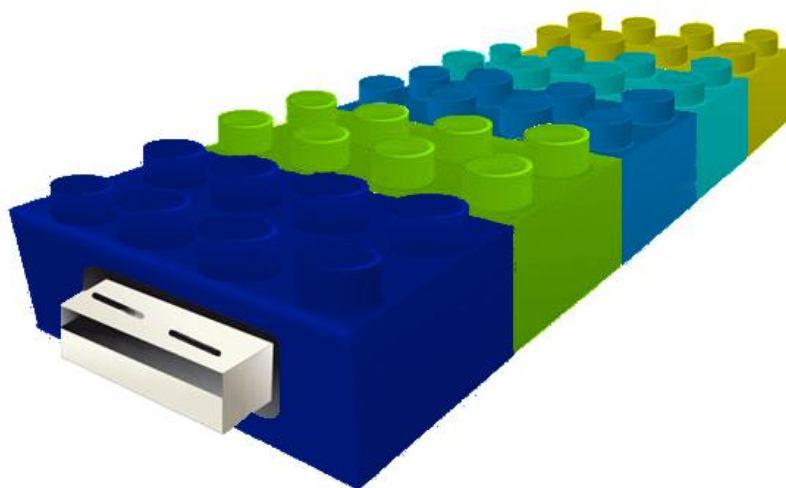




European  
Commission

# **The feasibility and scenarios for the long-term sustainability of the Large Scale Pilots, including 'ex-ante' evaluation**



PEPPOL

SPoCS



## **FINAL REPORT**

**A study prepared for the European Commission  
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Technology**

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# Foreword

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# 1 Introduction

Cross-border digital services are essential components for building a truly connected European Union and to realise the Digital Single Market. Cross-border services and mobility is a key policy priority in the internal market. However, cross-border public services are few in number and even where eGovernment services are offered, the majority of EU citizens are reluctant to use them. As mobility within the EU increases at pace and the EU continues to expand, providing public services that transcend national borders is needed.

## 1.1 Context

Five Large Scale Pilots (LSPs) were developed and run under the Competitiveness and Innovation framework Programme (CIP) Information and Communication Technology Policy Support Programme (CIP ICT PSP). These LSPs developed and implemented solution for providing European cross-border public services in five main areas; eID (STORK<sup>1</sup>), eProcurement (PEPPOL<sup>2</sup>), eBusiness (SPOCS<sup>3</sup>), eHealth (epSOS<sup>4</sup>) and eJustice (e-CODEX<sup>5</sup>). However, these five Large Scale Pilots cannot remain pilots as the funding period is coming to an end and given that significant investments have been made by both the Member States and the European Commission, it is essential that this investment not be lost.

The Commission has put forward a proposal for the adoption of the Connecting Europe Facility (CEF<sup>6</sup>), with the aim of improving Europe's transport, energy and digital networks. The conception of the Connecting Europe Facility, which is currently under negotiation, is a key tool to further deepen the Single Market and to provide an economic stimulus to the European economy. By fostering and centralising priority infrastructure investments in the fields of energy, transport and ICT, the CEF will contribute to the completion of the "transport core network", "energy priority corridors" and key digital infrastructure". The CEF will thus (under digital infrastructures) provide a financing option in the medium term, up to 2020, to ensure the further development and deployment of the solutions developed under the Large Scale Pilots.

Originally at least EUR 9.2 billion, of the total EUR 50 billion CEF budget, was earmarked for digital infrastructure, for broadband and Digital Service Infrastructures, the remainder for transport and energy. Whereas it was expected that EUR 7 billion of the these EUR 9.2 billion would be attributed to financing further deployment of broadband, particularly in areas less attractive to the market, like rural and isolated regions. The remaining EUR 2.2 billion of the proposed budget was to be invested in the joined-up infrastructure needed for pan-European digital public services or Digital Service

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<sup>1</sup> Please see <https://www.eid-stork.eu/> last visited on 22.05.2013 and for the on-going STORK 2.0 see: <https://www.eid-stork2.eu/> last visited on 22.05.2013

<sup>2</sup> Please see <http://www.peppol.eu/> last visited on 22.05.2013

<sup>3</sup> Please see <http://www.eu-spocs.eu/> last visited on 22.05.2013

<sup>4</sup> Please see <http://www.epsos.eu/> last visited on 22.05.2013

<sup>5</sup> Please see <http://www.e-codex.eu/> last visited on 22.05.2013

<sup>6</sup> Please see <https://ec.europa.eu/digital-agenda/en/connecting-europe-facility> last visited 06.06.2013

Infrastructures (DSI). However, these numbers have changed over the course of the study and whilst there are no final numbers on the total amount and on how much will be used for what, the current indication is that the EUR 7 billion originally allocated to broadband will cut completely, removing broadband completely from the CEF, and the EUR 2.2 billion originally foreseen for the DSIs will be reduced to approximately EUR 1 billion.

The Digital Services Infrastructures, foreseen under the CEF, are in the areas of:

- ❑ 'Trans-European high-speed backbone connections for public administrations';
- ❑ 'Enabling access to public sector information and multilingual services';
- ❑ 'Deployment of information and communication technology solutions for intelligent energy networks and for the provision of Smart Energy Services';
- ❑ 'Cross-border delivery of public services'; and in particular the following areas:
  - ❑ Interoperable electronic identification and authentication across Europe;
  - ❑ European Platform for the interconnection of European business registers;
  - ❑ Electronic procedures for setting up an running a business in another European country;
  - ❑ Interoperable cross-border electronic procurement services;
  - ❑ Interoperable cross-border eJustice services;
  - ❑ Interoperable cross-border eHealth services.

The category, 'cross-border delivery of public services' is the focus of this study. As is clear from the CEF, the LSPs are directly connected to this. The CEF paves the way for the funding of the deployment of the Digital Service Infrastructure in the medium term (up to 2020).

The vision foreseen in the CEF for the Digital Service Infrastructures is that they "will act as platforms on which new industries can create innovative applications and also build digital bridges to facilitate the mobility of citizens and businesses across-borders. Pan-European digital services will modernise public services." Furthermore, the **vision for the Digital Service Infrastructures for the provision of cross-border digital services** has been developed:

*Beyond 2020, enable the provision of online personalised cross-border public services, whether provided by public or private sector, by making use of sustainable Core Service Platforms that provide common fundamental cross-border interoperability solutions.*

With a strong vision of how things should be, the key question which therefore needs to be answered is **what type of model is needed to create a sustainable Digital Service Infrastructures, including Core Service Platforms and Generic Services**<sup>7</sup>.

## 1.2 Purpose of the Study

The purpose of this study is to deliver a comprehensive analysis to develop and assess possible scenarios for sustainability and future deployment of the services developed by the CIP ICT PSP Large Scale Pilots, solutions developed to provide cross-border public services in a number of areas. The aim of the study is to investigate the possible governance, operations, financing and architectural possibilities for their **long-term sustainability**. This feasibility study includes the development of the necessary conceptual and analytical models, the creation of sustainability scenarios, a deployment cost (benefit) analysis and an impact assessment of these possible scenarios. Furthermore, the

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<sup>7</sup> Both the term Core Service Platform and the term Generic Service are explained in Chapter 2, Section 2.2.

study's final aim is to; based on the previously-mentioned steps, provide a roadmap and concrete recommendations for putting the proposed scenario in place to ensure sustainability.

### 1.3 Approach to the Study

Figure 1, shows the study logic, which outlines the different steps in the approach to the study. These steps are grouped into the four tasks defined for the study.

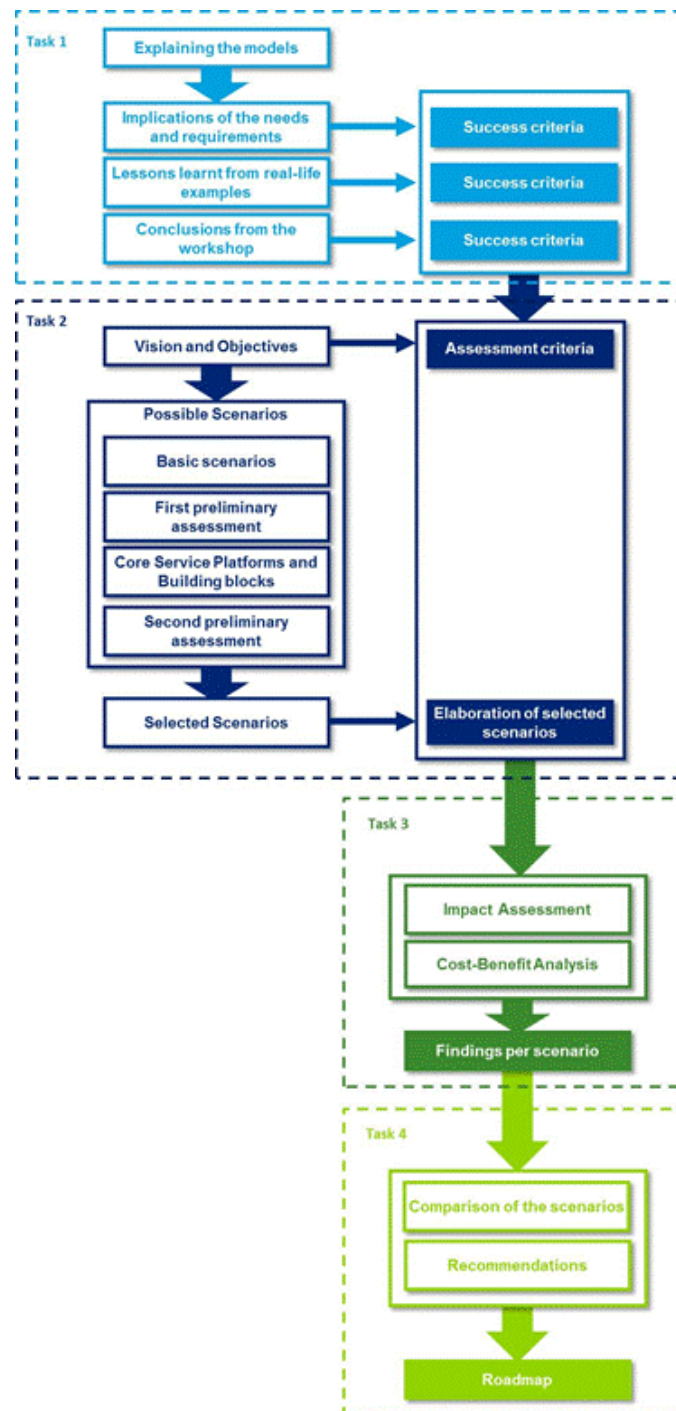


Figure 1 – Study Logic

## 1.4 Structure of the report

This report constitutes the final deliverable for the study on 'the feasibility and scenarios for the long-term sustainability of the Large Scale Pilots, including 'ex-ante' evaluation' and contains a description of the approach and methodology as well as the full findings of the study, including both recommendations and a roadmap.

The report contains nine chapters, structured along the approach to the study, each chapter detailing the main findings and forming the basis for the next steps and chapters:

- ❑ Introduction;
- ❑ Methodology and Models;
- ❑ Problem Assessment;
- ❑ Baseline Scenario: Current Situation and Future Trends;
- ❑ Objectives and Assessment Criteria;
- ❑ Assessment of Scenarios;
- ❑ Options;
- ❑ Roadmap and Recommendations;
- ❑ Conclusions.

In addition to these chapters, there are a number of annexes:

- ❑ Annex A – Abbreviations and Terminology;
- ❑ Annex B – Needs and Requirements;
- ❑ Annex C – Elaboration of Drivers and Options;
- ❑ Annex D – Results from the Survey to Member State and associated countries;
- ❑ Annex E – The basis for calculations for cross-border service use;
- ❑ Annex F – Characteristics of organisations similar to those that might oversee scenarios;
- ❑ Annex G – Key Practical Specifications and Recommendations.

## 2 Methodology and Models

The five Large Scale Pilots (LSPs) – STORK<sup>8</sup>, PEPPOL, SPOCS, epSOS and e-CODEX – have been carried out by consortia of Member States, public administrations, academia and the private sector; with the aim of developing and testing seamless cross-border digital services in different public sector domains including electronic identity, online public services for businesses, eJustice, eProcurement and eHealth. The LSP's have proven that providing cross-border public services is feasible. In numerous domains, building blocks that enable seamless cross-border services have been developed and piloted.

### 2.1 The Large Scale Pilot and the Building Blocks

The notion of **building blocks** refers to the fact that the technical solutions developed by the LSPs are essentially individual components on which providers of online services can build their own services (i.e. by integrating these building blocks into their own services they thereby provide the components' functionality). In the case of the LSPs this means that (national) online services become interoperable across-borders:

- ▶ **STORK I (2009-2012) and STORK II (2012-2015)**: the STORK I LSP focused on developing and piloting solutions for the cross-border interoperability of electronic identification and authentication, which is continued under the STORK II LSP. Essentially, STORK has delivered an interoperability solution that enables the interconnection of existing national eID systems in Member States, based on standards, specifications and a common code. This permits providers of online services (public and possibly private sector) to identify end-users (citizens and businesses) within their own Member States and from other Member States with their national eID, thereby enabling the provision of online services across-borders. The STORK I LSP has piloted its solution in a number of pilots including allowing foreign citizens to register for social security, allowing for notification of relevant public authorities of a change of address, delivery of electronic documents enabling transactional public services (eDelivery), user authentication for electronic services of the Commission for Commission and Member State officials (ECAS-integration), access to online administrative services of universities for foreign students (e.g. enrolment) and cross-border eLearning and safer chat for children. From a trust-enabling perspective, one of the key outputs of STORK is its Quality Authentication Assurance (QAA) model. It defines criteria to assess the trustworthiness of eIDs, and contains a mapping of existing eID solutions participating in the pilots on to four quality levels (i.e. eIDs can be ranked from level 1 to level 4, from least reliable to most reliable). Based on these pilots, it is already clear that the use of (cross-border) eID has many possible applications in different domains. This is even more evident given the focus of the STORK II LSP, which extends the piloting into the areas of eLearning

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<sup>8</sup> References to STORK include both the original STORK and STORK 2, the continuation of STORK.

and academic qualifications, eBanking (e.g. opening a new bank account online), eHealth, and public services for businesses.

- ▶ **PEPPOL (2009-2012):** the PEPPOL LSP focused on developing and piloting solutions to facilitate cross-border eProcurement by aligning electronic procurement across governments in Europe, enabling businesses to communicate electronically with government institutions in the procurement process and increasing efficiency and reducing administrative burden and costs. PEPPOL has delivered solutions for this kind of interoperability between eProcurement communities based on standards, specifications and common code that make up the building blocks for exchange of documents electronically (eDocument), delivery of these electronic documents (eDelivery of e.g. submission of tenders, and invoices), electronic signing of the documents (eSignature Validation), and standardised company information (eAttestation/Virtual Company Dossier (VCD), including such evidence as certificates and attestations). The PEPPOL transport infrastructure is the foundation of all PEPPOL post-award services. It is based on common, national IT compatible standards and interconnecting e-procurement communities. PEPPOL thereby supports the pre- and post-award eProcurement phases.
- ▶ **SPOCS (2009-2012):** SPOCS focused on developing and piloting solutions to facilitate public administrations in the Member States to provide cross-border online services to businesses through next generation portals (these are known as Points of Single Contact (PSCs) that are the one-stop shops for online public services for businesses, set up as part of the implementation of the Services Directive). SPOCS delivered solutions for cross-border public services for businesses based on standards, specifications and common code that make up building blocks for eDocument, eDelivery, eSafe (secure storage of authenticated documents), eService Catalogues (location and metadata about available online public services), and Syndication (mapping of the equivalent services in the Member States). In addition, eID is also relevant for SPOCS given that businesses need to identify themselves for online services (this is currently being tested).
- ▶ **epSOS (2008-2013):** epSOS focuses on developing and piloting for cross-border interoperability of electronic health record systems in Europe and enabling access to patients' electronic health records across-borders. This allows patients as well as authorised professionals in the sector (including hospitals, general practitioners, medical specialists, and pharmacies) to access the patient summary (which contains important medical data) and enables electronic provision of medical prescription across-borders. epSOS-delivered solutions for cross-border exchange of such health information based on standards, specifications and common code make up building blocks for such services as: identification of patients and health professionals (identification Service), ePrescription and eDispensation (electronic retrieval of prescribed medicine and registration of dispensed medicine(s)), a Patient Summary, a Consent Service (patients providing consent for the use of their data), and a Taxonomy Manager and Terminology Service Access Manager (mapping of equivalent medicine(s) across Member States). In a second, enlargement, phase, known as epSOS 2, epSOS is working on the 112 emergency services, the European Health Insurance Card (EHIC), and aiming to enable patients to access their data.

- **e-CODEX (2010-2013):** e-CODEX focuses on developing and piloting solutions to improve the access of citizens and businesses to legal means in Europe as well as to improve the interoperability between legal authorities within the EU. e-CODEX delivered solutions to enable cross-border access to justice systems in Europe based on standards, specifications and common code that make up building blocks including eSignature, ePayment (electronic handling of payment of court fees), eDelivery and eDocument. In addition, e-CODEX intends to enable eID to identify citizens and professionals (e.g. lawyers and integration of role authentication system called 'Find a lawyer 2.'). e-CODEX has piloted specific applications of these building blocks in pilots concerning European payment orders, small claims, secure cross-border exchange of sensitive judicial data, a European arrest warrant, and mutual recognition of financial penalties.

It is clear that the five LSPs have delivered a number of solutions, or building blocks, that enable cross-border digital services in the above-mentioned policy areas. Figure 2 provides an overview of the solutions delivered for each LSP.

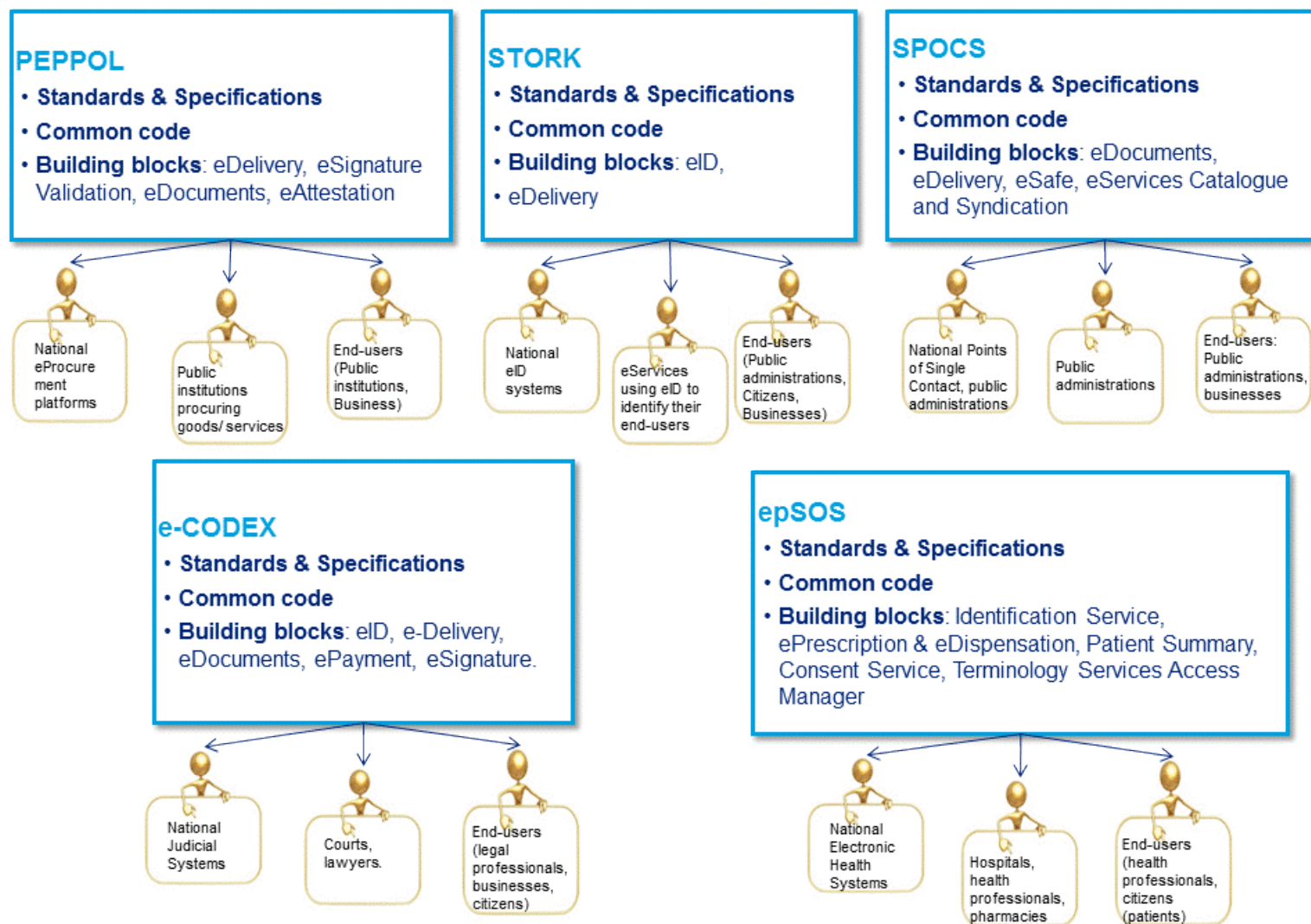


Figure 2 – Blocks developed under the LSPs

Each block consists of a number of **Components** (common code) and uses a number of **Standards and Specifications**.

The building blocks for cross-border interoperability developed by the LSPs all share a key characteristic: they are intended to be taken up as part of online services which make these online services 'cross-border enabled'.

However, the different LSPs have developed building blocks with similar purposes, in parallel, and there is now a need to consolidate and industrialise them. The existing LSPs have already undertaken some efforts to reuse existing building blocks. Examples include that:

- ❑ SPOCS uses the solution for cross-border identification of a natural person's eID developed by STORK. Furthermore it also builds on document transport concepts developed by STORK. It has used the Virtual Company Dossier (VCD) concept of PEPPOL for document containers and has generalised it into an Omnifarious Container Format for eDocument (OCD) to package company information for transmission to Points of Single Contact in other countries.
- ❑ e-CODEX will build on and make necessary changes to deliverables from SPOCS and the other pilots to fulfil its objectives for easy and secure access to legal information and procedures in other EU Member States.

This reuse takes place at the level of providers of online services (whether public or private sector) in the Member States that integrate the LSP building blocks as part of their services in order to enable cross-border interoperability and service provision. However, reuse is not only achieved at the level of Member States, who reuse the building blocks to make their online public services cross-border enabled. It can also be achieved at EU level, where many systems either have been or are being developed, which could benefit greatly from cross-border interoperability (e.g. an obvious example is ECAS which is already integrated with the STORK eID building block). Other systems include the Schengen Information System (SIS), Visa Information System (VIS) in the area of Home Affairs, and the Common Information Sharing Environment (CISE) in Maritime Affairs.

As can be seen in Figure 2, numerous blocks have been developed by the LSPs. Some of these are highly domain specific. Therefore their (re)use will be largely limited to that domain (e.g. ePrescription is specific to the domain of eHealth). Conversely, others have a high potential for reuse across the different domains. This is demonstrated by the fact that:

- ❑ **eID**, although mainly developed by STORK, is used in epSOS (see also the STORK II pilot on eHealth), e-CODEX (in the future) and could in principle also be applied in SPOCS;
- ❑ **eDocument** are used in SPOCS, PEPPOL and e-CODEX;
- ❑ **eDelivery** are used in PEPPOL, SPOCS, STORK and e-CODEX;
- ❑ **eSignature** is part of PEPPOL and e-CODEX.

Indeed, as was also concluded in the 2011 'Study on Cloud service orientated architecture for e-government'<sup>9</sup> high potential for reuse is associated with the level of granularity of a service/building block as well as its domain specificity, whereby less domain specific building blocks have a higher potential for reuse.

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<sup>9</sup> European Commission, Deloitte, (2011), Study on Cloud service orientated architecture for e-government', <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/smart2010-0074finalreport.pdf> , last visited 03.05.2013.

By providing the various building blocks openly to other public administrations and private sector stakeholders (via the internet) the LSPs have developed and piloted reusable solutions that enable interoperability across-borders. The variety of building blocks and stakeholders involved shows the complexity of this ecosystem.

It is therefore crucial for this study to set out a conceptual model that is used to analyse this ecosystem throughout the study. To this end the Digital Services Model introduced, it has been developed based on strategic interviews with key stakeholders, desk research and conclusions from a workshop held on 21 November 2012 where this model was validated by participants, which included representatives from both the public and the private sector.

## 2.2 Digital Services Model

In order to establish a conceptual model, it is important to clearly set out the key terminology that is used in relation to the DSI for the provision of cross-border public services. A starting-point for this is the CEF (that provides an overarching vision and framework). The CEF introduces two levels of support for the DSI: the **Core Service Platforms** and the **Generic Services**. Essentially, the Core Service Platforms refer to the platforms where the elements needed for the provision of cross-border digital services in areas such as eHealth and eJustice are located (i.e. where the building blocks for these domains are located), whereas Generic Services refer to the connection to the building blocks at the level of Member States. For the former, the proposed funding rate under the CEF will be 100%; whereas it will be 75% for the latter. This means that the CEF foresees full funding of the costs related to the creation, development and deployment of the Core Service Platforms and up to 75% of funding for the costs of the Generic Services, where Member States' authorities then have to pay the remaining 25%. The CEF funding is to run until 2020.

The LSPs have essentially developed building blocks that enable cross-border interoperability based on standards, specifications and common code/components. Moving beyond the pilot projects and towards actual deployment, it is crucial to develop a structure in which the digital services and the elements they are composed of can be conceptualised.

This is done through a five-layer structure that provides the conceptual framework. It takes into account the deliverables of the LSPs, the stakeholders and roles they can take on, and the driving forces behind the dynamics of this complex ecosystem. The conceptual framework is referred to as the Digital Services Model.

### 2.2.1 A Five-layer Approach

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The Digital Services Model provides a conceptual framework for the creation of and provision of cross-border public digital services. Such a framework is necessary in order to analyse the needs and requirements for the future deployment of the digital services. It presents the different levels of granularity which need to be taken into consideration for the overall management of the DSI for the provision of public Services.

As is clear from the description of the LSPs, there are a number of elements that need to be considered:

- ✘ **Standards and Specifications;**
- ✘ **Common code or Components;**
- ✘ **Building Blocks;**

- ❑ **Core Service Platforms;**
- ❑ **Generic Services.**

These are further discussed in the next sections.

## **Standards, Specifications and Components**

**Standards and Specifications** have been used by all the LSPs for the development of the digital services. These standards and specifications play a central role in interoperability as it means that systems have commonalities in key areas, enabling systems to communicate with one another.

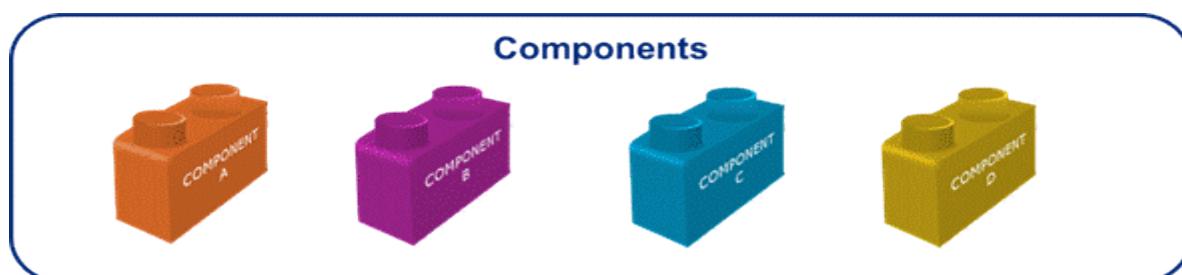


*Figure 3 – Standards and Specifications*

Standards and specifications play a role in take-up. For example, if industry has to take up the building blocks it is crucial that they have been developed using commonly used standards (so that they are interoperable with other existing systems used by public administrations and industry and so that they it is easy to integrate them).

Standards and specifications thus make up the first layer of the Digital Services Model. They are crucial elements, which need to be taken into account, to ensure the take-up of the developed solutions. Indeed, any misalignment of the standards and specifications with ones used in the market would more than likely have a strong negative impact on take-up. Furthermore, standards and specifications alone can be of interest to market players as they enable the market players to develop better interoperable products that are more commonly accepted across-borders, across Europe. This in turn can reduce development costs considerably as it makes reuse possible.

**Components** are the common code that has been developed for the building blocks. Building blocks are made up of several components (e.g. a timestamp component/functionality). These are often referred to as modules in the deliverables of the LSPs. A single component can either be building block-specific or it can be used in several building blocks.



*Figure 4 – Components*

These components must be taken into account as they are the software elements that make up the building blocks. While some components are specific to one building block, others can be used across

building blocks. Therefore, this is an important level of abstraction, because there is potential for reuse and thus a potential for saving resources. In addition, to ensure that these components work for all potential stakeholders, they must be designed and developed in a way that optimises interoperability. Components are therefore also essential for sustainability as they can be reused across building blocks. A new building block may be created, notably, by re-using components designed for another building block.

### ***Building Blocks, Core Service Platforms and Generic Services***

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As mentioned in the previous section, the CEF introduced the notion of **Core Service Platforms** and **Generic Services**. In addition, each of the LSPs has developed its solutions based on **Standards & Specifications** and **Common code or Components** that make up the **Building Blocks**.

Essentially, all the solutions that derive from the LSPs are ultimately building blocks, i.e. they are services that can be integrated as part of other services.

There are currently four specific building blocks that are identified as building blocks with a high potential for reuse: eID, eSignature, eDocument and eDelivery. Given the fact that these building blocks have the most obvious potential for reuse across different domains (or Core Service Platforms) these can be seen as a specific layer as part of the set of digital services.



*Figure 5 – Cross-CSP Reusable Building Blocks*

As noted in the CEF, Core Service Platforms enable the provision of cross-border digital services in different domains including eHealth, eJustice, and eProcurement. These are the platforms where all the different building blocks for a specific service (e.g. eHealth services or eID services) are brought together and made available, thus enabling service providers to take up and reuse the services as part of their own services. It is therefore crucial that these platforms are organised and managed in a way that serves the relevant stakeholders and their needs and requirements. The Core Service Platform (CSP) level should eventually enable the Member States to interact with other Member States through the use of building blocks (via the Generic Services).

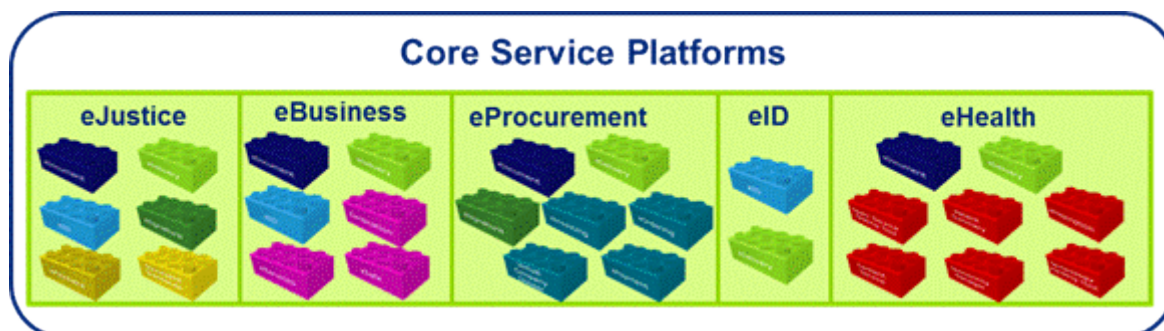


Figure 6 – Core Service Platforms

Each of these CSPs contains a number of building blocks. These are often ones that are both CSP-specific (i.e. they can only be used for that one Core Service) and ones that can be reused across CSPs (i.e. the four identified building blocks with high reuse potential).

Both the CSP layer and the building block layer are levels of abstraction that are very closely linked and dependent on one another. It is essential to understand what building blocks have been developed by the LSP and which of these are CSP-specific and which are reusable. From this point on, the CSP-specific blocks are called ‘domain blocks’ (e.g. ePrescription is specific to eHealth) and the reusable blocks are called ‘building blocks’ (e.g. eID can be reused in various domains).

The reusable building blocks are the strongest common element between the various CSPs. They therefore need to meet the needs and requirements of all the CSPs. This underlines the links between the building blocks and the CSPs, and the need to manage both these together. Generic Services, is the level of abstraction at which the Member States integrate or connect to the CSPs. These inter-connections are necessary to link up a Member State so it can provide cross-border access and use of national eIDs, electronic health records, national procurement platforms, national eJustice platforms and public services for foreign business. Each Member State will have to ensure that these existing systems at national level are linked up with the CSPs through Generic Services in order to be cross-border enabled.



Figure 7 – Generic Services

Identifying that a solution has a high potential for reuse should imply, from a sustainability perspective, that it is established as the standard to be used across the different CSPs. Therefore, technical evolutions of the (reusable) building block will have cross-CSP consequences.

The following figure (Figure 8) demonstrates the interplay of the Digital Service model, between the three levels of the Building Blocks layer, the Core Service Platform layer, and Generic Services.



The last two layers of the model are what are referred to in the CEF as the Digital Service Infrastructures. The first three layers form the basis for the elements used in these DSI and the two lower layers support the DSI.

Generic services allow Member States to connect to the Core Service Platforms, which regroup all the building blocks which have been developed in order to enable the delivery of cross-border public services. Above this layer is the layer with the building blocks that have a high reuse capacity. These therefore have a cross-CSP potential. All these building blocks are based on components, which rely on a number of standards and specifications. These layers also link up with the European Interoperability Architecture, which consists of interoperability agreements across Member States. These agreements are implemented in interoperability solutions such as common frameworks, generic tools and common services, which provide definitions for the identification, assessment and reuse of existing building blocks at European level. These definitions therefore link up with the layers of the Digital Service Model.

The model containing the five layers is shown in Figure 9.

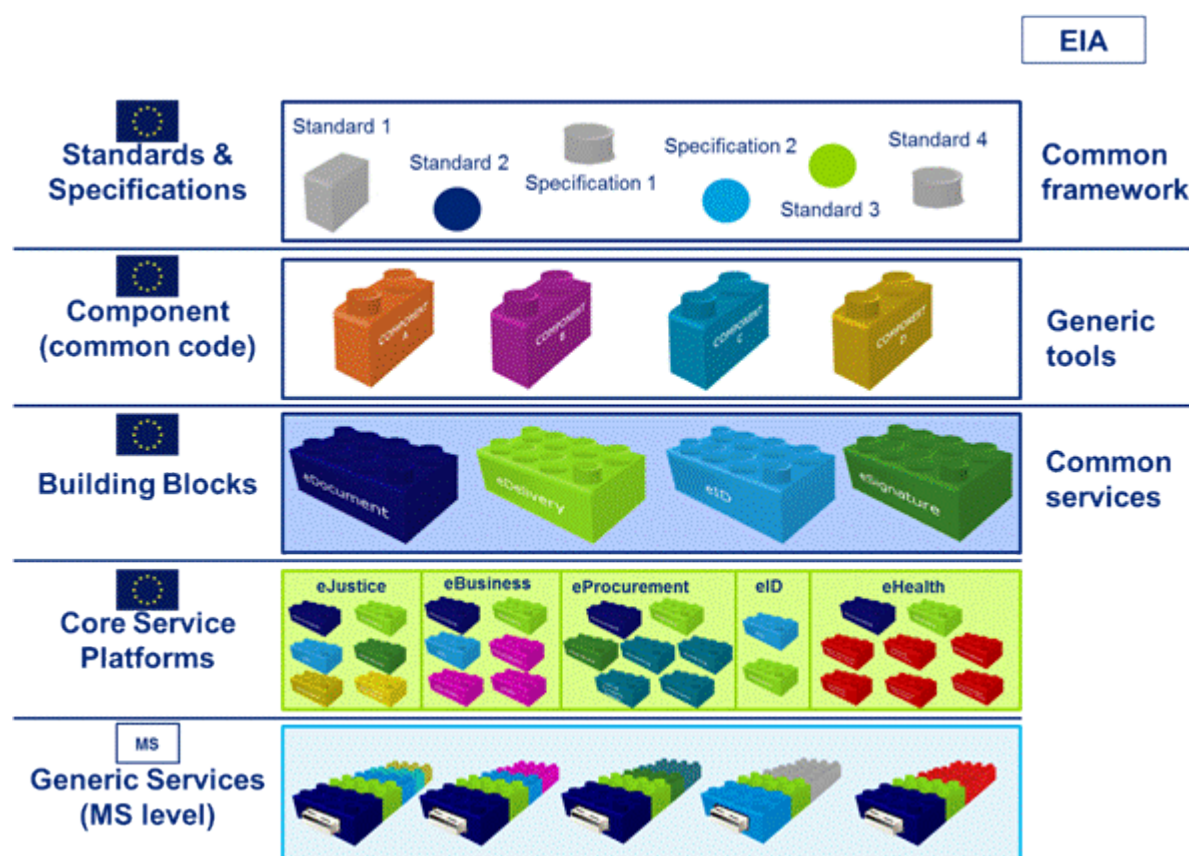


Figure 9 – Digital Services Model – a 5 layer model

## 2.2.2 Stakeholders and Driving Forces

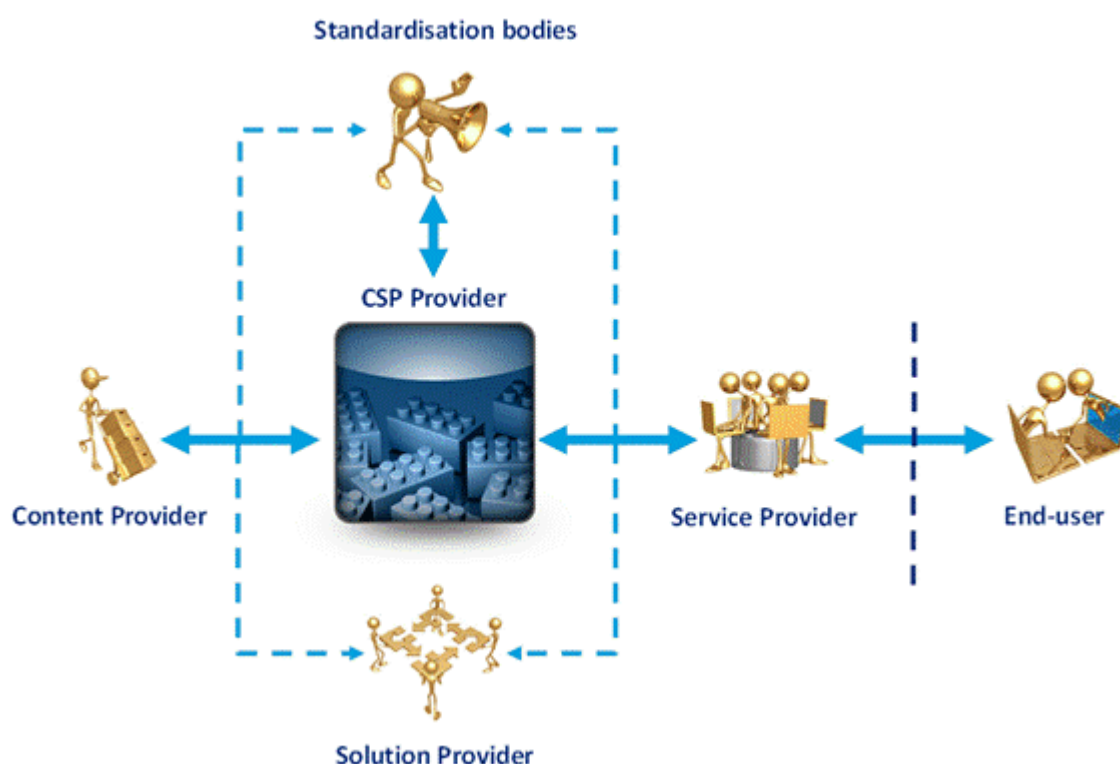
There are a number of different stakeholders that are involved in the digital services ecosystem, each stakeholder can take on one or more roles and they each have an influence on driving the further development and deployment of the solutions developed by the LSPs for cross-border public services.

## Stakeholders and the Roles they take on

Linked to the digital services, there are a number of stakeholders which are involved in one way or another. These stakeholders are:

- **Member States** (national, regional and local authorities – these can also refer to EFTA countries and Candidate Countries);
- **European Union** (EU) (European Commission and, in the pilots' phase, the LSP coordinators);
- **Private sector** (ICT industry, banking industry, etc.)
- **Third parties** (enabling bodies, like standardisation organisations and other bodies that work with standards, etc.)
- **Citizens and businesses.**

There are five main roles that stakeholders can play. The roles relate to the use of the blocks and the interaction between the different roles in the environment where the blocks have been rolled out. These roles and how they relate to one another are illustrated in Figure 10.



*Figure 10 – Stakeholder roles and their relation to one-another*

The roles are described as follows:

- **Content Provider** – the Content Provider role is attributed to any stakeholder that provides the basic elements or 'content' that is needed for interoperability across-borders. For example, National eID systems provide the actual eID and electronic identification and authentication services. Without these, the national eID would not exist and could not be made interoperable across-borders. Similarly, there is no cross-border eHealth without national electronic health systems, and no eJustice without national judicial systems. The

stakeholders providing this content could, for example, be public administrations that are in charge of providing these systems or in some cases also include or be the private sector.

- ✚ **Core Service Platform (CSP) Provider** – the CSP provider role is attributed to any stakeholder that is involved in the provision of the CSPs (cf. layer 4 of the Digital Services Model) and the Building Blocks. These are made up of layer 3 of the Digital Services Model, based on the Components and Standards and Specifications (layer 1 and 2 of the model). The CSP provider is directly concerned with the connection to the content providers as well as the delivery of services to the service providers.
- ✚ **Service Provider** – the Service Provider role is attributed to any stakeholder that provides a service to the End-user or to another Service Provider. For example, the Points of Single Contact are service providers that provide a service to businesses.
- ✚ **Solution Provider** – the Solution Provider role is attributed to any stakeholder that provides (software) solutions (typically to Content- or Service Providers), and/or implements these solutions. This could, for example, be a private sector company that develops a system for a Member State and installs it. This role has been identified as relevant, particularly since in the case when more common off-the-shelf solutions are applied, the role of open standards for cross-border interoperable solutions could contribute to integration of these systems across-borders.
- ✚ **Standardisation bodies** – the standardisation bodies' role is attributed to the stakeholders which are involved in developing, revising and communicating technical standards in liaison with the CSP provider.
- ✚ **End-user** – the end-user role is attributed to the ultimate user of the services provided by Service Providers. These are typically citizens or businesses, but can also be other public administrations.

The different roles can be taken on by different stakeholders: for example, private sector stakeholders can provide government-endorsed eIDs (e.g. bank eIDs that are used as national eIDs in public services) and take on the role of a Content Provider, or they could, in the role of a Service Provider, provide online services to end-users that rely on eID. The following table (Table 1) provides an example of a mapping between the different stakeholders and roles.

*Table 1 – Stakeholder mapping*

|                        | European Union | Member States | Private Sector | Third Parties | Citizens, businesses |
|------------------------|----------------|---------------|----------------|---------------|----------------------|
| Content Provider       |                | X             | X              | X             |                      |
| CSP Provider           | X              |               | X              | X             |                      |
| Service Provider       | X              | X             | X              | X             |                      |
| Solution Provider      |                |               | X              | X             |                      |
| Standardisation Bodies |                |               |                | X             |                      |
| End-user               | X              | X             | X              | X             | X                    |

Clearly, the part of the ecosystem relating to the cross-border solutions in the different CSP domains can be rather complex, given the different possible stakeholders and the roles that they can take on. Essentially, the **key driving forces** for the digital services are determined within this ecosystem. These driving forces revolve around the **need for interoperability**, the **supply dimension** (e.g. existing systems at national level (Content Providers), the developers of these systems (Solution Providers)), as well as a **demand dimension** (e.g. online services that could benefit from cross-border interoperability of e.g. eID, eHealth, etc. (Service Providers)).

## Driving Forces

In addition to understanding which stakeholders are within the digital services ecosystem, it is also necessary to understand from which perspective they drive the digital services. As mentioned above, there are three main directions in which the digital services are driven:

- ❑ **Supply-driven** (Top-down);
- ❑ **Demand-driven** (Bottom-up);
- ❑ **Interoperability-driven** (Horizontal).

Figure 11, below, shows how these forces fit across the five layers of the Digital Services Model.

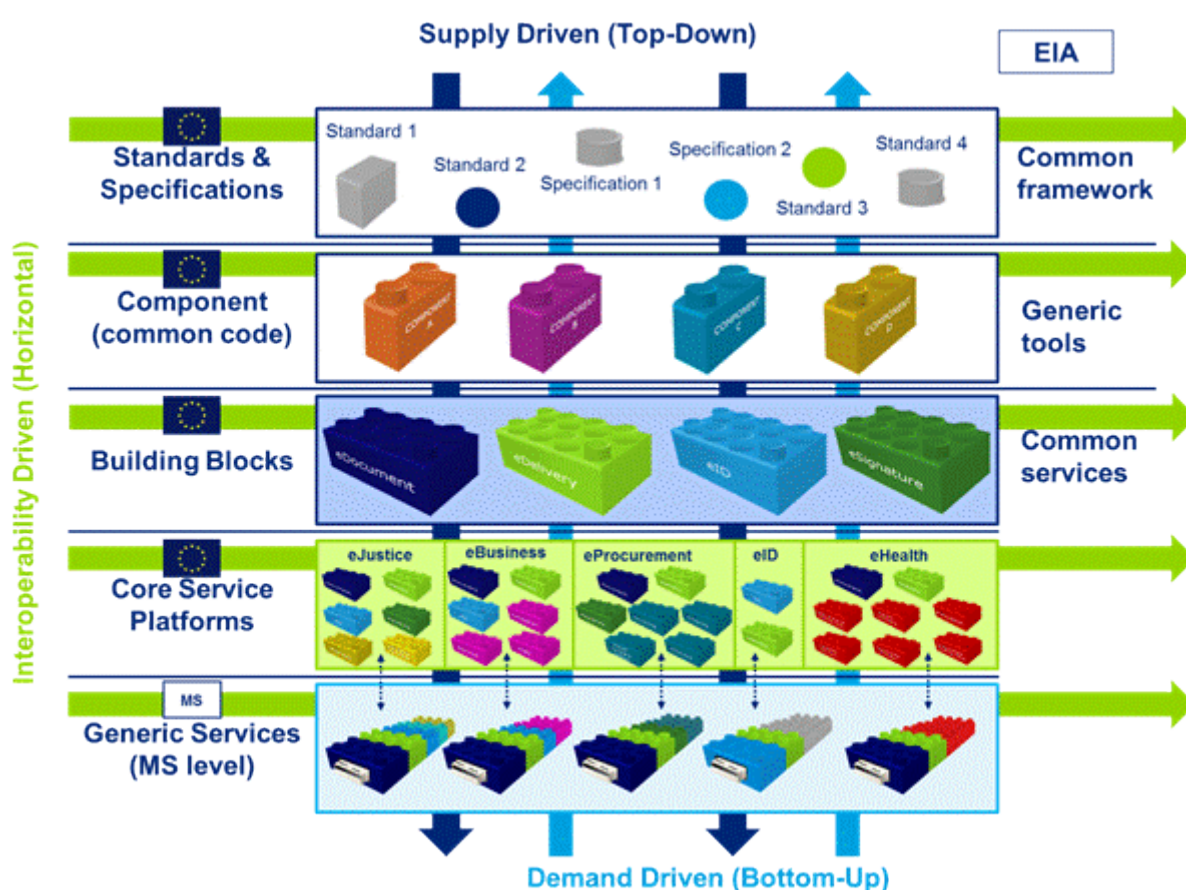


Figure 11 – The Digital Services Model

Supply-driven means that it is driven by the Content Providers who have the content that makes it possible to supply services (e.g. to the Member States), however, it can also to some extent be driven

by the Service Providers who see the possibility for providing new services. The supply-driven aspect is therefore about what services is it possible to offer, what content lends it-self to services, and what services should be offered.

Demand-driven means that it is driven by the Service Providers – these serve as a channel or voice for the end-users who request (or demand) new services to meet their needs and requirements.

Interoperability-driven means that it is driven by the need to ensure that existing online services and systems can interact and work together across-borders. This can be driven by a number of underlying forces such as the legal framework, organisational structures, semantic issues, and technological evolutions.

### **2.2.3 Applicability of the Digital Services Model**

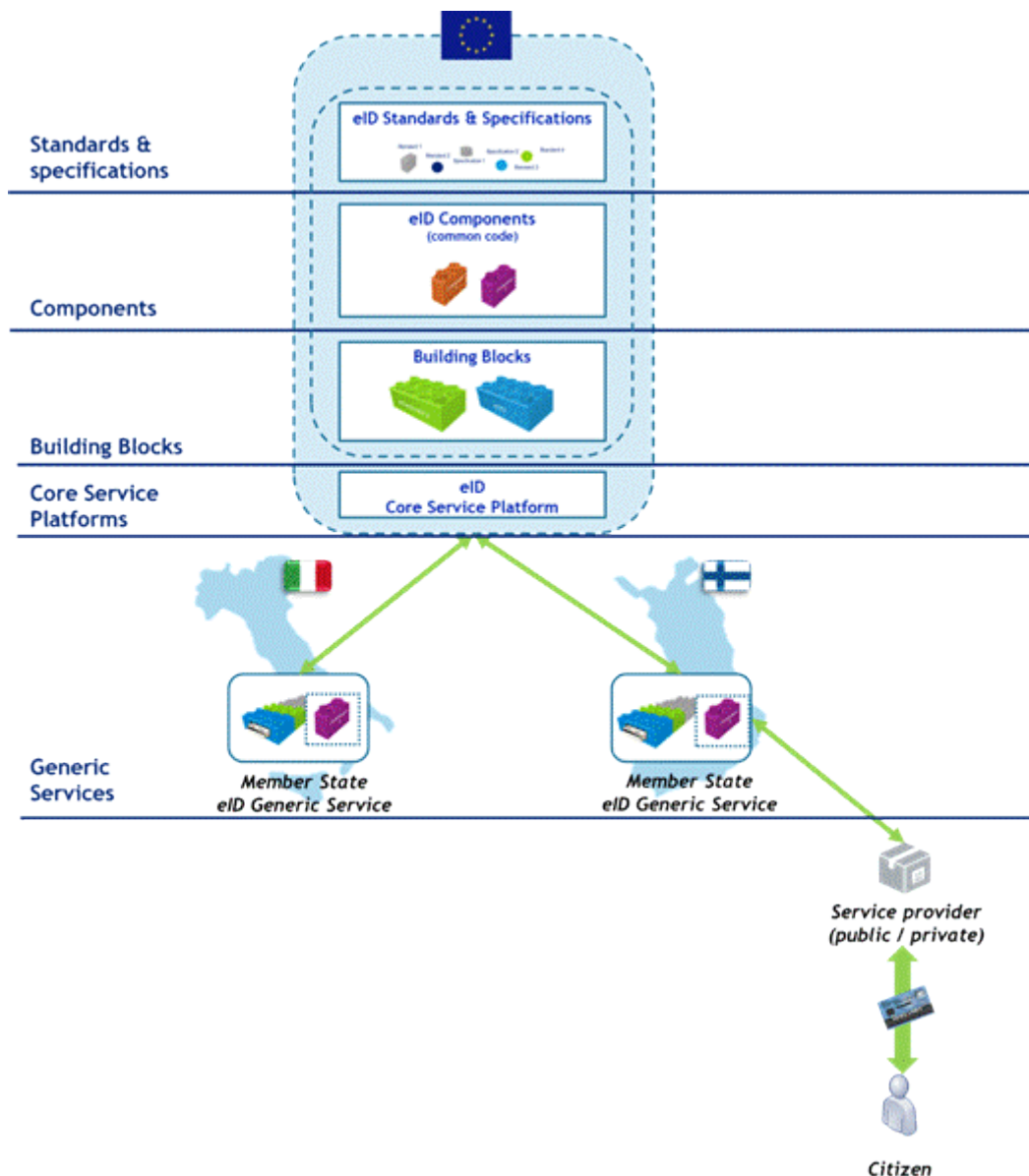
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In order to understand the Digital Services Model and how it can help in the creation of cross-border public services, a concrete example should be provided and mapped with the elements of this model.

The eID service can be considered as a useful and easy to understand example for describing the different elements of the Digital Services Model and the stakeholders involved.

As shown in Figure 12, Service Providers (whether public or private sector) will directly use the Member State Generic Services for eID to verify the identity of citizens. In the case of verifying electronic identities coming from other Member States, the eID CSP at a common EU level is connected to direct the identification requests toward the corresponding Member State eID generic services. This platform provides the building blocks applicable for enabling the interactions. In implementing this eID scenario, a set of eID Components (common code), standards and specifications are defined, provided and governed at the common EU level that can be used by Member States to implement the connections to the eID CSP.

This example of eID shows the interaction of the different elements in the proposed Digital Services Model, including the CSPs, components and Member State generic services. Furthermore, it addresses the different stakeholders that are involved in the implementation, use and governance of these elements. In general, it shows the applicability of the proposed Digital Services Model as a conceptual model for the creation and provision of cross-border digital services.



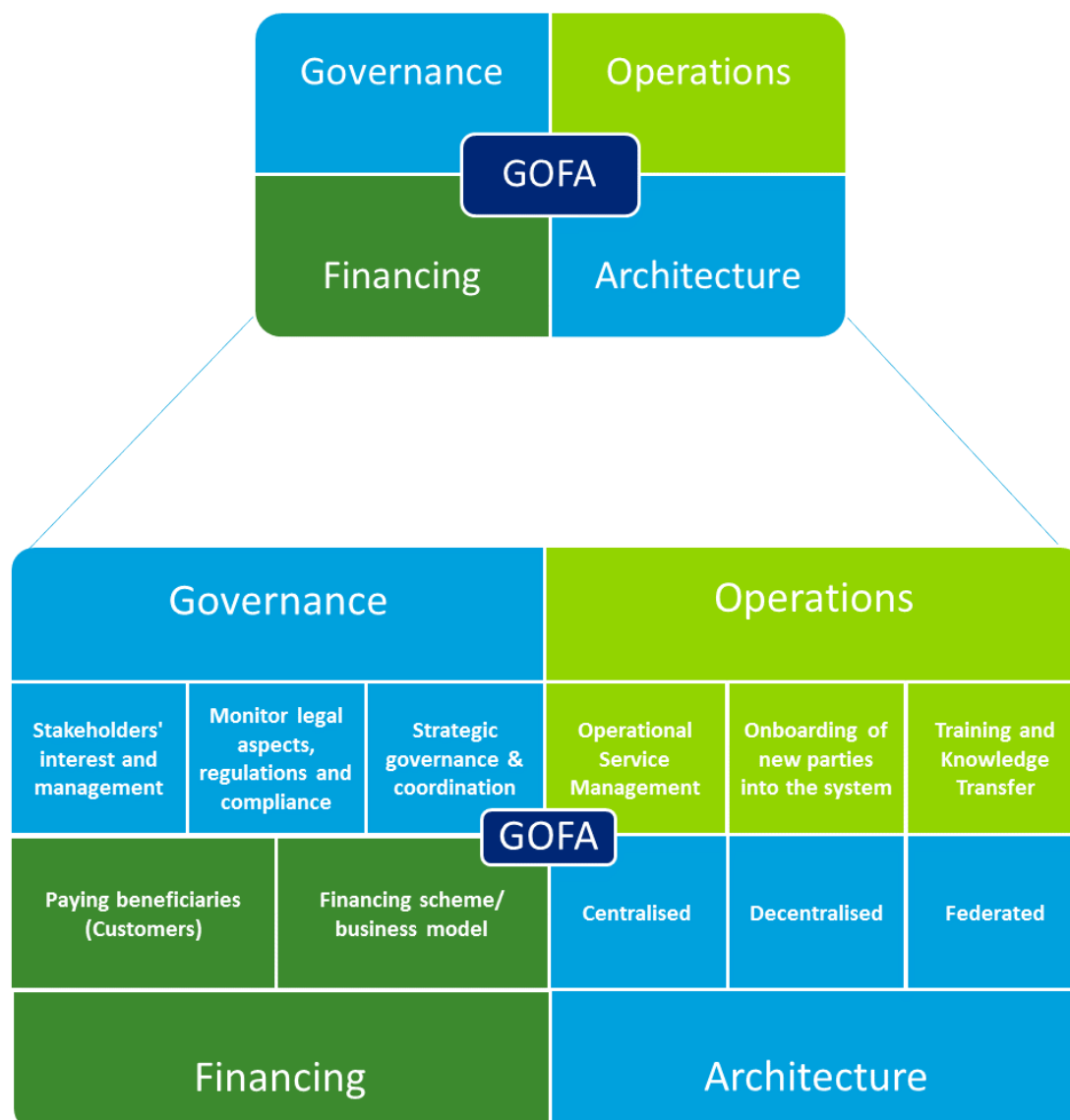
*Figure 12 – Example of eID services at Member States and Cross Service Platform*

## 2.3 Governance, Operations, Financing and Architecture

Based on the layers of the Digital Services Model and based on the stakeholders involved in the digital services ecosystem, ensuring the sustainability of the solutions developed therefore implies finding an overarching organisational structure which institutionally reflects both the differences between the developed solutions, their potential reusability across CSPs, and the differences in terms of which different stakeholders can be involved in their development and deployment.

The five layers of the Digital Services Model thus have to be managed so that the needed building blocks are available and continuously developed, and so they both continue to contain the needed components and to use the right standards and specifications. The ultimate goal is to ensure that the CSPs are available. These conditions in turn ensure that the Member States can provide digital services across-borders.

Within this management element (referred to as the role 'CSP Provider' in Figure 10), there are four main aspects to consider, these are Governance, Operations, Financing and Architecture (called GOFA elements), as shown in the illustration in Figure 13.



*Figure 13 – The GOFA Model*

The GOFA Model serves as the reference framework for the design of sustainability scenarios.

### 2.3.1 Governance

Governance refers to the control and the steering of the decisions on digital services, essentially to the decision-making. The existence of a sound governance structure supported by solid coordination is a first prerequisite. In general, the governance structure should ensure the long-term sustainability of the layers. It should guarantee the quality level of the services offered and the data used and provided. To accomplish these tasks, the Governance Model includes the following three pillars: the legal aspects, and regulations and compliance; the strategic governance and coordination; and the stakeholders' interest and management. These three pillars must be taken into account to ensure the sustainability of the future digital services.

### 2.3.2 Operations

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'Operations' is about the day-to-day running of the digital services. Reliable service management is a second prerequisite and needs to guarantee that the day-to-day operation of the expected services so they can be offered to customers.

A first pillar in this context is the "Operational Service Management". The service management should guarantee that the services comply with the required operational conditions.

A second pillar in this context is the "On-boarding of new parties into the system" which should maintain the trustworthiness and reliability of the system at the required levels.

A third pillar in this context is "Training and Knowledge Transfer". A key success factor for creating a sustainable system is training and knowledge transfer. By documenting and sharing past experiences with integrating e.g. identity, attribute or service providers, the repetition of any past mistakes made can be avoided, and knowledge and experience of former projects and initiatives can be leveraged for the benefit of new connecting parties.

### 2.3.3 Financing

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Financing is about the resources needed for the governance body, the operations and the architectural updates. The financial model will evolve over time. Once the DSIs are deployed and running, governance, operations and architectural costs will increase since the system will become more complex and more services will have to be managed. The costs could then be supported by a combination of approaches: such as for example free membership/subscription for Member States and their service providers or relying parties, and fee based membership/subscription for private sector stakeholders. In an initial stage, during which there are only a low number of private sector partners, public sector-funding will still be required to maintain the system (as foreseen in the CEF). In the long-term, various models of public-private partnerships, financing sources and schemes need to be considered in order to develop a sustainable financial model for the digital services.

### 2.3.4 Architecture

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Architecture corresponds to a formal description of an information technology system. Architecture has many different definitions. When an audience is asked about this matter, a lot of opinions may be expressed about what architecture can be or should look like. In this report, the standard terms are presented to comply with the industry definition of architecture.

ISO/IEC 42010:2007 defines "architecture" as:

***"The fundamental organisation of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution. In this context, a system is a collection of components organised to accomplish a specific function or set of functions."***

The Open Group Architecture Framework (TOGAF), a framework for enterprise architecture covering requirements in terms design, planning, implementation and governance, embraces but does not strictly adhere to ISO/IEC 42010:2007 terminology. In TOGAF, "architecture" has two meanings that depend on the context:

- A formal description of a system, or a detailed plan of the system at component level to guide its implementation;

- ✉ The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.

TOGAF strikes a balance between promoting the concepts and terminology of ISO/IEC 42010:2007 – ensuring that our usage of terms defined by ISO/IEC 42010:2007 is consistent with the standard – and retaining other commonly accepted terminology that is familiar to the majority of the TOGAF readership.

For the creation of a digital services ecosystem, it will be necessary to define clear architecture guidelines, including the different architecture domains such as business, data and application, and technology architectures. In the context of the LSPs and the interoperability between public administrations, the architecture should indicate the different options on the collaboration between the Member States and the European Commission. The architecture discussions will lead to a decision on the more centralised or decentralised or federated structures to be used and involved.

The on-going work on the European Interoperability Architecture (EIA)<sup>11</sup>, aimed at “Improving cross-border cooperation between Member States’ public administrations”, would provide a starting-point for defining an overall Digital Services Architecture, and identify possible reusable building blocks. The EIA already provides useful information on the possible interoperability agreements that are needed in the different architecture domains. Furthermore, the conceptual architecture models as part of the EIA provide a structure for identifying, assessing and reusing already existing building blocks at European level (or even Member State level).

## 2.4 Putting it all together – The Digital Services Ecosystem

The elements that have been described are a part of the digital services ecosystem. It is within this ecosystem that the development, testing, deployment and maintenance of the digital services will take place. The ecosystem is illustrated in Figure 14.

The conceptual framework presented in this section allows a presentation the overall digital services ecosystem for which sustainability scenarios need to be constructed. The first key finding is that, based on the work conducted under the LSPs and the deployments that can be foreseen under the CEF, five layers are identified that can conceptualise the different elements.

The first four elements – Standards and Specification, Components, Building Blocks and Core Service Platforms – are centralised elements which have to be managed in order to set up and deploy the CSPs that ultimately enable the provision building blocks for cross-border interoperable digital services.

The last element, Generic Services, refers to decentralised connectors which have to be created for the Content Providers connect to the CSPs and enable the cross-border use of national content, including national eIDs, national electronic health records, national procurement, national public services for businesses, and national judicial information.

Service Providers can then connect to the CSPs in order to integrate and enable cross-border provision of their services. The Digital Service Model presents these elements in a conceptual framework.

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<sup>11</sup> Please see: [http://ec.europa.eu/isa/actions/02-interoperability-architecture/2-1action\\_en.htm](http://ec.europa.eu/isa/actions/02-interoperability-architecture/2-1action_en.htm) , last visited on 03.05.2013

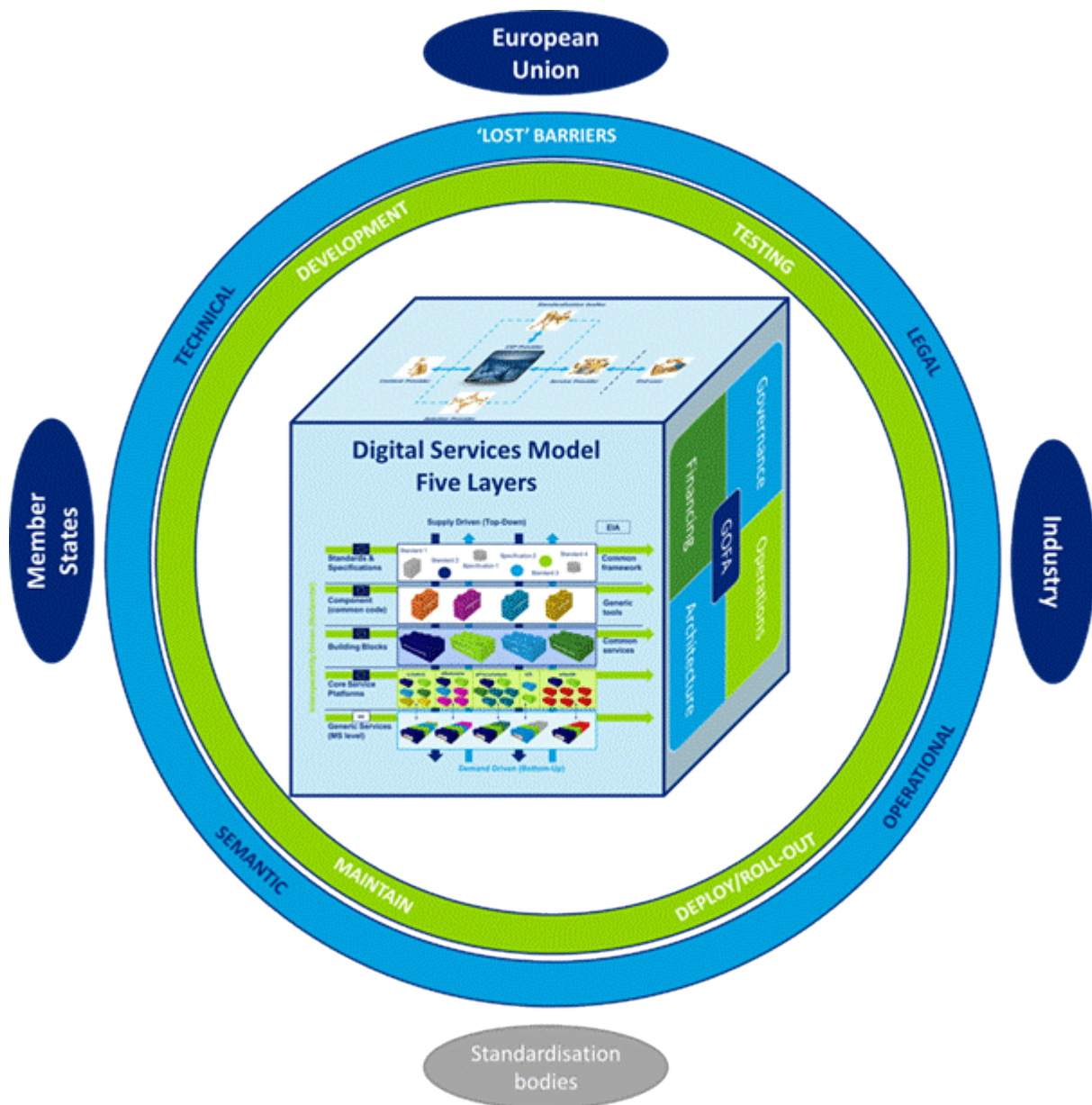


Figure 14 – The Digital Services Ecosystem

The second key element that is part of the Digital Services model is the different stakeholders involved in the digital services ecosystem. It is essential to understand which stakeholders are involved in this ecosystem. It is not only the stakeholders who will have a role to play in the DSI but also those who come into play in governance, financing, architecture and operations. These stakeholders can be drivers of development, deployment and take-up of the building blocks. The decision of each stakeholder to adhere to, or invest in, the building blocks developed will depend on the adequacy of the value propositions of each solution. Incentives to take-up range from legal obligations and reduced costs to enhanced cross-border activity and the capacity to make a profit. Stakeholder involvement will also depend on the extent to which current barriers can be overcome.

Understanding how the various stakeholders assess the developed solutions as well as determining which barriers still impede and prevent them from taking up these solutions is therefore fundamental. It permits the mapping of which actions still need to be implemented for the stakeholders to drive the development and deployment of the solutions.

Stakeholders driving the development and deployment of the solutions may take on different roles and thus represent different driving forces, however, regardless of what forces they represent, they have needs and requirements that must be met for the services to be useful to them.

# 3 Problem Assessment

The conceptual model for the DSIs and the environment surrounding them has been laid out and it includes a number of different elements and aspects that need to be taken into account. However, as the building blocks and the solutions for the Core Service Platforms were developed with the purpose to serve a number of stakeholders, none of the elements within the digital services ecosystem are more important than the stakeholders. Therefore, in order to achieve sustainability of the solutions, it is indispensable to understand and take into account the stakeholders' needs and requirements as well as the legal environment surrounding the stakeholders and the ecosystem as a whole. In addition to this, to increase the chances of sustainability it is also important to identify and understand the lessons learnt from past experience with similar initiatives.

## 3.1 Understanding Needs and Requirements

In each of the domains, the current legal framework, involvement of different stakeholders, and current status of development / implementation of cross-border solutions poses a number of challenges, needs and requirements that need to be taken into account when drawing up future scenarios, an analysis of these can be found in Annex B – Needs and Requirements..

When looking at the identified needs and requirements, a number of key challenges across each of the domains clearly stand out. They involve stakeholders, take-up, flexibility, and continuity:

- ✉ **Stakeholders** represent a challenge due to the different stakeholders involved in each domain, the fact that they may differ substantially, and the different needs and requirements they may each bring to the table;
- ✉ **Take-up** will be dependent on both the level of development and readiness of key stakeholders (particularly Member States), on the one hand, to link up their existing systems (as content providers) to the CSPs and, on the other hand, in terms of both public administrations and private sector entities, to take up and use the CSPs across borders;
- ✉ **Flexibility** is necessary, given the differences between the domains, and particularly given the different levels of maturity of cross-border solutions across the domains. Also, looking forward, achieving the potential take-up in all the domains will call for flexibility to take into account an evolving landscape and needs and requirements;
- ✉ **Continuity** will therefore depend on how well the above factors are taken into account when deploying the cross-border solutions as part of the DSI for cross-border public services, particularly in terms of setting up the governance, operations, financing and architectural aspects.

The GOFA Model, presented in Chapter 2, is used in this study to examine the elements that need to be put in place as part of guaranteeing sustainable future scenarios. The identified needs and requirements have implications for each of the key elements of this model, i.e. Governance, Operations, Financing and Architecture.

Before looking into the model and the implications for its various elements, however, a number of real-life examples are assessed. These examples provide lessons learned that should be taken into account before concluding on the key aspects to be considered for Governance, Operations, Financing and Architecture. In addition, the 21 November 2012 workshop held as part of this study with key stakeholders from the different CSP domains has provided important feedback to be taken into account.

Furthermore, it is important to make sure that lessons learnt from other project and initiatives are taken into account.

## 3.2 Lessons Learnt

In view of constructing sustainability scenarios, a number of real-life examples which will provide valuable lessons learnt to be taken into consideration for the LSPs are assessed. These lessons learnt are mapped in line with the GOFA model.

The GOFA model is the reference framework for the design of sustainable scenarios. This section therefore assesses the Governance, Operations, Financing and Architecture (GOFA) elements of each of the LSPs; in order to draw out key lessons learnt which will be taken into consideration in the design of sustainability scenarios.

### 3.2.1 Experience from various projects and programmes at EU level

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The analysis of real-life experience with cross-border collaboration and implementation projects at EU level is highly insightful as it enables the outlining of key elements which need to be taken into consideration given the reality of EU policy-making dynamics. This could, for instance, refer to the role of the European Commission, as well as Member States, in steering the development of the solutions developed under the LSPs.

In the context of this study, three EU-level projects and programmes have been evaluated:

- ✘ Common Information Sharing Environment (CISE) project by DG MARE;
- ✘ European Telematics Programme by the European Medical Agency;
- ✘ Common Communication Network and Common System Interface (CCN/CSI) by DG TAXUD.

From a governance point of view, the following lessons can be extracted from these projects and programmes:

- ✘ Having Member States as co-deciders ensures that public sector needs and demands are represented and defended in the course of projects and programmes. There is, however, a risk of slower decision-making because of the different objectives or goals of the Member States themselves;
- ✘ Involvement of Member States without the need for consensus creates the risk of having a small group of willing countries that collaborate together while other Member States opt-out of the initiative;
- ✘ Sufficient involvement of the EU ensures a focus on interoperability and results in successful projects and a long-term vision on interoperability;
- ✘ The use of advisory groups with different types of stakeholders (such as end-users, private sector, public bodies within Member States) improves the adoption of the solutions and project results.

From a financing point of view, the following lessons can be learned from these projects and programmes:

- ✉ In having Member States co-finance a project or a programme, care should be taken when the degree of financing will depend on the amount of Member State-specific work that needs to be done. Member States that may gather limited benefits from the solution, but have high costs, are more likely to be reluctant or might even opt-out;
- ✉ Currently, there is no or very limited private funding involved in the three projects that were investigated. This circumstance can most be explained by the fact that a particular project is either not private sector-related or the business case for the private sector institutions is not sufficiently interesting.

### 3.2.2 Experience from projects and initiatives in other domains

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In addition to the above three, EU-level experiences, which have provided contextual insights to be taken into consideration, there are also a number of other interesting cases from the EU and beyond that have been examined.

#### *Euroclear*

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The main lessons learned from the Euroclear case can be grouped together as follows.

##### **Relevant key lessons learnt:**

- ✉ **Transparent and documented organisation:** Publicly accessible statistics about financial performance are easily available, but also documents about governance and structure.
- ✉ **Both geographical and functional structural outline.** The Board and Management Committee are advised and supported by functional committees with respective specialist such as Audit Committee, Governance Committee, and Remuneration Committee. In addition to these three committees, a Market Advisory Committee (MAC) also exists that takes into account opinions and trends in the user committee. The committees are geographically segmented in order to not lose control or feeling with local authorities and communities. This organisation structure, with functional committee to support in day-to-day management and geographical entities to report local issues and problems, is a useful source of inspiration for the cross-border services.
- ✉ **Clear objectives and guidelines for committees:** Each committee, both in the Euroclear SA and Euroclear PLC, has a 'Terms of Reference' sheet with clear objectives, responsibilities (and constraints to responsibilities), members, and meetings. These documents can serve as a guideline or inspiration to set up similar functional committees.
- ✉ **Board members have clear industry knowledge.** As Euroclear is user-owned and governed organisation (86.1%), it is normal that the majority of the board consists of clients but also functional committees (e.g. Governance, Audit, Remuneration and Market Advisory Committees). It is advised to include the right people with the right background and use the right structures to channel this expertise.
- ✉ **Inconsistent approach to decision making, governance and membership base in the committees.** In the 'Terms of Reference' can be found the different ways of voting (majority of voting/present/existing members), different minimum amount of members (2-3-4) or different meeting frequencies (3/4 times annually – every two weeks) for the committees. The rationale behind this is not clear. It is beneficial for the organisation to have consistent

and similar reasoning and approaches among all functional committees. It is advised to decide on one fixed minimum amount of members, one voting protocol, and having a minimum amount of members present.

## Galileo

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The main lessons learned from the Galileo case can be grouped as follows.

### Key lessons learnt:

- ✦ **Evolving governance structure and stakeholders involved**, as the project moved from one phase to another. However, the transfer of responsibilities and activities from the Galileo Joint Undertaking (GJU) to the GNSS Supervisory Authority, a Community Agency, as well as the evolution of the latter's role (as opposed to the role originally foreseen) further impeded the efficient deployment of the project. This transfer caused further delays and confusion, due to the lack of adequate follow-up and project support.
- ✦ **Member States intervened to ensure their national interests** (including their national industry interests) and blocked the project's progress for a significant period;
- ✦ Responsibilities of different stakeholders were not be well-defined, with **no strategic sponsor** embracing full responsibility for the project, so as to ensure:
  - Clear, realistic and acceptable objectives (not just at the outset, but continually);
  - Defining appropriate strategies and instruments to achieve the objectives;
  - Setting up a future (permanent) organisation to run the undertaking;
  - Providing for risk management;
- ✦ The Galileo project was initially funded through the European Commission's Framework Programmes, but this funding mechanism was modified over time so as to ensure a maximum of one-third public funding and two-thirds private funding. **A PPP model was therefore selected**, as it was estimated that this was the most effective way to control costs, manage completion, and optimise market exploitation. Furthermore, private sector involvement was perceived as a way to increase take-up and ensure that users' needs were given central importance.
- ✦ **When setting up the public-private partnership, mistakes were made:**
  - Lack of proper preparation and insufficient time for the private sector to build up a credible business plan given the difficulty to predict revenue generation;
  - Lack of appropriate management resources;
  - Lack of maintaining effective competition;
  - No regular review of the PPP to ensure that continued valued for money was provided;
  - More generally, the PPP was negotiated before real confidence on design robustness was built up.
- ✦ The **public-private partnership model should therefore ensure that:**
  - The risks that the private and public sectors take should be aligned with the potential benefits (e.g. the private sector will not take large risks for small potential benefits/return on investment);
  - Methods for the private sector to generate revenue should be identified before setting up the public-private partnership. In this case, the deployment of GPS-III, a competing

system, free of charge, changed the expected value proposition of the Galileo solutions for the private sector;

- The private sector partners need to be involved from the very beginning of the process, not just at the later stages;
- All decisions are taken in a timely manner.

## GSMA

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The main lessons learned from the GSMA case can be grouped as follows.

### Key lessons learnt:

- **Changing legal entity:** Public sector entities (European postal and communication administrations) created GSM in order to adopt a common cellular telephone system across Europe. Through legislation, the EU then rendered mandatory the standards decided on by GSM. The responsibility of GSM was later transferred to a European Telecommunications Standard Institute (ETSI) technical committee. The European Commission has influence on ETSI through voluntary contributions to support the development of particular standards, prevent the adoption of standards which may be desired by some members, and enforce standards. After having signed a MoU, GSM was formally registered as an association in Switzerland, and became GSMA.
- **Transparent and documented organisation:** A large number of documents and vast amount of information is publicly available on the governance and structure of the GSMA organisation, including the responsible persons within the main entities.
- **Combining a geographical and functional structure.** The Board and Management Team are advised and supported by functional committees with respective specialists (such as a Finance Committee and a Remuneration Committee) and regional interest groups who provide forums to discuss and address either regional or global issues.
- **Specific governance organisation for commercial activities and organisation of events (GSMA Ltd. Board):** It is considered a best practice to create a new and specific entity whenever a certain committee or activity grows too big in an organisation. The GSMA Ltd. Board has been established for very specific tasks, including commercial activities and the organisation of events.
- **Board members have clear industry knowledge.** The Board members provide added value in terms of their influence and industry knowledge.

## ICANN

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The main lessons learned from the ICANN case can be grouped as follows.

### Key lessons learnt:

- **Evolving legal entity:** Governance was transferred from an Agency belonging to the US Department of Commerce to a Non-profit organisation (NPO), ICANN, in order to privatise the management of internet names and addresses and spur competition, as well as to facilitate global participation.
- **An innovative governance mix:** Diverse stakeholders from throughout business, public sector and civil society are all members of ICANN. All stakeholders are highly involved and a lot of buy-in is created among them thanks to the Supporting Organisations and the different

Advisory Committees in ICANN's multi-stakeholder model. Moreover, ICANN organises public meetings three times a year, it has a public consultation tool on its website, and it actively supports the Internet Governance Forum (IGF), founded by the UN. In these initiatives, ICANN aims to strengthen its multi-stakeholder model and the global awareness of their organisation and policies. However, ICANN has to take care of imbalances between commercial and non-commercial interests and of the strong position of the governments, especially the US (as the original founder of ICANN). Indeed, ICANN continues to operate under contract with the US government.

- **Bottom-up and consensus-driven approach:** Members of sub-groups in ICANN raise and discuss issues at the grassroots level. If it is relevant, and within ICANN's scope, a topic will move upwards throughout the organisation, which encourages broader and more creative problem-solving. Through its by-laws, processes, and international meetings, ICANN provides an arena where everyone can discuss Internet policy issues.
- **Board members have clear industry knowledge:** Besides the momentum and influence that the board members bring, they also possess added-value in terms of their knowledge. Industry expertise is a crucial criterion for the Nominating Committee.
- **Funding by registry fees:** The main funding for ICANN comes from registry fees related to IP addresses and domain names. This clearly relates to the entities that benefit from these services.

## SEPA

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The main lessons learned from the SEPA case can be grouped as follows.

### Key lessons learnt:

- **Stakeholders' involvement and local awareness** is crucial for such a wide implementation. As it is a self-regulating project, the European authorities have to explain and emphasise the benefits for all parties involved. With an overarching structure, such as the SEPA Council at the European level, the suppliers and the end-users are involved in the governance and decision-making processes, which create awareness and public understanding of SEPA. Both public and private stakeholders are therefore involved in the governance, with the various European institutions (such as the EC, ECB, and EP) acting as veritable drivers of development. They define an adequate vision to be followed, as well as adopting and providing incentives through legislation. However, users need to be involved at the national level too, where more detailed work for the implementation of SEPA takes place.
- The EPC, a **non-profit organisation, ensures coordination and decision-making**. The EPC defines common positions for the cooperative space of payment services, provides strategic guidance for standardisation, formulates rules, best practices and standards, and supports and monitors implementation of decisions taken.
- **Freedom at national level is important**. Every country/National SEPA Committee can decide on its own way of working, as the necessary steps to migrate and adapt to SEPA differ from country to country. Establishing clear deadlines, a European legacy framework, and common product specifications for all Member States creates willingness-to-implement.

In 2012, the SEPA regulation<sup>12</sup>, defined 1 February 2014 as the deadline in the euro area for compliance with the core provisions of this regulation.

- ✉ For such a European-wide implementation, it is important that **all stakeholders are actively involved** from the start to create awareness and willingness-to-implement. A clear communication strategy at both a European and national level is key to accomplishing a successful implementation. Unfortunately, the level and intensity of SEPA communication efforts nowadays differ substantially from one Member State to another.

## SWIFT

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The main lessons learned from the SWIFT case are the following:

### Key lessons learnt:

- ✉ **Clear roles.** The Board, nominated by its most important users (shareholders), governs and oversees SWIFT, and all users (National Member Group and National User Group) have an advisory role. As the real users of the platform “govern” the organisation, the key issues relating to the financial market are discussed and solved efficiently.
- ✉ **All stakeholders are involved.** Not only are the three stakeholders represented on the Board of Directors, SWIFT has developed a community to connect all important stakeholders in the global financial industry. Examples of this global community spirit are National Member Group, Swiftcommunity.net, Sibos, Payments Market Practice Group, and Dialogue magazine.
- ✉ **Leverage the Board.** The Board Members represent some of the biggest financial institutions in the world. The ideal way to gain credibility, power and influence is to incorporate the world biggest players in that specific industry you target into your cross-border organisation.
- ✉ **Board members have clear industry knowledge.** Besides the momentum and influence the board members bring they also bring added value in terms of knowledge.
- ✉ **Regional organisational approach.** The three regions (EMEA, Asia Pacific and Americas) have significant autonomy, which enables SWIFT to work closely with their customers and ensures that their particular needs are understood. Other functions like the marketing for a common global communication and the operation of the SWIFT community are group-oriented.
- ✉ **Funding by pay per use** is used by SWIFT and works for them.

## Conclusions

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The analysis of the existing examples of organisations that come from other domains enables the study team to draw a number of conclusions which can be applied to the solutions developed under the LSPs.

In terms of governance, the following elements have to be taken into consideration:

- ✉ **A strategic sponsor is crucial** to ensure the development and deployment of the solutions. The sponsor should ensure strong and clear governance. The private sector can only be expected to take on this role if a clear business case has been identified.

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<sup>12</sup> For more information, see EC website [http://ec.europa.eu/internal\\_market/payments/sepa/ec\\_en.htm](http://ec.europa.eu/internal_market/payments/sepa/ec_en.htm) , last visited on 03.05.2013

- ✉ **The European Commission has a key role to play in steering the development and deployment of the solutions**, at least in the short-term, as Member States have limited incentives to provide interoperability solutions to their citizens. The European Commission can notably catalyse take-up through legislation.
- ✉ **Including private sector stakeholders in governance** can spur competition, facilitate global participation, and ensure that users' needs are given a central importance. However, private stakeholder engagement should be in line with the profit capacity, as well as market confidence, of the solutions. Adopting a PPP model before the private sector has had sufficient time to build up a credible business plan could hamper its commitment to the development of such solutions. Real confidence on design robustness needs to be built before the private sector can be expected to play an active role in decision-making. Concessions, such as in the Galileo case, should, for instance, only be attributed to the private sector if a clear business case has been identified. However, having the private sector involved through advisory committees should be a short-term priority for the solutions developed under the LSPs, in order to build market confidence and interest.
- ✉ **The legal entity under which the solutions are brought can be of a diverse nature** (one example is of a non-profit organisation), and can change over time, reflecting the evolving needs in terms of stakeholder engagement. However, the temporary nature of an entity may undermine its authority. Furthermore, the evolution from one entity to another may present risks in terms of knowledge transfer.

### 3.2.3 Key conclusions from the workshop

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The workshop held on 21 November 2012 with European Commission officials, representatives from the LSPs, private sector representatives and representatives from standardisation organisations, resulted in a number of key conclusions in the areas of governance and financing of the DSI for the provision of cross-border public services.

#### Governance

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It was concluded that the governance should view the areas of application and the overall situation as a market and govern it as such. Furthermore, a conclusion was that, whatever model is chosen, it should be as open as possible, to be more inclusive and flexible, so as also to take into account that the national approaches across the EU vary widely as do private sector business approaches. Furthermore, an important point that was raised was the essentialness of taking the diversity of needs into account and to ensure that there is an open approach towards new building blocks and new models. This is closely linked to the idea that was put forward, to "Leave it for the market, it is dynamic; do not constrain the market to a single model." as one workshop participant stated.

On the governance side, the private sector would be interested in an open platform that shares a more lively debate on key matters was another conclusion that links up well with the idea of creating a consensus and building on commonalities, i.e. "what brings us together". This would also provide an opportunity to make use of existing and new expert groups that could provide valuable input and support the governance process.

Another important point brought up in the workshop was the need to focus on the cross-border and cross-sector aspects, as all stakeholders must think pan-European. Similarly, it is important that the CSPs do not become silos, and thus there should be overarching governance at this level.

Private sector participants in the workshop said they would be happy to become involved, but their rationale will primarily be to make a profit. They are may be keen to start, but they currently see a confused playing field. If standards or clear routes to develop something can be identified, they could start activities, making that an important point to cover in governance. They are equally aware that the products or services that they develop will have to meet user needs, so there should be a clear focus on demand in the governance of the DSI for the provision of cross-border public services.

Participants at the workshop also debated the involvement of the EU. They saw a potentially important role for the EU in using legislation as the root or the catalyst for all that would follow: this could 'get the ball rolling' vis-à-vis demand and would ensure take-up by Member States. This, of course, is more important in those domains where there is no immediate natural market demand, and would only be possible providing the action is a field where the EU has a mandate to act and legislate.

## Financing

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The workshop provided some interesting key conclusions vis-à-vis the financing of the DSI for the provision of cross-border public services.

The most repeated conclusion was that, if there needs to be private sector involvement, it is important to examine the underpinning business case as the private sector will only get involved if there is a clear profit to be made. There has to be demand and if demand does not exist naturally, it may be necessary to force it through regulation if wider take-up has to be ensured and through that, private sector financing.

However, if the private sector is to be involved, there is also a need to ensure the possibility of having different business models for each (and possibly within each) CSP in order to maximise the potential for business. An important question was also raised, with regard to how (secondary) stakeholders (e.g. health insurers or other insurers) can be involved in paying for the services.

It was also concluded that it is important to look at the whole lifecycle of a pilot or initiative. Presently, it is better for the private sector to wait for the LSPs to become a bit more stable. If the European Commission were to say that the financing should be on-going at least until 2020 (which it should under the CEF) and that the infrastructure will remain (so that businesses do not need to make adjustments every month in order to deal with the versions i.e. different versioning), that would be an highly useful approach, as it would build stability since it takes time for businesses to make a profit. In contrast, an unstable environment would be likely to lead to less investment and financing from the private sector.

Another key conclusion from the workshop related to promotion and communication. The results of the LSPs and their plans for the future should be promoted and communicated, as this is the only way to make sure that the private sector is aware of the potential and to encourage that there is a demand. This promotion and communication would require a significant effort at the European level, but it is crucial in order to ensure demand for the DSI. As demand is a prerequisite for developing a sound business case, in turn it is a prerequisite for private sector investment and financing.

## 3.3 Key Challenges for Sustainability

Based on the understanding of the needs and requirements as well as the lessons learnt, it is possible to draw these together and identify key challenges for sustainability.

### 3.3.1 Governance

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Lessons learnt in terms of future governance of the developed solutions can be drawn from the needs and requirements identified for the different LSPs.

- The cross-border public services are clearly situated in very different legal contexts, however commonalities are also evident. Certain LSPs share specific legal needs. The legal framework remains an important issue which needs to be addressed and adequate legal instruments need to be set up for each of the domains. The European Commission has played, and is expected to continue to play, a key role in this and will therefore inevitably remain a central player in the governance of these solutions. As part of the future governance, it is therefore clear that the **Legal Aspects, Regulations and Compliance need to be governed at EU level**. Legal issues, with relation to each CSP, are:
  - **eID across-borders:** There is a lack of legal framework for eIDs. Consequently, a mutual recognition and liability regime across-borders is to be developed. These needs are attended to through the “Proposal for a Regulation on electronic identification and trust services for electronic transactions in the internal market”.
  - **eProcurement across-borders:** There are issues with responsibilities and liabilities related to eSignature. There is also no legal status for the VCD. However, there is an intended EU regulation on eProcurement (and updating the procurement directives), which could potentially address such issues as the VCD.
  - **eBusiness across-borders:** The OCD and eSafe have no legal status. Furthermore, there is no generic eDocument equivalence rule in the EU. Finally, there is no regulation on eDelivery that ensures the integrity and authenticity of electronic communications.
  - **eHealth across-borders:** There is no adequate legal instrument for the full operational deployment of epSOS. There are, for instance, issues with the validation and assurance of professional qualifications. There are also strong privacy and data protection concerns. Finally, ePrescription has no formal status and is not used in some countries in part due to legislation forbidding or not addressing the electronic transmission of prescriptions<sup>13</sup>.
  - **eJustice across-borders:** There are issues related to mutual recognition of professional qualifications, responsibility/liability, privacy/data protection compliance, and security assurances.
- It is clear from the needs and requirements that there is a considerable scope for reuse of the building blocks across CSPs. Several similar building blocks have been developed, based on different standards and specifications, and opportunities for reuse have been identified. The future governance structure of the building blocks should therefore reflect institutionally the fact that the CSPs can share a need for similar functionalities that can be provided by a single building block. The immediate consequence of deciding that a particular building block is a cross-CSP reusable building block is that its reuse should be privileged over the creation of new solutions with a similar purpose. This decision indicates the fact that **strategic coordination across CSPs of the building blocks is key to ensuring their**

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<sup>13</sup> Stroetmann et al. – Legal Challenges on the Road Towards Interoperable eHealth Solutions in Europe, EJBI – Volume 8 (2012), Issue 2.

**reuse.** A number of observations can be made about the building blocks that have been developed in each LSP (which will become a part of the different CSPs in the future):

- **eID across-borders:** The cross-border eID solution has the potential to be reused across numerous CSPs, as it is a key enabler for other services. It is currently being piloted in eHealth (STORK 2.0) in terms of Patient Access and will be used in eJustice. eID also has the potential to be used in eBusiness. It is currently not used in PEPPOL as the STORK 'authentication' is missing.
  - **eProcurement across-borders:** The solutions developed under the eProcurement LSP have the potential to be reused across CSPs. The eSignature solution was notably reused within eBusiness in order to create the Omnifarious Container Format (OCD), thus generalising the VCD solution developed under the eProcurement LSP. The eDelivery solution, and notably the Bus DoX concepts, was also reused in eBusiness. Finally, the eInvoicing solution has been identified as a potential candidate for reuse.
  - **eBusiness across-borders:** The solutions developed under the eBusiness LSP are highly generic, which stems from the high level of reuse achieved by SPOCS. The OCD is thus the result of the reuse of PEPPOL's eSignature solution, whereas the eDelivery solution is the result of the reuse of PEPPOL's Bus DoX concepts and STORK's SAMPL profiling. Some parts of the evidence builder code from the SPOCS solution were reused in the eJustice LSP.
  - **eHealth across-borders:** The solutions developed under epSOS are quite domain-specific and therefore have limited potential for reuse.
  - **eJustice across-borders:** The eSignature developed solution has a high potential for reuse, and was created based on DG MARKT's DSS tool.
- Looking forward, if building blocks are reused across CSPs, and therefore outgrow their domain, they could lead to the creation of new CSPs in other eGovernment domains, or could be applied in private sector applications. The need for coordination will be enhanced, in line with the growing number of CSPs. **The governance mechanism should have the possibility to incorporate new CSPs and therefore be scalable.**
- **eID across-borders:** The eID CSP is an example of a CSP that is defined in a highly generic manner. This implies that, in principle, any service providers, whether public or private, could take up eID across border for the provision of their services.
  - **eProcurement across-borders:** The eProcurement CSP is defined as rather domain-specific. However, the PEPPOL solutions include the eSignature, eDocument and eDelivery building blocks, as well as the eInvoicing building block. They have the potential to outgrow their domain and be applied in different areas of application beyond the currently defined domains of the CSPs.
  - **eBusiness across-borders:** the eBusiness CSP is also quite specific; however, the solutions developed are highly generic. Indeed, the eDocument and eDelivery solutions have a potential to be reused outside of the current CSP domains, and notably in private sector applications.
  - **eHealth across-borders:** The eHealth CSP is quite domain-specific and there are limited possibilities for its reuse outside of the CSP.
  - **eJustice across-borders:** The eJustice CSP is also defined as quite domain-specific. However, the eSignature building block developed, which builds on DG MARKT's DSS tool, has a high potential for reuse, and notably outside the current CSPs.

✉ A great diversity of stakeholders has been identified across the different domains. This diverse landscape of stakeholders therefore needs to be managed effectively, at different governance levels. The European Commission and Member States have an important role to play to ensure the sustainability of the developed solutions. A diverse number of Member States have participated in the LSPs. The ones which have participated have a vested interest, due to the money and time which they have invested, in taking up the solutions developed. However, other Member States are also encouraged to take up these solutions which implies that it is likely that further development will be needed based on their specific needs and requirements. Coordination will be required to ensure that all service providers are informed if a new country has joined. Possible semantic or organisational issues may arise as a consequence. Furthermore, there are a number of observations that arise from the assessment of each CSP (based on the results from the respective LSPs). For example, large markets have yet to been found for the building blocks; and the governance structure should be sufficiently flexible to enable the customisation of solutions to the needs of stakeholders (and notably the private sector stakeholders) that would want to make use of them. These stakeholders should therefore have the possibility to be represented within the governance mechanism. The governance structure should thus be **sufficiently flexible and scalable as to enable stakeholders to be represented**. The stakeholders currently involved in each LSP are listed below, according to each LSP:

- ✉ **eID across-borders:** The STORK consortium is composed of 17 Member States, private sector companies, universities, and NGOs. Although there are a limited number of content providers in cross-border eID, given the high reuse capacity of the solutions, there could be numerous service providers which need to be taken into consideration in the governance mechanism.
- ✉ **eProcurement across-borders:** The PEPPOL consortium grouped together 12 European countries, as well as regional and local contracting authorities, and economic operators. The OpenPEPPOL Association, the successor of the PEPPOL pilot, currently regroups nearly 70 members, ranging from public authorities to private companies. Given the high potential of reuse of the PEPPOL solutions in B2B communication, the service providers which seek to be represented in terms of governance could be numerous. Furthermore, as eProcurement can be done either through centralised platforms, at national level, or through decentralised regional or local platforms, the content providers could also be numerous in this case.
- ✉ **eBusiness across-borders:** The SPOCS consortium grouped together 15 Member States, regional authorities and agencies, private companies, universities, and research centres. Given the highly generic nature of the eBusiness solutions, non-eBusiness stakeholders may wish to be involved in their governance in order to tailor them to their needs. This consideration considerably broadens the scope of stakeholders which need to be considered in the governance of eBusiness.
- ✉ **eHealth across-borders:** The epSOS consortium comprises 20 Member States, as well as private companies, which are grouped together in a Steering Committee. Given the high involvement of Member States, the need for greater representation will come from the additional service providers which start to make use of the solutions once these are deployed.
- ✉ **eJustice across-borders:** The e-CODEX consortium is composed of 14 Member States' Ministries of Justice, as well as two organisations: the Council of the Notariats of

the European Union and the Council of Bars and Law Societies of Europe. Numerous other EU -level organisations have been identified, which could want to be represented within the eJustice CSP.

Although different stakeholders are involved across all LSPs, the extent of their involvement varies considerably. It is worthwhile exploring the role of private sector stakeholders, in particular. For example, in the case of epSOS, private sector stakeholders are represented through a Steering Committee, whereas in the case of the follow-up to PEPPOL, they are represented through the OpenPEPPOL association. Looking forward, the extent to which Member States will enable private sector entities to be actively involved in governance will differ in each CSP, according to political sensitivity. For instance, it seems unlikely that Member States will allow private sector entities to be involved in decision-making within the eID CSP. However, cultural discrepancies are vast across Member States on this matter, with some Member States, such as Denmark, Estonia, Finland and Lithuania, relying on private banking solutions to deliver eID solutions. Additionally, a Member State's perception of the extent to which private sector stakeholders may be involved in governance may evolve over time.

The assessment of other real-life examples reveals the impact of including private sector stakeholders in governance. Indeed, such engagement can spur competition, facilitate global participation, and ensure that user's' needs are given central importance.

- Consequently, governance should not impede specific stakeholders from adopting a formal decision-making role within the governance of the CSPs, if this is required. **The legal entity under which governance is brought should be sufficiently flexible so as to evolve in line with stakeholder engagement.**

This observation is in line with the lessons learnt from real-life examples which reveal that the legal entity under which the solutions are brought can be of a diverse nature, and can evolve over time, in line with stakeholder engagement and the decision-making powers adopted by these stakeholders. The creation of a NPO notably enables the private sector to adopt a formal decision-making role. However, the lessons learnt from real-life examples also reveal that the temporary nature of an entity may undermine its authority. Finally, the assessment of other real-life examples has revealed that private stakeholder engagement in governance should be in line with both the profit capacity, as well as market confidence, of the solutions. This assessment has shown that adopting a PPP model before the private sector has had sufficient time to build up a credible business plan could hamper the companies' commitment to the development of such solutions. Consequently, it was concluded that real confidence on design robustness and business potential needs to be built before the private sector can be expected to play an active role in decision-making.

### 3.3.2 Operations

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Based on the assessment of the needs and requirements across the CSP domains a number of key elements are apparent in relation to operations:

- Given the different levels of maturity of the cross-border solutions for each of the CSP domains, it is clear that further development will be needed. In addition, in a fast changing landscape in which new opportunities, areas of application and evolving needs and requirements occur, it is crucial that sound **Operational Service Management is ensured** in order to:

- **Ensure of the scalability of the solutions:** The infrastructure must have the capacity to upgrade the solutions in order to deal with larger volumes, safeguard intended services levels, handle monitoring of the service level and manage a growing set of service providers that reuse the building blocks once the solutions are deployed. With an increasing number of areas of application there is a likelihood of a request for changes to the cross-border solutions in order to incorporate specific demands from stakeholders. Therefore, change management should be ensured as should the scalability of the solutions;
- **Ensure the reliability of the solutions:** Compliance with operational conditions is crucial and the services should not be interrupted. This requires monitoring and coordination of different parties, including content providers and service providers. It is therefore essential to ensure the reliability of the solutions.
- **Enhance and build trust in the solutions:** Ensuring a certain service level and security is not only crucial for the reliability of the services, but is also an essential ingredient to enhance and build trust in the solutions.
- **Avoid lock-in effects:** Given the highly innovative nature of ICT, it is important to take into account the need to adapt to technological developments. To comply with a certain technological neutrality, it is essential to avoid lock-in effects. It is also important to consider knowledge transfers, particularly in a situation of changing operating entities.
- **eID across-borders:** National identity and attribute providers are expected to connect to their existing systems in order to make the national eID systems and related attributes interoperable across-borders. This means that, on the one hand, when new systems are connected the service is not interrupted. Given this reliance on national systems for eIDs to work across-borders, it is key that the day-to-day operations are reliable such that service providers can expect the same consistent level of service. In addition, the fact that more systems will connect (while at the same time the aim is to increase the take-up as part of services offer by public and possibly private sector service providers), the scalability of the cross-border solutions becomes crucial. The means that they would ensure a certain response time and ability to handle more traffic. Both these elements contribute to enhancing trust in the CSP. The STORK solutions are based on standards (e.g. SAML 2.0), which is key to avoiding lock-in effects. However, open standardisation is identified as a weakness, and should be encouraged in order to ensure that lock-in effects do not occur;
- **eProcurement across-borders:** With the expected onset of the eProcurement market, it is likely that more national eProcurement platforms as well as suppliers will make use of cross-border eProcurement. The connecting of new national online procurement platforms should not interrupt the cross-border services provided by the CSP. Reliance on national eProcurement platforms also indicated that reliability should be a key focus of attention. Similarly, scalability is also highly relevant here, given the expected increase in take-up. Again, all three of these elements need to be ensured. They must be part and parcel of building trust in the CSP among the stakeholders in the ecosystem. The PEPPOL solutions are based on standards (e.g. OASIS BDX Architecture, OASIS SML, OASIS SMP and OASIS START) which are key to avoiding lock-in effects. The use of open standards should be encouraged in order to ensure that lock-in effects do not occur;

- **eBusiness across-borders:** The Points of Single Contact (PSCs) across the Member States are at different stages of maturity, as was evidenced by the 2012 study on the 'The functioning and usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward'<sup>14</sup>. The expected further development of the PSCs will result in more public authorities that provide public services to business with the aim of connecting them to cross-border solutions. More businesses in the EU will take up these public services across-borders. Again, reliability and scalability are key factors to enhance the trust of the different stakeholders. The SPOCS solutions are based on standards (for example, W3C's XML, XSD, WSDL, RDF, SOAP, CEN SDShare, ETSI and ISO). This is key to avoiding lock-in effects. Therefore, the use of open standards should be encouraged in order to ensure that lock-in effects do not occur;
- **eHealth across-borders:** To date, the cross-border solutions for eHealth have only been applied in a restricted scope (exchange of patient summaries and ePrescription with a limited set of stakeholders). The cross-border solutions rely on existing national electronic health systems in the Member States. This indicates the importance of ensuring the reliability of the cross-border eHealth solutions. The identified potential for these services may be achieved in coming years. In turn, this would mean that more and more hospitals, pharmacies and other potential services providers would take up the cross-border eHealth solutions. Therefore, reliability and scalability need to be ensured in order to build trust among these stakeholders. The epSOS solutions are based on standards (including those which are covered by CEN and ISO), which is key to avoiding lock-in effects. The use of open standards should be encouraged in order to ensure lock-in effects do not occur;
- **eJustice across-borders:** The eJustice cross-border solutions are at an early stage of development. Nevertheless, it is clear that the reliance on National Judicial Systems for cross-border solutions to operate should be the key focus. This would ensure the reliability of cross-border eJustice solutions. In addition, there are several foreseen areas of application (European Payment Order (EPO), Small Claims (SC), Secure cross-border exchange of sensitive judicial data, Financial penalties, European Arrest Warrant (EAW), insolvency registers and business registers, 'Find a lawyer', and European Case Law identified services). This indicates that, at an EU scale, the potential for take-up could be considerable. Therefore, both reliability and scalability are key focus areas that need to be ensured in order to guarantee the level of services provided by the cross-border eJustice solutions and build trust among the different stakeholders. The e-CODEX solutions are based on standards (including OASIS ebMS 3, and ETSI ASIC-S), which is key. To avoid lock-in effects, the use of open standards should be encouraged in order to ensure lock-in effects do not occur.

Operational Service Management is key in order to ensure the day-to-day operations of the CSPs. This includes having the capacity to upgrade the solutions in order to deal with larger volumes, safeguard intended services levels, handle monitoring of the service level, and managing a growing set of service providers that reuse the building blocks. As soon as the take-up of the deployed CSPs

<sup>14</sup> European Commission, Deloitte (2012), the 'The functioning and usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward', [http://ec.europa.eu/internal\\_market/services/docs/services-dir/study\\_on\\_points/final\\_report\\_en.pdf](http://ec.europa.eu/internal_market/services/docs/services-dir/study_on_points/final_report_en.pdf), last visited on 03.05.2013

will increase, the infrastructure will need to prove that it can cope with this enlarged activity. Compliance with operational conditions is crucial, and the services should not be interrupted. This requires monitoring and coordination of different parties, including content providers and service providers. Ensuring a certain service level and security is not only crucial for the reliability of the services but is also an essential ingredient to enhance trust.

Given that the ultimate aim is to maximise take-up by public administrations as well as private sector organisations, the on-boarding of both new content providers and service providers should be organised well. This is also crucial to the trustworthiness and reliability of the services provided by the CSPs. Such on-boarding will also be facilitated if proper knowledge transfer is in place, and training is provided.

### 3.3.3 Financing

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Based on the assessment of the needs and requirements across the CSP domains, a number of key elements are apparent in relation to financing:

- The key stakeholders that are identified across the domains are mainly found in both the public and private sector. However, not all Member States have been involved in the LSPs, and private sector stakeholders have generally been involved to an even lesser extent. This observation points out that a clear value proposition is necessary in order to trigger interest from different sides. Given the long-term goal of sustainability, it is imperative that possible different sources of funding are tapped into. **Ensuring a clear value proposition and potential business cases is necessary in order to enable different sources of funding across the CSP domains.** Here the possible financing and feasible markets of the LSP products are explored on a CSP by CSP basis.
- **eID across-borders:** Clear benefits have been identified. For the public sector, these advantages could be related to reduce administrative costs, enhanced service delivery, and efficiency gains. Private sector stakeholders that have an interest in providing services across-borders for which authenticated identification is crucial (e.g., banks) could also benefit from interoperable eIDs at EU level by being able to enlarge their effective market for services provided online. Nevertheless, due to legal gaps and the absence of open standardisation, no clear value proposition and resulting business case have yet been established;
- **eProcurement across-borders:** Potential benefits for both public and private sector stakeholders have been identified. For example, public authorities could reduce procurement costs and enhance competition, while private sector stakeholders could benefit from a more efficient bidding process and reducing administrative burdens. It should be noted, however, that due to different levels of maturity and the subsequent lack of support for the entire eProcurement process, the value proposition and business case may differ per building block. One important factor is that public authorities should be the first to adopt the cross-border eProcurement building blocks before the private sector sees a clear business case;
- **eBusiness across-borders:** Given the level of maturity and generic nature of the specific building blocks that have been developed (e.g., eDelivery and eDocument), they could potentially be used in many different domains, both in the public sector and potentially beyond. However, given that currently these have been developed with a

specific focus to support the delivery of public services for business the initial source of funding would need to be found in the public sector. This limited scope means that so far no clear value proposition and business case has been identified to enable other sources of funding;

➤ **eHealth across-borders:** Potential for take-up of the cross-border eHealth solutions is identified in particular for private sector stakeholders (e.g. the pharmaceuticals industry, medical devices industry, research for clinical purposes, and the chemical industry). However, given the specificity of the national context and the limited scope within which the cross-border eHealth solutions have been tested, the value proposition and business case are not yet clear;

➤ **eJustice across-borders:** Given that, to date, the cross-border eJustice solutions have not yet been tested, the value proposition and business case are not clear.

➤ Financing schemes will differ according to the business potential of each of the solutions developed, and therefore their potential to be directly financed for their use by Member States or the private sector. In the case of eProcurement across-borders, the example of OpenPEPPOL already shows how a financing scheme has been applied. In addition, based on the potential to tap into different sources of funding over time, as identified above, different financing schemes could be put into place. Financing schemes will therefore vary for each CSP according to the interest of stakeholders in the solutions. This involves **ensuring flexibility for diversified and evolving financing schemes in order to enable different ways of financing across the CSP domains.**

➤ **eID across-borders:** It is clear that, since different areas of application of cross-border eID have been identified, that over time different sources of funding and therefore different funding schemes could be put into place. It is essential that, with a view to sustainability, the possibility of this evolution needs to be taken into account. Where the sources of funding are most likely to come from the public sector (given that the most obvious area of application at first is in the public sector), there may be opportunities in the future to consider the private sector as a source of revenue. (This could be envisioned through funding schemes such as fees or pay-per-use.);

➤ **eProcurement across-borders:** currently OpenPEPPOL receives funding from both public and private sector players through membership fees. This shows that, for this CSP domain. the potential for different sources of funding has been tapped into by establishing such a financing scheme;

➤ **eBusiness across-borders:** The eDelivery and eDocument are highly reusable cross-border building blocks that have the potential to be applied beyond the eBusiness domain. Within the domain of eBusiness across-borders, the potential remains limited to the public sector. It could however be envisaged that different financing schemes could be put into place for this whereby either direct public funding or more pay-per-use or fees schemes could be foreseen;

➤ **eHealth across-borders:** If, over time, a clear business case is foreseen for the different private sector stakeholders to take up cross-border eHealth solutions, different funding schemes can be envisaged in line with the value proposition;

➤ **eJustice across-borders:** Given that to date the cross-border eJustice solutions have not yet been tested, the value proposition and business case are not clear.

As noted by key stakeholders during the 21 November 2012 workshop, establishing a business case based on a solid value proposition is key for take-up, particularly by the private sector. Similarly, such a business case would also have implications for possible financing schemes that can be applied. Certain cases may allow for user fees or pay-per-use arrangements, whereas in other cases generating revenue by providing a building block may not be feasible as the use of the solutions for a fee could be a deterrent to take-up by the private sector.

As the greatest bulk of the costs required to develop the building blocks was made up-front, this may limit the investments that may derive from maintenance and development of the building blocks. A precise mapping of what the cost structure would entail in the medium-term, to evaluate what the financial requirements are for sustainability, is therefore key. These elements would also need to be considered on a case-by-case basis.

### 3.3.4 Architecture

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In evaluating the needs and requirements and potential challenges of the different LSPs, a set of lessons learned can be identified and defined for the sustainability of the building blocks from an architectural point of view.

The first point would be the **creation of a central architectural governance unit**. This unit is required in order to define European-wide architectural principles and an architectural vision is to be applied to each of the LSPs and their (common) building blocks. The main function of the architectural governance unit would be similar to the role of an overarching enterprise architecture board. Besides the definition of the architectural vision and principles, this central unit would have the following responsibilities:

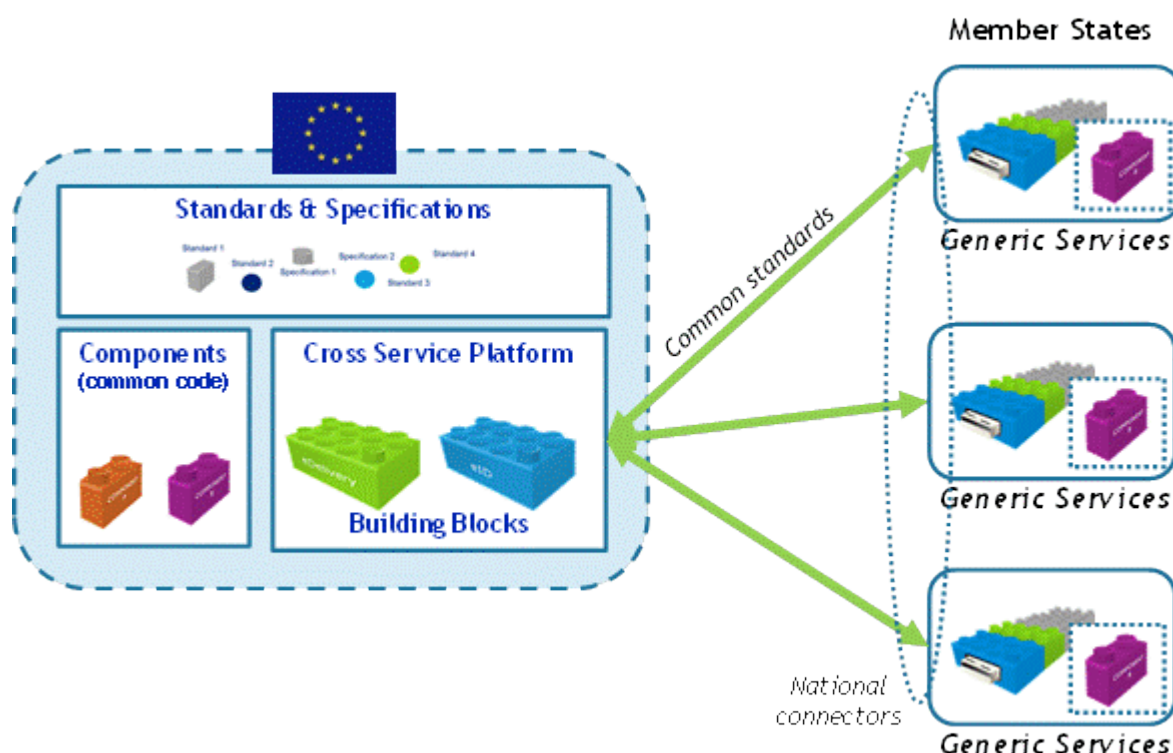
- Monitor and audit the correct use and application of architectural principles and vision in each of the CSPs and building blocks, including the interdependencies, the coordination of new versions, the improvement of the technical maturity, and the corresponding change management;
- Identify and discover opportunities for new applications based on new combinations of existing building blocks (new use-cases which is what the CSPs essentially are) and the creation of new (common) building blocks that could offer an added value. Work on definitions of business cases for these new building blocks;
- Identify possible gaps within and between CSPs and building blocks, and the need for the development of common building blocks. For these new building blocks, a new structure needs to be foreseen so as to manage well the scope and responsibilities;
- Ensure that the market and end-user needs and requirements are maintained (on the demand side), and understand the potential to leverage the upcoming technologies that might support more efficiently these needs and requirements (on the supply side);
- Ensure that the requirements for the building blocks are verified regularly with users and CSPs, and match the architecture and implementation with the changing technological capabilities in order to ensure a constant high technical maturity.

As a first, the overarching architectural governance unit will coordinate and liaise with the units responsible for the architecture of each of the CSPs and building blocks. These units will be responsible for ensuring the application of the general architectural vision and principles to their

domain, but with the freedom to make additional domain-specific architectural decisions. In general, this architecture governance unit could be established as part of the governance organisation for the LSP sustainability.

As a second point, a number of architectural lessons learnt could be identified based on the needs and requirements from the different LSPs at a technical level. In evaluating these lessons learnt, a clear reference could be made to the different elements in the proposed Digital Services Model (see Chapter 2.2). In Figure 15, an overview is shown of the lessons learnt that are mapped to the Digital Services Model.

- ✘ Interoperability solutions are needed that enable the interconnection of existing national systems in Member States, based on standards, specifications and common code, and apply a service-orientation approach;
- ✘ From a trust-enabling perspective, there is a need for a Quality Authentication Assurance (QAA) model, which defines criteria to assess the trustworthiness of systems and persons. This includes the need for identification and authentication services for ensuring the correct identity and access for users;
- ✘ Need for Points of Single Contact (PSCs) that are one-stop shops for online public services for end-users, and establish a federated network that acts as 'gateway' or 'bridges' between the different customers;
- ✘ Establishing building blocks for providing specific functionalities in delivering interoperable cross-border systems preferably based on open standards and technology, or a stronger focus on global standards for increased future cross-border interoperability;
- ✘ Numerous building blocks have been developed, of which some are highly domain-specific. Therefore their (re-)use will be largely limited to that domain. Conversely, others have a high potential for reuse across the different domains, which is associated with the level of granularity of a service or building block as well as the domain specificity;
- ✘ Need for the use of commonly agreed communication standards and support for multilingualism, and the translation of the communications at national level to this standard (including the proper handling of different alphabets or character sets). There is also a need for common specifications for designing major components and the provision of common code (or components) to operate on the same protocols, connectors and interfaces;
- ✘ Need for the flexibility to use both decentralised and centralised solutions, whereas most LSPs need at least one or more centralised components. The availability of these centralised components should be ensured in the case of high adoption and/or creation of bottlenecks.



*Figure 15 – Architectural lessons learnt for the elements in the Digital Services Model*

As part of the ISA<sup>15</sup> action on European Interoperability Architecture (EIA), a set of architecture principles is defined, which will form the basis for making future decisions on the creation of new cross-border public services. These architecture principles reflect a level of consensus across the Commission services and Member States, and align with the relevant principles of the European Commission. It is therefore recommended to use and apply the EIA architectural principles and guidelines in the context of the CSPs for future sustainability, and to not repeat this exercise.

Architectural principles are required to strive to a higher level of quality for the different building blocks and solutions and to increase their sustainability. The architectural principles should be applied and monitored in each of the different domains and common building blocks from the start. The following examples (which are not exhaustive) illustrate the importance of clearly defining and maintaining architectural principles:

- ❑ Use language independent standards and formats: As the European Union is founded on 'unity in diversity', the diversity of the different languages spoken and applicable within the Union has a direct impact on the interactions between citizens, businesses and public administrations;
- ❑ Guarantee privacy and data protection: Citizens and businesses must be assured that they interact with public administrations in an environment of trust and in full compliance with the relevant regulations, e.g., on privacy and data protection. This means that public administrations must guarantee the privacy of citizens and the confidentiality of information provided by businesses;
- ❑ Apply service orientation: There is a need for modular, loosely coupled service components interconnected through infrastructure and that work together to deliver European public

<sup>15</sup> Interoperability Solutions for European Public Administrations, European Commission DG Programme

services. There is an explicit call for EU-wide adoption of a service orientation to designing and developing systems, and an ICT ecosystem comprising consistent, and in some cases jointly developed, service components;

- Ensure sharing and reuse of solutions: Reuse is key to the efficient development of European public services as it implies public administrations share with others their solutions, concepts, frameworks, specifications, tools and components. Reuse and sharing naturally lead to cooperation with regard to using collaborative platforms towards mutually beneficial and agreed common goals;
- Ensure interoperability and standardisation: Standards help ensure consistency between the public services provided by different public administrations, thus improving the ability to manage the systems and increase their interoperability.

### 3.4 Conclusions

This report presents the conceptual framework, the Digital Service Model, for the analysis of the DSI for cross-border public services. This model is composed of five layers, taking into account what has been achieved under the LSPs. The five layers are 1) Standards and Specifications, 2) Components, 3) Building Blocks, 4) Core Service Platforms and 5) Generic Services. The model also captures the dynamics within the ecosystem in terms of the different stakeholders, their roles, and the driving forces that will shape the model. The Digital Services Model therefore provides a conceptual framework for the analysis of sustainable deployment of core service platforms containing reusable building blocks for the delivery of cross-border digital services.

By applying this model, an assessment of the current situation, starting from the achievements of the LSPs, is made to look into needs and requirements for each of the five domains within the ecosystem. Needs and requirements have been assessed at the legal level, from the perspective of different roles and related stakeholders and in line with the supply, demand and interoperability which are the driving forces of the ecosystem. The assessment brings forward a number of important findings that need to be taken into account for the future deployment of the DSI for cross-border public services.

The aim of this study is to look at future scenarios for the sustainable deployment of the DSI for cross-border public services. To this end the Digital Services Model is complemented by the GOFA model, a framework that brings together the key elements that need to be considered in order to build sustainability. In order to assess the needs and requirements in terms of sustainability of future deployment, the identified needs and requirements are mapped onto the four key elements of the GOFA model" governance, operations, financing and architecture.

This assessment is complemented by lessons learnt from other real-life examples. A number of examples of deployment of IT systems at EU level as well as projects with a European scope involving different types of stakeholders have been examined in order to draw out key lessons learnt in relation to the actual governance, operations and financing. In addition, feedback and insights from key stakeholders related to the LSPs that participated to the study workshop are provided.

Based on needs and requirements, lessons learnt from other real-life examples, and input from important stakeholders, conclusions are drawn with a view on the future sustainability of the deployment of the DSI for cross-border public services in relation to governance, organisation, financing and architecture (GOFA).

#### 3.4.1 Key conclusions for sustainability

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When looking at the assessment and identified needs and requirements, a number of key challenges across each of the domains clearly stand out:

- ✉ **Stakeholders** the different stakeholders involved in each domain and the different needs and requirements they may bring to the table represent a challenge;
- ✉ **Take-up** will be dependent on both the level of development and readiness of key stakeholders (particularly Member States), on the one hand, to link up their existing systems (as Content Providers) to the CSPs and, on the other hand, in terms of both public administrations and private sector, to take-up and use the cross-border CSPs;
- ✉ **Flexibility** is necessary given the differences between the domains and particularly given the different levels of maturity of cross-border solutions across the domains. Looking forward, achieving potential take-up will call for flexibility to take into account an evolving landscape and needs and requirements;
- ✉ **Continuity** will therefore depend on how well the above factors are taken into account when deploying the cross-border solutions as part of the DSI for cross-border public services, particularly in terms of setting up the governance, operations, financing and architecture.

For each of the elements of the GOFA model, the following key elements were identified that need to be taken into account for the creation of sustainability scenarios.

#### **Governance:**

- ✉ **Legal Aspects, Regulations and Compliance need to be governed at EU level.** Setting up an adequate legal framework is necessary to ensure the deployment and take-up of the developed solutions.
- ✉ **Strategic coordination across CSPs and of the building blocks is key to ensuring their reuse.** Solutions such as eID, eSignature, eDocument and eDelivery have been identified as having a high reuse potential. Maximising the reuse of developed solutions implies that governance structure should encourage ex-ante communication and coordination between the different CSPs and building blocks (here forth referred to as CSP/BBs) to avoid the creation of solutions with the same functionality, but based on different standards and specifications. If there is thus a need to design a specific solution for a CSP/BB, it should firstly be ensured that no previously designed building block can be reused for this purpose. The most efficient way to ensure coordination is by designing a two-level governance structure, at the supra-CSP/BB, and at a decentralised level, at the CSP/BB level. The former would identify which building blocks have a high reuse potential and should be adopted by other CSP/BBs.
- ✉ **The governance should have the possibility to incorporate new CSP/BBs and therefore be scalable.** The coordination of the various CSP/BBs introduces the nature of the entity or entities under which they will be brought. One single entity could be set up to regroup the various CSP/BB s under one roof, or different entities, one for each CSP/BB, could be set up, but coordinated through an entity in which all the CSP/BB s are represented. Coordination is in both of these cases reflected institutionally. If a building block has been identified as having a high reuse capacity, it should no longer be ascribed to a specific CSP/BB and the coordination would ensure that it is used within other domains. Consequently, the reuse of a building block outside its original domain of application could imply the creation of new CSP/BB s in other domains. Although a new CSP/BB could also be

created without reusing already existing building blocks. The governance structure should be scalable as to incorporate newly created CSP/BB s.

- ✉ **The governance should be sufficiently flexible and scalable as to enable stakeholders to be represented.** Stakeholders interested in taking part in the governance of the solutions may evolve over time. This is most notably the case for Member States, which are currently not all represented in the LSPs, and private sector stakeholders. The governance structure should ensure sufficient flexibility to enable the broadest stakeholder engagement possible.
- ✉ **The legal entity under which governance is brought should be sufficiently flexible to evolve in line with stakeholder engagement.** The level of involvement of stakeholders, from an advisory role to an effective decision-making role, will be CSP/BB -specific. In domains such as eID, it is difficult to envisage any private sector involvement in governance beyond an advisory role or, due to political sensitivities, in the long-term, a standards-setting role. However, Member States' perception of the extent to which private sector stakeholders may be involved in governance may come to evolve in time. The legal entity under which the solutions are brought should therefore not impede private sector stakeholders from adopting a formal decision-making role within the governance of the CSP/BB s, if this is required. This should be reflected institutionally with the possibility for the legal entity under which the governance gravitates to evolve in line with stakeholder engagement.

#### Financing:

- ✉ **Ensure a clear value proposition and potential business cases in order to enable different sources of funding across the CSP/BB domains.** As not all Member States have been involved in the LSPs, and private sector stakeholders have generally been involved to an even lesser extent, there is a need to clearly lay out the value proposition of the solutions in order to trigger interest.
- ✉ **Ensure flexibility for diversified and evolving financing schemes in order to enable different ways of financing across the CSP/BB domains.** Financing schemes will differ according to the business potential of each of the solutions developed, and therefore their potential to be directly financed for their use by Member States or the private sector. Financing schemes will therefore vary according to each CSP/BB according to the interest of stakeholders in the solutions.

#### Operations:

- ✉ **Operational Service Management should be ensured.** As the solutions are currently at different levels of maturity, further development will be needed. This should thus:
- ✉ **Ensure the scalability of the solutions.** The infrastructure must have the capacity to upgrade the solutions in order to deal with larger volumes, safeguard intended services levels, handle monitoring of the service level, and manage a growing set of service providers that reuse the building blocks once the solutions are deployed.
- ✉ **Ensure the reliability of the solutions.** Compliance with operational conditions is crucial, and the services should not be interrupted. This requires monitoring and coordination of different parties, including content providers and service providers.
- ✉ **Enhance and build trust in the solutions.** Ensuring a certain service level and security is not only crucial for the reliability of the services but is also an essential ingredient to enhance and build trust in the solutions.

- **Avoid lock-in effects.** Given the highly innovative nature of ICT, there is a need to take into account the need to adapt to technological developments. Therefore to comply with a certain technological neutrality, it is therefore essential to avoid lock-in effects.

#### Architecture:

- **Define a central architectural governance unit.** This unit will decide on European-wide architectural principles and an architectural vision to be applied to each of the LSPs and their (common) building blocks. The overarching architectural governance will play a central role in coordinating and liaising with the units responsible for architecture of each of the CSP/BBs.
- **Need for the flexibility to use both decentralised and centralised solutions, while most LSPs need at least one or more centralised components.** Numerous building blocks and components have been developed, some of which are highly domain-specific. Therefore their reuse will be largely limited to that domain. Conversely, other building blocks have a high potential for reuse across the different domains, which is associated with the level of granularity of a service/building block as well as its domain specificity. These could be referenced as CSPs, Building Blocks and Components.
- **Use and apply the EIA architectural principles and guidelines.** The ownership of these general architecture principles should be situated at the EIA.

These conclusions can be perceived as success criteria for the successful sustainable deployment of the DSI for cross-border public services. They form the basis for the further elaboration of the objectives and the creation of the sustainability scenarios for the DSI for cross-border public services.

# 4 Baseline Scenario: Current Situation and Future Trends

This chapter presents the current development levels of each of the CSP/BBs<sup>16</sup>, as well as the potential future trends which need to be taken into consideration in order to determine the baseline scenario.

## 4.1 Current Development Level per CSP/BB

In order to determine the baseline scenario that corresponds to the scenario in which no additional actions would be undertaken in order to ensure the sustainability of the CSP/BBs, it is first necessary to assess the current development levels of each of the CSP/BBs. This assessment is carried out based on the four key challenges which were identified in the previous section.

The elements that are part of the trends and developments include particularly:

- ✚ **Stakeholders:**
  - **Participation of stakeholders:** are all relevant stakeholders able to participate, including possibly via already existing bodies?
- ✚ **Take-up:**
  - **Market maturity:** can the CSP/BB be provided by a thriving market?
  - **Technical maturity:** is standardisation required, and is usable code/implementation work available?
  - **Take-up:** is the CSP/BB actively used by the stakeholders (EU and national governments, citizens, businesses)?
- ✚ **Flexibility:**
  - **Financing mechanisms:** to what extent are there options other than public funding to sustain the scenario?
- ✚ **Continuity:**
  - **Need for governance:** what degree of intervention is needed to ensure effective governance?

For each of the CSP/BBs, we will examine these points, starting from an assessment of the current situation: what is in place per CSP and Building Block? E.g. is there governance in place, is the basic

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<sup>16</sup> Strictly speaking, in the current situation this is the current development levels of each LSP and the building blocks (both reusable and domain specific) that they contain, however, for the sake of simplicity and continuity of terminology the term CSP/BB is used even when talking about the current situation in this section.

code stable/mature and standards agreed upon? Is there a business case and private sector involvement? Etc. These elements are built on the outputs of prior work carried out for the study.

Based on this assessment, the likely trends/developments over time are assessed, including an assessment of whether or not it is likely that a self-sustaining business case is likely to develop or not.

### ***Electronic Identity across-borders***

With respect to eID, the primary outputs to be considered derive from STORK and the emerging legal framework provided by the proposed eID and Trust Services Regulation.

The current situation and plausible developments for the future can be summarised as follows:

*Table 2 – Assessment for eID*

|                                      | eID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is not yet universal. Member States can participate in STORK on a voluntary basis (currently 19 countries are participating in STORK 2.0). The Proposed Regulation “on electronic identification and trust services for electronic transactions in the internal market” foresees collaboration mechanisms, but this has not yet been adopted. Thus, a strong participatory mechanism is needed for the future. DG DIGIT and its ISA Programme are currently in the process of taking over the STORK deliverables and related governance actions which will support this to some extent in the short-term. |
| <b>Need for governance</b>           | Due to the stakeholder participation situation, strong governance mechanisms are not yet implemented. STORK has operated on the basis of its consortium agreement under the LSP and will be transferred to DG DIGIT in the short term while the STORK 2.0 LSP will also continue. In the long-term a more sustainable governance approach is necessary.                                                                                                                                                                                                                                                                             |
| <b>Market maturity</b>               | Market maturity varies strongly across the Member States. It should be noted that some Member States consider eID to be a governmental service that cannot be left entirely to market providers. Therefore, complete reliance on market service providers is not feasible in the foreseeable future.                                                                                                                                                                                                                                                                                                                                |
| <b>Technical maturity</b>            | STORK has created a stable code base and strong consensus between participating countries. Solutions can technically function in practice, although evolutions are still expected. Furthermore it should be noted that STORK solutions have as of yet no formal status (they are project deliverables until DG DIGIT and ISA have officially taken over the governance of these). In addition, not all Member States have participated in STORK (and thus not all countries have implemented appropriate technical solutions).                                                                                                      |
| <b>Financing mechanisms</b>          | Financing is likely to be variable: as noted above, some Member                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                |                                                                                                                                                                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | States consider eID to be a government function which is largely or entirely tax payer funded, whereas others take a mixed public/private market approach. Financing mechanisms thus vary from Member State to Member State; this is unlikely to change in the near future. |
| <b>Take-up</b> | The CSP is in active use, but primarily at the pilot level. This will likely change, as legal and policy maturity increases (in particular when the proposed Regulation is adopted).                                                                                        |

The key finding is that eID still requires the development of a stable legal and governance basis; although for the short term the European Commission (DG DIGIT and the ISA Programme) is taking over governance tasks. The fact that Member States have a strong (and in some countries exclusive) role in issuing and managing eIDs means that there is a need for a scenario that can provide a stable collaboration mechanism between public sector bodies. This is unlikely to change in the foreseeable future.

### ***Electronic Procurement across-borders***

With respect to eProcurement, the primary outputs to be considered derive from PEPPOL, which has done a significant amount of implementation work.

The current situation and plausible developments for the future can be summarised as follows:

*Table 3 – Assessment for eProcurement*

|                                      | <b>eProcurement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is not yet universal. Member States can participate in PEPPOL on a voluntary basis. National solutions can vary quite strongly: some countries rely on decentralised (and possible private sector) eProcurement service providers; thus, in order to see universal take-up of PEPPOL solutions, private sector stakeholders may need to be involved. OpenPEPPOL is already in place and is in charge of the governance and stakeholder engagement (currently OpenPEPPOL has 68 members who pay membership fees). In addition, DG DIGIT plays a role in the maintenance part of the solutions. |
| <b>Need for governance</b>           | Governance of PEPPOL outputs has been placed with OpenPEPPOL; this should be the starting point for further governance actions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Market maturity</b>               | eProcurement has been able to see increasing take-up in the market, but not necessarily built on PEPPOL outputs, with limited interoperability as a result. Thus, a key challenge is in spreading PEPPOL outputs to non-PEPPOL procurement providers.                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Technical maturity</b>            | PEPPOL has created a stable code base and strong consensus between participating countries. Solutions can function in practice and in accordance with the Public Procurement Directives,                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | although evolutions are still expected. PEPPOL solutions have no formal status (they are project deliverables), and not all Member States have participated in PEPPOL (12 countries participated in PEPPOL). The main challenge is thus to refine PEPPOL outputs and to encourage their more universal spread across service providers (including in the private sector).                                                     |
| <b>Financing mechanisms</b> | Financing is likely varied: as noted above, private sector eProcurement service providers operate in the market in some Member States, whereas others rely on public sector controlled portals. However, there is a relatively easy financing opportunity, as procurement participants will likely be willing to pay to use eProcurement (considering the savings compared to paper processes).                               |
| <b>Take-up</b>              | The solution is in active use, e.g. 60 eProcurement communities are PEPPOL enabled in the post award infrastructure (with 19 progressing, 7 committed and 15 upcoming) <sup>17</sup> . This will likely change, as legal and policy maturity increases and as private sector take-up can be boosted. The legal framework, the procurement Directives, is being updated with a focus on eProcurement and may increase take-up. |

The key finding is that eProcurement has a stable technical platform and mature legislation, but take-up still needs boosting. The existence of a governance platform via OpenPEPPOL is a benefit that must be leveraged.

### *Electronic public services for businesses across-borders*

With respect to public services for businesses, the primary outputs to be considered derive from SPOCS and the legal framework established by the Services Directive.

The current situation and plausible developments for the future can be summarised as follows:

*Table 4 – Assessment for eBusiness*

|                                      | <b>eBusiness</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is not universal. Member States can participate in SPOCS on a voluntary basis (15 countries participated in SPOCS). National solutions can vary strongly, as there is no obligation for Member States to use any common solutions; Member States may freely choose any solution that fulfils the objectives of the Services Directive. No mechanism for stakeholder participation (considering primarily the Member States) is currently available. |

<sup>17</sup> Data from August 2012 taken from <http://www.peppol.eu/pilot-reporting/infrastructure/post-award-infrastructure-1/active-e-procurement-communities>, last visited on 03.05.2013

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Need for governance</b>  | The need for governance is hard to predict, as this CSP mainly requires the appropriate re-use of other CSPs and building blocks, and their application by competent public sector bodies in an interoperable manner. The extent to which further EU level governance is needed to achieve this goal is not yet completely clear.                                                                                                                                    |
| <b>Market maturity</b>      | Market maturity is not a relevant factor for this CSP: the outputs of SPOCS are used by market players, but deployed by Member States in their Points of Single Contact (PSC) if they choose to do so.                                                                                                                                                                                                                                                               |
| <b>Technical maturity</b>   | SPOCS has created a stable code base and applications that function in practice, building on the outputs of other CSPs and building blocks, in accordance with the Services Directive. The main challenge is thus to keep those CSPs and building blocks up to date and fit for purpose.                                                                                                                                                                             |
| <b>Financing mechanisms</b> | Financing may be less of an issue than for other CSPs and building blocks: since the primary effort consists in the upkeep and formalisation of other CSPs and building blocks, any EU level coordination may be funded by the Member States that benefit from such coordination. They can in turn choose to finance this coordination by charging users for the use of their national PSCs, but this is a matter which can be decided freely at the national level. |
| <b>Take-up</b>              | The solution is in use, but primarily at the pilot level. This may change as maturity of other CSPs and building blocks increases, which could provide greater incentive for adoption by the Member States.                                                                                                                                                                                                                                                          |

The key finding is that SPOCS functions well and has a stable legal framework, but is dependent on the completion of all other building blocks that it reuses. The need for EU level governance is strongly dependent on the desire of Member States to align the deployment of SPOCS outputs in their PSCs.

### ***Electronic services for Health across-borders***

With respect to eHealth, the primary outputs to be considered derive from epSOS. While legislation exists that touches upon both technical (e.g. eSignature) and operational (e.g. professional qualifications) aspects of epSOS, no CSP-specific legal initiatives exist.

The current situation and plausible developments for the future can be summarised as follows:

*Table 5 – Assessment for eHealth*

|                                      | <b>eHealth</b>                                                                                                                                                                                   |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is not universal. Stakeholders (Member States – 26 countries participate in epSOS including 23 member states, healthcare providers, industry, SDOs) can participate in |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | <p>epSOS on a voluntary basis. National solutions can vary strongly, as there is no obligation for stakeholders to use any common solutions. However, it has been observed that some Member States which decided to deploy eHR solutions on large scale did it on the basis of epSOS specifications and interoperability framework. The industry participation is coordinated by IHE Europe, a consortia developing interoperability specifications used worldwide, ensuring uniform adoption of international standards through profiling. epSOS organises Members States' participation on the basis of a specific contractual framework; a proper legal framework will need to be developed to make this sustainable. Outside of epSOS, the eHealth Network, this formal voluntary network of Member States established under the Patient's rights Directive, demonstrates the willingness of the Member States to endorse common guidelines, identification and authentication measures which they would commit to use across the borders, but also nationally. The eHealth Governance initiative (eHGI) is composed of experts from different stakeholders (Member States, SDOs, industry, healthcare providers) and does the expert, ground work for the eHealth Network. The eHealth Stakeholders group, with a broader scope, is representative of the whole area and provides advises to the Commission on different issues including interoperability.</p> |
| <b>Need for governance</b>  | <p>The eHealth sector has specific requirements that are not sufficiently met by generic building blocks; thus, a governance mechanism, which should include the eHealth Network, will be needed that can ensure customisation and development of any further add-ons.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Market maturity</b>      | <p>eHealth applications are widely used in practice, and many Member States have or are now committing for large scale deployments of eHealth solutions, often based on interoperability specifications such as the one developed by epSOS. Adoption of international standards could be accelerated through large scale cross border deployments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Technical maturity</b>   | <p>epSOS has created a stable code base and applications that function in practice. The eHealth Network is now developing guidelines on a minimum data set of patient data, based on the epSOS patient summary, to be exchanged across the borders, which is scheduled to be endorsed before end of 2013. Further integration with other CSPs and building blocks (such as eID which is taken up as a pilot under the STORK 2.0 LSP) is still required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Financing mechanisms</b> | <p>Financing mechanisms can be established in accordance with national preferences: Member States that rely stronger on public</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | sector funding of the health sector could choose to rely on public (tax payer) funding, whereas others may choose to charge private service providers (hospitals or doctors) or patients directly.                                                                                                                                                                                                                                                                                                        |
| <b>Take-up</b> | The solution in use, at the pilot level for cross border exchange, has been used as a model for some national deployments. This will likely change as maturity increases, which would provide greater incentive for adoption by the public and private sector stakeholders. While some Member States have widely deployed eHealth solutions, commitment by many others which are deploying them now or will do so in the near future shows that we are approaching the tipping point for massive take up. |

The key finding is that epSOS functions well, but requires further integration with other building blocks and a more permanent and comprehensive governance mechanisms after its termination. Given the crucial role of the private sector (doctors, hospitals, etc.), a public/private sector approach may be required.

However, it has to be noted that bilateral discussions are happening between Member States to deal with cross border exchange of health data, as was highlighted during the last eHealth Network meeting in Dublin. We can also suspect that some private actors having healthcare provider's facilities in different countries are already exchanging data across borders for travelling patients inside their own facilities. It means that if we don't have an action at the EU level to federate and harmonize the exchange of patient data, there is a risk to see bilateral agreement burgeon, with no interoperability at the EU level.

### ***Electronic services for Justice across-borders***

With respect to Justice, the primary outputs to be considered derive from e-CODEX. While legislation exists that touches upon both technical (e.g. eSignature) and operational (e.g. professional qualifications) aspects of e-CODEX, no CSP-specific legal initiatives exist.

*Table 6 – Assessment for eJustice*

|                                      | <b>eJustice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is not universal. Stakeholders (Member States (14 countries participate in e-CODEX) and private parties such as lawyers or notaries) can participate in e-CODEX on a voluntary basis. National solutions can vary strongly, as there is no obligation for stakeholders to use any common solutions. e-CODEX organises stakeholder participation on the basis of its contractual setup; a mechanism will need to be developed to make this sustainable. Outside of e-CODEX, NPOs exist that can represent the interests of the sector, but these do not ensure comprehensive participation. |
| <b>Need for governance</b>           | The eJustice sector has specific requirements that are not sufficiently met by generic building blocks; thus, a governance mechanism will be needed that can ensure customisation and                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                             |                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | development of any further add-ons.                                                                                                                                                                                                                                                                                        |
| <b>Market maturity</b>      | eJustice applications are widely used in practice, but not necessarily based on interoperable solutions such as those developed by e-CODEX.                                                                                                                                                                                |
| <b>Technical maturity</b>   | e-CODEX is the youngest LSP, and its outputs are still in development.                                                                                                                                                                                                                                                     |
| <b>Financing mechanisms</b> | Financing mechanisms can be established in accordance with national preferences: Member States that rely stronger on public sector funding of the justice sector could choose to rely on tax payer funding, whereas others may choose to charge private service providers (lawyers or notaries) or their clients directly. |
| <b>Take-up</b>              | As the youngest LSP, uptake of its components is not yet well established.                                                                                                                                                                                                                                                 |

The key finding is that e-CODEX is not yet well established, as a result of its relatively early stage of development. Further technical development is needed, as well as the creation of a more permanent and comprehensive governance mechanisms after the pilot ends. Given the crucial role of the private sector (lawyers, notaries, etc.), a public/private sector approach may be required.

## ***eSignatures***

With respect to eSignature, the primary outputs to be considered derive from the eSignature Directive and its related Commission Decisions, as well the Commission Decisions adopted within the context of the Services Directive. Functioning code has been developed within various LSPs, including PEPPOL, STORK, SPOCS and epSOS.

The current situation and plausible developments for the future can be summarised as follows:

*Table 7 – Assessment for eSignature*

|                                      | <b>eSignature</b>                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is currently largely in the hands of the public sector, and at the EU level organised on an ad hoc basis in relation to specific policy initiatives (such as the eSignature Directive or the Services Directive). In the future permanent governance at the EU level may be organised via the eID and Trust Services Regulation. No permanent body is currently available at the EU level. |
| <b>Need for governance</b>           | Need for governance at the national level is in the hands of supervisory bodies, and this is not envisaged to change under the proposed Regulation. However, at the EU level some degree of governance may still be needed to update relevant standards and ensure the completeness of the legal framework (i.e. secondary legislation under the proposed Regulation).                                               |
| <b>Market maturity</b>               | eSignature service providers are operating in the market at a                                                                                                                                                                                                                                                                                                                                                        |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | relatively significant degree of maturity.                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Technical maturity</b>   | eSignature standards and solutions are available and in use, but updates and revisions may still be required, especially to support signature validation solution providers.                                                                                                                                                                                                                                         |
| <b>Financing mechanisms</b> | Financing of the governance at the national level (i.e. supervisory bodies) can be based on mainly tax payer funding, mainly contributions of the supervised service providers, or a mix of these, depending on national preferences. At the EU level, there is currently no body or organisation to finance, although this could conceivably be organised by contributions derived from national service providers. |
| <b>Take-up</b>              | Take-up of eSignature services is relatively well established at the national level, although interoperability supporting solutions such as those piloted by the LSPs are not yet used as broadly.                                                                                                                                                                                                                   |

The key finding is that eSignature is a relatively well established and mature market service, with governance and financing mechanisms at the national level. These will still need to be organised and aggregated at the EU level to ensure alignment and interoperability.

### ***eDocument***

With respect to eDocument, the primary outputs to be considered derive from the PEPPOL and SPOCS LSPs, supported also by the Commission Decisions adopted within the context of the Services Directive. Functionalities are expanded by other pilots which also depend on eDocument exchange such as epSOS and e-CODEX.

The current situation and plausible developments for the future can be summarised as follows:

*Table 8 – Assessment for eDocument*

|                                      | <b>eDocument</b>                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is currently not strongly organised, but addressed largely via ad hoc initiatives in the relevant LSPs. In the future permanent governance at the EU level may be organised via the eID and Trust Services Regulation. No permanent body is currently available at the EU level.                            |
| <b>Need for governance</b>           | The proposed Regulation foresees the establishment of supervisory bodies at the national level to supervise market players, and EU level coordination to update relevant standards and ensure the completeness of the legal framework (i.e. secondary legislation under the proposed Regulation). Currently, neither of these exists. |
| <b>Market maturity</b>               | eDocument service provision is an emerging market, which is therefore not yet mature. The role of public and private sector in this market is not yet entirely clear.                                                                                                                                                                 |

|                             |                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical maturity</b>   | The various LSPs have established a stable code base and applications that function in practice. Further evolutions and formalisation may still be needed.                                                                                                                                                                           |
| <b>Financing mechanisms</b> | Financing could follow the same approach as eSignature: supervisory bodies can be funded through tax payers, through contributions of service providers, or both. At the EU level, there is currently no body or organisation to finance. Therefore the situation depends on the evolution of this market, which is still uncertain. |
| <b>Take-up</b>              | Take-up of eDocument is relatively well established at the national level, but is not to a large extent not based on the interoperability supporting solutions such as those piloted by the LSPs.                                                                                                                                    |

The key finding is that eDocument are relatively well established at the national level, but use of the LSP solutions is not yet commonplace, and there is no significant eDocument services market at this point. More importantly, the role of the public and private sector as service providers is not yet clear. Therefore, a flexible approach will be needed.

### *eDelivery*

With respect to eDelivery, the primary outputs to be considered derive from the PEPPOL and SPOCS LSP. Functionalities are expanded by other pilots which also depend on eDelivery, such as epSOS and e-CODEX.

The current situation and plausible developments for the future can be summarised as follows:

*Table 9 – Assessment for eDelivery*

|                                      | <b>eDelivery</b>                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Participation of stakeholders</b> | Stakeholder participation is thus far not strongly organised, and addressed largely via ad hoc initiatives in the relevant LSPs. In the future permanent governance at the EU level may be organised via the eID and Trust Services Regulation. No permanent body is currently available at the EU level.                             |
| <b>Need for governance</b>           | The proposed Regulation foresees the establishment of supervisory bodies at the national level to supervise market players, and EU level coordination to update relevant standards and ensure the completeness of the legal framework (i.e. secondary legislation under the proposed Regulation). Currently, neither of these exists. |
| <b>Market maturity</b>               | eDelivery service providers are in an emerging market, which is not very mature yet, in most countries (although some countries have deployed registered document delivery services such as registered e-mail). The role of public and private sector in this market is not yet entirely clear.                                       |

|                      |                                                                                                                                                                                                                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical maturity   | The various LSPs have established a stable code base and applications that function in practice. Further evolutions and formalisation may still be in order.                                                                                                                                                      |
| Financing mechanisms | Financing could follow the same approach as eSignature: supervisory bodies can be funded through tax payers, through contributions of service providers, or both. At the EU level, there is currently no body or organisation to finance. This depends on the evolution of this market, which is still uncertain. |
| Take-up              | Take-up of eDelivery is not yet well established or based on the interoperability supporting solutions such as those piloted by the LSPs.                                                                                                                                                                         |

As with eDocument, the key finding is that eDelivery is not yet commonly offered using the LSP developed solutions and there is no significant European eDelivery services market at this point. Similarly, the role of the public and private sector as service providers is not yet clear. Therefore, a flexible approach will be needed.

## Conclusion

The overview of each of the CSPs and building blocks above shows that their state of development and expected future trends can vary quite strongly, depending on each of the examined aspects:

- **Participation of stakeholders:** for some CSPs, stakeholder groupings already exist (e.g. OpenPEPPOL) but require further support, whereas others lack even embryonic representation (e.g. eDocument and eDelivery). In the cases of eHealth or eJustice, stakeholder groups for the sectors exist, but do not (yet) participate in CSP/BB management. This implies that a variety of stakeholder participation mechanisms should be supported, as well as the possibility of having provisional 'placeholder' mechanisms until a more permanent ideal solution can be found.
- **Need for governance:** the need for governance is strongly dependent on maturity (since mature services may require less governance: standards and norms may already exist) and on the need for coordination (e.g. public services for businesses may require less coordination, since Member States are in principle free to decide if/how they use components in their PSCs). Less mature sectors may require stronger and higher intensity governance approaches to support quick development and enforcement of standards and norms, whereas other mainly require minor upkeep, updates or resolution management.
- **Market maturity:** not all CSP/BBs are market services (e.g. eID in some countries), in which case market maturity is moot. But for other CSP/BBs that qualify entirely or partially as market services, maturity can vary from relatively high (eSignature) to low (eDocument and eDelivery), while other services are mature at the national level but less so at the cross-border level (eHealth). Therefore, it is inappropriate to choose a single approach for all market services; account must be taken of the state of the market, where the fate of emerging and less mature services is not left to a non-existent market. In these cases, services will need more public sector support until the market is ready to play its role.
- **Technical maturity:** as with market maturity, a coherent approach is already available for some CSP/BBs (e.g. eSignature and increasingly eID), whereas others have no clear

consensus yet on how interoperable communications can be organised across the EU (e.g. eJustice). The main result is that some CSP/BBs need more of a margin for further experimentation and development, as premature lock-in to unproven technologies must be avoided. This implies that some CSP/BBs may require more extensive efforts to guide these experiments, whereas others mainly need maintenance of existing outputs.

- **Financing mechanisms:** the overview of CSP/BBs showed that even a single CSP/BB can have different funding mechanisms depending on the Member States (e.g. eID can be offered as a market service in some Member States, and be entirely government funded in others). This implies that there must be some degree of flexibility to organise funding streams at the national level.
- **Take-up:** finally, take-up of CSP/BBs solutions varies quite strongly, which is obviously linked to their status as pilots (rather than as fully finalised and perfectly stable solutions). Furthermore, the take-up also varies between CSP/BBs solutions; adoption can therefore not be taken for granted.

There are substantial disparities across the CSP/BBs as regards to participation of stakeholders, existing governance structure, market maturity, technical maturity, financing mechanisms and take-up. In order to reconcile all of these differences and nuances into one coherent strategy, there is firstly a need to map each CSP/BBs along the CSP life-cycle. This will be done in the following section.

## 4.2 The CSP/BB life-cycle

In the previous section, the disparity in development levels of the CSP/BBs was presented. The CSP/BBs, in their current state, can thus be mapped. This mapping is presented in Figure 16. There are two key milestones in the time-horizon outlined in this figure. The first is 2014, by which time a new financial instrument, the Connecting Europe Facility (CEF), will be set-up in order to fund the deployment the solutions developed by the LSPs. The second is 2020, by which the CEF end, and by when a sustainable alternative will need to be put in place to finance the management of the CSP/BBs.

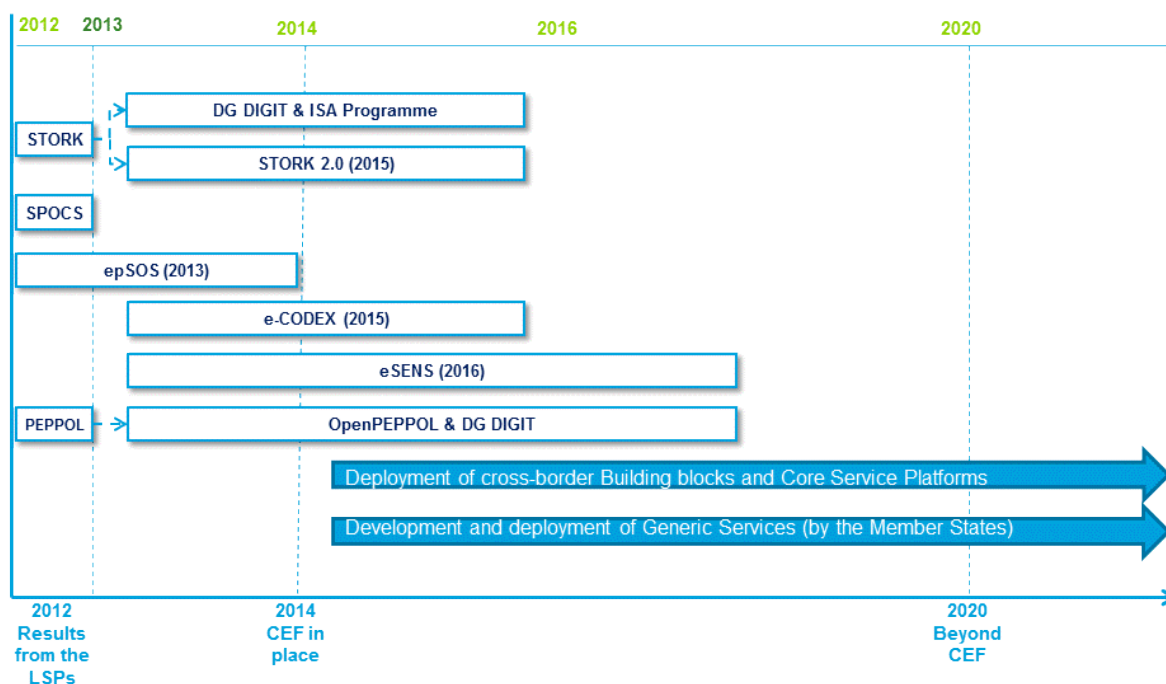


Figure 16 - Milestones

Through their development, deployment and take-up, the CSP/BBs go through a number of phases. These phases form part of the CSP lifecycle, which is organised around three development stages. Each of these phases corresponds to certain characteristics as regards to participation of stakeholders, governance, market maturity and take-up. These are:

- **Emerging Phase:** In this phase, the solutions are designed and tested under pilot modes. Take-up is limited at this stage, in line with the low technical maturity of the solutions. Governance platforms are scarcely developed beyond that of the pilot consortium, and the legislative framework around the solutions is often immature. The following CSP/BBs are currently in this phase:
  - **eID:** the STORK pilot ended in 2012 and deliverables are being transferred to DG DIGIT. Although the solutions are technically mature, take-up has so far remained limited and the legal framework around eID is still contingent on the adoption of the proposed Regulation. The cross-border eID solution is therefore in the moving towards the end of the emerging phase but has not yet reached the growth stage in terms of take-up and use.
  - **eBusiness:** the SPOCS pilot finished in 2012. Although technical maturity for the solutions is high, and a stable legal framework is in place although it doesn't oblige Member States to take up the cross-border solutions, therefore take-up has so far remained limited. eBusiness is thus in the mid-emerging development phase.
  - **eHealth:** the epSOS pilots is still running with 8 countries already piloting and 7 more which should be operational before Q4 2013. Take-up has so far remained limited to the pilots, although some Member States decided to deploy eHR solutions on a large scale based on epSOS specifications and interoperability framework and comprehensive governance mechanisms need to be put in place once the pilot ends. eHealth is thus in the emerging development phase.

- ▶ **eJustice:** the e-CODEX pilot is still running and will be operational until the end of February 2015. Further technical developments are needed, as well as the creation of more permanent and comprehensive governance mechanisms once the pilot is completed. eJustice is thus in the early emerging development phase.
  - ▶ **eDocument:** Although a stable code has been established by the various LSPs which have developed eDocument solutions, there is currently no significant European eDelivery services market. Similarly to eID, the legal framework for eDocument is also tentative. eDocument is therefore in the mid-emerging development phase.
  - ▶ **eDelivery:** Similarly to eDocument, stable code has been created by the various LSPs which have developed eDelivery solutions. However, the market is currently emerging and take-up has thus remained limited. eDelivery is thus in the mid-emerging development phase.
- ▶ **Growth Phase:** In this phase, take-up progressively increases, and the potential for revenue for some CSPs becomes apparent. Furthermore, the CSP/BBs operate within a stable governance structure and legal framework. The following CSP is currently in this phase:
- ▶ **eProcurement:** the PEPPOL pilot finished in 2012, and the OpenPEPPOL NPO has been created to govern the results of PEPPOL. A stable technical platform has thus been established, which operates within a mature legislative framework that, furthermore is being updated. Take-up of the solutions is progressively growing, whereas members of the OpenPEPPOL NPO, which are private and public sector stakeholders, are willing to pay membership fees implying that there is a potential for revenue. eProcurement is thus in early growth stage.
- ▶ **Maturity Phase:** In this phase, take-up of the solutions is substantial, by both public and private stakeholders. For some CSP/BBs, the potential for revenue has materialised and a clear market maturity has been identified for specific CSPs. The following CSP/BB is currently approaching this phase:
- ▶ **eSignature:** Stable code has been delivered for eSignature, which is a well-established and mature market at national level, although interoperability supporting solutions such as those piloted by the LSPs are not yet commonly used.

The following figure presents a mapping of the CSP/BBs, in their current state, per development phase.

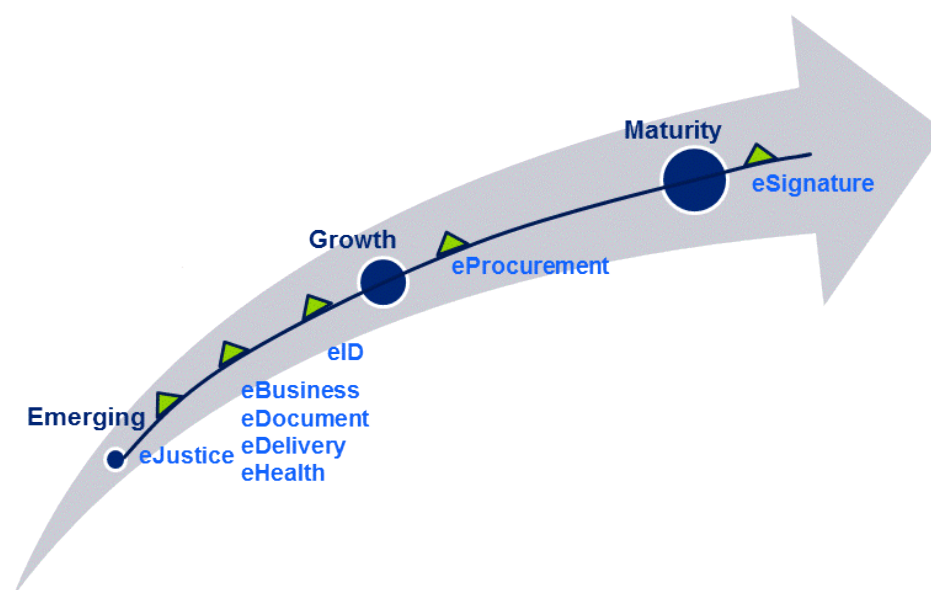


Figure 17 – CSP/BBs and their relative phases of maturity

There are therefore substantial relative disparities in the current development levels of the CSP/BBs. Looking forward, evolutions in terms of take-up, maturity and private sector business case may also differ considerably.

### 4.3 Possible evolutions of Take-up, Maturity and Private Sector Business case

Given the estimated volume of transactions shown in Figure 12, it is clear that, although the CSP/BBs are at different stages in their maturity, there are also different levels of possible demand and that even in the long term differences will remain. Furthermore, it can be assumed that some CSP/BBs have a stronger private sector business case than others.

Table 10 – Estimated take-up of the CSP/BBs<sup>18</sup>

|                       | Estimated volume of transactions in 2012 (millions) | Transactions 2014 to 2018 <sup>19</sup> (millions) |
|-----------------------|-----------------------------------------------------|----------------------------------------------------|
| eID <sup>20</sup>     | 11.54                                               | 74.2                                               |
| eHealth <sup>21</sup> | 8.16                                                | 80.1                                               |
| eDocument             | 7.03                                                | 47.55                                              |

<sup>18</sup> These numbers are based on the findings of the Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers. SMART 2011/0074.

<sup>19</sup> This estimate assumes average EU immigration growth per annum of 8.05%

<sup>20</sup> eID transactions are higher than those for eHealth in 2012 but estimates for transactions 2014 to 2018 are lower than for eHealth because most eID transactions are only undertaken once per annum. As previously highlighted eHealth transactions have a multiplicand of 6.63 thus exacerbating the impact of immigrant growth in future years.

<sup>21</sup> *ibid*

|              |      |       |
|--------------|------|-------|
| eDelivery    | 7.03 | 47.55 |
| eSignature   | 5.78 | 37.6  |
| eBusiness    | 1.42 | 7.52  |
| eJustice     | 0.4  | 2.6   |
| eProcurement | 0.18 | 0.18  |

Based on the potential take-up and nature of the CPS/BBs, it is clear that some CSP/BBs will have sufficient possibility to be (at least partially) funded through revenue (stemming either from the public or private sector), whilst others may not. This has clear implication on how the need for financing (in terms of financing schemes and sources of funding) may develop in relation to the potential for generating revenue and possible levels of take-up. Figure 18 shows this graphically.

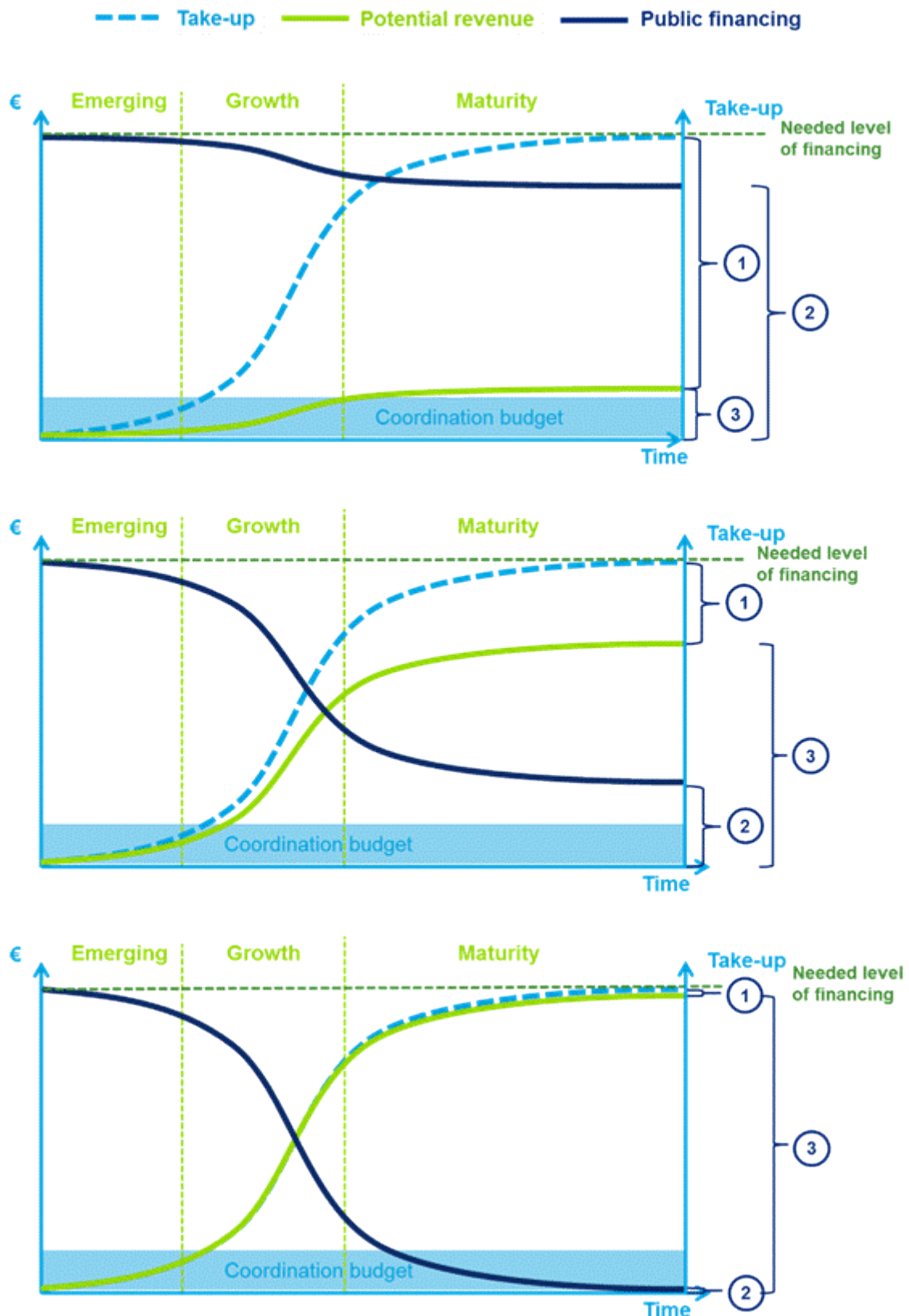


Figure 18 – Take-up, Business case and how they relate

The above figure represents three possible cases of the evolution of particularly the public financing (represented by the **dark blue** line) and the potential revenue (the **green** line). In addition, the take-up

(represented by the **light blue** dotted line) is expected to increase over time following an s-curve (meaning that take-up is likely to slowly develop in the short to medium term with a strong growth in medium to long-term and will stabilise in the long-term). For the level of take-up this means that the potential take-up represented by the number of transactions in Table 10 is achieved gradually over time. The level of public financing needed and the level of potential revenue can follow different trends as presented in the three parts of the figure. These two are inversely related, meaning that as the potential for private sector revenue becomes more and more a reality (i.e. the **green** line goes up) the need for public sector funding (the **dark blue** line) decreases. This inverse relationship reflects the fact that as the potential for generating revenue (through for example charging user fees) increases the need for direct public sector funding decreases.

Figure 18 should be interpreted as representing the take-up and funding of a single CSP/BB, the gaps between the different lines represent by a 1), 2) or 3) each have a specific interpretation:

- (1) in each figure represents the gap between the take-up and the potential revenue;
- (2) in each represents the needed for public financing. In other terms, the gap between the total needed financing and what can be funded from revenue is what the public sector needs to finance;
- (3) in each figure represents the total of the revenue that can be generated.

It should also be noted that the illustrations show the need for a coordination budget. The need for this coordination will be explained in the following sections.

The figure shows three different situations, the first graph shows a situation where there is very little scope for generating revenue, meaning that there is a definite need for public funding. This essentially means that the funding would have to be (possibly fully) ensured by the public sector. This could either, be ensured by relying on EU budget funding or contributions from the Member States. For operations it would not be possible license them out as the private sector would not be interested in paying for the license to run something where there is no or limited possibility to generate revenues. However, it would still be possible to carry them out in-house or through outsourcing.

In the second graph, there is a significant potential for generating revenue however, it is clear that there still is a gap meaning that there is still a need for some public sector financing. In essence this means, that it is not possible to hand it completely over to the market because the private sector business case is not quite strong enough (no sufficient potential to generate revenue), however, a combination of private sector and public sector would be possible. This would mean that whilst the entire the operations, governance and financing cannot be handed over to the private sector, it may be possible to generate revenue from allowing the private sector to provide services making use of the CSP/BBs in return for payment. However, the operations would then have to either remain in-house in the coordinating entity or be outsourced. Licensing of operations could be possible for those CSP/BBs where the potential for revenue generation is sufficient to offset the cost of operations.

The third graph in Figure 18 shows a situation where the possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations). This is a situation is one where it is possible to hand the operations and the financing fully over to the private sector.

In the long term, there may therefore be radical differences across CSP/BBs as regards to their maturity, take-up and capacity to generate revenue.

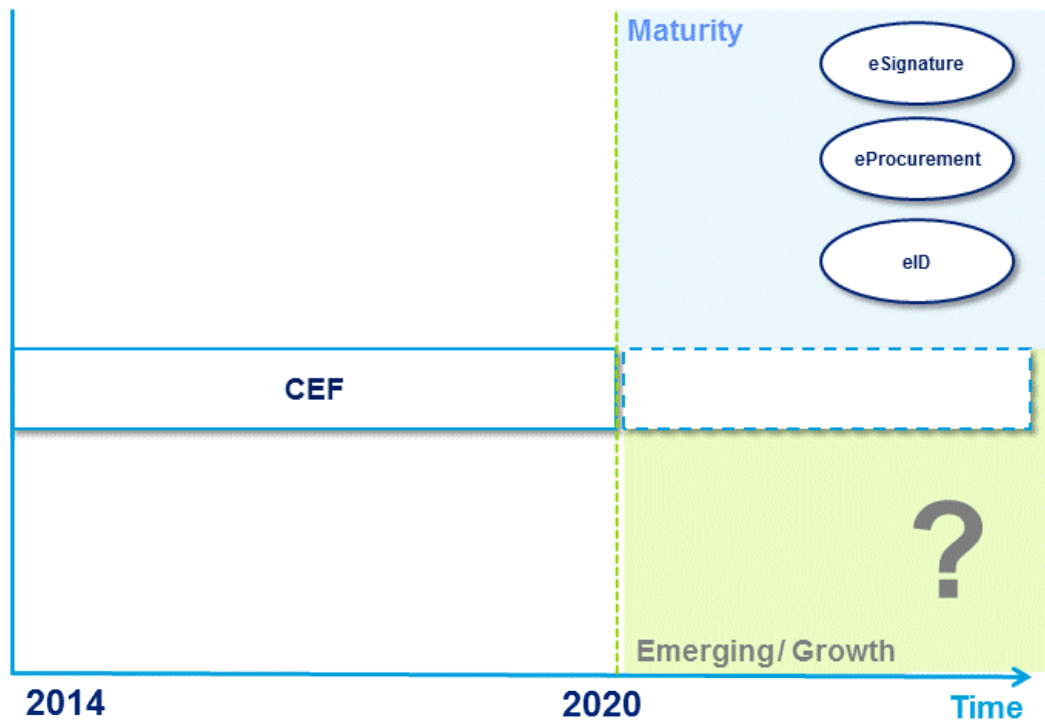
## 4.4 Baseline Scenario

The assessment of current development levels per CSP/BBs has shown that there are substantial disparities across the CSP/BBs and building blocks as regards to participation of stakeholders, existing governance structure, market maturity, technical maturity, financing mechanisms and take-up. As such, although eSignature was assessed as mature, and eProcurement is currently in the growth development phase, all the other CSP/BBs are currently in the emerging phase, including eHealth, and eJustice. With regard to the latter e-CODEX has only recently started with piloting solutions, in the area of eHealth epSOS is implementing pilots which are currently on-going / planned. There is limited buy-in for eBusiness, eDocument, eDelivery and to a lesser extent eHealth and eJustice.

The CEF is expected to fund the deployment of the solutions developed by the LSPs as of 2013 whereas Horizon2020 will fund the development of new CSP/BBs. As such, the CEF is a Programme to deploy and manage the CSP/BBs. As the solutions are deployed, take-up will increase and a potential for revenue may become apparent for some CSP/BBs. The CEF will come to an end in 2020, at which point the negotiation of a new financial instrument to fund the management of the CSP/BBs will depend on political will. eSignature, eProcurement and potentially eID will have reached maturity in 2020, implying that they are (partly) financed by the market, or there is sufficient take-up to incentivise Member States to finance them in the case that there is no business case or that political sensitivities impede the private sector from exploiting and generating revenue from the solutions. Negotiations on a new financial instrument in 2020 are highly uncertain, which could imply that if no alternative financing scheme is agreed upon for the other CSP/BBs, thereby depriving them from public funding, these CSP/BBs could cease from operating. The significant investments made by Member States to develop and deploy the CSP/BBs would thus be lost.

The baseline scenario, as shown in Figure 19, therefore corresponds to the scenario where the CSP/BBs are deployed through the CEF, while new CSP/BBs are created through Horizon2020. In 2020, EU funding will depend on political will and it possible that no financial instrument will be agreed upon to fund the management of the CSP/BBs. In this case, assuming no major changes in the relative maturity, the mature CSP/BBs, namely eSignature, eProcurement and potentially eID, will continue to operate based on either private or Member State financing, whereas it is probable that the other CSP/BBs would cease from operating.

The baseline scenario is presented in Figure 19.



*Figure 19 – Baseline scenario*

It is questionable whether the baseline scenario would ensure the sustainability of the developed solutions. Consequently, sustainability scenarios need to be designed. This will be further elaborated in the next chapters.

# 5 Objectives and Assessment Criteria

In order to be able to create scenarios for the sustainability of the Digital Service Infrastructures for the provision of cross-border public services, it is first necessary to further specify the objectives and based on these, the criteria that should be used to assess the scenarios.

The vision for the deployment of the Digital Service Infrastructure for the provision of cross-border public services, presented in section 1.1 is to:

*Beyond 2020, enable the provision of online personalised cross-border public services, whether provided by public or private sector, by making use of sustainable Core Service Platforms that provide common fundamental cross-border interoperability solutions.*

This vision outlines a number of key aspects vis-à-vis the DSI. First, this vision is set for the longer term (beyond 2020) since the aim is to deploy the different CSP/BBs and building blocks and to ensure sustainability in the long run. Second, the vision acknowledges the different stakeholders (public and private) that have an interest in cross-border interoperable solutions. Third, the use and therefore provision of CSP/BBs should be ensured in a sustainable way. Fourth, and ultimately, these cross-border interoperability solutions are required for the provision of online personalised public services that operate across-borders.

From this vision, an overall objective and a number of specific objectives can be outlined.

## 5.1 Objectives

In order to achieve the vision the primary objective is to ensure the sustainability of the Digital Service Infrastructure for the provision of cross-border public services. In line with the Digital Service Model presented in section 2.2, this includes the five layers (standards and specifications, components, building blocks, Core Service Platforms and Generic Services) that are based on the cross-border interoperability solutions that have been developed under the LSPs. The Core Service Platforms are composed of building blocks which enable cross-border interoperability between Member States and need to be integrated into existing systems and online services at national level through Generic Services to allow providers of online services to connect their services to other Member States.

Therefore, the overall objective for the Digital Service Infrastructure for cross-border public services is to:

*Ensure the sustainable provision of the Digital Service Infrastructure for cross-border public services by implementing Core Service Platforms (comprised of building blocks, which in turn consist of components and agreed upon standards and specifications) that provide cross-*

*border interoperability solutions by taking into account the needs and requirements of the different stakeholders and setting up corresponding structures for the governance, financing, operations and architecture.*

Based on the findings presented in chapters 2 and 3, a number of specific objectives are identified in line with this overall objective. In addition, given the importance of the long-term sustainability the roadmap towards and beyond 2020 and the key milestones that are already known need to be taken into account.

### 5.1.1 Specific objectives

---

The previously laid out vision and overall objective, contain a number of principal elements that are derived from the key challenges identified in for this study. The identified key challenges concern aspects such as stakeholders, take-up, flexibility, and continuity:

- ✘ **Stakeholders** represent a challenge due to the different stakeholders involved in each domain, and the different needs and requirements they may bring to the table;
- ✘ **Take-up** will be dependent on both the level of development and readiness of key stakeholders (particularly Member States), on the one hand, to link up their existing systems (as Content Providers) to the CSP/BBs and, on the other hand, whether public administrations or private sector to take up and use the CSP/BBs across borders;
- ✘ **Flexibility** is necessary given the differences between the domains, and particularly given the different levels of maturity of cross-border solutions across the domains. Looking forward, achieving the potential take-up will call for flexibility to take into account an evolving landscape and needs and requirements;
- ✘ **Continuity** will therefore depend on how well the above factors are taken into account when deploying the cross-border solutions as part of the Digital Service Infrastructure for cross-border public services, particularly in terms of setting up the governance, operations, financing and architecture.

Consequently, four specific objectives can be derived from this and should be taken into consideration in view of defining sustainability scenarios. The specific objectives for the establishment of the DSI for the provision of cross-border public services are to:

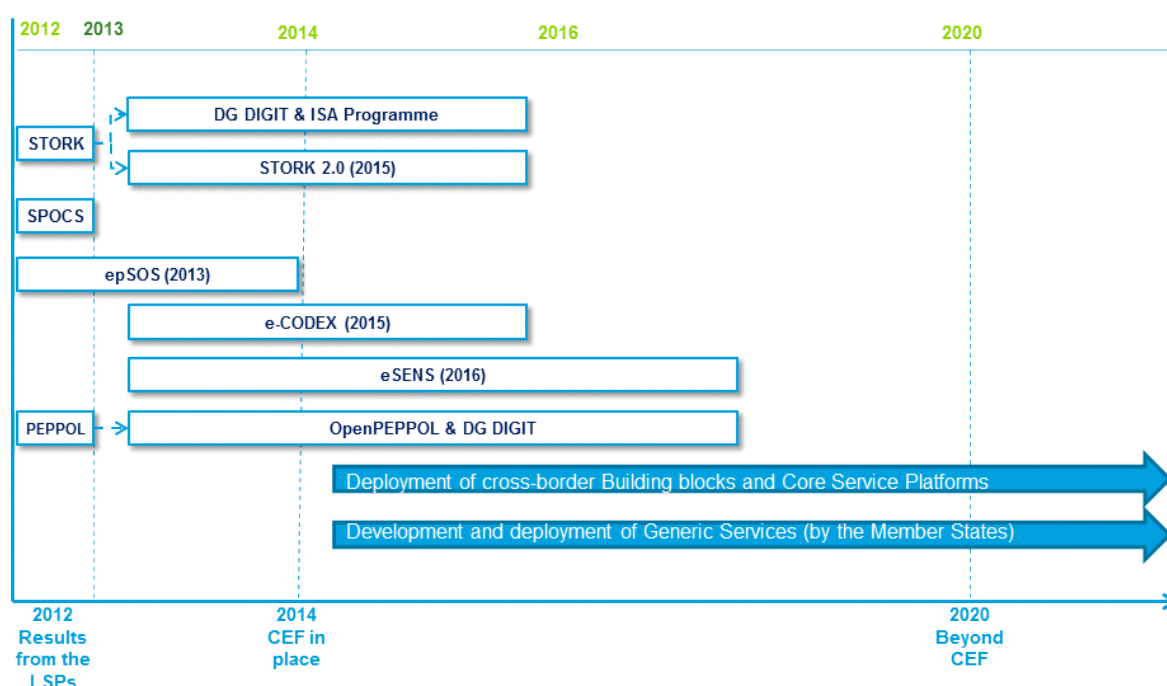
- ✘ **Ensure involvement of key stakeholders** in order to create awareness and ensure to adequately take into account their needs and requirements vis-à-vis the DSI for cross-border public services;
- ✘ **Ensure take-up** by both public and private sector providers of online services;
- ✘ **Ensure sufficient flexibility** in order to set up corresponding structures for the governance, financing, operations and architecture;
- ✘ All the above should contribute to the **long-term continuity** of the DSI.

### 5.1.2 Roadmap and milestones

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As mentioned, there is a time definition to constructing scenarios. The roadmap for the implementation of the scenarios will be presented in chapter 8. However, it is firstly necessary to define the time horizon over which the scenarios will be developed. Importantly, as the focus of this study is the long-term sustainability of the DSI for cross-border public services, the scenarios are long-term models. Once the long-term scenario is defined, the roadmap will thus indicate the key milestones to be met, in the short- and medium-term, in order to achieve this goal.

Furthermore, the journey towards a sustainable DSI for the provision of cross-border public services contains a number of important points that must be observed during this time frame. These are the contextual elements that must be taken into account in the construction of scenarios. These pointers are shown in Figure 20, below.



*Figure 20 – Roadmap, important points*

The three major points indicated in the figure are the ones marked in light blue:

- 2012-2014, the short-term: In 2012 the results from most of the LSPs are available, while a new STORK LSP has been launched and others are still on-going (e-CODEX and epSOS) and due to start (eSENS): Chapter 4 of this report has laid out the current situation based on the results of the LSPs;
- 2014-2020, the medium term: In 2014 the CEF is put into place and will be the main instrument for financing the deployment of the building blocks developed under the LSPs as part of the DSI for cross-border public services;
- 2020 and beyond: In 2020 the currently proposed CEF will expire, and the next steps to follow the CEF are as of yet unclear. Consequently, the dependency on public financing, and therefore the sustainability, of the solutions developed by the LSPs should be minimised by this date.

Looking at the short-term, Figure 20, shows that a number of milestones were reached in 2012, namely the end of STORK (1.0), SPOCS and PEPPOL; however it also shows that a number of milestones lie ahead. The first of these is the end of the, currently on-going, e-CODEX and epSOS,

LSPs which will end in December 2013. However, in the meanwhile, STORK 2.0 has been launched and eSENS will be launched in 2013. STORK 2.0 will end in March 2015 and eSENS in 2016.

Beginning in the medium-term, once the CEF is in place, two additional milestones will be reached: these are the deployment of the Core Service Platforms (CSPs – and the building blocks) and the continuous development and deployment of the Generic Services. Both these two activities run until the 2020 CEF milestone and continue beyond it and into the long-term.

It is important to keep in mind that the roadmap for each CSP is not aligned, i.e. the individual roadmaps are not consecutive, and they overlap. Not only does the continued development of the LSPs overlap, but they also overlap with the deployment (and continued development) of the CSPs and the Generic Services. This complicates matters for the reason that the deployment will have to begin for some building blocks, while yet others are still under development (and thus not ready for deployment). Scenarios are therefore an end-goal towards a given future, which will include the combination of CSPs and building blocks that are all at different levels of maturity in the short- to medium-term.

Therefore, the organisational model which is set up in the short- and medium-term must ensure sufficient flexibility in Governance, Organisation and Financing, to take into account these disparities.

Figure 21 shows the overall journey from the perspective of the three main stakeholders; the European Commission (representing the European Union), the Member States and the private sector.

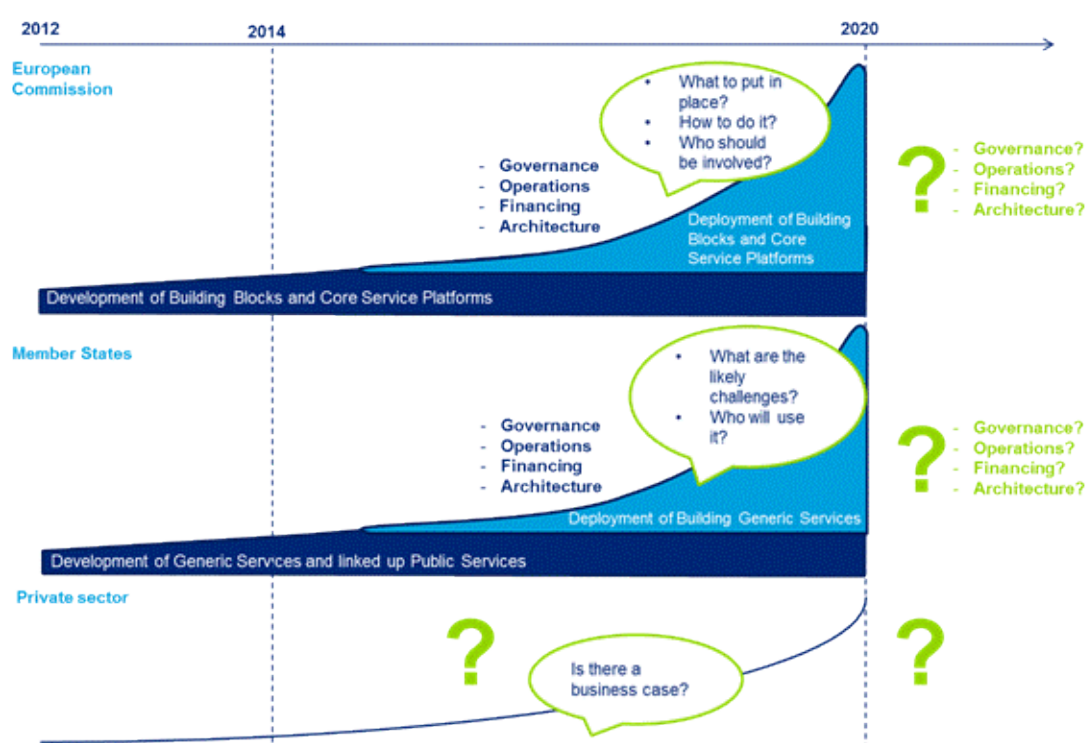


Figure 21 – The milestones and take-up over time by the different stakeholders

The objective of this timeline is that the deployment of the CSPs, as well as the Generic Services, will be organised under the CEF in the medium-term (from 2014 until 2020). Sustainability entails, however, that the end of the CEF is not the end of the CSPs. This is why there is a particular focus on the long-term and investigating the possibilities to ensure sustainability beyond the CEF. In line with

this objective, the role of the private sector will become increasingly important over time in terms of take-up, financing and potentially the development and deployment of building blocks. However, these development curves will be specific to each CSP. Thus, the importance of ensuring a flexible organisational model in the short- and medium-term needs to be highlighted in order to take this development into account.

In view of determining which scenario would be most suitable in the long-term, it is necessary to firstly define assessment criteria which will serve as a basis for differentiating and evaluating the various possibilities.

## 5.2 Achieving the objectives: establishing assessment criteria

Four key objectives were outlined that are derived from the overall vision for the provision of cross-border public services. Clearly, the assessment of the scenarios will have to determine which of the scenarios is most likely to contribute successfully to these objectives.

The assessment of needs and requirements across the different CSP domains (or ecosystems), previously presented (and further detailed in Annex B – Needs and Requirements), resulted in a number of key elements that can be considered success criteria for the deployment of cross-border solutions.

Therefore, is it necessary to derive a number of assessment criteria that take into account the identified success criteria, as well as the previously described objectives described (Section 5.1.1), that serve to assess the scenarios.

These objectives have implications for the aspects of Governance, Operations, Financing and Architecture, noting that some objectives are relevant for several aspects whilst others are not.

### Governance

---

There are four assessment criteria for governance, each covering a different objective:

- **The extent to which the governance ensures buy-in of the Member States and allows a balanced stakeholder representation** – covering the stakeholder representation objective;
- **The extent to which the governance stimulates take-up by Member States and then service providers** – covering the take-up objective;
- **The extent to which it is possible to have different decision-making structures and processes for different Core Service Platforms and the extent to which new ones can easily be added** – covering the flexibility objective;
- **The extent to which long-term strategic and stable planning is possible** – covering the continuity objective.

What each of these assessment criteria covers, is explained below:

### **The extent to which the governance ensures buy-in of the Member States and allows a balanced stakeholder representation**

This assessment criteria will be scored based on a considerations such as whether Member States are involved in decision-making (and thus are more likely to buy-in) both at a strategic governance level and at operational governance level. The part of the assessment criteria that is focused on balanced stakeholder representation should be considered to include whether all relevant stakeholders are involved and to what extent they can decide or just be consulted. These considerations are essential as buy-in from the Member States is a must, whilst at the same time ensuring that the needs and requirements of all relevant stakeholders are taken into account.

### **The extent to which the governance stimulates take-up by Member States and then service providers**

The extent to which the governance stimulates take-up by Member States and then the service providers is essential as there must be take-up of the services in order for these to be sustainable. From a governance perspective, the key elements that could affect the take-up and should therefore be taken into account include the impact of the decisions and the extent to which the needs and requirements of Member States and service providers are taken into account. Another aspect that is a part of the scoring of this criterion is whether the scenario makes it possible to take national differences into consideration.

### **The extent to which it is possible to have different decision-making structures and processes for different Core Service Platforms and the extent to which new ones can easily be added**

Another important aspect as far as sustainability is concerned is to understand that each of the Core Service Platforms has its own specificities and therefore its own needs and requirements and stakeholder environment, therefore the possibility within the scenario to have delegated decision-making procedures is essential, so that the difference in stakeholders involved and in needs and requirements from CSP to CSP can be taken into account.

### **The extent to which long-term strategic and stable planning is possible**

This criterion focuses on aspects that have to do directly or indirectly with continuity. Therefore, the assessment linked to this criterion should be focused on aspects such as whether the governance structure or the decision-making structure is time-bound or not (as time-bound means a lack of continuity). Furthermore, within this criterion, aspects like to what extent transparency of decision-making is ensured as well as to what extent the decision-making and resulting governance is predictable. Both these aspects are essential as a stable environment builds trust and makes it possible for the private sector to invest.

## **Operations**

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There are two assessment criteria for operations:

- ✳ **The extent to which the service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up** – covering the continuity and take-up objectives;
- ✳ **The extent to which scalability and adaptability are possible, for operations** – covering the flexibility objective;

For operations, the stakeholder involvement objective is not relevant as stakeholder involvement is focused on the decision-making, not operations.

What each of the two abovementioned assessment criteria covers, is explained below:

**The extent to which the service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up**

This criterion, focused on operations, includes aspects such as how realistic it is to be able to do the operations in-house because although all three operations options (in-house, outsourcing and licensing) are possible for each of the scenarios and are real possibilities, the in-house is the only one that is not time-limited. For both outsourcing and licensing, the contracts are of a limited duration (to avoid lock-in) and before a new one can start, there would have to be a hand-over, which (even with shadowing) is not ideal as it causes interruptions (i.e. lock-in effect). Another aspect of providing a service level that stimulates take-up is making sure that the needed expertise is available, making the ability to attract capability (expertise) essential and which should therefore also be taken into account when carrying out the assessment for this criterion.

**The extent to which scalability and adaptability are possible, for operations.**

As new Core Service Platforms may be added in the future and as the existing ones may be changed as the needs and requirements of the stakeholders change, there is a clear need for adaptability and scalability. This also includes scaling the infrastructure and the operational staffing etc. Building capacity and scaling it in these ways and the adaptability of operations within the scenarios are therefore a central part of the assessment linked to this criterion.

## **Financing**

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There are two assessment criteria for financing:

- **The extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added** – covering the flexibility (and to some extent, the continuity, stakeholder involvement and take-up) objective;
- **The extent to which the revenue streams are continuous and are not time-limited** – covering the continuity objective;

For financing the most important thing is the aspect of having the possibility of different financing sources and schemes (flexibility objective) in order to be able to increase the possibilities of ensuring continuous financing. Therefore, stakeholder involvement and take-up is only relevant to help ensure sources of financing.

What each of these assessment criteria covers, is explained below:

**The extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added;**

This assessment criterion focuses on the possibilities for having revenue from different sources and through different schemes. The first focus should therefore be whether the scenario allows for other sources of revenue than just direct public sector funding. Furthermore, the extent to which it is possible to have different revenue schemes and integrate new ones is also an aspect that should be considered (as it is important to maximize the potential revenue sources and schemes). Another aspect is to what extent financing is ensured if there is no or not enough revenue. All of these aspects need to be taken into consideration when scoring the scenarios for this assessment criterion.

### **The extent to which the revenue streams are continuous and are not time-limited.**

The final assessment criterion focuses on ensuring continuous financing. It is clear that it is important that the services are available continuously and therefore the linked costs must be paid, requiring continuous (and not time-limited) revenue. This is assessed in terms of whether there is a (potential) limitation to the time in which revenue can be generated or in which financing is available.

### **Architecture**

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There are no assessment criteria for architecture as architecture is not contingent on the different scenarios, but on the CSPs and therefore the scenarios should not be assessed by it.

# 6 Assessment of Scenarios

In order to determine possible sustainability scenarios, it is first necessary to create the basis for these scenarios, defining the lines along which they are developed, in order to end up with a set of basic scenarios. Once these have been defined and elaborated, and any unrealistic scenarios have been removed, the scenarios will be assessed according to the assessment criteria which have previously been defined. An assessment will also be carried out at CSP(/BB) level to evaluate the suitability of each scenario. Finally, a cost-benefit analysis will be conducted.

## 6.1 Basic Scenarios

Governance, Operations, Financing and Architecture (GOFA) are the four main elements of the sustainability scenarios. These four elements, introduced in Chapter 2 under the GOFA model, each cover an aspect of the scenarios. However, these elements have to be taken charge of under the responsibility of an entity. It is therefore important to look at the possible entities within which the GOFA scenarios can be located; these are referred to as basic scenarios.

### 6.1.1 GOFA Drivers and Options

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The possible scenarios for establishing the deployment of the DSI for cross-border public services in a sustainable way is investigated. Ensuring the sustainability of the solutions developed implies finding an overarching organisational structure which institutionally reflects both the differences between the developed solutions and the differences in terms of which type of stakeholders can be involved in their development and deployment. The GOFA model, as detailed in the (Section 2.3 starting page 20), proposes four main elements that are critical for the deployment of the DSI, which are Governance, Operations, Financing and Architecture. The determining factor of the scenarios is how the overarching organisational structure is setup and what stakeholders take the lead and /or are involved. In view of this, the elements that make up each of these four aspects (GOFA) can either be considered as **drivers** for the establishment of scenarios or **options** that could be adopted under any scenario.

- **Drivers** are elements that make each of the scenarios fundamentally different from one another.
- **Options** are elements, within the scenarios, that can differ, but do not change the scenarios fundamentally.

Some GOFA elements are options in themselves whereas some of them contain parts that are options. A summary of the drivers and options is presented in the following table. More detail on this is provided in Annex C – Elaboration of Drivers and Options.

Table 11 – Summary of drivers and options

| GOFA Element: | Drivers:                                                                                                      | Options:                                                                                                                                                                                      |
|---------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Governance    | 1. <b>Decision-making</b> - One stakeholder <b>deciding vs.</b> two or more stakeholders <b>co-deciding</b> . | 1. <b>Consultation of other stakeholders</b> (it is always possible to consult stakeholders that are not involved in the decision-making).<br>2. Organisational structure for the governance. |
| Operations    |                                                                                                               | 1. Operations can be undertaken <b>in-house, outsourced</b> or <b>licensed</b> .                                                                                                              |
| Financing     |                                                                                                               | 1. <b>Financing schemes</b> (such as pay-per-use and subscription).<br>2. <b>Sources of funding</b>                                                                                           |
| Architecture  |                                                                                                               | 1. Architecture can be centralised, decentralised or federated.                                                                                                                               |

This table clearly shows that the single driving factor for the scenarios is:

➤ **The governance:** it is about which stakeholders are deciding and co-deciding.

Therefore, precisely which stakeholders are involved in the decision-making process is the single element to examine when determining the possibilities for basic scenarios.

### 6.1.2 The model for the basic scenarios

The model in Figure 22, below, shows the three fundamental possibilities from which the basic scenarios can be extracted.

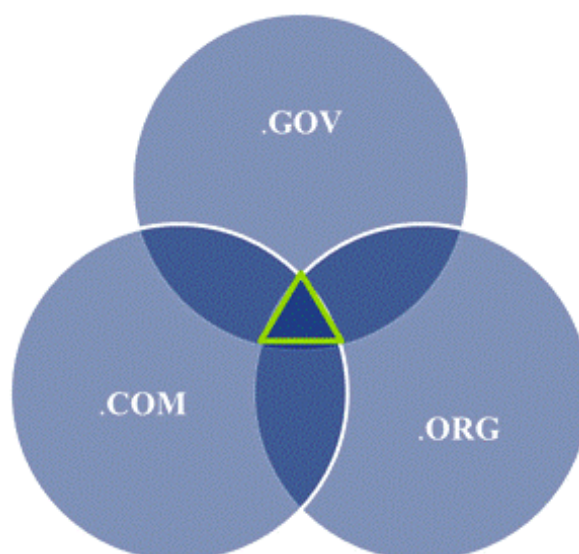


Figure 22 – Model of the realistic scenarios

What the model illustrates is that there are three main possible ‘pure’ choices for who precisely can **take the lead** on decision-making, **i.e. be the main driver** in terms of governance of the DSI and the CSPs:

- ✘ The Public Sector - .GOV;
- ✘ A Non-Profit Organisation (NPO) - .ORG;
- ✘ The Private Sector - .COM.

However, it is of course also possible to have a combination involving two of the three or even all three of these sectors: public, private, and non-profit organisations. Given this, all the possibilities are:

- ✘ **.G** (.GOV);
- ✘ **.O** (.ORG);
- ✘ **.C** (.COM);
- ✘ **.GO** (.GOV & .ORG);
- ✘ **.CG** (.COM & .GOV);
- ✘ **.CO** (.COM & .ORG);
- ✘ **.GO(C)** (.GOV & .ORG & .COM).

The seven possibilities presented above represent the possible basic scenarios. Each of these scenarios corresponds to possible entities, which each has its own specificities vis-à-vis the driver of governance (as seen in the table below, Table 12). However, it should be noted that the .GOV basic scenario is split in two (a and b), as there are two possible .GOV entities of interest. The two differ in terms of who can be involved in the decision-making.

*Table 12 – Decision-making in the seven basic scenarios*

| Scenario name      | Scenario description                                                                                      | Involvement of stakeholders in decision-making                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>.G-a</b> (.GOV) | European Commission<br>DG Programme<br><br>An example could be the ISA Programme                          | <b>The European Commission is sole decision-maker</b> (representing the EU). The other stakeholders can only be consulted (Member States can be included in decision-making during the creation of the programme, but not once the programme is running other than through consultation).                                                                      |
| <b>.G-b</b> (.GOV) | An Agency<br><br>An example could be the European Agency for Large Scale IT Systems                       | <b>The European Commission can be sole decision-maker <u>or</u> the European Commission can be a co-decision-maker alongside some or all of the Member States</b> (this co- decision-making can be voluntary for some matters, but obligatory for others). The private sector can also be involved in decision-making (where this is deemed to be beneficial). |
| <b>.O</b> (.ORG)   | Non-Profit Organisation that emerges naturally (not as a result of any of the stakeholders taking action) | As none of the stakeholders taking action or are involved, none of them are involved in the decision-making, making this <b>an unrealistic sustainability scenario</b> .                                                                                                                                                                                       |
| <b>.C</b> (.COM)   | The private sector becomes the                                                                            | Individual private sector companies would be the sole                                                                                                                                                                                                                                                                                                          |

| Scenario name                      | Scenario description                                                                                                                                                                                                                                             | Involvement of stakeholders in decision-making                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | owner, no coordination and no supervision                                                                                                                                                                                                                        | decision-makers (each making their own decisions). Therefore, there would be no interoperability (and hence this organisation would no longer be serving the purpose of the DSIs), making this <b>an unrealistic sustainability scenario</b> .                                                                                                                                                                                                                             |
| <b>.GO(C)</b> (.GOV & .ORG & .COM) | Non-Profit Organisation set up by the Public Sector with the private sector co-deciding (This will be referred to later as a P/PP NPO)<br><br>An example could be ICANN                                                                                          | <b>The European Commission can be a co-decision-maker</b> (representing the EU), Member States <b>can be co-decision-makers</b> on a voluntary basis, and the <b>private sector can also be a co-decision-maker</b> . (Each Member State decides if it wants to be involved. It is also possible to decide to have only the private sector involved in some aspects.)                                                                                                      |
| <b>.GO</b> (.GOV & .ORG);          | The Public Sector (European Commission) sets up a Non-Profit Organisation and Member States can participate voluntarily (there is no private sector involvement)<br><br>An example could be EURid, set up by the European Commission                             | This scenario presents no advantages as compared to .GO(C) scenario. The .GO(C) scenario has the .GO scenario built into it, as it is possible only to include the private sector where it is deemed beneficial. This means that all or parts of the .GO(C) scenario can also be a .GO scenario, in which it is only the public sector deciding in the NPO. The .GO scenario is therefore viewed as <b>a duplicate scenario, and therefore a non-beneficial scenario</b> . |
| <b>.CG</b> (.COM & .GOV)           | The private sector takes the lead but the companies are not coordinated. However, the Public Sector sets up (a) Supervisory Authority<br><br>An example could be the telecoms sector supervised by the national authorities, which are grouped together in BEREC | The <b>private sector companies are the sole decision-makers</b> (each makes its own decisions), but the <b>Supervisory Authority ensures the interoperability</b> .                                                                                                                                                                                                                                                                                                       |
| <b>.CO</b> (.COM & .ORG)           | The private sector forms its own Non-Profit Organisation (with the European Commission regulating)<br><br>An example could be the European Payments Council, setup by banks                                                                                      | <b>The private sector is the sole decision-maker</b> (all the companies make decisions together, and the European Commission, as always, has the option to regulate).                                                                                                                                                                                                                                                                                                      |

### 6.1.3 Conclusions on Drivers and Options

The analysis shows that the main driver, and most important influence on the basic scenarios, is whether the governance mechanism allows for co-decision-making and by for which type of stakeholders. Operations, Financing and Architecture are very important elements in the GOFA model, and are essential choices to be made within the scenarios. However, they are considered as options rather than as drivers of the scenarios themselves and are therefore are not determining factors at this stage.

Two scenarios are viewed either as unrealistic or as duplications. They are the .O (ORG) and the .GO (.GOV & .ORG together). They can be removed from the total list of scenarios.

Taking the content of Table 12, and the above analysis, therefore, into account there are five possible realistic basic scenarios. They are listed in Table 13, below.

*Table 13 – Possible realistic basic scenarios*

| Scenario name                                                                                   | Scenario description                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>.G-a (.GOV)</b><br><b>Name: DG Programme</b>                                                 | <b>European Commission DG Programme.</b> The European Commission is sole decision-maker (representing the EU). The other stakeholders can only be consulted (Member States can potentially be included in decision-making during the creation of the programme, but not once the programme is running other than through consultation).                                                                                     |
| <b>.G-b (.GOV)</b><br><b>Name: Agency</b>                                                       | <b>An Agency.</b> The European Commission can be sole decision maker or a co-decision-maker alongside some or all of the Member States (this co- decision-making can be voluntary for some matters, but obligatory for others). The private sector can also be involved in decision-making (where this is deemed to be beneficial).                                                                                         |
| <b>.CG (.COM &amp; .GOV)</b><br><b>Name: Supervisory Authority</b>                              | The private sector companies are the sole decision-makers (each makes its own decisions), but the <b>Supervisory Authority</b> ensures the interoperability.                                                                                                                                                                                                                                                                |
| <b>.CO (.COM &amp; .ORG)</b><br><b>Name: Private NPO</b>                                        | The <b>private sector</b> forms its own <b>Non-Profit Organisation</b> . The private sector is the sole decision-maker. (All the companies make decisions together and the European Commission, as always, has the option to regulate).                                                                                                                                                                                     |
| <b>.GO(C) (.GOV &amp; .ORG &amp; .COM)</b><br><b>Name: Public/Private-Public NPO – P/PP NPO</b> | <b>Non-Profit Organisation</b> set up by Public Sector. The European Commission can be a co-decision-maker (representing the EU), Member States can be co-decision-makers in some or all parts on a voluntary basis and the private sector can also be a co-decision-maker. (Each Member State decides if it wants to be involved. It is also possible to decide to have only the private sector involved in some aspects.) |

## 6.2 Elaboration of Scenarios

Before being able to carry out an in-depth assessment and Cost-Benefit Analysis of the scenarios, the selected scenarios must be further defined and elaborated. Therefore the possibilities vis-à-vis governance (decision-making) in the different scenarios, i.e. what stakeholders can be involved and to what level, as well as the possible financing, operations and architecture options are presented in the following sections.

### 6.2.1 Scenario: .G-a – European Commission DG Programme

The first scenario is a 'pure' .GOV scenario, meaning that it is the public sector that takes the lead, in this case through a programme within the European Commission. A real-life example of a DG Programme could be the ISA Programme.

#### Governance

The .G-a scenario is a DG Programme. It has the following possibilities vis-à-vis governance:

*Table 14 – Scenario 1: .G-a – Governance possibilities*

| Drivers and options               | European Union            | Member States             | Private sector | Third parties |
|-----------------------------------|---------------------------|---------------------------|----------------|---------------|
| <b>Decides (driver)</b>           | <b>X</b>                  |                           |                |               |
| <b>Co-decides (driver)</b>        | <b>Only during set-up</b> | <b>Only during set-up</b> |                |               |
| <b>Advises/consulted (option)</b> |                           | <b>X</b>                  | <b>X</b>       | <b>X</b>      |

The table above clearly shows that the European Union (represented by the European Commission) is the real decision-maker. The only time that there is co-decision is during the set-up or definition of the programme. Once the programme is running, the sole decision-maker is the European Commission (representing the European Union).

However, with the European Commission as the decision-maker, there is always still the option of consulting other stakeholders.

Another option is whether such a programme should be run by DG CONNECT or DG DIGIT. This is an option as it makes no difference vis-à-vis stakeholder involvement in decision-making, which is the main driver. In fact, the only real difference between the two options is that, although both DG DIGIT and DG CONNECT can ensure the strategic governance of the CSP/BBs, DG CONNECT is closer to the wider ICT policy developments, which may be a considerable advantage compared to DG DIGIT. Conversely, on technical governance, DG DIGIT may have the appropriate capability, which DG CONNECT currently does not. This means that, unless they were to acquire the capability, DG CONNECT would be obliged to have the technical governance undertaken externally. This could be done, e.g. through outsourcing or by linking the technical governance to the operations. Both could be licensed out together (in a 'package deal').

## Operations

The most basic question for operations is how they are performed, i.e. whether it is done in-house, outsourced or licensed. The possibilities are shown in the table below.

*Table 15 – Scenario: .G-a – Operations possibilities*

| Options     | DG Programme |
|-------------|--------------|
| In-house    | (X)          |
| Outsourcing | X            |
| Licencing   | X            |

For both a DG DIGIT and a DG CONNECT Programme, all of the operations options are possible. However, it has to be borne in mind that in-house operations would require the relevant skills and resources, and they may have to be acquired. A sub-option within this option is the method of operation, further details on this can be found in Annex C – Elaboration of Drivers and Options.

## Financing

For this scenario, .G-a, the DG Programme, financing is possible in the following ways: finances fully, co-finances, or is not involved.

*Table 16 – Scenario: .G-a – Financing possibilities*

| Options        | European Union | Member States | Private sector | Third parties |
|----------------|----------------|---------------|----------------|---------------|
| Finances fully | X              |               | (X)            |               |
| Co-finances    | X              | X             | X              | X             |
| Not involved   |                | X             | X              | X             |

This table shows that there is a possibility for the European Union to fully finance a Programme or that it can co-finance it with any of the other stakeholders. The latter option would be done through calls for proposals, essentially using a similar financing model to the one under which the LSPs were originally financed.

Marked in red and in brackets, is another possibility, which would be for the private sector to finance the initiative fully. This possibility is not actually financing. It refers to the is the previously mentioned licensing option (more detail on this point can be found in Annex C – Elaboration of Drivers and Options), whereby the private sector provides the European Commission and the Member States with the services in exchange for being allowed the possibility to sell the services (at a profit) to the private sector. This achieves the same objective, of minimising public sector funding, as revenue would if a DG Programme would be allowed to generate revenue, i.e. reduce the costs of operations for the public sector. However, the one difference is that the governance would have to be financed by the

programme (unless it is also licensed out, which would, however, potentially change the decision-maker).

## Architecture

As with all the scenarios, architecture is an option. All options are possible for any scenario, including this first scenario. This is illustrated in the table below.

*Table 17 – Scenario: .G-a – Architecture possibilities*

| Level of involvement | DG Programme |
|----------------------|--------------|
| Centralised          | X            |
| Decentralised        | X            |
| Federated            | X            |

Architecture is a choice that will eventually have to be made and that may depend on the individual CSP/BBs.

## 6.2.2 Scenario: .G-b – EU Agency

The second scenario is also a ‘pure’ .GOV scenario. It is again the public sector that takes the lead, and does so through an Agency. An example of an appropriate kind of Agency could be the large scale IT systems Agency in Riga.

## Governance

The .G-b scenario, an Agency, has the following possibilities vis-à-vis governance:

*Table 18 – Scenario: .G-b – Governance possibilities*

| Drivers and options                 | European Union | Member States | Private sector | Third parties |
|-------------------------------------|----------------|---------------|----------------|---------------|
| Decides ( <b>driver</b> )           | X              |               |                |               |
| Co-decides ( <b>driver</b> )        | X              | X             | X              | X             |
| Advises/consulted ( <b>option</b> ) | X              | X             | X              | X             |

The Agency scenario offers the possibility for the European Union to be sole decider, as the table above shows. However, it also has the possibility to be a co-decider with the Member States and with the private sector and third parties. However, if there is co-decision with the Member States, this does not imply that all Member States have to be involved as e.g., the EFSA<sup>22</sup> and EIGE<sup>23</sup> agencies do not

<sup>22</sup> European Food Safety Authority

have all Member States on their boards<sup>24</sup>. Nor does the European Commission have to be on the board (if so wished): examples of this could include CEPOL<sup>25</sup> and EUROJUST<sup>26</sup>.

No matter whether it is the EU fully deciding or whether there is co-decision with the Member States and other stakeholders, there is always the option of consulting the non-decision-making stakeholders.

## Operations

The most basic option for operations is how the operations are conducted, i.e. whether operations are done in-house, outsourced or licensed. The possibilities are shown in the table below.

*Table 19 – Scenario: .G-b – Operations possibilities*

| Options     | .GO |
|-------------|-----|
| In-house    | X   |
| Outsourcing | X   |
| Licencing   | X   |

For an Agency, all of the operations options are possible. A sub-option within this option is the method of operating, further details on this can be found in Annex C – Elaboration of Drivers and Options.

## Financing

For this scenario, .G-b, financing is possible in the following ways:

*Table 20 – Scenario: .G-b – Financing possibilities*

| Options        | European Union | Member States | Private sector | Third parties |
|----------------|----------------|---------------|----------------|---------------|
| Finances fully | X              | X             | X              | (X)           |
| Co-finances    | X              | X             | X              | X             |
| Not involved   | X              | X             | X              | X             |

The table shows that there is a possibility for the European Union to fully finance an Agency or that it can co-finance it in combination with any of the other stakeholders. The table also shows that it is possible for an Agency to be fully financed by all the other stakeholders.

The full financing by the European Union of an Agency is the way in which many agencies are funded (e.g. ENISA<sup>27</sup>, EFSA<sup>28</sup>). This means that the other stakeholders are not involved in the financing.

<sup>23</sup> European Institute for Gender Equality

<sup>24</sup> A source used for several parts of the Agency section: Ramboll, 2009. Evaluation of the EU decentralised agencies in 2009, synthesis and prospects

<sup>25</sup> European Police College

<sup>26</sup> The European Union's Judicial Cooperation Unit

<sup>27</sup> European Network and Information Security Agency

However, other agencies are co-financed, meaning that a part of their financing comes through revenue, whereas the rest is provided through EU funding (e.g. EASA<sup>29</sup>). Finally there is a possibility of full financing through revenue (e.g. CdT<sup>30</sup>, CPVO<sup>31</sup>, and OHIM<sup>32</sup>).

It is therefore clear that, vis-à-vis financing; an Agency presents the full possible range of financing options. Of course, it should be noted that it is not very likely that third parties would finance an Agency fully, but it is possible to do so within an Agency should it be the case.

## Architecture

As for all the scenarios, architecture is an option and all options are possible for any scenario, including this first scenario. This is illustrated in the table below.

*Table 21 – Scenario 2: .G-b – Architecture possibilities*

| Level of involvement | Agency |
|----------------------|--------|
| Centralised          | X      |
| Decentralised        | X      |
| Federated            | X      |

Architecture is a choice that will have to be made and that may depend on the individual CSP/BBs.

### 6.2.3 Scenario: .CG – A Supervisory Authority

This scenario shows that the lead is taken by the private sector and, at the same time, a Supervisory Authority is set up by the public sector to ensure two aspects of the architecture: first, that the right direction is taken in terms of developments and, second, to make sure that standards and specifications are agreed upon. Similar set-ups already exist: an example is in the telecoms sector which is supervised by the national authorities that are grouped together in BEREC<sup>33</sup>.

It should be noted that this is a scenario that involves the private sector. This possibility is only realistic if there is a market and if there is a profit to be made (directly or indirectly), otherwise the private sector will not be involved. Whether there is a market or a potential for a market may differ from CSP/BB to CSP/BB.

## Governance

The .CG scenario, the market supervision scenario, has the following possibilities vis-à-vis governance:

<sup>28</sup> European Food Safety Authority

<sup>29</sup> European Aviation Safety Agency

<sup>30</sup> Translation Centre for the Bodies of the European Union

<sup>31</sup> Community Plant Variety Office

<sup>32</sup> Office of Harmonization for the Internal Market

<sup>33</sup> Body of European Regulators of Electronic Communications

Table 22 – Scenario .CG – Governance possibilities

| Drivers and options               | European Union | Member States | Private sector | Third parties |
|-----------------------------------|----------------|---------------|----------------|---------------|
| <b>Decides (driver)</b>           | X              |               |                |               |
| <b>Co-decides (driver)</b>        | X              | X             |                |               |
| <b>Advises/consulted (option)</b> |                | X             | X              | X             |

The market supervision scenario presents two distinct possibilities for decision-making: one example comes from the telecoms sector; the other represents a much wider range of authorities or agencies.

The first possibility is the European Union as the sole decision-maker through a Union-level Supervisory Authority. This would be a single supervisory mechanism (SSM) such as the one proposed for the creation of a real banking union (that would be led by the European Central Bank). The logic that a single monetary union would require an SSM could also be applied to public services.

The second possibility would be to arrange co-decision between the European Union and the Member States. However, this could be done in two ways. The first method would be like one like the one that operates in the telecoms sector, where there are National Regulatory Authorities (NRAs) which are then grouped under Body of European Regulators for Electronic Communications (BEREC). However, this is not a “Supervisory Authority” as such (technically speaking it is an Agency). Nevertheless, “NRAs and the Commission have to take utmost account of any opinion, recommendation, guidelines, advice or regulatory best practice adopted by BEREC”<sup>34</sup>. Another example of co-decision is that represented by a much fuller range of authorities. They include the ESAs<sup>35</sup>, ESMA<sup>36</sup>, the EBA<sup>37</sup>, and the EIOPA<sup>38</sup>. These bodies all have a slightly stronger degree of authority for enforcement.

If the second of these two options were to be selected for implementation, which variant of a Supervisory Authority is needed would depend on the level of authority and enforcement deemed necessary.

## Operations

The most basic option for operations is how they are carried out, i.e. whether it is done in-house, outsourced or licensed. The possibilities are shown in the table below (Table 23).

<sup>34</sup> [http://berec.europa.eu/eng/about\\_berec/what\\_is\\_berec/](http://berec.europa.eu/eng/about_berec/what_is_berec/)

<sup>35</sup> European Supervisory Authorities

<sup>36</sup> European Securities and Markets Agency

<sup>37</sup> European Banking Agency

<sup>38</sup> European Insurance and Occupational Pensions Authority

Table 23 – Scenario .CG – Operations possibilities

| Options     | .CG |
|-------------|-----|
| In-house    | X   |
| Outsourcing | X   |
| Licencing   | X   |

For a market supervisor, all of the operations options are possible as the operations are carried out by the private sector. A sub-option within this option is the method for operating, further details on this can be found in Annex C – Elaboration of Drivers and Options.

### Financing

For this scenario, .CG, the Supervisory Authority, financing is possible in the following ways: full financing, co-financing or not involved at all.

Table 24 – Scenario .CG – Financing possibilities

| Options        | European Union | Member States | Private sector | Third parties |
|----------------|----------------|---------------|----------------|---------------|
| Finances fully | X              | X             | (X)            |               |
| Co-finances    | X              | X             | (X)            |               |
| Not involved   | X              | X             | X              | X             |

In terms of financing, the table above shows that the Supervisory Authority could be fully funded by the European Union through the Union's budget or it could be fully funded by the Member States through fees paid for services provided (such as e.g. compliance audits). From this perspective of funding it through fees, the private sector could also theoretically provide full funding through fees for services provided. Co-financing from fees from two or all three of the following stakeholders is also possible: the European Union, Member States and the private sector.

Regardless of how the Supervisory Authority (responsible for governance) is funded, the operations are run and thus also funded, by the private sector which recuperates the costs by charging for the services.

### Architecture

As for all the scenarios, architecture is an option and all options are possible for any scenario, including this first scenario. This is illustrated in Table 25.

Table 25 – Scenario 4: .CG – Architecture possibilities

| Level of involvement | .CG |
|----------------------|-----|
| Centralised          | X   |
| Decentralised        | X   |
| Federated            | X   |

Architecture is a choice that will have to be made and that may depend on the individual CSP/BBs.

#### 6.2.4 Scenario: .CO – A Private NPO

The fifth scenario is a scenario where the private sector takes the lead. The interested companies come together and form a non-profit organisation to set standards and specifications to ensure continued interoperability of the services they provide to the public sector (and potentially to the rest of the private sector). The role of the European Commission (representing the European Union) is its "natural role" - to regulate. An example could be the European Payments Council, which has been set up by the banks. It should be noted that as this scenario involves private sector, it is only realistic if there is clear market and if there is a profit to be made (directly or indirectly). Otherwise, the private sector will not be involved. Whether there is a market or a potential for a market may differ from CSP/BB to CSP/BB.

#### Governance

The .CO scenario is of a private sector-run NPO, which has the following possibilities vis-à-vis governance:

Table 26 – Scenario .CO – Governance possibilities

| Drivers and options                 | European Union | Member States | Private sector | Third parties |
|-------------------------------------|----------------|---------------|----------------|---------------|
| Decides ( <b>driver</b> )           |                |               | X              |               |
| Co-decides ( <b>driver</b> )        |                |               |                |               |
| Advises/consulted ( <b>option</b> ) | (X)            | (X)           |                | X             |

The private sector-run NPO scenario is a market-driven scenario, where the private sector takes the lead completely. This means that the private sector is the sole decider. The private sector will likely consult third parties, like standardisation organisations, when agreeing on standards and specifications (however, are not obliged to ask for their advice). Although perhaps unlikely, the private sector may also choose to consult the European Union and the Member States.

## Operations

The most basic option for operations is how they are carried out, i.e. whether it is done in-house, outsourced or licensed, the possibilities are shown in the table below (Table 27).

*Table 27 – Scenario .CO – Operations possibilities*

| Options     | .CO |
|-------------|-----|
| In-house    | X   |
| Outsourcing | X   |
| Licencing   | X   |

For a private sector-run NPO, all of the operations options are possible. A sub-option within this option is the method for operating, further details on this can be found in Annex C – Elaboration of Drivers and Options.

## Financing

For this scenario, .CO, a private sector-run NPO, financing is possible in the way shown in the table below:

*Table 28 – Scenario .CO – Financing possibilities*

| Options        | European Union | Member States | Private sector | Third parties |
|----------------|----------------|---------------|----------------|---------------|
| Finances fully |                |               | X              |               |
| Co-finances    |                |               |                |               |
| Not involved   | X              | X             |                | X             |

As the above table shows, in this scenario the private sector provides full financing. The costs are recuperated through the (direct or indirect) revenue that the private sector obtains by providing the services.

## Architecture

As for all the scenarios, architecture is an option and all options are possible for any scenario, including this first scenario. This is illustrated in the table below.

Table 29 – Scenario .CO – Architecture possibilities

| Level of involvement | .CO |
|----------------------|-----|
| Centralised          | X   |
| Decentralised        | X   |
| Federated            | X   |

Architecture is a choice that will have to be made and that may depend on the individual CSP/BBs.

### 6.2.5 Scenario: .GO(C) – A P/PP NPO

This scenario can be considered as a combination of the .GO and .CO scenarios. It means that a non-profit organisation is set up, and there can be co-decision between the public sector and the private sector. An example of such a set-up could be ICANN<sup>39</sup>.

#### Governance

The .GO(C) scenario, the P/PP NPO has the following possibilities vis-à-vis governance:

Table 30 – Scenario .GO(C) – Governance possibilities

| Drivers and options                 | European Union | Member States | Private sector | Third parties |
|-------------------------------------|----------------|---------------|----------------|---------------|
| Decides ( <b>driver</b> )           |                |               |                |               |
| Co-decides ( <b>driver</b> )        | X              | X             | X              | X             |
| Advises/consulted ( <b>option</b> ) | X              | X             |                | X             |

The table above shows that the governance of a .GO(C) scenario is ensured through co-decision. Potentially, it is always an option to arrange consultation of any stakeholder that is not involved in decision-making. The variations of this scenario revolve around two main items: one is whether third parties are involved in the decision-making, and the other is which of the other possible co-deciding stakeholders are involved and in what way. The NPO can have, on a voluntary basis, Member States involved in some or all parts of its governance, the European Commission involved in some or all parts, and the private sector can be involved in some or all parts, as is deemed best.

#### Operations

The most basic option for operations refers to how they are carried out, i.e. whether it is done in-house, outsourced or licensed, the possibilities are shown in the table below.

<sup>39</sup> Internet Corporation for Assigned Names and Numbers

*Table 31 – Scenario .GO(C) – Operations possibilities*

| Options     | .GO(C) |
|-------------|--------|
| In-house    | X      |
| Outsourcing | X      |
| Licencing   | X      |

For .GO(C) scenario all of the operations options are possible. A sub-option within this option is the method for operating, further details on this can be found in Annex C – Elaboration of Drivers and Options.

### **Financing**

For this scenario, .GO(C), financing is possible in the following three ways:

*Table 32 – Scenario .GO(C) – Financing possibilities*

| Options        | European Union | Member States | Private sector | Third parties |
|----------------|----------------|---------------|----------------|---------------|
| Finances fully |                |               |                |               |
| Co-finances    | X              | X             | X              | X             |
| Not involved   | X              | X             |                | X             |

The table above shows that in the .GO(C) scenario, financing is done through co-financing by two or more of the stakeholders. However, it is always including co-financing by the private sector, a pattern that mirrors the pattern for decision-making. Who pays will typically be linked to who is a part of the co-decision process. The stakeholders involved in co-decision will typically pay for the mechanism through membership fees which then entitle them to co-decision-making rights.

Part of the financing or all of the financing can also be generated through fees acquired as a result of providing the services.

### **Architecture**

As for all the scenarios, architecture is an option and all options are possible for any scenario, including this first scenario. This is illustrated in the table below.

*Table 33 – Scenario .GO(C) – Architecture possibilities*

| Level of involvement | .GO(C) |
|----------------------|--------|
| Centralised          | X      |
| Decentralised        | X      |

|           |   |
|-----------|---|
| Federated | X |
|-----------|---|

Architecture is a choice that will have to be made and that may depend on the individual CSP/BBs.

### 6.2.6 Conclusions

The vision and objectives for the deployment of the DSI for cross-border public services have been established. Related assessment criteria have been determined in order to assess different sustainability scenarios. Next, the four key elements for sustainability, Governance, Financing, Operations and Architecture, have been assessed in terms of which elements form the main drivers and what are the optional elements. Based on this, the model to construct basic scenarios has been established and a number of basic scenarios identified. A preliminary assessment has been made to identify the possible scenarios that could be selected. Finally, the remaining scenarios have been further elaborated.

Based on the above assessment, five scenarios are selected:

- ✘ **.G-a** (.GOV) – **A DG Programme**;
- ✘ **.G-b** (.GOV) – **An Agency**;
- ✘ **.CG** (.COM & .GOV) – The private sector, supervised by a **Supervisory Authority**;
- ✘ **.CO** (.COM & .ORG) – The private sector setting up an NPO to agree on issues such as standards – **Private NPO**;
- ✘ **.GO(C)** (.GOV & .ORG & .COM) – An NPO set up by the Public Sector and potentially involving both Member States and the private sector – **P/PP NPO**.

The governance mechanism, and who can finance it, is presented in Table 34. For each of these scenarios, operations can be undertaken in-house, outsourced or licensed. Architecture can always be centralised, decentralised or federated. Finally, stakeholders which are not involved in governance can always be consulted.

Table 34 – Summary of drivers and options for the scenarios

| Scenario:                                                                                                                                                | Governance                                                                                                                                                                                                                                                                                                                                                                 | Financing                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>.G-a (.GOV) – A DG Programme</b>                                                                                                                      | European Union decides – Member States can help decide while the programme is set up, but not while it is run.                                                                                                                                                                                                                                                             | EU can fully finance this scenario or it can be co-financed by a combination of the different stakeholders if the operations are licensed out.                                                         |
| <b>.G-b (.GOV) – An Agency</b>                                                                                                                           | EU can be the sole decider or co-decider with the Member States. They can also co-decide with the private sector and third parties if they so wish.                                                                                                                                                                                                                        | Financing can be done either fully by any of the stakeholders (whereas only by the private sector if there is possibility to make a profit) or it can be co-financed by a combination of stakeholders. |
| <b>.CG (.COM &amp; .GOV) – The private sector, supervised by a Supervisory Authority</b>                                                                 | The EU decides through the Supervisory Authority or co-decides with the Member States if National Regulatory Authorities are involved.                                                                                                                                                                                                                                     | Can be fully financed by either the EU or the Member States or co-financed between the two.<br>It can be financed by the private sector if the supervisor charges e.g., for compliance audits.         |
| <b>.CO (.COM &amp; .ORG) – The private sector sets up an NPO to agree on standards, (NPO ensures interoperability/cross-CSP/BB aspect) – Private NPO</b> | The private sector is the sole decider.                                                                                                                                                                                                                                                                                                                                    | The private sector fully finances.                                                                                                                                                                     |
| <b>.GO(C) (.GOV &amp; .ORG &amp; .COM) – An NPO set up by the Public Sector and involving both Member States and the private sector – P/PP NPO</b>       | The European Commission can be a co-decision-maker (representing the EU). Member States can be co-decision-makers in some or all parts, on a voluntary basis (each Member State decides if it wants to be involved). The private sector can also be a co-decision-maker. It can also be decided to have the private sector involved only in some aspect of the governance. | Financing follows decision-making: whoever decides also finances?<br>Financing can also come from fees e.g., for compliance audits.                                                                    |

In Chapter 5, a number of assessment criteria have been defined, deriving from the specific objectives. These are:

- ✘ The extent to which the **governance ensures buy-in** of the Member States and allows a balanced stakeholder representation;
- ✘ The extent to which the **governance stimulates take-up** by Member States and then service providers;
- ✘ The extent to which the **service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up**;
- ✘ The extent to which it is **possible to have different decision-making structures and processes** for different Core Service Platforms and the extent to which new ones can easily be added;
- ✘ The extent to which it is **possible to have multiple different financing sources and schemes** simultaneously and the extent to which new ones can easily be added;
- ✘ The extent to which **scalability and adaptability are possible**, for operations;
- ✘ The extent to which **long-term strategic and stable planning** is possible;
- ✘ The extent to which the **revenue streams are continuous and are not time-limited**.

In the next section, the scenarios which were presented in the previous section are assessed according to these assessment criteria.

## 6.3 Assessment of Scenarios

### 6.3.1 Evaluation of the assessment criteria

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In the following sections, an assessment of the scenarios is made per assessment criteria.

#### *The extent to which the governance ensures buy-in of the Member States and allows a balanced stakeholder representation.*

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In the following sections, an assessment of the first assessment criterion is made for each of the scenarios.

#### **Scenario: DG Programme (.G - a)**

From a governance perspective, a DG Programme, has very few possibilities for decision-making and direct stakeholder involvement. The European Union (represented by the European Commission) is the sole decision-maker, and the only time that there is co-decision is during the setup or definition of the programme, at which point Member States are involved in defining and approving the programme. As in all scenarios, it is an option to consult the other stakeholders as deemed necessary; however, other stakeholders cannot be directly involved in decision-making.

During the programme, although the unit(s) within the DG(s) responsible for the programme will be driving the work and the European Commission will be making the final decisions, it is possible to have:

- ✘ **A Programme Committee** that assists in the management of the programme – An example could be the ISA Committee consisting of Member State representatives (DG DIGIT).
- ✘ **A Coordination Group** that ensures the coordination of the work on the programme – An example could be the ISA Coordination Group (DG DIGIT); another could be DG TAXUD's network of Customs 2013 monitoring co-ordinators (National Monitoring Coordinators) from the Customs 2013 Programme.

- ✉ **Working groups** that drive the work on individual areas within the Programme – An example could be the Trusted Information Exchange ISA Working Group (DG DIGIT), another could be the Youth in Action programme's Youth Working Party (DG EAC).

To conclude, from a Member State buy-in perspective, the scenario may ensure enough buy-in providing the Member States are content with the way the programme is setup and run and providing that not too many changes are needed underway. Although it is possible to setup a programme that Member States are happy with and thereby ensure Member State buy-in, it is not possible to have the other stakeholders involved and therefore a programme does not ensure a balanced stakeholder representation. This implies that there is a real risk that the needs and requirements of the other stakeholders may not be taken sufficiently into account. This scenario will therefore score relatively low for this assessment criterion.

### **EC Agency (G- b)**

In terms of involving Member States in the decision-making the Agency scenario presents strong flexibility, the Member States can be involved directly as co-decision makers with the European Commission such as is done in e.g. EASA<sup>40</sup> and in EFCA<sup>41</sup>. However, if there is co-decision with the Member States, this does not imply that all Member States have to be involved as e.g., the EFSA<sup>42</sup> and EIGE<sup>43</sup> Agencies do not have all Member States on their boards. Nor does the European Commission have to be on the board (if so wished): examples of this could include CEPOL<sup>44</sup> and EUROJUST<sup>45</sup>. In addition to this, it is possible for other stakeholders to be involved in the decision-making by having representatives on the board, such as is the case in e.g. ENISA<sup>46</sup> and CEDEFOP<sup>47</sup>.

To conclude, the Agency can have any level of Member State involvement wished and any level of involvement of other stakeholders that may be wished for, thereby optimising both Member State buy-in and a balanced stakeholder representation. This scenario will therefore score highly for this assessment criterion.

### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

A P/PP NPO enables a diverse involvement of stakeholders in the governance structure. Indeed, in an NPO, any type of stakeholder can form part of the decision board, as long as this is foreseen by the association's statutes.

Member States can therefore have decision making power at the strategic level, as well as at the organisation level. This is notably the case in TERENA, a collaborative organisation in which Member States are regrouped in order to foster the development of Internet technology. A .GO(C) scenario does therefore enable Member State buy-in.

Participation in the organisation is however voluntary. On one hand, this implies that only Member States interested in the services provided by the NPO will join, and therefore that decision making will be more effective, as Member States which are not interested in the solutions will not be consulted,

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<sup>40</sup> European Aviation Safety Agency

<sup>41</sup> European Fisheries Control Agency

<sup>42</sup> European Food Safety Authority

<sup>43</sup> European Institute for Gender Equality

<sup>44</sup> European Police College

<sup>45</sup> The European Union's Judicial Cooperation Unit

<sup>46</sup> European Network and Information Security Agency

<sup>47</sup> European Centre for the Development of Vocational Training

and slow down the adoption of decisions. On the other hand, the non-representation of some Member States in organisation goes against the nature of the European Commission's "Proposal for a Regulation on electronic identification and trust services for electronic transactions in the internal market", which forces Member States to collaborate.

As participation is voluntary, and for historical reasons related to past involvement within the LSPs, there may be risks of unbalanced representation of Member States within an NPO. Indeed, some Member States may come too acquire dominant positions. For instance, in the case of the Internet Corporation for Assigned Names and Numbers (ICANN), the perceived overwhelming dominance of the United States, due to historical reasons, has been at the centre of much controversy. This was notably recognised by Stuart Lynn, CEO of ICANN from 2001 to 2003, which declared that: "If ICANN comes to be seen (as is starting to happen in some quarters) as simply a tool of the US Government, it will no longer have any hope of accomplishing its original mission"<sup>48</sup>. Indeed, ICANN currently exists under an agreement with the US Department of Commerce. If a Member State was to acquire an overwhelmingly dominant position within an NPO, which would govern and manage the solutions developed by the LSPs, this could discourage the buy-in of other Member States.

However, an NPO enables for decision-making to be shared with a broad range of other stakeholders, such as private sector stakeholders, the European Commission or third parties. An NPO thus enables a highly balanced form of stakeholder representation, with the possibility to engage any type of stakeholder. As the case of OpenPEPPOL demonstrates, an NPO enables to create a vehicle for people to meet, discuss and influence the development of the solutions, as indicated by participants to the 2<sup>nd</sup> LSP workshop.

The level of engagement of stakeholders can vary from an advisory/consultative role, to involvement in decision making, such as in ICANN. Enabling a broad stakeholder representation was one of the four key drivers, as outlined by the Green Paper<sup>49</sup> from the National Telecommunications & Information Administration (NTIA) Agency of the United States Department of Commerce, towards the establishment of ICANN, along with competition, stability and private bottom-up coordination. As such, in its 'Statement of Policy on the Management of Internet Names and Addresses', the US Department of Commerce asserted that:

*"The new corporation should operate as a private entity for the benefit of the Internet community as a whole. The development of sound, fair, and widely accepted policies for the management of DNS will depend on input from the broad and growing community of Internet users. Management structures should reflect the functional and geographic diversity of the Internet and its users. Mechanisms should be established to ensure international participation in decision making".*

Consequently, ICANN adopted a multi-stakeholder model, which implies a consensus-based policy development with all stakeholders.

The fact that Member States could share decision making powers with other types of stakeholders may undermine their influence in the organisation, and thereby hinder buy-in. It is however of critical importance to ensure that national interests do not prevail over collective interests. The case of GSM is very illustrative in this respect. Indeed, the Conférence des Administrations Européennes des Postes et Telecommunications (CEPT), which was set up as an intergovernmental organisation to

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<sup>48</sup> 'President's Report: ICANN – The Case for Reform', 24 February 2002, <http://archive.icann.org/en/general/lynn-reform-proposal-24feb02.htm>

<sup>49</sup> More information can be found on: <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>

ensure the coordination of European state telecommunications and postal organisations, found itself in a deadlock when various Member States backed different standards. Indeed, while France and Germany backed wide-band, the Scandinavian countries, as well as Italy and the United Kingdom backed narrow-band<sup>50</sup>, putting at risk the success of harmonisation of telecommunication standards in the EU. The European Telecommunications Standards Institute (ETSI) was thus created, under pressure of the European Commission, in order to enable a broader stakeholder representation and engagement, and overcome the institutional flaws of the CEPT. Indeed, representation and influence in the standard setting process was opened to “any European organization proving an interest in promoting European telecommunications standards”<sup>51</sup>. By curbing the influence of individual Member States, which was counterbalanced by the incorporating other stakeholders in the governance of the organisation, within ETSI, the European Commission ensured the adoption of common standards.

To conclude, an NPO ensures to some extent the buy-in of Member States, although not to the extent that it would in an Agency or in a Programme. However, an NPO enables for the most balanced form of stakeholder representation with the possibility to actively involve the private sector (with the assumption that there is a business case for the CSP/BBs) in the decision making process. This scenario will therefore score relatively highly for this assessment criterion.

### **Private sector forming own NPO (.CO)**

As previously stated, the evaluation of this scenario, the NPO initiated by the private sector, assumes that there is a business case for the CSP/BBs as this is a prerequisite for this scenario to be realistic. With that in mind, an NPO initiated by the private sector implies that the private sector is the sole decider within the governance structure, thereby excluding public authorities from the decision making process. As the only scenario without government involvement, and therefore relying on self-regulation from industry, the .CO scenario is the least successful scenario in ensuring the buy-in of Member States. In the case of the solutions developed by the LSPs, most Member States would oppose themselves to relinquishing total decision making powers to the private sector, particularly in areas such as eID or eJustice. The need for Member State involvement within the governance of the solutions was notably reflected in the survey which was addressed to Member States (see Annex D – Results from the Survey to Member State and associated countries), in which the majority of respondents were adamant about the need for them to be involved in this process. Government involvement would also ensure that the interest of consumers is taken into consideration. As such, Stuart Lynn, CEO of ICANN from 2001 to 2003 declared that “governments play a unique role in representing the broad public interests of their populations”. Consequently, he asserted that the original ICANN model based on a totally private model “is not workable because it leaves ICANN isolated from the real-world institutions – governments – whose backing and support are essential for any effective global coordinating body to accomplish its assigned tasks [...]. It is simply unrealistic to believe that global coordination of the DNS can succeed without more active involvement of governments”.

Although the private sector NPO could hinder Member State buy-in, this scenario would provide the opportunity for considerable private sector engagement, as they would be the only stakeholders involved in decision making. A private sector NPO would enable industry get organized in order to

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<sup>50</sup> Back, David (2000), 'International Cooperation and the Logic of Networks: Europe and the Global System for Mobile Communication (GSM)', <http://escholarship.org/uc/item/7365v5g5#page-13>

<sup>51</sup> ETSI, 'About ETSI'

self-regulate in the view of providing citizens with cross-border public services. However, participants to the 2<sup>nd</sup> LSP sustainability workshop have voiced their concerns as to whether this would be feasible in practice, as they emphasized that without government involvement in the NPO; the private sector may easily become fragmented impeding this scenario from being sustainable. Furthermore, there are risks that dominant stakeholders within the NPO will capture decision making and thereby hamper the buy-in of other private sector entities.

Other stakeholders can also be consulted in the decision making process of private NPOs. This is notably the case for the European Payments Council (EPC), which is an NPO composed of the European banks and banking associations, in order to support and promote the creation and development of the Single Euro Payments Area (SEPA). The EPC liaises with standardisation bodies in order to implement its decisions. Furthermore, the European Central Bank is also an observer in the EPC Plenary.

To conclude, an NPO created by the private sector would not enable a balanced stakeholder representation as governments would not be involved in decision making, which they would entirely relinquish to the private sector. This scenario will therefore score relatively low for this assessment criterion.

### **Supervisory authority monitoring private companies (.CG)**

As previously stated, the evaluation of this scenario, the Supervisory Authority, assumes that there is a business case for the CSP/BBs as this is a prerequisite for this scenario to be realistic (as is the case for the .CO scenario). From a governance perspective, a supervision based scenario is somewhat different as it is inherently not in charge of establishing fundamental norms, but only of ensuring compliance with these norms. This is not to say that this scenario does not comprise any governance aspects, as the Supervisory Authority may still have some say over how the norms established externally (e.g. at the EU level) are applied and verified. Thus, the scenario has governance implications, albeit at a more modest scale than other scenarios.

Depending on the chosen model, various governance options are available:

- ✘ In a centralised model, buy-in options would be most limited, as this model is characterised by the non-participation of Member States. This model thus does not ensure buy-in, and is less likely to be adopted.
- ✘ In the decentralised model, Member States have exclusive authority, and their buy-in is thus ensured. It should be noted however that private sector companies have no say in the Supervisory Authority, as the authority's core function is to supervise them. Thus, buy-in from service providers is likely to be very weak.
- ✘ In a mixed model, buy-in can be expected to be high with Member States, but weak with service providers, for the same reasons as in a decentralised model. It is worth noting that the mixed model does not imply that only Member States are involved in governance; independent EU level participation is possible, as seen e.g. in the European Data Protection Supervisor's participation in the aforementioned Article 29 Working Party, or in the composition of the Board of Supervisors of other bodies such as the EBA or the EIOPA, which comprise independent chairpersons in addition to the national authorities.

To conclude, the scenario can generate high buy-in from Member States, but virtually none from other stakeholders, and governance relates only to supervision of compliance, not to the establishment of norms as such. This scenario will therefore score relatively low for this assessment criterion.

*Table 35 – Scoring of the extent to which governance ensures buy-in of the Member States and allow a balanced stakeholder representation*

| Assessment criteria                                                                                                                         | .G-a | .G-b | .GO(C) | .CO | .CG |
|---------------------------------------------------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Governance:</b> The extent to which the governance ensures buy-in of the Member States and allows a balanced stakeholder representation. | 2    | 5    | 4      | 1   | 2   |

The DG Programme scenario (.G-a) is attributed a score of two as it has strong buy-in from Member States due to the fact that they take part in defining and approving the Programme, however, there is no possibility for other stakeholders to be involved in the decision-making. Conversely, in an Agency (.G-b), there is also buy-in from Member States, as it is an EU Agency, the Member State presence would be in the form of formal representation. Furthermore, due to the flexibility in how the Agency is set up, it is also possible to have other stakeholders formally involved in decision-making. Therefore, the Agency scenario scores a full five. The .GO(C) scenario, which is an P/PPNPO, is given a score of four, because although it can, as the Agency, have all stakeholders involved in the decision-making and the argument can be made that it presents more flexibility and incentive for the private sector to be involved, there is no formal representation of the Member States (as there would be in an Agency) and they can choose to leave the NPO at any time as membership is voluntary. The scenario where the private sector is given the developed solutions (under the assumption that there is a business case for them) and where they setup an NPO (.CO) scores a one, as there is no Member State involvement, nor is there any way to ensure involvement of third parties. Furthermore, the scenario presents a risk that some (larger) private sector players may dominate decision-making, potentially fragmenting the NPO. Finally, the last scenario, where the private sector is providing the developed solutions (again under the assumption that there is a business case for them), but does not setup an NPO, leading to a need for a supervisory/regulatory authority (.CG) scores a two, because despite being strong in ensuring Member State buy-in (as it can be made mandatory for Member States to participate by setting up national supervisory authorities), balanced stakeholder representation is not ensured: the authority is a part of the public sector and has no obligation (or incentive) to involve the private sector (or other stakeholders) in the decision-making process. In fact, participation by the supervised parties would be counterproductive, as they have a vested interest in flexible or weaker supervision schemes.

### *The extent to which the governance stimulates take-up by Member States and then service providers*

In the following sections, an assessment of the second assessment criterion is made for each of the scenarios.

#### **DG Programme (.G - a)**

Decision-making in a programme can be very rapid as it, in theory, only necessitates the European Commission deciding upon something. However, if the decision-making is carried out without involving the other stakeholders, then it is not likely that their needs and requirements are fully taken into account and linked to that, the impact of the governance will therefore not be significant. As the scenario does not allow for co-decision-making, but only for consultation, the needs and requirements may only be taken into account with limited success as there is no direct representation of the

stakeholders. The exception to this is of course e.g. a Programme Committee, where Member States are represented and therefore can voice their opinion (such as in e.g. the ISA Programme). If the programme is designed such as to always have a meeting of the relevant committees or (working) groups before any major decision, although the decision-making would take more time, the Member States would know that they would always be heard and therefore it may stimulate take-up to some extent.

However, whilst the Member States would be represented in the governance meaning that governance stimulates take-up by the Member States, the local service providers within the Member States will not be represented directly (only through the Member State representative) and (perhaps more damaging yet) the private sector service providers will not be represented and therefore their needs and requirements not taken into account. The effect of this would be that there is a serious risk that the impact of the governance on service providers would not be good and therefore not stimulate take-up and use of the Core Service Platforms/services by the service providers.

To conclude, a DG programme would to a limited extent stimulate take up by Member States and service providers as it only marginally takes their needs and requirements into account in the governance. This scenario will therefore score relatively low for this assessment criterion.

### **EC Agency (G- b)**

As it is possible to have any combination of stakeholders involved (as determined above), it is possible to take into account the Member States' needs as well as the service providers' needs, as these can be represented directly on the board. Furthermore, in terms of taking Member States' differences into account, this is possible to the extent of being able to choose to include (or not to include) Member States which are not interested in specific parts.

To conclude, the Agency scenario will score well for this criterion.

### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

Within an NPO, Member States can be involved in strategic and operational decision making, thereby ensuring that their needs and requirements are taken into account. However, other stakeholders such as the private sector can also be involved in decision making, thereby also ensuring that their needs and requirements are taken into account. This was in fact the rationale behind the creation of ICANN. Indeed, by relinquish control over the management of internet names and addresses, the NTIA endeavoured to stimulate take-up by ensuring that the service providers could influence the development of the internet. By enabling co-decision between public and private sector stakeholders, the .GO(C) thus enables to take into account both the needs and requirements of the public and the private sector.

A .GO(C) scenario therefore entails reaching a consensus between the views of all stakeholders involved within the association. However, this implies that the respective needs and requirements of the public and the private sector, if the latter are co-deciders in the association, will not be taken into consideration to the extent that they would be if only the public sector, or only the private where involved in governance.

GSMA<sup>52</sup> is an illustrative example of an NPO which managed to ensure a balanced stakeholder representation in order to spur take-up. Indeed, although the association was founded in order to ensure interoperability in the EU, the GSMA standards were rapidly taken up across the world. To reflect institutionally the growing global influence of the GSMA standards, the board was opened to non-EU members.<sup>53</sup> Currently, the Board of GSMA is, amongst others, composed of the Executive Vice President of AT&T, the Vice President of China Mobile, the Chief Executive Officer of Qtel, as well as the Senior Executive Vice-President of Group Marketing & Innovation France Telecom and the Senior Vice President for Public & Regulatory Affairs of Deutsche Telekom.<sup>54</sup>

In the case of ICANN, governments' lack of adequate influence in the decision making process was identified by Stuart Lynn in 2002 as one of the major issues that the organisation was confronted with. Albeit the Government Advisory Committee (GAC), which channels governments' input to the Board to Directors, governments' influence over decision making was perceived as insufficient to ensure adequate take-up. The Board can thus take decisions which are in clear opposition to the opinion voiced by the GAC. The fact that the needs and requirements of public authorities are not fully taken into consideration under an NPO could thus hinder take-up by Member States. Indeed, numerous governments have abstained from joining the GAC as they estimated that their influence would be limited to an advice voiced to the board. As a result, countries such as India or Brazil have called for a government takeover of the internet management within the United Nations. However, the opinions voiced by public authorities are most often taken into account, with 70 out of the 80 government proposals having been reflected in ICANN's final guidebook<sup>55</sup>, according to Fiona Alexander, assistant administrator at NTIA.

Finally, management of the service under an NPO entails that financial barriers to take-up by service providers will be limited as revenues should only ensure that costs are covered. This was notably highlighted in the case of EURid, which is an organisation responsible for managing the '.eu' domain name. As the NPO cannot generate profit, the service is provided at competitive rates<sup>56</sup>, thereby spurring take-up.

To conclude, both the needs and requirements of the public sector and private sector are taken into account under an NPO, if the private sector is involved in decision making (presuming they are interested – which would require the existence of a business case, which is assumed). However, if decision making is based on consensus, neither of these needs and requirements will be taken into account to the extent that they would be in a 'pure' .G or .C scenario. This scenario appears as the most 'democratic' scenario, as highlighted by participants to the 2<sup>nd</sup> LSP sustainability workshop. This scenario will therefore score well for this assessment criterion.

### **Private sector forming own NPO (.CO)**

Again, for the assessment of this scenario, it is assumed that there is a business case for the CSP/BBs as it is a prerequisite for the scenario to be realistic. As governments are excluded from decision making in a private sector NPO, it is questionable if their needs and requirements are taken

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<sup>52</sup> See also <http://www.gsma.com/>

<sup>53</sup> See also <http://www.gsma.com/aboutus/history>

<sup>54</sup> See also <http://www.gsma.com/aboutus/leadership/gsma-board>

<sup>55</sup> More information can be found at: <http://www.ip-watch.org/2011/10/03/proposal-for-new-un-internet-governance-body-meets-resistance/>

<sup>56</sup> Viviane Reding (2008), ".eu – Do you get the point?"

into consideration beyond that of any given user of the solutions. In essence, interoperability, which is an overarching need for public authorities, would most probably be ensured in this scenario, if the private sector has the adequate incentive, and therefore a business case, to ensure interoperability. Indeed, the private sector would adequately respond to this need if there is sufficient business case behind it. However, this single playing field, which would be defined by the private sector, may not meet the specific needs and requirements of public authorities. In the case of the EPC, the association has set itself the objective, as defined in its charter<sup>57</sup>, to promote the “widespread acceptance of reusable standards and best practices, which are simple, easy to understand and implement”. It can however not be guaranteed that these standards will meet the requirements of public authorities.

To conclude, the .CO scenario would perform quite poorly on this criterion as there is no way to ensure that the needs and requirements of public authorities are taken into consideration.

### **Supervisory authority monitoring private companies (.CG)**

With respect to the question of take-up, a supervision based scenario (again, which by its very nature assumes that there is a business case for the CSP/BBs) is highly effective, as it assumes that a supervisory structure is created that mandatorily applies to Member States and certain service providers. Specifically:

- Member States are either required to participate directly in supervision activities (in the decentralised or mixed model), or they will fall within the competences of the EU level authority (in the centralised model). Irrespective of the chosen model, the take-up of the supervisory scheme is mandatory and therefore all-encompassing.
- Service providers are similarly made subject to mandatory supervision, independent of the chosen supervision model. A nuance should be applied to the extent that legislation could choose to make only certain types of service providers subject to mandatory supervision, and could even choose to allow Member States to extend their supervision schemes (or schemes which are similar) to other service providers. As a practical example, the eSignature Directive requires Member States to supervise certification service providers which issue qualified certificates to the public. Other types of certification service providers are not required to be supervised, although Member States may freely choose to do so. From the perspective of assessing the take-up however, this distinction is irrelevant: as soon as a political choice is made on which service providers should be supervised, take-up can be as universal as desired.

Thus, the scenario can ensure extremely high take-up. Furthermore, the scenario can be highly efficient from a governance perspective, mainly due to the more limited scope of governance: the scenario only impacts the governance by Member States of supervision of compliance, not to the establishment of norms as such.

It should be noted however that the definition of the scenario (supervision of private companies) necessarily implies that it cannot ensure take-up for CSP/BBs which are not offered by private companies, but which are instead in the hands of the public sector. This could e.g. apply to the eID CSP, which is controlled by the public sector in at least some Member States.

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<sup>57</sup> More information can be found at: [http://www.europeanpaymentscouncil.eu/knowledge\\_bank\\_detail.cfm?documents\\_id=337](http://www.europeanpaymentscouncil.eu/knowledge_bank_detail.cfm?documents_id=337)

To conclude, the .CG scenario would perform quite well in enabling take up by Member States then service providers.

### Assessment scoring

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 36 – Scoring of the extent to which the governance stimulates take-up by Member States and then service providers*

| Assessment criteria                                                                                                   | .G-a | .G-b | .GO(C) | .CO | .CG |
|-----------------------------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Governance:</b> The extent to which the governance stimulates take-up by Member States and then service providers. | 2    | 4    | 4      | 2   | 4   |

For this assessment criterion, the DG Programme scenario (.G-a) scores a low two as Member States only have a say in decision-making during the setup of the programme, and they have no obligation to take up the solutions provided. Furthermore, on the service provider side, the public sector ones are only involved to some extent through the Member States at the time of definition and approval of the programme, but again, not at all during the running of the programme. In addition to this, the private sector and third parties cannot be involved in decision-making (not even at the time of defining and approving the programme). Therefore, the needs and requirements of the different (individual) stakeholders are not necessarily taken into account. The Agency scenario (.G-b) scores a four as Member States can be obliged, or not, to be part (as is deemed most appropriate) of the decision-making during the implementation although there is no obligation to take up the solutions. Furthermore, both Member States and all other stakeholders (including regional, local and private sector service providers) can have their needs and requirements taken into account if they are part of the decision-making (which is possible), which will stimulate take-up more than in the DG Programme. In the .GO(C) scenario, the P/PPNPO, Member States can voluntarily be involved in decision-making, however, as in the Agency; there is no obligation to take up the solutions. Furthermore, as in the Agency case, all other stakeholders can also be involved (as deemed best), thereby also stimulating take-up. Therefore, the .GO(C) scenario is attributed as score of four, like the Agency. The fourth scenario, where the private sector sets up an NPO (.CO) – which presumes the existence of a business case for the CSP/BBs, scores much lower, with a score of two. This score is due to the fact that Member States (and other non-private sector stakeholders) are not involved in the decision-making and their needs and requirements are not (necessarily) taken into account, therefore, there is no way of ensuring that it stimulates take-up. The .CG scenario, the Supervisory Authority (which also assumes that there is a business case for the CSP/BBs and that the private sector would be interested in running these), scores a four like the Agency and the P/PP NPO. Even though all stakeholders' needs and requirements may not be taken into account (especially those of the private sector, which is the object of supervision rather than a participant in it), the scenario scores high because it is the only scenario where there is an obligation to implement what is decided, as the decisions made by the Supervisory Authority are binding to the supervised service providers.

### *The extent to which the service level is reliable, continuous and, and lock-in effects are avoided thereby stimulating take-up*

In the following sections, an assessment of the third assessment criterion is made for each of the scenarios.

### **DG Programme (.G - a)**

In a DG programme, although theoretically possible and to some extent already done (the short to medium term continuation of STORK is done by DG DIGIT), it is important to note the capability and capacity which are needed to be able to run the services in-house. In terms of both capability and capacity for operations to be run in-house, a DG programme under DG CONNECT would mean acquiring both, as neither the technical capability or capacity is currently present (although the strategic is), whilst a programme under DG DIGIT would have the capability, but would have to acquire the capacity. Therefore, although the DGs are existing entities, they do present similar challenges as a new entity (such as a newly created NPO would). However, a DG programme also presents an additional challenge (or issue) as to the extent to which such resources are not already available in the European Commission and can be reallocated to the programme to build the capacity, it would be necessary to hire new staff. This staff would be limited by the rules on hiring that apply for the European Commission, meaning limitations in hiring of permanent staff (and the consideration of whether it would be prudent to hire a large number of permanent staff with the risk of the programme not being renewed) and if contractual agents or other types of staff are hired on time-limited contracts (as per the staffing regulations) the advantages of carrying out the operations in-house, i.e. the linked continuity and reliability, would be lost.

Whilst outsourcing and licensing remains an option (licensing is possible under the assumption that there is a business case for the CSP/BBs), these are considered to be less ideal than in-house as any outsourcing or licensing contract would be time-limited and therefore there would potentially be a transfer of operations to another contractor meaning a break in continuity and reliability as a result, even if shadowing is used. Furthermore, there is a risk of technology or vendor lock-in with outsourcing or licensing, which further favours the in-house option. Therefore, in terms of ensuring reliability, continuity and avoiding lock-in in order to stimulate take-up, this scenario does not score well.

To conclude, a DG Programme would have a limited capacity to ensure a reliable and continuous service, which avoids lock-in effects. This scenario will therefore score relatively low for this assessment criterion.

### **EC Agency (G- b)**

For an Agency, all the operations models are possible: it is possible to carry out operations in-house, outsource them or license them out (licensing is possible under the assumption that there is a business case for the CSP/BBs). However, given that both out-sourcing and licensing are time-limited contracts, this can lead to continuity issues as services may not be available when there is a handover from one contractor to another or from one licensee to another. In licensing and outsourcing, the only way to avoid these interruptions would be to always use the same contractor or licensee; however, this would lead to a lock-in situation, where e.g. the contractor raises its prices because it is sure to win.

Therefore, in-house operations are the ideal solution and this is possible in an Agency, as is the case in EUROPOL or OHIM<sup>58</sup>.

All these possibilities for an Agency help stimulate take-up through the possibility to ensure a very high level of service. Furthermore, it is possible for an Agency to attract the needed expertise to ensure the service level, as the Agency can be seen as a centre for excellence. Furthermore, an Agency does not require staff rotation and can therefore maintain this expertise in-house.

To conclude, it is therefore clear that in terms of ensuring the service level and stimulating take-up, the Agency scenario does very well.

### **NPO set up by EC, private sector co-deciding (.GO(C))**

An NPO can realistically carry out its operations in-house, thereby ensuring a continuous service level. This is notably for the case of OpenPEPPOL which carries out most of its operations in-house, except for the update of specifications for specific infrastructure which are done by DG DIGIT. This therefore ensures that lock-in effects are avoided.

Furthermore, an NPO has a substantial capacity to attract expertise as it can freely define the salaries that it offers to its employees, as long as these costs are covered by its revenues. As an NPO can be designed as not to be time bound, it can offer an appealing career prospect for qualified experts. Furthermore, as NPOs are private entities, employment contracts, which fall under national laws, can be for an indefinite period of time. In the case of ETSI, which was created to manage GSM, before the creation of the GSM Association, 100 people were permanently employed in 2000 and 3500 experts worked in 200 technical groups<sup>59</sup>, highlighting the capacity of these types of entities to attract qualified expertise.

Finally, an NPO enables for individuals, organisations, and private companies to offer their services to the NPO for free, thereby providing donations in kind. This represents another opportunity for NPOs to attract capacity, as well as capability.

To conclude, an NPO has the capacity to carry out its activities in-house, as well as attract substantial capacity. This scenario will therefore score highly for this assessment criterion.

### **Private sector forming own NPO (.CO)**

Again, for this scenario, the assumption that there is a business case for the CSP/BBs is made in order to be able to compare this scenario with the others. The private sector is very efficient in running operations. Consequently, as indicated by the participants of the 2<sup>nd</sup> LSP workshop, operations would be highly reliable and continuous in a .CO scenario. Indeed, participants to the workshop highlighted that operations run under a .CO scenario would be less bureaucratic and therefore more efficient. However there are substantial risks of lock in effects in case certain members within the organisation acquire an overwhelmingly dominant position.

To conclude, this scenario will obtain a medium score for this assessment criterion.

### **Supervisory authority monitoring private companies (.CG)**

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<sup>58</sup> Office for Harmonisation in the Internal Market

<sup>59</sup> Bach, David (2000), 'international cooperation and the logic of networks: Europe and the global system for mobile communications (GSM)', <http://brie.berkeley.edu/publications/wp139.pdf>

A supervision based scenario can be made to be highly reliable and continuous, given that various operational choices are possible, and that Member States (in a decentralised or mixed scenario) can be given some leeway on outsourcing versus insourcing choices. Supervisory authorities may choose to run their supervision activities fully in-house, thus requiring them to attract the necessary expertise and ensure that the relevant resources are available. This approach is more expensive, but grants greater independence to the Supervisory Authority. Alternatively, the authority can choose to rely on private bodies for some of its functions. E.g. with respect to the example of supervision of eSignature service providers, some Member States have elected to work with accredited private sector bodies to conduct compliance assessment checks against technical standards. This partially outsourced approach requires fewer resources for the supervisory body, but also implies a certain dependence on private service providers. Given that the accreditation market is relatively mature and competitive, this is however not necessarily problematic, and is a commonly used approach in the eSignature market.

With respect to the issue of lock-in, the scenario is relatively flexible, as the main risks are inherently well managed: the supervisory body is independent of market players, and can rely on a variety of options for assessing compliance. The main lock-in risk is rather in the definition of criteria against which the supervisory body should check: if these criteria are too strict or too technology specific, lock-in effects can occur. However, since these criteria are defined externally from the supervision scheme, this is not a risk which is intrinsic to this scenario.

To conclude, in terms of ensuring reliability, continuity and avoiding lock-in in order to stimulate take-up this scenario scores relatively well.

### Assessment scoring

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 37 – Scoring of the extent to which the service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up*

| Assessment criteria                                                                                                                          | .G-a | .G-b | .GO(C) | .CO | .CG |
|----------------------------------------------------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Operations:</b> The extent to which the service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up | 2    | 5    | 4      | 3   | 4   |

Given that that in terms of operations, both outsourcing and licensing are time-limited, the only really continuous option is in-house. The first scenario, a DG programme (.G-a), scores low on this because given the staff-limitations imposed on the European Commission, it is unlikely that they would be able to hire permanent staff, but rather use contractual agents, who's contracts are time-limited. Even if permanent staff was used, there are rules on rotation, which would imply that the staff turnover would be too great to ensure continuity. In addition to this, a DG programme is time-limited (with a maximum of seven years before renewal) in itself and there is no guarantee of renewal of the programme. The scenario is therefore attributed a score of two. An Agency, on the other hand, is attributed a score of five as there are no (definite) limitations on permanent staff, nor is there a need for rotation of staff and an Agency can have its own hiring procedures. Furthermore, an Agency is not time-limited and it can more easily be built as a centre of expertise where the best experts can build a career (as there is

no forced rotation, staff can stay in the same roles as long as they want or need to). The .GO(C) scenario scores well as it is not time limited by definition and like the Agency, it has its own hiring procedures. However, the .GO(C) scenario scores less well than the Agency, because there is a risk as far as continuity is concerned as some (or all) members may choose to leave, or too few members may join. The NPO would thus incur the risk of not having sufficient financing to ensure high-quality operations. An Agency has public funding to fall back on, whereas the .GO(C) does not. As it is less ideal than an Agency, it scores four. The NPO set up by the private sector only scores a three although it also has its own hiring procedures, because it is less certain of continuity as there is no assurance that there is a strong enough business case for the private sector to be interested in running the solutions in the long term (in the case that it is assumed that in the medium term there is). Furthermore, there is a risk of a lock-in effect as there is a risk that larger more dominant players end up having control, thus marginalising the participation and say of smaller players. Finally, the .CG scenario (which also assumes the presence of a business case) scores well on this point, as a Supervisory Authority under public sector control is as reliable and continuous as the government under which it is established. Lock-in is not a significant risk in this scenario, as lock-in can only originate from the establishment of norms to be complied with, which is a decision made externally from the supervisory authorities. However, the relatively high score of the .CG scenario in terms of operations relates only to the operational activities of the supervisory body itself, which only comprise the assurance of compliance with applicable norms. The more crucial element of reliability and continuity of the service providers running the CSP/BBs is not affected by this scenario.

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***The extent to which it is possible to have different decision-making structures and processes for different Core Service Platforms and the extent to which new ones can easily be added.***

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In the following sections, an assessment of the fourth assessment criterion is made for each of the scenarios.

### **DG Programme (.G - a)**

For a programme, it is only possible to have one real decision-making structure and process, which is the European Commission deciding as sole decision-maker. However, it should be noted that the informal decision-making structures can theoretically be structured in such a way that either the committee in reality makes the decisions and that the European Commission simply ‘validates’ these decisions and makes them the decisions of the programme. This could also be done at a CSP/BB specific level, having a working group making the actual decisions which are then passed on to the European Commission, who then ‘validates’ these. Although possible, this remains informal as the Programme has to be driven by the European Commission.

As far as including new CSP/BBs, this is not possible in a Programme as the scope and tasks (actions) of a programme are defined at the time of creation of the programme, which then remains for a maximum of seven years. As a new CSP/BB would require a re-scoping and potentially a number of new tasks or actions, this would not be possible within the seven year period, but only at the time of renewal. Again, a theoretical solution exists in as far as Member States would agree to a vaguely defined scope only, making the scope of the programme CSP/BBs in general and not limit it to the ones currently defined, thus enabling them to add more programmes. However, although some change of focus or re-defining of actions has taken place in Programmes such as ISA, the scope for this one would have to be very wide and very vague to allow for this. Furthermore, the likelihood for

this to be more than theoretical solution is very low as (will be discussed later) financing is determined when the programme is created, meaning that there would only be a fixed amount of funding available and this would not increase when adding more CSP/BBs.

This scenario will therefore score relatively low for this assessment criterion.

### **EC Agency (G- b)**

Many Agencies have a single Management or Governing board that is responsible for the decision-making in the Agency; these are then typically supported by a number of units, advisory groups, expert groups or other kinds of supportive structures. An example could be FRONTEX, which has a Management board, an operations division, a capacity building division and an administrative division. Another example could be ECHA, which has a Management board that is supported by a Member State Committee, a Committee for Risk Assessment, a Committee for Socio-Economic Analysis, a Biocidal Products Committee and an Enforcement Forum (all from which the board receives recommendations on what to do).

However, it is not the only possible decision-making structure; ACER<sup>60</sup> for example has three boards with different responsibilities. Another example is EFCA<sup>61</sup>, which has an Administrative board and an Advisory board. Finally, a third example could be FRA<sup>62</sup>, which has a Management Board, a Scientific Committee and an Executive Board.

These different examples provide ample evidence that an Agency can be designed as to take into account the different needs and requirements of the stakeholders from CSP/BB to CSP/BB. Furthermore, an Agency can be designed so that new CSPs can be added reasonably easily in the future. For these reasons, the Agency scenario scores well for this criterion.

To conclude, a DG Programme would score quite poorly on this assessment criterion.

### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

An NPO enables considerable flexibility as regards to how it should be established. It has been described in the previous sections that an NPO enables to engage various types of stakeholders in the governance structure. In the case of the Large Scale Pilots, it has been shown in section 6.2 that the level of involvement of stakeholders, from an advisory role to effective decision making role, will be CSP/BB specific. Indeed, some Member States will now allow unique citizen IDs to be shared with private entities, thereby rendering incongruous the involvement of such stakeholders, private entities, in the governance of cross-border eID solutions. Conversely, Member States could enable the private sector to be involved in the governance of cross-border eProcurement solutions. Furthermore, Member States' view of the extent to which private sector stakeholders can be involved in the governance of a specific domain may change over time. This therefore highlights the need to ensure sufficient flexibility in the governance structure to adequately involve stakeholders in each CSP/BB, and therefore of having the possibility to implement decentralised decision making procedures. In this respect, ensuring that governance is decentralised within a single legal entity would be greatly beneficial as it would enable to maximise re-use.

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<sup>60</sup> Agency for the Cooperation of Energy Regulators

<sup>61</sup> European Fisheries Control Agency

<sup>62</sup> European Union Agency for Fundamental Rights

OpenPEPPOL is a very relevant example in this respect. It consists of the following different units and bodies<sup>63</sup>:

- ✘ The **OpenPEPPOL General Assembly** is the supreme power of the Association and holds all the powers that are expressly reserved by law, and that are not devolved to the Managing Committee by the current Statutes, except for powers of representation. The General Assembly has the power to:
  - ✘ Alter the Statutes;
  - ✘ Elect or dismiss Members of the Managing Committee and the Auditor;
  - ✘ Establish or dissolve Coordinating Communities;
  - ✘ Approve a broad programme of activities and initiatives for the forthcoming years to further the purposes of the Association;
  - ✘ Approve a budget and sources of funding including the setting of a subscription fee or range of fees for the forthcoming year;
  - ✘ Approve the accounts of the previous fiscal year;
  - ✘ Disqualify any Member; dissolve the Association;
  - ✘ Elect and appoint the Secretary General;
  - ✘ Elect and appoint the members of the Managing Committee, except those elected and appointed by the Coordinating Communities.
- ✘ All OpenPEPPOL Members that form the General Assembly are also Members of at least one Coordinating Community.
- ✘ The **Coordinating Communities** include different working groups on for example the transport infrastructure, the post-award or pre-award processes.
- ✘ The **OpenPEPPOL Managing Committee** acts as a board and is composed entirely of OpenPEPPOL Member representatives, including the Secretary General and one representative of each Coordinating Community, as a minimum.
- ✘ The **Secretary General** is the highest authority of the Association between General Assemblies and is elected by the General Assembly. The Secretary General promotes the purposes of the association and implements the decisions of the General Assembly and the Managing Committee.
- ✘ The **Operating Office** assists the Secretary General in executive tasks.

The Coordinating Community elected leaders, which coordinate building block specific stakeholders which pay a building block specific membership fee, form part of the Managing Committee. The governance structure set up by OpenPEPPOL is consequently highly decentralised with each Coordinating Community being represented in the Managing Committee, thereby enabling adequate stakeholder representation per building block and maximising strategic coordination within the association.

An NPO therefore enables a decentralised governance structure, within which CSP/BB specific stakeholders would be able to manage the development and deployment of a CSP/BB, while maximising re-use of the developed solutions through coordination on the Managing Committee/Board.

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<sup>63</sup> More information can be found on: [http://www.peppol.eu/about\\_peppol/organisational-structure](http://www.peppol.eu/about_peppol/organisational-structure)

As new stakeholders can easily join an association, and the statutes of an association can also easily be changed, adding a new decentralised governance body, with the creation of a new CSP, would not represent substantial difficulties.

To conclude, it is possible within an NPO to have different decision-making structures and processes for different CSP/BBs. Furthermore, new ones can easily be added. This scenario will therefore score highly for this assessment criterion.

### **Private sector forming own NPO (.CO)**

In line with the .GO(C) scenario, a private sector NPO can also be set up flexibly to incorporate different stakeholders in different decentralised governance organs. Furthermore, as statutes and sources of revenue can rapidly be adapted in order to meet market needs, new decentralised governance organs, and therefore new CSPs, could also be rapidly created. It should of course be noted that this scenario assumes that there is a business case for the CSP/BBs as this is a precondition for it to be realistic.

To conclude, the.CO scenario would score highly on this assessment criterion.

### **Supervisory authority monitoring private companies (.CG)**

The supervision based scenario can be somewhat flexible with respect to decision making structures within various supervisory bodies, provided that two basic restrictions are taken into account:

- ✘ Firstly, as noted above, decisions can only relate to the governance of supervision of compliance; fundamental decisions on the norms to be supervised against are made elsewhere.
- ✘ Secondly, to ensure that supervisory schemes are equally effective across the EU, certain basic principles need to be established at the EU level, including the norms to be supervised against, but also requirements with respect to e.g. independence, competences and procedures to be followed. This is necessary to avoid market disruptions by having significantly lighter supervision requirements in some Member States than in others.

Keeping these restrictions in mind, the supervision scenario offers moderate opportunities to vary decision making structures between CSPs.

As far as including new CSPs, this is possible to the extent that EU level rules are revised to mandate new supervisory structures, or designed in a way that allows such new structures to be easily created. As this requires consensus across all Member States to avoid national divergences that would render supervision meaningless, this is not a trivial problem to solve. Furthermore, as noted above, the definition of the scenario implies that it cannot be applied to CSPs which are not offered by private companies.

Thus, the scenario scores strongly on this point for market based services, but cannot be applied to CSPs which are not considered as market services in all Member States (however for the purpose of the assessment it is assumed that there are business cases).

### **Assessment scoring**

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 38 – Scoring of the extent to which it is possible to have different decision-making structures and processes for different CSP/BB and the extent to which new ones can easily be added.*

| Assessment criteria                                                                                                                                                                                         | .G-a | .G-b | .GO(C) | .CO | .CG |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Governance:</b> The extent to which it is possible to have different decision-making structures and processes for different Core Service Platforms and the extent to which new ones can easily be added. | 1    | 5    | 5      | 4   | 4   |

The DG Programme scenario (.G-a) scores very low, a score of one, because there is only one decision-maker and therefore the relevance of having different decision-making structures and processes disappears. In terms of governance of the different CSP/BBs, this is a significant weakness. Furthermore, due to the limitation of the budget and the work programme being defined in advance in a Programme (with the programme running for up to seven years), it is difficult to adapt it during the life of the programme (this in general takes a lot of work and a total time of about 10 months). Both .G-b and .GO(C), Agency and P/PPNPO, are attributed a score of five, the maximum score, as they are both very flexible in terms of the possible setup and therefore different decision-making structures can be used per CSP/BB, where needed. Furthermore, both the Agency and the P/PPNPO can add new CSP/BBs, of course providing that new financing can be generated/assured. The .CO scenario, an NPO setup by the private sector scores a little less, with a score of four, as it has similar flexibility in setup, but has the weakness that new CSPs can only be added if there is a business case for them (this going beyond the assumption that for current CSP/BBs, there is a business case – this assumption does not apply to future CSP/BBs for this comparison). The .CG scenario, the Supervisory Authority also scores four: in this scenario it is perfectly possible to establish multiple different supervisory authorities for different CSP/BBs, each of which can have different decision making structures, and to add new supervisory authorities when a new CSP would require this. However, the scenario is imperfect due to the need to align the approach between Member States – as this is a prerequisite for establishing a fair internal market between the private service providers – which can make the scenario less efficient than some of the others.

### ***The extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added.***

In the following sections, an assessment of the fifth assessment criterion is made for each of the scenarios.

#### **DG Programme (.G - a)**

For a programme, having different financing sources is not possible, the only source of financing possible is public funding. Furthermore, in terms of schemes, there are no possible schemes as a DG programme cannot have revenue and therefore cannot use different schemes, nor can new ones easily be added. In terms of financing and therefore for this assessment criteria, the DG programme scenario does very poorly. The only real option to reduce the reliance on public sector funding and to have ‘a different source of income’ is to license out the operations. Whilst the programme cannot generate revenue and therefore cannot charge for the license, it can require that the licensee provide it for free (or very reduced price) to the European Commission and the Member States, in return for being allowed to provide the CSP/BBs (and sell the services) to other stakeholders. Although this is

not strictly speaking a 'different source of income', it can serve as one as it shifts a large part of the costs (i.e. the costs of operations) away from the public sector. However, despite this potential alleviation of the reliance on public sector funding, it does require that one or more private sector companies are interested in this, which would require that there is a business case for the CSP/BBs, something which cannot be determined with certainty (before they are rolled-out).

To conclude, a DG Programme would not score highly on this assessment criterion.

### **EC Agency (G- b)**

For an Agency, it is possible to be fully financed by a single source or have multiple financing sources. Full funding is typically done by the EU, e.g. ENISA<sup>64</sup>, EFSA<sup>65</sup> are fully financed by the EU. This means that the other stakeholders are not involved in the financing. However, it is also possible for an Agency to be co-financed, meaning that a part of their financing comes through revenue and the rest of the financing is provided through EU funding, e.g. EASA<sup>66</sup> and ECHA<sup>67</sup>. Finally there is a possibility of full financing through revenue e.g. CdT<sup>68</sup>, CPVO<sup>69</sup>, and OHIM<sup>70</sup> are all financed fully through revenue.

As far as having different schemes, whilst most agencies that generate revenue do so by charging for their services (such as EASA, mentioned above), there are possibilities for other revenue schemes. For example, ECHA (mentioned above) received a one-off payment from the industry.

There are no limitations as far as having different schemes for generating revenue, the regulation establishing the Agency just has to make it clear that it can generate revenue. Furthermore, if the regulation establishing the Agency does not specify how, then the Agency can add new sources and schemes as deemed appropriate and necessary.

To conclude, an Agency presents the full possible range of financing options and the scenario therefore scores well.

### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

An NPO allows for numerous and varied types of funding sources, which is a considerable advantage. The fact that the internet was progressively becoming commercial, and therefore that it was less appropriate for US research agencies to fund and steer its development, was an essential driver behind the transfer of responsibilities from the NTIA to an NPO, ICANN<sup>71</sup>.

Indeed, revenue can be generated through user fees, such as in the case of ICANN, or through membership fees, such as in the case of OpenPEPPOL, which can be charged to both public and private sector stakeholders. Finally, NPOs can be funded publicly or receive donations, such as GSMA.

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<sup>64</sup> European Network and Information Security Agency

<sup>65</sup> European Food Safety Authority

<sup>66</sup> European Aviation Safety Agency

<sup>67</sup> European Chemicals Agency

<sup>68</sup> Translation Centre for the Bodies of the European Union

<sup>69</sup> Community Plant Variety Office

<sup>70</sup> Office of Harmonization for the Internal Market

<sup>71</sup> United States Department of Commerce (1998), 'Statement of Policy on the Management of Internet Names and Addresses', <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>

Consequently, NPOs can generate substantial revenues. For instance, ICANN generated USD 65.77 million of revenue in FY2010<sup>72</sup>, thereby covering its operational expenses of USD 58 million. The revenue accumulated can then be invested, such as in the case of ICANN which has a reserve fund of over \$46 million.

Although NPOs can generate revenue from diverse sources, these revenue sources are not necessarily stable. Indeed, if use of the services provided by the NPO is limited or a limited number of stakeholders adhere to the association and/or support it financially, the NPO will no longer have the financial capacity to operate. A clear value proposition, or business case, must therefore be defined in order to ensure adequate financing of the NPO (which is assumed here for the present CSP/BBs). This is an issue which was notably encountered by ICANN. Four years after its creation, in 2002, inadequate funding was identified as a major issue threatening the continuation of its activities. Indeed, ICANN began operating without guaranteed funding from any sources, whether from governments or private entities. In its early years, it relied on loans from “public-spirited businesses” before relying on “heavily negotiated revenue streams generated from a small number of interested intermediaries”<sup>73</sup>. ICANN was therefore seriously underfinanced in its outset, before generating adequate revenues through user fees.

In case of insufficient funding, the NPO can increase user fees, which may lead to decrease in membership, or ask governments for additional funding. This process can however induce uncertainty.

In order to be sustainable, an NPO must therefore be set up with a clear financial backing from stakeholders. These stakeholders may be public or private, if a business case has been identified for the services provided under the NPO.

To conclude, a P/PP NPO scores highly on this assessment criterion.

### **Private sector forming own NPO (.CO)**

In a private sector NPO, there are no limitations as to the sources of funding a part from public funding. This is one of the considerable advantages, as was highlighted by participants to the 2<sup>nd</sup> LSP sustainability workshop, of this scenario. As in a .GO(C) scenario, membership fees can be charged, as in the case of the EPC. In the case of the Interoperable Device Interface Specifications (IDIS) industry association, which was “established to maintain and promote publicly available technical interoperability specifications based on open standards and supports their implementation”<sup>74</sup> in the area of smart meters, revenues are generated by selling the IDIS specifications. However, a considerable limitation for a private sector NPO, compared with an NPO initiated by the EC, is that if users are no longer willing to pay for such services, thereby no longer rendering the provision of these services profitable, the NPO will cease providing them. Indeed, as the private NPO is not supported by public financing, there is no incentive for it to provide the services in the absence of a business case. Whilst it is presumed that there currently is a business case for the CSPs, this may change over time.

To conclude, the private sector led NPO would score relatively low on this assessment criterion.

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<sup>72</sup> More information can be found on <http://www.internetnews.com/bus-news/article.php/3930246/ICANN+Revenues+Grow.htm>

<sup>73</sup> ‘President’s Report: ICANN – The Case for Reform’, 24 February 2002, <http://archive.icann.org/en/general/lynn-reform-proposal-24feb02.htm>

<sup>74</sup> More information can be found on: <http://www.idis-association.com/press.html>

## Supervisory authority monitoring private companies (.CG)

A supervision scenario can support multiple financing scenarios, which may vary from CSP to CSP and from Member State to Member State. Two separate revenue streams are possible:

- Firstly, the supervisory body can be publicly funded, given that the CSP is of broader societal value and that it is in the interest of the general public to ensure adequate supervision.
- Secondly, additional revenue streams can be generated from the market players which are supervised. Supervisory fees can be charged when a service provider firstly registers for supervision with the competent body, when it is periodically audited for compliance, or a mix of both. Market players can be driven to pay either because of a legal requirement to do so, or based on the market incentive that supervision creates a competitive advantage, as supervised service providers may be perceived as being more trustworthy by the market.

Thus, co-financing by the public and private sector is possible under this scenario – as in any scenario that involved the private sector; the presumption is that there is a business case for the CSPs, as it is seen as a prerequisite for private sector involvement. For completeness' sake, it is worth noting that a Supervisory Authority could also generate revenue by applying penalty fees to service providers which default on their legal obligations; however, this is a revenue stream which cannot be counted upon, given that periodic non-compliance cannot be assumed and that dependence on this revenue creates adverse incentives for the supervisory body.

None the less, the scenario can support multiple financing sources which can be modified to match market realities. Thus, the scenario scores very highly on this point. The only mechanism which is not generally available to supervisory authorities is the licensing of specific solutions, as supervisory authorities by definition focus on assessing compliance, rather than making solutions available to the market.

## Assessment scoring

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 39 – Scoring of the extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added*

| Assessment criteria                                                                                                                                                                | .G-a | .G-b | .GO(C) | .CO | .CG |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Financing:</b> The extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added. | 1    | 5    | 4      | 2   | 3   |

In terms of ensuring that there is sufficient funding if there are no or limited possibilities for generating revenue, the DG Programme (.G-a) does well. However, it does not do well in terms of the possibility of having sources of financing or revenue other than from the public sector as it can only be funded by the public sector. Furthermore, in terms of having different possible financing schemes, this is obviously not possible either. As the financing schemes and sources are central to this assessment criterion, it only scores a one. The Agency (.G-b) on the other hand scores a full five points as it can have different sources of income, other than public sector funding and it can have different financing

schemes. Furthermore, it is possible to ensure that there is financing even if there is no revenue. Similarly to the Agency, the P/PP NPO can also make use of different sources and schemes for financing. However, financing is only ensured, when there is no revenue, if there still are enough public sector members willing to pay membership fees. A low score of two is attributed to the .CO scenario, where the private sector sets up an NPO. The score is so low because whilst it is possible to have different financing schemes and different sources of revenue, there is no safeguard in case that there is no or low levels of revenue as the private sector is very unlikely to be willing to finance the solutions if there is no (or insufficient) possibility to generate revenue for them. Finally, the .CG scenario scores quite highly, as it can combine the stability of public sector funding and the market orientation of service fees charged from private service providers. However, it is given a 3 point score due to the impossibility of licensing revenues: supervisory authorities focus on assessing compliance, not on licensing out solutions to the private market.

### ***The extent to which scalability and adaptability are possible for operations.***

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In the following sections, an assessment of the sixth assessment criterion is made for each of the scenarios.

#### **DG Programme (.G - a)**

A DG Programme does present some challenges in terms of the extent to which scalability and adaptability are possible for operations. As a programme is defined upfront for a five-year period, it is difficult to say that scalability is possible. Scalability is only possible to the extent to which it can be foreseen and planned for (which is limited). Similarly, adaptability is also limited. If the change or addition can be anticipated and therefore be included in the programme, it can be considered adaptable, but should there be a need to adapt to something not foreseen when defining the programme, this may be very difficult if at all possible. In terms of this assessment criterion, whilst a programme can be scalable and adaptable to the foreseeable changes in the next five years, the programme cannot flexibly deal with unforeseen events, which can only be attended to at the end of each programme, when a new programme is defined (providing there is a continuation or a new programme).

To conclude, a DG Programme would score quite low on this assessment criterion.

#### **EC Agency (G- b)**

Scalability and adaptability of operations is important as the foreseen CSPs' user-base may increase in an unexpected manner after a period of time, leading to a need to scale the operations. Similarly there is a need to be able to adapt the operations if the CSPs change or if new are added. Obviously on the technical side there may be a need to improve or add to the infrastructure (e.g. servers, etc.) but more importantly, there must also be operational scalability and adaptability at an institutional level. An Agency can have these sorts of scalability and adaptability foreseen in the regulation that establishes them. An example of this could be the Large Scale IT Agency, where the regulation<sup>75</sup> establishing the Agency foresees the addition of other systems (than the current ones) in the future. Therefore, there is precedence in terms of the legal basis for ensuring scalability and adaptability on

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<sup>75</sup> REGULATION (EU) No 1077/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2011

the more practical level, if the potential need for scalability and adaptability is taken into account when designing the organisational structure, this should not present any difficulties either.

To conclude, the Agency scenario scores very well for this assessment criterion.

### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

Given the inherent flexibility of an NPO, scalability and adaptability of operations do not present a substantial issue. They are however dependent on the NPO being able to leverage sufficient financial resources to cope with these new requests.

During the 2<sup>nd</sup> LSP workshop, contradicting opinions were voiced regarding the efficiency of operations when conducted by an NPO, particularly when they are done in-house. It could be argued that maintaining the operations within the NPO, instead of transferring them to public authorities, would increase efficiency, as the former is market driven, as opposed to the latter. Market pressures oblige an NPO to be more reactive to attend the needs of service providers. Conversely, others estimated that the decision making process in an NPO can be relatively slow and cumbersome, thereby hindering rapid adaptations.

To conclude, NPOs have the capacity to scale and adapt their operations, as well as carry out their activities in-house. This scenario would therefore score highly on this assessment criterion.

### **Private sector forming own NPO (.CO)**

It has been mentioned in the previous sections that the private NPO has the capacity to flexibly draw on numerous and diversified financing schemes. If operations needed to be tailored to a specific need, or be scaled, as this represents a clear value proposition, it can be estimated that the private sector would respond swiftly and adequately to this need. The NPO would therefore have the capacity to scale up and adapt its solutions to meet market needs.

To conclude, the private sector NPO would score very highly on this assessment criterion.

### **Supervisory authority monitoring private companies (.CG)**

The scenario can present some challenges in terms of the extent to which scalability and adaptability are possible for operations, although this is highly dependent on the decision to insource or outsource responsibilities. As the assessment of compliance against specific criteria can be labour intensive, a fully insourced solution is likely to be less capable of handling sudden increases in the number of market players or in the number of CSPs to be supervised. However, an outsourced solution would be more easily capable of addressing this point, since commercial compliance assessment/accreditation service providers are readily available and likely to grow in numbers if market demand would support this.

To conclude, the scenario can be made scalable and adaptable for changes that are not foreseen, assuming that the outsourcing option is chosen. It would therefore score highly.

### **Assessment scoring**

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 40 – Scoring of the extent to which scalability and adaptability are possible for operations*

| Assessment criteria                                                                               | .G-a | .G-b | .GO(C) | .CO | .CG |
|---------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Operations:</b> The extent to which scalability and adaptability are possible, for operations. | 1    | 4    | 4      | 5   | 4   |

In terms of scalability and adaptability of operations, the DG Programme scenario scores poorly, with a score of one, because the staffing and the work programme are defined at the beginning of the programme. Given the limitations in terms of hiring more staff during the programme and in terms of having available budget to scale the infrastructure, if the need for scalability and adaptability cannot be foreseen, the need cannot be catered to. Both an Agency and a P/PPNPO score better, scoring a four, as they are much more flexible and can hire staff more freely to meet increased requirements. Furthermore, they can also adapt and scale their infrastructure more easily as they do not have a fixed budget for a five year period as the Programme does. However, whilst the .CO has the same attributes for this criterion as the Agency and the P/PPNPO, the private sector is more efficient and adaptable in its hiring practices, as it is less bound by procedural rules that aim to ensure fairness and legitimacy; therefore, the scenario scores a little bit higher than the former, with a score of five. The .CG scenario scores equally to the .G-b and .GO(C) scenarios, as it largely shares the same characteristics.

### *The extent to which long-term strategic and stable planning is possible.*

In the following sections, an assessment of the seventh assessment criterion is made for each of the scenarios.

#### **DG Programme (.G - a)**

The continuity of a Programme is questionable; a programme can only have a duration of up to seven years and is in any case limited in time. Whilst it is possible at the beginning of a programme to plan up to seven years ahead both in terms of operations and in terms of strategic planning, at any given point in time during the life-time of the programme, it is not possible to plan beyond the end of the programme. This implies that during the last year of a programme, it is not even possible to plan for the coming years as there is no certainty that a new programme will be agreed upon and that continuation will be ensured. However, from a transparency point of view, the decision-making can be as transparent as deemed needed as there can be extensive communication of what is happening within the programme, what is being considered and what is being decided. However, as the final decision-making rests with the European Commission, it can chose to change its mind at the very last moment in any given process and as other stakeholders are not represented in the final decision-making, this may reduce transparency (for other stakeholders and) in general.

To conclude, the problems that the lack of continuity and potential lack of transparency present imply that the scenario cannot score very high.

## EC Agency (G- b)

In terms of continuity an Agency can be time-limited e.g. ENISA<sup>76</sup>, whose mandate is regularly reviewed or continuous, such as EASA<sup>77</sup>. This depends on how the Agency is setup. However, as it is possible to have a continuous Agency, long-term strategic and stable planning is possible as there is no time-limit for how long into the future there can be plans. Furthermore, in terms of building trust, an Agency can be built in with any needed safeguards in terms of transparency (such as publishing all meeting minutes, decisions, etc.).

As far as predictability is concerned, the decision-making can be predictable to the largest possible extent, as with any scenario, predictability of the environment is not necessarily there. However, if the environment remains stable, then the decision-making remains stable too and therefore becomes predictable.

To conclude, the Agency scenario scores well in terms of the possibility for long-term strategic and stable planning, i.e. scores well for this criterion.

## NPO set up by the public sector, private sector co-deciding (.GO(C))

The time-horizon in which an NPO operates can be flexibly defined, and can therefore not be time-bound. In the cases of ICANN and EURid, the NPOs were granted service concession contracts by the US and the EU respectively. These contracts have defined time-horizons, and will therefore be re-submitted to bidding processes upon termination of the contracts. If this type of model, service concession contracts, was chosen, long term strategic and stable planning could be hampered. However, this depends, to a great extent, on the duration of the contract. In a fast evolving area such as ICT, long term strategic planning may only be realistic for the duration of the contract. Other associations, such as GSMA or OpenPEPPOL, do not have defined time-spans. Indeed, as mentioned in the OpenPEPPOL statutes: "OpenPEPPOL is set up for an undefined period. It can be dissolved at any time by the decision of a qualified majority in a General Assembly"<sup>78</sup>.

Furthermore, the duration of the mandate of the chairman can be decided upon and formally recognised in the statutes of the association. This mandate can therefore be relatively long in order to ensure stability. In the case of OpenPEPPOL: "The Secretary General may stand for more than one term of office. The General Assembly has the power to elect and appoint the Secretary General and shall determine his term of office, which may not exceed two years".

NPOs are therefore stable entities. Stability was, as previously mentioned, one of the key principles in the establishment of ICANN. Indeed, the NTIA White paper emphasizes that "the corporation who will manage the internet should maintain and prioritize the security and stability of the Domain Name System".

However, a considerable issue which may hinder the stability of the NPO is transparency, as well as accountability. This case of ICANN is particularly illustrative in this respect. Indeed, given the disparities in opinions and interests amongst the wide array of stakeholders which are members of ICANN, questions have been raised as to how decisions are taken. As NPOs do not have shareholders or competitors, they are often constrained, and rendered accountable by their access to

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<sup>76</sup> European Network and Information Security Agency

<sup>77</sup> European Aviation Safety Agency

<sup>78</sup> Open PEPPOL Association Internationale Sans But Lucratif (AISBL), PROPOSED STATUTES (as of 11.06.2012), [http://www.peppol.eu/about\\_peppol/openpeppol/statutes-for-open-peppol-aisbl/20120611%20OpenPEPPOL%20Proposed%20Statutes%20-%20English](http://www.peppol.eu/about_peppol/openpeppol/statutes-for-open-peppol-aisbl/20120611%20OpenPEPPOL%20Proposed%20Statutes%20-%20English)

financing<sup>79</sup>. If members no longer support and approve the association, then they can choose to stop financing it. However, if an NPO has found a stable business model, individual members can to a much lesser extent exert coercive power on the NPO. This issue has notably been raised in the case of ICANN. This issue could also be of considerable issue for an NPO regrouping all the LSP solutions. Indeed, as the LSP solutions will be used to deliver cross border public services, there are high stakes for EU Member States which need to ensure a transparent and accountable governance structure. This can be ensured by maintaining a stable Member State and European Commission presence on the decision board.

To conclude, a P/PP NPO can be set up as a very stable solution, although there may be issues with predictability and transparency given the diversity of stakeholders which can be represented within the organisation.

### **Private sector forming own NPO (.CO)**

As in the case of the .GO(C) scenario, the NPO created by the private sector can be flexibly defined and not be time-bound. The EPC has thus been established, according to its charter, “for the duration necessary to meet its objectives”.

Furthermore, the decisions taken by the private sector NPO should be rather predictable given that all stakeholders who join the association share a common vision. The preamble of the EPC charter thus states that:

“We [...members]:

- Share the common vision that Euroland payments are domestic payments,
- Join forces to implement this vision for the benefit of European customers, industry and banks accordingly,
- Launch our Single Payment Area”<sup>80</sup>.

By sharing a common vision, the predictability of the decisions taken by the NPO is to some extent ensured as it can be estimated that opinions will not differentiate substantially among member. Furthermore, it is defined in the charter of the EPC that “each EPC member must act at all times in a manner compatible with the objectives of the EPC”. If a member no longer complies with this obligation, it can be excluded from the association.

However, a member can withdraw from the association if it cannot “support a decision of a competent EPC body”. A considerable drawback of a private NPO is therefore that there is no way to enforce the decisions taken by the EPC on a member, which may come to withdraw from the association if the decision is not in its interest.

Transparency may also be an issue that the NPO is confronted with. As no public authorities, or consumer organisations, are involved in decision making, it is questionable if the interest of citizens or consumers will be taken into consideration in decision making, as there are no entities within the governance structure that could be held accountable.

To conclude, a private sector NPO (which presumes the existence of a business case for the CSP/BBs) can be considered as rather stable as members should share a common vision, or

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<sup>79</sup> Komaitis, Konstantinos (2003), ‘ICANN: Guilty as Charged?’, [http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2003\\_1/komaitis/](http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2003_1/komaitis/)

<sup>80</sup> EPC Charter version 7.0, see also: [http://www.europeanpaymentscouncil.eu/knowledge\\_bank\\_detail.cfm?documents\\_id=337](http://www.europeanpaymentscouncil.eu/knowledge_bank_detail.cfm?documents_id=337)

otherwise risk being excluded. This is also a considerable drawback as this highlights that there is no way for the NPO to enforce its decision if they are not in the interest of one of the members. This scenario would therefore score rather poorly on this scenario.

### Supervisory authority monitoring private companies (.CG)

The continuity of a supervision based scenario can be ensured relatively easily, given that the primary requirement is the continuing operation of one or more supervisory bodies. As these bodies are responsible for the enforcement of norms which are set externally, long term strategic and stable planning is thus possible to the extent that these goals can also be met at the level where norms are decided upon.

To conclude, the scenario can thus score highly on this point, although it should be noted that the issues which are most sensitive from the perspective of long term stable planning (namely the definition of norms that should be complied with) will be done elsewhere outside of the scope of this scenario.

### Assessment scoring

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 41 – Scoring of the extent to which long-term strategic and stable planning is possible*

| Assessment criteria                                                                         | .G-a | .G-b | .GO(C) | .CO | .CG |
|---------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Governance:</b> The extent to which long-term strategic and stable planning is possible. | 2    | 5    | 4      | 2   | 5   |

The first scenario, the DG Programme (.G-a) scores a two in terms of long-term strategic and stable planning because although the Programme is transparent in its decision-making, it is not predictable in the long-term as it is time-bound and has to be renegotiated regularly. Therefore, planning cannot exceed the duration of the programme (hence the low score). Conversely, an Agency scores the maximum five as it is not time-bound in any way and it is stable over time as it is established by regulation. Furthermore, it is transparent as governments are involved and they are accountable to their citizens. In addition to this, the transparency is increased by the presence of several stakeholder groups. The .GO(C) scenario scores slightly lower than an Agency, with a score of four as it has the same advantages as an Agency as it can be setup by a regulation and as governments are involved, the process will be transparent, however, it is a little weaker in the long-term as even if it is setup by regulation, membership is still voluntary. The NPO setup by private sector (for which it is presumed that there is a business case) only scores a two although it is not time-bound because transparency and predictability are very low as the decision-making only has to be transparent internally and as there is no outwards accountability, there is very no guarantee that it will be stable planning. Finally, the .CG scenario is perfectly capable of supporting long term strategic and stable planning, as supervisory authorities are as stable as the government which has created them wishes them to be, and as they can perfectly follow the planning which is set out for them at the political level.

### ***The extent to which the revenue streams are continuous and are not time-limited.***

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In the following sections, an assessment of the eighth assessment criterion is made for each of the scenarios.

#### **DG Programme (.G - a)**

The revenue streams for a programme are by default time-limited as the programme is time-limited (to a period of maximum seven years) and the funding provided for the programme is provided for the duration of the programme. Furthermore, funding for a new programme is not ensured as a programme is subject to approval by the Member States and there may not be political will for a new programme.

To conclude, the DG programme scenario would score poorly in terms of continuity of revenue streams.

#### **EC Agency (G- b)**

In terms of continuity, it has been established that an Agency is continuous (or rather can be designed to be so if wished) and therefore from the perspective of the Agency, there are no time-limitations and the revenue streams can therefore be continuous. Of course whether the revenue streams are continuous will depend on whether there is a continuous demand for the services. This will however be the case for any scenario.

To conclude, this scenario will score very highly on this assessment criterion.

#### **NPO set up by the public sector, private sector co-deciding (.GO(C))**

Under a P/PP NPO, as has been previously described, there are a number of potential revenue sources. Some, such as donations, can be sporadic, whereas others such as membership fees or public funding are more continuous and stable. Public funding depends on national and European funding programmes, which are time bound. Finally, user fees are proportionate to the use of the services provided under the NPO. By combining these various revenue sources, an NPO can thus ensure that it has access to continuous revenue sources.

To conclude, this scenario will score relatively highly for this assessment criterion.

#### **Private sector forming own NPO (.CO)**

A pre-condition to the private sector forming an NPO to manage the solutions developed by the LSPs is for a clear value proposition to be defined in order provide them with the incentives to cooperate and provide the solutions. Once this is ensured, and sufficient demand from end-users enables to generate profit, the private sector will finance the NPO and the management of the solutions. As long as there is a clear business case, revenue streams for the NPO will be continuous and not be time-bound.

To conclude, as the continuity of financing is dependent on the business potential of the solutions, this scenario would score relatively low for this assessment criterion.

## Supervisory authority monitoring private companies (.CG)

A supervision based scenario can score very highly on this point, as revenue streams (which can combine public funding and contributions from supervised market players, as noted above) can be made fully recurring: public funding can be provided continuously, and market players can be required to pay periodic (e.g. annual contributions), which can be made to vary depending on funding needs and market success.

To conclude, the scenario scores optimally for this assessment criterion.

## Assessment scoring

The following table presents a summary of the scores which have been attributed, for this assessment criterion, to each of the scenarios.

*Table 42 – Scoring of the extent to which the revenue streams are continuous and are not time limited*

| Assessment criteria                                                                               | .G-a | .G-b | .GO(C) | .CO | .CG |
|---------------------------------------------------------------------------------------------------|------|------|--------|-----|-----|
| <b>Financing:</b> The extent to which the revenue streams are continuous and are not time-limited | 1    | 5    | 4      | 3   | 5   |

In terms of financing, the extent to which the revenue streams are continuous and not time-limited, the DG Programme scores the lowest score, with only one point, as the programme itself is time-limited and therefore not continuous, but has to be renewed (and renegotiated) every seven years at best. Conversely, the Agency has no time-limitation and even if revenue should decrease, the financing can be continuous as it can be partly funded by the public sector. Similarly, the P/PPNPO is also not time-limited and it can ensure continuous financing as the Agency. However, this scenario scores slightly lower than the Agency because there is a risk that Member States may leave the NPO or may not join to begin with as the participation is voluntary, therefore the scenario scores a four. The NPO setup by the private sector scores a three because although it presumes the existence of a business case and that it is not time-limited; there is no public sector backing to ensure continuity in case of lack of revenue in a period. Finally, the .CG scenario also scores the highest, as its financial continuity can be perfectly ensured due to the possibility of falling back on stable and predictable public sector funding if needed.

### 6.3.2 Comparison of assessment scoring

| Objectives/Assessment criteria                                                                                                                                                                                       | .G-a      | .G-b      | .GO(C)    | .CO       | .CG       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Stakeholder engagement</b>                                                                                                                                                                                        |           |           |           |           |           |
| <p>➤ <b>Governance:</b> The extent to which the governance ensures buy-in of the Member States and allows a balanced stakeholder representation.</p>                                                                 | 2         | 5         | 4         | 1         | 2         |
| <b>Take up</b>                                                                                                                                                                                                       |           |           |           |           |           |
| <p>➤ <b>Governance:</b> The extent to which the governance stimulates take-up by Member States and then service providers.</p>                                                                                       | 2         | 4         | 4         | 2         | 4         |
| <p>➤ <b>Operations:</b> The extent to which the service level is reliable, continuous and lock-in effects are avoided thereby stimulating take-up</p>                                                                | 2         | 5         | 4         | 3         | 4         |
| <b>Flexibility</b>                                                                                                                                                                                                   |           |           |           |           |           |
| <p>➤ <b>Governance:</b> The extent to which it is possible to have different decision-making structures and processes for different Core Service Platforms and the extent to which new ones can easily be added.</p> | 1         | 5         | 5         | 4         | 4         |
| <p>➤ <b>Financing:</b> The extent to which it is possible to have multiple different financing sources and schemes simultaneously and the extent to which new ones can easily be added.</p>                          | 1         | 5         | 4         | 2         | 3         |
| <p>➤ <b>Operations:</b> The extent to which scalability and adaptability are possible, for operations.</p>                                                                                                           | 1         | 4         | 4         | 5         | 4         |
| <b>Continuity</b>                                                                                                                                                                                                    |           |           |           |           |           |
| <p>➤ <b>Governance:</b> The extent to which long-term strategic and stable planning is possible.</p>                                                                                                                 | 2         | 5         | 4         | 2         | 5         |
| <p>➤ <b>Financing:</b> The extent to which the revenue streams are continuous and are not time-limited</p>                                                                                                           | 1         | 5         | 4         | 3         | 5         |
| <b>Total score</b>                                                                                                                                                                                                   | <b>12</b> | <b>38</b> | <b>33</b> | <b>22</b> | <b>31</b> |

As the table on the previous page shows, based on the assessment by the study team and input from the stakeholders (represented at the workshop), the highest scoring scenario is the .G-b scenario, followed closely by the .GO(C) and .CG. In contrast, the .CO and .G-a scenario score relatively weakly. Examining the reasoning behind these scores, the following general observations can be developed, as also validated during this Study's second workshop, keeping in mind that when talking about private sector involvement of any kind, it is assumed that there is a business case:

- The .G-b and .GO(C) scenarios are seen as the most mature scenarios, which have the capability of attracting all relevant stakeholders and of ensuring stability and sustainability, both operationally and financially.
- The .G-a scenario on the other hand is seen as an interesting short term option and as a way of building consensus between stakeholders. However, due to its weaknesses shown in the table above (notably with respect to weaker governance impact, limited sustainability and restricted financing options); it is not seen as a viable long term solution. At best, it is seen as a first step towards the stronger .G-b or .GO(C) scenarios.
- The .CO scenario suffers from the clear weakness of having no public sector involvement. Thus, it is again perceived as an interesting tool to build consensus between key market players. However, its inability of ensuring public sector take-up, the uncertainty of stable financing and the risk of lock-in through domination by a small number of very large private companies means that it is not seen as a viable long term strategy.
- Finally, the .CG scenario performs strongly but fails to address the challenges comprehensively. It plays at a different level than other scenarios, as it only addresses the assessment of compliance with established norms, whereas all other scenarios also examine who establishes the norms. Thus, it is a supportive scenario that is very effective in reaching its goal (assessing compliance of private players), but which does not resolve fundamental issues (how are norms established, and how can the operational sustainability of CSPs be ensured)? Thus, it should be seen as a supporting option for other scenarios, rather than as a full scenario in its own right.

This analysis shows that there can be a **temporal** component in the choice of scenarios: the .G-b and .GO(C) scenarios are the only ones which are seen as comprehensive long term solutions, whereas the .G-a and .CO scenarios are seen only as temporary supportive solutions. The .CG scenario on the other hand can be deployed as a tool to support the other scenarios, once a mature private sector service market has originated that can be supervised.

### 6.3.3 Overall Assessment of the Scenarios

The assessment of each of the five scenarios provided individual scores per scenario for each assessment criteria. Table 43 shows the total scores for each scenario.

*Table 43 – Conclusion of the assessment*

| Scenario | DG Programme (.G-a) | Agency (.G-b) | P/PP NPO (.GO(C)) | NPO setup by the private sector (.CO) | Supervisory Authority (.CG) |
|----------|---------------------|---------------|-------------------|---------------------------------------|-----------------------------|
| Score    | 12                  | 38            | 33                | 22                                    | 31                          |

As the table shows, the Agency scored highest, followed by the P/PP NPO. Third was the Supervisory Authority, followed by the NPO setup by the private sector and finally the DG Programme with the lowest score.

The reason the Agency scores highest is that it provides full flexibility in terms of who can be involved in decision-making as well as in both possible financing sources and possible financing schemes. Furthermore, in terms of operations, carrying out operations in-house is considered best as it is the best way to ensure complete continuity. The Agency does very well as it can perform operations in-house since it is able to attract and build the needed capabilities and capacities. All these factors mean that the Agency does very well in terms of all of the objectives; stakeholder representation, take-up, flexibility and continuity. The .GO(C) scenario, the P/PP NPO, does very well as well, but a slight bit less well than the Agency. This is mainly due to two things, first of all, the scenario presents a little less certainty in terms of financing as the Agency can fall back on public sector funding in case there is no – or reduced – financing. Although the NPO can do this too in terms of membership fees, there is no guarantee of having enough membership fees as membership is on a voluntary basis and members can leave (whereas the Agency can have formal and obligatory representation). The .CG scenario (which assumes the existence of a business case for the CSPs), is to a certain extent different from the other scenarios (as explained in section 6.2.3), The Supervisory Authority, scores close to the .GO(C), the only area where the .GO(C) is slightly stronger is that of balanced stakeholder representation. In .CO scenario, the NPO setup by the private sector which also presumes the presence of a business case, scores a great deal lower than the Supervisory Authority, only the private sector is (guaranteed) a part of the decision-making. Furthermore, it scores low in terms of continuity as it is only ensured for the CSP/BBs where there is a certain business case, i.e. potential for profit. Finally the DG programme scores the lowest because it is time-limited thereby affecting continuity, only the European Commission decides (Member States only when the Programme is defined) and it is very inflexible as it is defined for five years and is hard to change during those five years. It should however be noted that the DG Programme is likely to be a good solution in the short-medium term in order to transition into the final scenario. In the workshop, used to debate the matter with all the stakeholder groups, there was also consensus around these conclusions.

## **6.4 Assessment of Scenarios per CSP/BB**

In order to carry out the preliminary assessment, it is important to understand the Core Service Platform/Building Block aspect and how it fits into the scenarios. The assessment can be considered a second assessment. An assessment of the scenarios is made for each Core Service Platforms/Building Blocks, along the lines of the two driving GOFA elements, Governance and Financing.

### **6.4.1 Core Service Platforms and Building Blocks**

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As previously laid out in the, there are five CSPs: eID, eProcurement, eBusiness, eHealth and eJustice. In addition there are also (for the moment) three building blocks that are considered as fundamentally reusable as each of the five others make use of one or more of them; eDelivery, eDocument, and eSignature. Therefore, there are a total of eight Core Service Platforms and (reusable) building blocks that are considered as well as the cross-CSP/BB aspect. Put differently, the eight CSP/BBs and the reusability aspect of the platforms is explored in detail here.

## 6.4.2 Assessment

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This assessment takes a closer look at each of the five, previously defined, scenarios. It examines to what extent the scenarios are capable of addressing the needs for the DSI for the provision of cross-border public services, as well as the strategic choices that have been made in each of the LSPs so far.

This assessment is made both with respect to the issue of Governance/decision-making (i.e. who establishes and maintains the outcomes of key CSP/BB decisions such as common policies, specifications). The assessment is made by mapping each of the five scenarios against each of the eight CSP/BBs and the cross-CSP/BB aspect, since the suitability of a scenario varies from CSP/BB to CSP/BB. The resulting matrix is shown on the next pages with respect to governance, using the following colour coding:

*Table 44 – Legend table*

| Colour | Meaning                                                                                     |
|--------|---------------------------------------------------------------------------------------------|
| Green  | Indicates a perfectly viable scenario for this CSP                                          |
| Yellow | Indicates a viable scenario for this CSP with minor challenges                              |
| Orange | Indicates a viable scenario for this CSP with more substantial challenges                   |
| Red    | Indicates a fundamentally unsuitable scenario for this CSP due to insurmountable challenges |

Each cell in the matrix summarises briefly which characteristics and challenges (if any) present themselves. Each scenario is discussed in greater detail in the following sections.

Table 45 – Overview of assessment of the basic scenarios for governance for each of the CSP/BBs

| Basic scenario | Decision making power | eID                                                                                                                         | eProcurement                                                                                                                                                                                         | eBusiness                                                                                                                                                                                                  | eHealth                                                                                                     | eJustice                                                                                                    | eSignature                                                                                                  | eDocument                                                                                                   | eDelivery                                                                                                   | Cross-CSP/BB                                                                              |
|----------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| .G             | DG Programme          | Viable, with mandate to execute eID and Trust Services Regulation.                                                          | Viable, but eProcurement is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Lighter EU regulatory framework so no obligations for Member States. | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature / eDocument but freedom in implementation. | Viable, but no obligation for take-up and need for stakeholder engagement.                                  | Viable, but no obligation for take-up and need for stakeholder engagement.                                  | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players.        | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players.        | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players.        | Viable, with coordination and reuse strongly governed.                                    |
| .G             | Agency                | Viable, with mandate to execute eID and Trust Services Regulation. Agency has better possibility of attracting top experts. | Viable. Private sector participants can co-decide. eProcurement is Member States competence, so it is up to Member States to decide if they want to adhere/take-up.                                  | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation.   | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable, with coordination and reuse strongly governed and opportunity to attract experts. |

| Basic scenario | Decision making power                              | eID                                                                                                                                                                                         | eProcurement                                                                                                                                                                       | eBusiness                                                                                                                                                                                                                                  | eHealth                                                                                                                                | eJustice                                                                                                                                           | eSignature                                                                                                  | eDocument                                                                                                   | eDelivery                                                                                                   | Cross-CSP/BB                                                                              |
|----------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| .GO(C)         | P/PP NPO                                           | Viable, but not ideal. Not all Member States are required to participate. Risk of not being able to have cross-EU interoperability in eID as needs and requirements not taken into account. | Viable. Private sector participants can co-decide. eProcurement is a Member States' competence, so up to Member States to decide if they want to adhere/take-up.                   | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation.                                   | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up.                            | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up.                                        | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable, with coordination and reuse strongly governed and opportunity to attract experts. |
| .CO            | Private NPO                                        | Not viable. Member States needs and requirements not necessarily taken into account.                                                                                                        | Viable, but eProcurement is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Public sector is key stakeholder in eProcurement). | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation. Public sector is key stakeholder. | Viable. Market players are represented, and market driven. Sector is already organised (e.g. IHE/Continua). No obligation for take-up. | Viable. Market players are represented, and market driven. Sector is already organised (e.g. European Bar Association). No obligation for take-up. | Viable, but there is a need to supervise market players.                                                    | Viable, but there is a need to supervise market players.                                                    | Viable, but there is a need to supervise market players.                                                    | Not viable. A purely private sector initiative would not ensure reuse and coordination.   |
| .CG            | Supervisory authority monitoring private companies | Not viable. Member States with public sector eIDs would not accept supervisory authorities at EU level, and at Member States level does not make sense.                                     | Viable. Monitor PEPPOL implementation, similar to eSignature market. Potentially very large number of systems.                                                                     | Not viable. eBusiness implementations are public sector owned; private sector is not involved.                                                                                                                                             | Viable. Monitor epSOS implementation. But added complexity because of stakeholder involvement.                                         | Viable. Monitor e-CODEX implementation. But added complexity because of stakeholder involvement.                                                   | Viable                                                                                                      | Viable                                                                                                      | Viable                                                                                                      | Not viable, as not all CSP/BBs are provided by private companies.                         |

### 6.4.3 Governance/Decision-Making Assessment

#### Scenario 1: .G-a – European Commission DG Programme

Table 46 – Overview of assessment of the basic scenario ".G-a" for governance for each of the CSP/BBs

| Basic scenario | eID                                                                                                 | eProcurement                                                                                                                                                                                | eBusiness                                                                                                                                                                                         | eHealth                                                                    | eJustice                                                                   | eSignature                                                                                           | eDocument                                                                                            | eDelivery                                                                                            | Cross-CSP/BB                                           |
|----------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| .G             | Viable, with mandate to execute eID and Trust Services Regulation. Need for notification mechanism. | Viable, but eProcurement is Member States competence, so up to Member States to decide if they want to adhere/take-up. Lighter EU regulatory framework so no obligations for Member States. | Viable, but eBusiness (PSC) is Member States competence, so up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature / eDocument but freedom in implementation. | Viable, but no obligation for take-up and need for stakeholder engagement. | Viable, but no obligation for take-up and need for stakeholder engagement. | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players. | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players. | Viable, with mandate to execute eID and Trust Services Regulation. Need to supervise market players. | Viable, with coordination and reuse strongly governed. |

The first scenario would imply that the EU takes the lead through a programme carried out within the European Commission. As the table shows, this scenario is not impossible for any CSP/BB (there are no red cells), but is also not optimal for any CSP/BB (there are no green cells).

This is primarily due to the relatively inflexible nature of a DG Programme, which has to be defined periodically. Its temporary character is not ideally suited for a policy area that needs permanent governance and continuous access to highly skilled specialists. Furthermore, the scenario struggles to meet the needs of policy areas in which a strategic choice has been made to give Member States a strong co-deciding role.

Looking at the individual CSP/BBs, the following observations can be made:

- ▶ With respect to eID, eSignature, eDocument and eDelivery, the Programme could be tasked principally with the execution of the eID and Trust Services Regulation, i.e. preparing implementing and delegated acts. However, it should be borne in mind that Member States play a strong

decision-making role as notifiers (for eID) or supervisors (for eSignature, eDocument and eDelivery), which the Programme scenario needs to consider.

- ✘ With respect to eProcurement and eBusiness, the Programme could be tasked with maintaining the deliverables of PEPPOL and SPOCS and seeking their formalisation where necessary (e.g., through standardisation). However, Member States are free to implement these deliverables<sup>81</sup>, so the impact is not assured.
- ✘ With respect to eHealth and eJustice, the Programme would have to face the fundamental challenge that private sector stakeholders in these sectors (such as doctors, hospitals and lawyers) are not given a driving role. Given the importance of the support of these professions, occupations, and institutions for such initiatives, this is a significant negative factor.
- ✘ With respect to cross-CSP/BB coordination, the Programme is a viable option. Its primary downside is, however, it is inherently less stable character than an Agency.

## Scenario 2: .G-b – EU Agency

Table 47 – Overview of assessment of the basic scenario ".G-b" for governance for each of the CSP/BBs

| Basic scenario | eID                                                                                                                         | eProcurement                                                                                                                                                           | eBusiness                                                                                                                                                                                                | eHealth                                                                                                     | eJustice                                                                                                    | eSignature                                                                                                  | eDocument                                                                                                   | eDelivery                                                                                                   | Cross-CSP/BB                                                                              |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| .G             | Viable, with mandate to execute eID and Trust Services Regulation. Agency has better possibility of attracting top experts. | Viable. Private sector participants can co-decide. eProcurement is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable, with coordination and reuse strongly governed and opportunity to attract experts. |

<sup>81</sup> While there is a legal obligation to operate a PSC under the Services Directive, Member States are of course free not to follow the SPOCS solutions as long as they meet their regulatory obligations under the Directive and its related Commission Decisions.

The second scenario would imply that the EU takes the lead, but can have the other stakeholders co-decide through an Agency. As the table shows, this scenario is not impossible for any CSP/BB (there are no red cells), and is optimal for the rest.

Compared to the previous scenario, the primary benefits of this scenario are its increased possibilities for sustainability and flexibility, and the resulting increased opportunity for attracting top experts.

Looking at the individual CSP/BBs, the following observations can be made:

- With respect to eID, eSignature, eDocument and eDelivery, the Agency could be tasked principally with the execution of the eID and Trust Services Regulation, i.e. preparing implementing and delegated acts. The scenario is more suitable for eID, where Member States still notify national eIDs in accordance with the Regulation, but where the Agency could be tasked with maintaining eID trust lists. This factor is less relevant for eSignature, eDocument and eDelivery, for which the Regulation relies more strongly on national supervisory bodies. The scenario outperforms the Programme scenario due to its greater potential sustainability and higher ability to attract specialised experts.
- With respect to eProcurement and eBusiness, the Agency could be tasked with maintaining the deliverables of PEPPOL and SPOCS and seeking their formalisation where necessary (e.g. through standardisation). However, Member States are free to implement these deliverables<sup>82</sup>, so the impact is not assured.
- With respect to eHealth and eJustice, the Agency does not share the same fundamental challenge as the Programme scenario, namely that private sector stakeholders in these sectors (such as doctors, hospitals, and lawyers) can be given a driving role. Given the importance of the support of these professions, occupations, and institutions, this is an important aspect of an Agency to take into consideration.
- With respect to cross-CSP/BB coordination, the Agency is a viable option, because its greater potential sustainability and higher ability to attract specialised experts is a key benefit.

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<sup>82</sup> While there is a legal obligation to operate a PSC under the Services Directive, Member States are of course free not to follow the SPOCS solutions as long as they meet their regulatory obligations under the Directive and its related Commission Decisions.

### Scenario 3: .GO(C) – A P/PP NPO mandated by the Public Sector, with the private sector co-deciding within this NPO

Table 48 – Overview of assessment of the basic scenario ".GO(C)" for governance for each of the CSP/BBs

| Basic scenario | eID                                                                                                                                                                                         | eProcurement                                                                                                                                                           | eBusiness                                                                                                                                                                                                | eHealth                                                                                                     | eJustice                                                                                                    | eSignature                                                                                                  | eDocument                                                                                                   | eDelivery                                                                                                   | Cross-CSP/BB                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| .GO(C)         | Viable, but not ideal. Not all Member States are required to participate. Risk of not being able to have cross-EU interoperability in eID as needs and requirements not taken into account. | Viable. Private sector participants can co-decide. eProcurement is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. All stakeholders are represented while retaining freedom to participate. No obligation for take-up. | Viable. Reuse can be ensured, but neutrality may be challenging. |

The third scenario is similar in many respects to an Agency, but not the same: a non-profit organisation still takes the lead but it has a specific EU level mandate. However, in this scenario both the private sector and public sector can be given a co-decision role (in some or all parts), ensuring their effective influence in the governance of the CSP/BBs. However, as opposed to an Agency, there is no way to oblige Member States to participate (in some or all parts of the initiative).

As the Scenario 3 table shows, this scenario is impossible for the eID CSP/BB, but it is optimal for a substantial number of CSP/BBs that depend to some extent on the private market, at least in some Member States.

Looking at the individual CSP/BBs, the following observations can be made:

- ✘ With respect to eID, an NPO struggles to ensure that all Member States participate or support the NPO's work. No assurance of effective impact results. This scenario also fails to consider the leading role that Member States have been given under the eID and Trust Services Regulation.
- ✘ With respect to eSignature, eDocument and eDelivery, the scenario is viable: it considers that these CSP/BBs are treated as market services under the eID and Trust Services Regulation, so that private sector participation is more viable. The Regulation relies on national supervisory bodies, which implies a strong Member States' role, but this does not rule out private sector co-governance.

- With respect to eProcurement, the scenario is also highly viable, as the NPO could be tasked with maintaining the PEPPOL deliverables. Furthermore, given that eProcurement solutions are developed by private companies in some Member States (outside of the PEPPOL context), this scenario considers alternative solutions as well. It is thus well attuned to market realities.
- With respect to eBusiness, the scenario is less interesting. PSC implementation is by definition a public sector task, where competition by private sector solutions is less of a factor and where private sector co-governance is thus not required. For eBusiness, the NPO would have to be designed to exclude the private sector from eBusiness decisions.
- With respect to eHealth and eJustice, this scenario can ensure co-decision-making power for the primary stakeholders in the private market. Therefore, it is the optimal scenario for these CSPs.
- Finally, with respect to cross-CSP/BB coordination, an NPO is viable. However, it may struggle to ensure effective take-up. This is because some CSP/BBs are dependent on private sector initiatives in some countries, which may not welcome a strong driving NPO that may show insufficient neutrality towards their own solution models.

#### Scenario 4: .CO – A private sector formed NPO without a formal mandate from the public sector

Table 49 – Overview of assessment of the basic scenario ".CO" for governance for each of the CSP/BBs

| Basic scenario | eID                                                                                  | eProcurement                                                                                                                                                                       | eBusiness                                                                                                                                                                                                                                  | eHealth                                                                                                                                | eJustice                                                                                                                                           | eSignature                                               | eDocument                                                | eDelivery                                                | Cross-CSP/BB                                                                            |
|----------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| .CO            | Not viable. Member States needs and requirements not necessarily taken into account. | Viable, but eProcurement is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Public sector is key stakeholder in eProcurement). | Viable, but eBusiness (PSC) is a Member States' competence, so it is up to Member States to decide if they want to adhere/take-up. Limited rules for eSignature/eDocument but freedom in implementation. Public sector is key stakeholder. | Viable. Market players are represented, and market driven. Sector is already organised (e.g. IHE/Continua). No obligation for take-up. | Viable. Market players are represented, and market driven. Sector is already organised (e.g. European Bar Association). No obligation for take-up. | Viable, but there is a need to supervise market players. | Viable, but there is a need to supervise market players. | Viable, but there is a need to supervise market players. | Not viable. A purely private sector initiative would not ensure reuse and coordination. |

The fourth scenario is separate from all of the above, previous scenarios, as it does not involve strong public sector involvement. Instead, governance is entrusted to the private sector which forms its own NPO.

As the table shows, this scenario is impossible for the eID CSP and for the cross-CSP/BB, but it is viable for the eHealth and eJustice CSP/BBs.

Looking at the individual CSP/BBs, the following observations can be made:

- With respect to eID, the scenario is not compatible with the approach of the eID and Trust Services Regulation, which implies a strong public sector role.
- With respect to eSignature, eDocument and eDelivery, the scenario is viable: it considers that these CSP/BBs are treated as market services under the eID and Trust Services Regulation, so that private sector participation is more viable. However, the Regulation relies on national supervisory bodies, which implies a strong Member States' role; the wholesale elimination of the public sector from governance may therefore be a significant problem.
- With respect to eProcurement and eBusiness, the scenario is viable but not optimal, as the public sector is a key stakeholder in both areas. The elimination of the public sector from governance may therefore once again be a significant problem.
- With respect to eHealth and eJustice, this scenario provides strong decision-making power for the primary stakeholders in the private market. Furthermore, NPOs already exist that match this model (although they are not presently involved in this governance task). The model therefore seems viable.
- Finally, with respect to cross-CSP/BB coordination, an NPO solution without public sector participation does not appear viable, given that the public sector is a key stakeholder for too many CSP/BBs.

### Scenario 5: .CG – Public sector mandated Supervisory Authority monitoring private companies

Table 50 – Overview of assessment of the basic scenario ".CG" for governance for each of the CSP/BBs

| Basic scenario | eID                                                                                                                                                          | eProcurement                                                                                                   | eBusiness                                                                                      | eHealth                                                                                        | eJustice                                                                                         | eSignature | eDocument | eDelivery | Cross-CSP/BB                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------|-----------|-----------|-------------------------------------------------------------------|
| .CG            | Not viable. Member States with public sector eIDs would not accept supervisory authorities at EU level, and at Member States' level, it does not make sense. | Viable. Monitor PEPPOL implementation, similar to eSignature market. Potentially very large number of systems. | Not viable. eBusiness implementations are public sector-owned; private sector is not involved. | Viable. Monitor epSOS implementation. But added complexity because of stakeholder involvement. | Viable. Monitor e-CODEX implementation. But added complexity because of stakeholder involvement. | Viable     | Viable    | Viable    | Not viable, as not all CSP/BBs are provided by private companies. |

This scenario builds on the current model for eSignature: while as a model it allows CSP/BBs to be run by the private sector, the market players are supervised by a Supervisory Authority with a public sector mandate.

As the table shows (Table 50), this scenario is impossible for eID, eBusiness and the cross-CSP/BB, but it is very viable for the eSignature, eDocument and eDelivery CSP/BBs. Indeed, the scenario is currently already applied for the eSignature CSP/BB.

Looking at the individual CSP/BBs, the following observations can be made:

- With respect to eID and eBusiness, the scenario is not applicable, given that neither eIDs nor PSC implementations are private sector services, at least not in a number of Member States. This scenario does not consider public sector control, where EU level supervision is politically not viable and national level supervision is not logical, as it would involve the public sector supervising itself. Therefore, it is not viable for these CSP/BBs.
- With respect to eSignature, eDocument and eDelivery, the scenario is viable. It is already functioning in the case of eSignature, and it is also planned to apply it for eDocument and eDelivery under the eID and Trust Services Regulation.
- With respect to eProcurement, the scenario is viable, as there is no reason in principle why supervisory authorities could not be tasked with supervising eProcurement solutions for PEPPOL compliance through a form of trust marking scheme. However, it may be hard to apply in practice, given the potentially very large number of eProcurement systems in Member States which rely on public sector partners, and given that PEPPOL compliance is not mandatory for a trustworthy eProcurement system. However, PEPPOL interoperable systems are beginning to appear in the Member States (e.g. Lund University in Sweden, which has become service provider Visma Proceedo's first customer to receive electronic invoices via PEPPOL)
- With respect to eHealth and eJustice, the scenario is viable on grounds that are comparable to those affecting eProcurement: supervisory authorities could be tasked with supervising epSOS/e-CODEX compliance using a form of trust marking scheme. Application in practice may, however, be complex, given the strong role of stakeholders that may oppose supervision that takes place according to criteria in which they have had no involvement in terms of their formulation and development.
- Finally, with respect to cross-CSP/BB coordination, a governance solution in which public sector participation consists largely of supervision of private sector players is not viable, given that not all CSP/BBs depend on private sector players.

#### 6.4.4 Conclusions per CSP/BB

The assessment shows that no single model is capable of providing a comprehensive solution for all CSP/BBs. The following table (Table 51) shows which scenario is best for each CSP/BB (vis-à-vis governance, which is the only driver).

*Table 51 – Overview of assessment of the basic scenarios*

| Basic scenario | Decision making power                              | eID | eProc <sup>83</sup> | eBus | eHealth | eJustice | eSign | eDoc | eDeliver | Cross-CSP/BB |
|----------------|----------------------------------------------------|-----|---------------------|------|---------|----------|-------|------|----------|--------------|
| .G             | DG Programme                                       |     |                     |      |         |          |       |      |          |              |
| .G             | Agency                                             |     |                     |      |         |          |       |      |          |              |
| .GO(C)         | NPO by EC, private sector co-deciding              |     |                     |      |         |          |       |      |          |              |
| .CO            | Private sector forming own NPO                     |     |                     |      |         |          |       |      |          |              |
| .CG            | Supervisory authority monitoring private companies |     |                     |      |         |          |       |      |          |              |

The table allows a number of interesting conclusions to be drawn:

- ✚ With respect to eID and Cross-CSP/BB governance, only an Agency-based scenario is ideally viable. Providing Member States commit to joining the NPO, at least for the eID part, .GO(C) is also viable.
- ✚ With respect to eProcurement, the .GO(C) scenario is viable, but so is an Agency.
- ✚ For eBusiness, there is no ideal scenario (a scenario which leads to a green cell). However, the DG Programme, Agency and .GO(C) scenarios are more viable than the .CO and .CG scenarios.

<sup>83</sup> eProc = eProcurement, eBus = eBusiness, eSign = eSignature, eDoc = eDocument, eDeliver = eDelivery.

- eHealth and eJustice always score identically, due to the same governance challenge of involving key private sector stakeholders. A .GO(C), .CO or an Agency scenario therefore seems necessary. .CO is slightly less preferred, due to the fact that the public sector is obviously also a key stakeholder for both CSP/BBs, and they could not be involved in a .CO scenario.
- Finally, eSignature, eDocument and eDelivery also always score identically, due to the policy choice of treating them as market services. A joint governance model is therefore recommended. .CG is the currently supported model, which is also planned for the future via the proposed eID and Trust Services Regulation. However, an Agency is also viable.

As is clear from this assessment, the DG Programme, it is not ideal for any of the CSP/BBs, however, not impossible for any (confirming that it is a possible solution in the short-medium term). The Agency is very well suited to contain all the CSPs, except eBusiness where it does well but is not optimal. However, it should be noted that there is no scenario that scores better for eBusiness. The .GO(C) scenario also presents itself as a possibility across the full range of CSPs including for cross-CSP governance, however, it does rank less well for both eID and cross-CSP governance, than the Agency. The NPO setup by the private sector on the other hand is not a possibility for eID, not for cross-CSP governance and whilst it is a possible scenario for the remain CSPs; it only scores really well (but not better than Agency and the .GO(C) scenario) for eHealth and eJustice. Finally, the Supervisory Authority is not a realistic scenario for the eID and eBusiness scenarios, not for the cross-CSP governance, however, it is very well suited for eSignature, eDocument and eDelivery, just as the Agency and the NPO setup by the European Commission are.

To conclude it is clear that an Agency is the most viable solution across the board (as it is the only one that does very well for both eID and for cross-CSP governance). However, although not as strong, .GO(C) is also a real possibility as it is not impossible for any of the CSPs. This shows that both in terms of the assessment of the scenarios based on the scoring for the assessment criteria (along the objectives for sustainability) and in terms of what is possible for the CSP/BBs, the only two real possibilities are an Agency and a P/PP NPO setup by the European Commission (with the Agency potentially being more likely to be sustainable as it was pointed out in the workshop that the Agency is a strong solution as it also ensured EU representation, which is needed for the cross-CSP governance). The Supervisory Authority comes in at a third place, but its viability presumes sufficient maturity for it to be given to the market.

## 6.5 Cost-benefit Analysis

In this section, the costs and benefits relating to each scenario are assessed.

### 6.5.1 Methodology

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The cost-benefit methodology is comprised of three key parts:-

- A review of potential use levels for the nine CSP/BBs and building blocks (eID, eProcurement, eBusiness, eHealth, eJustice, eSignature, eDocument, eDelivery) as well as reuse across CSPs by investigating their possible levels of cross-border use for nine citizen services and seven business services identified as the most important in a recent study undertaken for the Commission of the services most likely to facilitate cross-border activities. This will provide a basis for estimating the volume of transactions/work for the organisation that might oversee the nine components for each of the scenarios in the future.

The estimated volume of transactions will be used as a multiplicand to underpin the estimation of the level of benefits (benefit per transaction multiplied by the estimated number of transactions) and the costs (probable organizational cost per transaction multiplied by the estimated number of transactions) of the scenarios.

- A review of organisations that have the same characteristics as the five scenarios being reviewed (.G-a, .G-b, .GO(C), .CO, .CG) was undertaken to examine the characteristics and changes over time in the running costs for the types of organisations that might be adopted to govern and run the CSPs and building blocks in the future. Ten organisations were examined in detail through reference to annual reports, organisation accounts and through seeking further information directly from the organisations. This information was used in two ways. Firstly, to find the range of operating costs and income for each of the five scenarios. Secondly, analysis through investigating the volume of work undertaken by each organisation to provide an insight into the size and operating structure of organisations that might be required to run the CSPs.
- The final element considers the establishment/development costs that will be incurred in developing the required organisational structures before the organisations are formally launched. The second part of our methodology (above) focuses on running costs when organisations are established. This part will focus on the set-up costs incurred in seeking legal advice, for recruitment, for obtaining premises and all the other activities that will have to take place before an organisation is formally launched.

These costs were found by communicating with the ten organisations involved in the second methodological component above. In addition representative values were found for legal costs, recruitment costs and real estate fees.

The methodology adopted for this study is an enhanced and more wide-ranging version of the impact assessment for the IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens) Infrastructure Services study<sup>84</sup>. The IDABC study only used two other organisations for benchmarking, this study uses ten. The IDABC used subjective estimates to calculate establishment/development costs for organisations; this study has sought information from relevant organisations and appropriate practitioners.

The methodology provides a robust ex ante overview of the estimated costs and benefits associated with the development of the CSPs and building blocks (eID, eProcurement, eBusiness, eHealth, eJustice, eSignature, eDocument, and eDelivery) as well as reuse across CSPs for the scenarios. When the appropriate scenario or scenarios is/are determined it will be necessary to undertake a more complete and extensive impact assessment to determine costs and benefits more comprehensively.

It is fully acknowledged that calculations concerning probable levels of cross-border residents and the costs and benefits associated with the scenarios are ambitious. However, in any case it was thought to be important to provide the best estimates reasonably possible from relevant data and documents so that information relating to costs and benefits of the scenarios could be considered alongside assessment presented in the preceding chapters.

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<sup>84</sup> Risk and Policy Analysts. 2007. Preparatory Study for an Impact Assessment Relating to the Establishment of Mechanisms to Ensure Financial and Operational Sustainability of IDABC Infrastructure Services PEGSCO 2007-03-08 DOC 5.2

## 6.5.2 The volume of services likely to be facilitated by the scenarios

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This section and Annex E – The basis for calculations for cross-border service use, provide an overview of the forecasts and calculations undertaken to estimate the volume of services provided or the volume of transactions facilitated by Core Service Platforms or building blocks developed by the Large Scale Pilots.

Calculations are broken down into separate estimates for citizens and businesses. This section concludes with an aggregate table providing an estimate for the volume of transactions facilitated by the Core Service Platforms or building blocks for 2012 and low, medium and high estimates for the five year period between 2014 and 2018.

A caveat regarding the ambitious nature of these calculations was highlighted previously. Nonetheless, they are necessary to understand the volume of transactions that would need to be overseen by the new organisations that might take forward the development of the Core Service Platforms or building blocks. Only by understanding the volume of potential work can the probable operating costs (data processing, administration, personnel and ICT) of these organisations be estimated. Citizen use of cross-border services

The CSPs and building blocks (eID, eProcurement, eBusiness, eHealth, eJustice, eSignature, eDocument, and eDelivery) considered in this study have been developed to facilitate cross-border services. These services will primarily be used (across-borders) by citizens moving between EU Member States and business developing cross-border business activities.

Eurostat provides data<sup>85</sup> concerning cross-border residency between EU Member States and thus the possible number of users for these services. A pilot study was undertaken by Eurostat in 2011 to enhance and extend data about cross-border residents.

Whilst the data set is incomplete<sup>86</sup>, extrapolation between the 20 Member States for which data exists provides an insight to the number of cross-border residency between EU Member States. Figure 36 shows that the number of cross-border residents was 1.18 million in 2009, 1.27 million in 2010 and 1.38 million in 2011 (see the blue line in the figure). This level of cross-border residency is the equivalent of 2.5 cross-border residents per 1,000 of the EU population in 2010.

It would be easy to simply adopt an annual average number for cross-border residents<sup>87</sup>, but analysis shows that the picture is not static. The rate of increase in cross-border residency between EU Member States was 8.05 per cent per annum between 2009 and 2011. In order to provide a range of forecast values to 2020 calculations of future growth were made at the prevailing Eurostat rate of 8.05 per cent, as well as a lower estimate (at 4 per cent) and a higher estimate (at 12 per cent), as shown in Figure 45.

These estimates demonstrate that if the prevailing growth rate (between 2009 and 2011) is maintained, the level of cross-border residency between EU Member States in 2020 will reach 2.77 million. At the lower growth rate (4 per cent, shown in red) the number in 2020 is 1.82 million. At the higher growth rate (12 per cent, shown in green) the level reaches 4.10 million in 2020.

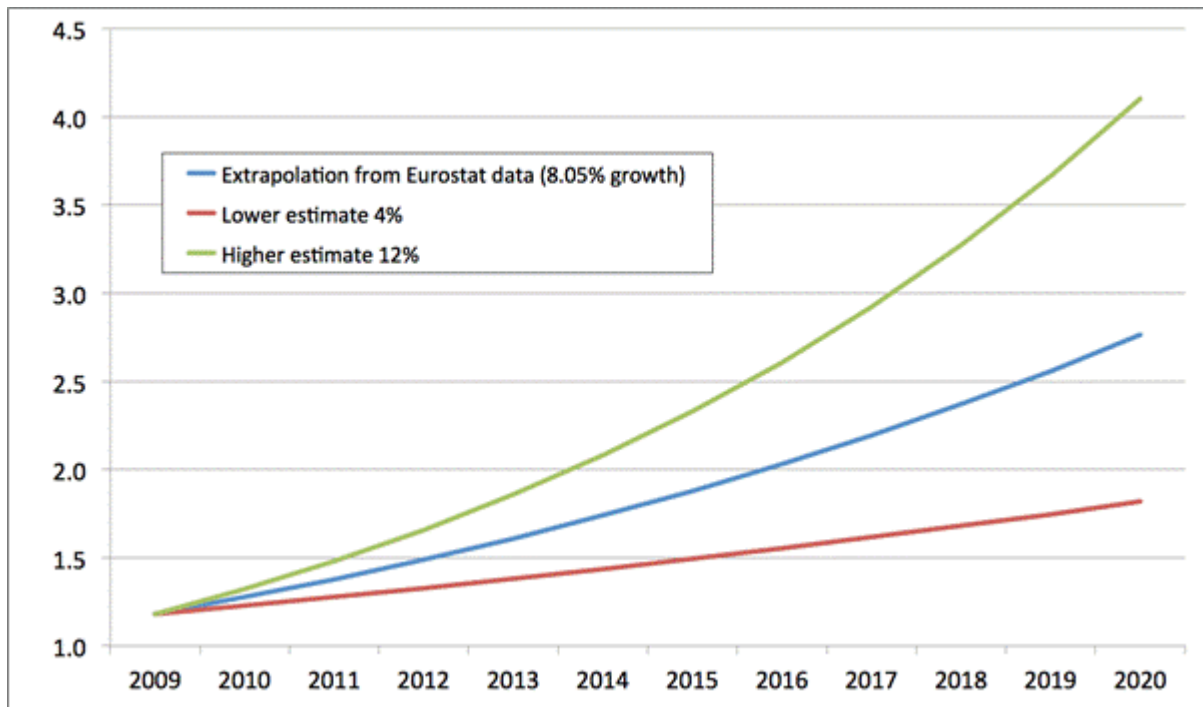
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<sup>85</sup> migr\_imm5prv. See

[http://epp.eurostat.ec.europa.eu/portal/page/portal/product\\_details/dataset?p\\_product\\_code=MIGR\\_IMM5PRV](http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=MIGR_IMM5PRV) , last visited on 03.05.2013

<sup>86</sup> There is missing data for one or more of the years 2009, 2010 and 2011 for seven EU Member States (Belgium, Bulgaria, Hungary, Malta, Netherlands, Poland and Romania)

<sup>87</sup> Eurostat. 2011. Indicators of immigrant integration: A pilot study. [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-RA-11-009/EN/KS-RA-11-009-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-11-009/EN/KS-RA-11-009-EN.PDF) , last visited on 03.05.2013



*Figure 23 – An estimate of cross-border residency (in millions) from EU Member States between 2009 and 2020<sup>88</sup>*

It is reasonable to assume that at some point a cross-border resident will become assimilated into a country and will generally no longer require 'cross-border' services, since their administrative and regulatory needs will be fulfilled in their 'new' State of residence. The main exception to this assumption is that small number of documents, such as birth certificates, will always be retained in the State of birth of a cross-border resident and requirements for this document will therefore remain as cross-border transactions.

For the purposes of this study it is assumed that a new resident ceases to be a 'cross-border' resident five years after their arrival in a 'new' Member State. This assumption is important since it ensures that calculations about cross-border service requirements are made on the basis of a 'stock' of the new cross-border residents. A five year limit on cross-border resident status prevents this number from becoming inflated and therefore providing unreasonably large estimates of the requirements for cross-border services. However, as noted above our estimates are not static and they accommodate three different rates of growth in the 'stock' of the new cross-border residents (see Figure 45) in all calculations.

### **Business use of cross-border services**

Cross-border digital services are also utilised by businesses. It is therefore important to estimate the number of cross-border businesses that might require these services. There are two sorts of EU27 cross-border businesses. The first group consists of businesses located in one Member State that have created branches in another Member State. The second group consists of businesses started in one Member State by someone originally (or within the last five years) from another Member State, i.e. a cross-border resident.

<sup>88</sup> Source: Tech4i2 estimates and extrapolations from Eurostat data for 2009, 2010 and 2011 migr\_imm5prv

A European Commission staff working document<sup>89</sup> found that there were over 112,000 branches registered in EEA countries (the figure of 112,000 branches is therefore an over representation of the EU27 situation). Annex 11 of the document provided details of the number of branches at Member State level<sup>90</sup>. Table 65 shows the results of our analysis which used extrapolation methods to calculate the total number of cross-border branches for the EU 27 Member. This data was only provided for a single year (2009); forecasts for future years have therefore not been possible.

The overall percentage of branches found by the Impact Assessment (0.44 per cent) was similar to the percentage found in a UK study. The Office for National Statistics study<sup>91</sup> found that 0.52 per cent of UK enterprises were branches of businesses located in other EU27 Member States. These calculations have been shared with staff in the Directorate General for the Internal Market and Services and they confirmed that they are probably a useful estimate of the number of branches.

The second group of businesses requiring cross-border services is those started by someone (or a group of people) from another Member State. The previous section noted that this study has adopted a five year limit for cross-border resident status.

Calculations therefore assumed that cross-border residents in a Member State would be as likely as the indigenous population to start a business<sup>92</sup>. This is likely to be a marginally conservative estimate since cross-border residents have a slightly higher propensity to start businesses<sup>93</sup>. Nonetheless, the analysis assumes that the 'stock' of cross-border residents (age 15 to 65) from EU27 Member States over a five year period would produce new businesses at the rate of the national population of each State. The estimated level of cross-border residency business start-ups are shown in Table 65. Further details about these calculations can be found in Annex E – The basis for calculations for cross-border service use.

*Table 52 – Number of branches and cross-border resident business start-ups requiring cross-border services in Member States<sup>94</sup>*

|              | Number of branches in the Member State 2009 | Branches as a percentage of total enterprises 2009 | Estimate of annual enterprise start-ups from cross-border residents 2009 |
|--------------|---------------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------|
| <b>Total</b> | <b>102,470</b>                              | <b>0.44%</b>                                       | <b>18,290</b>                                                            |

The preceding analysis has focused on the creation of permanent establishments or start-ups. It is also necessary to consider temporary cross-border business providers (providing services temporarily

<sup>89</sup> European Commission. 2010. Brussels, SEC(2010) Commission staff working document – Impact Assessment: Accompanying document to the Proposal for a Directive of the European Parliament and of the Council amending Directives 89/666/EEC, 2005/56/EC and 2009/101/EC as regards the interconnection of central, commercial and companies registers

<sup>90</sup> No data was provided in the Impact Assessment for Belgium and Poland. Eurostat data was not available for the number of enterprises in Greece and Malta, hence their omission from Table

<sup>91</sup> [www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-253656](http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-253656) , last visited on 03.05.2013

<sup>92</sup> Calculations suggest business start-ups arise at 3.1 per 1,000 of the population in EU27 Member States in 2009

<sup>93</sup> [http://www.america.gov/st/business-english/2008/March/20070302160834berehellek\\_0.7271845.html](http://www.america.gov/st/business-english/2008/March/20070302160834berehellek_0.7271845.html) , last visited on 03.03.2013

<sup>94</sup> Source: European Commission. 2010. Brussels, SEC(2010) Commission staff working document – Impact Assessment and EuroStat enterprise start-up data (bd-9a\_I\_form) estimated from EU immigrant population (tps00010) per 1,000 inhabitants. Eurostat did not provide enterprise data for Greece and Malta.

in another country). A literature review could not find any studies<sup>95</sup> providing quantitative data concerning these temporary service providers.

A useful source of information is Eurostat data about holiday and business trips to another country<sup>96</sup>. In 2011 (q4) there were approximately<sup>97</sup> 55.7 million outbound (to another country) business and holiday trips of one or more night duration. Approximately 10.3 million of these trips were undertaken for business purposes.

An estimate of how many of the 10.3 million are for service provision and how many are just for meetings is then made. A figure of one service provision trip for every 30 outbound business trips is probably reasonable. Assuming that someone would have to stay one or more nights (and they were working alone) to provide the service this would suggest 343,300 cross-border acts of service provision. The situation regarding the tax position of temporary cross-border providers (and thus the likely requirement to utilise Large Scale Pilot components) is complex and on occasions can depend on the nature of the service provided.

### *Utilisation of building blocks as part of public services for citizen*

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In a study undertaken for the Commission in 2012<sup>98</sup> the citizen services that are most likely to facilitate cross-border support for citizens were identified. The methodology used to identify these services involved the development of long lists and then short lists of services and input and consideration of these lists of the most important services by a wide range of experts and also during two in-depth workshops with EC officials and Member State representatives. The services regarded as most significant are in line with those highlighted in a study undertaken by the Association of European Border Regions<sup>99</sup>. Examination of these services provides an insight to the utilisation of the components developed by the Large Scale Pilots.

Utilising statistics from the preceding calculations about the number of cross-border residents between 2009 and 2020 (see Figure 23) enables estimates to be made of the volume of transactions that might be required for different cross-border services, see Table 53.

A subjective assessment was made of the extent to which the nine citizen services would use the Core Service Platforms and building blocks based on the Large Scale Pilots (eIDs, eSignature etc.). It was acknowledged that the way the services are administered varies across the EU27 Member States. The services and the practices of Member States also vary in their use of the elements developed by the Large Scale Pilots (referred to as CSP/BBs as it is about their future use); therefore, an assessment of usage levels was made using a three point ordinal scale<sup>100</sup>.

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<sup>95</sup> Points of Single Contact provide information about regulations, see for example <http://www.pointofsinglecontact.ie/Temporary-Cross-Border-Provision-of-Services/>. A few papers consider the issue but do not provide data or estimates. See for example <http://www2.lse.ac.uk/europeanInstitute/LEQS/LEQSPaper9.pdf>, last visited on 03.05.2013

<sup>96</sup> Eurostat tour\_dem\_ttq

<sup>97</sup> Data was not available for the Netherlands. Statistics for Estonia, Ireland and Greece were extrapolated from earlier years.

<sup>98</sup> Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers. SMART 2011/0074

<sup>99</sup> Association of European Border Regions. 2012. Information services for cross-border workers in European border regions. AEBR, Gronau, Germany.

<sup>100</sup> "Yes" indicates the majority of Member States would use the component for the services and in calculations 100 per cent use was assumed. "Maybe" indicates some of Member States would use the component for the services and in calculations 50 per cent use was assumed. "No" indicates the majority of Member States would not use the component for the services and no use was assumed in calculations 100

Table 66 provides an estimate for the level of use of the nine citizen services. The highest estimated level of use amongst the eight services is for vehicle tax payments. 3.427 million cross-border resident users of this service are estimated for 2012. This relatively high level of use is because vehicle ownership in the EU27 population is 520 per 1,000<sup>101</sup> and vehicle taxes have to be paid every year. The next most important services are registering as a domicile and requesting ID documents, both have 1.74 million users estimated in 2012. Calculations assume these documents are only required once (not each year like vehicle taxes), with five per cent re-requesting them each year.

The lowest level of cross-border service use is the registration of a death, it is estimated that this service will only be required on behalf of 25,000 cross-border residents in 2012. This relatively low level of use arises because the majority of cross-border residents (97 per cent) are below the age of 64 and death rates amongst this group are relatively low<sup>102</sup>.

*Table 53 – Estimates for the volume of citizen cross-border services*

| Key citizen services       | Estimated EU27 usage per year 2012 ('000's) | Estimated total use 2014 to 2020 (millions) | eID <sup>103</sup> | eSignature | eDocument | eJustice | eDelivery |
|----------------------------|---------------------------------------------|---------------------------------------------|--------------------|------------|-----------|----------|-----------|
| Register as domicile       | 1,740                                       | 18.10                                       | Yes                | Maybe      | Yes       |          | Yes       |
| Request ID documents       | 1,740                                       | 18.10                                       | Yes                | Maybe      | Yes       |          | Yes       |
| Enrol as a student         | 702                                         | 7.23                                        | Yes                | Maybe      | Yes       |          | Yes       |
| Vehicle tax payment        | 3,427                                       | 35.27                                       | Yes                | Maybe      | Maybe     |          | Maybe     |
| Apply for driver's licence | 576                                         | 5.93                                        | Yes                | Maybe      | Maybe     |          | Maybe     |
| Order a birth              | 130                                         | 1.34                                        | Yes                | Maybe      | Maybe     |          | Maybe     |

<sup>101</sup> United Nations statistics, see [http://w3.unece.org/pxweb/dialog/varval.asp?ma=ZZZ\\_TRvehiclePsgFlit\\_r&path=../database/STAT/40-TRTRANS/02-TRRoadFleet/&lang=1&ti=Passenger+Vehicles+\(number\)+at+31+December+by+Country%2C+Vehicle+Category+and+Time](http://w3.unece.org/pxweb/dialog/varval.asp?ma=ZZZ_TRvehiclePsgFlit_r&path=../database/STAT/40-TRTRANS/02-TRRoadFleet/&lang=1&ti=Passenger+Vehicles+(number)+at+31+December+by+Country%2C+Vehicle+Category+and+Time), last visited on 03.05.2013

<sup>102</sup> Eurostat data (hlth\_cd\_anr) states that deaths per 1,000 of the population are 0.43 for those under 15 and 2.73 for those between 15 and 64. Amongst those over 65 years old the death rate is 45.20

<sup>103</sup> Analysis of the application and use of eIDs excludes consideration of the possible use of eIDs in eJustice and eHealth service provision. These elements were not included because there is not always consistent entry by personal eID information (by a doctor or lawyer) or via local identification on to a system (hospital or legal practice) through which the hospital or legal practice is then able to access eHealth or eJustice services.

|                               |       |      |     |       |     |     |     |
|-------------------------------|-------|------|-----|-------|-----|-----|-----|
| certificate                   |       |      |     |       |     |     |     |
| Register a death              | 25    | 0.26 | Yes | Maybe | Yes |     | Yes |
| Register real estate purchase | 72    | 0.74 | Yes | Yes   | Yes |     | Yes |
| Register for legal aid        | 386   | 3.98 | Yes | Maybe | Yes | Yes | Yes |
| Total                         | 8,800 | 90.9 |     |       |     |     |     |

Table 54 utilises statistics from the preceding analysis and forecasts for cross-border residents presented in Table 66 to estimate the total volume of uses for each service between 2014 and 2018. 2014 is chosen as the start date since it is assumed it will take about a year to formally establish the scenarios. 2018 is selected as the end data for calculations since this provides an insight to the probable level of activities over a five year period. This is long enough to analyse payback periods for investments, without extending forecasts into the far future (after 2018) which are more likely to be incorrect (for example Figure 23 shows that the variance between low and high forecasts becomes considerably greater after 2018).

*Table 54 – Sensitivity analysis estimates for the volume of citizen cross-border services 2014 to 2018 (in millions)*

|                                                                                                       | eID  | eSignature | eDocument | eJustice | eDelivery |
|-------------------------------------------------------------------------------------------------------|------|------------|-----------|----------|-----------|
| Estimated volume of transactions in 2012 (millions) <sup>104</sup>                                    | 8.8  | 4.4        | 6.7       | 0.4      | 6.7       |
| Estimated volume of transactions 2014 to 2018 (8.05% cross-border residency growth/annum) millions    | 59.8 | 30.1       | 45.8      | 2.6      | 45.8      |
| Lower estimated volume of transactions 2014 to 2018 (4% cross-border residency growth/annum) millions | 47.8 | 24.1       | 36.4      | 2.1      | 36.4      |
| Higher estimated volume of                                                                            | 74.1 | 37.3       | 57.1      | 3.2      | 57.1      |

<sup>104</sup> The 'estimated volume of transactions' is the estimate of the number of times the building block will be used for the provision of the nine key citizen services in the preceding table

|                                                                                       |  |  |  |  |  |
|---------------------------------------------------------------------------------------|--|--|--|--|--|
| transactions 2014 to 2018<br>(12% cross-border<br>residency growth/annum)<br>millions |  |  |  |  |  |
|---------------------------------------------------------------------------------------|--|--|--|--|--|

Table 54 also incorporates sensitivity analysis to accommodate the different volumes of transactions that it is estimated are required between 2014 and 2018 for the low, average and high estimates for future volumes of EU27 cross-border residency (presented in Figure 23).

Table 54 highlights that the CSP/BB with the highest level of probable use between 2014 and 2018 across the nine key cross-border citizen services is eIDs with an estimated potential 59.8 million transactions in the five year period between 2014 and 2018 and 8.8 million in 2012. The high growth in cross-border resident estimate (12 per cent per annum) raises the level to 74.1 million transactions. The low growth estimate (4 per cent per annum) reduces the number of transactions to 47.8 million.

The CSP/BB with the lowest level of probable use between 2014 and 2018 across the nine key cross-border citizen services is eJustice with an estimated 2.6 million transactions possible in the five year period between 2014 and 2018 and 400,000 in 2012.

### *Utilisation of building blocks as part of public services for business*

The study undertaken for the Commission in 2012 identified the business services most likely to facilitate cross-border support for businesses. This section therefore replicates the approach adopted in the previous section to estimate for the likely level of use for seven business services<sup>105</sup>.

The highest estimated level of use amongst the seven business services is for the payment of employee social contributions, see Table 55. 1.28 million cross-border users of this service are estimated for 2012. This high level of use is because employee social contributions are paid on a monthly basis.

The next most important service is the submission of VAT declarations, 799,000 estimated in 2012. Again the relatively high level of use for this is because payment is made quarterly. Most of the other services have relatively fewer transactions because they are usually undertaken only once a year.

*Table 55 – Estimates of the volume of business cross-border services 2014 to 2018*

| Key business services | Estimated EU27 usage per year 2012 ('000's) | Estimated total use 2014 to 2020 (millions) | eID | eSignature | eDocument | eDelivery | eBusiness <sup>106</sup> |
|-----------------------|---------------------------------------------|---------------------------------------------|-----|------------|-----------|-----------|--------------------------|
| Register a            | 108                                         | 0.65                                        | Yes | Yes        | Maybe     | Maybe     | Yes                      |

<sup>105</sup> The situation regarding the tax position of temporary cross-border providers is complex and on occasions can depend on the nature of the service provided. From 1 January 2010, there are two general place of supply rules, depending on whether the recipient is a business or a consumer: 1) For supplies of Business to Business (B2B) services, the place of taxation is the place where the recipient is established (reverse charge). 2) For supplies of Business to Consumer (B2C) services, the place of taxation is where the supplier is established. In general cross-border suppliers are exempt from Corporation Tax and VAT in the country in which they are providing the service. A useful overview of the situation can be found at <http://www.revenue.ie/en/tax/vat/leaflets/place-of-supply-of-services.html>, last visited on 03.05.2013

<sup>106</sup> eProcurement is examined separately

|                                  |       |       |     |       |       |       |       |
|----------------------------------|-------|-------|-----|-------|-------|-------|-------|
| new legal entity                 |       |       |     |       |       |       |       |
| Corporate tax declaration        | 200   | 1.10  | Yes | Yes   | Maybe | Maybe | Maybe |
| Register for VAT                 | 108   | 0.65  | Yes | Yes   | Maybe | Maybe | Maybe |
| Submit a VAT declaration         | 799   | 4.42  | Yes | Yes   |       |       | Maybe |
| Register a new employee          | 161   | 0.87  | Yes | Maybe | Maybe | Maybe | Maybe |
| Pay employee social contribution | 1,281 | 6.47  | Yes |       |       |       | Maybe |
| Report termination of employee   | 82    | 0.23  | Yes | Yes   | Maybe | Maybe | Maybe |
|                                  | 2,739 | 14.39 |     |       |       |       |       |

Table 56 utilises statistics from the preceding analysis to forecast the use of business services between 2014 and 2018. 2014 is chosen as the start date since it is assumed it will take about a year to formally establish the scenarios. 2018 is selected as the end data for calculations since this provides an insight to the level of activities over a five year period.

*Table 56 – Sensitivity analysis estimates for the volume of business cross-border services 2014 to 2018*

|                                                                                                    | eID   | eSignature | eDocument | eDelivery | eBusiness |
|----------------------------------------------------------------------------------------------------|-------|------------|-----------|-----------|-----------|
| Estimated volume of transactions in 2012 (millions)                                                | 2.74  | 1.38       | 0.33      | 0.33      | 1.42      |
| Estimated volume of transactions 2014 to 2018 (8.05% cross-border residency growth/annum) millions | 14.40 | 7.50       | 1.75      | 1.75      | 7.52      |

|                                                                                                         |       |      |      |      |      |
|---------------------------------------------------------------------------------------------------------|-------|------|------|------|------|
| Lower estimated volume of transactions 2014 to 2018 (4% cross-border residency growth/annum) millions   | 13.78 | 6.95 | 1.62 | 1.62 | 7.18 |
| Higher estimated volume of transactions 2014 to 2018 (12% cross-border residency growth/annum) millions | 15.13 | 8.15 | 1.92 | 1.92 | 7.93 |

### Utilisation of eHealth services

One of the CSP/BB focuses on eHealth. Like the preceding sections it is possible to make tentative calculations about consultations with doctors and the level of access required for cross-border access to electronic patient summaries/records<sup>107</sup>.

OECD data<sup>108</sup> suggests the average number of visits to a doctor each year in EU 27 Member States is 6.63<sup>109</sup>. If one makes the assumption that cross-border residents use doctors at the same level as those in EU27 Member States. It is estimated that there have been 43.09 million cross-border visits to doctors in 2012. If one assumes that each patient record is only downloaded during the first visit and then stored by the 'new' cross-border doctor for future use with the cross-border resident the number of visits decreases to 6.49 million.

Estimates for the use of cross-border visits to doctors also have to consider tourists and others visiting Member States for business or pleasure. Eurostat provides data<sup>110</sup> about the number of bed nights spent by EU27 visitors in Member States. This data set enables the number of 'temporary visitor' doctor visits to be calculated. Our calculations made the assumption that those on a temporary visit are half as likely to visit a doctor as the EU average. Based on these estimates there are 1.67 million cross-border visits to doctors.

A number of cross-border visits to doctors can thus be estimated at 8.16 million in 2012.

Like the preceding analysis calculations incorporates sensitivity analysis to accommodate the different volumes of transactions that it is estimated are required between 2014 and 2018 for the low, average and high estimates for future volumes of EU27 cross-border residency (presented in Figure 23). These calculations estimate that the number of patients' summary transactions to be undertaken between 2014 and 2018 will be 80.1 million. The high growth in the cross-border resident estimate (12 per cent per annum) raises the level to 97.9 million transactions. The low growth estimate (4 per cent per annum) reduces the number of transactions to 65.69 million.

<sup>107</sup> Analysis in this section only relates to visits to doctors. The utilisation of ePrescriptions has not been investigated due to a lack of robust data and previous analysis.

<sup>108</sup> [http://www.oecd-ilibrary.org/sites/health\\_glance-2011-en/04/01/index.html?jsessionid=3dln9sdrovedm.delta?contentType=&itemId=/content/chapter/health\\_glance-2011-29-en&containerItemid=/content/serial/19991312&accessItemids=/content/book/health\\_glance-2011-en&mimeType=text/html](http://www.oecd-ilibrary.org/sites/health_glance-2011-en/04/01/index.html?jsessionid=3dln9sdrovedm.delta?contentType=&itemId=/content/chapter/health_glance-2011-29-en&containerItemid=/content/serial/19991312&accessItemids=/content/book/health_glance-2011-en&mimeType=text/html), last visited on 03.05.2013

<sup>109</sup> OECD statistics include both planned and unplanned consultations that take place in doctors' offices or clinics, in hospital outpatient departments or, in some cases, in patients' own homes.

<sup>110</sup> tour\_occ\_arraw

## Utilisation of eProcurement

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TED (Tenders Electronic Daily) is the online version of the 'Supplement to the Official Journal of the European Union', dedicated to European public procurement. TED provides free access to business opportunities. It is updated five times a week with approximately 1500 public procurement notices from the European Union.

Monitoring TED over two weeks found that on average there were 3,405 contract notices recorded per week. This would equate to approximately 177,000 contract notices per annum. For the purposes of this study it is suggested that it is reasonable to estimate that there is one cross-border contractor bidding for each contract notice. Thus we estimate that there are 177,000 cross-border procurement transactions per annum.

Analysis in this section only relates to procurement facilitated by TED and these will generally exceed EC procurement thresholds<sup>111</sup>. The analysis also focuses on cross-border procurement. Obviously the utilisation of eProcurement within Member States will be greater than for cross-border. For example PEPPOL records the actual usage enabled in Denmark as being 126,188 transactions<sup>112</sup>.

In the UK where there is a mandatory requirement for local government to release data about all expenditure over GBP 500 (EUR 640). Analysis for this study was undertaken to provide a better understanding of the possible wider utilisation of eProcurement services. Analysis was undertaken of contract awards made by Plymouth City Council in a single month - January 2012. Plymouth City Council is one of more than 380 local administrations in the UK. In January 2012 the city council used 948 suppliers to assign 4,294 contracts with a value of GBP 19.5 million (EUR 24.9 million). Only 25 (0.5 per cent) of procurement contracts awarded had a value above the EU Schedule 1 procurement threshold<sup>113</sup>. These 25 above threshold contracts had a value of GBP 6.2 million (EUR 7.92 million; 32 per cent of the total value of contracts awarded in January 2012). The median value of the 4,294 contracts was GBP 4,116 (EUR 5,257).

TED focuses on procurement between government and business (B2G). Like several of the Large CSP/BB there could be scope for extending or expanding activities in the future. At present there might be questions about whether an EC supported project should move into private sector markets. But in the future, if administrative bodies were adopted that had a greater private sector input (or nil or reduced government support), it is possible some components (such as eProcurement) could be extended to provide a platform for B2B markets. At present there numerous B2B online marketplaces (for example Alibaba, EC21, ECPlaza, Exportpages) but the Large Scale Pilot eProcurement component could, one day be extended to provide a B2B marketplace if those developing the component saw this as a strategic direction they wished to pursue. It is notable that some of the current 68 PEPPOL members are private sector businesses, such as nexusIT and Tradeshift, which offer platforms for B2B including tendering, procurement, eInvoicing and ePayments.

## Utilisation of eJustice

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One of the CSP/BB focuses on eJustice. Like the preceding sections it is possible to make tentative calculations about the level of cross-border utilisation.

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<sup>111</sup> 130,00 euros for supplies and services listed in Schedule 1, 80,000 euros for supplies and services listed as small lots

<sup>112</sup> <http://www.peppol.eu/pilot-reporting/usage/post-award-usage/actual-usage-of-post-award-infrastructure> , last visited on 03.05.2013

<sup>113</sup> *ibid*

A report from the Order of Flemish Bars provided data at National level about Legal Aid<sup>114</sup>. Similar data was found in the UK Legal Services Commission Annual Report 2008/9. Data from both studies was aggregated to find the number of Acts of assistance per 1,000 of the population for different age groups. These estimates found that, on average there were 113 acts of assistance per 1,000 of the populations under 15, 40 acts for 15 to 64 year olds and 373 per 1,000 for those 65 and over. These figures were then extrapolated for immigrants for the appropriate age groups

Estimates for cross-border use of Legal Aid suggest that there were approximately 386,000 cross-border cases in 2012. 3.98 million cross-border Legal Aid cases are likely to be undertaken between 2014 and 2020.

Like the preceding analysis calculations incorporates sensitivity analysis to accommodate the different volumes of cross-border Legal Aid cases that it is estimated are required between 2014 and 2018 for the low, average and high estimates for future volumes of EU27 immigration (presented in Figure 23). These calculations estimate that the number of cross-border Legal Aid cases to be undertaken between 2014 and 2018 will be 1.75 million. The high growth in the immigrant estimate (12 per cent per annum) raises the level to 1.92 million transactions. The low growth estimate (4 per cent per annum) reduces the number of transactions to 1.62 million.

### *Utilisation - a concluding overview*

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Preceding sections have provided an overview of the forecasts and calculations undertaken to estimate the volume of services provided or the volume of transactions facilitated by the CSP/BBs.

Table 57 provides an aggregation for the preceding calculations. It thus provides an insight to the total volume of transactions that could be facilitated by the CSP/BBs. Sensitivity analysis has been undertaken to provide a range for the number of transactions that might be expected under different growth scenarios (high, average and low cross-border residency growth percentages) for the five year period between 2014 and 2018 (inclusive).

The volume of transactions presented in Table 57 is vital in estimating operating costs for the scenarios. It is hypothesized that the estimated volume of transactions should have some relationship with the size of the organisation (in employees) that will be required to administer the transactions. It is also evident that understanding the volume of transactions can be useful in estimating the benefits of providing services through new digital methods (developed by the Large Scale Pilot) rather than by more traditional methods.

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<sup>114</sup> [www.advocaat.be/UserFiles/Positions/Waar%20naartoe%20met%20de%20juridische%20bijstand\\_nota\\_KV\\_080509.pdf](http://www.advocaat.be/UserFiles/Positions/Waar%20naartoe%20met%20de%20juridische%20bijstand_nota_KV_080509.pdf) , last visited on 03.05.2013

*Table 57 – An estimate of the volume of transactions facilitated by components developed for the Large Scale Pilots*

|                                       | Estimated volume of transactions in 2012 (millions) | Transactions 2014 to 2018 <sup>115</sup> | Lower estimate for transactions 2014 to 2018 <sup>116</sup> | Higher estimate for transactions 2014 to 2018 <sup>117</sup> |
|---------------------------------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------|
| eID <sup>118</sup>                    | 11.54                                               | 74.2                                     | 61.58                                                       | 89.23                                                        |
| eHealth <sup>119</sup>                | 8.16                                                | 80.1                                     | 65.69                                                       | 97.9                                                         |
| eDocument                             | 7.03                                                | 47.55                                    | 38.02                                                       | 59.02                                                        |
| eDelivery                             | 7.03                                                | 47.55                                    | 38.02                                                       | 59.02                                                        |
| eSignature                            | 5.78                                                | 37.6                                     | 31.05                                                       | 45.45                                                        |
| eBusiness                             | 1.42                                                | 7.52                                     | 7.18                                                        | 7.93                                                         |
| eJustice                              | 0.4                                                 | 2.6                                      | 2.1                                                         | 3.2                                                          |
| eProcurement                          | 0.18                                                | 0.18                                     | 0.18                                                        | 0.18                                                         |
| <b>Total all components per annum</b> | <b>41.5</b>                                         | <b>59.5</b>                              | <b>48.8</b>                                                 | <b>72.4</b>                                                  |

The building block developed by the Large Scale Pilots that is predicted to have the highest level of utilisation in 2012 is eID. As previously demonstrated all cross-border services probably require the use of eIDs at some point in the provision of citizen and business services. eHealth services have a relatively high volume of transactions due to the relatively high number of average visits made to doctors in EU 27 Member States per annum (6.63). The final row of the Table 57 provides an overview of the total number of transactions for all components that would have to be facilitated on average per annum between 2014 and 2018. The total average number of transactions varies between a low estimate of 48.8 million per annum and a high estimate of 72.4 million. The average number is 59.5 million.

Three of the CSP/BBs appear to have significantly smaller volumes of transactions than the others – eBusiness, eJustice and eProcurement.

Finally, it should be noted that there are several well established European Union systems that already operate across-borders or connect existing national systems. For the most part these systems focus on particular types of documents or forms. For example EUCARIS is the EUropean CAR and

<sup>115</sup> This estimate assumes average EU immigration growth per annum of 8.05%

<sup>116</sup> This lower estimate assumes average EU immigration growth per annum of 4%

<sup>117</sup> This higher estimate assumes average EU immigration growth per annum of 12%

<sup>118</sup> eID transactions are higher than those for eHealth in 2012 but estimates for transactions 2014 to 2018 are lower than for eHealth because most eID transactions are only undertaken once per annum, as previously highlighted eHealth transactions have a multiplicand of 6.63 thus exacerbating the impact of immigrant growth in future years.

<sup>119</sup> *ibid*

driving license Information System. EUCARIS is a unique system that provides opportunities for countries to share their car and driving licence registration information and/or other transport related data to help fight car theft and registration fraud. The Visa Information System (VIS) allows Schengen States to exchange visa data and the Schengen Information System (SIS) is a governmental database used by Member States to maintain and distribute information on individuals and pieces of property of interest.

While the focus of these systems is on particular documents it is possible that they could utilise some of the Large Scale Pilot components to extend or complement their core activities. They could thus act as a catalyst for the further utilisation of components such as eID and eDocument.

### 6.5.3 Costs of the scenarios based on real life examples

#### Introduction

A review of organisations that have the same characteristics as the five scenarios (.G-a, .G-b, .GO(C), CO, CG) is undertaken to examine the characteristics and changes over time in the running costs for the types of organisations that might be adopted for the governance and operations of the DSI and/or CSPs in the future.

Ten organisations were examined in detail through reference to annual reports, organisation accounts and through seeking further information directly from the organisations. Annex 4 provides short pen-pictures about the characteristics of the ten organisations. These follow a common format, providing a brief overview, a short history, details of organizational structure, concluding with a statistical overview of financial and employment data

An overview of the organisations reviewed is provided in Table 58. The table shows that it was possible to obtain one or more example of each type of organisation proposed for the scenarios.

*Table 58 – An overview of ten organisations similar to those suggested for scenarios*

| Scenario type | Organisation type                                 | Organisation   |
|---------------|---------------------------------------------------|----------------|
| .G-a          | EC programmes                                     | ISA            |
| .G-b          | European Agencies                                 | CISE           |
| .G-b          | European Agencies                                 | GNSS           |
| .G-b          | European Agencies                                 | Large Scale IT |
| .GO(C)        | Government initiated non-profit organisations     | EURid          |
| .GO(C)        | Government initiated non-profit organisations     | ICANN          |
| .GO(C)        | Government initiated non-profit organisations     | Terena         |
| .CO           | Private sector initiated non-profit organisations | EPC            |
| .CO           | Private sector initiated non-profit organisations | SWIFT          |
| .CG           | European Commission as a supervisory Agency       | BEREC          |

#### Organisational characteristics

Table 59 provides an overview of the key financial characteristics for each of the ten organisations, where information was available. In the majority of cases the information relates to 2011. Direct

comparison of operating budgets between organisations is unwise due to the differing size and activities of the organisations. SWIFT is the largest organisation. It provides a network that enables financial institutions worldwide to send and receive about 4.5 billion messages a year that facilitate information exchange and financial transactions in a secure, standardized and reliable environment. The smallest organisation is TERENA promotes and develops high-quality international network infrastructures to support European research and education.

*Table 59 – Operating characteristics for the ten organisations similar to those suggested for scenarios*

| Scenario                             | Organisation   | Year for data | Staff | Operating budget (EUR million) | Staff per EUR million budget |
|--------------------------------------|----------------|---------------|-------|--------------------------------|------------------------------|
| .G-a                                 | ISA            | 2011          |       | 164.1                          |                              |
| .G-b                                 | CISE           |               |       |                                |                              |
| .G-b                                 | GNSS           | 2010          | 40    | 39.1                           | 1.0                          |
| .G-b                                 | Large Scale IT | 2013          | 75    | 19.8                           | 3.8                          |
| .GO(C)                               | EURid          | 2011          | 56.5  | 12.6                           | 4.5                          |
| .GO(C)                               | ICANN          | 2011          | 140   | 45.9                           | 3.1                          |
| .GO(C)                               | Terena         | 2011          | 16    | 2.9                            | 5.5                          |
| .CO                                  | EPC            | 2012          |       |                                |                              |
| .CO                                  | SWIFT          | 2011          | 1882  | 512.8                          | 3.7                          |
| .CG                                  | BEREC          | 2011          | 11    | 0.75                           | 14.7                         |
| Average staff per EUR million budget |                |               |       |                                | 5.2                          |

In order for comparisons to be made between individual organisations and/or the different categories of organisations it is necessary to try and standardise features to enable comparison between organisations. For example Table 59 provides a calculation for the number of staff per EUR million of operating budget in the right hand column. The similarities between organisations are (particularly when GNSS and BEREC are excluded) is relatively striking. The average figure is 5.2 staff per EUR million of operating budget. This figure falls to 4.1 when staff per EUR million of operating budget when GNSS and BEREC are excluded. This observation suggests there is little difference between the different categories of organisation for this calculation.

It is also noticeable that, where data is available, the standardised operating costs do not seem to vary between the different groups of organisational structures examined (.G-a, .G-b, .GO(C), .CO and .CG).

The CSP/BBs will largely be overseeing the exchange of data, information or messages. Four of the ten selected organisations have a similar coordinating role for large volumes of data. These are shown in Table 60.

With the exception of EURid there appears to be a relatively high degree of similarity between the number of staff and the operating budget per millions transactions<sup>120</sup>. The average number of staff per million transactions for the three relevant organisations (Large Scale IT, ICANN and SWIFT) is 0.69 and the average budget per million transactions is EUR 200,000.

<sup>120</sup> Robust statistical analysis was not possible to test this relationship because there were only three data points and one is significantly greater than the others.

These figures provide an interesting insight for the Large Scale Pilot study. As the final row in Table 60 indicates the total number of transactions for all CSP/BBs that would have to be facilitated on average per annum between 2014 and 2018 is 59.5 million. This is slightly lower than those for the Large Scale IT (80 million transactions per annum), ICANN (192 million) and SWIFT (4,500 million) organisations. But nonetheless, it is reasonable to assume that operating costs for these organisations should offer an insight for the potential costs for the CSP/BBs.

*Table 60 – Standardised transaction costs for the ten organisations similar to those suggested for scenarios*

| Scenario | Organisation   | Annual work volume                     | Staff per million transactions | Operating budget per million transactions |
|----------|----------------|----------------------------------------|--------------------------------|-------------------------------------------|
| .G-a     | ISA            | Not applicable                         |                                |                                           |
| .G-b     | CISE           | Not applicable                         |                                |                                           |
| .G-b     | GNSS           | Not applicable                         |                                |                                           |
| .G-b     | Large Scale IT | 80m visa applications                  | 0.94                           | 0.25                                      |
| .GO(C)   | EURid          | 3.5m .eu domains                       | 16.14                          | 3.60                                      |
| .GO(C)   | ICANN          | 192m web domain names                  | 0.73                           | 0.24                                      |
| .GO(C)   | Terena         | Not applicable                         |                                |                                           |
| .CO      | EPC            | Not applicable                         |                                |                                           |
| .CO      | SWIFT          | 4,500m financial messages/transactions | 0.42                           | 0.11                                      |
| .CG      | BEREC          | Not applicable                         |                                |                                           |

|                    |                         |  |  |
|--------------------|-------------------------|--|--|
| All LSP components | Average 48.8m per annum |  |  |
|--------------------|-------------------------|--|--|

Despite the lack of an extensive set of data it once again noticeable that, where data is available, the standardised operating costs do not seem to vary between the different groups of organisational structures examined. This is not surprising, because the volume of work and the manner in which activities are undertaken will remain broadly the same whatever the organisational structure. Some organisational structures may provide more opportunities for commercial or income generating activities, but the underlying volume of work to facilitate the processing of transactions is probably the same whatever the organisational structure.

### **Operating cost for scenarios**

The previous section highlighted that operating costs do not seem to vary between the different groups of organisational structures examined. Reasons for this lack of variation in operating costs were also put forward. This section therefore adopts a single consolidated approach to estimating the operating costs across all the organisational structures proposed in the scenarios.

The approach in the previous section offers a useful method of calculating the possible operating costs of the different scenarios. There will undoubtedly be economies of scale that should be obtained by organisations with larger volumes of transactions. This assertion appears to be correct because

the staff and operating budgets per million transactions decrease with the volume of transactions processed. Before estimating possible operating costs for scenarios it is obvious, but must be highlighted, that it is essential an intensive examination and detailed estimate of likely operating activities and requirements should be undertaken for each scenario. The calculations below provide a useful estimate of possible costs derived from a brief overview of the operating characteristics of similar organisations. But they must be supplemented by a full and thorough business plan.

The average operating costs for the CSP/BBs are calculated using the average number of staff per million transactions (0.69) and the average budget per million transactions (EUR 200,000) for the three relevant organisations (Large Scale IT, ICANN and SWIFT) presented in Table 60.

The annual operating costs for scenarios in the table are calculated by multiplying the high, medium and low estimates for transactions presented in Table 57 by an operating cost of EUR 0.2 million per one million transactions (thus the medium volume of transactions for eIDs per annum between 2014 and 2018 [74.2 divided by 5 years equals an average of 14.84 million transactions per annum] is multiplied by EUR 0.2 million to derive an estimated annual operating cost of EUR 3 million per annum).

*Table 61 – Average estimate for the annual operating costs (in EUR millions) for the scenarios*

|                                      | Medium estimate of transactions 2014 to 2018 | Lower estimate for transactions 2014 to 2018 | Higher estimate for transactions 2014 to 2018 |
|--------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------|
| eID                                  | 3.0                                          | 2.5                                          | 3.6                                           |
| eHealth                              | 3.2                                          | 2.6                                          | 3.9                                           |
| eDocument                            | 1.9                                          | 1.5                                          | 2.4                                           |
| eDelivery                            | 1.9                                          | 1.5                                          | 2.4                                           |
| eSignature                           | 1.5                                          | 1.2                                          | 1.8                                           |
| eBusiness                            | 0.3                                          | 0.3                                          | 0.3                                           |
| eJustice                             | 0.1                                          | 0.1                                          | 0.1                                           |
| eProcurement                         | 0.01                                         | 0.01                                         | 0.01                                          |
| <b>Total all component per annum</b> | <b>11.9</b>                                  | <b>9.8</b>                                   | <b>14.5</b>                                   |

The operating budget for EURid (EUR 3.6 million per one million transactions) could be taken as a maximum value for the operational budget per million transactions. However, the operating cost for EURid is eighteen times greater than those for the three other organisations (Large Scale IT, ICANN and SWIFT, average EUR 0.2 million per one million transactions) for which data is available. This would lead to estimated operating costs (for the average scenario in Table 57) in excess of EUR 50 million per annum each for eIDs and eHealth and a total operation cost for all the Large Scale Pilots of EUR 214 per annum.

It was noted in the previous section that the average number of staff per million transactions for the three relevant organisations (Large Scale IT, ICANN and SWIFT) presented in Table 60 averaged 0.69 staff. It is thus possible to estimate the probable level of staff required for each of the preceding scenarios, see Table 62.

*Table 62 – The estimated staff size for the organisations established for the scenarios*

|                                      | Medium estimate of transactions 2014 to 2018 | Lower estimate for transactions 2014 to 2018 | Higher estimate for transactions 2014 to 2018 |
|--------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------|
| eID                                  | 10.2                                         | 8.5                                          | 12.3                                          |
| eHealth                              | 11.1                                         | 9.1                                          | 13.5                                          |
| eDocument                            | 6.6                                          | 5.2                                          | 8.1                                           |
| eDelivery                            | 6.6                                          | 5.2                                          | 8.1                                           |
| eSignature                           | 5.2                                          | 4.3                                          | 6.3                                           |
| eBusiness                            | 1.0                                          | 1.0                                          | 1.1                                           |
| eJustice                             | 0.4                                          | 0.3                                          | 0.4                                           |
| <b>Total all component per annum</b> | <b>41.0</b>                                  | <b>33.6</b>                                  | <b>49.9</b>                                   |

A higher estimate of possible staff requirements can be found by using the average number of staff across all the ten organisations studied in Table 59. This was relatively constant at about 4.1 per EUR million of operating budget. It is thus possible to produce a high estimate for the level of staff required for each of the preceding scenarios if the operating budget for EURid (EUR 3.6 million per one million transactions) was taken as a maximum value for the operational budget per million transactions. This would lead to estimated staff requirements (for the average scenario in Table 57) in excess of 120 personnel each for eIDs and eHealth and a total staff requirement for all the CSP/BBs of approximately 484 personnel.

### *Transition and establishment costs for the scenarios*

The penultimate part of this chapter considers the establishment and development costs that will be incurred in developing the required organisational structures before the organisations are formally launched. The establishment of agencies or non-governmental organisations generally follows a nine stage process<sup>121</sup>.

1. Establish the purpose, vision and goals;
2. Create a development team;
3. Write a Business Plan;
4. Seek legal expertise;
5. Stakeholder consultation;
6. Develop and draft the governing documents (Articles of Incorporation, Bylaws etc.);
7. Register the organization;
8. Obtain premises;
9. Hire staff and volunteers.

Some of these elements are being partially developed by this study (purpose, vision, consultation). All will have to be more fully developed as a consequence of this study.

<sup>121</sup> <http://www.scvo.org.uk/information/organisational-structures/setting-up-a-voluntary-organisation-in-six-steps/> ; last visited on 03.05.2013; <http://www.wango.org/NGONews/July08/HowToStartAnNGO.pdf> ; last visited on 03.05.2013; <http://www.coyotecomunications.com/development/startingngo.shtm> , last visited on 03.03.2013

The simple checklist highlights that the most costly elements, after initial developmental work has been undertaken, are assumed to be legal advice (development and drafting of governing documents and the registering of legal documents), obtaining premises and the hiring of staff and volunteers.

Possible costs for these elements are discussed in the remainder of this section. These costs are suggested on the basis that the new organisations might be located in Belgium or in another nearby Member State. If this is not the case, these costs estimates might need to be adjusted slightly depending on the prevailing charges for legal advice, recruitment services and premises in the appropriate country.

## **Legal costs**

A study undertaken prior to the establishment of the IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens)<sup>122</sup> highlighted that it was difficult to obtain information relating to the legal costs that might be associated with the transition from the existing baseline situation to the other options being considered. The study highlighted that the potentially lengthy legal process associated with establishing scenarios with a high degree of government oversight (such as European Agencies (.G-b) and the European Commission as a supervisory Agency (.CG) ) were particularly difficult due to the large amount and sometimes complex input from legal specialists that is required to establish these organisations. A figure of EUR 500,000 was suggested by DG Budget as a 'ball-park' figure for the costs associated with establishing an Agency.

It is probable that the legal costs associated with establishing not-for-profit organisations will be lower than for those that have more significant Commission input and/or control. We estimate that the legal costs might be less than half of those for an Agency. An estimate of EUR 200,000 has been adopted in Table 63. It is assumed that if a DG programme was used for one of the scenarios that development activities would be undertaken internally by the Commission. As a result no legal costs are included in Table 63.

## **Recruitment costs**

Four of the ten organisations examined in the previous section had been established recently enough to provide information about the number of personnel they recruited when they started formally operating (GNSS, Large Scale IT, EURid and BEREC). On average they commenced operating with fifteen staff. The average salary cost (including overheads) for staff in the organisations was approximately EUR 70,000. Recruitment agencies typically charge between 20 and 30 per cent of Annual Gross salary. It is reasonable to assume that ten senior staff will be recruited through agencies and more junior staff will be recruited directly by the new organisation. The recruitment of ten staff would therefore incur recruitment fees of between EUR 140,000 and EUR 210,000.

## **Premises costs**

Premises costs are probably the lowest costs in the development of the scenarios. It is estimated that the costs of support in obtaining leasehold premises might be approximately EUR 20,000.

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<sup>122</sup> Risk and Policy Analysts. 2007. Preparatory Study for an Impact Assessment Relating to the Establishment of Mechanisms to Ensure Financial and Operational Sustainability of IDABC Infrastructure Services PEGSCO 2007-03-08 DOC 5.2

Preceding sections have provided an overview of the probable establishment costs that will be incurred in the establishment of new scenario organisations. An overview of the cost estimations to be incurred by the different scenarios is provided in Table 63.

*Table 63 – Transition and establishment costs likely to be incurred by the different scenarios*

| Scenario type | Organisation type                                 | Legal costs (EUR '000's) | Recruitment costs EUR '000's) | Premises fees (EUR '000's) | Total (EUR '000's) |
|---------------|---------------------------------------------------|--------------------------|-------------------------------|----------------------------|--------------------|
| .G-a          | EC programmes                                     |                          | 140 to 210                    | 20                         | 160 to 230         |
| .G-b          | European Agencies                                 | 500                      | 140 to 210                    | 20                         | 660 to 730         |
| .GO(C)        | Government initiated non-profit organisations     | 200                      | 140 to 210                    | 20                         | 360 to 430         |
| .CO           | Private sector initiated non-profit organisations | 200                      | 140 to 210                    | 20                         | 360 to 430         |
| .CG           | European Commission as a supervisory Agency       | 500                      | 140 to 210                    | 20                         | 660 to 730         |

As indicated above, the primary difference between the scenarios is created by the higher level of legal fees incurred with establishing scenarios with a high degree of government oversight (such as European Agencies (.G-b) and the European Commission as a Supervisory Authority (.CG) ).

## 6.5.4 Benefits arising from the scenarios

### Introduction

There are numerous challenges and methodological problems involved in measuring the impact of technology and electronic interactions. A small number of studies have examined the costs and benefits of electronic service delivery; they have used many different methodologies and identified a wide range of benefits and returns on investment. These studies raise almost as many questions as they answer. Nearly all use different methodologies and their results are presented in different ways. Some provide details about costs, others do not. This makes it difficult to be certain that savings exceed development costs and that a positive return on investment has been realized. Few studies use transaction costs methods that provide an insight to cost savings, and thus benefits, per transaction using electronic interactions. The most robust study in this area has been undertaken by Waldecker<sup>123</sup> to examine Austrian Tax Declarations. This study is described in this section.

It is also notable that there are many benefits that will arise from electronic interaction and thus the continuation of the CSP/BBs. These benefits can be conceptualized at three different levels:

1. Broader societal benefits arising from increased trust in electronic transactions
2. Immediate 'information' benefits through more secure and seamless cross-border electronic interactions
3. Benefits facilitated by access to cross-border information (prevention of fraud etc.)

These three types of benefit are described in the next three sections.

<sup>123</sup> Mag. Erich Waldecker. 2012. E-Government im BMF – Scanning, Sparpaket und Handysignatur. E-Government Konferenz. Graz, 19. – 20. June

A Commission Staff Working paper examining electronic identification and trust services for electronic transactions in the internal market<sup>124</sup> highlighted that secure and seamless electronic interactions between businesses, citizens and public authorities, increases the effectiveness of public and private online services and electronic commerce in the EU, thus creating trust in electronic transactions in the internal market.

Continuation of the LSP activities will thus achieve objectives established by the Single Market Act<sup>125</sup> that stressed the need for boosting confidence in electronic transactions and restates the objective “to make secure, seamless electronic interaction possible between businesses, citizens and public authorities, thereby increasing the effectiveness of public services and procurement, service provision and electronic commerce (including the cross-border dimension)”. It will also support the Digital Agenda for Europe<sup>126</sup> which identifies existing barriers to Europe’s digital development and proposes legislation on eSignature (Key Action 3) and the mutual recognition of eidentification and authentication (Key Action 16), establishing a clear legal framework eliminating fragmentation and the lack of interoperability, enhancing digital citizenship and preventing cybercrime.

The Impact Assessment provides many examples<sup>127</sup> of situations where the lack of cross-border eID verification, eSignature, eDocument and eDelivery systems necessitate citizens and businesses incurring considerable extra costs in complying with regulations because they have to travel to Member State offices (in their home country or abroad) to present hard copy documents. Thus, incurring considerable costs in terms of time and money. These costs would not arise, and instead savings or benefits would occur, if these generally unrecognised citizen and business expenses were removed by improved cross-border electronic interactions.

Surveys<sup>128</sup> have consistently reported that a lack of confidence and trust in electronic systems is a barrier in enabling citizens and businesses to benefit from the services in the digital world.

The Impact Assessment SME Test Panel on eSignature and eID revealed that only 11 per cent of SMEs use eSignature for cross-border transactions. The lack of common trust enhancing rules for eIAS was frequently mentioned as a barrier to the cross-border use.

According to the Communication on a coherent framework for building trust in the Digital Single Market for e-commerce and online services<sup>129</sup> ‘The Digital Single Market is far from achieving its full potential; the cost of failure to complete it is expected to be at least 4.1 per cent of GDP between 2012 and 2020, i.e. EUR 500 billion or EUR 1000 per citizen. It is suggested that increased trust could enhance e-commerce completion rates.

These more general societal benefits for businesses, citizens and society arising from greater trust in more secure and seamless cross-border electronic interactions are rarely considered in impact assessments or considered amongst the benefits that might arise from continuation of the LSP activities. However, as the examples above show they can be considerable. If even a small proportion

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<sup>124</sup> European Commission. 2012. Staff Working paper. Impact assessment examining electronic identification and trust services for electronic transactions in the internal market SWD(2012) 135 Final

<sup>125</sup> COM(2011) 206 final of 13.4.2011

<sup>126</sup> COM(2010) 245 of 19.05.2010

<sup>127</sup> pages 8 and 9

<sup>128</sup> Eurobarometer 250, 2009; Eurostat household survey 2010, IDC ICT security market study, 2008

<sup>129</sup> [http://ec.europa.eu/internal\\_market/e-commerce/communications/2012/index\\_en.htm](http://ec.europa.eu/internal_market/e-commerce/communications/2012/index_en.htm) , last visited on 03.05.2013

of the magnitude of these benefits could be achieved they would be sufficient to develop a robust business case for the continuation of the components provided by the large scale pilots.

One reason why these benefits are rarely considered in impact assessments is because they do not always directly arise directly to those implementing systems or they are non-cashable savings (arising from preventing fraud etc.) that will not directly accrue to those contributing electronic systems development.

### *Immediate benefits arising from more secure and seamless cross-border electronic interactions*

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A traditional way of envisage benefits is to consider outputs that arise directly from an activity and outcomes that will be enabled or stimulated by an activity<sup>130</sup>. Outputs generally arise instantly or more quickly. Outcomes can take longer to occur.

Many Member States and Large Scale Pilot contributors are already developing many of the CSP/BBs, such as eID systems, eSignature, eDocument exchange systems etc. The marginal cost to them of developing systems to accommodate the interoperability and other standards to facilitate more secure and seamless cross-border electronic interactions enabled by the Large Scale Pilots (and consequent CSP/BBs) is generally small. The benefits arising from more secure and seamless cross-border electronic interactions might also be regarded in similar manner. Once a new secure and seamless system is developed the immediate cross-border savings might be relatively trivial. Perhaps just a few EUR or less as documents are scrutinised or authorized online, rather than requiring an administrator to look at hard copy document (brought or posted to them by citizen or business representative at significantly greater costs, than the benefit arising for an administration).

The saving or benefit per transaction that would need to be achieved can be estimated by dividing the average estimated costs for each scenarios (Table 63) by the number of transactions that the organisation might process (Table 57). Due to the way calculations were developed the required level of benefits to reach break-even is EUR 2 per transaction.

These estimates can be replicated using results from all of the preceding tables that incorporate sensitivity analysis for the volume of transactions and the different levels of costs for operating the organisations. Nonetheless, EUR 2 per transaction is a useful benchmark for the benefits per transaction, which would need to arise from the development of a scenario, in order to break-even.

A study by Waldecker<sup>131</sup> of Austrian Tax Declarations Online (launched 2003) examined savings in the cost of processing conventional applications vs. electronic applications. The study estimated that each conventional application needed five minutes to be processed by a clerk whereas an electronic application was processed automatically. Interestingly, five minutes of clerks time (at a salary of EUR 30,000 per annum) equates to a cost of about EUR 1.52. If overheads (social contributions, premises costs, paper costs) were included it is probable that the figure would approach EUR 2 – the breakeven point for the scenarios.

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<sup>130</sup> <http://www.jisc.ac.uk/fundingopportunities/projectmanagement/planning/objectives-outputs-outcomes.aspx>, last visited on 03.05.2013

<sup>131</sup> Mag. Erich Waldecker. 2012. E-Government im BMF – Scanning, Sparpaket und Handysignatur. E-Government Konferenz. Graz, 19. – 20. June

## Benefits facilitated by access to cross-border information

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The previous section examined the immediate outputs or benefits that could arise from developing the scenarios. This section considers the (often) longer term benefits or outcomes that can arise from the information that is provided by secure and seamless cross-border electronic interactions. These benefits primarily relate to more efficient operations and fraud prevention.

Increased availability of eIDs and other cross-border electronic systems can help to address the problem of identity fraud. The UK National Fraud Authority<sup>132</sup> estimates that in the UK alone, identity fraud is estimated to cost victims around GBP 1.9 billion a year (approximately EUR 2.3 billion), or some EUR 36 per capita. The report notes that “if the costs of responding to and dealing with identity fraud are taken into consideration, it is estimated that the real cost of identity fraud is at least GBP 2.7 billion a year”, or EUR 3.2 billion in total or some EUR 52 per capita. Extrapolated across the EU and assuming equal prevalence and cost, this would amount to an estimated total cost over EUR 26 billion.

Discussion with a representative of epSOS highlighted that in the UK one of the key benefits of eHealth electronic interactions or patient identification methods (eIDs) would be detect fraudulent access to UK health services. The UK provides more than EUR 691 million of health care per annum to cross-border patients. Clear guidelines are provided about charges for overseas visitors<sup>133</sup>. Nonetheless, it is known that relatively high proportion of overseas visitors fraudulently receive free health care. The epSOS representative noted that one of the outcomes provided by secure and seamless cross-border electronic health records would be immediate access to patient records. This would enhance the quality of service individuals could receive and, by looking at patient histories, ensure that those fraudulently seeking assistance could be detected. If the fraudulent level of service provided as one per cent of the total annual expenditure on cross-border patients this would represent EUR 6.91 million. This relatively small saving would represent over 20 per cent of annual operating cost for the eHealth organisation scenario presented in Table 61.

## Conclusion

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Contact was made with three representatives of the Large Scale Pilots. All provided very helpful insights to development activities and studies they knew about that provided an insight to benefits. However, none were able to provide an insight to the benefits that might arise from the current or future implementation of their activities.

As this section has demonstrated the benefits arising from the introduction of secure and seamless cross-border electronic interactions can be diverse and considerable.

The enhancement of trust and greater confidence in the use of electronic systems facilitated by the continuation of the Large Scale Pilots (through the CSP/BBs) will offer considerable benefits in achieving European Commission objectives relating to the Single Market Act and the Digital Agenda for Europe in developing digital services and electronic commerce. These can be regarded as societal benefits arising from increased trust in electronic transactions

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<sup>132</sup> [www.homeoffice.gov.uk/publications/agencies-public-bodies/nfa/annual-fraud-indicator/annual-fraud-indicator-2011?view=Binary](http://www.homeoffice.gov.uk/publications/agencies-public-bodies/nfa/annual-fraud-indicator/annual-fraud-indicator-2011?view=Binary) , last visited on 03.05.2013

<sup>133</sup> Guidance on implementing the overseas visitors hospital charging regulations, see [http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_134418.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_134418.pdf) , last visited on 03.05.2013

The main financial benefits facilitated by access to cross-border largely relate to the prevention of fraud and the provision of better services to users. Savings from the prevention of identity theft could be as much as EUR 52 per person in Europe. Health care savings in the UK could also be significant.

A problem with both of the preceding benefits is that, although they are significant, they are difficult to calculate, they are not usually 'cashable' and they do not accrue directly to those providing or utilising the electronic services.

The immediate output or benefit of developing more secure and seamless cross-border electronic interactions enabled by CSP/BBs is the time saving (or equivalent cost) of processing a transaction electronically instead of using traditional methods. The Waldecker study of online Austrian Tax Declarations suggested a time saving of approximately five minutes or about EUR 1.52 per transaction. This time saving does not seem unreasonable and it is similar to anecdotal figures frequently presented<sup>134</sup> at eGovernment conferences. It is thought that this saving, to those administering the online service, would increase to nearer EUR 2 if other overheads were included.

Interestingly, the required level of benefit level for each transaction to reach break-even for the scenarios is EUR 2 per transaction. It therefore appears that even if the other benefits considered in this section are disregarded that the scenarios should approach breakeven.

As previously noted detailed impact assessments will be required to more fully examine the costs and potential benefits of the precise proposed scenarios when the preferred organizational structures for the different components have been determined.

## 6.6 Conclusions

### 6.6.1 Overall assessment of the scenarios

The assessment of each of the five scenarios provided individual scores per scenario for each assessment criteria. Table 64 shows the total scores for each scenario.

*Table 64 – Conclusion of the assessment*

| Scenario | DG Programme<br>(.G-a) | Agency<br>(.G-b) | P/PP NPO<br>(.GO(C)) | Private Sector NPO<br>(.CO) | Supervisory Authority<br>(.CG) |
|----------|------------------------|------------------|----------------------|-----------------------------|--------------------------------|
| Score    | 12                     | 38               | 33                   | 22                          | 31                             |

As the table shows, the Agency scored highest, then the P/PP NPO. Third was the Supervisory Authority, followed by the NPO setup by the private sector and finally the DG Programme with the lowest score.

The reason the Agency scores highest is that it provides full flexibility in terms of who can be involved in decision-making as well as in both possible financing sources and possible financing schemes. Furthermore, in terms of operations, where carrying out operations in-house is considered best as it is the best way to ensure complete continuity, the Agency does very well as it can perform operations in-house since it is able to attract and build the needed capabilities and capacities. All these factors

<sup>134</sup> But usually unsupported with evidence.

mean that the Agency does very well in terms of all of the objectives; stakeholder representation, take-up, flexibility and continuity. The P/PP NPO does very well as well, but a slight bit less well than the Agency. This is mainly due to two things, first of all, the scenario presents a little less certainty in terms of financing as the Agency can fall back on public sector funding in case there is no – or reduced – financing. Although the NPO can do this too in terms of membership fees, there is no guarantee of having enough membership fees as membership is on a voluntary basis and members can leave (whereas the Agency can have formal and obligatory representation). The Supervisory Authority (which assumes the existence of a business case for the CSP/BBs), is to a certain extent different from the other scenarios, The Supervisory Authority, scores close to the P/PP NPO, the only area where the P/PP NPO is slightly stronger is that of balanced stakeholder representation. The Private NPO scenario also presumes the presence of a business case, scores a great deal lower than the Supervisory Authority; only the private sector is (guaranteed) a part of the decision-making. Furthermore, it scores low in terms of continuity as it is only ensured for the CSP/BBs where there is a certain business case, i.e. potential for profit. Finally the DG programme scores the lowest because it is time-limited thereby affecting continuity, only the European Commission decides (Member States only when the Programme is defined) and it is very inflexible as it is defined for five years and is hard to change during those five years. It should however be noted that the DG Programme is likely to be a good solution in the short-medium term in order to transition into the final scenario. In the workshop, used to debate them matter with all the stakeholder groups, there was also consensus around these conclusions.

When looking at the scenarios and how they would work for the individual CSP/BBs, it was concluded that the DG Programme, it is not ideal for any of the CSP/BBs, however, not impossible for any (confirming that it is a possible solution in the short-medium term). The Agency is very well suited to contain all the CSP/BBs, except eBusiness where it does well but is not optimal. However, it should be noted that there is no scenario that scores better for eBusiness. The P/PP NPO scenario also presents itself as a possibility across the full range of CSP/BBs including for cross-CSP/BB governance, however, it does rank less well for both eID and cross-CSP/BB governance, than the Agency. The NPO setup by the private sector on the other hand is not a possibility for eID, not for cross-CSP/BB governance and whilst it is a possible scenario for the remain CSP/BBs; it only scores really well (but not better than Agency and the P/PP NPO scenario) for eHealth and eJustice. Finally, the Supervisory Authority is not a realistic scenario for the eID and eBusiness scenarios, not for the cross-CSP/BB governance, however, it is very well suited for eSignature, eDocument and eDelivery, just as the Agency and the P/PP NPO are.

To conclude it is clear that an Agency is the most viable solution across the board (as it is the only one that does very well for both eID and for cross-CSP/BB governance). However, although not as strong, P/PP NPO is also a real possibility as it is not impossible for any of the CSP/BBs. This shows that both in terms of the assessment of the scenarios based on the scoring for the assessment criteria (along the objectives for sustainability) and in terms of what is possible for the CSP/BBs, the only two real possibilities are an Agency and a P/PP NPO (with the Agency potentially being more likely to be sustainable as it was pointed out in the workshop that the Agency is a strong solution as it also ensured EU representation, which is needed for the cross-CSP/BB governance). The Supervisory Authority comes in at a third place, but its viability presumes sufficient maturity for it to be given to the market.

## 6.6.2 Conclusions of the Cost-benefit Analysis

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Cost-benefits analysis calculations were underpinned by an evidence based estimation of the **potential** use levels for the nine CSPs and building blocks - eID, eProcurement, eBusiness, eHealth, eJustice, eSignature, eDocument, eDelivery. These calculations estimated that the total potential volume of transactions by citizens in 2012 that could be facilitated by the building blocks for the nine most important citizen cross-border services would be 27.0 million transactions. Sensitivity analysis forecasts were undertaken to estimate the volume of transactions for the five year period between 2014 and 2018, this estimated 184.1 million transactions.

Forecasts for transactions undertaken by businesses were also undertaken for the transactions that could be facilitated by the building blocks for the seven most important business cross-border services. These forecasts estimated that 6.2 million business transactions could be facilitated in 2012. Sensitivity analysis forecasts were undertaken to estimate the volume of transactions for the five year period between 2014 and 2018, this estimated 32.9 million business transactions.

The estimated volume of transactions was used as a multiplicand to underpin the estimation of the likely level of costs and benefits of the scenarios.

A review of ten organisations that have the same characteristics as the five scenarios (.G-a, .G-b, .GO(C), CO, CG) was undertaken to examine the characteristics and changes over time in the running costs for the types of organisations that might be adopted for the governance and operations of the DSI and/or CSPs in the future. The operating costs (calculated as the costs per million transactions overseen) for these ten organisations was estimated. This data was used alongside earlier estimates for the number of transactions that would be facilitated by each building block to estimate annual operating costs for the five year period between 2014 and 2018. Sensitivity analysis was used to provide a range of values. The two building blocks with the highest volume of potential transactions and thus operating costs in the five year period were eHealth and eIDs (with the assumption that the potential is realised). The estimated average annual operating costs for eHealth was EUR 32m. For eIDs the estimate was EUR 29.7m. The estimated number of personnel required to administer these two building blocks was 131 and 122 people respectively.

A small number of studies have examined the costs and benefits of electronic service delivery; they have used many different methodologies and identified a wide range of benefits and returns on investment. A sound evidence base for estimating potential benefits does not exist. Nonetheless, three clear types of benefits are evident.

Firstly, there are broader societal benefits arising from increased trust in electronic transactions. Surveys have consistently reported that a lack of confidence and trust in electronic systems is a barrier in enabling citizens and businesses to benefit from the services in the digital world. The cost of this failure is expected to be at least 4.1 per cent of GDP between 2012 and 2020. This equates to EUR 500 billion or EUR 1000 per citizen. It is suggested that increased trust could enhance e-commerce completion rates.

Secondly, there are immediate 'information' benefits through facilitating more secure and seamless cross-border electronic interactions. A study of online Austrian Tax Declarations Online estimated that their seamless electronic tax system probably led to savings of approximately EUR 2 per transaction when compared with conventional processing of applications.

The final group of benefits relate to the prevention of fraud facilitated by access to cross-border information. The UK National Fraud Authority estimates that in the UK identity fraud is estimated to

cost victims around GBP 1.9 billion a year (approximately EUR 2.3 billion), or some EUR 36 per capita. Extrapolated across the EU, and assuming equal prevalence and cost, this would amount to an estimated total cost over EUR 26 billion.

### 6.6.3 Conclusions

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As is clear from the conclusion of the assessment, there is a temporal component related to the choice of scenarios. Depending on the level of maturity and the extent to which a business case is apparent there is a larger scope for the involvement of the private sector. This would mean that for specific CSP/BBs different scenarios will be more viable over time. For example, if companies would see a clear interest in exploiting a CSP/BB and create a market for the services, a P/PP NPO, NPO setup by the private sector or the Supervisory Authority scenario will become more likely. Given the different time frames in which this may occur per CSP/BB this means that over time the need to establish a different scenario could occur at different points in time.

Stakeholders confirmed this evolution over time during the workshop by asserting that a certain level of maturity and a clear business case are required for the private sector to take on a pivotal role in the governance of the CSP/BBs.

The cost-benefit analysis has shown that although operational costs will not vary substantially across the scenarios, there are substantial disparities as regards to transition and establishment costs. Therefore, in order to draw up the roadmap, it should be taken into account that the potential evolution of specific scenarios per CSP/BB may require certain costs to be incurred, while at the same time these also enable different possibilities to generate revenues and involve private sector. As such, these costs may be offset if the scenario that the CSP/BB transits towards has a greater capacity to generate revenue from the use of the solutions by the private sector. In addition, the role of the public sector in financing the building blocks and CSP/BBs may diminish over time for those where a business for private sector involvement is more apparent.

# 7 Options

**This chapter presents the various options which can be selected in order to ensure the sustainability of the solutions developed by the Large Scale Pilots.**

Policy Options are the possible paths which can be selected to ensure the sustainability of the solutions developed by the LSPs. Indeed, it is clear from the previous section that there is a temporal element related to the scenarios. Therefore, the adequacy of a scenario for any CSP/BB will depend on the development level of the CSP/BB. Consequently, paths are designed by combining scenarios, in line with the development phase of each CSP/BB. This combination of scenarios should thus enable to meet the specific objectives which have been outlined in Chapter 5. These are:

- ❑ **Ensuring take-up** of the solutions;
- ❑ **Ensuring flexibility**, which includes limiting public funding and limiting set-up and transition costs;
- ❑ **Ensuring stakeholder engagement**;
- ❑ **Ensuring continuity**.

In order to create Policy Options, it is firstly necessary to determine which scenarios best comply with the requirements of each development phase. Secondly, the Policy Options must also take into account a number of elements which result from the assessment carried out in the previous sections. These are:

- ❑ The need for coordination;
- ❑ The evolution of existing CSP/BB;
- ❑ The possibility of adding new CSP/BBs.

These elements will be further described in the following sections.

## 7.1 Possible Scenarios per Development Phase

In Chapter 4, the CSPs and building blocks have been mapped according to their current development phase (emerging, growth, maturity). Specific needs and requirements, in terms of stakeholder engagement, take-up, flexibility and continuity, can be ascribed to each of these phases. Assessing these needs and requirements therefore enables to draw conclusions as regards to suitability of each scenario per development phase. These are presented in the following section.

### **Emerging Phase**

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In the emerging phase, the solutions are designed, and are progressively deployed towards the late emerging phase. In this phase, the most relevant stakeholders (particularly EU and Member States) come together to define interoperability standards and specifications, create components, building blocks and CSPs, and progressively deploy them. Stakeholder engagement should thus be confined to public sector stakeholders; private sector stakeholders (the most relevant industry stakeholders) could be consulted/advise. Indeed, as take-up is limited, there is a limited need for private sector

involvement beyond consultation. Furthermore, flexibility, particularly in terms of financing, is of limited importance, as the solutions are financed by the public sector (as was done under the LSPs). There is therefore no real possibility for diverse financing sources and schemes. Finally, continuity is of more limited concern as the developed solutions are in an experimental stage, and there is uncertainty as regards to their long-term perspective in this phase.

In the assessment carried out in Chapter 6, the DG Programme was assessed as the worst performing scenario in view of ensuring long-term sustainability due to its limited capacity to involve diverse stakeholders within its governance structure, the limited flexibility and due to its time-bound nature. However, during the time of its existence, the DG Programme is a highly stable scenario, with access to a continuous and steady budget. Furthermore, although the DG Programme does not enable diverse stakeholder engagement in terms of decision making, this is not a requirement in the emerging development phase. Participants to the 2nd LSP workshop have notably confirmed that one of the advantages of the DG Programme was its capacity to “get key (public sector) stakeholders around the table” in order to set the direction, which is an essential requirement during this development phase. Finally, the Cost-Benefit Analysis presented in section 6.5 revealed that the DG Programme is the most economically efficient scenario as regards to set-up and transition costs. These elements therefore point towards the fact that the DG Programme could be an adequate scenario for the CSPs in their emerging phase.

The Agency is also a potential candidate in the emerging phase, as it can also benefit from stable public finance backing and organise public sector stakeholders. Finally, the P/PP NPO is also a viable solution in the emerging phase, although this scenario presents the disadvantage of voluntary participation, implying that it is less secure in terms of ensuring continuous public revenue. The non-participation of some countries in STORK 2.0, following its participation in STORK is particularly illustrative in this respect as it highlights the possibility of Member State deciding to opt out of a CSP if it no longer sees the a clear value proposition. This disadvantage could be overcome by financial backing from the European Commission.

## **Growth Phase**

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In the growth phase, the solutions begin to gain authority among users, and therefore take-up progressively increases. As take-up of the solutions increases, a potential for revenue becomes apparent for specific CSP/BBs. This progressively diminishes the need for public sector financing, and conversely substantially increases the need to enable flexible financing schemes and sources. As the potential for revenue becomes apparent, the need for the private sector to be involved within the governance structure of specific CSP/BBs, in order to influence the development of the solutions, will also increase. Finally, continuity is relatively important in this phase, as there is more certainty as regards to the long-term perspective of the solutions.

In the assessment conducted in Chapter 6, the Agency is the scenario which scored the highest given its capacity to involve diverse stakeholders within the governance structure and make use of diverse financing sources and schemes. By being able to generate revenue, the Agency can limit the dependency of the solutions on public financing, as a clear private sector business case becomes apparent for certain CSP/BBs. This can therefore lead to the cross-subsidisation of the CSP/BBs within the Agency. However, to the contrary of the private sector NPO or Supervisory Authority scenarios, the Agency does not require the existence of an actual business case as a pre-condition to its sustainability, as it can rely on flexible public funding. The Agency is therefore a highly suitable

scenario to ensure the progressive involvement of the private sector within governance, and to catalyse the development of the solutions in their early growth stage.

However, it may be politically sensitive to create a new Agency, given the European Commission's commitment to the European Parliament to ensure more balanced governance, as well as improve the efficiency, accountability and coherence of the current EU Agencies.

The P/PP NPO scored the second highest in the assessment conducted in Chapter 6. However, as membership is voluntary, public and private sector stakeholders will only adhere to the NPO once a clear value proposition has been defined. An NPO can either be comprised exclusively of public authorities, in which case they are Public NPOs, such as EURid, or Public-Private (PP) NPOs, such as ICANN. If no clear private sector business case has been identified, which would motivate private sector involvement, establishing a Public NPO, could be a credible alternative to an Agency in the early growth stage of the CSPs.

However, the veritable value added of the P/PP NPO lies in the diversity of opportunities which it offers in terms of stakeholder engagement, as well as the financing schemes and sources. Indeed, by bringing the CSPs out of the purely public sector umbrella, the PP-NPO provides a neutral forum, in which the private sector can develop a greatest sense of ownership, and therefore has a greater incentive to be involved in the development of the solutions. As the private sector will only be interested in being involved in the governance structure once a clear business case for the solutions has been identified, thus considerably diminishing the need for public sector funding, the Public-Private NPO is a potentially adequate scenario once the solutions have reached late growth phase and early maturity phase.

## **Maturity Phase**

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In the maturity phase, take-up of the solutions is substantial. For specific CSP/BBs, the potential for revenue identified in the growth phase has materialised and a clear business case has been identified by the private sector. The clear business case enhances the need for flexibility as numerous Service Providers wish to integrate the solutions within their own service offering, and therefore require specific adaptations of the solutions. The need for stakeholder engagement is therefore at its pinnacle and the management of the CSP/BBs is outsourced to the private sector.

The Private-Public NPO is a possible scenario for the CSP/BBs in their maturity phase. In the PP NPO, public authorities remain dominant stakeholders, on an equal footing with the private sector. As a clear business case has been identified, the NPO is self-sustainable. This scenario thus presents the advantage of the both taking public authorities' needs and requirements into account, as well as curbing the financial impact of the CSP/BB management on public budgets.

There are two 'full market' scenario, enabling the private sector to take full ownership of the CSP/BBs. These are the Supervisory Authority and the Private Sector NPO.

The Supervisory Authority was the third best performing scenario in the assessment conducted in Chapter 6. As such, the public sector relinquishes the management of the CSP/BBs to the private sector, although a Supervisory Authority is set-up to regulate this mature market. The public sector, through regulation, retains a dominant position and has no obligation to involve the private sector within the decision making process of the Supervisory Authority. This scenario is the only one in which there is an obligation to implement what is decided, as the decisions made by the Supervisory

Authority are binding to the supervised Service Providers. This scenario can thus catalyse take-up. Finally, this scenario is highly stable, and benefits from numerous and diversified financing.

The private sector NPO would be another “full market” possibility, although it scored considerably lower in the assessment conducted in Chapter 6. A crucial weakness of the private sector NPO is the potential domination of the NPO by a small number of very large private companies, which would hamper the long term viability of the association.

In case public authorities oppose themselves to private sector generating revenue from the CSP/BBs, or if no business case has been identified, an Agency or a public NPO could be suitable scenarios for the CSP/BBs.

## Conclusion

It is clear that there is a temporal element to the scenarios, and that specific scenarios are best suited for specific development phases of the CSPs. The figure below presents the possible scenarios per development phase of the CSPs.

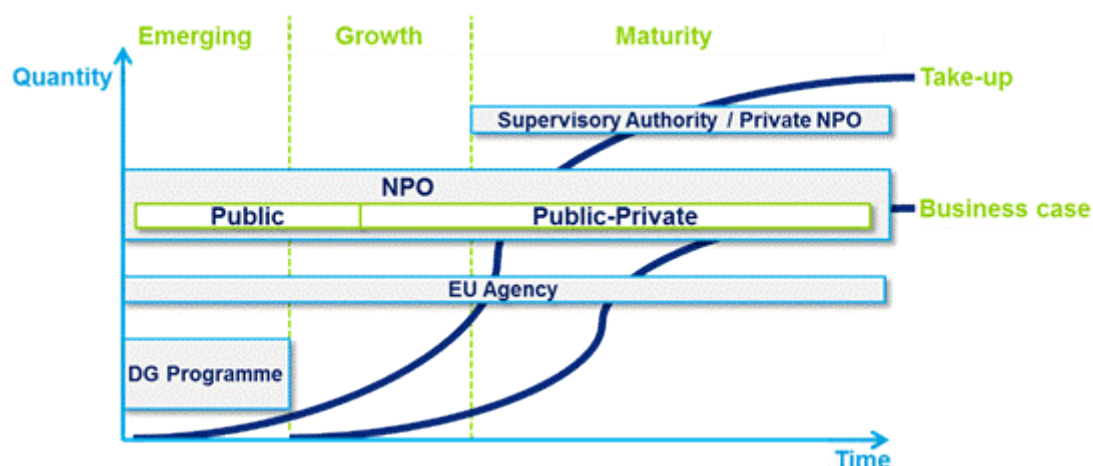


Figure 24 – Scenario possibilities according to development phase

## 7.2 Towards Creating Options

Once the fitness of each scenario per development phase has been defined, it is necessary to take a number of elements – the need for coordination, the evolution of a CSP/BB, adding a new CSP/BB – into account in order to develop Policy Option.

### 7.2.1 The Need for Coordination

It has been shown that there is a temporal component related to the scenarios, and that there are significant discrepancies in the development levels of the various CSP/BBs. Consequently, a single scenario, and therefore entity, may not be adequate to encompass all the CSP/BBs.

The case is notably clear for OpenPEPPOL, which is currently a user driven organisation setup as an NPO. As such, transferring OpenPEPPOL in its current development stage to another entity could either impede private sector engagement within governance, in the case of a DG Programme, or deprive it of public sector financing if a more full market approach is adopted. The presence of the European Commission within the Managing Committee of OpenPEPPOL could however

counterbalance the inherent financial insecurity of NPOs. Transition to another type of entity is however possible in a future development stage.

In Chapter 6, it was concluded that if a building block has been identified as having a high re-use capacity, it should not only be ascribed to a specific CSP/BB but identified for broader re-use across CSPs. As such, although individual CSP/BBs may thrive under different types of entities, coordination should be ensured in view of maximising the re-use of solutions outside their original domain of application, thereby avoiding the duplication of efforts, and guaranteeing that various solutions responding to the same end need are not communicated to users.

The idea of cross-CSP/BB governance was introduced, in order to ensure ex-ante coordination and identify the building blocks have a high re-use potential and should consequently be adopted by other CSP/BBs.

The need to ensure such cross-CSP coordination at EU level was confirmed by the results of the survey addressed to Member States and associated countries, presented in Annex D – Results from the Survey to Member State and associated countries. Nearly all respondents emphasized that there is a need for strategic coordination across the CSP/BBs, at the EU level, in order to maximise the re-use of developed solutions.

The Policy Option must thus include a scenario, and therefore an entity, which ensures coordination of the other CSP/BBs which are at different levels of maturity. Further to ensuring coordination, the entity could also directly manage the CSP/BBs.

The selected coordination entity will have a changing role over time. This changing role is linked to changes in the CSP/BBs and building blocks and their maturity; new ones being added, old ones becoming more mature and the needs of the stakeholders changing over time and thereby potentially leading to change and as a result affecting take-up. There are a number of events or changes that can lead to effects on the entity and have an outcome that affects the overall environment. It is important to consider these as they can lead to a transition for the coordination entity itself or can lead to the creation of other entities.

## **7.2.2 Evolutions for existing Core Service Platforms / building blocks**

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Essentially, for an existing CSP/BB two things can happen in the medium to long term that have implications for governance, financing and operations:

1. Maturity and take-up increase for a specific CSP/BB, however, there is no interest from the private sector to deploy, manage and govern the CSP/BB, in other words there is no clear private sector business case;
2. Maturity and take-up increase for a specific CSP/BB and there is a clear interest from the private sector to deploy, manage and govern the CSP/BB, in other words there is a clear private sector business case;

The main dichotomy that can have a profound impact on the governance, operations and financing of the CPS/BB depends on there being a clear private sector business case. Indeed, if the market is willing and interested in providing cross-border interoperable solutions based upon agreed standards and specifications the involvement and role of government stakeholders will likely change. The following two sections provide more detail on the effect this has for the different scenarios in terms of governance, financing and operations.

### **Event: A CSP/BB reaches maturity but has no private sector business case**

The change, its effect and the outcome presented in the table below are linked to an event in which a CSP/BB reaches maturity but has no business case.

| <b>Change (cause): A CSP/BB reaches maturity but has no business case</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Effect GOFA (Effect)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>What the result is (Outcome)</b>                                               |
| <p><b>Governance:</b> Regardless of whether there is a private sector business case upon maturation of a CSP/BB, the cross-CSP/BB governance will always have to be ensured by the coordinating entity.</p> <p>However, although there is no private sector business case, the private sector may still wish to be a part of the governance of the CSP/BB, but the only entities that are relevant if there is no private sector business case are an Agency or an P/PP NPO, which are the most viable choices for the coordination entity, so in terms of governance, the mature CSP/BB with no private sector business case will remain in the coordinating entity.</p> | <p>The outcome is that there is no change to the entity, it remains the same.</p> |
| <p><b>Operations:</b> In terms of operations, the options remain the same, if operations in general are done in-house in the coordinating entity, then this will likely also be the case for the mature CSP/BB, if the entity outsources operations, this is also likely to be the case for the mature CSP/BB. As take-up is increasing, however, the need for scalability in operations should be guaranteed.</p> <p>An alternative is however, to license out the operations, however, the prerequisite for this is that the licensees can then charge fees to the end-users (like public administrations charge fees for some services to citizens).</p>               |                                                                                   |
| <p><b>Financing:</b> The financing will most likely be through public funding, unless the end-users are charged for the services in which case the coordinating entity can either charge the users directly or can license it out and receive license fees from the licensee who then charges the users.</p>                                                                                                                                                                                                                                                                                                                                                              |                                                                                   |

### *Event: A CSP/BB reaches maturity and has a clear private sector business case*

The change, its effect and the outcome presented in the table below are linked to an event in which a CSP/BB reaches maturity and has a clear private sector business case.

| Change (cause): A CSP/BB reaches maturity and has a business case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effect GOFA (Effect)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | What the result is (Outcome)                                                                                                                                                                                                                                                                                                             |
| <p><b>Governance:</b> The governance needs remain the same; there will continue to be a need for governance of the CSP/BB specific issues, but also a need for the cross-CSP/BB to take into account the mature CSP/BB. The governance of the CSP/BB specific issues can however, be undertaken by a number of different stakeholders and not necessarily in the coordinating entity. It can be done in a spin-off. It is important to note that due to the existence of a private sector business case, the private sector will likely be interested in taking part in the governance regardless of the entity in which it is done.</p> <p>If indeed, the market will offer services that enable the cross-border interoperability a specific CSP/BB could be taken over by the market leading to a more market oriented governance (possibly governed through a spin-off entity such as a Private NPO or Supervisory Authority). In the case of a spin-off the cross-CSP coordination needs to be duly considered in order to ensure the potential re-use and alignment across CSP/BBs.</p> | <p>The outcome is that it is possible to keep it in the coordinating entity, however, it is also possible to create a spin-off entity, which takes over the running and governance of the CSP/BB and which represents the CSP/BB in the coordinating entity. This event is the event that could lead to the most significant change.</p> |
| <p><b>Operations:</b> Operations would for an immature CSP/BB be carried out either in-house or outsourced, however as the CSP/BB reaches maturity and there is a private sector business case, this can be transferred to a licensing scheme. However it can also be kept in-house or outsourced.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                          |
| <p><b>Financing:</b> Because there is a business case, the financing can be done through the generation of revenue either by the licensee if operations are run that way or through direct generation of revenue by the entity running the CSP/BB. This means that there is scope for decreased reliance on direct public sector funding.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                          |

In addition to the evolution of an existing CSP/BB another important event to consider is the event of a new CSP/BB being added, the next section addresses the different possible events in this case.

### **7.2.3 Adding a new CSP/BB**

Once a new CSP/BB is added to enable cross-border interoperability in important areas of online service provision a number of different cases may arise. Today the sustainability scenarios that are to be setup will deal with the set of existing CSP/BBs based on the results of the LSPs. The LSPs have

developed specific interoperability solutions that have undergone an evolution from developing and piloting these solutions (at 'immature' stages) to wider acceptance and more maturity. In the possible event of a new CSP/BB being added to the Digital Service Infrastructure for cross-border public services this could either concern a similar 'new LSP' that needs to be developed from scratch or may concern a more mature already existing solution. In addition, there may or may not be a clear private sector business case as argued in the previous section.

The following sections therefore consider the three possible events when adding a new CSP/BB based on an immature one being added or a mature one where there is no clear private sector business case or one where there already is.

### ***Event: A new (immature) CSP/BB is added***

The change, its effect and the outcome presented in the table below are linked to an event in which a new immature CSP/BB is added.

| <b>Change (cause): A new (immature) CSP/BB is added</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Effect GOFA (Effect)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>What the result is (Outcome)</b>                                                                                                                                                                                              |
| <p><b>Governance:</b> There is a need to have a new (group for the) governance of the new CSP/BB, to deal with the CSP/BB specific matters. It has to be decided which stakeholders should be represented in this new CSP/BB specific governance structure. Once this is done, there is a need for the CSP/BB to be represented in the cross-CSP/BB decision-making process.</p>                                                                                                                                                                                                                                                                       | <p>The outcome is that the coordination entity remains the only entity that is enlarged by incorporating the most relevant stakeholders. It is also possible to transfer these into a Public NPO if it is deemed preferable.</p> |
| <p><b>Operations:</b> Depending on how the operations are done in the coordination entity (Agency or P/PP NPO); if it is already done in-house, then the new CSP/BB operations can be done in-house too providing it is possible to on-board the necessary expertise and ensure a knowledge transfer. If the CSP/BB is developed from the very beginning in the coordination entity, then the necessary expertise and knowledge should be acquired from the market.</p> <p>If the operations are outsourced, then the operations of the new CSP/BB could also be outsourced. There is no potential for licensing as it is a new (immature) CSP/BB.</p> |                                                                                                                                                                                                                                  |
| <p><b>Financing:</b> Financing has to be ensured by the coordination entity as there is no (or very limited) business case e.g. due to the (immature) level of development and take-up. The financing can therefore be done either through public funding or through using revenue generated by the entity from other activities (cross subsidising).</p>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                  |

### **Event: A new (mature) CSP/BB is added with no clear private sector business case**

The change, its effect and the outcome presented in the table below are linked to an event in which a new mature CSP/BB is added with no clear private sector business case (e.g. a new CSP/BB is added by the public sector from another project/area).

| <b>Change (cause): A new mature CSP/BB is added with no clear business case</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Effect GOFA (Effect)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>What the result is (Outcome)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Governance:</b> There may only be a need to govern the cross-CSP/BB aspect if the CSP/BB itself is already being governed by the originator who will continue to govern the CSP/BB. The only change in governance in this case will therefore be that the new (mature) CSP/BB will need to be represented in the cross-CSP/BB governance and coordination mechanisms will have to be established.</p> <p>A second possibility (however perhaps not likely for political reasons) is that the entire CSP/BB is brought under the coordination entity in which case this will be equal to setting up a new CSP/BB as it would require a governance (group) for the CSP/BB specific matters for the new CSP/BB.</p>                                                                                                                                                                    | <p>The likely outcome is that the established governance of the CSP/BB will remain in place and coordination needs to be ensured within the existing entity responsible for the DSI.</p> <p>Alternatively, the governance could also be assumed by the entity in charge of the governance of the DSI which would imply the setting up of the appropriate governance structure within the organisation and ensuring representation of the relevant stakeholders.</p> |
| <p><b>Operations:</b> From an operational perspective if the management and further development would continue to be carried out by the originator there are no operations to carry out except for making the building block available for re-use, integrating it into the offerings. The making available of the offering should either be done by the existing teams in-house or the existing outsourced operations (as it should not require much knowledge transfer just to make it available) – If then another CSP/BB wants to re-use it, those responsible for running these operations should then become familiar with it (which would perhaps require a slightly higher level of knowledge transfer).</p> <p>For the second possibility, the entire operations would be incorporated in the coordination entity, thus ensuring the needed expertise and knowledge transfer.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Financing:</b> As there is no private sector business case, it will most likely have to be fully financed through public funding.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### ***Event: A new (mature) CSP/BB is added with a clear private sector business case***

The change, its effect and the outcome presented in the table below are linked to an event in which a new mature CSP/BB is added with a clear private sector business case (e.g. the private sector adds CSP/BB they wish to share in order to it to be used by public administrations).

| <b>Change (cause): A new mature CSP/BB is added with a clear business case</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Effect GOFA (Effect)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>What the result is (Outcome)</b>                                                                                                                                                      |
| <b>Governance:</b> There will only be a need to govern the cross-CSP/BB aspect as the CSP/BB it is already being governed by the originator which brings it in for re-use. The only change in governance in this case will therefore be that the new (mature) CSP/BB will need to be represented in the cross-CSP/BB governance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The outcome is that the coordination entity remains the only entity as there is no spin-off, but only coordination. Therefore, the entity is just somewhat enlarged but the only entity. |
| <b>Operations:</b> From an operational perspective there are no operations to carry out except for making the building block available for re-use, integrating it into the offerings – however, development would be continue to be carried out by the originator. The making available of the offering should either be done by the existing teams in-house or the existing outsourced operations (as it should not require much knowledge transfer just to make it available) – If then another CSP/BB wants to re-use it, the people running these operations should then become familiar with it (which would perhaps require a slightly higher level of knowledge transfer).<br><br>For the second (less likely) possibility, the entire operations would be incorporated in the coordination entity, thus ensuring the needed expertise and knowledge transfer. |                                                                                                                                                                                          |
| <b>Financing:</b> In terms of financing, as the CSP/BB is mature and given that there is a clear private sector business case, the operations and governance can be financed through revenue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                          |

### **7.3 Policy Option 1: Creating an Agency in the Medium Term**

In Chapter 6, the viability of each scenario, per CSP/BB, was assessed, as well as the capacity of the scenario to ensure cross-CSP coordination.

The Agency was assessed as the model which would be best suited to ensure this coordination. This would imply that even in the case that CSPs are more left to the market, in the maturity phase, the Agency should still be maintained in view of ensuring coordination and could take on the role of Supervisory Authority. However, it was also concluded that a minimum of three years would be required to create, and slightly less to amend an existing Agency (e.g. the Large Scale IT Systems Agency), depriving this scenario from being a short term solution to ensure coordination of the CSPs.

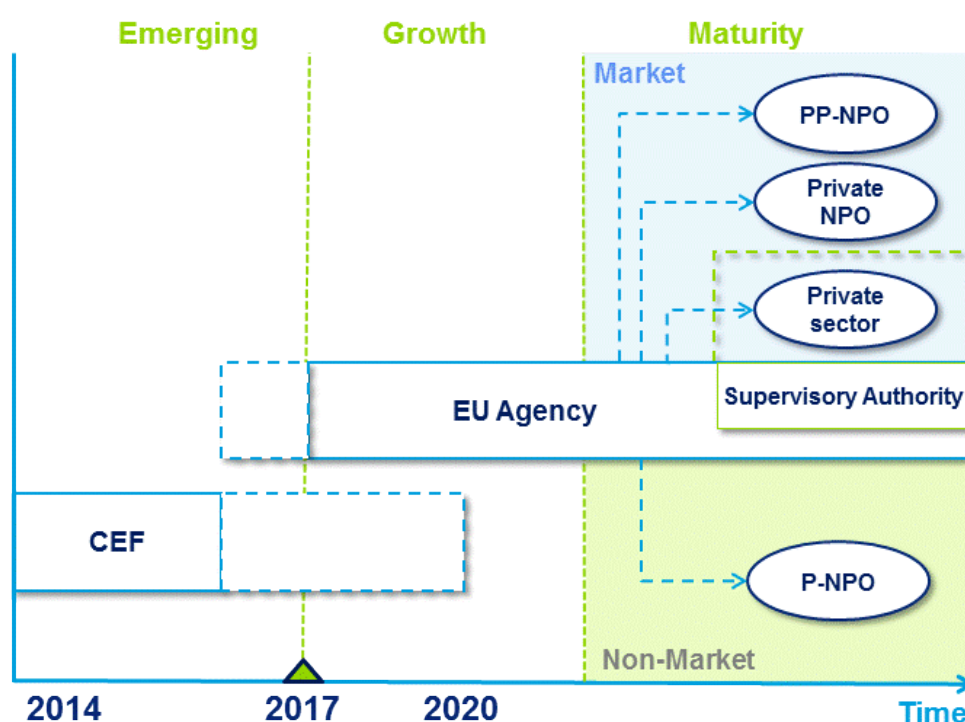
The Agency was also assessed as the most suitable scenario to ensure the management of the CSP/BBs, notably due to its capacity to involve diverse stakeholders within its governance structure, generate revenue and also benefit from the stable public sector financing.

The first Policy Option therefore consists of setting up an Agency in the Medium Term (meaning that it should be present in the Medium term).

In the long-term, if an Agency is chosen as the coordinating entity, cross-CSP/BB governance can remain within the Agency regardless of whether there is a private sector business case or not. However, as shown in the previous sections, the role of the Agency might change and alternative setups for the CSP/BB specific governance may be setup. As Figure 25 shows, there are mainly five possibilities:

- ✘ **Possibility 1:** Everything remains within the Agency, even if there is a business case;
- ✘ **Possibility 2:** There is no business case and a Public NPO is set up;
- ✘ **Possibility 3:** There is a business case and a Public-Private NPO is setup;
- ✘ **Possibility 4:** There is a business case and a Private NPO is setup;
- ✘ **Possibility 5:** There is a business case and the CSP/BB is managed and deployed by the private sector and a Supervisory Authority is setup.

The figure below illustrates these different possibilities.



*Figure 25 – Long-term: The effects of events on an Agency*

It should however be noted that each of these possibilities have advantages and disadvantages both in terms of what public financing, the need for investment, ensuring cross-CSP/BB coordination, stakeholder involvement and the risks that are linked to it.

### 7.3.1 Policy Option 1.a: Everything remains within the Agency, even if there is a business case

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If no spin-offs are created and the Agency is maintained not only as the coordinating entity, but as the only entity for running and governing the CSP/BBs, a number of advantages and disadvantages can be distinguished.

In terms of governance, the individual CSP/BB specific governance can be ensured, both in terms of strategic governance and operational governance. Furthermore, maintaining an Agency as the only entity ensures the cross-CSP/BB governance very well, perhaps better than with any spin-offs as it is kept within one entity thereby potentially making the functioning smoother. However, there is a risk that this may not be politically feasible, particularly in the case where a clear private sector business case exists. One could claim that in this case the CPS/BB should be left up to the market and the role of the Agency could move towards a supervisory role rather than fully governing the CSP/BB (see the dedicated section on Supervisory Authority below).

In terms of operations, there are various possibilities if they are outsourced or carried out in-house; they can continue to be outsourced. However, as CSP/BBs with a business case reach maturity it will then be possible to generate revenue from them thereby offsetting some of the costs of outsourcing them or carrying them out in-house. In addition to this, it will be possible to license some of the operations out (for the ones that are mature and have a business case), however, as with outsourcing, this does however potentially impact the continuity of the services as the outsourcing contracts and/or licensing contracts would have to be renewed and the vendor could change, potentially affecting continuity.

Vis-à-vis both flexibility and stakeholder engagement, the Agency does provide sufficient flexibility to scale its operations and to have different stakeholders involved, however, it may be slightly slower to adapt than other entities. Therefore it could also be argued that something mature, which could be placed in the market, should be placed in the market in order to better respond to the needs and in order to relieve some of the burden on the public sector. Whilst an Agency can rely on public funding when there is not a business case (which is an important strength of the Agency), it should rely on revenue for the CSP/BBs where there is a business case and in terms of financing of the CSP/BBs where there is no business case, it may be possible cross-subsidize in the way that if a CSP/BB can generate more revenue than what it costs, then some of the extra revenue can be used to cross-subsidize the CSP/BBs that do not have a business case. In addition to this, having all of the CSP/BBs remain in the same entity would also mean that some economies of scale may be possible and it would mean that there would be no additional investment needed in order to setup a spin-off.

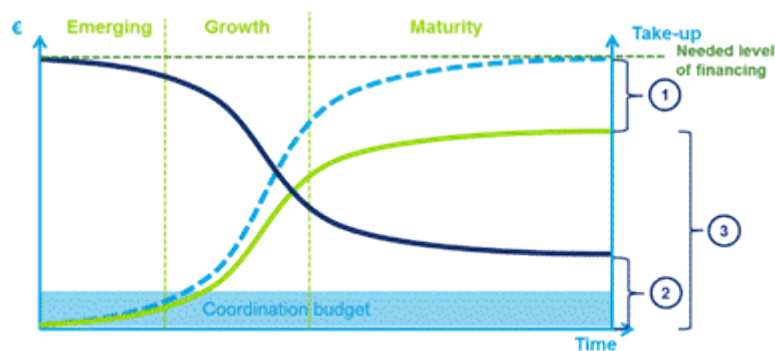
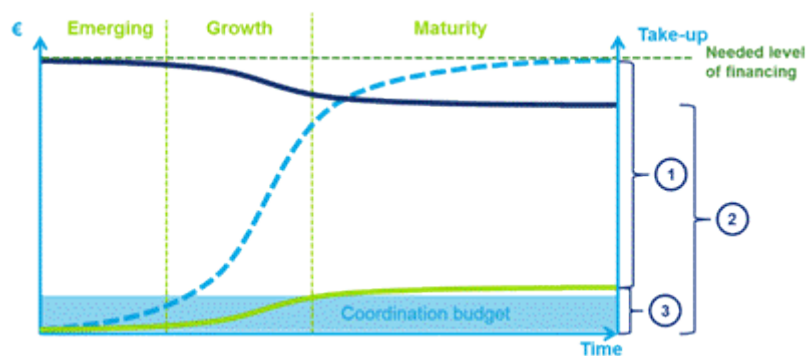
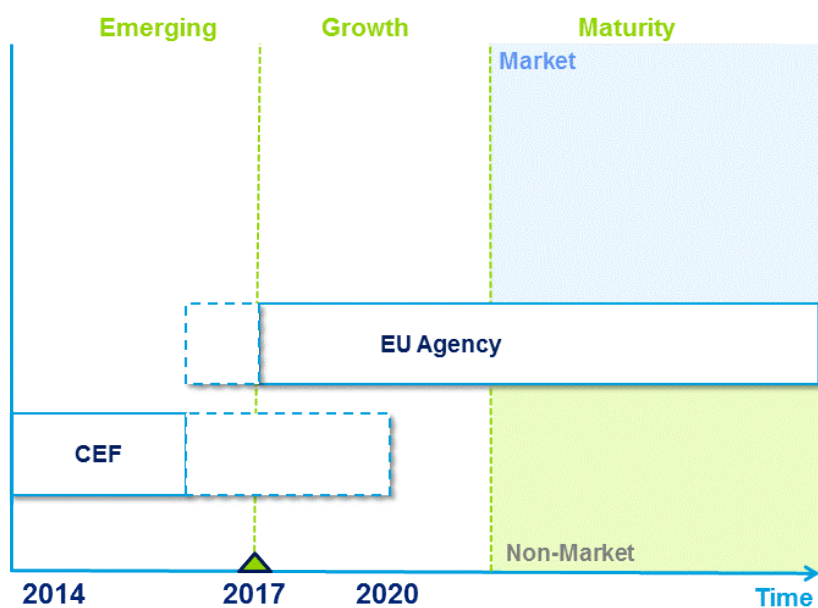
In terms of Take-up, the Member States may be more willing to take-up solutions from an Agency than from a spin-off as the Agency would be a trusted entity, however, this could also be built over time with a spin-off (to a greater or lesser extent depending on which kind of spin-off).

However, in the case of a spin-off the private sector may be more willing to participate and drive the further development as they would have a stronger feeling of ownership.

The following figures present the path which would be followed in Policy Option 1.a, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- Limited scope for generating revenue;
- Significant scope for generating revenue;

- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).



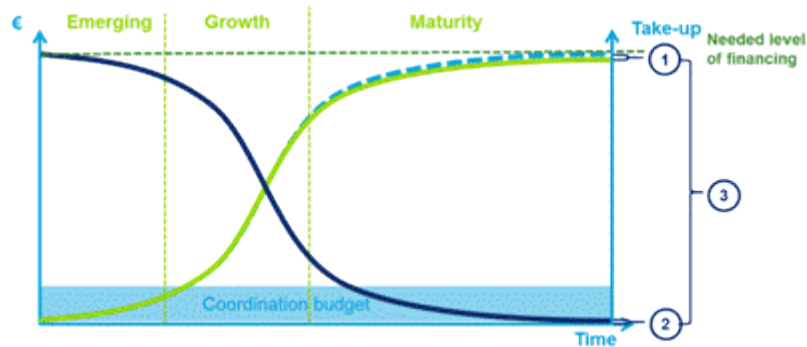


Figure 26 – Policy Option 1.a: Everything remains within the Agency, even if there is a business case

### 7.3.2 Policy Option 1.b: There is no business case and a Public NPO is set up

In the long-term, with an event of a CSP/BB becoming mature, but there is no business case, it is possible to maintain it in the coordinating entity (Agency), however it is also possible to create a Public Non-Profit Organisation (a .GO(C) scenario, but without private sector involvement) where the CSP/BB can then be transferred to.

In terms of governance, a Public NPO would entail that the governance of the CSP/BB specific matters would be carried out within that NPO and that the NPO would be represented in the Agency for the cross-CSP/BB governance in order to ensure continued possibility for reuse and interoperability across the CSP/BBs. Whilst the advantage of setting up such an NPO is that it could be run more independently, there is a risk related to the cross-CSP/BB governance. However, with an NPO, whilst there is the possibility of including stakeholders that it may not be possible to include in the Agency (for example, Russia is part of OpenPEPPOL), there is however a risk inherent to an NPO that is not there for an Agency, which is that the stakeholders can opt out (namely the Member States). Member States opting out would be a significant problem as this would lead to two main issues; Member States are less likely to take up the solutions if they are not a part of the NPO and equally important, if Member States leave, the financing through their membership fees are also reduced meaning that it can become unsustainable.

Furthermore, in terms of operations, not only is it difficult to ensure the continuity during the transition into the Public NPO spin-off, but there will also be a reduced (or complete disappearance) of the economies of scale as the operations of the other CSP/BBs would be separate. Furthermore, given that the operations cannot be licensed out (due to a lack of business case), these would have to be either carried out in-house or outsourced. In the case of outsourcing, the inherent problem of continuity presents itself. In addition to this, whereas maintaining the operations in-house in the Agency means continuity, this is not the case during the transfer period as knowledge transfer would be difficult to ensure without transferring staff from the Agency, which may then leave the Agency short on staff or knowledge. From a fall-back financing solution this may also be less advantageous than maintaining it in an Agency as an Agency can fall back on public funding if needed, there is no such guaranteed possibility for a public NPO. Furthermore, there are of course significant costs linked to the creation of an NPO, as mentioned in the CBA in section 6.5, would be in the range of EUR 360 000 to EUR 430 000. These costs cannot, due to the lack of business case, be recuperated through revenue and will have to be funded by the public sector.

The following figures present the path which would be followed in Policy Option 1.b, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in case there is limited scope for generating revenue.

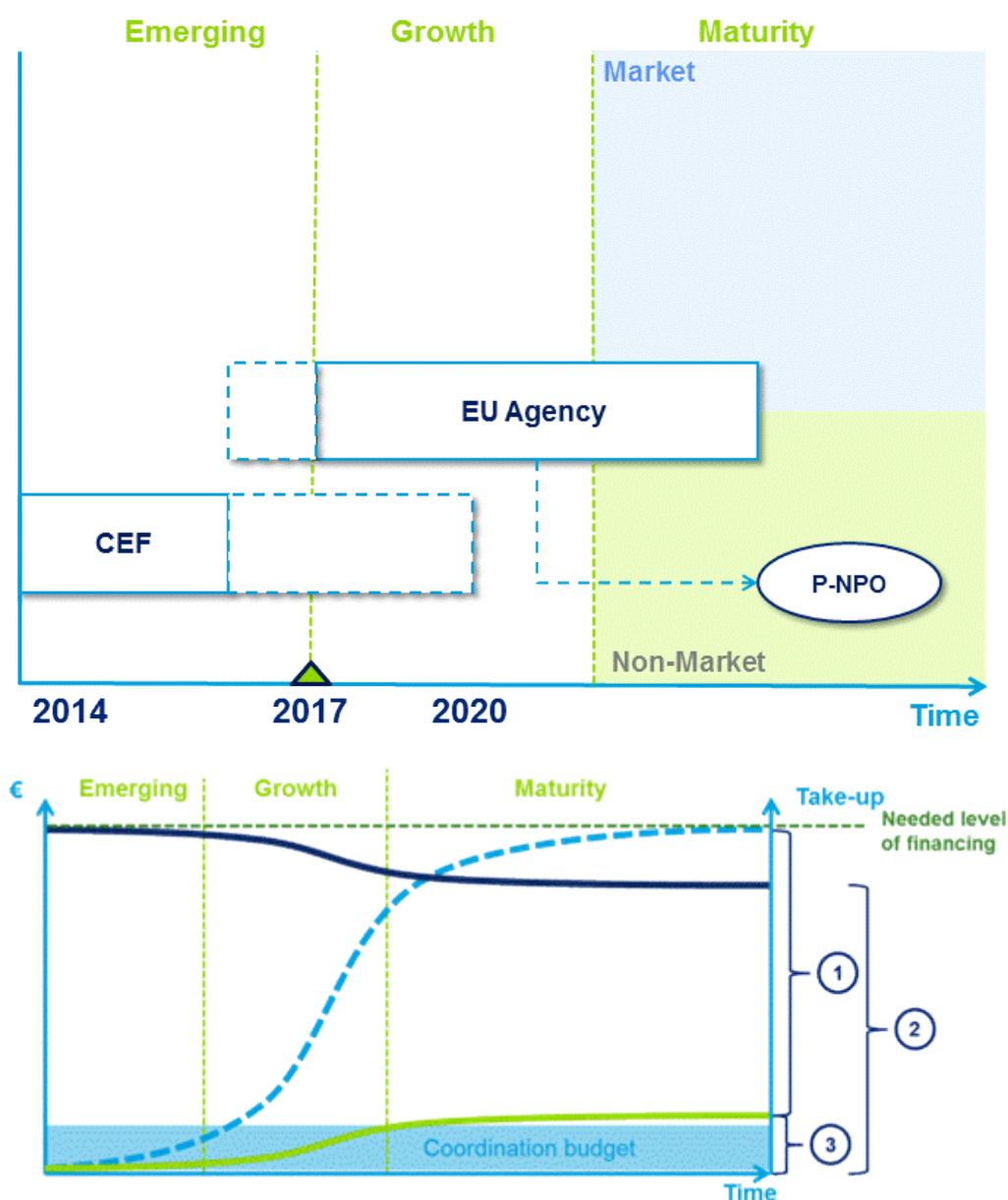


Figure 27 – Policy Option 1.b: There is no business case and a Public NPO is set up

### 7.3.3 Policy Option 1.c: There is a business case and a Public-Private NPO is setup

The third possibility which is one where a CSP/BB reaches maturity with a clear private sector business case and where the reaction to this event is the creation of a Public-Private NPO (a .GO(C) scenario where the private sector is involved – PP-NPO).

In terms of governance, this would mean that all CSP/BB specific governance is moved to the NPO and for the cross-CSP/BB aspects, the NPO is represented in the coordinating entity (the Agency). However, in terms of the advantage of having the governance of CSP/BB specific matters in the NPO,

the real advantage is in terms of stakeholder representation or buy-in which will likely be stronger from the private sector as they will have a stronger sense of ownership as compared to in an Agency (which by definition is a public sector entity). However, conversely, the NPO may lead to less involvement from the Member States as the NPO may be seen as less trustworthy, however, this has been overcome in other cases (e.g. ICANN) and is therefore considered less of a risk. An advantage of the PP-NPO spin-off over the Agency is that it is possible to have third countries involved (e.g., Russia is involved in OpenPEPPOL), which is not possible in the Agency.

In terms of operations and the continuity of these, there is (as with a Public NPO) a risk that during the transition of the operations into this entity, the continuity cannot be ensured, just as it may be difficult to ensure the knowledge transfer without removing knowledge from the coordination entity, the Agency. However, for the PP-NPO it is possible (as there is a business case) to license out the operations, so that the only real costs that are linked to the CSP/BB is the cost of governance (CSP/BB specific and cross-CSP/BB). In addition, as it is also the case for an Agency, in-house and outsourcing operations is also possible although the Agency has the advantage of being able to generate economies of scale. Whilst the PP-NPO, as the Agency, can generate revenue, if only CSP/BBs with a business case are spun-off into the PP-NPO, the approach does not allow for the business case CSP/BBs to cross-subsidise the CSP/BBs that have not business case, thereby making the burden on the public sector higher in terms of funding the non-business case CSP/BBs.

Concerning financing, the financing itself is ensured through the existence of the business case (as previously mentioned), which enables the generation of revenue, however, it should be noted that the PP-NPO would also through its revenue have to off-set the cost of setting up the NPO, which as noted in the CBA is considerable as it would range from about EUR 360 000 to EUR 430 000.

The following figures present the path which would be followed in Policy Option 1.c, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- Significant scope for generating revenue;
- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

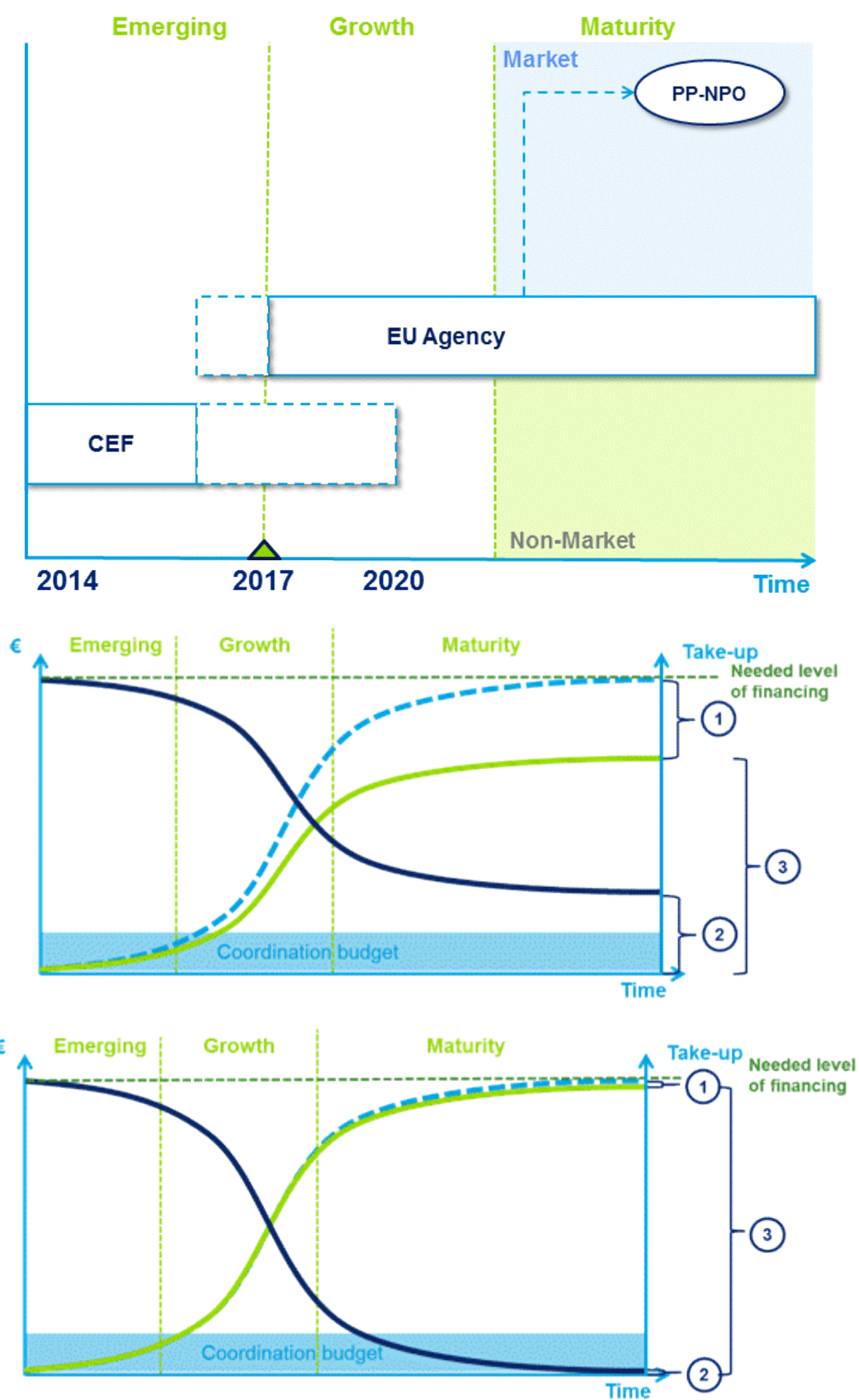


Figure 28 – Policy Option 1.c: There is a business case and a Public-Private NPO is setup

### 7.3.4 Policy Option 1.d: There is a business case and a Private NPO is setup

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In the event that a CSP/BB reaches maturity and that there is a business case, another possibility is for a spin-off for that (or those) CSP/BB into a Private sector NPO (referred to as a Private NPO – previously described as a .CO, which has no supervision at all). What this NPO means is a complete hand-off of the CSP/BB to the private sector.

In terms of governance, this means that the private sector comes together and governs the CSP/BB specific matters and is then represented in the cross-CSP/BB governance. However, there is no way to make it obligatory for the private NPO to participate in the cross-CSP/BB governance meaning that there may be a risk of loss of coordination leading to a lack of possible re-use and interoperability with the other CSP/BBs.

However, the operations would be completely transferred to the private sector, meaning that the burden for this would also be transferred, but again, as with the other cases where there is a spin-off, there are two main issues with this, first the loss of cross-subsidising and second, the loss of economies of scale that can be achieved through running all the operations in-house in the coordinating entity, the Agency. Also, as with the other spin-offs, there is a risk of lack of continuity during the transfer period. However, the private sector does generally react faster than the public sector (due to less cumbersome procedures and processes) meaning that, in terms of flexibility to e.g. scale rapidly, the private sector running the operations would be better in responding to such issues. The only true advantage in terms of financing is that the private sector would be fully financing the investment needed for the creation of the NPO (again estimated at EUR 360 000 to EUR 430 000 in the CBA).

Stakeholder representation would of course be an issue as only the private sector would be represented and even there, there is a risk that it would mainly be the dominant players that really have a voice. The only way the public sector could have a say, is through legislation at EU level (which is the default in any scenario). In term of take-up a private NPO would likely lead to greater take-up in the wider market, however, it may well hinder take-up my Member States as it may be perceived by Member States as being less trustworthy because there is no guarantee for transparency and no guarantee of public sector representation.

The following figures present the path which would be followed in Policy Option 1.d, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

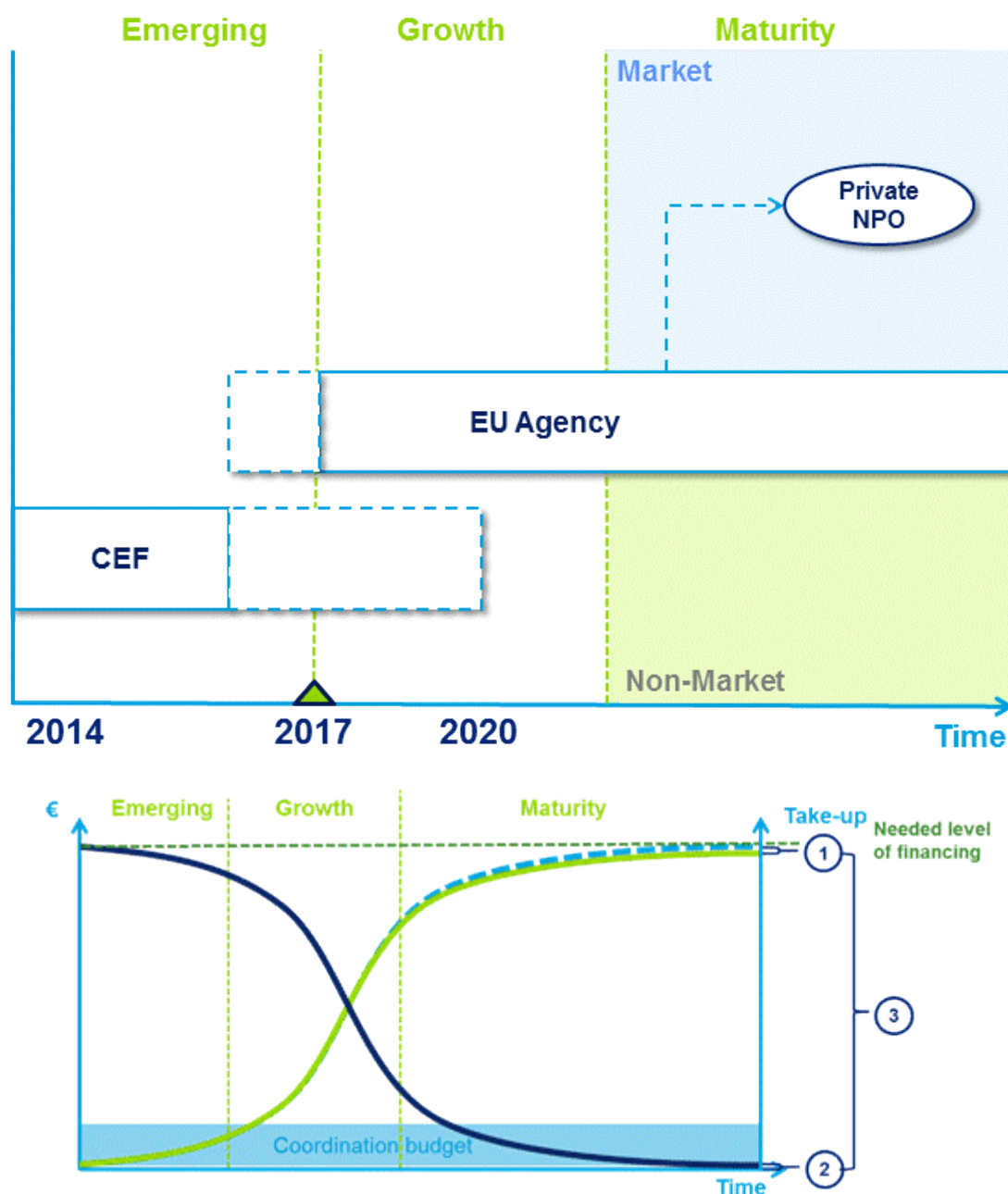


Figure 29 – Policy Option 1.d: There is a business case and a Private NPO is setup

### 7.3.5 Policy Option 1.e: There is a business case and the CSP/BB is managed and deployed by the private sector and a Supervisory Authority is setup

A final possibility for a spin-off in case of a CSP/BB maturing with a business case is a Supervisory authority. This possibility is not as such a spin-off as it means releasing the CSP/BB to the private sector and letting the private sector govern, operate and finance it all and the at EU (and possible national) level have a Supervisory Authority (as there is in e.g. the telecoms sector), which through its supervisory powers ensures that the focus on standards and specifications is maintained.

What this means in terms of governance is that the CSP/BB(s) is entrusted to the market (private sector) and that the cross-CSP/BB governance is ensured through the Supervisory Authority. In practical terms, the Supervisory Authority would be take the shape of an Agency (such as BEREC for

the telecoms), which means that in terms of knowledge transfer and ensuring the best possible cross-CSP/BB coordination (for the CSP/BBs still inside the coordinating entity, the Agency), the best solution would be to simply setup the Supervisory Authority inside the Agency that has already been running (and coordinating) the CSP/BB up until maturity.

This would mean a complete transfer of operations to the private sector (potentially with the Agency maintaining any centralised elements such as trusted lists – which the private sector would have to pay for access to). Similarly, the operating costs would be transferred to the market, meaning that the only costs that remain would be the ones linked to the Supervisory Authority part of the Agency, which can either be cross-subsidised by any CSP/BBs with a business case that remain within the Agency or it can be financed through the Supervisory Authority charging for its services.

In terms of stakeholder representation, the Supervisory authority would ensure the representation of the public sector (and potentially third parties if wished) and the running by the private sector (but under the watch of the authority) would mean that the private sector is also represented. In terms of take-up, the Supervisory Authority can help drive take-up as it can represent the needs of the public sector, however, the only way it can be guaranteed is through regulation.

Continuity is difficult to ensure during the transition, which may be an issue as there may be a lack of availability of the services, however, beyond the transition it is relatively sure as the Supervisory Authority can impose this on the private sector. However, the Supervisory Authority cannot impose anything on the private sector vis-à-vis staying in the sector, meaning that if the business case is reduced or disappears, so will the services and possibly with no possibility for the public sector to take them over again (whereas this may be more likely to happen if there is an NPO involved – of course still not as sure as with an Agency).

It is important to note that from the point of view of extra investments needed as is the case when creating the other spin-offs, there does not have to be any costs involved in the transition (beyond some limited recruiting or retraining) as the Agency, with this eventuality in mind, can be created with the supervisory powers from the beginning, meaning that there would be no need for the Agency to be amended in order to be able to transition into a supervisory role for some CSP/BBs.

The following figures present the path which would be followed in Policy Option 1.e, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

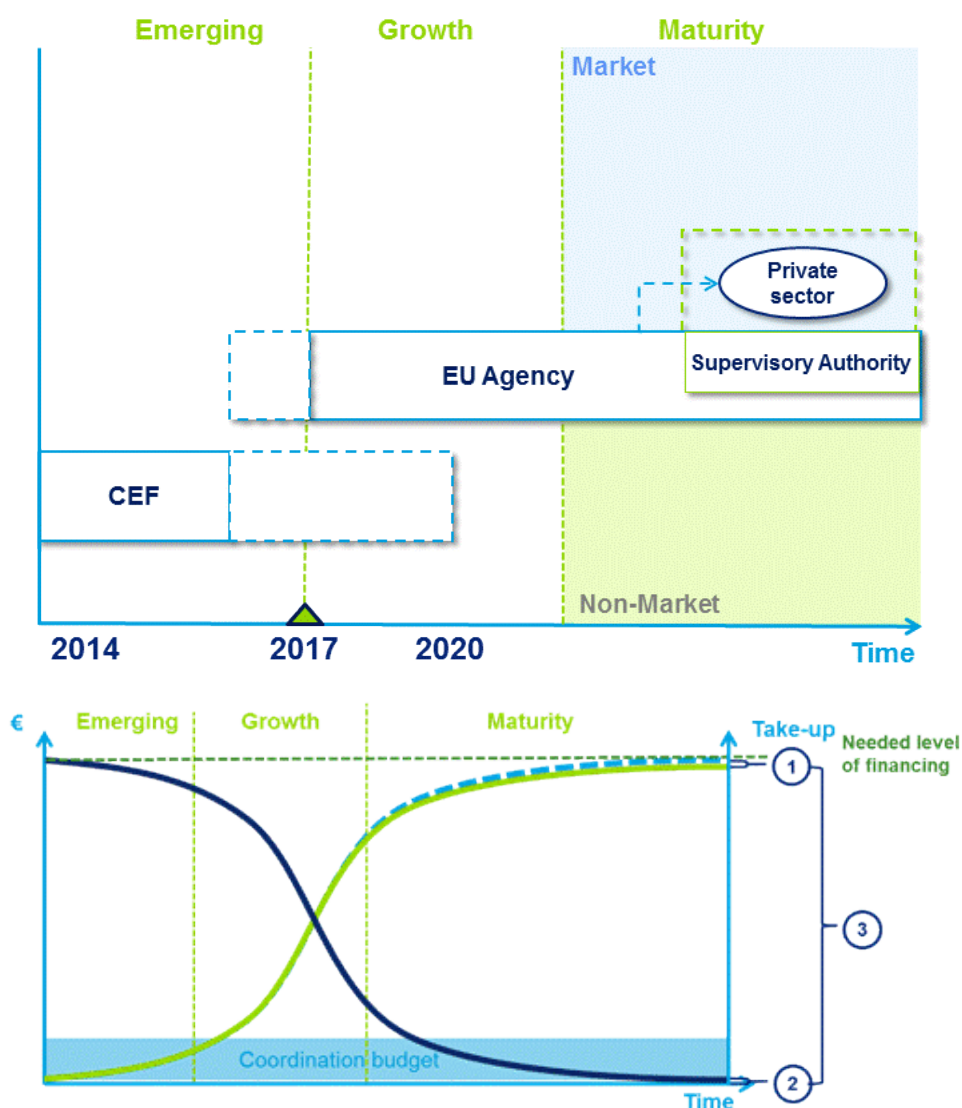


Figure 30 – Policy Option 1.e: There is a business case and the CSP/BB is managed and deployed by the private sector and a Supervisory Authority is setup

#### 7.4 Policy Option 2: Creating a P/PP NPO in the Medium Term

If there is limited political will to set-up an Agency, a Public-Private NPO would be the second best option to ensure the management and the coordination across the CSP/BBs, given its relative sustainability. Although a DG Programme was assessed as the second best solution to ensure coordination, it is inherently time-bound and is therefore not a sustainable solution. It was however assessed that Public-Private NPO may not necessarily ensure effective take-up; given that some CSP/BBs are dependent on private sector initiatives in some countries. As such, these private sector initiatives may not welcome a strong driving NPO that could show insufficient neutrality towards their own solution models.

Furthermore, the P/PP NPO was assessed as the second best scenario to manage the CSP/BBs as it has similarly characteristics as the Agency. Although this scenario is less secure in terms of ensuring continuous revenue, as membership is voluntary, it offers considerable perspectives in terms of stakeholder engagement.

In the long-term, if a P/PP NPO is chosen as the coordinating entity, everything can remain within the NPO regardless of whether there is a clear private sector business case or not. However, there are alternative possibilities. As Figure 31 shows, there are four other possibilities, meaning that there are a total of five possibilities:

- **Possibility 1:** Everything remains within the P/PP NPO, even if there is business case;
- **Possibility 2:** There is no business case and an Agency is setup;
- **Possibility 3:** There is a clear private sector business case and a Private NPO is setup;
- **Possibility 4:** There is a business case and the CSP/BB is given to the private sector and a Supervisory Authority is setup.

The figure below illustrates these different possibilities.

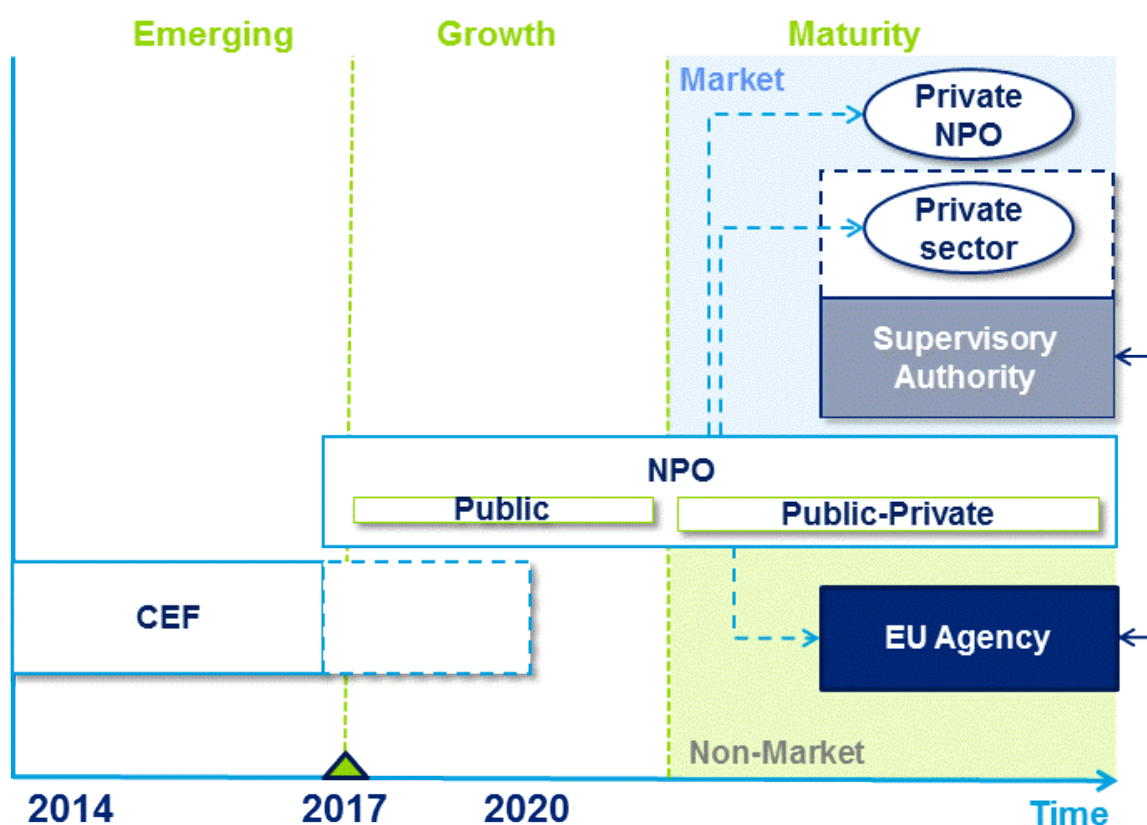


Figure 31 – Long-term: The effects of events on a P/PP NPO

As is clear from the figure above, the setup of a Supervisory Authority can be done either at EU level (for which an Agency should be setup that is given the role of a Supervisory Authority) or at national level in a decentralised way (which may affect the coordination and interoperability), or a combination of these. In general it may be possible that over time the need and political support for the setup of an Agency may become apparent even if it is not currently, as at that time, the clear private sector business case may be more clearly visible. This would mean that the P/PP NPO would be transformed into an Agency and the description of events in the previous section would be valid. Alternatively an Agency is created in parallel, with the NPO continuing.

It should however be noted that each of these possibilities have advantages and disadvantages both in terms of what public financing, the need for investment, ensuring cross-CSP/BB coordination, the risks that are linked to it.

### 7.4.1 Policy Option 2.a: Everything remains within the P/PP NPO, even if there is business case

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If a P/PP NPO is setup as the coordinating entity and is maintained as the only entity regardless of the maturation of CSP/BBs with or without a business case, the advantage in terms of governance is that the individual CSP/BB specific governance can be ensured, both in terms of strategic governance and operational governance. Furthermore, maintaining a P/PP NPO as the only entity ensures the cross-CSP/BB governance very well, perhaps better than with any spin-offs as it is kept within one entity thereby potentially making the functioning smoother.

In terms of operations, there are various possibilities if they are outsourced or carried out in-house; they can continue to be outsourced. However, as CSP/BBs with a business case reach maturity it will then be possible to generate revenue from them thereby offsetting some of the costs of outsourcing them or carrying them out in-house. In addition to this, it will be possible to license some of the operations out (for the ones that are mature and have a business case), however, as with outsourcing, this does however potentially impact the continuity of the services as the outsourcing contracts and/or licensing contracts would have to be renewed and the vendor could change, potentially affecting continuity.

Vis-à-vis both flexibility and stakeholder engagement, the P/PP NPO provides ample flexibility to scale its operations and to have different stakeholders involved and it may be faster than an Agency. Whilst an Agency can rely on public funding when there is not a business case (which is an important strength of the Agency), the P/PP NPO cannot, it would rely on revenue for the CSP/BBs where there is a business case and in terms of financing of the CSP/BBs where there is no business case, it may be possible cross-subsidize in the way that if a CSP/BB can generate more revenue than what it costs, then some of the extra revenue can be used to cross-subsidize the CSP/BBs that do not have a business case. The other possibility is to cover the cost of operations of the non-business case CSP/BBs by using membership fees. However, it should be noted that the private sector representatives in the NPO may object to funding the operations of something that they do not profit from, therefore it may be In addition to this, having all of the CSP/BBs remain in the same entity would also mean that some economies of scale may be possible and it would mean that there would be no additional investment needed in order to setup a spin-off.

In terms of take-up, the Member States may be a little less willing to take-up solutions from a P/PP NPO than from an Agency, but more so than a spin-off as the NPO would be a more trusted entity than a spin-off but less than an Agency. However, this trust could also be built over time with a spin-off (to a greater or lesser extent depending on which kind of spin-off).

However, the private sector may have a stronger feeling of ownership in an NPO than in an Agency and therefore may be more inclined to invest in it and drive it.

The following figures present the path which would be followed in Policy Option 2.a, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- Limited scope for generating revenue;
- Significant scope for generating revenue;
- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

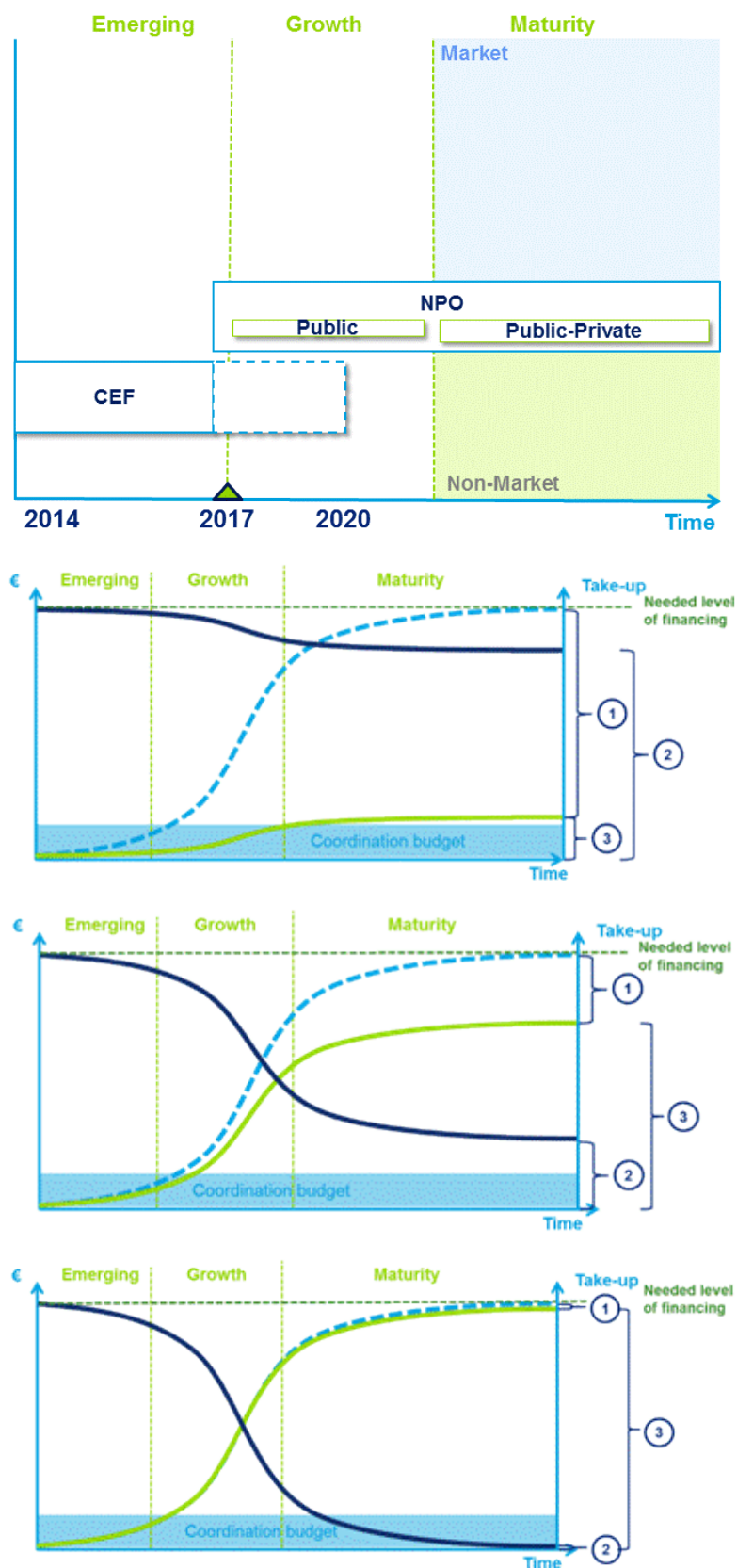


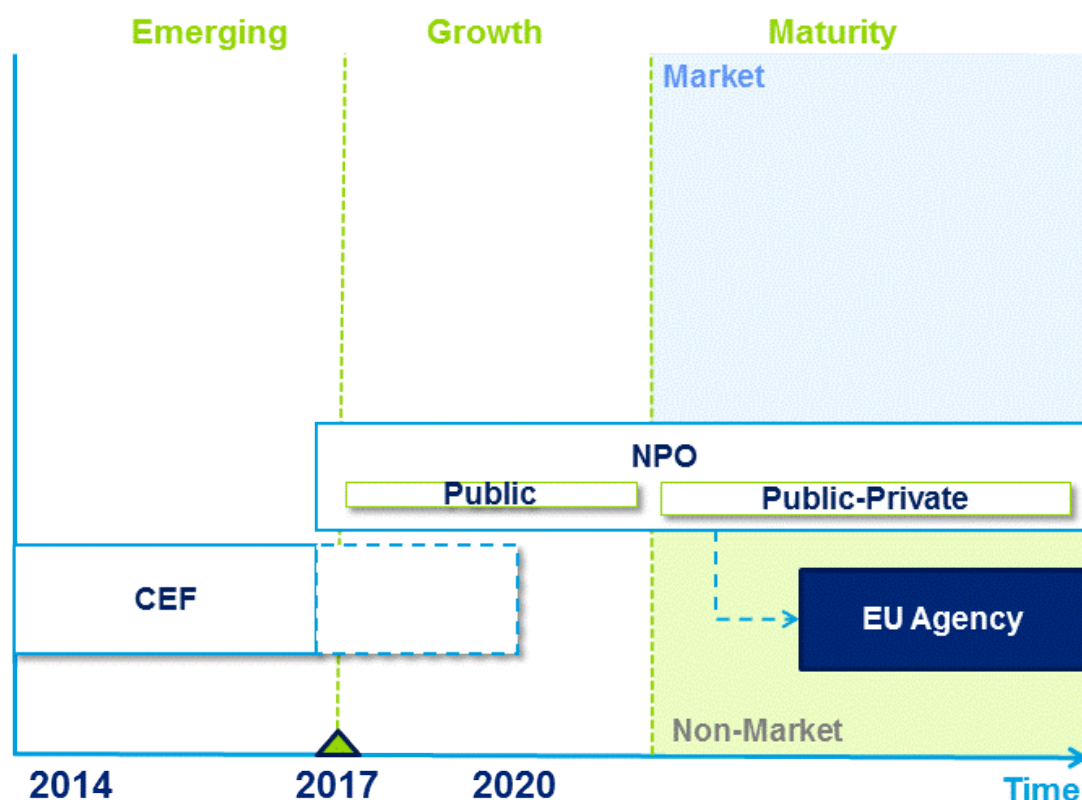
Figure 32 – Policy Option 2.a: Everything remains within the P/PP NPO, even if there is business case

### 7.4.2 Policy Option 2.b: There is no business case and an Agency is setup

An Agency can be a spin-off and would be the only possible spin-off if one has to be created for CSP/BBs that mature but have no business case. The Agency would ensure the CSP/BB specific governance and represent the CSP/BB in the cross-CSP/BB governance in the coordinating entity (the P/PP NPO) and it would be responsible for the operations, regardless of whether this would be done in-house or outsourced (licensing is obviously not possible as there is no business case). Regardless of how the operations are done, there would be an issue with continuity as is the case for any spin-off where the operations are transferred.

However, there are advantages to the Agency spin-off, the first of which is that it can ensure continuous financing from public funding for CSP/BBs where there is no business case and it can make it obligatory for the Public Sector to be involved in the Agency and an Agency can allow for any other stakeholder involvement that is deemed beneficial. However, moving some operations into an Agency would lead to a loss of potential economies of scale and it would also be likely to create knowledge transfer issues. In addition to this, it should be noted that it would require significant investment to create the Agency and that as it would be created for CSP/BBs for which there is no business case and therefore no potential for revenue and the full cost which is estimated to range from EUR 660 000 to EUR 730 000 would therefore be on the Public Sector funding. This could potentially be off-set by including CSP/BBs with a business case in the Agency or by also making the Agency a Supervisory Authority that can generate revenue (this will be discussed later in this section).

The following figures present the path which would be followed in Policy Option 2.b, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the case that there is limited scope for generating revenue.



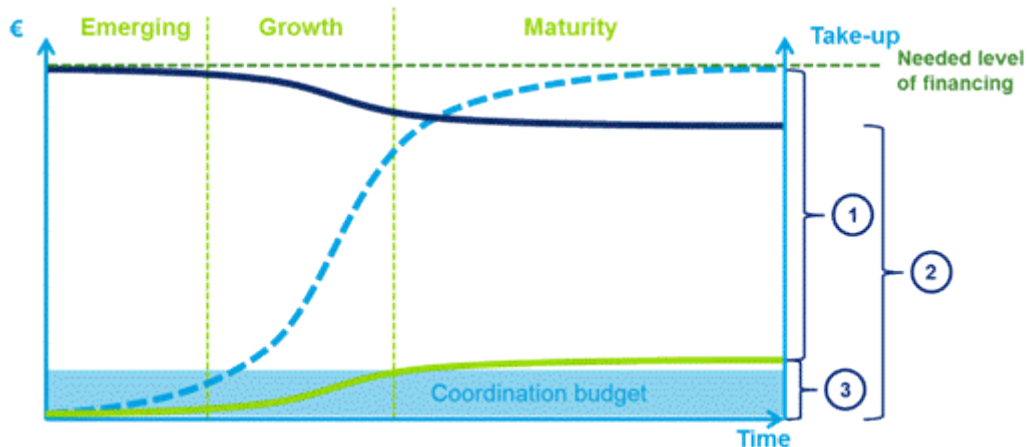


Figure 33 – Policy Option 2.b: There is no business case and an Agency is setup

### 7.4.3 Policy Option 2.c: There is a clear private sector business case and a Private NPO is setup

In the event that a CSP/BB reaches maturity and that there is a business case, another possibility is for a spin-off for that (or those) CSP/BB into a Private sector NPO (referred to as a Private NPO – previously described as a .CO – a scenario where there is no supervision at all). What this NPO means is a complete hand-off of the CSP/BB to the private sector.

In terms of governance, this means that the private sector comes together and governs the CSP/BB specific matters and is then represented in the cross-CSP/BB governance. However, there is no way to make it obligatory for the private NPO to participate in the cross-CSP/BB governance meaning that there may be a risk of loss of coordination leading to a lack of possible re-use and interoperability with the other CSP/BBs.

However, the operations would be completely transferred to the private sector, meaning that the burden for this would also be transferred, but again, as with the other cases where there is a spin-off, there are two main issues with this, first the loss of cross-subsidising and second, the loss of economies of scale that can be achieved through running all the operations in-house in the coordinating entity, the P/PP NPO. Also, as with the other spin-offs, there is a risk of lack of continuity during the transfer period. However, the private sector does generally react faster than the public sector (due to less cumbersome procedures and processes) meaning that, in terms of flexibility to e.g. scale rapidly, the private sector running the operations would be better in responding to such issues – it should however be noted that the difference in reaction speed would be less significant than when comparing the Private NPO with an Agency. The only true advantage in terms of financing is that the private sector would be fully financing the investment needed for the creation of the NPO, an investment estimated in the CBA to be from EUR 360 000 to EUR 430 000.

Stakeholder representation would of course be an issue as only the private sector would be represented and even there, there is a risk that it would mainly be the dominant players that really have a voice. The only way the public sector could have a say, is through legislation at EU level (which is the default in any scenario). In term of take-up a private NPO would likely lead to greater take-up in the wider market, however, it may well hinder take-up my Member States as it may be perceived by Member States as being less trustworthy because there is no guarantee for transparency and no guarantee of public sector representation.

The following figures present the path which would be followed in Policy Option 2.c, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

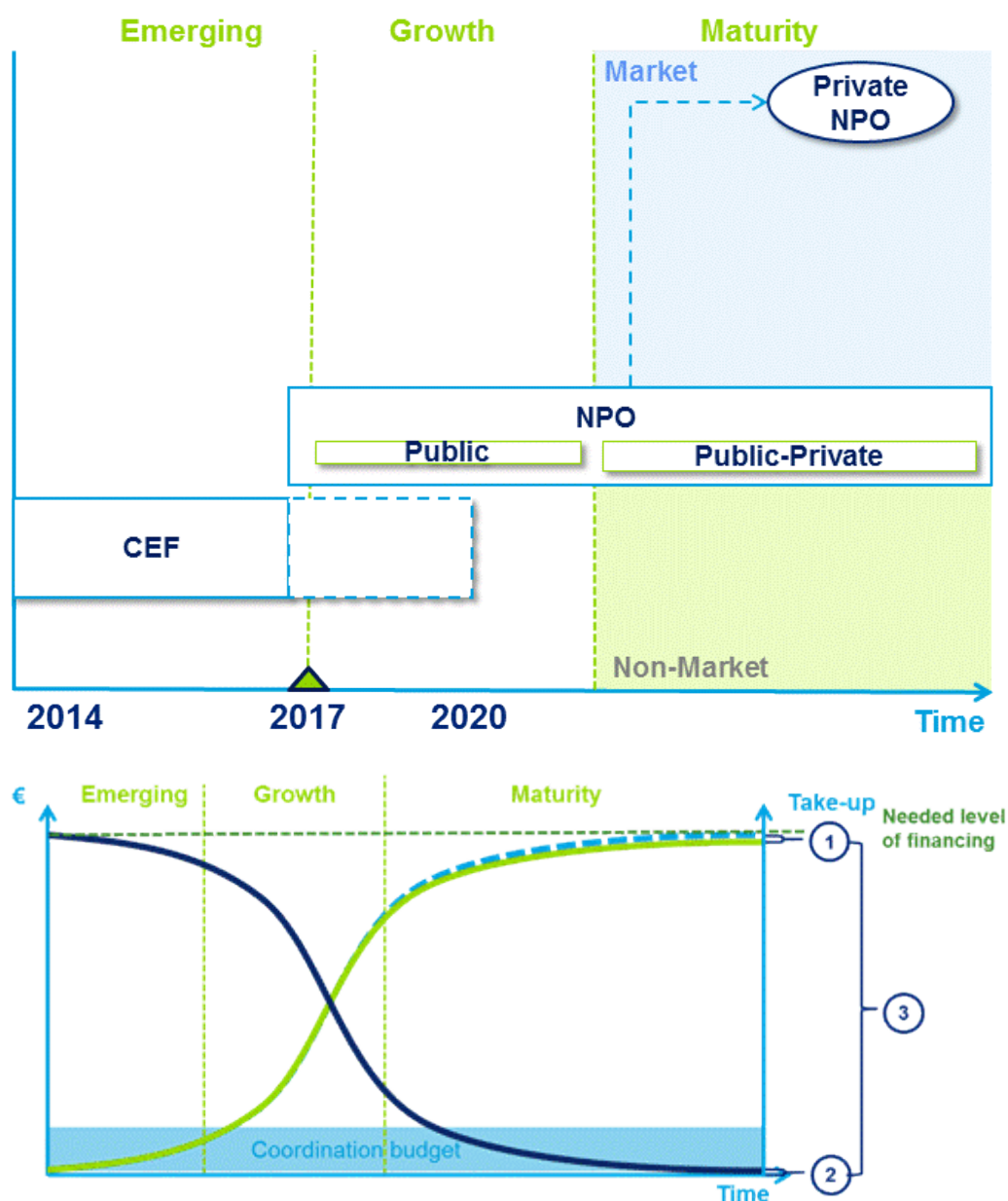


Figure 34 – Policy Option 2.c: There is a clear private sector business case and a Private NPO is setup

#### 7.4.4 Policy Option 2.d: There is a business case and the CSP/BB is given to the private sector and a Supervisory Authority is setup

A final possibility for a spin-off in case of a CSP/BB maturing with a business case is a Supervisory authority. This possibility is not as such a spin-off as it means releasing the CSP/BB to the private sector and letting the private sector govern, operate and finance it all and the at EU (and possible

national) level have a Supervisory Authority (as there is in e.g. the telecoms sector), which through its supervisory powers ensures that the focus on standards and specifications is maintained.

What this means in terms of governance is that the CSP/BB(s) is entrusted to the market (private sector) and that the cross-CSP/BB governance is ensured through the Supervisory Authority. In practical terms, the Supervisory Authority would take the shape of an Agency (such as BEREC for the telecoms), which means that in terms of knowledge transfer and ensuring the best possible cross-CSP/BB coordination would require close collaboration with the P/PP NPO.

The Supervisory Authority 'spin-off' would mean a complete transfer of operations to the private sector (potentially with the Agency maintaining any centralised elements such as trusted lists – which the private sector would have to pay for access to). Similarly, the operating costs would be transferred to the market, meaning that the only costs that remain would be the ones linked to the Supervisory Authority itself, which can either be cross-subsidised by any CSP/BBs with a business case that are placed within the same Agency or it can be financed through the Supervisory Authority charging for its services. However, it is important to take these costs into consideration as they are significant, ranging from EUR 660 000 to EUR 730 000.

In terms of stakeholder representation, the Supervisory authority would ensure the representation of the public sector (and potentially third parties if wished) and the running by the private sector (but under the watch of the authority) would mean that the private sector is also represented. In terms of take-up, the Supervisory Authority can help drive take-up as it can represent the needs of the public sector, however, the only way it can be guaranteed is through regulation.

Continuity is difficult to ensure during the transition, which may be an issue as there may be a lack of availability of the services, however, beyond the transition it is relatively sure as the Supervisory Authority can impose this on the private sector. However, the Supervisory Authority cannot impose anything on the private sector vis-à-vis staying in the sector, meaning that if the business case is reduced or disappears, so will the services and possibly with no possibility for the public sector to take them over again (whereas this may be more likely to happen if there is an NPO involved – of course still not as sure as with an Agency).

The following figures present the path which would be followed in Policy Option 2.d, in line with the potential take-up and potential for revenue and public funding possibilities for this scenario. As such, this path can be taken in the following cases:

- The possibility for generating revenue for the CSP/BB is very strong (sufficient to offset the cost of operations).

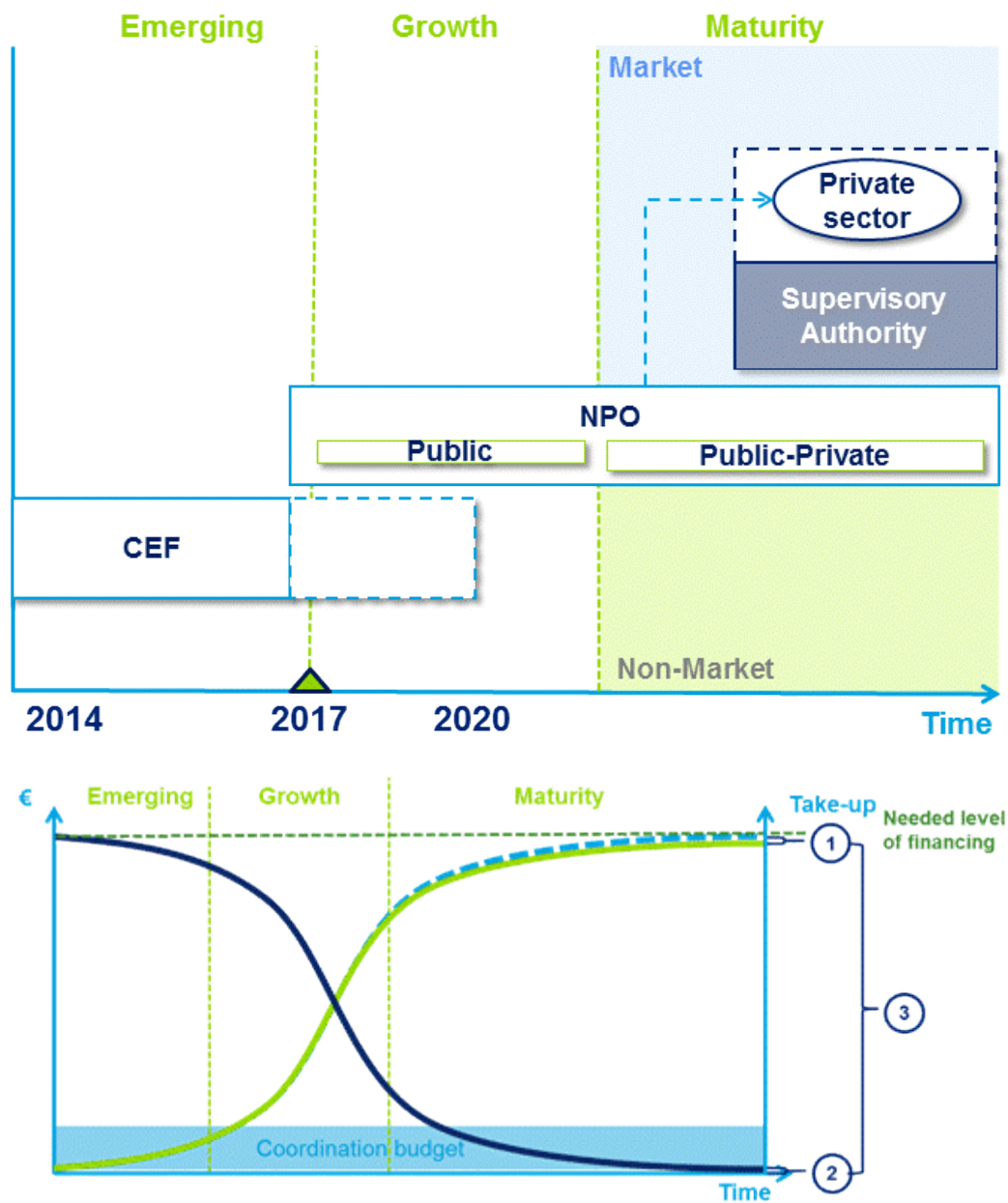


Figure 35 – Policy Option 2.d: There is a business case and the CSP/BB is given to the private sector and a Supervisory Authority is setup

## 7.5 Conclusion

In conclusion, as previously presented in the, there are two possibilities for the coordinating entity in the medium and long-term, it can either be an Agency or a P/PP NPO. For each of these, there are number of possible spin-offs depending on whether the CSP/BBs mature with or without a clear private sector business case. It is however clear that when there is a business case, the transfer of the CSP/BBs into a private NPO does not present any advantages as it make it vulnerable to lack of cross-CSP/BB coordination as there is no supervision and it makes it vulnerable to lack of funding if the business case is not strong enough. Furthermore, all stakeholders are not represented, meaning that some needs and requirements may not be taken into account.

In the case of an Agency being chosen as the coordinating entity, the possible spin-off in case there is no business case for the CSP/BB is a public NPO (P-NPO), which presents a number of clear disadvantages compared to keeping the CSP/BB in the Agency.

Conversely in the case a P/PP NPO is chosen as the coordinating entity, it is clear that should there be a wish to move any CSP/BBs with a clear private sector business case into the market (private sector) then a Supervisory Authority would be needed either centralised at EU level (for which an Agency would need to be setup), decentralised at national level or a combination of these. Potentially, any non-business case CSP/BBs would remain within the P/PP NPO or could be transferred into the Agency as well (as it would not make sense to maintain the P/PP NPO when the Agency is created as the Agency can complete the tasks of the NPO too).

This means that in the long-term, as CSP/BBs mature the only real option is to keep the ones that do not have business case within the coordinating entity or in case the coordinating entity is a P/PP NPO, potentially move it into an Agency. For the CSP/BBs with a business case, these can either be kept in the coordinating entity and potentially cross-subsidise the non-business case CSP/BBs or they can be given to the market (private sector) and a Supervisory Authority setup (at centralised level this should be done within an Agency – either the Agency which is the coordinating entity if that is the chosen solution or an Agency could be setup in addition to the P/PPNPO if that is the chosen coordination entity, however in this case decentralise supervisory authorities at national level or a combination are also possible).

This means that the most realistic options are the ones illustrated in the Figure 36.

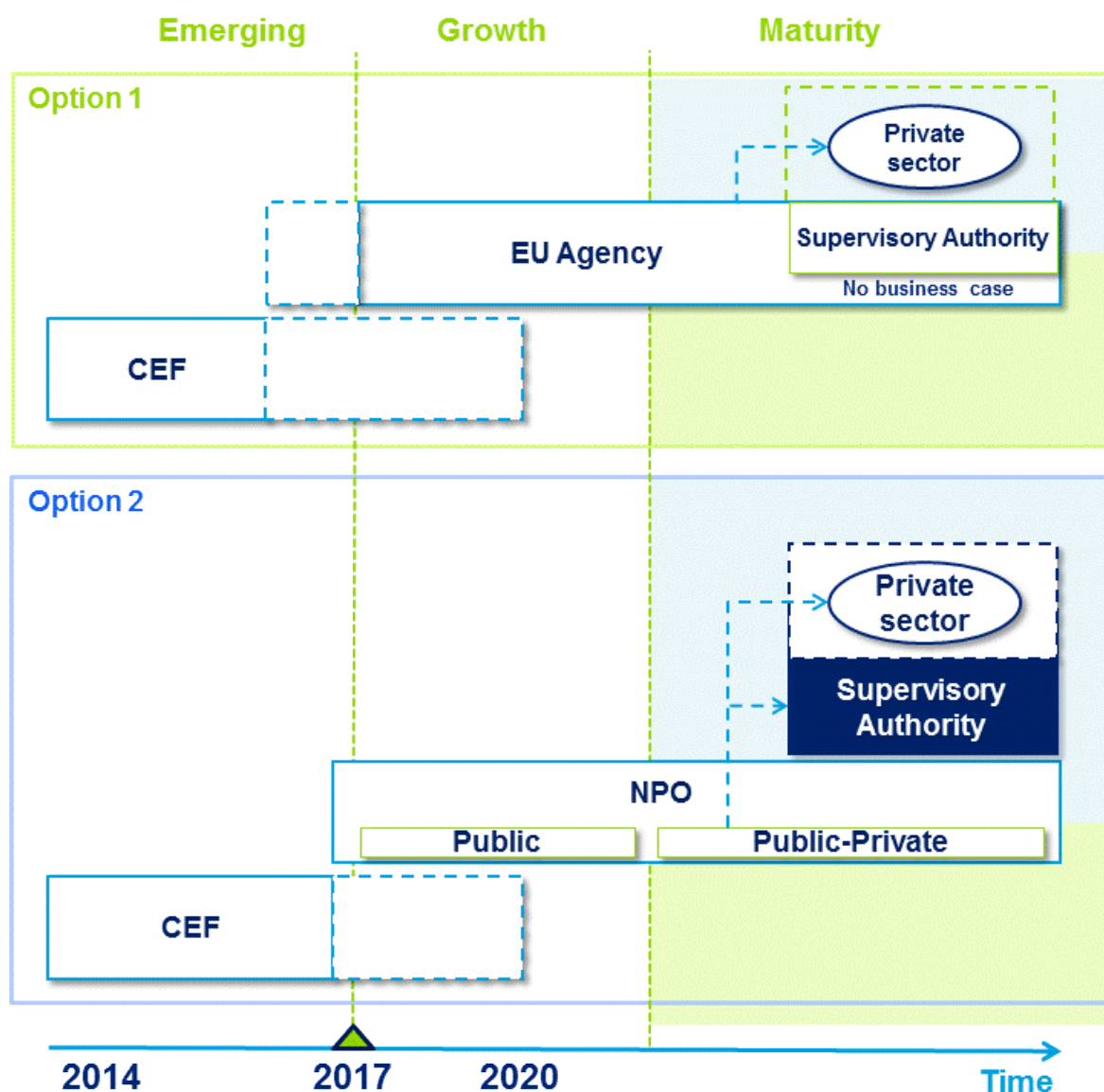


Figure 36 – Long-term Options

Based on the assessment of scenarios carried out in Chapter 6, the Agency is the preferred option to ensure cross-CSP/BB coordination. If this is (politically) not feasible the P/PP NPO presents a viable alternative but has a number of disadvantages as compared to the Agency both in terms of buy-in, financing and possible long-term transition into a Supervisory Authority.

Furthermore, as the knowledge from running the CSP/BBs can be maintained within the Agency as the transition of a part of the Agency to a Supervisory role takes place. There are (as also demonstrated in the scenario assessment), significant advantages to an Agency, such as the ability to fall back on public funding if needed for a period. In addition, it is that in the event that a P/PP NPO is chosen as the coordinating entity, there is a risk of lack of funding and interest in the CSP/BBs for which there is no private sector business case due to the fact that membership and contribution to a P/PP NPO is of a voluntary nature. Finally, should it be necessary to create (or amend) an Agency at a later stage then it would require significant investment (on top of the investment already made for the P/PP NPO) to set this up.

However, it is acknowledged that it may not be possible, for example for political reasons, to establish an Agency in the short to medium term, in which case, a P/PP NPO would be the only solution even with the inherent risks it brings and with the knowledge that it will very likely be necessary to create an Agency at a later stage. However, as Figure 36 shows, the most efficient and effective (cheapest and best fit for purpose) solution is option 1.

# 8 Roadmap and Recommendations

This section brings together the results from the assessment of the likely trends and developments per CSP and building block, the cross Core Service Platform Coordination and the transition towards a more market-orientated approach. Its aim is to develop a high-level roadmap to ensure the sustainability of the solutions developed under the LSPs. This roadmap presents six different elements. These include the likely evolution of the scenarios for each CSP in line with take-up (emerging, growth, and maturity), the business case, transition, set-up costs, CSP specific needs and requirements, and cross-CSP/BB governance. Recommendations are also presented.

## 8.1 Roadmap

Figure 37 shows the current situation with regard to the current Large Scale Pilots results. It makes it clear that the situation is complex. There have been, and still are, multiple Large Scale Pilots. Their content and orientation has been quite diverse. Their timing has been very different: some are finished, and some are being continued, some are in transition or have transitioned into new phases.

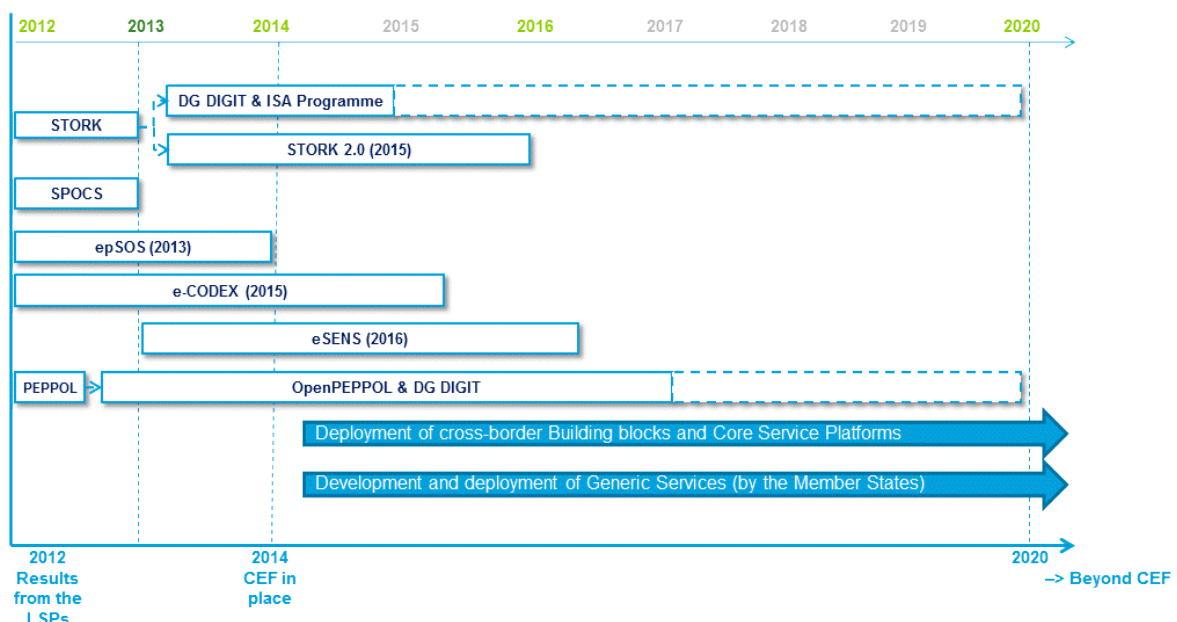


Figure 37 – Milestone Journey

In more detail, the figure offers some information about the time of set-up of the various LSPs, and modification of various LSPs, as well as their transformation into other mechanisms for handling the same or similar initiatives. To date five LSPs have been launched: STORK, SPOCS, PEPPOL, epSOS and e-CODEX (however, eSENS has just started and does not link up to a CSP in itself and is

therefore considered not considered as an LSP in this context). The two last of these are still ongoing. In addition, there has been a continuation of the efforts in the area of eID, through STORK 2.0. An NPO was also set up to continue the work of PEPPOL. Most recently, a new LSP called eSENS has been created to continue and regroup the work carried out by the LSPs. The figure illustrates that a new STORK 2.0 pilot was launched, in order to pilot some new fields of applications, whilst the sustainability of the existing solutions is being taken care of by the ISA programme within DG DIGIT; it also shows that PEPPOL has been transferred in part into OpenPEPPOL and in part into DG DIGIT. Finally, the figure shows two important aspects outlined in the CEF. These are the deployment of cross-border Building blocks and Core Service Platforms, and the development and deployment of Generic Services by the Member States.

With this complex current situation in mind, and the knowledge that the building blocks, CSPs and Generic Services have to be both deployed through the CEF and that the CSPs and building blocks have to be managed in an on-going manner, a milestone journey is laid out in Figure 38.

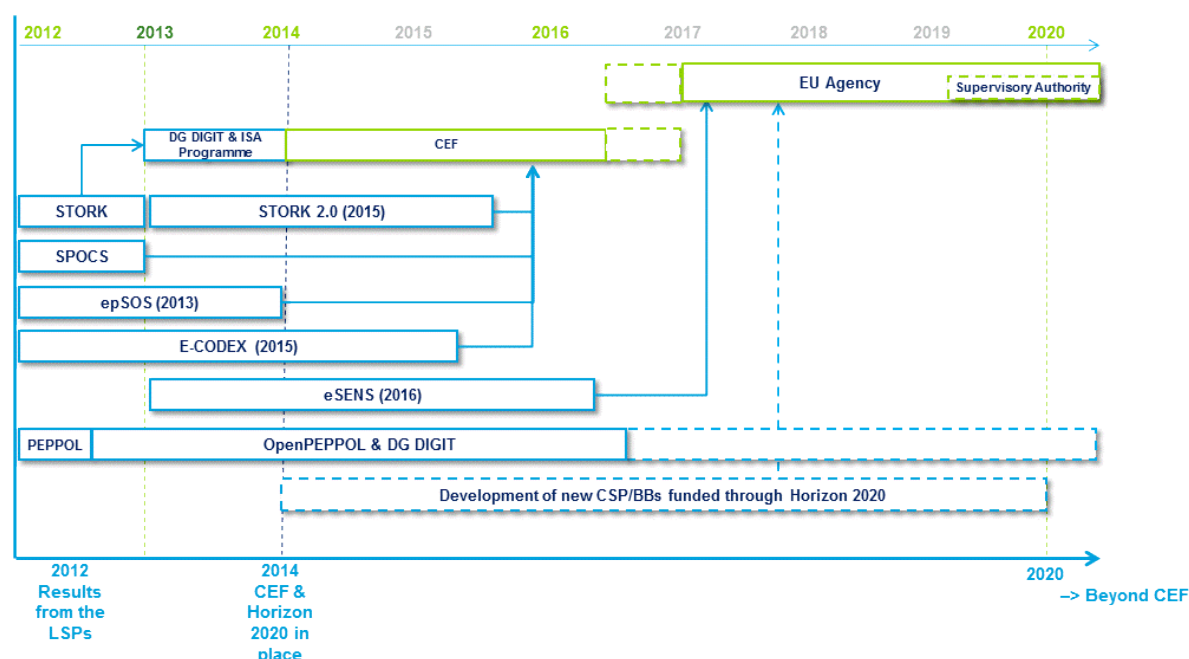


Figure 38 – Roadmap

Both Figure 37 and Figure 38 illustrate the current situation, as perceived in 2013. However, Figure 38 adds the short, medium- and long-term perspectives. In the medium- and long-term, the current complexity will be reduced as the various pilots or CSP/BBs are brought together to provide a complete basis for the provision of cross-border public services in the EU.

What the figure shows is the ideal scenario (as defined in option 1 in Figure 36) which consists of a transition of the LSPs into a Programme (the CEF), and then into an Agency. However, the illustration incorporates the detail of the current status quo, which is somewhat more complex than the two steps of simply creating, first, a DG programme and then, second, an Agency. The figure shows that it should be expected that STORK and SPOCS are transferred directly into the DG Programme and that, upon completion, so too would be the results of epSOS, STORK 2.0, e-CODEX and eSENS. However, in parallel, Open PEPPOL (the NPO continuing PEPPOL), continues to operate. Thus, there are then three possibilities which arise, either (a) OpenPEPPOL continues to take up its specific tasks or (b) it is transferred into the Agency at the end of the

Programme along with the other LSPs that have been run under the CEF Programme or (c) if no Agency is set up, the NPO would transition towards the P/PP NPO.

Finally, as shown in the figure, Horizon 2020, the new EU Framework Programme for Research and Innovation 2014 - 2020, can be used to fund the development and piloting of new CSP/BBs in other public sector domains.

The ten milestones in the roadmap are listed below:

- ✘ A programme is set up in the short and medium term, in the form of the Connecting Europe Facility. It ensures the continued governance, operations and financing of the solutions developed under the Large Scale Pilots as part of the Digital Service Infrastructure for cross-border public services;
- ✘ Once the Programme has been set up, STORK and SPOCS should be transferred into it;
- ✘ The Programme launches the outsourcing of the maintenance and operations of the Digital Service Infrastructure for cross-border public services;
- ✘ The process for the creation of an Agency (or the extension of an existing agency) to be launched;
- ✘ The Programme to ensure coordination with those pilots which are still on-going in order to maximise the re-use of developed solutions;
- ✘ When epSOS finishes, it should also be transferred in the Programme;
- ✘ In 2015, when the pilots STORK 2.0 and e-CODEX are finished, their outcomes should also be transferred to the Programme;
- ✘ Providing that the Agency has been established by this time, the solutions developed by eSENS should be transferred into the Agency in 2016 when the pilot finishes. If not, the solutions should be transferred into the Programme;
- ✘ Once the Agency has been established, the Programme should be transitioned into the Agency;
- ✘ Finally, as CSP/BBs mature, and business cases have been developed for one or more of them, these could be transferred onto the market. At that point, the Agency should take on the role of a Supervisory Authority.

Within each of these ten steps, there are a number of recommendations to consider. These are further explored in the following section.

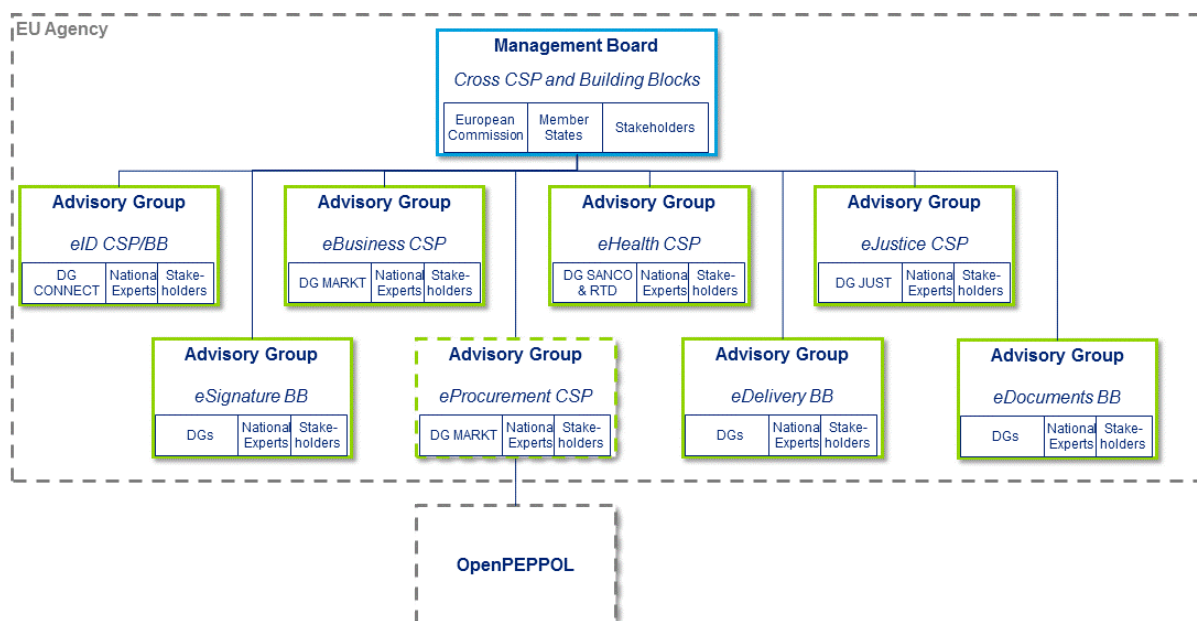
## 8.2 Recommendations

In the previous section, a high-level roadmap for the sustainability of the solutions developed under the LSPs was developed. However, a number of concrete actions need to be considered in order to ensure that this roadmap translates into a sustainable path for the longer-term solutions.

- ✘ **A political vision of the DSIs needs to be elaborated.** There is currently a lack of vision on how the establishment of seamless cross-border eGovernment services can boost the digital market and which services should be prioritised. The political vision should rely on an assessment of the benefits that seamless cross-border eGovernment services can provide to citizens and businesses. The vision should provide the entire range of stakeholders involved with a strategic vision of the end-goal to be achieved. While the vision may be primarily economic, it also needs to include the appropriate policy-related and societal/social arguments. This political vision should be reflected in the allocation of the CEF funding for the DSIs.

- **An appropriate Agency needs to be set up.** There is a need to work towards creating an EU Agency in the medium term or to consider the extension of the remit of an already-existing Agency. The EU Agency is, in the medium term, the only scenario which can ensure the robust financial backing of the public sector and facilitate a sufficient level of stakeholder engagement.
- **Stakeholder roles need to be clearly defined and stakeholder management needs to be facilitated.** There is currently within the European Commission a lack of strategic stakeholder management. The lack of buy-in by various policy Directorates, which should act as the most important drivers and users of the solutions, is particularly striking. Currently, the link with the European Commission's corporate IT governance is not ensured. Actions need to be taken to set up a strategic governance and stakeholder management structure, a Management Board, organising the buy in of the key policy Directorates General within the European Commission (such as the Secretariat General, DG CONNECT for eID, DG MARKT for eBusiness, DG SANCO and DG RT for eHealth and DG JUST for eJustice). The various policy Directorates-General need to be adequately represented and maintain a dominant role in steering the CSP and the domain-specific solutions which have been developed. Given the variety of mandates of Directorates-General leadership and possible co-leadership of these boards and groups needs careful consideration and calculation. There must be a strong focus on change management as well as cross-DG involvement and communication to define the gaps and create an understanding of how to build more effective collaboration. The Management Board would be intended to ensure buy-in and coordination among all the CSP/BBs. Finally, ensuring the buy-in of Member States is of primary importance, and should be ensured for each CSP/BB. In this sense, immediate buy-in (for leading countries) as well as engagement over time (for laggard or observer countries) needs consideration.

The following figure presents a medium term organisational possibility for an EU Agency, which should be set up as soon as possible.



*Figure 39 – Medium term organisational possibility for an EU Agency, its Management Board and supporting Advisory Boards*

- ❑ **A blueprint for deployment should be prepared**, once the organisational structure has been defined. This action would involve defining the precise tasks, operational structures, procedures and processes which should be ensured so as to guarantee that the needs and requirements of users are met.
- ❑ **Operations and maintenance should be outsourced to private parties**. In the short term, a Programme should be set up, and backed financially by the CEF. However, in order to ensure that solutions operate efficiently, and ensure take-up, operations and maintenance should be outsourced to private entities as the European Commission has limited capacities to carry out these tasks in-house. The outsourcing should be organised in such a way that consortia of large professional suppliers are interested in responding to calls and would see an advantage in performing these tasks.
- ❑ **An efficient mapping, monitoring and consolidation of the solutions** which have been developed by the Large Scale Pilots needs to be developed in the short-term.
- ❑ **A process of convergence of solutions should be encouraged**. As multiple pilot solutions have been developed with the same end-purpose of developing cross-border digital services, a process of convergence should be encouraged. This may involve recognition of some of the solutions being baseline or foundational solutions, and others forming the kind of more generic applications to which these baselines might be applied.
- ❑ **Legislative needs should be closely monitored and mapped**. An example includes the need proposed Regulation on electronic identification and trust services for electronic transactions in the internal market. The extent to which Directives or Regulations, for example, are the appropriate legal instruments to be borne in mind needs careful consideration.
- ❑ **Further development of the potential for revenue of each CSP/BB and of business cases**. Clear value propositions for stakeholders need to be laid out, in order to involve market players adequately in due time. Relying on markets to develop and deploy the solutions before such value propositions have materialised would be counterproductive.

Conversely, not involving stakeholders when such a value proposition has materialised may lead to public authorities assuming an excessively high share of financial burden for the management of the CSPs. Some of these business cases may be more sensitive in terms of their development than others, because of the way in which institutions which are currently "payers" are not necessarily those who gain the benefits from the applications.

- ▶ **Use of the various applications in day-to-day practice:** Consideration should be given with regard to how the Commission services themselves, as well as other European institutions, might sustain through day-to-day working practice the various applications which have been developed within the LSPs (e.g., use of eIdentity, use of eProcurement).

In "Annex G – Key Practical Specifications and Recommendations", are some elaborated specifications and recommendations detailing the roles and responsibilities that need to be taken up in order to ensure the roll out of the CSP/BBs and that can be used as a starting point for creating a blueprint.

# 9 Annexes

The annexes supplement the information in the main body of the report. There are seven annexes:

- ❑ Annex A – Abbreviations and Terminology;
- ❑ Annex B – Needs and Requirements;
- ❑ Annex C – Elaboration of Drivers and Options;
- ❑ Annex D – Results from the Survey to Member State and associated countries;
- ❑ Annex E – The basis for calculations for cross-border service use;
- ❑ Annex F – Characteristics of organisations similar to those that might oversee scenarios;
- ❑ Annex G – Key Practical Specifications and Recommendations.

## Annex A – Abbreviations and Terminology

This annex contains a list of the most commonly used abbreviations and terms used in this report as well as their meaning.

| Term          | Meaning                                                             |
|---------------|---------------------------------------------------------------------|
| <b>.CG</b>    | (.COM & .GOV) Supervisory Authority                                 |
| <b>.CO</b>    | (.COM & .ORG) Private NPO                                           |
| <b>.COM</b>   | Private sector takes the lead (in decision-making)                  |
| <b>.G-a</b>   | (.GOV-a) DG Programme                                               |
| <b>.G-b</b>   | (.GOV-b) Agency                                                     |
| <b>.GO</b>    | (.GOV & .ORG)                                                       |
| <b>.GO(C)</b> | (.GOV & .ORG & .COM) P/PP NPO                                       |
| <b>.GOV</b>   | Public Sector takes the lead (in decision-making)                   |
| <b>.ORG</b>   | A Non-Profit Organisation (NPO) takes the lead (in decision-making) |
| <b>A2A</b>    | Administration-to-administration                                    |
| <b>AEAJ</b>   | Association of European Administrative Judges                       |
| <b>B2A</b>    | Business-to-administration                                          |

|                   |                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>B2B</b>        | Business-to-business                                                                                                      |
| <b>B2G</b>        | Business-to-government                                                                                                    |
| <b>BBO</b>        | Buy-Build-Operate                                                                                                         |
| <b>BEREC</b>      | Body of European Regulators of Electronic Communications                                                                  |
| <b>BLOT</b>       | Build-Lease-Operate-Transfer                                                                                              |
| <b>BOO</b>        | Build-Own-Operate                                                                                                         |
| <b>BOOT</b>       | Build-Own-Operate-Transfer                                                                                                |
| <b>CBA</b>        | Cost Benefit Analysis                                                                                                     |
| <b>CCBE</b>       | Council of Bars and Law Societies of Europe                                                                               |
| <b>CCN/CSI</b>    | Common Communication Network and Common System Interface                                                                  |
| <b>CdT</b>        | Translation Centre for the Bodies of the European Union                                                                   |
| <b>CEF</b>        | Connecting Europe Facility                                                                                                |
| <b>CIP</b>        | Competitiveness and Innovation framework Programme                                                                        |
| <b>CISE</b>       | Common Information Sharing Environment                                                                                    |
| <b>COTS</b>       | Common off-the-shelf                                                                                                      |
| <b>CPVO</b>       | Community Plant Variety Office                                                                                            |
| <b>CRM</b>        | Customer Relationship Management                                                                                          |
| <b>CSP</b>        | Core Service Platform                                                                                                     |
| <b>CSP/BB</b>     | Core Service Platform and building block (commonly refers to the five CSPs and the three widely reusable building blocks) |
| <b>DB</b>         | Design-Build                                                                                                              |
| <b>DG CONNECT</b> | Directorate General for Communications Networks, Content and Technology                                                   |
| <b>DG DIGIT</b>   | Directorate General for Informatics                                                                                       |
| <b>DG EAC</b>     | Directorate General for Education and Culture                                                                             |
| <b>DG JUST</b>    | Directorate General for Justice                                                                                           |

|                      |                                                        |
|----------------------|--------------------------------------------------------|
| <b>DG MARE</b>       | Directorate General for Maritime Affairs and Fisheries |
| <b>DG MARKT</b>      | Directorate General for Internal Market and services   |
| <b>DG SANCO</b>      | Directorate General for Health and Consumers           |
| <b>DG TAXUD</b>      | Directorate General for Taxation and Customs Union     |
| <b>DSI</b>           | Digital Service Infrastructure(s)                      |
| <b>DSS</b>           | Digital Signature Service                              |
| <b>E.g.</b>          | exempli gratia (example)                               |
| <b>EASA</b>          | European Aviation Safety Agency                        |
| <b>eAttestation</b>  | Electronic attestation                                 |
| <b>EAW</b>           | European Arrest Warrant                                |
| <b>EBA</b>           | European Banking Agency                                |
| <b>eBusiness</b>     | Electronic business                                    |
| <b>EC</b>            | European Commission                                    |
| <b>ECAS</b>          | European Commission Authentication Service             |
| <b>ECB</b>           | European Central Bank                                  |
| <b>e-CODEX</b>       | The electronic Justice Large Scale Pilot               |
| <b>eDelivery</b>     | Electronic delivery                                    |
| <b>eDispensation</b> | Electronic dispensation                                |
| <b>eDocument</b>     | Electronic documents                                   |
| <b>EFSA</b>          | European Food Safety Authority                         |
| <b>EFTA</b>          | European Free Trade Association                        |
| <b>eGovernment</b>   | Electronic government                                  |
| <b>eHealth</b>       | Electronic health                                      |
| <b>EHIC</b>          | European Health Insurance Card                         |

|                           |                                                                                 |
|---------------------------|---------------------------------------------------------------------------------|
| <b>EHR</b>                | Electronic Health Record                                                        |
| <b>EIA</b>                | European Interoperability Architecture                                          |
| <b>eID</b>                | Electronic identification                                                       |
| <b>EIOPA</b>              | European Insurance and Occupational Pensions Authority                          |
| <b>EJPA</b>               | European Judges and Prosecutors Association                                     |
| <b>eLearning</b>          | Electronic learning                                                             |
| <b>EMEA</b>               | Europe, Middle East and Africa                                                  |
| <b>ENISA</b>              | European Network and Information Security Agency                                |
| <b>EP</b>                 | European Parliament                                                             |
| <b>ePayment</b>           | Electronic payment                                                              |
| <b>EPC</b>                | European Payments Council                                                       |
| <b>EPO</b>                | European Payment Order                                                          |
| <b>ePrescription</b>      | Electronic prescription                                                         |
| <b>eProcurement</b>       | Electronic procurement                                                          |
| <b>epSOS</b>              | European Patients - Smart open Services (name of the eHealth Large Scale Pilot) |
| <b>ERP</b>                | Enterprise Resource Planning                                                    |
| <b>ESA</b>                | European Supervisory Authorities                                                |
| <b>eSafe</b>              | Electronic safe                                                                 |
| <b>eService Catalogue</b> | Electronic service catalogue                                                    |
| <b>eSignature</b>         | Electronic signature                                                            |
| <b>ESMA</b>               | European Securities and Markets Agency                                          |
| <b>ETSI</b>               | European Telecommunications Standards Institute                                 |
| <b>EU</b>                 | European Union                                                                  |
| <b>EUR</b>                | Euro                                                                            |

|                  |                                                                  |
|------------------|------------------------------------------------------------------|
| <b>GJU</b>       | Galileo Joint Undertaking                                        |
| <b>GOFA</b>      | Governance, Operation, Financing and Architecture                |
| <b>GS</b>        | Generic Services                                                 |
| <b>GSMA</b>      | GSM Association                                                  |
| <b>GUI</b>       | Graphic User Interface                                           |
| <b>i.e.</b>      | Id est (Latin abbreviation essentially meaning “in other words”) |
| <b>IA</b>        | Impact Assessment                                                |
| <b>ICANN</b>     | Internet Corporation for Assigned Names and Numbers              |
| <b>ICT</b>       | Information and Communication Technologies                       |
| <b>IP</b>        | Internet Protocol                                                |
| <b>IRM</b>       | Information Resource Management                                  |
| <b>ISA</b>       | Interoperability Solutions for European Public Administrations   |
| <b>LSP</b>       | Large Scale Pilot(s)                                             |
| <b>MAC</b>       | Market Advisory Committee                                        |
| <b>MIDB</b>      | Meta Information Database                                        |
| <b>MoU</b>       | Memorandum of Understanding                                      |
| <b>MS</b>        | Member States                                                    |
| <b>MW</b>        | Middleware                                                       |
| <b>NCP</b>       | National Contact Point                                           |
| <b>NGO</b>       | Non-Governmental Organisation                                    |
| <b>NPO</b>       | Non-Profit Organisation                                          |
| <b>NRA</b>       | National Regulatory Authority                                    |
| <b>O &amp; M</b> | Operation and Maintenance Contract                               |
| <b>OASIS</b>     | Organization for the Advancement of Information Standards        |

|                 |                                                                                       |
|-----------------|---------------------------------------------------------------------------------------|
| <b>OCD</b>      | Omnifarious Container format for eDocument                                            |
| <b>OHIM</b>     | Office of Harmonization for the Internal Market                                       |
| <b>P/PP NPO</b> | Public / Public-Private NPO (the .GO(C) scenario)                                     |
| <b>PEPPOL</b>   | Pan-European Public Procurement Online (the eProcurement Large Scale Pilot)           |
| <b>PEPS</b>     | Pan-European Proxy Services                                                           |
| <b>PPP</b>      | Public-Private Partnership                                                            |
| <b>PSC</b>      | Points of Single Contact                                                              |
| <b>PSP</b>      | Policy Support Programme                                                              |
| <b>QAA</b>      | Quality Authentication Assurance                                                      |
| <b>SAML</b>     | Security Assertion Mark-up Language                                                   |
| <b>SC</b>       | Small Claims                                                                          |
| <b>SDO</b>      | Standards Development Organisations                                                   |
| <b>SEPA</b>     | Single European Payments Area                                                         |
| <b>SIS</b>      | Schengen Information System                                                           |
| <b>SPOCS</b>    | Simple Procedures Online for Cross- Border Services (the eBusiness Large Scale Pilot) |
| <b>SSM</b>      | Single Supervisory Mechanism                                                          |
| <b>STORK</b>    | Secure idenTity across-borders linKed (the eID Large Scale Pilot)                     |
| <b>SWIFT</b>    | Society for Worldwide Interbank Financial Telecommunication                           |
| <b>TOGAF</b>    | The Open Group Architecture Framework                                                 |
| <b>TSL</b>      | Trust-Service status List                                                             |
| <b>VCD</b>      | Virtual Company dossier                                                               |
| <b>VIS</b>      | Visa Information System                                                               |
| <b>XML</b>      | Extensible Markup Language                                                            |

## Annex B – Needs and Requirements

This annex contains a detailed account of the needs and requirements identified during the study, complementing the part on needs and requirements in the main body of the report.

In order to be able to frame the needs and requirements of the stakeholders, it is first necessary to apply the Digital Services Model and stakeholder model to the current situation. The current situation is one in which the LSPs have developed solutions for cross-border interoperability. Some pilots have ended or entered a second phase, while others are still on-going. This section therefore draws on the situation to date, and examines the different relevant stakeholders and the ecosystems for each of the CSP domains.

The aim of this exercise is to identify the key needs and requirements. Therefore, for each of the CSP domains, the following aspects are assessed:

- ✘ **Legal framework:** All stakeholders involved, operate within the ecosystem that is at the governed by a current legal framework. Therefore, it is necessary to carry out an assessment of this legal framework and then derive possible linked needs and requirements;
- ✘ **Content providers:** The Content Providers are those stakeholders that connect their existing systems (e.g. National eID systems, National Electronic Health Systems, National Judicial Systems) to the CSPs (layer four of the Digital Services Model), through Generic Services (layer five of the Digital Services Model). Being an important element of the ecosystem, their needs and requirements should be taken into account;
- ✘ **Core Service Platform Providers:** To date the key elements that are part of the CSPs have been developed by the LSPs. These include the building blocks, the Components and the Standards and Specifications used in each LSP as part of the cross-border interoperability solutions. This CSP provider role, as part of the stakeholder model, is concerned with the delivery of the cross-border interoperability solutions and therefore with the first four layers of the Digital Services Model. This stakeholder role and the stakeholder(s) that take it on are therefore central to the entire DSI ecosystem and taking their needs and requirements into account is central;
- ✘ **Service Providers:** The Service Providers will also need to be integrated in order to make use of the cross-border public solutions in different fields of application and therefore their needs and requirements should be taken into account.

End-users and solution providers have also been identified as related stakeholders in the stakeholder model. The assessment focuses primarily on the three main stakeholders. Others are taken into account both here (partially) and at a later stage. Although the stakeholders have general needs across the Core Service Platforms, they also have needs for each specific Core Service Platform, such as specific needs and requirements related to e.g. eID.

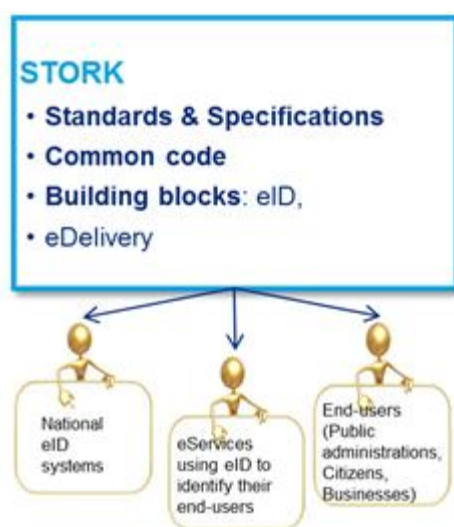
### 9.1.1 Electronic Identity across-borders

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The solutions developed by each LSP have been outlined (see Figure 2 on page 8), as well as key stakeholders who are within the ecosystem of each CSP (see Figure 10 on page 16).

It indicates, that a variety of national eID systems exist across EU Member States. These systems provide the 'content' or basis, i.e. in the case of eID they provide the actual eID and online identification and authentication services at national level. Because they provide content, the stakeholders providing these systems are referred to as Content Providers in the stakeholder model,

i.e. they provide the basic content which is made interoperable across-borders and on which other online services can rely to identify their users.



*Figure 40 – STORK solutions and stakeholders*

The providers of online services or eServices, are referred to as Service Providers in the stakeholder model. Service Providers provide eServices that make use of the eID to identify the end-users at either national level or across-borders. These stakeholders range from other public authorities to private stakeholders which include this solution within their applications.

The CSP provider corresponds to the entity which will operate the CSP for cross-border eID, building on the deliverables of STORK. The STORK consortium consists of Member States, private sector companies, universities, and non-profit organisations (NPOs), under the coordination of the information technology company, Atos. STORK has also worked with standardisation bodies, as they have incorporated standards by the Organization for the Advancement of Information Standards (OASIS), standards such as Security Assertion Mark-up Language (SAML) as well as built on the work of the European Telecommunications Standards Institute (ETSI) for eDelivery.

However, the solutions developed of for the different CSPs do not exist in a vacuum there are legal aspects to take into consideration as well as the needs and requirements of each of these cross-border eID stakeholders – Content Providers, Service Providers and CSP provider is made.

### ***Assessment of the Current Legal Environment***

In the area of eID, there is no established EU-level legal framework to work with, nor are there consistent legal frameworks at national level. Thus far, STORK has been able to leverage the rules of the eSignature Directive 1999/93/EC to some extent as this directive provides a common legal framework for electronic signatures, including a trust framework based on the supervision of national service providers. This directive has, de facto, been of benefit to STORK as well, through its Quality Authentication Assurance (QAA) framework, which defines four levels of eIDs. The highest quality eIDs (known as level 4 eIDs) in the QAA can use qualified eSignature certificates to support their trustworthiness. In this way, STORK can, to some extent, draw on the trust mechanisms created by the eSignature Directive.

In June 2012, the Commission published its “Proposal for a Regulation on electronic identification and trust services for electronic transactions in the internal market”, which would implement a common legal framework for eIDs. It would allow Member States to notify eID schemes that meet certain requirements, resulting in an obligation for other Member States to accept these eIDs in their applications. This could support a great deal of the efforts made by STORK; however, the Regulation is not likely to be adopted until late 2013, and it is not yet clear how discussions with the Member States, in the end, will affect the content, scope and approach of the Regulation.

Currently, the primary issue remains the lack of any legal framework, for eIDs, across Europe or between Member States. Consequently, a mutual recognition and liability regime across-borders is still lacking, which implies that it is currently impossible to take eID beyond the pilot phase.

Whilst this is a difficulty in terms of rolling out cross-border eID, it could be resolved by the proposed Regulation. However, it would also require secondary legislation (which implies implementing delegated acts by the Commission) to deal with crucial details that are not yet addressed directly in the proposal itself. These details include:

- ✘ Formalising the QAA and setting up mechanisms for assigning a quality level to a notified eID;
- ✘ Formalising the standards and protocols pioneered by STORK (e.g. the SAML statement currently used);
- ✘ Setting up a governance mechanism to keep the framework current and to manage all the relevant participants;
- ✘ Clarifying the liability of PEPS or middleware issuers, including with respect to the proposed Regulation’s requirement that Member States offer an authentication solution for notified eIDs;
- ✘ Addressing how external attribute providers can be integrated (an issue which is currently being pioneered in STORK 2.0, but which is not yet covered by the Regulation).

In addition to a clear need for both the Regulation to be passed and secondary legislation to address certain details, the needs and requirements of stakeholders also need to be taken into account.

### ***Content Providers: needs and requirements from a supply perspective***

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Member States are key players in the supply of eIDs. As Table 65 illustrates, 17 Member States have participated in the STORK pilot, and 16 are participating in STORK 2.0. These are Austria, Belgium, Estonia, Finland, France, Greece, Germany, Iceland, Italy, Lithuania, Luxembourg, Netherlands, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom<sup>135</sup>.

Participants have vested interests in the cross-border eID solutions since they have invested significant time and money in the Large Scale Pilot. Therefore, at the very least, these Member States can be expected to take-up cross-border eID.

The STORK solution builds on national eID solutions that have been developed. Substantial disparities exist in the national eID contexts across Member States, as the tokens used can be either smart cards, mobile eIDs or software certification.

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<sup>135</sup> Finland, Germany, and Poland participated in STORK and not in STORK 2.0. Conversely, the Czech Republic and Greece did not participate in STORK but are participating in STORK 2.0.

Table 65 provides examples of the diversity of eIDs across Member States. It is clear that many different solutions for providing eIDs to citizens and businesses are in place. In addition, it is a dynamic area in which new technologies influence the way in which electronic identification takes place. For example, there is the trend towards providing eID for mobile devices (as is implemented, for example, in Austria, Estonia, Luxembourg and Sweden).

*Table 65 – Token examples across Member States<sup>136</sup>*

| Country & credentials |            | Token Types |            |               | Relation to 1999/93/EC          |             | Token Issuer  |                    |
|-----------------------|------------|-------------|------------|---------------|---------------------------------|-------------|---------------|--------------------|
|                       | # of cred. | Smart card  | mobile eID | soft.-certif. | qualified cert (signature-cert) | is a SSCD   | public sector | private sector     |
| Austria               | 3          | yes         | yes        | -             | all                             | all         | yes           | yes (all. qual.c.) |
| Belgium               | 1          | yes         | -          | -             | all                             | all         | yes           | -                  |
| Estonia               | 2          | yes         | yes        | -             | all                             | all         | yes           | -                  |
| Germany               | 1          | yes         | -          | -             | optional                        | all         | yes           | (opt. qual.certs.) |
| Finland               | 1          | yes         | -          | -             | qualified                       | all         | yes           | -                  |
| Iceland               | 2          | yes         | -          | -             | all                             | all         | -             | yes                |
| Italy                 | 2          | yes         | -          | -             | all                             | all         | yes           | yes (sig.-card)    |
| Lithuania             | 1          | yes         | -          | -             | all                             | all         | yes           | -                  |
| Luxembourg            | 3          | yes         | yes        | -             | all                             | all         | -             | yes                |
| Portugal              | 1          | yes         | -          | -             | all                             | all         | yes           | -                  |
| Slovenia              | 3          | yes         | -          | yes           | all                             | yes (QAA 4) | yes           | yes                |
| Spain                 | 1+80       | yes         | -          | yes           | all                             | yes (QAA 4) | yes (QAA 3-4) | yes (QAA 3-4)      |
| Sweden                | 12+        | yes         | yes        | yes           | -                               | tbc         | yes           | yes                |

From an organisational perspective, change management is another dimension which needs to be taken into consideration to ensure the future sustainability of the eID solutions. Although providers of eID tend to be centralised, and limited, a more efficient way of dealing with user queries, comments and recommendations needs to be set up. Creating a hotline, which would be operational on a 24/7 basis, could thus be a solution. This is particularly important the more types of solutions are made interoperable as a result of the eID solutions. Conversely, an important barrier which could hamper the take-up of cross-border eID solutions is that some Member States, such as Ireland and the United Kingdom<sup>137</sup> as well as Finland, France and Poland<sup>138</sup> do not have a national eID system, but rely on a username/password solution. In other cases, such as Cyprus, Greece and Liechtenstein, national eIDs are not yet implemented and are in the process of being issued.

By rendering interoperable national eID solutions, a pre-requisite for the take-up of cross-border eID solutions is that national solutions are in place. The take-up of eID is therefore very dependent on the maturity of the eID market at Member State level. It is uncertain whether the Member States that are examined in this study will in fact adopt the cross-border eID solutions. However, take-up by public

<sup>136</sup> Source: Presentation on 'Trusted Identities Cross-border - A Look at STORK-Experiences'

<sup>137</sup> Although there are indications that the United Kingdom is planning steps in this direction by providing a national identity scheme based on mobile eID.

<sup>138</sup> European Commission, Deloitte (2012), 'The functioning and usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward', [http://ec.europa.eu/internal\\_market/services/docs/services-dir/study\\_on\\_points/final\\_report\\_en.pdf](http://ec.europa.eu/internal_market/services/docs/services-dir/study_on_points/final_report_en.pdf), last visited on 03.05.2013

authorities is crucial for sustainability, and conveys a strong market signal to private sector stakeholders which may then be interested in investing in, and building on, the chosen eID solution. In some Member States, the development of the local eID market is however, already being driven by the private sector. In Denmark, Estonia, Finland, and Lithuania, solutions are in fact based on bank eID systems which have been embedded in the national eGovernment structure.

This assessment clearly points out a couple of key needs and requirements in terms of the future:

- Many Member States can be expected to take up the eID solution. However, so far 10 Member States have not participated in STORK, and there could be other issues at stake for those countries which do not have national eID systems in place;
- There are different solutions for providing eIDs across Member States and new solutions can be expected to be developed. This situation should be closely monitored in order to render new electronic identification systems interoperable.

### *Service Providers: needs and requirements from a demand perspective*

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Service providers play a key role in this eco-system as they will ensure that the solutions that emerge are available to and used by end-users. Needs and requirements to ensure that Service Providers are able to take on this role should therefore be taken into account.

The eID across-borders solutions have the potential to be used in a great diversity of domains, as is also evidenced by the variety of pilot initiatives carried out under STORK I and planned under STORK 2.0. eID is a key enabler for service provision since the identification and authentication of a user is an essential element of most online services. The importance of eID for private sector applications has therefore also been reflected in STORK 2.0, which will expand the scope of STORK to areas such as eBanking, eHealth, and eLearning.

The 2011 study entitled “Towards a Trusted and Sustainable European Federated eID system”<sup>139</sup> enumerates potential benefits for service providers from the use of eID solutions. These include the fact that service providers (both in the public and private sector) will:

- Have access to large numbers of European users to whom they will be able to offer their services in cross-border contexts;
- Know that their pre-registered users are equipped with eID tokens that are all certified;
- Be able to lower their costs for user-registration and user-authentication and register users/clients fully electronically and in a legally compliant way;
- Be able to avoid legal uncertainty, possible liabilities and fraud when delivering their services cross-border;
- Provide cross-industry common specifications, standards and building blocks for better and interoperable products capable of handling eID-related information access across-borders, applications and sectors.

Despite these benefits, cross-sector awareness of cross-border use of eID has remained limited. To spur take-up, there is a need to demonstrate, to service providers both in the public and private sector, the long-term benefits of the use of the cross-border eID solutions. This will enhance the visibility of cross-border eID and encourage take-up.

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<sup>139</sup> European Commission, Deloitte (2011), study ‘Towards a Trusted and Sustainable European Federated eID system’ <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/smart2010-0068.pdf> , last visited on 03.05.2013

Demonstrating the tangible benefits of cross-border eID should also be a priority in order to motivate take-up by the private sector, thereby ensuring the financial sustainability of the developed solutions. In order for eID to be sustainable, a high industry adoption will be important. There is therefore a need to clearly understand and lay out the business case for using the eID solutions, as the visibility of the potential for profit has thus far remained limited. However, a decisive issue for private sector involvement is whether Member States will agree to have the private sector use government-endorsed eIDs to provide their services.

In addition, the lack of open standards has also hampered take-up. Such standards are a prerequisite for the reuse of the developed solution and for the creation of innovative applications by other public authorities or by the private sector. Specifications and requirements for this solution should therefore be agreed upon by all the stakeholders and be stable in nature.

This assessment clearly points out key needs and requirements for the future:

- ✉ There is a need to clearly demonstrate the value proposition for the take-up of cross-border eID to public authorities and to the private sector. This should be done by providing concrete examples in terms of potential business cases, reduced administrative costs, or enhanced mobility;
- ✉ Adopting open standards to enable the reuse of the eID building block.

### ***CSP Providers: needs and requirements for achieving cross-border interoperability***

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The CSP provider is the stakeholder that provides the CSPs (as shown in Figure 10 on page 16). The provider will have to rely upon, and build on the deliverables of the STORK consortium, including technical achievements and identified challenges.

The STORK LSP has focused on providing two main interoperability solutions (or models). Each Member State is free to implement one or both of the two solutions:

- ✉ Decentralised Middleware (MW): If a country chooses the decentralised solution, systems located in that country will need the middleware to be installed in order to authenticate. The middleware solution will also use a component, (V-IDP) located at the PEPS sites providing a common middleware layer and allowing also for combination with PEPS model. The MW (also called “SPWare”) is run directly by the Service Providers themselves in MW-countries, so that they do not need to rely on external proxy servers.
- ✉ Centralised Pan-European Proxy Services (PEPS): Countries using the PEPS solution have a centralised solution in place that will be used for authentication. The PEPS will handle communication with other countries for cross-border communication and will be used for authentication services towards its citizens and service providers. However, these PEPS are separated from the Service Providers that end users wish to use. Thus, each Service Provider in a PEPS country will refer authentication requests originating from other Member States to a national PEPS.

The authentication procedure will be specific for that country, as well as the communication between the STORK infrastructure and service provider’s applications. So both the PEPS and MW components translate these national communications to the commonly agreed STORK communication standard. The common specifications have been designed so that major components operate on the same protocols, irrespective of the model or its combinations. Possible combinations of both the PEPS and MW solutions are: MW→MW, PEPS→PEPS, MW→PEPS, PEPS→MW.

STORK delivered common code for both its PEPS and middleware solutions that allow for the technical integration of identity providers and service providers. The STORK software has been published online on the JoinUp platform of the European Commission and thereby made publicly available as open source. The software includes:

- A package for a Member State to establish itself as a STORK-enabled Member State, using a PEPS solution (including an installation, configuration and integration manual and a toolkit, with examples, testing tools and test credentials);
- Integration packages for Service Providers and Industry: these integration packages have been provided. Several different programming languages have been preconfigured for specific markets.

From a technical perspective, the solutions developed under eID are highly mature. However, they have yet to prove that they can be scaled to industrial levels. In order to achieve this, a shift towards cloud computing and mobile devices would be required, but this would present some additional challenges.

Potential challenges, needs and requirements, to be taken into consideration, include:

- The solution should be ready for high levels of demand for the different components. Each solution (centralised or decentralised) needs one or more centralised components which should be able to cope with increasingly higher loads, especially if public sector and industry adoption increases;
- The solution should be extended and should include a solution for mobile devices. The use of mobile devices in everyday life is becoming increasingly important and the need for a mobile authentication solution will become an increasingly important requirement;
- Design should be adapted to integrate with common off-the-shelf (COTS) products. Although industry standards were chosen for the implementation of STORK, the way these standards are used and implemented may mean that COTS products cannot communicate with and be integrated with the authentication platform;
- STORK allows login through technology from different countries. This means that in order to use STORK for the credential of a particular country, the technical environment has to support the authentication technology of that country;
- The existence of Member State-specific STORK implementations poses a challenge regarding the coordination of new versions. In the future, good governance will have to be put in place so that Member States are not suddenly 'cut off' (or removed from) the platform because they lag behind in implementing a new version of the system. Within a Member State, there also will have to be good coordination between the STORK-infrastructure and the service providers that make use of it;
- Care should be taken to handle different alphabets or character sets properly in the content provided by different Member States. If information from different sources would be combined, a proper presentation should be guaranteed. Language and semantics challenges are thus of substantial importance;
- Every service provider will have to be aware when a new country becomes available on the system, and which QAA-level and which attributes it provides. Some service providers make use of the country selector feature available in their PEPS. This solves the aforementioned problem of automatically including new Member States on a technical level, but does not solve possible semantic or organisational issues. Therefore some service providers have

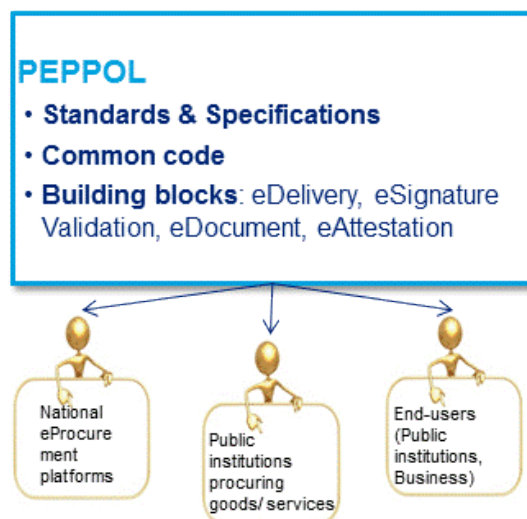
had to refrain from using such a feature in STORK and are dependent on the notification of their STORK contact point about the availability of new countries/tokens;

- Sufficient security measures should be foreseen and continuous validation of the security measures should be performed in order to guarantee sustainability.

### 9.1.2 Electronic Procurement across-borders

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The figure below, Figure 41, presents the PEPPOL (eProcurement) solutions and stakeholders.



*Figure 41 – PEPPOL solutions and stakeholders*

As Figure 41 illustrates that the public authorities that operate national eProcurement platforms are a main stakeholders, they are in this context the content providers. These stakeholders need to be taken into account in order to drive the deployment of the cross-border eProcurement solutions. A relevant entity which could be taken into consideration, as it groups together content providers that could be interested by the PEPPOL solutions, is the Public Procurement Network. The Network has set itself the objective of strengthening the application and the enforcement of procurement rules. It could therefore be a key stakeholder that further catalyses the take-up of the PEPPOL solutions.

The CSP provider is the entity which will operate the CSP for eProcurement across-borders, and that will deploy the cross-border solutions developed under PEPPOL. A key stakeholder in this respect is Open PEPPOL, an association created in 2012 upon the completion of PEPPOL. As an association created under Belgium Law, Open PEPPOL currently presents the most advanced form of stakeholder engagement model arising from the LSPs.

The service providers for eProcurement are the public institutions procuring goods and services, i.e. contracting authorities, which make use of national eProcurement platforms and can procure goods and service across-borders.

In addition to having an understanding of the stakeholders, an analysis of the needs and requirements of each of these cross-border eProcurement stakeholders – content providers, service providers and CSP providers – is needed. However, first it is necessary to have an assessment of the current legal framework affecting the LSPs in order to better understand the legal environment and the overall ecosystem within which the stakeholders (and their needs and requirements) are.

#### *Assessment of the current legal framework*

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PEPPOL's work has multiple legal angles to take into account. With respect to the use of eSignature, the eSignature Directive 1999/93/EC provides the basic legal rules. Public procurement as such (including eProcurement) is regulated through the Public Procurement Directives 2004/17/EC and 2004/18/EC. They contain the possibility for Member States to require the use of qualified eSignature, but also forbid the creation of interoperability barriers that would impede access to national procurements for foreign economic operators. The directives have all been transposed by the Member States into their national laws, with some divergence.

The Commission recently proposed a new Regulation on electronic identification and trust services for electronic transactions in the internal market, which would replace the eSignature Directive, and support various other trust services (e.g. time stamping electronic seals and electronic delivery services).

PEPPOL has innovated in various domains, some of which imply the need for further legal action. With respect to eSignature, PEPPOL has developed its own multilevel quality policy, which does not have a formal status under the eSignature Directive. To progress beyond its current status as a project deliverable, further action would be needed. The proposed Regulation creates the possibility of adopting multilevel signature policies (something which is not mentioned explicitly in the current eSignature Directive), so Commission could adopt this policy through secondary legislation, thereby formalising this approach.

A second innovation with respect to eSignature is PEPPOL's eSignature validation infrastructure, which relies on a distributed network of validation services. However, their efforts have no formal legal status, nor are the legal responsibilities/liabilities clearly regulated. This is another area that may require further action.

Thirdly, another major output is the Virtual Company Dossier (VCD), a standardised bundle of frequently used company eDocument. The two Public Procurement Directives reference a list of types of documents that contracting authorities may ask for in the context of public procurements, and establishes the rule that these must be treated as legal equivalents. However, the VCD as such has no formal status.

As previously mentioned, there is no specific eProcurement Directive. The lack of such a directive has been identified as something that could be problematic for the sustainability of Electronic Procurement across-borders. The update of the directives relating to Public Procurement will attempt to bring more coherence to the law in this respect as there is a move towards obligatory eProcurement for pre-procurement awards.

### ***Content providers: needs and requirements from a supply perspective***

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Member States, as well as regional, and local authorities are key players in the effective supply of the cross-border eProcurement solutions.

The PEPPOL consortium included 12 Member States and Associated Countries. These were Austria, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Sweden, and the United Kingdom. Commitment on behalf of Member States involved in PEPPOL, has been perceived as mixed, due to conflicting interests. The conflicting interests involved supporting the local economy by purchasing from local suppliers, and leveraging enhanced competition to reduce procurement costs. Furthermore, as several Member States have already made considerable investments in

developing semi-automated web-based tendering platforms, they may have little incentive to further develop these platforms.

eProcurement is very often decentralised within Member States, with only a minority of Member States having central eProcurement platforms. France, for instance, has a Government-wide eProcurement platform to which all central government ministries can link up, with exception of the Ministry of Defence which has its own platform. This implies that numerous public authorities will connect to the eProcurement CSP.

One of the premises for the sustainability of the cross-border eProcurement solutions is the development of national eProcurement markets. Overall take-up is estimated at less than 5% of total procurement (by value), across the EU<sup>140</sup>. Portugal is of particular interest as the public eProcurement market is being enforced through legislation. Consequently, the use of electronic means to conduct the pre-award procurement phases was made mandatory in late November 2009. Since then, contracting authorities have adapted their procurement procedures and are expecting to save EUR 28 million per annum on administrative costs. Other Member States such as Austria, Belgium, Cyprus, and the Netherlands have moved towards the mandatory use of some phases of eProcurement.

A further barrier to the development of the national eProcurement market is the availability of tokens. Despite its considerable potential and market maturity in some Member States, one of the major barriers that are impeding the take up of the cross-border eSignature solution is the availability of electronic signatures for end-users. The activation is very often associated with a fee at the Member State level, which can be a strong deterrent for the users to take it up. The token-based eProcurement solutions are therefore dependent on network dynamics, as emphasised in the 'PEPPOL Business Case for Sustainability' report. These dynamics imply that a critical mass of users for these solutions can only be achieved once a sufficient network exists.

Furthermore, commitment on the behalf of the European Commission is crucial for the sustainability of the solutions. Concerns were expressed that the European Commission had yet to voice its medium- to long-term commitment to the PEPPOL solutions, which had in turn created uncertainty among stakeholders as to the sustainability of the solutions.

Commitment and take-up on behalf of public authorities is therefore crucial in order to drive market confidence and to encourage further investments from other public authorities and private sector stakeholders. Thus far these stakeholders have been hesitant to do so due to the uncertainty regarding the future sustainability of the solutions. Making the PEPPOL solutions mandatory has been suggested as a possible solution to enforce, or at least strongly encourage, take-up. However, several precautions must be taken in this regard. First, the individual solutions should be technically evaluated to determine their adequacy for adoption. Furthermore, in the case of specific solutions, such as the eSignature, or eDelivery solutions, various solutions responding to the same end-need have been developed by the different LSPs. Second, as industry should only have to adapt to one set of standards, the various solutions should be thoroughly evaluated to determine which one has the greatest cross-CSP potential (i.e. potential for reuse).

However, cross-border eProcurement solutions are currently not available for business-to-business (B2B) testing as PEPPOL has essentially focused on the needs of the public sector. These solutions

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<sup>140</sup> PEPPOL (2012), 'PEPPOL Business Case for Sustainability'

should therefore be tested in the B2B environment in order to demonstrate the business case for these types of use.

Another potential barrier which has been outlined includes the lack of market readiness in certain Member States, to adopt single components<sup>141</sup>. The example of France has been laid out, where companies are not ready to automate business processes. Yet another barrier is the presence of competing standards in Member States (UBL vs. UNCEFACT).

This assessment clearly points out a number of key needs and requirements towards the future:

- A number of different stakeholders are already linked to PEPPOL<sup>142</sup>. Although many can be expected to follow<sup>143</sup> some deterrents may hinder further take-up (e.g. eSignature) and in addition not all Member States have moved towards adoption of eProcurement;
- If eProcurement were to be made mandatory through legislation, there should be a clear evaluation of the solutions with a high reuse potential, such as eSignature and eDelivery. As other similar solutions have been developed by the other LSPs it should be ensured that only one solution, among the various which have the same end goal, is made available to other stakeholders for reuse;
- Testing should be expanded to B2B.

### *Service providers: needs and requirements from a demand perspective*

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Although awareness of the solutions seems to be quite high, actual take-up by users has been limited. A clear market for cross-border eProcurement has not yet been identified. The limited awareness and take-up of the cross-border eProcurement solutions is notably the result of the fact the eProcurement market is currently at stage of infancy (only 5-10% of procurement procedures are carried out electronically)<sup>144</sup> and that the cross-border procurement market is limited. Numerous complexities have been identified, explaining the slow growth of this market and in addition there are contractual, geo/physical and public policy considerations. Furthermore, insufficient training has been provided to staff on these new procurement practices. The availability of the technology alone will not ensure the creation and development of the eProcurement market. The technology must be attractive to end-users as the preferred means to conduct procurement related activities<sup>145</sup>, based on a solid understanding of the benefits that these solutions provide.

However, although the overall eProcurement market is still underdeveloped, the various technologies within the eProcurement market are at different stages of maturity. The eInvoicing technology in particular is at a higher level of maturity for both B2B and business-to-government (B2G) transactions, according to the 'PEPPOL Business Case for Sustainability' report. The potential for take-up of the cross-border eProcurement technologies will therefore depend on the state of adoption of the underlying technologies at the Member States level.

Given this context, it is unlikely that a critical mass of users will be found for cross-border eProcurement solutions. The PEPPOL project already internalised this observation by evolving from

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<sup>141</sup> PEPPOL (2012), 'PEPPOL Business Case for Sustainability'

<sup>142</sup> PEPPOL provides recent figures on usage on its websites, see: <http://www.peppol.eu/pilot-reporting/usage>

<sup>143</sup> The Commission has also recently published 'A strategy for eProcurement' to move to full eProcurement by 2016, see: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0179:FIN:EN:PDF>

<sup>144</sup> European Commission, COM 2012 179, 'A strategy for eProcurement', see: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0179:FIN:EN:PDF>

<sup>145</sup> Vaidya, Sajeev, Callender (2006), 'Critical Factors that influence eProcurement implementation success in the public sector', [http://ippa.org/jopp/download/vol6/issue-1-2/e\\_ProSympAr6\\_Vaidya\\_etal.pdf](http://ippa.org/jopp/download/vol6/issue-1-2/e_ProSympAr6_Vaidya_etal.pdf)

having a cross-border to a “cross-community” focus. The ‘PEPPOL Business Case for Sustainability’ report highlights the notion that “current trade between organisations (within and outside) national borders should be supported and fostered with technology that PEPPOL has developed.”

A critical mass of users can therefore potentially be found within intra-regional procurement activities, and in the B2B sector. PEPPOL has realised this and is now seeking to expand its target stakeholder base to the B2B sector. The cross-border eProcurement solutions could thus become the reference for private procurement, where there is currently no dominant end-to-end eProcurement solution. End-users can thus be found outside the public eProcurement community. The development of public eProcurement methods could notably have an impact on the eCommerce industry in Europe, which has already achieved a critical mass of users. The ‘PEPPOL Business Case for Sustainability’ report also stresses that 45% of euro area enterprises have adopted some form of CRM or ERP solutions, which are related to online orders and purchases, illustrating the maturity of this market.

A lack of dissemination of how the cross-border solutions can be used and for what purpose, has so far considerably hampered take-up. Additional marketing efforts therefore need to be made to highlight the real savings potential for public authorities and business potential for industry that could be achieved by using these solutions. Improved marketing should therefore focus on a clear explanation, backed by numbers, of what the real benefits of these building blocks are as well as how they can be customised and used. As a result, one of the issues that may explain the limited business maturity and end-user take-up, is the difficulty for stakeholders to calculate development costs linked to creating actual products and services based on the cross-border eProcurement solutions. The first step in attempting to improve the take-up should therefore be assessing the business challenges the pilots are currently confronted by.

Private sector stakeholders have so far been showing limited willingness to invest in these solutions as there has not been clear commitment from public authorities to take up any developed solutions and access to the solutions for B2B purposes is not currently granted. Furthermore, as emphasised by the ‘PEPPOL Business Case for Sustainability’ report, private sector stakeholders have stressed that reference implementations are out-dated and incorrect and that there is a need for more efficient coordination and management control regarding versioning systems.

However, there is no clear willingness to invest before there is a commitment from public authorities and institutions to take up these eProcurement solutions. By making the PEPPOL solutions mandatory for the public sector, through a directive, a very strong signal would be sent, that could serve as a catalyst for take-up, by private stakeholders.

In short, the assessment outlined a number of key needs and requirements for the future:

- ✒ The various technologies within the eProcurement domain have achieved different levels of maturity. This implies that take-up of the cross-border solution could differ depending on the building blocks that have been developed. Take-up could therefore be building block-specific and not be applied to cross-border eProcurement as a whole;
- ✒ There is a need to clearly demonstrate the value proposition in the take-up of these solutions by public authorities and private sector stakeholders. This should be done by providing concrete examples of the extent to which the solutions enable the reduction of procurement costs due to enhanced competition, as well as demonstrating the business cases for private sector stakeholders;
- ✒ There is a need for centralised control over versioning.

The CSP provider will have to rely, and build, on the deliverables of the PEPPOL consortium. Technical achievements, as well as challenges identified, are presented in this section.

PEPPOL seeks to join the different systems of public eProcurement that currently operate across Europe by defining standard specifications based on common pre- and post-award business processes and by providing tools for supporting interoperability with existing eProcurement platforms. PEPPOL uses its Transport Infrastructure to connect these different eProcurement systems by establishing a set of common business processes and technical standards.

The PEPPOL Transport Infrastructure provides an interoperable and secure network connecting all Access Points using the same electronic messaging protocol and formats and applying digital signature technologies to secure message content. It is set up as a federated network of Access Points that act as 'gateways' or 'bridges' between the different customers. In the future, the PEPPOL Transport Infrastructure will become eDelivery, by converging the different transport infrastructures of the LSPs. Once connected to the PEPPOL Transport Infrastructure (via a PEPPOL Access Point), public agencies and private enterprises can reach any other eProcurement community using PEPPOL. While public contracting authorities may use their own method of communication in the PEPPOL pre-award tendering processes, use of the Transport Infrastructure is mandatory for PEPPOL post-award eProcurement processes. The PEPPOL Transport Infrastructure contains two main services. The first is responsible for publishing receiving capabilities (e.g. delivery addresses, business processes and document types supported, etc.) of all organisations participating in PEPPOL. The second is a central registry that stores all information about the Access Points and the participants they support. Access Points may be provided by any organisation that agrees to the section of the PEPPOL Transport Infrastructure Agreement covering Access Point Providers, and which implements the PEPPOL business processes relevant to their service offering (for example, eOrdering and eInvoicing). Currently, the Access Points are provided by government agencies, private companies and also as value added services by eBusiness network providers.

eSignature identify companies or single persons, allowing the receiver of a document to confirm the identification of the sender (authenticity) and provide assurance that the document has not been modified in transit (integrity). The originator of the document uses an eSignature issued by the relevant certification authority. These authorities may be public or private, national, regional or domain specific. The party receiving the document needs to know who issued the eSignature in order to validate it accordingly.

Catalogues are used by economic operators (suppliers) to describe goods or services offered for sale and may be used by contracting authorities to source goods or services, or to obtain product or pricing details. They can be a component of both the tendering (pre-award) and the purchasing (post-award) processes. PEPPOL's eCatalogue component focuses on common data structures and classification schemes. While the purpose and content of pre- and post-award catalogues may be different, many structures and classification schemes can be shared. eCatalogues can be used to inform contracting authorities about goods and services supplied under a specific contract, or updates can be made available on a regular basis according to terms of contracts.

The Virtual Company Dossier (VCD) system provides a set of tools to support national or cross-border public buyers and their suppliers in the pan-European tendering phase. For eligible economic operators (suppliers), participation in public tenders requires proof of fulfilment of the qualitative selection criteria requested by the contracting authority. The burden of proof lies with the economic

operator, who must collect evidences from different (national) sources and provide them to the contracting authority. PEPPOL's vision is to provide an interoperable electronic document solution that supports the exchange of evidences across-borders. PEPPOL has developed an eAttestation tool for tendering that provides a standardised structure to submit evidence that can be used for both national and cross-border eProcurement, during the qualitative selection process.

eOrdering begins with the issue of an order by a buyer and ends with the receipt of an order response from the supplier, by electronic means. The process may include an order change or cancellation advice from the buyer and a shipping/dispatch advice from the supplier. Ordering is an important phase of the public procurement process, and has a direct connection with the catalogue and the invoice. There is a strong desire from both contracting authorities (buyers) and economic operators (suppliers) to achieve efficiency across the procurement process through automation. This requires a specific structure, ensuring the flow of information between different parts of the process, and specific models, ensuring data synchronisation. The solution allows economic operators to receive orders electronically from any public sector awarding entity in Europe, and to respond to such orders. The solutions provided by PEPPOL demonstrate that electronic orders can be exchanged and processed without manual intervention across EU borders. This lowers the cost of entering data into systems and it reduces on-going operating costs.

Electronic invoicing is the automated process of issuing, sending, receiving and processing invoice data by electronic means. eInvoicing links two important value chains, the procurement and the payment process. However, it is governed by different country-specific legislation and may be subject to processes and standards specific to regions or industries, often creating barriers to cross-border trade. PEPPOL's solution makes it possible for economic operators (suppliers) to submit cross-border electronic invoices to any contracting authority within Europe. PEPPOL enables interoperability by lowering the organisational, semantic and technical barriers. Moreover, PEPPOL provides the opportunity for contracting authorities and their suppliers reach the wider EU market, while benefiting from increased opportunities and efficiencies.

Technical barriers which have been identified relate to standards which are still divergent across Member States. Although PEPPOL uses a number of predefined standards, mapping to Member State-specific standards will still be required and might bring additional challenges. The fact that different approaches have been adopted by Member States could be an additional barrier.

Potential challenges, needs and requirements, to be taken into consideration, include:

- ✘ Business rules in companies might have higher requirements for information than what is available in the standards. For example, in case of an eInvoice, the number of fields in the standards is limited to a fixed number although specific business rules might require additional information;
- ✘ Care should be taken to properly handle different alphabets or character sets in the content provided by different Member States. If information from different sources are to be combined, a proper presentation should be guaranteed;
- ✘ The specifications of the PEPPOL Transport Infrastructure is very similar to eDelivery requirements of other LSPs and is therefore a good candidate for merging with other implementations into a common building block;
- ✘ Piloting with post-award PEPPOL components has been sufficiently developed for potential reuse and enabled for participants while pre-award components are at the early development and testing stages;

- ✘ The architecture of PEPPOL contains a number of central components and a number of decentralised components. Access Point implementations, for example, are not Member State-specific. They therefore require a centrally managed governance organisation, currently OpenPEPPOL.

Another important requirement is the need for change management. For instance, the 'PEPPOL Business Case for Sustainability'<sup>146</sup> report highlights that one of the initial reference implementations of the Transport Infrastructure were incorrect, and not communicated to the early projects. This caused considerable frustration and led some pilots to forego the projects. The lack of centralised control over versioning and status of specifications was blamed for these errors, and an Implementation Support Unit (ISU) was therefore set up to attend this issue. The report emphasises that the ISU has enabled PEPPOL to evolve from a 'silo approach', with separate teams exclusively focusing on their deliverables, to a 'process-orientated' organisation. These teams have thus been merged in order to create a single team working on the Transport Infrastructure, and a single team in charge of post-award components. This underlines out an important experience for PEPPOL that should be kept in mind for all the cross-border building blocks.

Given the current role of OpenPEPPOL, some of the key features of this organisation are further elaborated here. Membership of OpenPEPPOL is open to different types of organisations. Content providers, such as Member States and regional and local contracting authorities, are key stakeholders in OpenPEPPOL. Economic operators, as counterparts to contracting authorities, by supplying them with their procurement needs also form part of the association. Other relevant stakeholders include Service Metadata Publisher Providers, Access Points Providers, eSignature Validation Service Providers, pre-award Service Providers, and other end-users of PEPPOL solutions. It is noteworthy that OpenPEPPOL stakeholders do not only include European entities, but also international ones, such as Russian, South Korean or US entities.

The organisational structure for the OpenPEPPOL consists of different units and bodies:

- ✘ The **OpenPEPPOL General Assembly** is the supreme power of the Association and holds all the powers that are expressly reserved by law, and that are not devolved to the Managing Committee by the current Statutes, except for powers of representation. All OpenPEPPOL Members that form the General Assembly are also Members of at least one Coordinating Community;
- ✘ The **Coordinating Communities** include different working groups on, for example, the Transport Infrastructure, and the post-award or pre-award processes;
- ✘ The **OpenPEPPOL Managing Committee** acts as a board and is composed entirely of OpenPEPPOL Member representatives, including the Secretary General and one representative of each Coordinating Community, as a minimum;
- ✘ The **Secretary General** is the highest authority of the Association between General Assemblies and is elected by the General Assembly. The Secretary General promotes the purposes of the association and implements the decisions of the General Assembly and the Managing Committee;
- ✘ The **Operating Office** assists the Secretary General in executive tasks.

The OpenPEPPOL association requires its users to pay an annual subscription fee. All members enjoy the same rights within OpenPEPPOL. However, in order to determine the fee due by each

<sup>146</sup> PEPPOL (2012), 'PEPPOL Business Case for Sustainability'

member, each member subscribes to a category depending on the membership criteria on which it has joined the association. Seven categories have been defined and are enumerated in the table below (Table 66).

*Table 66 – OpenPEPPOL Membership fees*

| Type of Membership                                                                   | Annual fees |
|--------------------------------------------------------------------------------------|-------------|
| <b>End-users of PEPPOL specifications, building blocks and services (Category 1)</b> | EUR 500     |
| <b>PEPPOL Authorities (Category 2)*</b>                                              | EUR 10.000  |
| <b>Service Metadata Publisher Providers (Category 3)*</b>                            | EUR 1,000   |
| <b>Access Point Providers (Category 4)*</b>                                          | EUR 1,000   |
| <b>eSignature Validation Service Providers (Category 5)</b>                          | EUR 800     |
| <b>Pre-award Service Providers (Category 6)</b>                                      | EUR 800     |
| <b>Other organisations (Category 7)</b>                                              | EUR 500     |

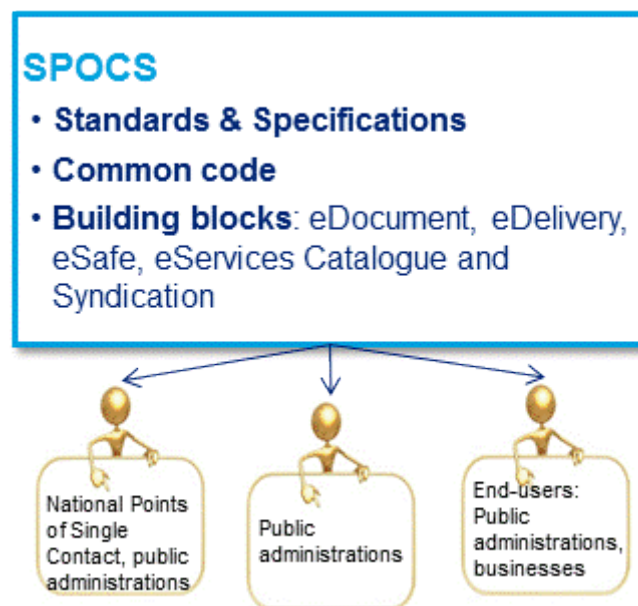
*\* Membership in OpenPEPPOL is mandatory according to PEPPOL Transport Infrastructure Agreements.*

PEPPOL has worked closely with third parties, which are other relevant stakeholders to be taken into consideration within the ecosystem, such as ETSI, CEN, UN/CEFACT and OASIS.

### 9.1.3 Electronic public services for businesses across-borders

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The following figure presents the SPOCS solutions and stakeholders.



*Figure 42 – SPOCS solutions and stakeholders*

In the cross-border eBusiness environment, National Points of Single Contact are considered as content providers. The types of administrations responsible for the Points of Single Contact differ considerably according to each Member State, which is an important factor to be taken into consideration when financing Generic Services and meeting the requirements of all the actors involved. These actors range from ministries of economy and commerce and chambers of commerce to tax authorities and administrative reform agencies. These content providers are therefore of a very diverse nature.

The CSP provider will operate the eBusiness CSP, building on the deliverables of SPOCS. The SPOCS consortium, coordinated by Capgemini, is composed of Member States, regional authorities and agencies, private companies, universities, and research centres. SPOCS has collaborated with ETSI for the definition of standards as well as W3C and ISO.

Finally, public administrations delivering online services to businesses nationally and across-borders correspond to service providers, as shown in Figure 42.

An assessment of the current legal framework is first provided, after which an analysis of the needs and requirements of each of these cross-border eID stakeholders – Content Providers, Service Providers and CSP providers.

#### **Assessment of the current legal context**

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SPOCS is the indirect result of the Services Directive 2006/123/EC, which required the implementation of national Points of Single Contact to address legal and administrative requirements in relation to the establishment or offering of covered services in other Member States. It has been followed up by secondary legislation, notably by Commission Decisions that have established Trusted Lists of Certificate Service Providers issuing qualified certificates in the Member States, and defining eSignature formats that Certificate Service Providers need to be able to accept. While these are

obviously closely linked to the eSignature Directive, formally they are tied only to the Services Directive.

The proposed Regulation on electronic identification and trust services for electronic transactions in the internal market would likely replace these eSignature-related rules (while leaving the Services Directive itself intact). It would not make substantial changes in the eSignature-related rules' content (i.e. on this specific point, the Regulation would represent coordination rather than a revision of the existing legislation).

SPOCS aims to support Member States in their implementation efforts for their own SPOCs which still face various challenges, even outside of the eSignature challenges mentioned above. From a legal perspective, a key issue is eDelivery. eDelivery relates to the challenge of exchanging eDocument between service providers and administrations (B2A), and between different administrations (A2A). To address this issue, SPOCS has generalised the VCD of PEPPOL into the so-called Omnifarious Container Format for eDocument (OCD). However, like the VCD, the OCD format has no formal status, nor is there a generic eDocument equivalence rule in the EU. This can create difficulties when the rules within a Member State require the communication of original documents, and the original documents are only issued on paper. The proposed Regulation attempts to address these points through provisions on eDocument, but will rely on secondary legislation to complete the framework. Other services pioneered by SPOCS (e.g. eSafe) similarly lack a general legal framework, but this is less problematic when those services are largely national in scope, as they can then be governed by local terms and conditions.

A second issue is that SPOCS (like other LSPs) does not benefit from any regulations on eDelivery that ensures the integrity and authenticity of electronic communications. This includes issues such as verifying the origin, destination, and timing of any communication. The proposed Regulation provides rules on electronic delivery and time stamping, which could help to resolve these issues.

### ***Content providers: needs and requirements from a supply perspective***

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The SPOCS LSP was undertaken by 15 Member States, including Austria, France, Germany, Greece, Italy, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Sweden and the United Kingdom.

Four pilots have been run under SPOCS in order to provide concrete examples as to how the developed solutions can be used. Each of the pilots has been tested by various Member States. These pilots were launched in two waves. The first one included:

- ✒ Real Estate Agent case, which was tested by Germany, Greece, Italy, and Poland;
- ✒ Travel Agent case, which was tested by Germany, Greece, and Poland.
- ✒ Master Builder Case, which was tested by Latvia and Italy.

The second wave of pilots was tested by Lithuania, Portugal and Slovenia (which joined SPOCS during the extension process). These two additional pilots are the Architect case and Tourist Entertainment Companies Case. All in all, a limited set of countries (seven Member States, specifically) was involved in the actual implementation and testing of the building blocks.

Points of Single Contact (PSCs) were established in every Member State, thereby complying with the requirements of the Service Directive. However, in the recent study on the 'The functioning and

usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward<sup>147</sup>, the availability and quality of eProcedures was assessed as lagging behind. The lack of support for cross-border acceptance of eIDs and eSignature was identified as a persistent barrier to cross-border service delivery:

- ✉ **Use of eID on the PSCs:** At the time of testing (summer 2011) only 12 portals, which accounts for 36% of portals, required eIDs from foreign users to use the online services.
  - In some countries such as Finland, France, Poland and the United Kingdom, eIDs from neither national nor foreign users are required. These countries do not have national eID systems, but rely on username/password solutions for identification. In the case of Belgium and Iceland, although eIDs are required for nationals, this is not the case for foreigners who can send scanned copies of their national passports. eIDs are also not required to make use of the DIB portal in Denmark, which relies on a username/password solution. In seven cases, eIDs are required for foreign users as well as for national users while the technical solutions for recognition of foreign eIDs are not implemented. This is the case for Hungary, Italy, Luxembourg, Malta, Norway, Sweden, and Slovenia. The implementation of STORK-based solutions could change this. However, Hungary and Malta did not take part in the STORK project, and it could be questioned whether they are likely to enable this feature.
  - A key finding from the 2012 report on the Points of Single Contact<sup>148</sup> is that countries which recognise foreign eIDs rely on the work of the STORK pilot, and that only participating Member States can be recognised and used by foreign businesses. However, the report highlights that, in some cases all the participants are not recognised, such as in the case of Portugal, which only recognises eIDs issued in Estonia and Spain.
- ✉ **Use of eSignature on the PSCs:** The study portrays a similar picture for eSignature:
  - Only 10 countries recognise official eSignature issued in other Member States. Austria, Finland, France, Ireland and the United Kingdom do not require or recognise qualified eSignature for nationals of foreign users, whereas Belgium, the Danish DK-BID portal, and Iceland adopt simpler solutions. In the case of Bulgaria, the German Points of Single Contact in the three German Länder analysed, Hungary, Italy, Luxembourg, Malta, Norway, and Sweden, qualified eSignature are required but not recognised. The use of the PEPPOL or e-CODEX eSignature solutions by these countries could change this. Germany and Italy have participated in both the pilots, whereas Sweden has participated only in PEPPOL, and Hungary and Malta only in e-CODEX.

Overall, the number of foreign eIDs and eSignature which are supported remains limited, and the reuse of building blocks developed under other LSPs will be crucial in order to enhance interoperability.

This assessment points out a number of key needs and requirements for the future:

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<sup>147</sup> European Commission, Deloitte (2012), the 'The functioning and usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward', [http://ec.europa.eu/internal\\_market/services/docs/services-dir/study\\_on\\_points/final\\_report\\_en.pdf](http://ec.europa.eu/internal_market/services/docs/services-dir/study_on_points/final_report_en.pdf), last visited on 03.05.2013

<sup>148</sup> European Commission, Deloitte (2012), the 'The functioning and usability of the Points of Single Contact under the Services Directive – State of Play and Way Forward', [http://ec.europa.eu/internal\\_market/services/docs/services-dir/study\\_on\\_points/final\\_report\\_en.pdf](http://ec.europa.eu/internal_market/services/docs/services-dir/study_on_points/final_report_en.pdf), last visited on 03.05.2013

- ✉ Given the low integration of SPOCS building blocks on existing Points of Single Contact there is a clear need to encourage take-up, also in line with Action 90 of the Digital Agenda for Europe to remove administrative burdens in accessing public services for businesses across-borders;
- ✉ In addition, if more Member States do take up building blocks to enable cross-border service provision through the Points of Single Contact their needs and requirements may result in a need to adapt the building blocks.

### ***Service Providers: needs and requirements from a demand perspective***

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The eBusiness building blocks developed under SPOCS are of a more generic nature, and therefore often have a cross domain application. As a result, the eBusiness solutions need to leverage this in order to be applied to other sectors. The solutions could, for instance, be applied to B2B communications where exchange of eDocument and eDelivery may have an obvious appeal.

Furthermore, an option for the eBusiness building blocks to achieve a critical mass of users would be for them to become the reference solutions, not only for cross-border cases but also within Member States and between regional and local Points of Single Contact.

Commercialisation and take-up, however, remain problematic. Although technical maturity is high, business maturity is relatively low albeit that some business representatives are present in the consortium.

The low market penetration can be explained by the fact that pilots were specifically limited to certain cases, and the scale has therefore remained limited. Furthermore, recruitment has proven difficult as there is need to identify companies willing to operate across-borders which will take up the developed solutions. As a consequence, volumes have remained quite low.

This assessment points out a number of key needs and requirements towards the future:

- ✉ Take-up of the building blocks has remained low and there is a need for further efforts to encourage take-up;
- ✉ Given the generic nature of the building blocks and their inherent potential for reuse across many domains the business case for reuse should be paid more attention.

### ***CSP provider: needs and requirements for achieving cross-border interoperability***

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The CSP provider will have to rely, and build, on the deliverables of the SPOCS consortium. Technical achievements, as well as challenges identified, are presented in this section.

The SPOCS solution consists of a number of building blocks that allow Member States to facilitate seamless cross-border electronic procedures for businesses through their Point of Single Contact.

A first building block is the eDocument. eDocument provide the functionality of documents containers and are thus used to package documents and ensure that they can be shared. An eDocument contains different layers to make it possible to not only include the document but also add metadata about the document and include a signature layer to authenticate the document. The technical maturity of this building block is considered as being quite high, as it has proved reliable in a closed environment. However, it is clear that further efforts are needed to increase market acceptance and take-up.

The eServices building block offers common code for the creation of a Meta Information Database (MIDB), the integration of this database with national information systems and a search module that allows foreign Points of Single Contact to search and use information from other Points of Single Contact. The MIDB contains information about information about government services, electronic services, documents, organisations and the professions for which these are relevant based on a common information model. In combination with the eServices building block, a Syndication block has been developed that allows for cross-border publication and aggregation of the information in the MIDB.

The SPOCS eDelivery building block defines an interoperability layer to interconnect secure and trustworthy eDelivery systems established in different Member States. The topology of the eDelivery building block of SPOCS is based on a Gateway model, meaning that each of the participating countries has a National Gateway towards the common SPOCS interoperability. By using these gateways, existing domestic infrastructure and protocols can still be used within each Member State since a conversion will be done by the gateway when cross-border communication would be required. For outbound communication, the gateway will convert messages to the common exchange format and sign them. For inbound communication, the gateway will convert messages to the domestic format and verify the signature.

eSafe is a final building block in support of the eServices building block. Its purpose is to support the integration of existing national eSafe solutions into the process of application requests by allowing communication between these existing eSafe solutions and a Point of Single Contact. Modules have been developed for integration at both the eSafe and the PSC side. The eSafe solution is based on the PUSH principle where the Point of Single Contact grants a service provider access to the eSafe in order to push the required documents towards the PSC.

Finally, the SPOCS Trust-Service status List (TSL) is a central component in the SPOCS infrastructure. It provides the trust relation of the service nodes and enables addressing for the SPOCS building blocks eDelivery, eServices, and eSafe.

On the technical side, the stocktaking revealed that national standards for interoperability are based on open standards and technology, but a stronger focus on global standards would increase future cross-border interoperability. Furthermore, it was concluded that there are currently interesting and relevant developments in the research and standardisation stage that could be applied to governmental syndication in the medium-term. Additionally, it was concluded that the European Interoperability Framework<sup>149</sup> (EIF, Section 7) contains important guidelines that Point of Single Contact solutions should take into account in order not to limit capabilities for future cross-border interoperability.

Organisational interoperability has been identified as one of the biggest issues because of the different processes involved. Much of the information in the Member States is managed at different levels (such as national, regional, or provincial). Care should be taken when offering this information cross-border in order to ensure clarity and correctness.

Finally, the complexity of semantics lies in finding equivalences for the documents of the various Member States. Furthermore, the initial stocktaking of the situation across the Member States

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<sup>149</sup> European Commission, 2010, European Interoperability Framework

participating in SPOCS, revealed that there needs to be a stronger focus on the use of semantic technologies to increase the very limited multilingual support (and thus interoperability).

Potential challenges, needs and requirements, to be taken into consideration, include:

- A solution offering globally unique identifiers for companies will be required to make sure they can be distinguished between different Member States;
- Care should be taken to properly handle different alphabets or character sets in the content provided by different Member States. If information from different sources would be combined, a proper presentation should be guaranteed;
- The TSL might become a bottleneck in the event of high adoption and use of the SPOCS platform. According to the SPOCS deliverables, the final version of the SPOCS platform would have a TSL solution at Member State level with a central European TSL pointing to the instances provided by the Member States.

#### 9.1.4 Electronic services for Health across-borders

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The following figure presents the epSOS solutions and stakeholders.



*Figure 43 – epSOS solutions and stakeholders*

Content providers in an eHealth ecosystem are the National Electronic Health Systems. The solutions developed under epSOS will ensure that national health systems are rendered interoperable. Consequently, Member States' Ministries of Health as well as the relevant regional health authorities and health-related agencies are key stakeholders. In certain Member States, health is a regional competency. The eHealth Network is a crucial stakeholder which needs to be taken into consideration, as it groups together numerous content providers. As a voluntary network of national authorities responsible for eHealth, the network ensures guidelines in the area of eHealth and ambitions to increase interoperability between electronic health systems. The eHealth Network is therefore a key stakeholder to be taken into consideration, particularly with regard to the governance of the cross-border solutions. The full list of members of the eHealth Network is presented in Annex 2.

The CSP provider corresponds to the entity which will operate the cross-border eHealth CSP, building on the epSOS deliverables. The epSOS consortium is composed of national and regional health authorities, as well as industrial firms who have elected a Steering Committee to represent them in

the epSOS governance bodies. This steering committee is composed of: Agfa HealthCare, Cisco, GE Healthcare, Gnomon, IBM, Indra, Microsoft, Tiani-Spirit, and IHE Europe. IHE Europe is a profiling organisation that is a form of standardisation body: this has therefore facilitated the adoption of specific standard profiles for the cross-border eHealth solutions. IHE Europe is composed of private sector players, NGOs, and other national standardisation bodies.

Finally, service providers range from hospitals, to health professionals and pharmacies.

An assessment of the current legal framework is first provided, after which an analysis of the needs and requirements of each of these cross-border eID stakeholders is undertaken – Content Providers, Service Providers and CSP provider.

### ***Assessment of the current legal framework***

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epSOS is impacted by several existing legislative measures: its use of eSignature can benefit from the provisions of the eSignature Directive, and eHealth is affected by the Patients' Rights Directive 2011/24/EU. The latter of which details the rights of European patients, including the right to access their health records, and it contains provisions to support the cross-border recognition of ePrescriptions: it mentions ePrescriptions as one of the areas in which the European Commission may adopt guidelines to support their implementation. All of these are aspects piloted by epSOS.

A further relevant input is the Professional Qualifications Directive 2005/36/EC, which sets up a system for the mutual recognition of professional titles, including those in the medical profession. This directive is critical to determine the authorisations and competences of professionals from other Member States.

Internally, epSOS has developed and executed a Framework Agreement between the participating nations, in order to set up a Trusted Domain within which specific information can be exchanged. This trusted domain provides homogeneity with respect to patient rights, data protection and security (as governed by Data Protection Directive 94/46/EC, which is under revision at this time), and creates a common governance platform.

epSOS can draw to some extent on the achievements of other LSPs, e.g. on STORK for eID, PEPPOL for eSignature, and SPOCS for eDelivery. However, it also has some specific legal issues that are not yet substantially influenced by existing LSP outputs. Therefore there is currently no adequate legal instrument for the full operational deployment of epSOS.

A first example is the validation and assurance of professional qualifications. While the Professional Qualifications Directive allows the comparison of national titles with regard to five categories of health professional, once these have been established, it does not determine how these titles should actually be established. Databases of qualifications (e.g. held and maintained by professional "orders" i.e. organisations) have no formal legal status that permits them to be accessed and relied on at the cross-border EU level. Nor does this issue appear to be resolved by the proposed Regulation: while the regulation will govern eIDs, it will not apply to attribute providers, which such database operators would be likely to be. This is a specific legal issue that needs to be resolved.

A second example is that epSOS faces stronger privacy and data protection concerns than other LSPs would do in general, due to the processing of sensitive (health-related) personal data, such as mental and sexual data, and other data. This concern implies that all stakeholders relying on epSOS (e.g. individual doctors and hospitals) need to apply stringent security requirements. These are developed within epSOS and applied through its Framework Agreement. However, in the longer run,

a more generic governance mechanism for the emerging eHealth Network may be necessary. This mechanism will also need to address the broader issue of the diverging implementations of these various EU-level directives, principally the Data Protection Directive, as this has resulted in varying formal and legal requirements for the processing of personal data, and particularly for the processing of health-related data, which enjoys additional legal protections. This issue could of course also be mitigated or even eliminated through other approaches, which is a likely explanation of why the European Commission has moved towards proposing a future regulation in this field rather than a directive. If the Data Protection Directive were to be replaced by a Data Protection Regulation, as is currently proposed, then issues relating to the currently diverging implementation on this front would be most probably eliminated.

Thirdly, several pilot implementations (including ePrescriptions) have no formal status, and would benefit from further legal backing (e.g. formalising standards through legislative references).

### *Content providers: needs and requirements from a supply perspective*

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Commitment from the Member States is key to ensure the effective supply of cross-border eHealth services.

Twenty Member States are currently taking part in the epSOS pilot. These are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovenia, Slovakia, Spain, Sweden, the Netherlands and the United Kingdom.

However, political commitment on their side has been identified as currently lacking. Early adopters of eHealth solutions have not seen beneficial results from epSOS, and they therefore tend to focus on their national solutions instead. Furthermore, some countries are currently implementing parallel solutions which could threaten the sustainability of the cross-border eHealth solutions.

This assessment clearly highlights a key need and requirement for the future:

- ✘ Political commitment on behalf of the Member States is crucial to ensure the sustainability of the developed building blocks.

### *Service providers: needs and requirements from a demand perspective*

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The epSOS pilot has tested eHealth services in the following areas:

- ✘ Patient Summary;
- ✘ Cross-border use of electronic prescription.

Furthermore, the pilot is planning to expand its work to other use cases, in the following areas:

- ✘ European Health Insurance Card (EHIC);
- ✘ 112 emergency services;
- ✘ Patient access to their data.

Looking forward, it is envisaged that the ePrescription building block will be further developed so as to give it a more contextual dimension in the future, by extending it towards 'unplanned care'. This would allow it to provide much greater information than just the prescription. Telemonitoring is also envisaged for chronic diseases. Finally, the transfer of medical image transfers (such as Information resource Management (IRM) and scanners) is also envisaged.

However, awareness and take-up of this particular solution has so far remained very limited for the cross-border eHealth solutions; it has remained at the pilot stage. The market for cross-border cases is quite limited and, as has been described for the previous eGovernment domains, the focus should also lie on regional cases. Nevertheless, cross-border examples of particular telehealth applications in the field of radiology, in particular, are well-known and (quite outside the epSOS case) commonly used.

It has been suggested that other stakeholders such as the pharmaceutical industry, medical devices industry, areas of research for clinical purposes, and the chemicals industry could, nevertheless, be interested in the take-up of patient summary record and ePrescription solutions. In the case of research for clinical purposes, the solutions proposed would enable specific stakeholders to have access to EU-wide databases in which all patients who wish to undergo clinical testing would be registered. The solutions would thus enable the matching of supply and demand for clinical testing. It has been indicated that both research entities and patients would be particularly eager to make use of such solutions. However, a thorough evaluation of the business case, and all its implications including security, privacy, and confidentiality, needs to be conducted.

As for the other domains previously described, the cross-border eHealth solutions are also very dependent on the national context, and on deployment of patient summaries and ePrescriptions at Member State level.

This assessment points out at least three key needs and requirements towards the future:

- ✚ There is potential to expand the take-up of the cross-border eHealth services base that could make use of the building blocks;
- ✚ Considerable efforts need to be made to raise awareness of the solutions;
- ✚ Impact assessments of the expanded use of these solutions are required.

### ***CSP provider: needs and requirements for achieving cross-border interoperability***

---

The CSP provider will have to rely, and build, on the deliverables of the epSOS consortium. Technical achievements, as well as challenges identified.

The basis of the epSOS technical architecture is the use of a National Contact Point (NCP) in each participating nation. Each participating country has a National Contact Point that is connected to both the epSOS communication layer and the national infrastructure. This approach allows participating countries to keep using their existing national infrastructure.

Each NCP has two responsibilities. Either it communicates with another NCP as a patient's country of origin or it communicates with another NCP as the patient's country of treatment. The epSOS architecture is based on a service-oriented paradigm. The epSOS services are passive and are implemented as Web Services. Each NCP consists of five major components, the national connector, the national interface, the portal and the portal adaptor, its core elements, and the epSOS interface:

- ✚ The National Connector: The National Connector is responsible for accessing the national infrastructure of a country. Because these connectors are the entry points towards the national infrastructures, they enforce or fulfil requirements that exist at a national level cross-border level for inbound and outbound communications respectively. Due to the differences between national infrastructures, national connectors need to be specific implementations for each Member State.

- ✘ The National Interface: The National Interface connects the national connector with the epSOS common components
- ✘ The Portal and the Portal Adapter: The portal is a Graphical User Interface (GUI) that can be used by health professionals when providing healthcare services through epSOS to their patients. Currently, two different portals are part of the epSOS common components. The portal is attached to the Portal Adapter which connects all portals with the national interface. Countries are free to develop additional portals which can be easily connected to the portal adapter.
- ✘ The Core Elements: The core elements are common components in the business layer of an NCP. These core elements consist of a number of building blocks. The six different building blocks are described below:
  - Patient Service, Order Service: The health professional sends a query for the medical data of the identified patient, and retrieves the information she/he needs. Medical data is solely accessible in the common epSOS format. The required encoding and decoding functionality is provided by the sending and receiving participating nations respectively.
  - eDispensation Service: Some operations performed on a patient's data could result in a change of the state of the available data (e.g. dispensation of an ePrescription). It is therefore mandatory that the participating nation is notified about this change, as it maintains the state of the affected object. The result of this step is a modification of the state of the affected object (which may include a data update).
  - Consent Service: The patient must give her/his consent before any of her/his data is made available to the epSOS network. The health professional's permission to access the patient's medical data is verified through the data-controlling country (with respect to the consent given in that country), the national security policy of the specific country, and through a patient privacy policy, if available. It is assumed that this step is piggybacked on each data access operation, and is implemented solely behind the capsule of the national eHealth infrastructures.
  - Taxonomy Manager and Terminology Service Access Manager to achieve semantic interoperability.
  - Auditing: User Accountability is provided through Audit Trail. The Audit Trail permits a security officer in an institution to audit activities, to assess compliance with a secure domain's policies, to detect instances of non-compliant behaviour, and to facilitate detection of improper creation, access, modification and deletion of Protected Health Information.
  - Identification Service, Authentication Services: Authentication in the epSOS system is based on the identity of the patient in his/her home country. Health professionals are identified based on their identity in their home country as well. Their authentication results in authentication information including a role attribute for permissions' purposes. Authorisation is an integral part of access control. In general, authorisation involves the process of approving (or, alternatively, disapproving) that an identified entity (person, system or process) may be granted access to specified resources. In the epSOS LSP environment, authorisation provides information for access control mechanisms, controlling the entity's access to patient health data or other sensitive data.
- ✘ The epSOS Interface: The epSOS Interface is also part of the common components and is responsible for the communication with the epSOS communication layer. It contains both an

Inbound and an Outbound Protocol Terminator in order to act as a patient's country of origin and the patient's country of treatment.

The epSOS Patient Summary is a standardised set of basic medical data that includes the most important clinical facts required to ensure safe and secure healthcare. This summarised version of the patient's medical data gives health professionals the essential information they need to provide care in the case of an unexpected or unscheduled medical situation (i.e. an emergency or an accident).

A considerable interoperability barrier which has been identified in terms of eHealth is semantics. However, it is also important to concentrate on the difficulties posed to eHealth, and pilots like epSOS, in terms of semantics.

Semantics are a predominant challenge for eHealth due to the 'exponential' nature of medical vocabularies. The solutions developed for cross-border eHealth currently cover some 10,000 medical terms.

In the context of health informatics, semantic interoperability refers to computer interpretation of data, and not to human interpretation. Clinicians already have considerable experience and expertise in reading heterogeneously documented health records, and making good use of them in most situations. Clinicians are quite good at inferring much of the necessary interpretation context when reading medical records written by others. The requirement to represent clinical meaning formally (computationally) is for clinicians challenging, and is thus still at a relatively early stage. It can seem somewhat counter-intuitive to doctors to require future documentation in an electronic health record (EHR) system to include specifying items that they consider to be obvious. The standards, tools, and applications to support comprehensive EHR documentation are only just also reaching maturity.

Taken together, (a) systems for concept representation, (b) clinical models which assemble data items and map to specific terminology subsets for each item, and (c) EHR information models that provide a higher level containment framework and provenance context, should be able to provide a relatively complete representation of the meaning of clinical information, thus permitting both computer interpretation and interoperable communication.

In practice, the combination of the different artefacts (terminology, clinical models and EHR information models) has proved problematic to achieve in the eHealth field. This is primarily because the health informatics communities (including standardisation bodies) that have developed each of these kinds of formalised information have been working in relative isolation from each other. This has resulted in a kind of self-induced and organisational form of non-interoperability.

European Commission co-financed projects such as epSOS, SemanticHealthNet and the eHealth Governance Initiative are all, in complementary ways, endeavouring to develop three areas of efforts. These include, first, the use cases to harness the clinical and wider user communities of interest; second, to define the business models for harmonising these diverse semantic assets; and, third, to deliver usable solutions for specific exemplar areas of semantic interoperability. For example, epSOS is focusing on the cross-border communication of patient summaries and prescriptions, while SemanticHealthNet is developing harmonised semantic assets for chronic heart failure and cardiovascular prevention. These kinds of initiatives are bringing the different informatics standards development organisations (SDOs) together in a collaborative environment, alongside domain experts. It is hoped that these efforts will result in future generations of standards that are better aligned.

In order to achieve a level of rich common semantic interpretation, the systems have to agree to use identical data representations and to use them consistently, or to develop inbuilt methods of interpreting each other representations (e.g., through mappings), or a mixture of the two. In either case, the meaning of the information must be represented as explicitly, formally, and as completely as possible.

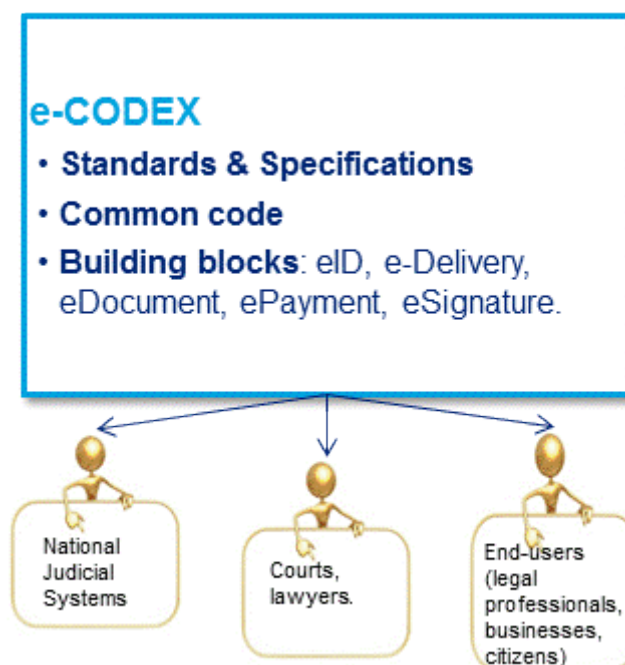
Potential challenges, needs and requirements, to be taken into consideration include:

- It should be possible to create a cross-border integration platform between authentication and authorisation systems. Without this integration, identities in a particular authentication system cannot be linked to authorisation levels in other platforms. For healthcare professionals, it will be important that their national identity is linked to authorisation levels in other systems (this will however be taken up in the STORK 2.0 LSP);
- Care should be taken to handle properly different alphabets or character sets in the content provided by different Member States. If information from different sources were to be combined, a proper presentation should be guaranteed;
- Depending on the existing National Infrastructure, a lot of work might be required to create the National Connector or might require changes to the existing infrastructure. In the case of new standards or regulations, it should be easy to modify existing connectors;
- Finally, change management and backward compatibility dimensions need to be integrated into the organisation of the electronic services for eHealth.

### 9.1.5 Electronic services for Justice across-borders

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The following figure presents the e-CODEX solutions and stakeholders.



*Figure 44 – e-CODEX solutions and stakeholders*

As e-CODEX solutions interlink national judicial systems, National Judicial Systems are Content Providers in the cross-border eJustice ecosystem.

The CSP provider will operate the cross-border eJustice CSP, building on the deliverables of e-CODEX.

Service Providers, in an eJustice context, correspond to courts, lawyers and other legal professionals. These stakeholders should be taken into consideration in the management of cross-border eJustice solutions. Other stakeholders could also be represented. Judges, for instance, could be represented through the Association of European Administrative Judges (AEAJ), the European Judges and Prosecutors Association (EJPA), the International Association of Judges, and the European Judges for Democracy and Liberty. Judges are of considerable importance for the sustainability of the eJustice solutions as they are end-users of the solutions. Public prosecutors could also be potential end-users and should thus be represented as stakeholders. The Network of European Prosecutors-General could ensure this role. Bailiffs could be other potential stakeholders which should be represented, notably through the International Union of Judicial Officers. The European Law Institute, which is a NGO, composed of scholars, practitioners and judges from the EU could also play a considerable role in promoting the solutions developed.

Other stakeholders which are relevant to consider in this environment are judicial networks, such as the European Judicial Network with regard to civil and commercial matters, which brings together national authorities responsible for assisting local courts.

Finally, the European Network of Councils for the Judiciary, which unites national institutions in Member States that are independent of the executive and legislature, and which are responsible for the support of the judiciaries in the independent delivery of Justice, could be another relevant stakeholder to take into consideration. These entities could play a considerable role in promoting the eJustice solutions within the eJustice ecosystem, and are therefore relevant stakeholders to be taken into consideration.

An assessment of the current legal framework is first provided, after which an analysis of the needs and requirements of each of these cross-border eID stakeholders is undertaken – Content Providers, Service Providers, and CSP provider.

### **Assessment of the current legal context**

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As the most recent LSP, e-CODEX can benefit from the provisions of the eSignature Directive and the Professional Qualifications Directive in the same way as described for the epSOS LSP. e-CODEX will implement five use cases, based on corresponding EU-level legislation:

For the purpose of the pilots, five procedures have been identified as use cases:

- ✘ The European Payment Order (EPO), based on Regulation No 1896/2006;
- ✘ Small claims, based on Regulation No 861/2007;
- ✘ Secure cross-border exchange of sensitive judicial data, based on Council Decision 2005/671/JHA;
- ✘ The European Arrest Warrant (EAW), based on Council Framework Decision 2002/584/JHA;
- ✘ The mutual recognition of financial penalties, based on Framework Decision 2005/214/JHA.

Specific challenges have been identified, which are largely comparable to those of epSOS:

- ✘ the concrete implementation of mutual recognition of professional qualifications;
- ✘ the need for a stable governance mechanism for each of the developed services;
- ✘ formalisation of standards and semantic agreements;

- ✘ clear responsibility and/or liability for each national contact point in the network of each service;
- ✘ privacy and/or data protection compliance and security assurances, taking into account the sensitive nature of the data involved.

Furthermore, courts in Member States are currently responsible for deciding which digital signatures are acceptable. This implies high legal uncertainty as to which eSignature are in fact acceptable. This could become very problematic if the e-CODEX solutions were to be applied in the case of high value financial transactions.

### ***Content Providers: needs and requirements from a supply perspective***

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Buy-in from Member States is crucial for the sustainability of the cross-border eJustice solutions. It could become a significant problem if Member States were to decide on the use of different solutions. The e-CODEX project is therefore highly dependent on Member States implementing the developed solutions, as current development and deployment resides in trust and good cooperation. The fourteen countries involved at the present time can be expected to take up the e-CODEX solutions.

A major barrier on the supply side is the limited usage of eSignature at Member State level. The absence of certificates delivered by Member States, when they are required for eSignature, is therefore a considerable barrier.

This assessment points out a number of key needs and requirements towards the future:

- ✘ Fourteen Member States are involved in the e-CODEX LSP, and piloting has not yet started. Therefore, considerable efforts are needed in order to ensure integration of the eJustice building blocks into national eJustice systems;
- ✘ The use of eSignature is key in the area of eJustice and lack of eSignature may pose a barrier to take-up.

### ***Service Providers: needs and requirements from a demand perspective***

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The piloting phase began as of 2013. It is therefore too early in the course of the LSP to evaluate needs and requirements in terms of Service Providers, and therefore demand. However, the following five pilots are foreseen:

- ✘ European Payment Order (EPO);
- ✘ Small claims (SC);
- ✘ Secure cross-border exchange of sensitive judicial data;
- ✘ Mutual recognition of financial penalties;
- ✘ European Arrest Warrant (EAW).

Other potential pilots have been mentioned in the medium-term. These are:

- ✘ The interconnection of insolvency registries and business registries;
- ✘ "Find a lawyer";
- ✘ European Case Law identifier services.

### ***CSP provider: needs and requirements for achieving cross-border interoperability***

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The CSP provider will have to rely, and build, on the deliverables of the e-CODEX consortium. The e-CODEX consortium is currently composed of 14 Member States' Ministries of Justice (Austria,

Belgium, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Malta, the Netherlands, Portugal, Romania and Spain) and two associations from the legal profession.

The two associations are:

- Council of the Notariats of the European Union; This organisation represents the notaries of all the EU Member States in which this profession exists: they number 21. Represented Member States include Austria, Belgium, Bulgaria, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, and Spain (and Croatia which has an observing member status).
- Council of Bars and Law Societies of Europe (CCBE). The CCBE is a non-profit association which liaises between the EU and Member States' national bars and law societies on issues relating to the law profession.

Third parties are other relevant stakeholders in the eJustice ecosystem which participate in order to ensure standards that maximise take-up. e-CODEX has also been in contact with a number of standardisation bodies. These include:

- OASIS;
- ETSI;
- European Network of Councils for the Judiciary (ENCJ);
- HUHJ.

The achievements of the e-CODEX consortium as well as challenges identified are presented in this section.

e-CODEX will develop building blocks that can be used in or between Member States to support cross-border operation of processes in the justice field.

The eDelivery component is at the centre of the e-CODEX project and is responsible for transporting information securely between the Member States. The system includes the gateways for every participating country and a basic framework for the national connector. The connector will then be customised by every participant to fit its needs.

The eSignature component will be part of the national connector and will help to sign documents and generate the "trust-ok token". It will also check the validity of incoming signed documents, and thus help to keep the cross-border transmission of documents secure.

The ePayment building block will help to support the national e-Payment solutions in each participating Member State. Through detailed information on the eJustice Portal participants will be able to pay the corresponding court fees easily in the Member State where they wish to file their case.

In the future it will be possible for EU citizens and professionals to access the eJustice portal by authenticating themselves through the use of their national ID cards. A role authentication system for lawyers called "Find a lawyer 2" is being considered for connection to e-CODEX sometime in the future as the system is still under development.

The eDocument building block deals with document conversion and semantics. Documents need to be converted to conform to national standards. The document conversion is done through the use of schemas and mapping. The XML data accompanying the documents will be automatically converted to fit the national case management system. This conversion will again take place to transform data to

the EU standard. This makes it possible for national systems to stay independent and still participate in the cross-border exchange of data. All of this will also take place in the national connector.

The piloting phase for the eJustice applications will begin as of 2013, so it may be premature to evaluate technical barriers at this stage. Indeed, technical maturity of the e-CODEX solutions are not yet at the same maturity level as the solutions developed under other LSPs. However, it has been pointed out that the use of eID presents high technological barriers.

e-CODEX cross-border eJustice services are based on a decentralised approach consisting of four items:

- ✘ eDelivery platform;
- ✘ e-CODEX Gateway;
- ✘ National Connector;
- ✘ National System.

This approach makes it easier to integrate existing national solutions into a new cross-border eJustice service.

The national connector is responsible for all semantic mapping. It guarantees the ability of the national systems to communicate with the e-CODEX gateway. This is usually linked to a national system which is in turn used by the courts. The e-CODEX Gateway establishes a secure and standardised connection with any other gateway on either the national or portal side.

Every communication will flow through the national system, the national connector, the e-CODEX Gateway, to the foreign countries' e-CODEX Gateway, their national connector and their national system. The eJustice Portal will probably be the only one to communicate directly with the gateway without a connector, since it has no necessity to transform documents to a national standard. In order to make use of the cross-border eJustice platform, specific applications or the eJustice portal can be used. Authentication, signing and validation of content will always be the responsibility of the Member State of origin.

Other potential challenges which need to be taken into consideration include:

- ✘ Semantics in the field of eJustice can be classified as "normal barriers";
- ✘ No pilots have been done so far, so it is difficult to compare the results of e-CODEX with the results of other LSPs;
- ✘ Care should be taken when integrating the national infrastructure with the e-CODEX components. Member State-specific standards will still be required and might bring additional challenges;
- ✘ Similar to the epSOS project, a role based authorisation system will be required as part of the e-CODEX solution. As much reusability of building blocks as possible should be encouraged, while still offering the required functionality for each domain;

Care should be taken to properly handle different alphabets or character sets in the content provided by different Member States. If information from different sources were to be combined, a proper presentation should be guaranteed.

## Annex C – Elaboration of Drivers and Options

This annex contains an elaboration of the drivers and options, supplementing the part on drivers and options that is contained in the main text.

### Governance – Drivers and Options

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As stated in section 2.3, governance refers to the control and steering of the DSI, including the strategic governance and coordination and stakeholders' interest and management, i.e. the decision-making and the execution of the decisions. It is important to note that the governance of the DSI takes as exogenous the developments of legal aspects and regulation, governance of the DSI operates within an evolving legal context but does not itself determine the legal framework. Governance is directly concerned with the decision making at strategic and operational level concerning the deployment of the DSI and thereby the strategic overall management.

Decision-making in terms of process and the stakeholders involved will greatly affect the success of trying to achieve sustainability as it will influence how well the objectives are achieved. For example, if important stakeholders are not a part of the decision-making process or are not at least consulted, then their needs and requirements may not be sufficiently taken into account. This in turn will have an impact on buy-in and the take-up by these stakeholders directly affecting the objective of the DSI and its sustainability over time.

With regards to decision-making, the following stakeholders are potential candidates to be involved in the governance of the DSI for the provision of cross-border public services:

- ✘ The European Union (represented by the European Commission);
- ✘ The Member States;
- ✘ The private sector;
- ✘ Third parties (e.g. standardisation bodies).

Each of these stakeholders can potentially be involved with the governance, at the following levels:

- ✘ Decides;
- ✘ Co-decides;
- ✘ Advises or is consulted.

Each of the levels of involvement in decision-making is not, however, equally relevant to the creation and first selections of the basic scenarios. In fact, whether a scenario allows for decision or co-decision (or both), and which stakeholders can be involved, is clearly important and has a significant impact on the scenario. It will vary from one scenario to another. For this reason, deciding and co-deciding are **drivers** for the scenarios.

In any scenario it is possible to consult stakeholders that are not involved directly in the decision-making process, making advising and consulting an **option**<sup>150</sup>.

Given the very high importance of governance and the stakeholders' involvement in it, the advantages and disadvantages of different levels of involvement according to each stakeholder should be taken into account (as they are in the next sections).

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<sup>150</sup> Of course in some legal entities it can be defined as an obligatory part of the decision-making process. However, in these cases, there is no obligation to take the results of the consultation into account (otherwise it would mean co-decision).

However, given the different levels of involvement, whether as a part of the decision-making or just through consultation, there is also the possibility of some stakeholders not being involved at all? As this may have advantages and/or disadvantages associated with it, the possibility of a stakeholder not being involved at all is also included as a possibility.

The five tables in the next section (Table 67 to Table 71) focus on three main aspects vis-à-vis governance, first, ensure a focus on the interoperability aspect or rather ensuring cross-border services, which is linked to the sustainability as the fundamental point of the CSPs is to provide cross-border services, making the cross-border services aspect the most fundamental aspect of sustainability.

Second and third are supply and demand, which are important aspects as they are linked to take-up. Take-up consists of demand for the services and a supply that meets that demand (interoperability, supply and demand are key drivers as laid out in Figure 11 and the accompanying explanation on page 18).

The other objectives are also taken into account, as stakeholder engagement and flexibility are intrinsically linked to governance. Stakeholder engagement forms part of the tables. The tables essentially show which stakeholder should be involved and to which extent. Generally, the issues of supply and demand are treated in each individual table.

The flexibility aspect is covered by the scenarios themselves and also according to which organisational structure is chosen for the governance. The notion of organisational structure is an option that will be discussed more in depth in a later section.

## The European Union's involvement in governance

The main, potential advantages and disadvantages of the different levels of involvement of the European Union (most likely through the European Commission) in the governance of the DSI for the provision of cross-border public services vis-à-vis cross-border public services are presented in Table 67, below.

*Table 67 – Advantages and disadvantages of the different possible levels of EU involvement in governance*

| EU level of involvement | Advantages                                                                                                                                                                                                                                                                                                                                                    | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Decides</b>          | <p>Cross-border public services are ensured as the EU is the only decision-maker and will therefore be able to guarantee a focus on this area.</p> <p>The supply aspect of governance will be guaranteed as the EU will be focused on ensuring the availability of the Digital Service Infrastructures for the provision of cross-border public services.</p> | <p>An in-depth understanding of the public and private sector-related demand aspects in terms of governance may be lacking, as the EU will (most likely) not provide services directly to the end-users or be in direct contact with them. This could result in a limited understanding of end-users' needs and demands. However, this disadvantage may be alleviated by the other stakeholders if they are consulted and their advice is</p> |

| EU level of involvement       | Advantages                                                                                                                                                                                                                                                                                                                                                    | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               |                                                                                                                                                                                                                                                                                                                                                               | taken into account.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Co-decides</b>             | <p>Cross-border public services are ensured as the EU is one of the decision makers and will therefore be able to ensure a focus on this area.</p> <p>The supply aspect of governance will be guaranteed as the EU will be focused on ensuring the availability of the Digital Service Infrastructures for the provision of cross-border public services.</p> | <p>An in-depth understanding of the public and private sector-related demand aspects in terms of governance may be lacking, as the EU will (most likely) not provide services directly to the end-users or be in direct contact with them. This could result in a limited understanding of end-users' needs and demands. However, this disadvantage may be alleviated by the other stakeholder(s) involved in the decision-making.</p> |
| <b>Advises/<br/>consulted</b> |                                                                                                                                                                                                                                                                                                                                                               | <p>A larger and long-term focus on the delivery of cross-border public services may not be ensured in terms of governance, as the EU is only consulted and not an active participant in the decision-making process. The EU can however influence the decision-making process, but is not able to control the final decision.</p>                                                                                                      |
| <b>Not involved</b>           |                                                                                                                                                                                                                                                                                                                                                               | <p>A larger and long-term focus on the delivery of cross-border public services may not be ensured in terms of governance, as the EU is not involved at all and most other stakeholders are likely to focus on their specific needs. Since there is no involvement from the EU at all, it would not even be able to influence the decision process.</p>                                                                                |

Due to the risk of lack of focus on cross-border public services, the levels of involvement 'advises/consulted' and 'not involved' are not realistic options as levels of involvement. Furthermore, the key purpose of the DSI for the provision of cross-border public services is to provide cross-border services. Since the EU coordinates cross-border aspects of the Internal Market, it should be part of the decision-making process. This would result in the following realistic options:

- The EU is the sole decision maker in the governance;

- ✒ The EU is a co-decision-maker in the governance.

## The Member States' involvement in governance

The main, potential advantages and disadvantages of the different levels of involvement of the Member States in the governance of the DSI for the provision of cross-border public services vis-à-vis cross-border public services in terms of supply and demand are presented in Table 68, below.

*Table 68 – Advantages and disadvantages of the different possible levels of Member State involvement in governance*

| Member State level of involvement | Advantages                                                                                                                                                                                                                                                                                                                        | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Decides</b>                    | <p>The supply aspect of governance will be ensured as the Member States will be focused on ensuring the availability of the DSI for the provision of cross-border public services.</p> <p>The public sector-related demand aspect will be covered as the Member States should be aware of what their end-users need and want.</p> | <p>A focus on interoperability across-borders may not be guaranteed as the Member States may focus on Member State-specific needs and requirements instead of the larger and more long-term picture (as seen in the lessons learnt from Galileo). However, given that the overall purpose of the DSI for the provision of cross-border public services is to ensure interoperability, this may be a limited risk. Furthermore, the risk will be limited if e.g., the EU and/or third parties like standardisation organisations are consulted and their advice is taken into account.</p> <p>The private sector-related demand aspect may not be covered as the Member States may not know the private sector needs. However, this disadvantage may be alleviated by the private sector if it is consulted and its advice is taken into account.</p> |
| <b>Co-decides</b>                 | <p>The supply aspect of governance will be ensured as the Member States will be focused on ensuring the availability of the DSI for the provision of cross-border public services.</p> <p>The public sector related-demand aspect will be covered as the Member States should know what</p>                                       | <p>A focus on interoperability across-borders may not be guaranteed as the Member States may focus on Member State-specific needs and requirements instead of the larger and more long-term picture (as seen in the lessons learnt from Galileo). However, given that the overall purpose of the DSI for the provision of cross-border public</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Member State level of involvement | Advantages                                                                            | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | their end-users need and want.                                                        | <p>services is to ensure interoperability, this may be a limited risk. Furthermore, the risk will be limited if e.g., the EU and/or third parties like standardisation organisations are consulted and their advice is taken into account.</p> <p>The private sector related-demand aspect may not be covered as the Member States may not be aware of the private sector needs unless the private sector is a co-decision maker or is consulted and its views taken into account.</p> |
| <b>Advises/consulted</b>          | Member States are able to influence the awareness of public sector demand and supply. | <p>A focus on public sector demand may not be ensured in the governance mechanism, as the Member States are only consulted and are not active participants in the decision-making.</p> <p>However, public sector demand advice might be taken into account in which case the risk is reduced.</p> <p>Interoperability might be negatively influenced through advice with a focus on Member State-specific needs and requirements.</p>                                                  |
| <b>Not involved</b>               |                                                                                       | A focus on public sector demand may not be ensured in the governance mechanism as the Member States are not at all involved.                                                                                                                                                                                                                                                                                                                                                           |

Due to the risk of a lack of focus on public sector demand, the 'not involved' level of involvement is not a realistic option as a level of engagement. However, due to the risks of a lack of focus on interoperability, and private sector demand, complete decision-making only on the part of the Member States is not realistic either. Therefore, the most realistic options are considered:

- ☑ The Member States as co-decision-makers in the governance;
- ☑ The Member States advising/being consulted in the governance.

### The private sector's involvement in governance

The main, potential advantages and disadvantages of the different levels of involvement of the private sector in the governance of the DSI for the provision of cross-border public services vis-à-vis cross-border public services, including supply and demand, are presented in Table 69.

*Table 69 – Advantages and disadvantages of the different potential levels of private sector involvement in governance*

| Private sector level of involvement | Advantages                                                                                                                     | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Decides</b>                      | The private sector-related demand aspect will be covered as the private sector should know what its end-users need and want.   | <p>A focus on interoperability may not be ensured as the private sector may not think of the larger and more long-term picture. However, given that interoperability across-borders enables the private sector to address a bigger market (and this is the overall purpose of the DSI for the provision of cross-border public services), this may be a limited risk. Furthermore, the risk will be limited if e.g., the EU and/or third parties like standardisation organisations are consulted and their advice is taken into account.</p> <p>The supply aspect may only be ensured for the private sector end-users.</p> <p>The public sector-related demand aspect may not be covered as the private sector may not be aware of the public sector needs. However, this disadvantage may be alleviated by the presence of the Member States if they are consulted and their advice is taken into account.</p> |
| <b>Co-decides</b>                   | The private sector-related demand aspect will be covered, as the Member States should know what their end-users need and want. | A focus on interoperability may not be ensured, as the Member States may not think of the larger and more long-term picture. However, given that the overall purpose of the DSI for the provision of cross-border public services is to ensure interoperability, and third parties like standardisation organisations might have a partial focus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Private sector level of involvement | Advantages                                                                                                                                                                                                    | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     |                                                                                                                                                                                                               | <p>on interoperability, this may be a limited risk.</p> <p>The supply aspect may only be ensured for private sector end-users.</p> <p>The public sector-related demand aspect may not be covered as the private sector may not be aware of the public sector needs. However, this disadvantage may be alleviated by the presence of the Member States if they are consulted and their advice is taken into account.</p> |
| <b>Advises/consulted</b>            | <p>Private sector is able to advise or be consulted based on their demands. Depending on the domain, this could be sufficient since private sector adoption will be the target of the other stakeholders.</p> | <p>A focus on private sector demand may not be ensured in the governance mechanism as the private sector is only consulted and is not an active participant in the decision-making. However, advice on private sector demand might be taken into account, in which case the risk is reduced.</p>                                                                                                                        |
| <b>Not involved</b>                 |                                                                                                                                                                                                               | <p>A focus on private sector demand may not be ensured in the governance mechanism as the private sector is not at all involved.</p>                                                                                                                                                                                                                                                                                    |

Due to the risk of lack of focus on private sector demand, the 'not involved' level of involvement is not a realistic option as a level of engagement. However, due to the risks of a lack of focus on interoperability and public sector demand, and the potential supply issue, complete decision-making on the part of the private sector is not realistic. Therefore, the most realistic options are:

- The private sector as co-decision-makers in the governance;
- The private sector advising/being consulted in the governance.

### Third parties' involvement in governance

The main, potential advantages and disadvantages of the different levels of involvement of the third parties in the governance of the DSI for the provision of cross-border public services vis-à-vis cross-border public services, including supply and demand, are presented in Table 70.

*Table 70 – Advantages and disadvantages of the different potential levels of third party involvement in governance*

| Third party level of involvement | Advantages                                                                                                                                                                                                                                                                                                                  | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Decides</b>                   | <p>Some (limited) focus may be given to interoperability through a focus on standards e.g., by standardisation organisations.</p> <p>The supply aspect of governance will be guaranteed as the third parties will be focused on ensuring the availability of the DSI for the provision of cross-border public services.</p> | <p>An in-depth understanding of the public and private sector-related demand aspects in the governance may be lacking as the third parties will most likely not be providing services directly to the end-users and will not likely be in direct contact with them. They may therefore not understand their needs and demands. However, this disadvantage may be alleviated by the other stakeholders if they are consulted and their advice is taken into account.</p>          |
| <b>Co-decides</b>                | <p>Some (limited) focus may be given to interoperability through a focus on standards e.g., standardisation organisations.</p> <p>The supply aspect of governance will be guaranteed as the third parties will be focused on ensuring the availability of the DSI for the provision of cross-border public services.</p>    | <p>An in-depth understanding of the public and private sector-related demand aspects in the governance may be lacking as the third parties will most likely not be providing services directly to the end-users and will not likely be in direct contact with them. They may therefore not understand their needs and demands. However, this disadvantage may be alleviated by the other stakeholders involved in the decision-making process.</p>                               |
| <b>Advises/consulted</b>         | <p>Third parties are able to provide useful advice on how to improve interoperability while still acting as an independent body in the governance process.</p>                                                                                                                                                              | <p>A larger and long-term focus on interoperability through standards may not be ensured in the governance mechanism as the third parties, like standardisation organisations, are only consulted and are not active participants in the decision-making. However, interoperability advice might still be taken into account and, if the EU is involved, it will have a focus on interoperability.</p> <p>An in-depth understanding of the public and private sector-related</p> |

| Third party level of involvement | Advantages | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |            | demand aspects in the governance mechanism may be lacking as the third parties will most likely not be providing services directly to end-users and will not likely be in direct contact with them. Therefore, the third parties may not understand the end-users' needs and therefore demands. However, this disadvantage may be alleviated by the other stakeholders involved in the decision-making process.                                                                                                                                                                                                                                                                                                                                                                                             |
| Not involved                     |            | <p>A larger and long-term focus on interoperability through standards may not be ensured in the governance mechanism, as the EU is not involved at all and most other stakeholders are likely to focus on their own specific needs. However, if the EU is involved, it will have a focus on interoperability.</p> <p>An in-depth understanding of the public and private sector-related demand aspects in the governance mechanism may be lacking as the third parties will most likely not be providing services directly to end-users and will not likely be in direct contact with them. Therefore, the third parties may not understand the end-users' needs and therefore demands. However, this disadvantage may be alleviated by the other stakeholders involved in the decision-making process.</p> |

In order to ensure that part of the interoperability focus is on based on standards, 'not involved' is not a realistic option for the level of engagement of third parties like standardisation organisations. However, due to the risk of a lack of focus on interoperability and demand, complete decision-making on the part of third parties is not realistic. Therefore, the most realistic options are:

- The third parties as co-decision-makers in the governance;
- The third parties advising/being consulted in the governance.

## Realistic levels of involvement of stakeholders

Based on the analysis of the long list of possible levels of involvement of the stakeholders in the governance mechanism, the realistic levels of involvement for each type of stakeholder is presented in Table 71 below.

*Table 71 – Conclusions on levels of involvement in governance*

| Level of involvement:    | European Union | Member States | Private sector | Third parties |
|--------------------------|----------------|---------------|----------------|---------------|
| <b>Decides</b>           | X              |               |                |               |
| <b>Co-decides</b>        | X              | X             | X              | (X)           |
| <b>Advises/consulted</b> |                | X             | X              | X             |
| <b>Not involved</b>      |                |               |                |               |

It is clear from the table that the EU should ideally be a decision-maker in the governance mechanism either alone or co-deciding with one or more other stakeholder groups. The main reason for this involvement in the governance is that the EU will be the stakeholder that is most focused on cross-border public services and interoperability. Interoperability is clearly a fundamental prerequisite for the DSI for the provision of cross-border public services. Furthermore, the EU coordinates the cross-border aspects of the Internal Market and should therefore ideally be a direct part of the governance. However, as previously mentioned, the EU can also be involved either in its de facto role as a regulator or in a closer way through a Supervisory Authority.

Member States, the private sector and third parties should, on the other hand, not be sole decision-makers as this may lead either or both to a lack of focus on the different aspects of the demand side and a lack of focus on interoperability across-borders.

Nevertheless, all three stakeholder groups can be co-deciders. This could be an interesting option as their needs (on the demand side) would be met, and their perspectives would have to be taken into account. However, a prerequisite for this approach is, of course, that they are willing to or interested in being a co-decider in the governance mechanism. For example, for the private sector, this may only be the case if they can see a clear business case from the beginning; otherwise they will not invest time in participating in the governance. Should there not be a clear business case, or should possible conflicts of interest arise that could make it less ideal to have all three stakeholder groups involved as co-deciders, they can also all three be involved to the level of providing advice/being consulted.

In the event of stakeholders providing advice/being consulted, there is of course no obligation to take the advice that the stakeholders provide into account. This can be a weakness in terms of some stakeholders being ignored, but can be a strength if the wishes of that stakeholder are in conflict with the overall goal of the DSI for the provision of cross-border public services.

It should, however, be noted that decision-making on the part of third parties is not realistic, nor ideal, as the term of third parties mainly refers to recognised standardisation organisations as well as other bodies working with standards (such as e.g. OASIS). Co-decision on the part of these organisations is

not realistic, because it is not their field of expertise: their involvement should primarily be to be consulted on standards and specifications.

The tables above and the conclusions linked to them clearly show the critical importance of decision-making and co-decision-making processes as drivers for governance and for the basic scenarios as a whole. However, in addition to decision-making as a driver (and the need for consideration of the consultation option), there are also a number of options to consider.

## Drivers and Options

In addition to the drivers and options explained above, there are a number of other options which can differ within a particular scenario (but which do not alter the scenario fundamentally). All the major options will be explored further in the elaboration of the scenarios (chapter 6.2) of this report and in the assessment.

However, an example of such an option could be the organisational structure for the governance whether, for example, this is handled through one or more committees or whether there is an executive board.

Table 72 presents the relevant drivers and options explored in this part of the study.

*Table 72 – Governance drivers and options*

| GOFA Element: | Drivers:                                                                                                      | Options:                                                                                                                                                                                      |
|---------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Governance    | 1. <b>Decision-making</b> - One stakeholder <b>deciding vs.</b> two or more stakeholders <b>co-deciding</b> . | 1. <b>Consultation of other stakeholders</b> (it is always possible to consult stakeholders that are not involved in the decision-making).<br>2. Organisational structure for the governance. |

## Operations – Drivers and Options

Operations relates to the day-to-day operations of the DSI for the provision of cross-border public services. Who runs the operations relates to who is governing or making the decisions with regard to how things are managed operationally. Given this, the three possibilities relating to operations are:

- ☑ In-house (by the stakeholder(s) leading the governance);
- ☑ Outsourcing;
- ☑ Licensing.

Although this is of course a very important decision that needs to be made, all three are **options**. In any given scenario, the decision-making or governing stakeholder can do the operations in-house, can outsource them or license them out. While these are, of course at very different costs and may have further implications, they are all potential possibilities and thus are all **options**.

Another **option** is the choice of method for operating, a sub-option of the previous option. For example, there are typically options like the following seven:

- ☑ **Buy-Build-Operate (BBO)**: Transfer of a public asset to a private partner under agreement that the assets are to be improved and operated for a specified period;

- **Build-Own-Operate (BOO):** The private partner finances, builds, owns and operates a facility or service in perpetuity under public constraints stated in the original agreement and through on-going regulatory authority;
- **Build-Own-Operate-Transfer (BOOT):** A private partner finances, designs, builds and operates a facility for a specified period charging user fees. At the end of the agreement, ownership is transferred back to the public sector;
- **Build-Lease-Operate-Transfer (BLOT):** A private partner finances, designs, builds and operates a facility for a specified period charging user fees in return for payment of a rent or fee to the public sector;
- **Operation and Maintenance Contract (O & M):** A private partner operates a publicly owned asset for a specified term under a contract, and the ownership of the asset remains with the public sector;
- **Design-Build (DB):** A private partner designs and builds a facility meeting public sector performance specifications, often for a fixed price, on a turn-key basis, so the risk of cost overruns is transferred to the private sector;
- **Operation License:** A private operator receives a license or rights to operate a public service, usually for a specified term.

As operations as a whole is an option (as shown in Table 73), rather than a driver, it is not a differentiating aspect to be taken into account in the creation and first assessments of the scenarios. It will therefore only be explored in detail after the selection of scenarios has been made.

*Table 73 – Operations drivers and options*

| GOFA Element: | Drivers: | Options:                                                                                                                                                                      |
|---------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operations    |          | <ol style="list-style-type: none"> <li>1. Operations can be done <b>in-house, outsourced</b> or <b>licensed</b>.</li> <li>2. Method for operating (BBO, BOO, etc.)</li> </ol> |

## **Financing – Drivers and Options**

Financing can be divided into two main aspects:

- Financing sources;
- Financing schemes.

Financing sources relates to where the funds needed to run the DSI for the provision of cross-border public services come from. Funding could come from the following stakeholders:

- The European Union (most probably represented by the European Commission);
- The Member States
- The private sector.

However, the likelihood of third parties being willing and/or able to pay for the DSI is not very high. The private sector will only be interested in providing funding if there is something in it for them, typically profit or competitive advantage of some kind. A profit requires revenue, which is where the financing schemes become relevant. There are a number of different potential financing schemes such as:

- ☒ Pay-per-use;
- ☒ Monthly subscription fees;
- ☒ Membership fees;
- ☒ Charging service providers;
- ☒ Revenue from related services (indirect financing);
- ☒ Advertising (indirect financing).

However, these six financing schemes are potential ways of ‘collecting’ revenue, and are therefore options. The more fundamental question is whether there is a potential for revenue or not and whether a specific scenario either legally or practically allows revenue to be gathered. This is a very important aspect of financing.

Revenue, of course, is important for the private sector in terms of covering its costs and making a profit. For the public sector, revenue is crucial in order to offset its costs. In either of these cases, the reliance on public sector funding is minimised, which is also an important objective and success criterion.

Therefore, logically, the driver would be whether or not a scenario allows for revenue to be generated, as some entities may not be allowed to gather revenue (even not just to offset costs). However, **being allowed to generate revenue or not is not a driver** because any entity can choose the ‘operations’ option related to **licensing**, which changes matters. Traditional licensing would mean that the licensor receives some sort of revenue from the licensee, and the licensor then sells the product or related services on to its customers.

Another possibility would be for the licensor to allow the licensee to sell services linked to the CSPs. For example, the private sector could make profits through selling services. In return for being allowed to do this, rather than paying the licensor, the licensee would then provide the service for free back to the licensor. An example of this could be: A company is the licensee, the company sells CSP-linked services to the private sector but, instead of paying the EU, it provides the services for free to the European Commission and the Member States. In this example the entity responsible for the CSPs does not have to generate revenue, and can still minimise public sector funding, which ultimately makes the DSI more sustainable. However, the minimisation of public sector expenditure is of course limited to the operations aspect, not the governance (unless that is licensed out too).

Therefore, minimising public sector funding is not a driver. Yet it is intrinsically linked to the operations option that is chosen for a specific entity. It is also overall an option. In other words, depending on the ability or the right of the legal entity involved in a scenario to generate revenue (or not), reducing public funding can be done or not done by choosing to either license out the operations or not do so.

It should of course be mentioned that licensing out the CSPs is not realistic unless there is a potential for the licensee generating revenue. Private sector companies are not likely to want to govern (or run) a Core Service Platform or building block if they cannot generate revenue (and potentially a profit). However, the ability of any CSP in itself to generate revenue is not linked to the scenarios, but to the CSP itself. This fact is also clear from Table 74, which shows the drivers and options for financing.

Table 74 – Financing drivers and options

| GOFA Element: | Drivers: | Options:                                                                                                                                                                                                                                                                                                                               |
|---------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Financing     |          | <ol style="list-style-type: none"> <li><b>Financing schemes</b> (such as pay-per-use and subscription).</li> <li><b>Minimising public sector funding.</b> While this is, of course, an objective, in entities with no right to generate revenue this becomes an option that is linked to the 'licensing' operations option.</li> </ol> |

### Architecture – Drivers and Options

Architecture is an important element in the sustainability of the DSI for the provision of cross-border public services, as it can affect how the day-to-day operations are run and what is included in the operations.

The different possible architectures are:

- ☑ Centralised;
- ☑ Decentralised;
- ☑ Federated.

However, the architecture does not play a central role in the scenarios as it does not affect them fundamentally. Therefore, the drivers and options for architecture are simple, as shown in Table 75.

Table 75 – Architecture drivers and options

| GOFA Element: | Drivers: | Options:                                                                                                                            |
|---------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|
| Architecture  |          | <ol style="list-style-type: none"> <li>Architecture can be <b>centralised</b>, <b>decentralised</b> or <b>federated</b>.</li> </ol> |

## Annex D – Results from the Survey to Member State and associated countries

This Annex presents the results of the Member State and associated countries survey which was conducted from the 22nd of January 2013 to the 8th of March 2013.

EU Member States as well as associated countries were consulted in order to indicate their preferences in terms of the Governance, Operational and Financing model which should be adopted in order to ensure the sustainability of the solutions developed under the LSPs. The 14 replies which were received provide information as regards to the take-up and financing of Core Service Platforms, as well on the future structure of the Governance, Financing, Operations, Architecture (GOFA). The results of the survey are highly relevant input in view of assessing the scenarios which have been developed. They are presented in the following sections.

### 9.1.6 Take-up and financing of Core Service Platforms

A first set of questions focused on take up and financing of the CSPs. These questions indicate the willingness to take up of the responding countries, and finance connecting to, the CSPs.

Most respondents to the survey have indicated that they will take-up the solutions developed under the LSPs, as shown in the figure below. The solutions for cross-border eID and eSignature particularly stand out, with respectively twelve and eleven Member States and associated countries (out of fourteen responses) indicating that they would take them up. Take-up for eBusiness and eHealth is also considerable with nine respondents indicating that they would take these solutions up. However, in both cases, one respondent pointed out that it would not take up the solutions, as a Point of Single Contact had already been established at national level, for the former, and due to organisational issues, for the latter. Furthermore, two respondents indicated that they would not take up the eProcurement solutions, for which there is a risk of lower take up, due to the absence of national eProcurement platforms. There is also a risk of lower take up of the eJustice solutions, for which two respondents indicated that they would not take them up, due to legal and organisational reasons.

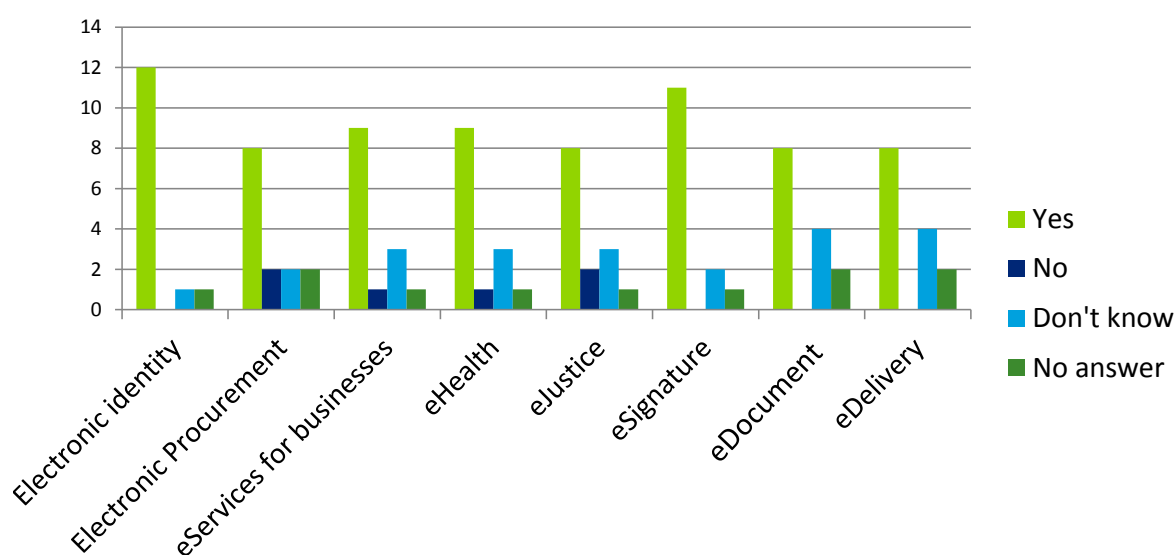
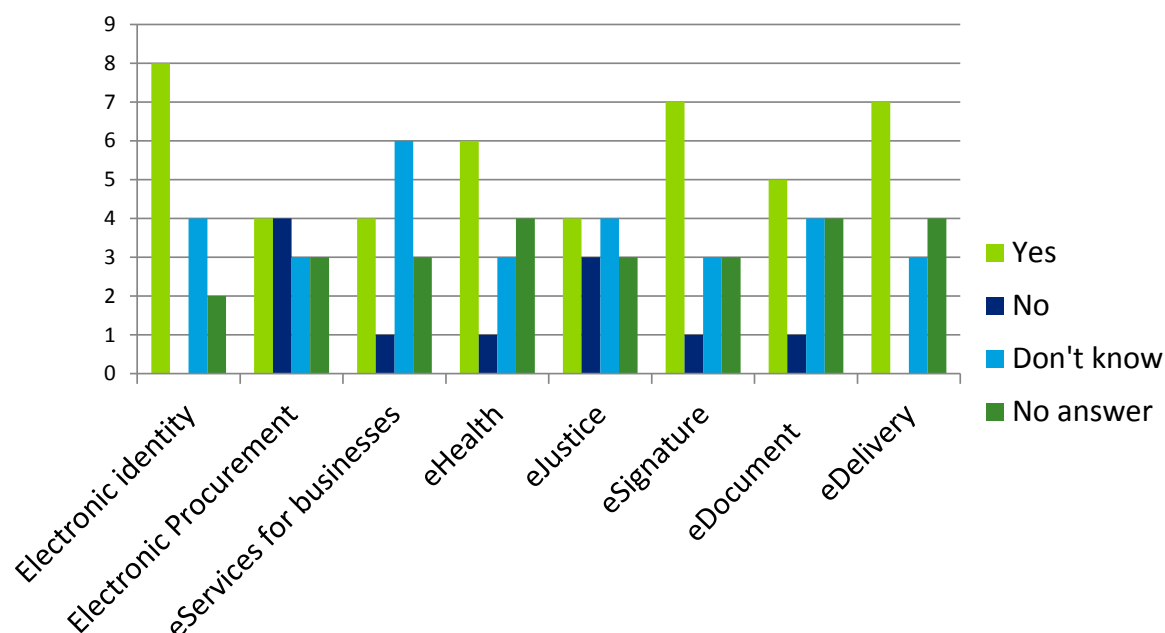


Figure 45 – Take-up of CSPs by public administrations

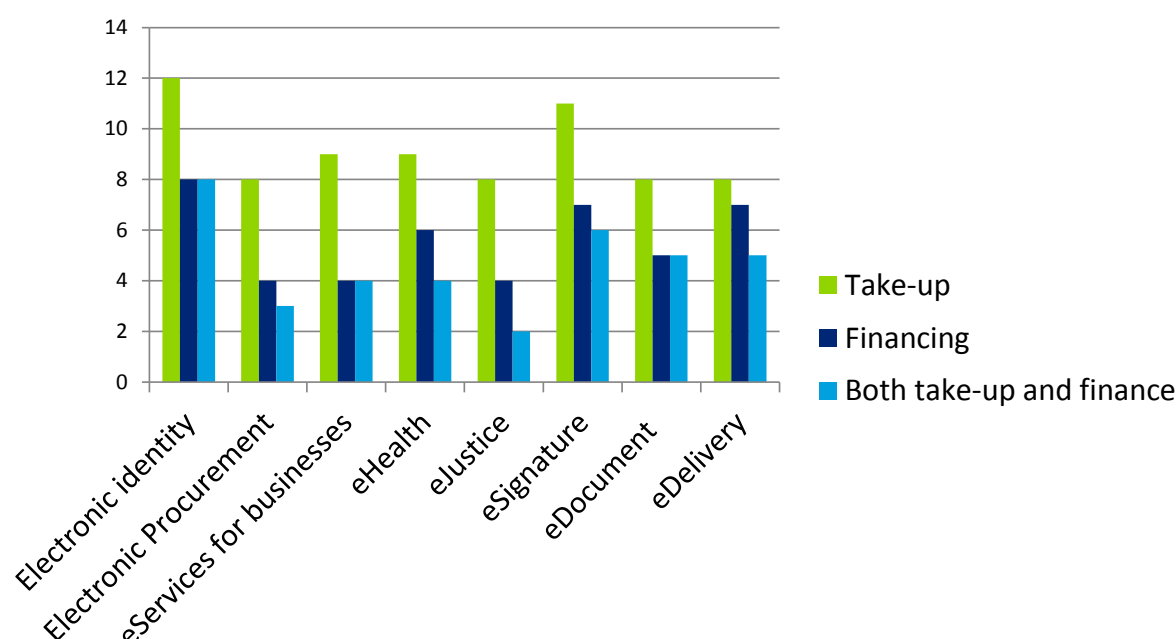
Further to take-up, it is also highly relevant to determine whether Member States and associated countries are willing to finance connecting to the CSPs. eID and Signature, which were the two CSPs which respondents indicated that they would be most willing to take-up are also the ones that for

which respondents indicated they would be most willing to finance the connecting up, with respectively eight and seven positive answers. Furthermore, seven respondents have also indicated that they would be willing to connect to the eDelivery CSP, and 6 to the eHealth CSP as shown in the figure below. Conversely, only four respondents have pointed out that they would be willing to finance eProcurement or eJustice, which were also among the CSPs with the greatest take-up risk. As such, four respondents indicated they would not be willing to finance the former and three the latter. Finally, a limited number of respondents are willing to finance eBusiness, with only four respondents indicating that would be willing to finance connecting to the CSP, and six pointing out that they did not know.



*Figure 46 – Willing to finance connecting public administrations to EU Core Service Platforms*

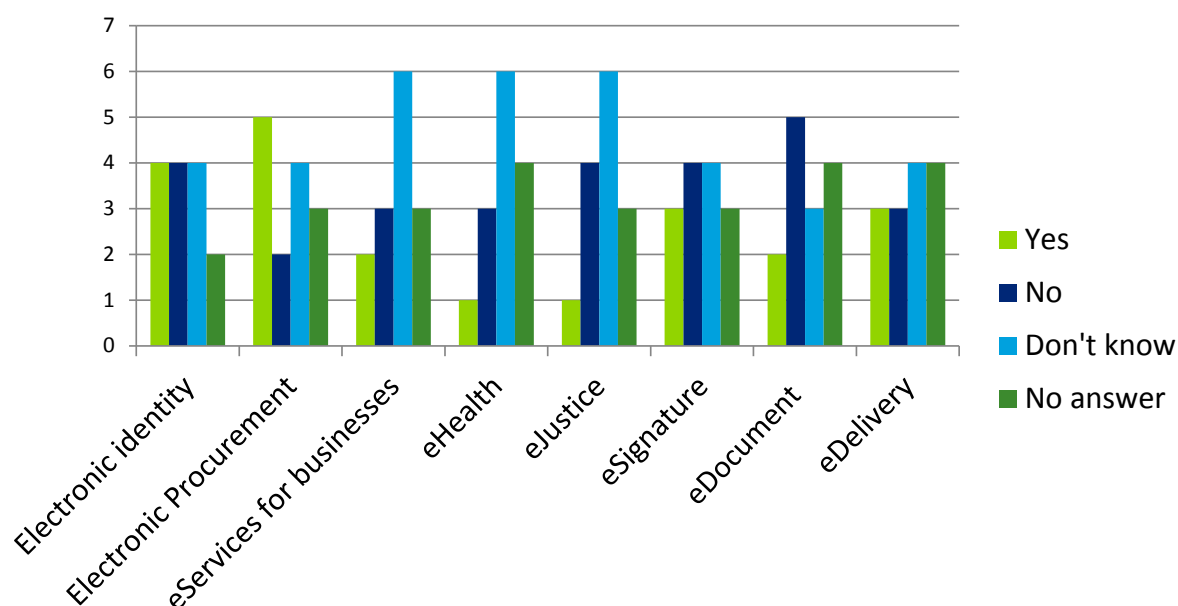
Overall, Member States and respondents seem more willing to take-up the solutions than to finance connecting to the CSPs. A conditional comparison was made, as shown in the figure below, to determine if Member States which are willing to take-up the solutions, are also willing to finance connecting to the CSPs. The results show that this holds true in the majority of cases, although some respondents indicated that they 'don't know' or did not answer. However, there are exceptions, such as in the case for eProcurement, for which a Member State indicated that it would be partly willing to finance connecting to this CSP, although it would not take up the solutions as businesses would implement them. Indeed, in certain Member States, businesses implement the eProcurement platforms instead of governments themselves, and will therefore take up the solutions. This highlights the differences in approaches as regards to eGovernment services across Member States, which needs to be taken into consideration in the assessment of the various scenarios.



*Figure 47 – Willingness to take-up and finance connecting to the CSPs*

Member States and associated countries were then asked for which CSPs they foresaw potential private financing. Results, presented in the figure below, show that the eID CSP has, to some extent, the potential to be financed by the private sector. However, responses are highly divided among respondents, with the ‘yes’, ‘no’ and ‘don’t know’ answers all collecting four replies. The case is more clear-cut for eProcurement, for which five respondents have indicated that the private sector would finance the CSP, and two that it would not.

According to respondents, eJustice, eSignature and eDocument are the most unlikely CSPs to be financed by the private sector, with respectively four, four and five respondents indicating that this would not be the case. Finally, eBusiness and eHealth, along with eJustice collected the most ‘don’t know’ answers.



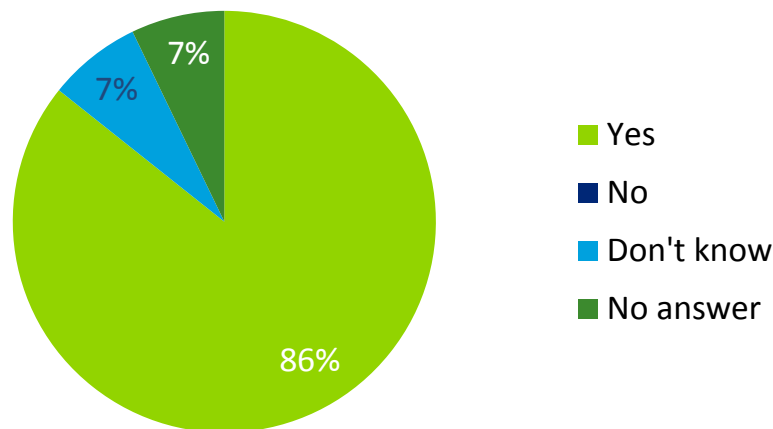
*Figure 48 – Likeliness that the private sector will finance the CSPs*

To conclude, there seems to be a very high interest from Member States and associated countries for eID, eSignature, eHealth and eBusiness. However, willingness to invest in connecting national systems to CSPs is unclear for eBusiness, eProcurement and eJustice. Finally, potential financing by the private sector is foreseen for eID, eProcurement and to some extent for eSignature, eDocument and eDelivery. Respondents to the survey indicated that it seems unlikely that the private sector will finance eBusiness, eHealth and eJustice.

### 9.1.7 Future Governance of the Core Service Platforms

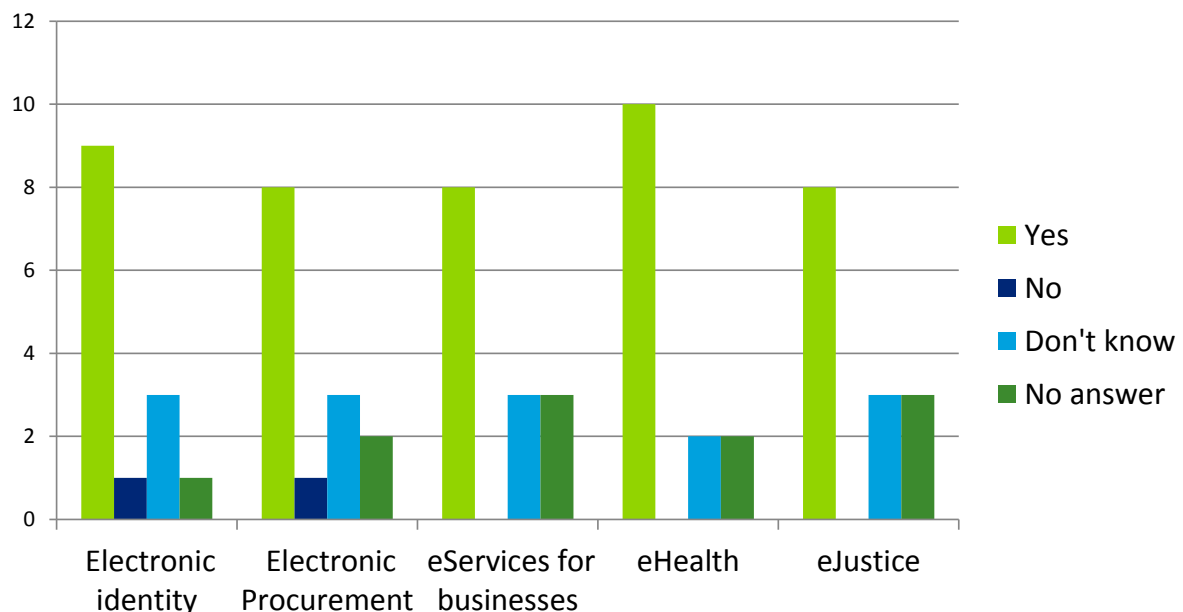
In a second set of questions, Member States and associated countries were asked to provide their opinion on the future governance structure which should be created to ensure the development and deployment of the solutions. The results are presented in this section.

The vast majority of respondents emphasized the need for strategic coordination, at the EU level, across the Core Service Platforms, in order to maximise the re-use of developed solutions. As such, 86% of respondents indicated that strategic coordination should be ensured, with 7% of respondents indicating that they 'don't know' or did not answer, as shown in the following figure.



*Figure 49 – Need for an EU level governance structure across the Core Service Platforms*

Most Member States and associated countries also foresee the need for a specific EU level governance structure for specific CSPs. The case is particularly clear for eHealth, for which 10 respondents indicated that this would be needed. Furthermore, nine respondents indicated that a specific EU level governance structure would be needed for eID, although one indicated that this was not the case.



*Figure 50 – Need for EU level governance structure for all/some of the Core Service Platforms*

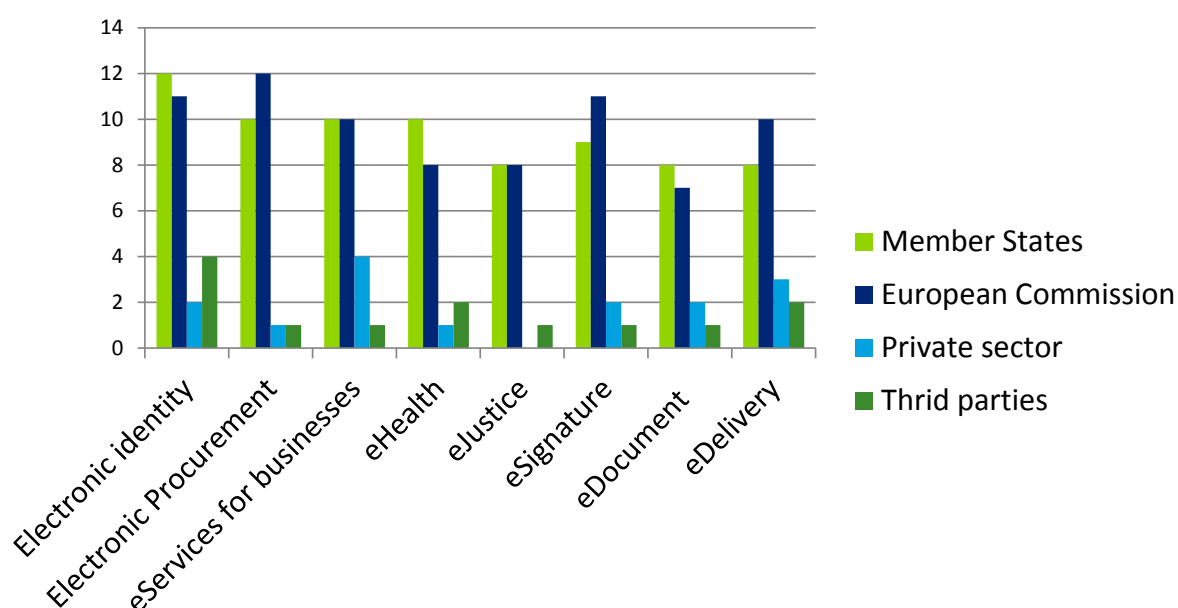
Member States and associated countries were also asked which type of stakeholders – Member States, European Commission, Private sector, or Third Parties – should form part of the governance structure, and be involved in strategic decision making for each CSP.

The majority of respondents foresee that Member States should be involved in strategic decision making in each CSP. As such, twelve respondents indicated that Member States should be involved in strategic decision making for eID, whereas only eight indicated that this should be the case for eJustice, eDocument and eDelivery.

The European Commission (EC) should also play a preponderant role within the governance of each CSP, with twelve respondents indicating that the EC should be involved within eProcurement, eleven

within eID and eSignature, and ten within eBusiness and eDelivery. In the cases of eProcurement and eSignature, respondents foresee a greater role for the EC than Member States. Conversely, respondents foresee less engagement of the EC in eHealth, eJustice and eDocument, for which respectively only eight, eight and seven respondents provided a positive reply on this question.

Finally, a limited number of respondents estimate that private sector and third party should be involved in decision making, except in the case of eID for third parties, and eBusiness and eDelivery for the private sector. Furthermore, respondents concurred that the private sector should not be involved in decision making in eJustice.



*Figure 51 – Involvement of stakeholders in strategic decision making*

To conclude, Member States and associated countries which responded to the survey highlighted the importance of strategic coordination, at EU level, to ensure the re-use of developed solutions across CSPs. The majority of Member States foresee the need for EU level governance structures for all CSPs, in which Member States and the EC should have a preponderant role as regards to decision making. Conversely, a limited number of respondents foresee that the private sector and third parties should be involved in decision making.

## Annex E – The basis for calculations for cross-border service use

This Annex provides an overview of the logic and data used in calculating the level of citizen and business cross-border service use. It is fully acknowledged that these calculations are ambitious. Indeed, some could regard them as foolhardy. Whatever the reader's viewpoint it was regarded as important to provide the best estimates reasonably possible from relevant data and documents.

These estimates are unlikely to 100 per cent correct. This inaccuracy will arise due to the lack of robust data for some calculations, errors in the estimates undertaken in other studies and the subjective nature of forecasting methods of this type. However, they do provide an innovative 'best guess' at the possible levels of use for different cross-border components.

In some ways it does not really matter if they are not 100 per cent correct. They are used as a constant multiplicand in calculations. Thus even if they are not correct they are a 'constant'; so the relative differences between estimates for cross-border service use should be 'stable' and therefore a good indication of the relative levels of use of different services. They thus provide an evidence based method for estimating the volume of transactions to be completed by scenarios. This enables a better basis from which to estimate their establishment and on-going annual cost of different scenarios. Importantly, they also provide a basis for estimating the benefits that can arise from providing the services offered by each scenario.

A study undertaken by Capgemini, Tech4i2 and Time.lex in 2012 undertook workshops with policymakers and practitioners to find the citizen services most likely to facilitate cross-border support for citizens. The study identified nine citizen services and seven business services. The remainder of this section describes the evidence base for making estimates for the volume of cross-border services for each of the sixteen services. Most of these estimates are based on the estimates of the number of cross-border residents and businesses described in section 6.5.

### Nine citizen cross-border services

| Citizen service      | Assumptions made to estimate the level of cross-border use                                                                                                                                                                                                                  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Register as domicile | It is assumed that all cross-border residents from EU 27 Member States (excluding commuters) each year are required to register as domicile and five per cent from previous years cross-border residents will re-request domicile status or documents due to loss or theft. |
| Request ID documents | It is assumed that all cross-border residents from EU 27 Member States (excluding commuters) each year will request ID documents. It is also estimated that five per cent from previous years' cross-border residents will re-request ID documents due to loss or theft.    |
| Enrol as a student   | cross-border resident data by age group is used to estimate the number of younger people between aged 5 and 18 that will have moved across-borders and therefore require to be enrolled as a student.                                                                       |

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Vehicle tax payment</b>           | United Nations data was used to examine vehicle ownership. The EU27 Member State average vehicle ownership figure was 520 per 1,000 of the population (aged over 15, this was the 'nearest' useful cohort group for calculations). It was then assumed that this proportion of the cross-border resident population was required to pay vehicle taxes each year.                                                                                                                                                                                                                                                                             |
| <b>Apply for driver's licence</b>    | Drivers' licenses do not have to be exchanged since the introduction of the common EU-driver's-license scheme. It was presumed that cross-border residents would eventually require a driver's license. The UK Driver Vehicle licensing authority provides data about applications <sup>151</sup> . This data suggests there are 771 license holders per 1,000 of the populations over 18; these license holders must renew their license every ten years. There are also 22 new license applications per 1,000 of the population per annum. This data was used to extrapolate new license and license renewal applications at the EU level. |
| <b>Order a birth certificate</b>     | Eurostat provides data about live births by mother's age [demo_fagec] for each EU27 Member State. This data was used to extrapolate the proportionate number of live births amongst the EU cross-border resident population. It was then assumed that each live birth would need to be registered.                                                                                                                                                                                                                                                                                                                                           |
| <b>Register a death</b>              | Eurostat provides data about the absolute number of deaths [hlth_cd_anr] for each EU27 Member State. This data was used to extrapolate the proportionate number of deaths amongst the EU cross-border resident population in the three age groups for which data is available (under 15, 15 to 64 and 65 and over). It was then assumed that each death would need to be registered.                                                                                                                                                                                                                                                         |
| <b>Register real estate purchase</b> | House sale data for the UK and France was obtained from official sources. This data was re-worked to find the number of house purchases per 1,000 of the population in both countries. In the UK the figure was 10.5 per 1,000, in France the figure was 11.6. The figure of 11 sales per 1,000 of the population was therefore used to estimate real estate purchases. This estimate was used to extrapolate the proportionate number of purchases amongst the cross-border resident population.                                                                                                                                            |

<sup>151</sup> See <http://www.dft.gov.uk/dvla/ARA.aspx> and [http://www.dft.gov.uk/statistics?orderby=title&post\\_type=table&s=nts02](http://www.dft.gov.uk/statistics?orderby=title&post_type=table&s=nts02) , last visited on 03.05.2013

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Register for legal aid</b> | A report from the Order of Flemish Bars provided data at National level about Legal Aid <sup>152</sup> . Similar data was found in the UK Legal Services Commission Annual Report 2008/9. Data from both studies was aggregated to find the number of Acts of assistance per 1,000 of the population for different age groups. These estimates found that, on average there were 113 acts of assistance per 1,000 of the populations under 15, 40 acts for 15 to 64 year olds and 373 per 1,000 for those 65 and over. These figures were then extrapolated for cross-border resident for the appropriate age groups |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Seven business cross-border services

The previous section provided details about cross-border service using businesses and new business creation amongst the cross-border resident population and the number of branches in EU Member States. These estimates were used to underpin the calculations for cross-border service use.

| <b>Business service</b>                 | <b>Assumptions made to estimate the level of cross-border use</b>                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Register a new legal entity</b>      | It is assumed that each business start-up from a cross-border resident will need to be registered as a legal entity; each new branch created will also need to be registered.                                                                                                                                                                                                                             |
| <b>Corporate tax declaration</b>        | It is assumed that all new businesses started over the preceding five years will have to make a tax declaration every year. It was assumed that all new branches will also have to make a tax declaration every year.                                                                                                                                                                                     |
| <b>Register for VAT</b>                 | It is assumed that each business start-up from a cross-border resident will need to register for VAT. Each new branch will also need to be registered.                                                                                                                                                                                                                                                    |
| <b>Submit a VAT declaration</b>         | All new businesses over the preceding five years will have to make a VAT declaration. So will all the branches.                                                                                                                                                                                                                                                                                           |
| <b>Register a new employee</b>          | Eurostat provides data about business demography indicators from 2004 <sup>153</sup> . It was assumed that the average percentage growth in employees (over four years) equates to percentage of businesses growing. This figure suggests that on average in EU 27 Member States 60.3 per cent of businesses are growing. This figure is extrapolated across cross-border resident and branch businesses. |
| <b>Pay employee social contribution</b> | Eurostat provides data about business demography indicators from 2004 <sup>154</sup> . It was assumed that each business with one or more                                                                                                                                                                                                                                                                 |

<sup>152</sup> [www.advocaat.be/UserFiles/Positions/Waar%20naartoe%20met%20de%20juridische%20bijstand\\_nota\\_KV\\_080509.pdf](http://www.advocaat.be/UserFiles/Positions/Waar%20naartoe%20met%20de%20juridische%20bijstand_nota_KV_080509.pdf), last visited on 03.05.2013

<sup>153</sup> Eurostat NACE Rev.2 [bd\_9b\_sz\_cl\_r2]

<sup>154</sup> *ibid*

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | employees will pay a social employee contribution. The proportion of businesses with one or more employees was extrapolated across cross-border resident and branch businesses in EU 27 Member States.                                                                                                                                                                                                                                                                                                    |
| <b>Report termination of employee</b> | Eurostat provides data about business demography indicators from 2004 onwards <sup>155</sup> . It was assume that the average percentage decline in employees (over four years) equates to percentage of businesses declining. Data suggests that on average in EU 27 Member States 30.7 per cent of businesses are declining in size. Data for EU 27 Member states was extrapolated across cross-border resident and branch businesses to calculate termination of employees in the EU 27 Member States. |

<sup>155</sup> Eurostat NACE Rev.2 [bd\_9b\_sz\_cl\_r2]

## Annex F – Characteristics of organisations similar to those that might oversee scenarios

This Annex provides an overview of the characteristics of organisations that might oversee the scenarios suggested in this paper. Information was primarily obtained from secondary sources (Annual Reports, Annual Accounts and web sites). Where additional information was required the organisations were contacted directly. These requests were not always successful.

### 9.1.8 .G-a organisations (EC programmes)

#### *Interoperability Solutions for European Public Administrations (ISA)*

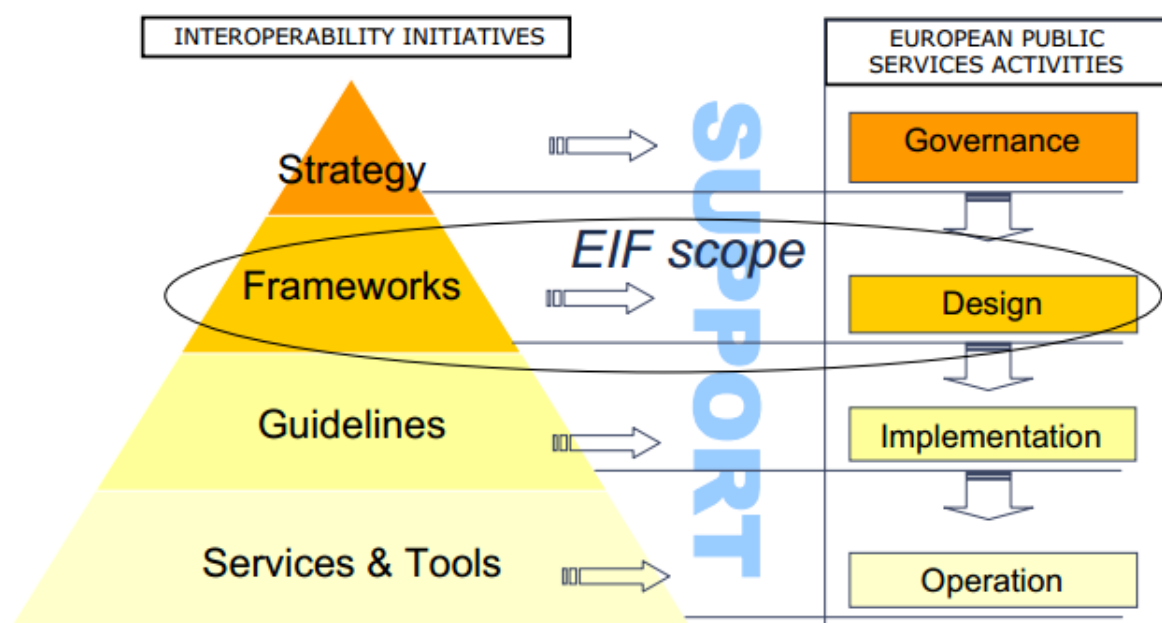
##### Introduction

Citizens and businesses expect efficient public services across Europe. ISA – the Interoperability Solutions for European Public Administrations programme – addresses this need by facilitating efficient and effective cross-border electronic collaboration between European public administrations. ISA has a budget of EUR 164.1 Million.

The purpose of the European Interoperability Framework (EIF) is:

- ❑ to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- ❑ to guide public administrations in their work to provide European public services to businesses and citizens;
- ❑ to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

#### EUROPEAN INTEROPERABILITY FRAMEWORK FOR EUROPEAN PUBLIC SERVICES

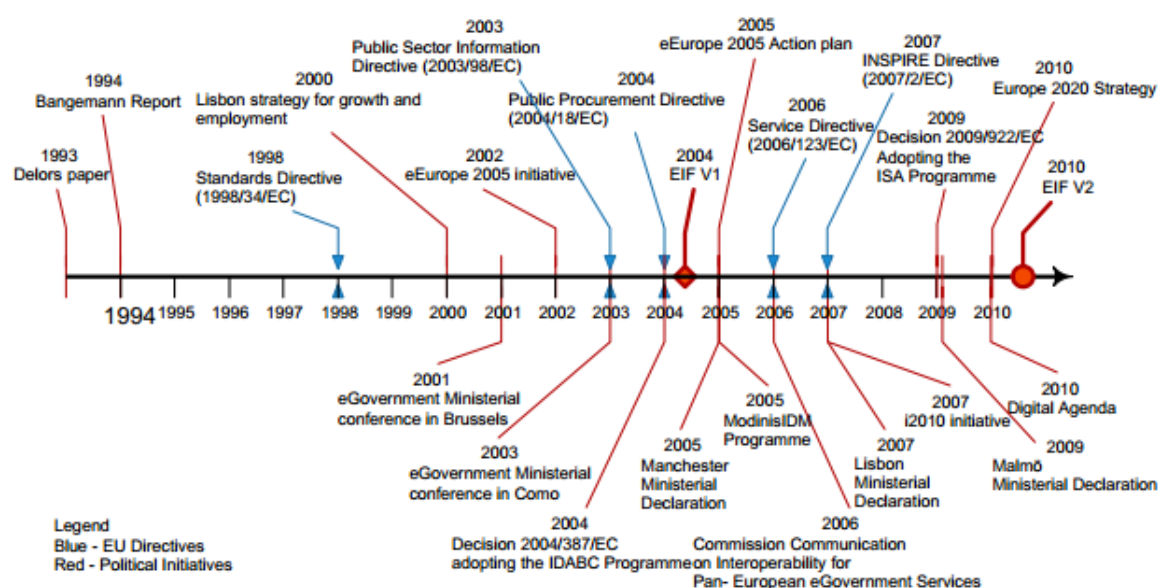


*Interoperability initiatives supporting activities to establish European public services*

**Source:** Annex 2, to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services'

## History

The European eGovernment Action Plan 2011-2015 that is being finalised by the European Commission in response to the Ministerial Declaration on eGovernment, approved by the ministers responsible for eGovernment policy on the occasion of the Ministerial eGovernment conference held in Malmö in November 2009. The Decision on 'Interoperability Solutions for European Public Administrations' was adopted by the European Parliament and the Council on 16 September 2009.



Timeline of EU initiatives concerning interoperability

**Source:** Annex 2, to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services'.

November 2012 saw the first results of the National Interoperability Framework Observatory (NIFO). This is a project by the European Commission's ISA work programme (Interoperability Solutions for European public administrations). ISA aims to improve electronic cooperation between European public administrations.

ISA's NIFO evaluated all current interoperability initiatives in 29 countries. Seventeen countries have already developed a National Interoperability Framework (NIF) and these were compared to the EIF in detail. An analytical model allows the comparison of the different aspects of the national frameworks.

## Members and organisational structure

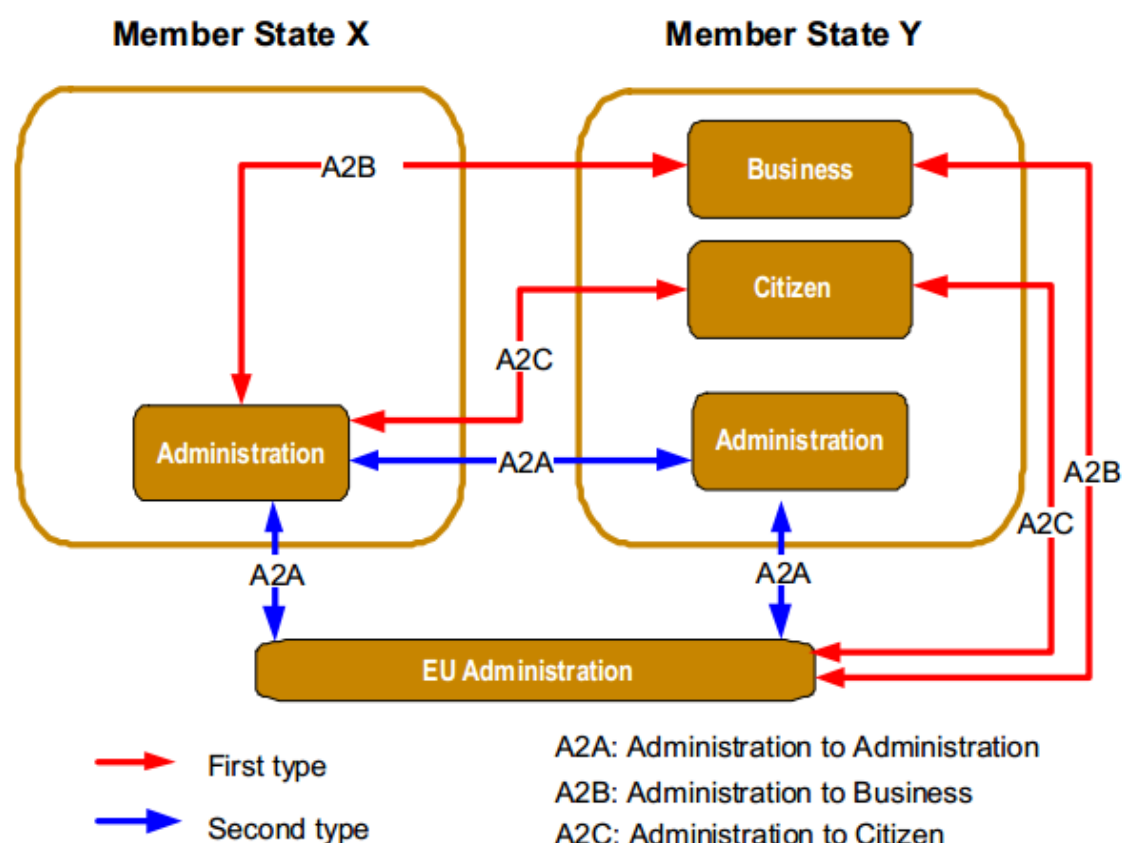


Figure 1-3

*The first type is direct interaction between businesses or citizens from one Member State and public administrations in another Member State and/or an EU administration (A2B and A2C) that deliver the public service to those businesses or citizens.*

*The second type is interaction between administrations from many Member States or EU administrations (A2A). This may support administrations in serving businesses or citizens (A2B and A2C).*

### 1.6.1 Scenario 1: Direct interaction between businesses/citizens and a foreign administration

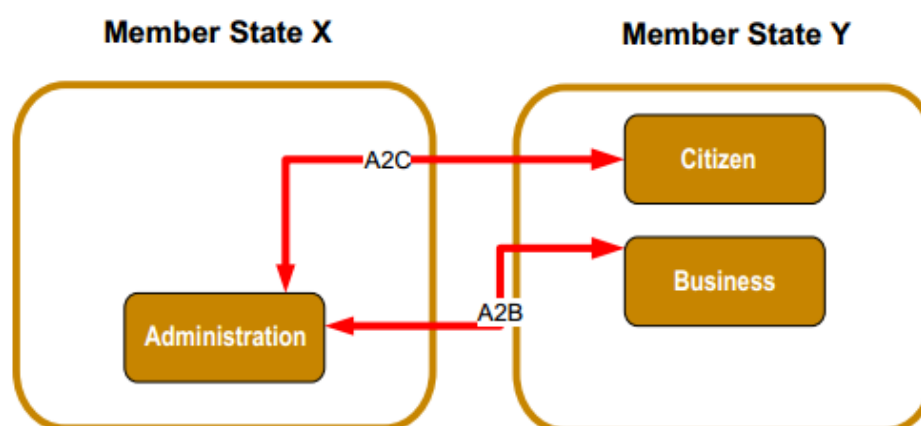


Figure 1-4

*Example: a citizen from Member State Y taking up a job in destination Member State X has to complete a number of formalities in Member State X.*

### 1.6.2 Scenario 2: Exchange of information between administrations on business/citizen requests

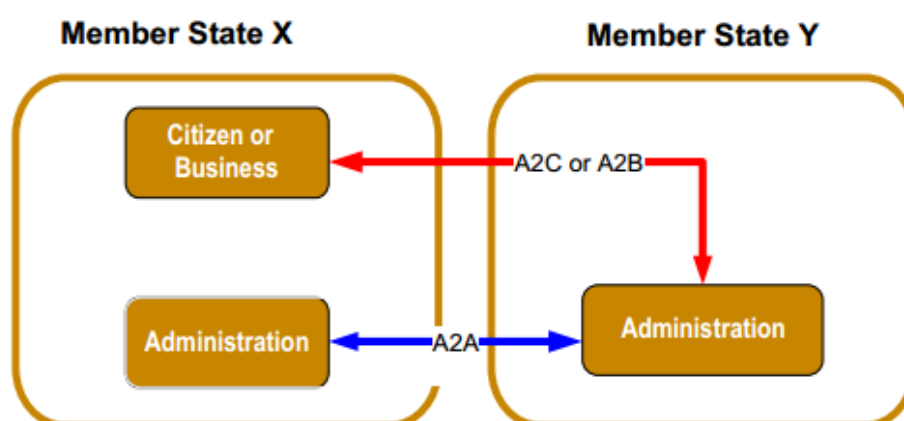


Figure 1-5

*Example: a service provider established in Member State X wishing to establish in Member State Y submits a request for establishment in Member State Y. To process his request and avoid asking the required information to the service provider, administrative bodies in both Member State X and Y could exchange information directly. This requires interoperability between the Member States involved.*

### 1.6.3 Scenario 3: Exchange of information between national administrations and EU institutions

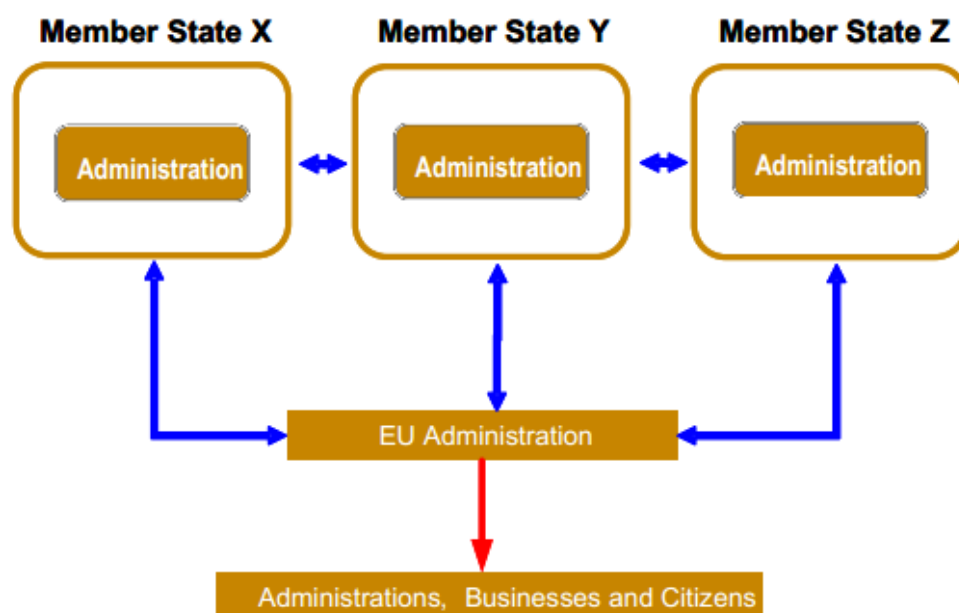


Figure 1-6

Typically, this scenario involves networks of administrations in a given sector where EU law requires Member State administrations to collect, exchange, and share information with each other, and/or with EU institutions and agencies.

Examples include cases where Member States provide information and statistics to a competent European authority, which then disseminates the aggregated information to the public concerned.

### 1.6.4 Examples of European public services

A non-exhaustive list of examples<sup>10</sup> illustrates generic scenarios for the European public services outlined above:

| Sector/Area                     | Service                                                                                                                                  | Sector/Area                           | Service                                                                                                                             |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Business development (A2B, A2A) | Start-up of a company<br>Public procurement<br>Registration of patents, trademarks, designs<br>Consumer protection, labelling, packaging | Social security (A2C)                 | Information service for social security systems<br>Unemployment benefits<br>Child allowances<br>Pensions<br>Public health insurance |
| Certificates and licenses (A2C) | Birth and marriage certificates<br>Driving licences<br>Passports, visas<br>Residence and working permits<br>Car registration             | Supply of statistical data (A2B, A2A) | Tax for businesses<br>VAT refunding<br>Information on tax incentives<br>Declaration of excise goods                                 |
| Education (A2C)                 | Enrolment in schools and universities<br>Study grants                                                                                    | Work (A2C)                            | Recognition of qualifications and diplomas<br>Job search                                                                            |
| Taxes for citizens (A2C)        | Online Tax                                                                                                                               | Customs (A2C, A2B, A2A)               | Information on Customs duties<br>Customs declarations                                                                               |

Financial and operational data was not available for ISA.

### 9.1.9 .G-b organisations (European Agencies)

#### *Common Information Sharing Environment For the European Union maritime domain (CISE)*

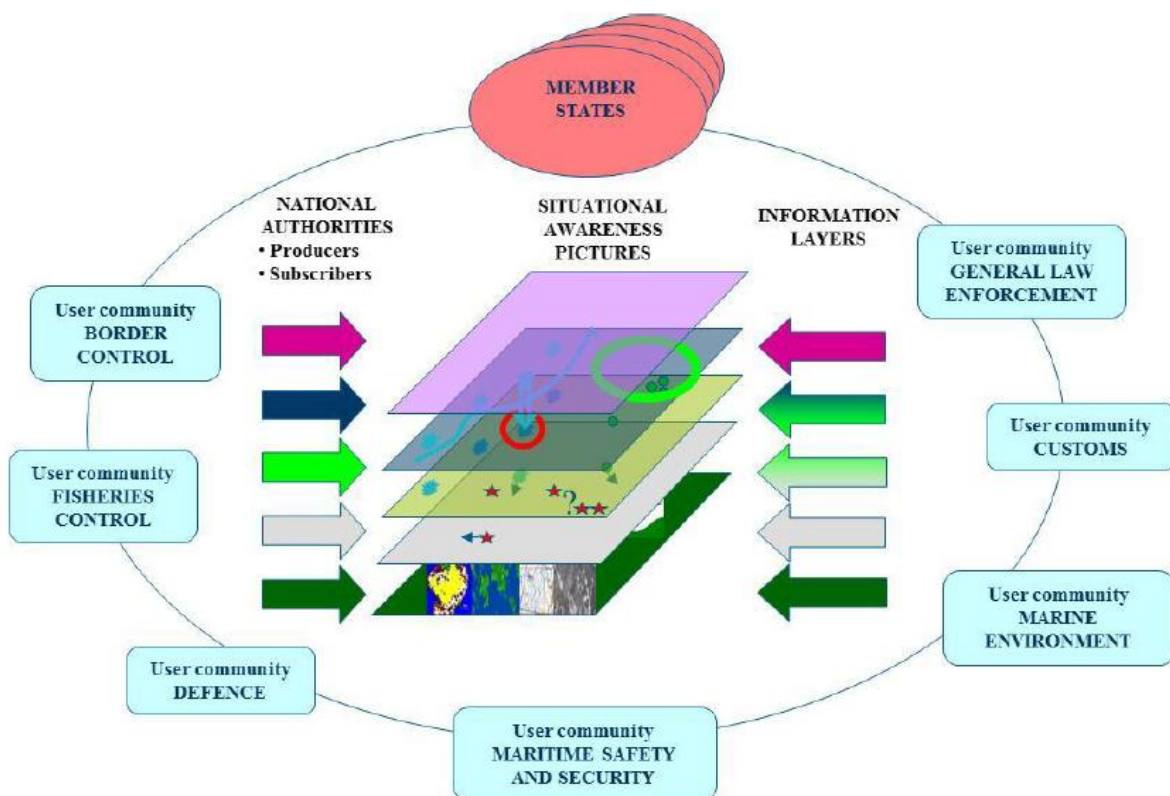
##### Introduction

Integrated Maritime Surveillance provides public authorities interested or active in maritime surveillance at European Union (EU), regional and national level with means to exchange information and data across-borders and across sectors to understand effectively activities and events at sea.

##### History

In October 2009, the European Commission set guiding principles on how to achieve integration of maritime surveillance. Based on these rules, a 'Common Information Sharing Environment for the surveillance of the European Union domain' ('CISE') is currently being developed jointly by the European Commission and the EU Member States including civilian and military authorities as well as the European agencies operating in the maritime field<sup>156</sup>.

##### Example of Common Information Sharing Environment ('CISE')



A Roadmap with a step by step approach has been adopted in October 2010<sup>156</sup>. Since, substantial progress has been made, with the close cooperation between the Commission, the Member States

<sup>156</sup> [http://ec.europa.eu/maritimeaffairs/maritimeday/2012/20120521\\_15\\_programme\\_en.pdf](http://ec.europa.eu/maritimeaffairs/maritimeday/2012/20120521_15_programme_en.pdf) , last visited on 03.05.2013

expert sub-group on integrated maritime surveillance and the 'CISE' Technical Advisory Group (TAG - including the representatives of all the user communities and European Agencies), regarding :

- Identification of 7 user communities (border control, maritime safety and security, fisheries control, customs, marine environment, general law enforcement and defence) and about 400 national public authorities.
- Mapping of over 500 existing related maritime surveillance data sets and 'gap' analysis for the data exchanges as 40% to 90% is not made available systematically today.
- Definition of the access rights to the data: TAG is currently investigating the relevance of structuring data elements into 'purpose oriented information service packages' with corresponding pre-defined 'access rights' based on predefined maritime missions of the 7 user communities.
- Development of the technical supporting framework using common interoperability language permitting secure and seamless data exchanges in a decentralised and flexible manner. A preliminary study is in progress essentially with a view to mapping the various information technologies tools used by existing and forthcoming sectorial and regional systems.
- Mapping of requirements of necessary legal provisions to allow lawful data exchanges with regard to personal data protection as well data confidentiality and ownership in accordance with international, European or national regulations.

Two sea basin pilot projects on the integration of the maritime surveillance - MARSUNO for the Northern sea basins and BLUEMASSMED for the Mediterranean sea basin and its Atlantic approaches - have been set up during 2009-2012 (overall budget EUR 13.2 million, EU contribution EUR 5.4 million). The overall purpose of these projects is to achieve better cross-border and cross-sector maritime surveillance data exchange on regional scale among the user communities and to test Member States' political interest and willingness for such sort of cooperation. These projects join together 58 public authorities representing all the user communities from 14 EU Member States.

Financial and operational data was not available for CISE.

## **European GNSS Agency (GSA)**

---

### **Introduction**

The European GNSS Agency (GSA) is an official European Union regulatory authority. It manages public interests related to European GNSS programmes.

The European GNSS Agency (GSA) was established in 2004. It manages a range of activities relating to Europe's satellite positioning and navigation programmes (including Galileo<sup>157</sup> and European Geostationary Navigation Overlay Service: EGNOS<sup>158</sup>).

Its roles include:

- preparing for the successful commercialisation and exploitation of the systems, aiming at smooth functioning, seamless service provision and high market penetration

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<sup>157</sup> Galileo is Europe's own global navigation satellite system, providing a highly accurate, guaranteed global positioning service under civilian control. See [http://www.esa.int/Our\\_Activities/Navigation/The\\_future\\_-\\_Galileo/What\\_is\\_Galileo](http://www.esa.int/Our_Activities/Navigation/The_future_-_Galileo/What_is_Galileo) , last visited on 03.05.2013

<sup>158</sup> <http://www.egnos-portal.eu/business-support/faq> , last visited on 03.05.2013

- ✘ ensuring the security accreditation of the system & establishment and operation of the Galileo Security Monitoring Centres
- ✘ managing satellite navigation research under the EU research programme
- ✘ promoting satellite navigation applications and services
- ✘ certifying system components.

The Agency is there to ensure Europe fully reaps the benefits of EGNOS and Galileo, which has the potential to become a cornerstone of the global radio navigation and positioning system and to contribute in a unique manner to the creation of jobs and economic growth.

## History

The GSA's history can be traced back to the GALILEO Joint Undertaking (GJU) which was set up in 2002 by the European Community and the European Space Agency to manage the development phase of the GALILEO Programme. The GSA, as “European GNSS Supervisory Authority”, officially took over all tasks previously assigned to the GJU on 1 January 2007.

The GSA itself was established as a Community Agency on 12 July 2004, by Council Regulation (EC) 1321/2004, status amended in 2006 by Council Regulation (EC) No 1942/2006.

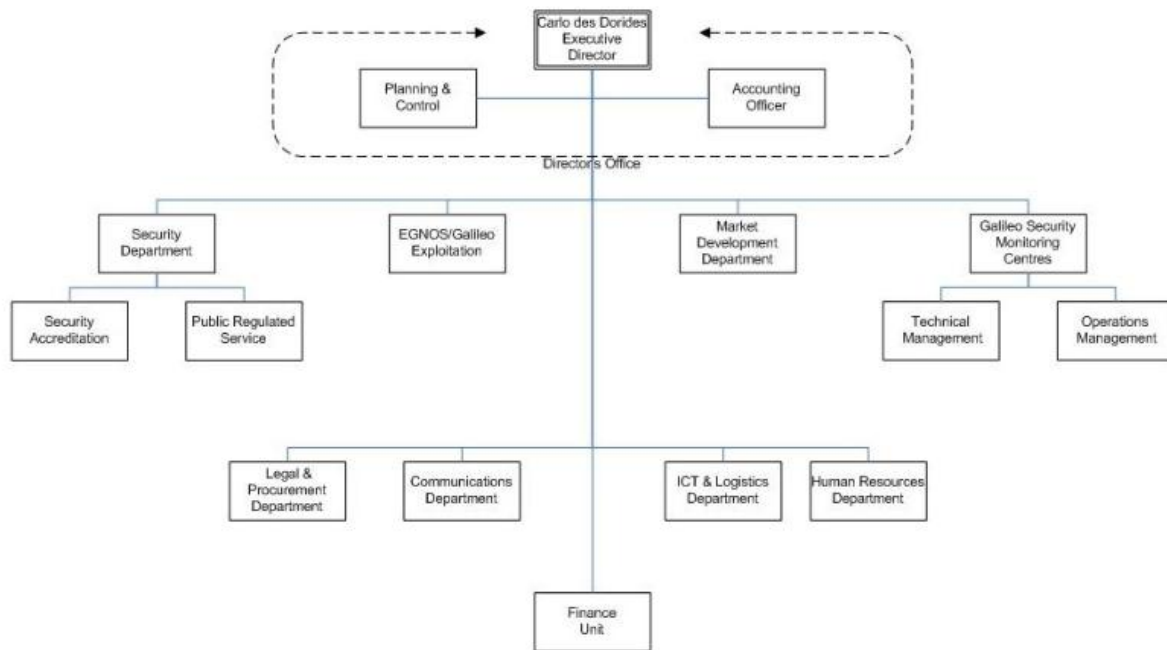
The European Council took this important step because of what it saw as the strategic nature of European satellite positioning and navigation programmes, which include both EGNOS and GALILEO, and the need to ensure that essential public interests in this field are adequately defended and represented.

In 2010 changes were made so that the GSA was renamed the European GNSS Agency (previously it was named the European GNSS Supervisory Authority).

## Members and organisational structure

The Governance of GSA is carried out through a management team of 10. This comprises the following roles: Executive Director; Head of Market Development; Head of the Galileo Security Monitoring Centre; GNSS Exploitation Program Manager; GNSS Exploitation Program Manager; Head of Legal and Procurement; Head of the Finance Unit; Head of Communication; Head of ICT and Logistics; and Head of the Human Resources Department.

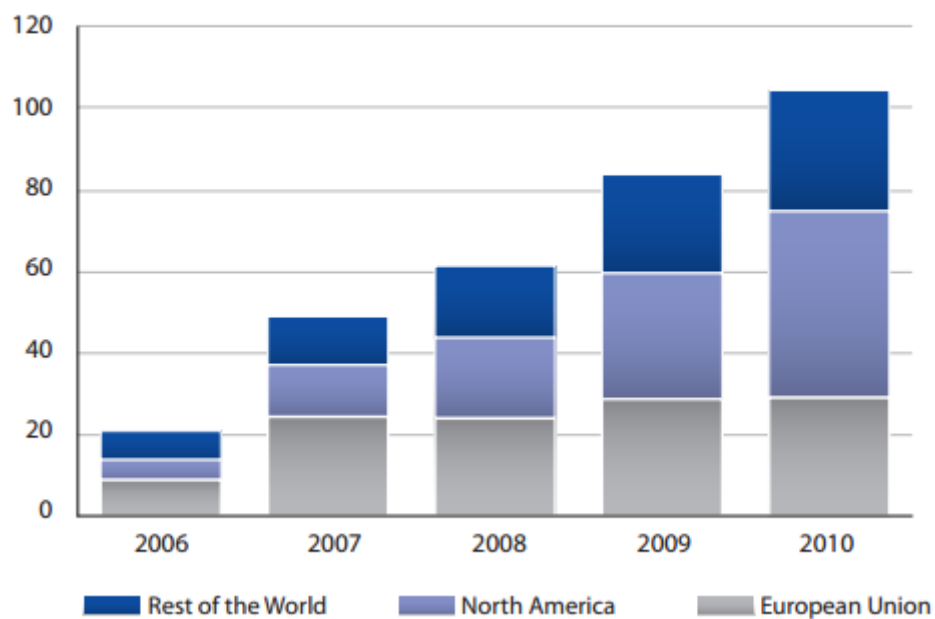
The structure of GSA is shown in the organisation chart below.



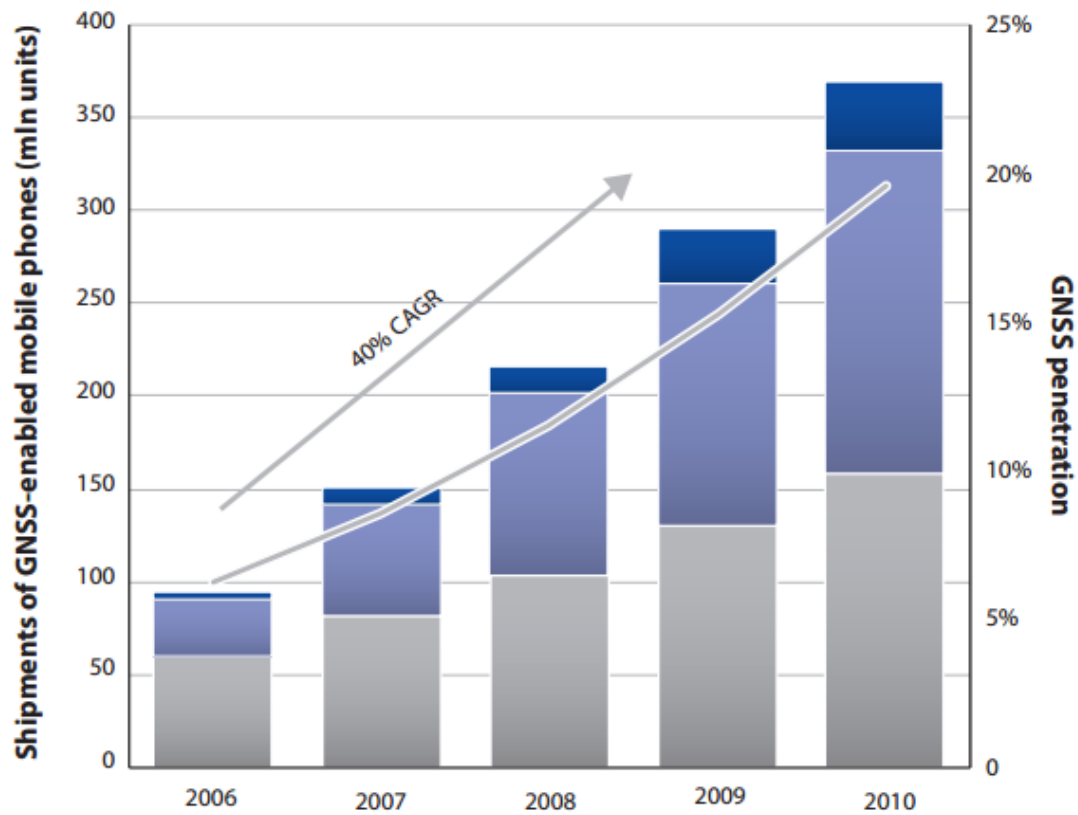
For governance there is also Administrative Board which comprises 32 representatives, mainly from EU Member states. And a Security Accreditation Board, composed of one voting representative per Member State, one representative from the European Commission, and one from the High Representative for Foreign Affairs and Security Policy.

## Trends

**Historical worldwide shipments of GNSS devices  
in road sector (mln units)**

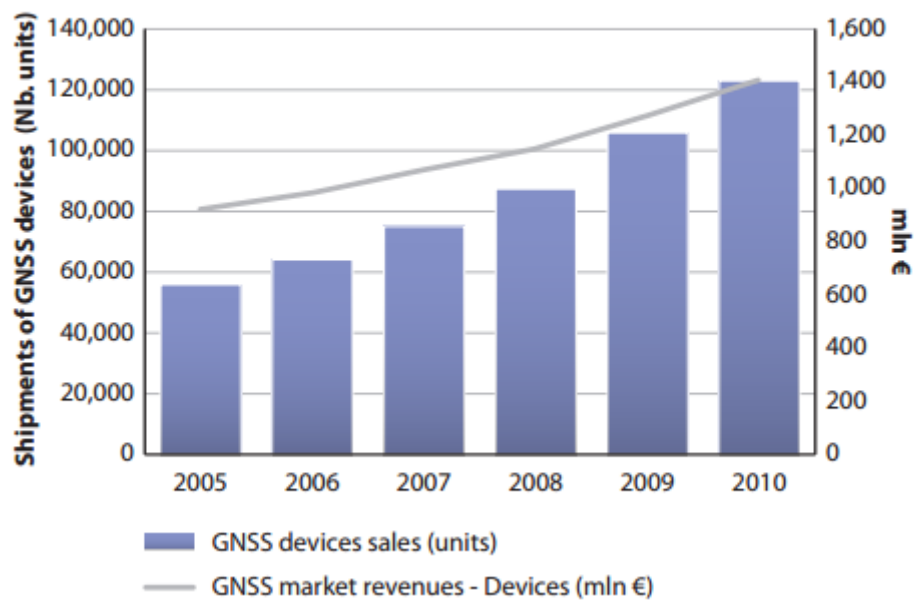


**Shipments of GNSS-enabled mobile phones (mln units)  
and penetration of GNSS in mobile phones (%) worldwide**



\* The penetration represents the percentage of mobile phones in use that are GNSS-enabled

**GNSS market in surveying domain**



## Financial overview

|                                              | 2006 <sup>159</sup> | 2007    | 2008    | 2009   | 2010   | 2011 <sup>160</sup> |
|----------------------------------------------|---------------------|---------|---------|--------|--------|---------------------|
| Operating Revenue<br>(EUR '000's)            | 2,041               | 83,150  | 152,234 | 24,357 | 28,940 |                     |
| Operating expenses<br>(EUR '000's)           | 1,216               | 56,717  | 165,027 | 26,969 | 39,091 |                     |
| Administrative expenses<br>(EUR '000's)      | 1,163               | 5,845   | 6,728   | 4,639  | 5,601  |                     |
|                                              |                     |         |         |        |        |                     |
| Total Assets<br>(EUR '000's)                 | 76,609              | 161,240 | 159,382 | 59,820 | 30,364 |                     |
| Total Net Assets/Liabilities<br>(EUR '000's) | 825                 | 27,901  | 15,842  | 13,428 | 3,362  |                     |
|                                              |                     |         |         |        |        |                     |
| Employees                                    | 20                  | 46      | 52      | 35     | 40     |                     |
| Temporary Agents                             | 16                  | 39      | 49      | 23     | 26     |                     |
| Contractual Agents                           | 4                   | 6       | 2       | 11     | 12     |                     |
| Seconded National Experts                    |                     | 1       | 1       | 1      | 2      |                     |

**Sources:** Annual Accounts, Financial Year 2010, 2008

## EU Agency for large scale IT systems

### Introduction

EU Agency for large scale IT systems has a role to provide a viable, long-term solution for the operational management of large scale IT systems in the area of Home Affairs.

At the start the Agency will manage EURODAC, the Visa Information System (VIS) and the second-generation Schengen Information System (SIS II), which are all essential instruments in the implementation of EU asylum, migration and border management policies. At a later stage, after gradually building up its expertise, the Agency will develop into a centre of excellence for the

<sup>159</sup> These financial statements cover the period from 18th September 2006 till 31<sup>st</sup> December 2006, i.e. from the transfer of the autonomy from DG TREN to the European GNSS Supervisory Authority

<sup>160</sup> As at March 2013, Financial Statements for 2011 are under preparation

development and operational management of other future systems in this policy area. The Agency is set up in the form of an independent European body (Regulatory Agency).

The core task of the Agency is to keep the IT systems under its responsibility functioning 24 hours a day, seven days a week, ensuring the continuous, uninterrupted exchange of data between national authorities. The Agency is also be responsible for adopting and implementing security measures, organising training for IT experts on the systems under its management, reporting, publishing statistics and monitoring research activities. The Agency needs to maintain the complete separation of data in the three systems and ensure that security and data protection requirements are fully met. When fully functional the system will hold biographic and biometric data for approximately 80 million persons applying for a Schengen visa.

The IT Agency will initially be responsible for the operational management of three large scale information technology (IT) systems developed by the European Commission in the area of freedom, security and justice:

- ✘ EURODAC is an IT system for comparing the fingerprints of asylum seekers and irregular migrants. It facilitates the application of the Dublin II Regulation, which makes it possible to determine the Member State responsible for examining an asylum application. The Commission is currently responsible for the EURODAC central unit and for data transmissions via this system and will retain these responsibilities until the Agency becomes operational.
- ✘ The Visa Information System (VIS) supports the implementation of the common visa policy and facilitates effective border control. It enables national authorities to enter and consult data on visa applications to enter the Schengen Area, including biometrics. The VIS started operations on 8 October 2011 (IP/11/1169 and MEMO/11/682). The first consular posts connected to the system were those in North Africa (Algeria, Egypt, Libya, Mauritania, Morocco and Tunisia). The Commission is currently responsible for managing the VIS until the Agency becomes fully operational.
- ✘ The second-generation Schengen Information System (SIS II) will facilitate the exchange of information on persons and objects between national border control authorities, police, customs, visa and judicial authorities throughout the Schengen Area. SIS II will take over from the existing Schengen Information System (SIS 1+), providing a more modern and up-to-date system with new and enhanced functionalities, such as the possibility of including biometric data. SIS II will therefore enhance security within the Schengen area. This system, which is due to enter into operations in 2013, will be managed directly by the Agency from that time onwards.

## History

The Agency started operations on December 1, 2012. Its role is to provide a viable, long-term solution for the operational management of large scale IT systems in the area of Home Affairs.

In its first years the Agency has four strategic goals, which are:

- ✘ Consolidate the Agency's structure and cohesion
- ✘ Move towards becoming a centre of excellence
- ✘ Preparations for taking on board additional systems
- ✘ Continuous move to optimise cost-effectiveness

## Members and organisational structure

The Agency is currently recruiting to 15 posts (closing date March 2013). The Agency's 2012 establishment plan foresees the recruitment of 75 staff members in 2012 (approximately 62 operational staff and 13 administrative staff.). The Agency is expected to employ 120 staff members by 2013.

## Statistical overview

The Agency will produce the reporting and statistics on the use of the IT systems under its management and monitor their functioning, as foreseen in the legal bases for these IT systems and reflected in the establishing Regulation. It will report regularly to the European Parliament, the Council and the Commission on the technical functioning of the systems, including the security thereof and will also provide the Commission with information that it requires for the regular evaluation of VIS, EURODAC and SIS II.

|                                                         | 2013                   |
|---------------------------------------------------------|------------------------|
| Staff Expenditure (EUR)                                 | 4,563,000              |
| Infrastructure and operating expenditure                | 9,297,000              |
| Running costs in connection with operational activities | 4,780,000 <sup>4</sup> |
| Operational expenditure                                 | 5,940,000              |
| <b>TOTAL EXPENDITURE</b>                                | <b>19,800,000</b>      |

Source: Budget forecast – Draft Budget 2013

## 9.1.10 .GO(C) organisations Government initiated non-profit

### EURid

#### Introduction

EURid manages the '.eu' top-level Internet domain under contract to the European Commission. EURid operates the registry under terms set by EU regulations<sup>161</sup>. The latest Annual Report (2011) available on the EURid web site states that in the five years since the .eu domain was created 3.5 million domain names had been created. .eu registrations grew by 5.5 per cent in 2011 (compared with 2010). Registration renewals have been running at above 80 per cent annually (81.6 per cent in 2011).

The main EURid office is located just outside of Brussels, Belgium. Regional offices are located in Stockholm, Sweden; Pisa, Italy; and Prague, the Czech Republic. EURid employees provide online and telephone support in all official EU languages to around 900 accredited registrars worldwide who offer .eu domain registration services.

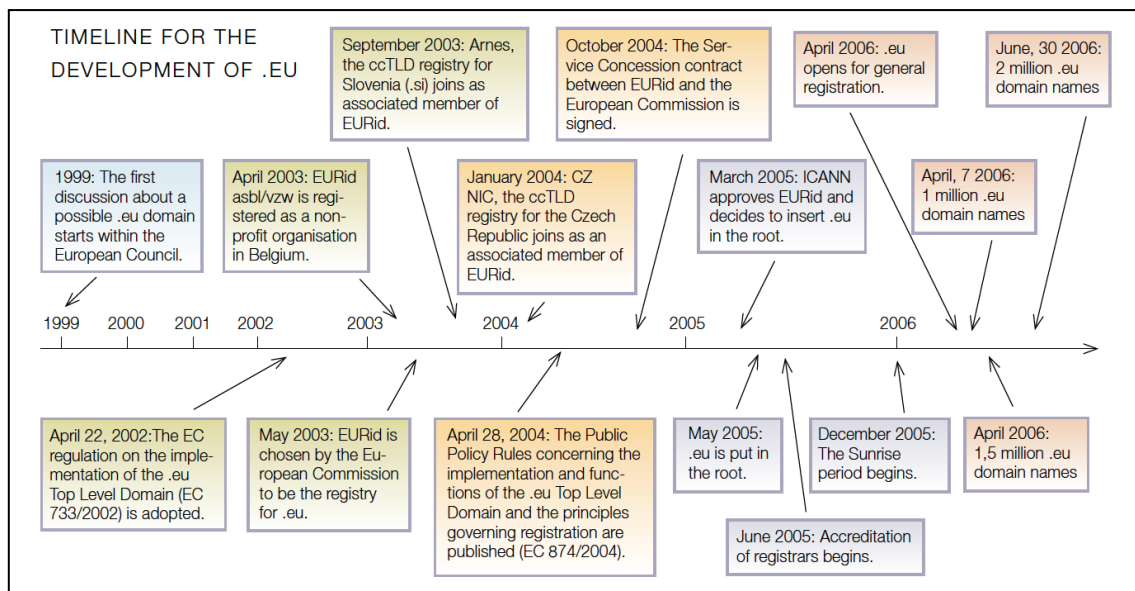
<sup>161</sup> 733/2002, 874/2004, 1654/2005, 1255/2007 and 560/2009

EURid is a multicultural organisation with staff from 22 countries who speak 25 languages. The EURid senior management team comprises seven personnel (general manager, finance manager, technical manager, communications manager, external relations manager, legal manager, human resources manager).

## History

In 1999 the European Council began discussing a single top-level domain for Europe. After several years of consideration, the European Commission appointed EURid as the operator of the .eu registry in 2003. EURid was incorporated under Belgian law as a private, not-for-profit organisation on 8 April 2003<sup>162</sup>.

The .eu domain was added to the root zone of the Internet Domain Name System in March 2005. EURid began accepting applications for .eu domain names, on a limited basis, in December 2005. This introductory period was known as Sunrise. General registration began in April 2006.



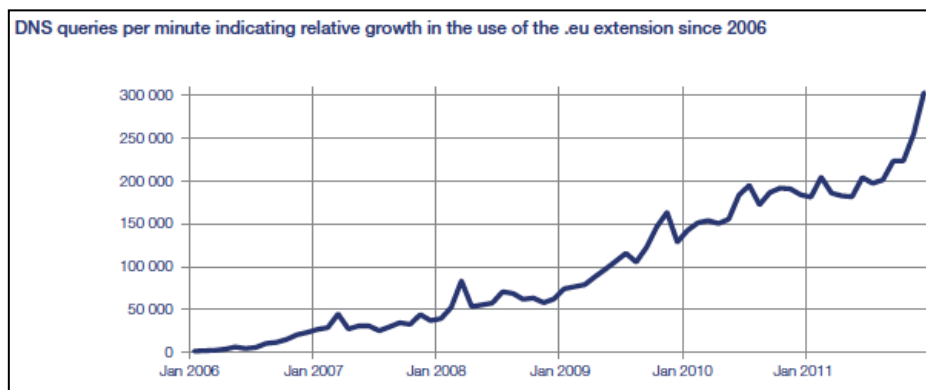
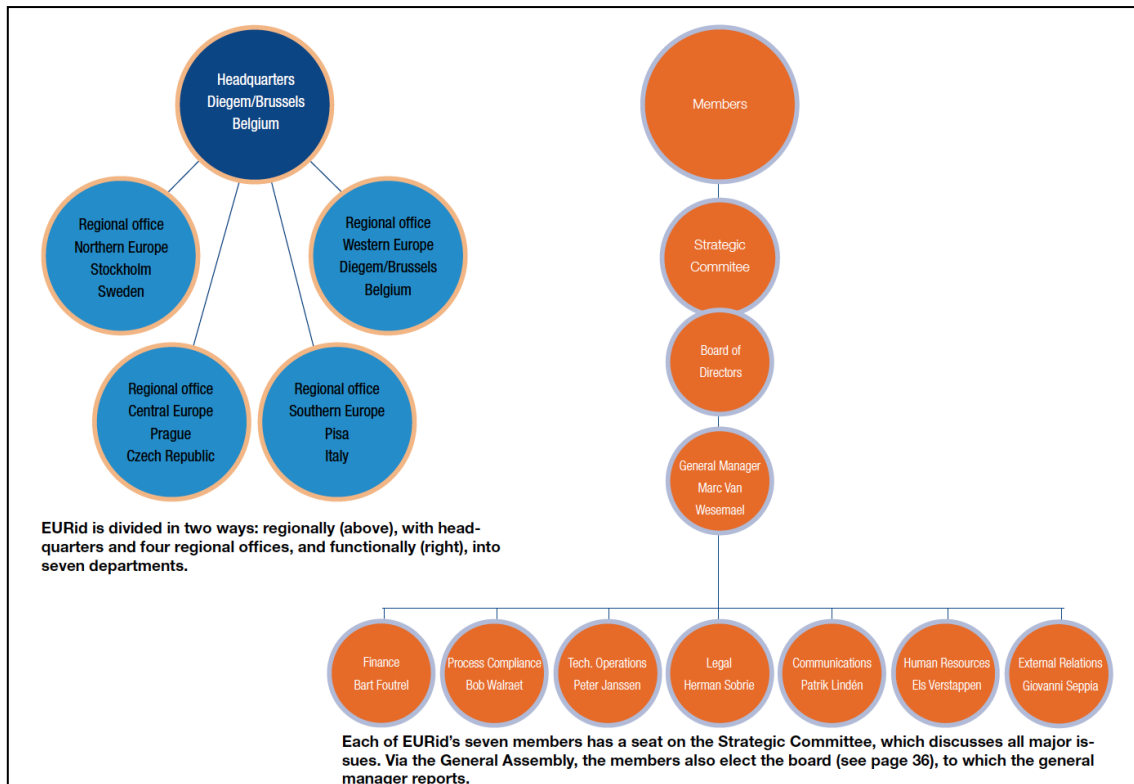
EURid recruited its first member of staff in April 2005. It became fully operational by June 2005 and at the end of 2005 had 15 employees working either on permanent or interim contracts.

## Members and organisational structure

The 7 members of EURid are:

- ❑ DNS Belgium, the registry for .be, the national top-level domain of Belgium
- ❑ Istituto di Informatica e Telematica, the registry for .it, the national top-level domain of Italy
- ❑ Stiftelsen för Internetinfrastruktur, IIS, the registry for .se, the national top-level domain of Sweden
- ❑ The Academic and Research Network of Slovenia (ARNES), the registry for .si, the national top-level domain for Slovenia
- ❑ CZ.NIC, the registry for .cz, the national top-level domain for the Czech Republic
- ❑ ISOC-ECC, the European chapter of the Internet Society
- ❑ BUSINESSEUROPE, a confederation of 39 industry-related federations from 33 countries

<sup>162</sup> Articles of Association can be found at <http://www.eurid.eu/en/about/management/articles-association> , last visited on 03.03.2013



## EURid: A statistical overview

|                                      | 2005  | 2006   | 2007   | 2008  | 2009  | 2010          | 2011          |
|--------------------------------------|-------|--------|--------|-------|-------|---------------|---------------|
| .eu registrations ('000's)           | 734   | 2,444  | 2,720  | 2,995 | 3,144 | 3,332         | 3,514         |
| <b>Total Revenues</b> (EUR millions) | 5.651 | 26.396 | 19.160 |       |       | <b>12.456</b> | <b>13.049</b> |
| Revenue from Registration rights     |       |        |        |       |       | 12.277        | 12.792        |
| <b>Total Costs</b> ( EUR millions)   | 7.402 | 21.404 | 16.150 |       |       | <b>12.082</b> | <b>12.569</b> |
| Human resources                      | 0.536 | 1.796  | 2.833  |       |       | 3.594         | 4.044         |

|                                                |       |       |       |    |     |       |       |
|------------------------------------------------|-------|-------|-------|----|-----|-------|-------|
| Marketing and communication                    |       |       |       |    |     | 3.104 | 2.856 |
| Operating expenses                             | 0.234 | 9.944 | 8.057 |    |     | 1.666 | 2.306 |
| General costs                                  | 0.506 |       |       |    |     | 1.067 | 1.220 |
| Subsidiaries                                   |       | 0.092 | 0.862 |    |     | 1.358 | 1.207 |
| Depreciation                                   | 0.046 | 0.179 | 0.426 |    |     | 1.291 | 0.934 |
| Reserves and profit carried forward            |       |       |       |    |     | 8.711 | 9.564 |
| <b>Fixed Assets (book value; EUR millions)</b> |       |       | 2.26  |    |     | 1.68  | 1.33  |
|                                                |       |       |       |    |     |       |       |
| <b>Total Employees (FTEs)</b>                  | 15    | 32.5  | 41.5  |    |     |       | 56.5  |
| Head office, Diegem                            | 15    |       | 31.5  |    |     |       | 44    |
| Other offices                                  |       |       | 10    |    |     |       | 12.5  |
|                                                |       |       |       |    |     |       |       |
| DNS Queries per minute ('000's)                | 22.96 |       | 41.7  | 70 | 140 | 180   | 300   |

The above table is compiled from EURid Annual reports for 2005, 2006, 2007 and 2011. Annual reports do not appear to be available in intervening or subsequent years.

### **Global System for Mobile communications Association (GSMA)**

#### **Introduction**

The GSMA represents the interests of the world's mobile operators in the development of this dynamic industry. It spans more than 220 countries, bringing together nearly 800 of the world's mobile operators, as well as more than 200 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers, Internet companies, and media and entertainment organisations. GSMA members represent more than 5 billion LTE, GSM and 3GSM connections.

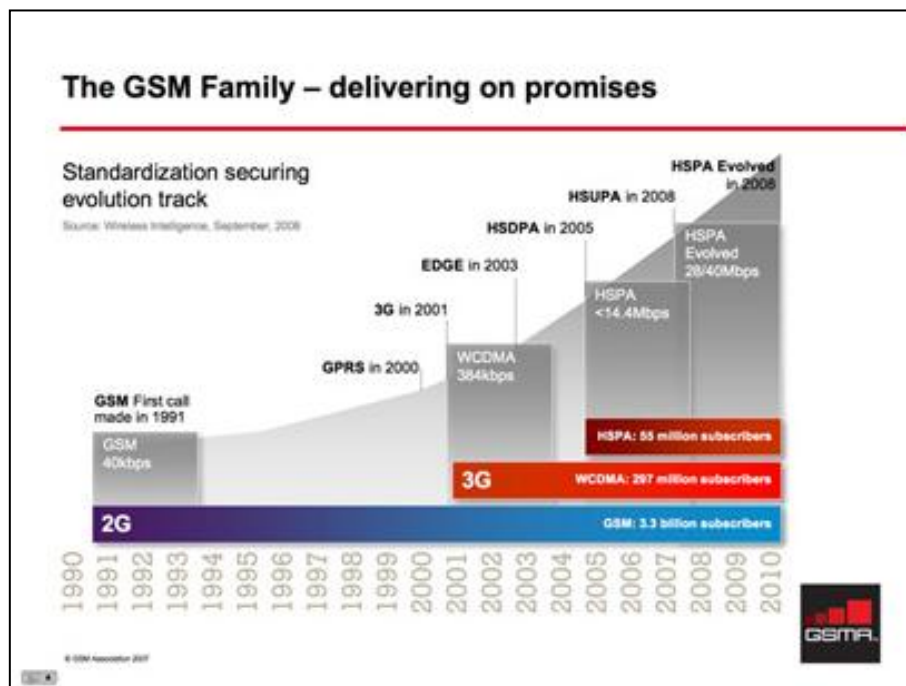
GSMA also produces the world's largest mobile event, [www.mobileworldcongress.com](http://www.mobileworldcongress.com), attracting each year, over 60,000 key decision makers to our annual congress in the Mobile World Capital, Barcelona.

There are offices in London, Shanghai, Atlanta, Brussels, Hong Kong, Sao Paulo, Delhi and Santiago.

These are the main services:

- GSM (Global System for Mobile communications) is an open, digital cellular technology used for transmitting mobile voice and data services. GSM supports voice calls and data transfer speeds of up to 9.6 kbps, together with the transmission of SMS (Short Message Service).

- ❑ GPRS (General Packet Radio Service) is a very widely-deployed wireless data service, available now with most GSM networks. GPRS offers throughput rates of up to 40 kbps, enabling mobile handsets to access online services at a similar speed to a dial-up modem, but with the convenience of being able to connect from almost anywhere. GPRS enables people to enjoy advanced, feature-rich data services, such as e-mail on the move, multimedia messages, social networking and location-based services.
- ❑ EDGE. GSM networks upgraded with Enhanced Data rates for GSM Evolution (EDGE) technology can provide up to three times the data capacity of GPRS. Using EDGE, operators can handle three times more subscribers than GPRS, triple their data rate per subscriber, or add extra capacity to their voice communications. EDGE enables the delivery of more demanding mobile services, such as the downloading of video and music clips, multimedia messaging, full web browsing and e-mail on the move.
- ❑ 3G/WCDMA (Wideband Code Division Multiple Access) can carry data at high speeds, enabling mobile operators to deliver richer mobile multimedia services such as music-on-demand, TV and video streaming and broadband Internet access.
- ❑ HSPA (High Speed Packet Access) supports the very efficient provision of voice services in combination with mobile broadband data services.
- ❑ Long Term Evolution (LTE) is a mobile network technology that is being deployed by mobile operators on both the GSM and the CDMA technology paths. Depending on the spectrum available, live LTE networks can deliver very fast data speeds of up to 100Mbps in the downlink and 50Mbps in the uplink.
- ❑ Roaming enables a mobile subscriber to automatically make and receive voice calls, send and receive data, or access other services when travelling outside the geographical coverage area of their home network, by means of using a visited network.
- ❑



## History<sup>163</sup>

The history of GSM & the GSMA goes back to 1982. In 1985 'GAP' (Groupe d'Analyse et de Prevision') meetings took place that led to the European Commission endorsement of the GSM project. In 1989 Groupe Speciale Mobile defined the GSM standard as the internationally accepted digital cellular telephony standard. In 1994 GSM MoU membership surpassed 100 operators and GSM subscribers reached one million. By 1998 Global GSM subscribers surpassed 100 million. In 2003 GSMA created new CEO-level Board and membership of GSM Association breaks through 200-country barrier. In 2006 GSM surpasses two billion customers and there were over 120 commercial WCDMA networks in more than 50 countries and almost 100 million subscriptions. In 2010 there were more than 300 million HSPA connections worldwide and 1.6 billion worldwide mobile device sales to end users.

## Members and organisational structure

The GSMA Board was constituted in 2003 and provides the GSMA's membership with a stronger voice, clearer direction, and faster decision making. It has 25 members reflecting the largest operator groups and members from smaller independent operators with global representation.

Members steer, and participate in, the work of the GSMA through specialist committees and groups. There are 5 main committees: Public Policy Committee, Finance Committee, Strategy Committee, Governance Committee, and Compensation Committee.

Financial and operational data was not available for GSMA.

## *Internet Corporation of Assigned Names and Numbers*

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### Introduction

The Internet Corporation for Assigned Names and Numbers (ICANN)<sup>164</sup> is responsible for managing and coordinating the Domain Name System (DNS) to ensure that every address is unique and that all users of the Internet can find all valid addresses. It does this by overseeing the distribution of unique IP addresses and domain names. It also ensures that each domain name maps to the correct IP address.

ICANN is also responsible for accrediting the domain name registrars. "Accredit" means to identify and set minimum standards for the performance of registration functions, to recognize persons or entities meeting those standards, and to enter into an accreditation agreement that sets forth the rules and procedures applicable to the provision of Registrar Services.

ICANN coordinates the Domain Name System (DNS), Internet Protocol (IP) addresses, space allocation, protocol identifier assignment, generic (gTLD) and country code (ccTLD) Top-Level Domain name system management, and root server system management functions. These services were originally performed under U.S. Government contract by the Internet Assigned Numbers Authority (IANA) and other entities. ICANN now performs the IANA function.

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<sup>163</sup> See <http://www.gsma.com/aboutus/history> , last visited on 03.05.2013

<sup>164</sup> <http://www.icann.org/> , last visited on 03.05.2013

## History

Before the establishment of ICANN, the Government of the United States controlled the domain name system of the Internet.

ICANN was incorporated in California on September 30, 1998. On September 29th, 1999, ICANN posted the Uniform Domain Name Resolution Policy for public comments. The process aimed to address problems arising from cybersquatting and protect intellectual property rights.

While ICANN has its roots in the U.S. government, it is now, and continues to strive to be, an international, community-driven organization. Their management of an interoperable Internet covers 180 million domain names, the allocation of more than 4 billion network addresses, and the support of approximately a trillion DNS look-ups everyday across 240 countries<sup>165</sup>.

In September, 2011, the ICANN Board approved resolutions to secure new office space for the organization. It is possible they will negotiate for more space at their current location, or that they find a new space at their headquarters of Marina Del Rey. It was also decided to begin permanently leasing its office space in Brussels instead of continuing to rent their space month-to-month. Much of its expansion is related to the new gTLD program. At the time of the board's decision, ICANN staff numbered 124, with 21 open positions to be filled. The 2012 budget includes \$2.1 million for office space acquisition and maintenance for its offices in Marina Del Rey, Brussels, Sydney, Paolo Alto, and Washington D.C.[64] The Sydney office went on to be closed in 2012.

In February 2013, CEO Fadi Chehadé announced that ICANN's office in L.A. would diminish in importance while two new "hubs" would be created to fill the gap and provide new means of outreach to ICANN's international constituents. The hubs are to be located in Singapore and Istanbul, and are to act with far more authority and purpose than a stand-alone office; it is clear that many senior staff from the L.A. office will be asked to move, and the CEO himself said he will be based in Singapore once that office is up and running.[65][66] The news was announced during Mr. Chehadé's first comprehensive tour of Asia, with trips to South Korea, China, Japan, and Singapore.

## Members and organisational structure

178 staff is listed on ICANN's website. The ICANN Strategic Plan for July 2010 – June 2013<sup>166</sup> describes ICANN as having 140 employees and annual funding of \$64 million.

ICANN has 5 teams listed for its functions. These are:

- ✘ Compliance – 13 staff work on compliance
- ✘ Domain Name System (DNS) Operations, The operations team has 5 members of staff.
- ✘ Global Partnerships - is a team of people appointed to demonstrate ICANN's commitment to international participation and the efficacy of its multi-stakeholder environment. 12 staff work in this team
- ✘ Internet Assigned Numbers Authority (IANA) is responsible for the global coordination of the DNS Root, IP addressing, and other Internet protocol resources
- ✘ Security. The Security team has an internal and external role, working across the organization and community to support ICANN's mission of preserving and enhancing the

<sup>165</sup> <http://icannwiki.com/index.php/ICANN> , last visited on 03.05.2013

<sup>166</sup> <https://www.icann.org/en/about/financials/fiscal-30jun11-en.htm> , last visited on 03.05.2013

operational stability, reliability and global interoperability of the Internet. 7 staff is shown working for security.

| Period                      | Period       | Transactions       | % Change |
|-----------------------------|--------------|--------------------|----------|
| FYE 30 June 2005            | Oct-Dec 2004 | 8,609,473          |          |
|                             | Jan-Mar 2005 | 14,852,287         | 72.5%    |
|                             | Apr-Jun 2005 | 15,238,720         | 2.6%     |
| FYE 30 June 2006            | Jul-Sep 2005 | 15,361,480         | 0.8%     |
|                             | Oct-Dec 2005 | 17,045,957         | 11.0%    |
|                             | Jan-Mar 2006 | 20,173,715         | 18.4%    |
|                             | Apr-Jun 2006 | 19,827,010         | -1.7%    |
| FYE 30 June 2007            | Jul-Sep 2006 | 19,521,289         | -1.5%    |
|                             | Oct-Dec 2006 | 21,461,069         | 9.9%     |
|                             | Jan-Mar 2007 | 24,601,274         | 14.6%    |
|                             | Apr-Jun 2007 | 24,516,150         | -0.4%    |
| FYE 30 June 2008            | Jul-Sep 2007 | 25,631,635         | 4.6%     |
|                             | Oct-Dec 2007 | 25,815,357         | 0.7%     |
|                             | Jan-Mar 2008 | 27,609,477         | 7.0%     |
|                             | Apr-Jun 2008 | 27,486,425         | -0.5%    |
| FYE 30 June 2009            | Jul-Sep 2008 | 29,064,841         | 5.7%     |
|                             | Oct-Dec 2008 |                    |          |
|                             | Jan-Mar 2008 |                    |          |
|                             | Apr-Jun 2008 |                    |          |
| <b>Proposed FY10 Budget</b> |              |                    |          |
| FYE 30 June 2010            | Jul-Sep 2009 | 31,252,280         |          |
|                             | Oct-Dec 2009 | 31,875,324         | 2.0%     |
|                             | Jan-Mar 2010 | 32,460,832         | 1.8%     |
|                             | Apr-Jun 2010 | 33,109,050         | 2.0%     |
|                             |              | <b>128,697,486</b> |          |

| FY10 Proposed Registry Revenue -- Transaction & fixed fees |            |               |
|------------------------------------------------------------|------------|---------------|
| gTLD                                                       | Fixed Fee  | Fee per Trans |
| .com                                                       | 18,000,000 |               |
| .pro                                                       | 121,900    |               |
| .tel                                                       | 50,000     |               |
| .aero                                                      | 5,000      |               |
| .coop                                                      | 5,000      |               |
| .museum                                                    | 500        |               |
| .cat                                                       | 10,000     | \$ 1.00       |
| .jobs                                                      | 10,000     | \$ 2.00       |
| .travel                                                    | 10,000     | \$ 2.00       |
| .net                                                       |            | \$ 0.75       |
| .biz                                                       |            | \$ 0.15       |
| .info                                                      |            | \$ 0.15       |
| .name                                                      |            | \$ 0.15       |
| .org                                                       |            | \$ 0.15       |
| .mobi                                                      |            | \$ 0.40       |
| .asia                                                      |            | \$ 0.75       |

Source: proposed budget framework for year ending June 2010<sup>167</sup>.

## ICANN: A statistical overview

|                                                 | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  |
|-------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Assets (EUR)                                    | 8.93  | 19.80 | 35.97 | 46.71 | 56.10 | 63.58 | 76.47 |
| Total support and revenue (EUR)                 | 13.64 | 22.85 | 33.30 | 38.59 | 46.15 | 50.39 | 53.09 |
| Total expenses (EUR)                            | 10.51 | 15.05 | 20.41 | 30.29 | 39.29 | 44.93 | 45.95 |
| Net cash provided by operating activities (EUR) | -0.32 | 7.61  | 15.09 | 13.00 | 11.96 | 1.64  | 11.01 |

## Trans-European Research and Education Networking Association (TERENA)

### Introduction

The Trans-European Research and Education Networking Association (TERENA)<sup>168</sup> offers a forum to collaborate, innovate and share knowledge in order to foster the development of Internet technology, infrastructure and services to be used by the research and education community.

TERENA is the association in which Europe's research networking organisations, research institutes, equipment vendors and telecommunications operators meet, exchange information and experience, and collaborate on a range of activities

<sup>167</sup> <https://www.icann.org/en/about/financials/fiscal-30jun10-en.htm> , last visited on 03.05.2013

<sup>168</sup> <http://www.terena.org/> , last visited on 03.05.2013

Its overall objective is: “...to promote and participate in the development of a high quality international information and telecommunications infrastructure for the benefit of research and education.”

TERENA has four core pillars of activities:

- Providing an environment for fostering new initiatives in the European research networking community.
- Supporting joint European work in developing, evaluating, testing, integrating and promoting new networking, middleware and application technologies through the TERENA Technical Programme.
- Organising conferences, workshops and seminars for the exchange of information in the European research networking community, and pursuing knowledge transfer to less advanced networking organisations.
- Promoting members' interests by representing the common interests and opinions of the membership contacts with governments, funding bodies, industry and other organisations.

## History

TERENA was founded under the name RARE (Réseaux Associés pour la Recherche Européenne) on 13 June 1986. The first few years were dominated by the COSINE (Co-operation for Open Systems Interconnection Networking in Europe) project. COSINE led to the implementation of some of the first standardised network-related services, for example email. It also created the first generation of the backbone network interconnecting the national research networks in Europe, known today as GÉANT. To run the European backbone, RARE's Operational Unit was later split off from the association under the name DANTE.

In the years that followed, IP (Internet Protocol) became the dominant protocol in data networking, leading to the creation of the RIPE (Réseaux IP Européens) Network Coordination Centre in 1992 by RARE, and later to the set-up of the RIPE NCC as a separate legal entity. In October 1994, RARE took over the assets of EARN (European Academic and Research Network), providing the financial basis to rebuild the organisation. Since then, RARE has been known by its current name TERENA, the Trans-European Research and Education Networking Association.

## Members and organisational structure

TERENA has 17 Secretariat Staff<sup>169</sup>.

In terms of governance, there is an Executive Committee (TEC) with 6 members<sup>170</sup>. There is a technical committee (TTC) for which 8 members<sup>171</sup> are listed. There is also a General Assembly (GA) with representatives listed as national (40), international (2) and associate (14).

## Services

TERENA does offer some services in addition to organising conferences and networking events and commissioning publications.

A satisfaction survey was carried out in 2012. In response to the question “How would you rate your overall experience with TERENA in the past 3 years?” 72% of respondents were very satisfied.

<sup>169</sup> <http://www.terena.org/about/people/> , last visited on 03.05.2013

<sup>170</sup> <http://www.terena.org/about/people/tec.php> , last visited on 03.05.2013

<sup>171</sup> <http://www.terena.org/about/people/ttc.php> , last visited on 03.05.2013

## Statistical overview

|                                     | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Current Assets (EUR '000's)         | 2,963 | 3,066 | 3,005 | 3,091 | 3,886 | 3,839 | 3,412 |
| Total Income (EUR '000's )          | 2,182 | 2,389 | 2,552 | 2,367 | 2,531 | 2,633 | 2,980 |
| Personnel Costs (EUR '000's)        | 429   | 535   | 526   | 395   | 446   | 342   | 1,577 |
| Projects, workshops and conferences | 1,510 | 1,387 | 1,464 | 1,681 | 1,970 | 2,045 | n/a   |
| Technical Programme                 | 32    | 34    | 46    | 48    | 27    | 21    | n/a   |
| Total Expenditure                   | 2,139 | 2,353 | 2,286 | 2,331 | 2,622 | 2,552 | 2,910 |
| Staff (posts)                       | 16    | 16    | 18    | 16    | 15    | 13    | 16    |

**Notes:** 2005 and 2006 financial data taken from 2006 Accounts, other information from the accounts of that year.

### 9.1.11 .CO organisations (Private sector initiated not for profit organisations)

#### European Payments Council - EPC

##### Introduction

The European Payments Council (EPC) is the coordination and decision-making body of the European banking industry in relation to payments. The purpose of the EPC is to support and promote the Single Euro Payments Area (SEPA). The EPC develops payment schemes and frameworks which help to realise the integrated euro payments market. In particular, the EPC defines common positions for the cooperative space of payment services.

The EPC consists of 74 members representing banks, banking communities and payment institutions. More than 360 professionals from 32 countries are directly engaged in the EPC's work programme, representing organisations of all sizes and sectors of the European banking industry. The European Central Bank (ECB) acts as an observer in all EPC working and support groups and in the EPC Plenary (the Plenary is the decision-making body of the EPC, see chart below). The EPC is a not-for-profit organisation which makes all of its deliverables, including the SEPA Scheme Rulebooks and adjacent documentation, available to download free of charge on the EPC Website. The EPC does not supply technology, goods or services.

##### History

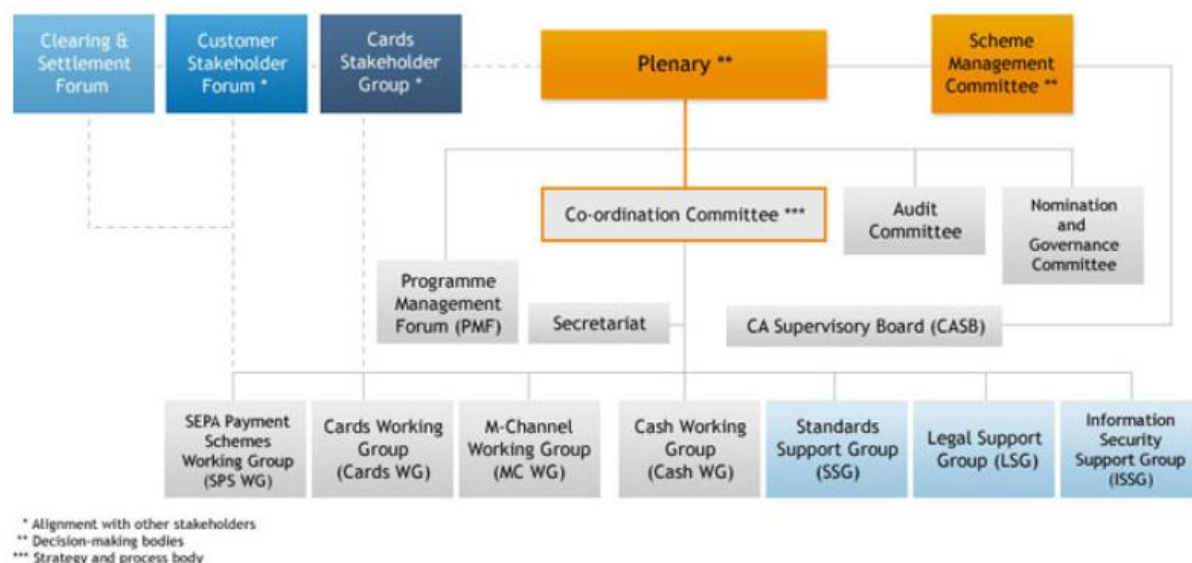
The European Payments Council (EPC) was founded in 2002.

SEPA currently consists of the 27 EU Member States plus Iceland, Norway, Liechtenstein, Switzerland and Monaco. Within SEPA, bank customers can make electronic euro payments across 32 countries under the same basic rights and obligations.

##### Members and organisational structure

At the end of 2011, the EPC consists of 74 members representing banks, banking communities and payment institutions. More than 360 professionals from 32 countries are directly engaged in the work programme of the EPC, representing all sizes and sectors of the banking industry within Europe. The

European Central Bank acts as an observer in all EPC working and support groups and in the EPC Plenary (the Plenary is the decision-making body of the EPC) (EPC Annual Activity Report 2011).



In February 2012, the European Union (EU) legislator adopted the Regulation establishing technical and business requirements for credit transfers and direct debits in euro and amending which defines 1 February 2014 as the deadline in the euro area for compliance with the core provisions of this Regulation. In non-euro countries, the deadline will be 31 October 2016. Effectively, this means that as of these dates, existing national euro credit transfer and direct debit schemes will be replaced by SEPA Credit Transfer (SCT) and SEPA Direct Debit (SDD).

Commission survey on public administrations (PA) preparedness and migration to SEPA<sup>172</sup>.

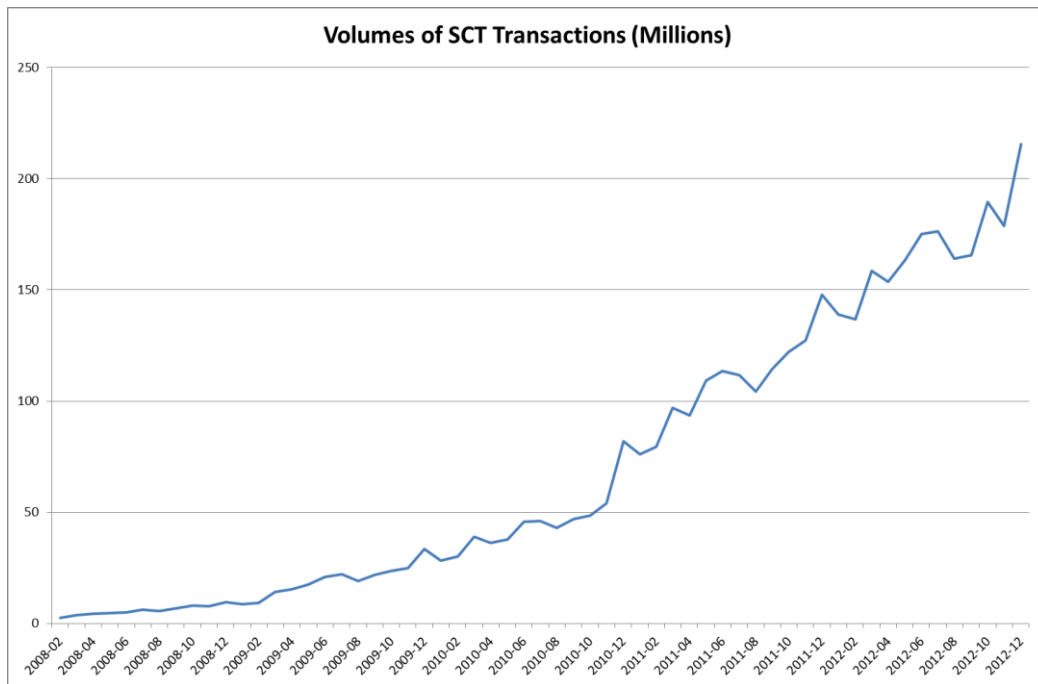
<sup>172</sup> [http://ec.europa.eu/internal\\_market/payments/docs/sepa/publ\\_adm\\_migration-2009\\_07\\_en.pdf](http://ec.europa.eu/internal_market/payments/docs/sepa/publ_adm_migration-2009_07_en.pdf) , last visited on 03.05.2013

**Table 1: Contributions received by individual PA at Member State level**

| Member State (MS)          | Number of replies by individual PA | Total number of CT in 2008 by individual PA responding to survey (millions) | Estimated total number of CT made by all PA in MS in 2008 (millions) | Estimated share of replying individual PA as percentage of total number of CT by all PA |
|----------------------------|------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Austria (AT)               | 1                                  | 0.3                                                                         | 148.0                                                                | 0.2%                                                                                    |
| Belgium (BE)               | 28                                 | 88.9                                                                        | 125.0                                                                | 71.2%                                                                                   |
| Cyprus (CY)                | 3                                  | 3.0                                                                         | 3.0                                                                  | 100.0%                                                                                  |
| Finland (FI)               | 4                                  | 70.0                                                                        | 70.0                                                                 | 100.0%                                                                                  |
| France (FR)                | 1                                  | 252.0                                                                       | 872.0                                                                | 28.9%                                                                                   |
| Germany (DE)               | 4                                  | 284.0                                                                       | 315.0                                                                | 90.2%                                                                                   |
| Greece (EL)                | 1                                  | 0.3                                                                         | 5.0                                                                  | 6.0%                                                                                    |
| Ireland (IE)               | 5                                  | 2.8                                                                         | 23.0                                                                 | 12.2%                                                                                   |
| Italy (IT)                 | 1                                  | 20.5                                                                        | 45.0                                                                 | 45.6%                                                                                   |
| Luxembourg (LU)            | 1                                  | 0.9                                                                         | 0.9                                                                  | 100.0%                                                                                  |
| Malta (MT)                 | 3                                  | 1.7                                                                         | 1.9                                                                  | 92.1%                                                                                   |
| Netherlands (NL)           | 6                                  | 85.5                                                                        | 150.0                                                                | 57.0%                                                                                   |
| Portugal (PT)              | 2                                  | 12.1                                                                        | 21.0                                                                 | 60.0%                                                                                   |
| Slovenia (SI)              | 2                                  | 8.5                                                                         | 40.0                                                                 | 21.3%                                                                                   |
| Slovakia (SK)              | 6                                  | 22.4                                                                        | 22.4                                                                 | 100.0%                                                                                  |
| Spain (ES)                 | 3                                  | 137.5                                                                       | 209.0                                                                | 65.8%                                                                                   |
| <b>Euro area</b>           | <b>71</b>                          | <b>990.3</b>                                                                | <b>2051</b>                                                          | <b>52.0%</b>                                                                            |
| Bulgaria <sup>1</sup> (BG) | 0                                  | <i>n.a.</i>                                                                 | 6.5                                                                  | 0.0%                                                                                    |
| Czech Republic (CZ)        | 1                                  | 0.0                                                                         | 28.0                                                                 | <i>n.a.</i>                                                                             |
| Denmark (DK)               | <b>no reply received</b>           |                                                                             |                                                                      |                                                                                         |
| Estonia (EE)               | 1                                  | 4.2                                                                         | 13.0                                                                 | 32.3%                                                                                   |
| Hungary (HU)               | 4                                  | 98.9                                                                        | 100.0                                                                | 95.0%                                                                                   |
| Latvia (LV)                | 4                                  | 10.0                                                                        | 10.0                                                                 | 100.0%                                                                                  |
| Lithuania (LT)             | 4                                  | 19.7                                                                        | 20.0                                                                 | 100.0%                                                                                  |
| Poland (PL)                | 12                                 | 0.3                                                                         | 156.0                                                                | <i>n.a.</i>                                                                             |
| Romania (RO)               | 1                                  | 12.0                                                                        | 39.0                                                                 | 30.8%                                                                                   |
| Sweden (SE)                | 4                                  | 78.0                                                                        | 78.0                                                                 | 100.0%                                                                                  |
| United Kingdom (UK)        | <b>no reply received</b>           |                                                                             |                                                                      |                                                                                         |
| <b>Non-euro area</b>       | <b>31</b>                          | <b>223.2</b>                                                                | <b>450.5</b>                                                         | <b>49.5%</b>                                                                            |
| <b>EU 27</b>               | <b>102</b>                         | <b>1213.5</b>                                                               | <b>2501.7</b>                                                        | <b>48.5%</b>                                                                            |

<sup>1</sup> Has submitted coordinated reply only

The chart above indicates the total number of SEPA credit transfers (SCT) transactions processed by the infrastructures located in the euro area.



Source: <http://www.ecb.europa.eu/paym/sepa/about/indicators/html/index.en.html> , last visited on 03.05.2013

Financial and operational data was not available for EPC.

## ***Society for Worldwide Interbank Financial Telecommunication (SWIFT)***

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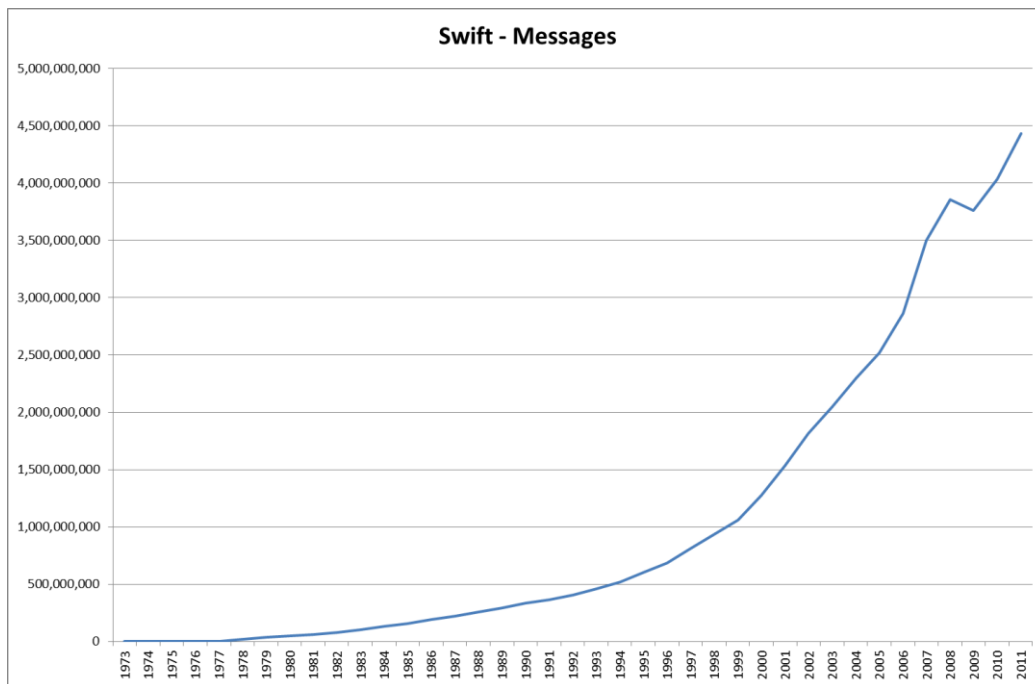
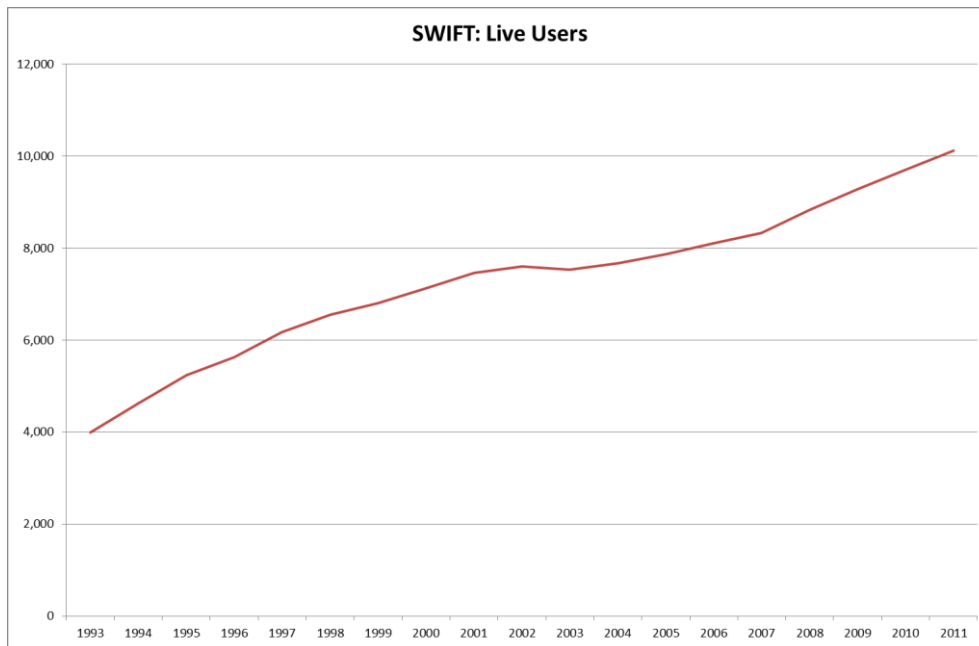
### **Introduction**

SWIFT is the Society for Worldwide Interbank Financial Telecommunication<sup>173</sup>, a member-owned cooperative through which the financial world conducts its business operations with speed, certainty and confidence. More than 10,000 banking organisations, securities institutions and corporate customers in 212 countries trust us every day to exchange millions of standardised financial messages.

### **History**

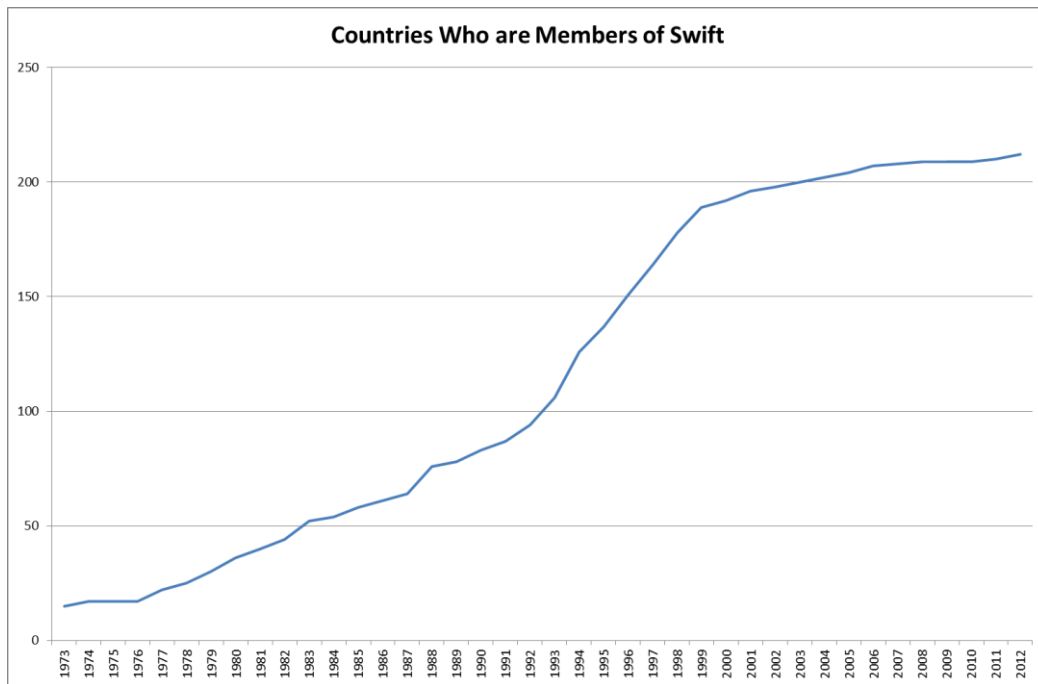
SWIFT was started in 1973 in Brussels by 239 banks in 15 countries. The first operating centres were opened in 1976. North American centre was opened in 1979 and the first Asian Countries joined in 1980. In 1987 SWIFT's expanded by including broker dealers, exchanges, central depositories and clearing institutions. In 2003 SWIFT yearly traffic reaches the two billion FIN message mark, doubling in volume since 1999. In 2008 SWIFT records two peaks in the same week in the message traffic 16,327,668 messages on Wednesday 23 January and 16,550,075 messages on Friday 25 January: a first in SWIFT history. First live SEPA (Single Euro Payments Area) Credit Transfers is sent from major European banks over SWIFTNet on 28 January 2008.

<sup>173</sup> <http://www.swift.com> , last visited on 03.05.2013



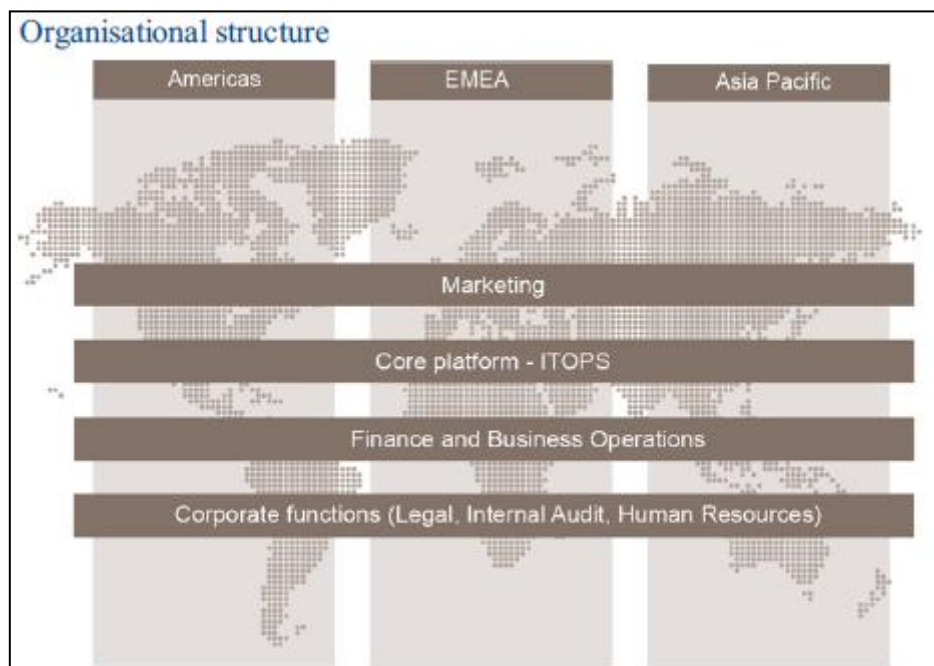
## Members and organisational structure

In 2012 202 Countries were members of SWIFT. The growth in national membership is shown in the next chart.



Swift is managed through a Board of Directors, through an Executive Committee with a Chief Executive Officer and 8 other senior positions.

Swift has a mixed geographical and functional management structure.



### Statistical overview

|                       | 2005    | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|
| Revenues (EUR '000's) | 535,911 | 562,437 | 568,373 | 579,489 | 586,074 | 537,973 | 530,988 |
| Total Expenses        | 525,161 | 538,660 | 535,017 | 559,584 | 567,595 | 527,745 | 512,828 |

| (EUR '000's)        |       |       |       |       |       |       |       |
|---------------------|-------|-------|-------|-------|-------|-------|-------|
| Number of employees | 1,821 | 1,890 | 2,001 | 2,138 | 1,991 | 1,807 | 1,882 |

### 9.1.12 .CG organisations (European Commission as a supervisory Agency)

#### *Body of European Regulators for Electronic Communications (BEREC)*

##### Introduction

The Body of European Regulators for Electronic Communications (BEREC) contributes to the development and better functioning of the internal market for electronic communications networks and services. It does this by aiming to ensure a consistent application of the EU regulatory framework and by aiming to promote an effective internal market in telecoms sector, in order to bring even greater benefits to consumers and businesses alike.

BEREC also assists the Commission and the national regulatory authorities (NRAs) in implementing the EU regulatory framework for electronic communications, to give advice on request and on its own initiative to the European institutions and to complement at European level the regulatory tasks performed at national level by the regulatory authorities.

The main aims of BEREC are to:

- ❑ develop and disseminate among NRAs regulatory best practices, such as common approaches, methodologies or guidelines on the implementation of the EU regulatory framework;
- ❑ on request, provide assistance to NRAs on regulatory issues;
- ❑ deliver opinions on the draft decisions, recommendations and guidelines of the Commission as specified in the regulatory framework;
- ❑ issue reports and provide advice, upon a reasoned request of the Commission or on its own initiative, and deliver opinions to the European Parliament and the Council, when needed, on any matter within its competence;
- ❑ on request, assist the European Parliament, the Council, the Commission and the NRAs in relations, discussions and exchanges of views with third parties; and assist the Commission and NRAs in the dissemination of regulatory best practices to third parties.

##### History

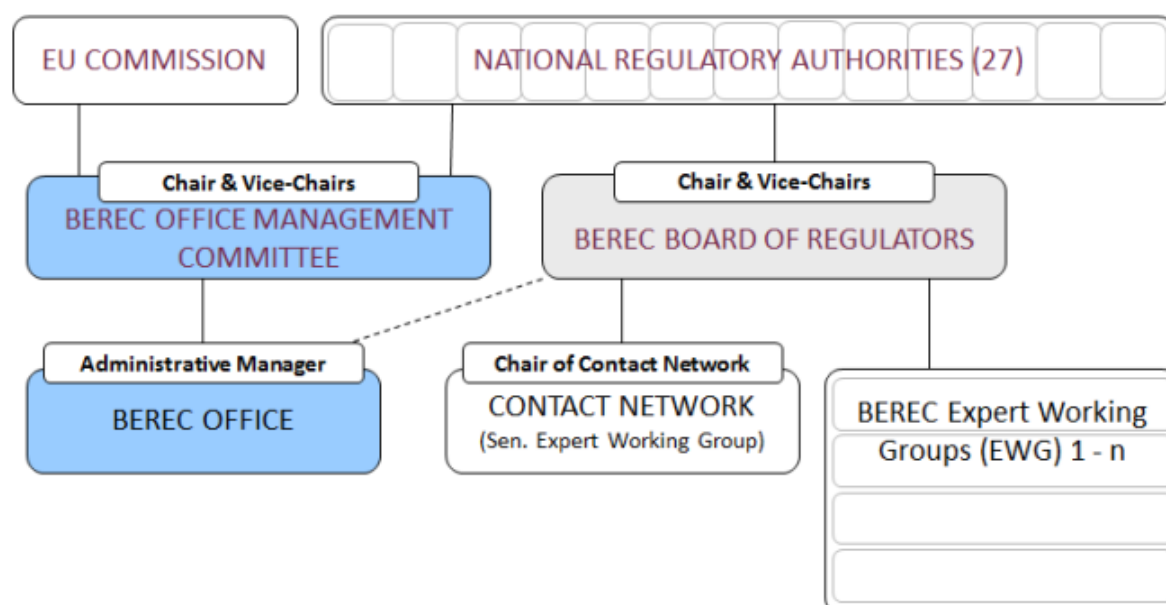
The Body of European Regulators for Electronic Communications (BEREC) was established by Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009, as part of the Telecom Reform package. It replaced the European Regulators Group for electronic communications networks and services which was established as an advisory group to the Commission in 2002.

BEREC commenced its activities in January 2010. In the course of 2011 it became fully functional and ready to fulfil all its assignments as required by the current regulatory framework.

## Members and organisational structure

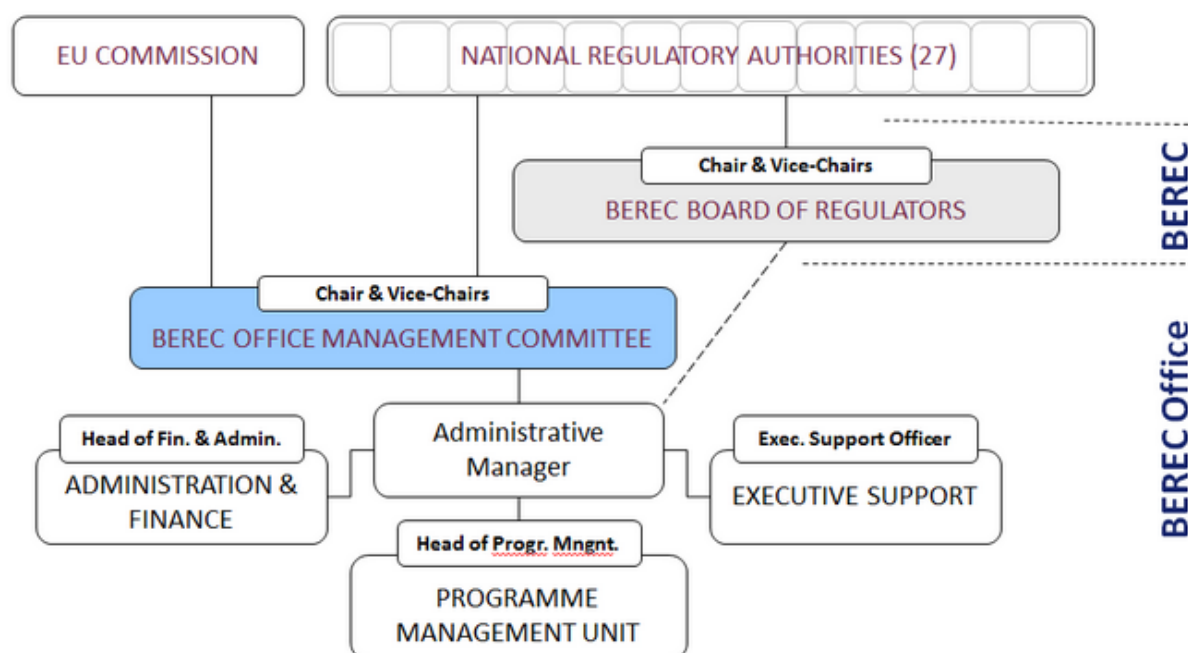
The overall structure of BEREC is shown below.

### Structure of BEREC



How the office is structured with BEREC is shown below.

### Structure of BEREC and BEREC Office



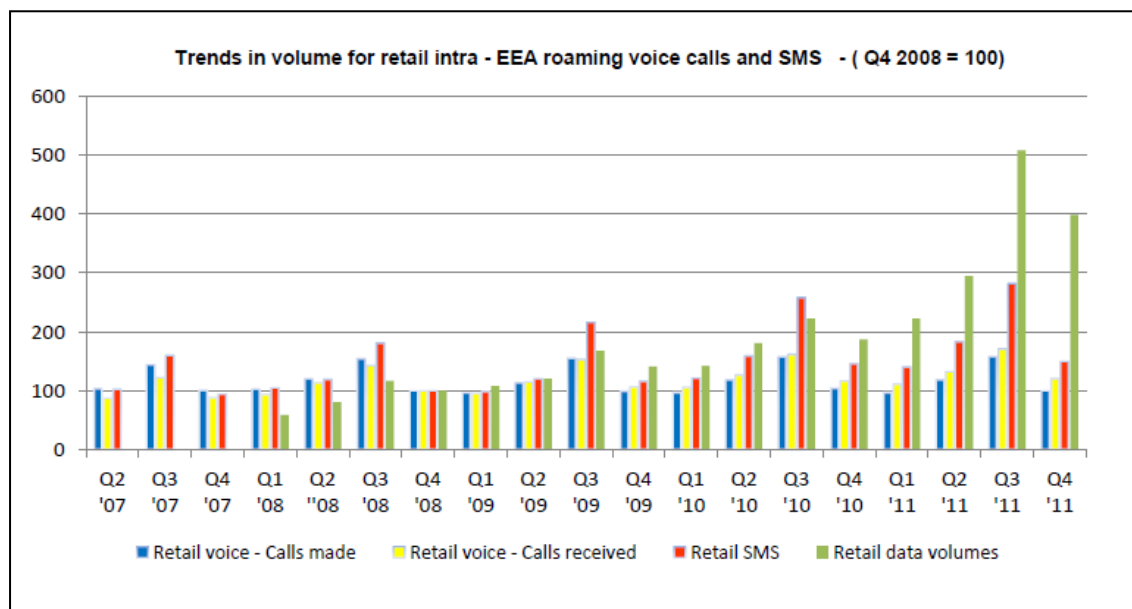
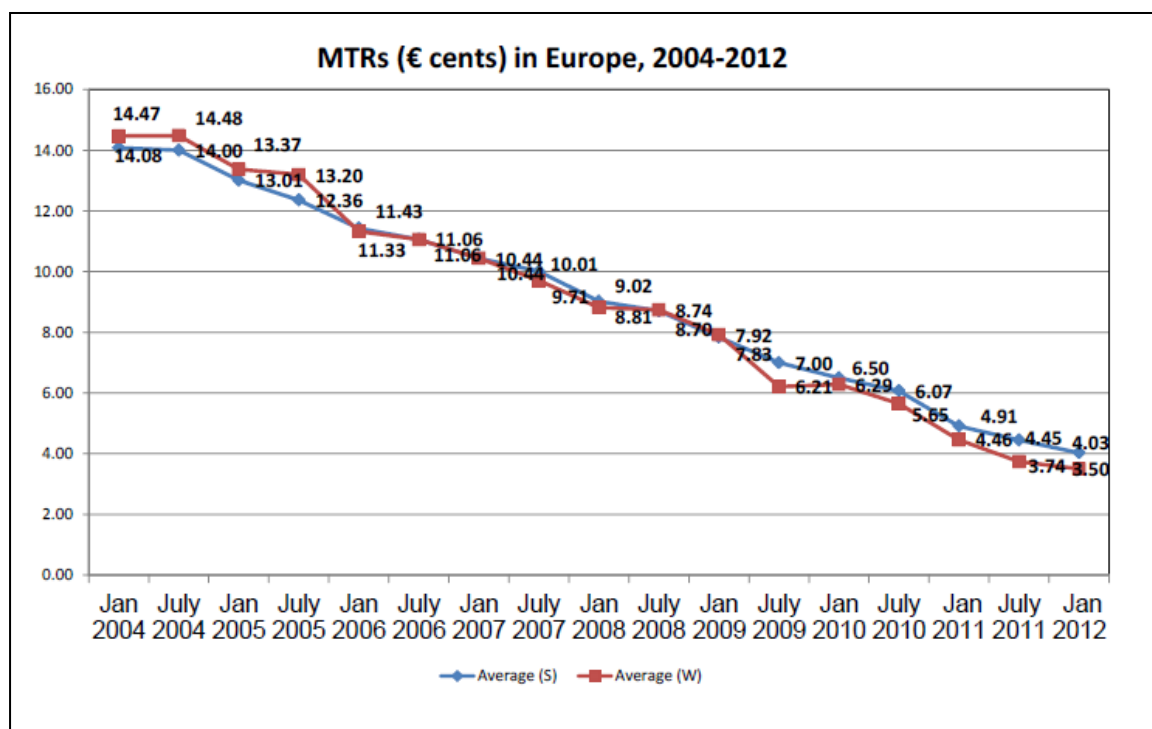
The Board of Regulators is composed of the heads or nominated high-level representatives of the NRA established in each EU Member State with primary responsibility for overseeing the day-to-day operation of the markets for electronic communications networks and services. This has 38 members.

The Board of Regulators is assisted by a working group called Contact Network composed of senior representatives of the BEREC NRAs and representatives of the European Commission and the EFTA Surveillance Authority.

There are currently 12 expert working groups.

The BEREC Office is located in Riga, Republic of Latvia.

## Mobile Termination Rates



## Statistical overview

BEREC became financially autonomous on 12 September 2011.

|                                | 2011       |
|--------------------------------|------------|
| Total Assets                   | 684,164.52 |
| Total Operational Income (EUR) | 778,984.21 |
| All staff expenses             | 364,711.61 |
| Total Expenditure              | 747,928.52 |
|                                |            |
| <b>Staff (posts)</b>           |            |
| Employees                      | 11         |
| Contract Agents                | 1          |
| Seconded National Experts      | 6          |

## Annex G – Key Practical Specifications and Recommendations

This Annex provides insights into key practical specifications and recommendations. These serve as a supplement to the Roadmap and Recommendations, providing more practical recommendations and specifications to achieve sustainability. However, these should not be viewed as a complete blueprint.

This section provides more detailed info on roles and responsibilities that have to be taken into account when setting up a Programme, an Agency, an NPO or one of the previously described scenarios. The purpose is to describe the formal management and support processes:

- ✘ **Setup a structured collaboration between the key stakeholders** in order to guarantee the further evolution of the different building blocks and CSPs. This includes stakeholder management, collaboration management and the setup of a financial management structure.
- ✘ **Assure a controlled evolution of the building blocks and CSPs** on functional, informational and architectural level.
- ✘ **Assure the quality and sustainability** on the level of compliance, information security and data quality.
- ✘ **Assure a structured exploitation of the platform** (building blocks, CSPs) with respect to service level management, capacity management and continuity management.
- ✘ **Support the on-boarding and creation of new cross-border trusted services** built on the CSPs and building blocks.

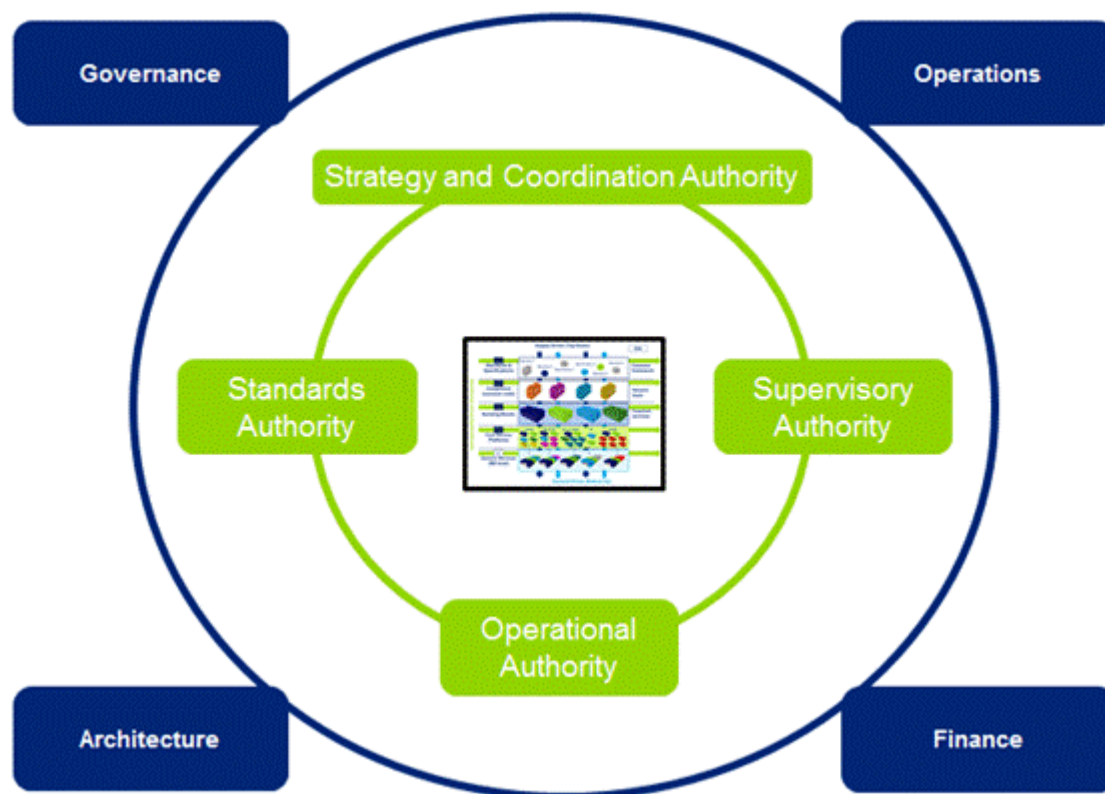
In this respect it is necessary to reflect on different levels, each having their own roles, responsibilities and structure. It is important to make a distinction between these key responsibilities, because they all contribute in their way to the creation of a sustainable trusted services ecosystem. These responsibilities or roles will be executed from within different structures or authorities, and these all play a role in every phase of the CSPs lifecycle. And the practical implementation of the role can change overtime as well, for instance from a pure consultancy role to a role where finding a consensus is very important.

It is therefore recommended to make a distinction between the following four key responsibilities or roles:

- ✘ **Strategy and Coordination Authority role:** This role entails the strategy and coordination with regards to the evolution and the conditions of operations of core services (CSPs) and their supporting building blocks. Basically it concerns the coordination of the different building blocks and CSPs and enabling re-use, for instance eID can be used in eHealth and eJustice. eDocument can be used in eProcurement, eBusiness and eJustice. It is important that this Strategy and Coordination Authority defines the high level framework to which the other defined authorities will have to apply (operate, control, define standards).
- ✘ **Standards Authority role:** The Standards Authority role entails the coordination of the evolution of the coinciding architecture and related standards and specifications that ensure interoperability and trust of these building blocks and CSPs.
- ✘ **Supervisory Authority role:** In this role the responsibility is taken to give guidance as to ensure trustworthy ecosystems and services. Where in the beginning the focus will be more on providing guidance to the Operational Authority in an Agency, in later stages this will evolve to supervision, compliance framework definition, controls and validation, involving multiple parties.

- Operational Authority role:** In this role the responsibility is taken - especially in the beginning - to run the core services and supporting building blocks and/or - in later stages - to do the necessary coordination to keep the corresponding ecosystems running, and provide a base infrastructure. The Operational Authority role is responsible for all operational aspects of running the Trust Services.

A summary of the 4 key responsibilities (roles, authorities) is given in figure below.



*Figure 52 – Overview of the 4 key responsibilities*

Each of these roles is explained in more in detail in the following sections, using the GOFA model, and specific recommendations are given.

### 9.1.13 The Strategy and Coordination Authority role

This role is defined to setup the strategy and coordination with regards to the evolution and the conditions of operations of CSPs and their supporting building blocks.

When applying the GOFA model the following more detailed recommendations can be given:

#### Governance

At the level of governance this role deals with the overall coordination of stakeholder management, portfolio management, and establishing trust and risk compliancy.

- Stakeholder Management:** This involves capturing the needs and requirements of all the stakeholders involved in a structured way. This results in a stakeholder management model (with stakeholder classifications), as well as a stakeholder communications plan. A clear and

thorough stakeholder management and involvement is crucial as was also determined in the lessons learnt. Stakeholder management and involved stakeholders can also change over time, depending on the lifecycle phase a CSP is in. Stakeholder management also includes tracing and prioritization issues which need to be dealt with.

- **Portfolio and Service Management:** Here it is important to prioritize requests and supervise the roadmap and different releases of the CSPs and their supporting building blocks, as well as the cross-border services. It includes the description of services and functionalities, the definition of a portfolio of what is in-scope, the follow-up of add-ons and the activation of new services or functionalities.
- **Establishing Trust and Risk Compliancy:** While the creation of a risk compliance framework will be more the work of the Standard Authority, the main goal for the Strategy and Coordination Authority is to ensure that the necessary attention is given, and that continued strategic attention is given to the evolution of threads and risks.

## Operations

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On operations level this Strategy and Coordination Authority role makes sure that knowledge transfer, communication and creation of documentation is well organized.

- **Knowledge and documentation:** The purpose is to create a common knowledge base clearly explaining and documenting the services, semantics and vocabulary. A common concepts framework will also include possible synonyms in order to be clear on the used jargon
- **Communication:** Information sessions need to be run by an information office clearly explaining the concepts and available documentation. Also all changes and extensions to concepts need to be discussed and communicated.

## Financing

---

On finance level the elaboration of a financing scheme and billing models (including the administration of these) is important to assure further funding.

- **Establish and guard a cost calculation model and financing mechanisms to ensure funding:** A profound financing scheme and structure needs to be set up (public, private funding, billing and charging models) in order to guarantee a long-term sustainability of the CSPs and building blocks. It has already been indicated that a good funding mechanism is very important (see for instance the funding examples at ICANN and SWIFT).

Defining a financial model and structure per authority is very important, but it will also be needed to reflect on a cross-authority financial structure. An example could be a structure whereby the Strategy and Coordination Authority decides on the money split between the different authorities, and therefore has an important responsibility in this example, because the other authorities will need to come up (yearly) with a budget plan, which will need approval by the Strategy and Coordination Authority.

## Architecture

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The Strategy and Coordination Authority role needs to deal with architectural governance.

- **Create an overall enterprise architecture:** The main goal is to describe the conceptual architecture based on the European Interoperability Framework and the European an and

the European Interoperability Architecture. This applies to the AS-IS architecture as well as to the TO-BE architecture of new components, CSPs and building blocks.

### 9.1.14 The Standards Authority role

---

Whereas the Strategy and Coordination Authority role works more on a strategic level, this Standards Authority role will work on a more tactical level. The Standards Authority role entails the coordination of the evolution of the coinciding architecture and related standards and specifications that ensure interoperability and trust of the building blocks and CSPs.

When applying the GOFA model the following more detailed recommendations can be given:

#### Governance

---

On governance level this role deals with the overall coordination of standards definition, establishing trust and the setup of a Governance, Risk and Compliancy (GRC) framework.

- ✉ **Standard coordination:** Defining standards and defining which standards need to be followed is one of the key responsibilities of the Standards Authority role. This includes collaboration with multiple external standard bodies as well. Standards and specifications were already defined as crucial elements in the first layer of the Digital Services Model.
- ✉ **Establishing Trust:** The main goal is here to establish trust frameworks and define the membership obligations and rules to guarantee compliancy with these trust frameworks. In this Trust ecosystem the role of every party must be clear. Possible ways to achieve this are the definition and use of Practice Statements, Codes of Conduct, Terms and Conditions, Privacy Statements, each describing the different expectations and roles between the parties involved in the ecosystem.
- ✉ **Risk Compliance:** A risk management framework sets out the most important risks of the CPSs and building blocks. This analysis results in security baselines and an action plan, and all involved parties will have to comply with these rules.

#### Operations

---

At the level of operations this Standards Authority role makes sure that knowledge transfer, communication and creation of documentation is well organized, but now on the level of standards.

- ✉ **Knowledge and documentation:** The purpose is to create a common knowledge base clearly explaining and documenting the standards, semantics and vocabulary. It is also important to document information models describing the relations between the building blocks, CSPs, entities and organizations.
- ✉ **Communication:** Information sessions need to be run by an information office clearly explaining the concepts and available documentation. Also all changes and extensions to concepts need to be discussed and communicated. Besides information sessions, also newsletters, manual publications, forums and blogs can be used as a communication way.

#### Financing

---

At the level of financing the elaboration of a budget scheme is important to assure further funding from the Strategic and Coordination Authority.

- ✉ **Establish multi-year and yearly budget:** In terms of the example of the cross-authority financial structure, both on a longer term and yearly term the Standards Authority will need to come up with a budget estimation, which needs approval from the Strategic and Coordination Authority.

## Architecture

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The Standards Authority role needs to deal with architectural governance, and is responsible for setting up standards.

- ✉ **Lists the integration and data interchange standards:** It is important to list the communication interfaces between components, CSPs and building blocks, and define data interchange standards, including the related security controls.
- ✉ **Defines a black box solution architecture:** This authority will also detail more the enterprise architecture, defined by the Strategic and Coordination Authority, and create a solution architecture following a black box approach.
- ✉ **Interoperability standards:** The Standard Authority role is led by 4 LOST levels, and in all levels security needs to be taken into account as well. These levels are defined in the European Interoperability Framework:
  - Legal interoperability: Legislation needs to be aligned so that exchanged data is accorded a proper legal weight.
  - Organizational interoperability: This aspect of interoperability is concerned with defining mutually beneficial business goals, modelling business processes and bringing about the collaboration of parties that wish to exchange information and may have different internal structures and processes.
  - Semantic interoperability: This ensures the precise meaning of exchanged information which is preserved and understood by all parties.
  - Technical interoperability: This aspect of interoperability covers the technical issues of linking computer systems and services.

### 9.1.15 The Supervisory Authority role

---

The Supervisory Authority role also works on a more tactical level. Where in the beginning the focus of this Supervisory Authority role will be more on providing guidance to the Operational Authority (described in the next sub-section), in later stages this will evolve to supervision, compliance framework follow up, controls and validation.

When applying the GOFA model the following more detailed recommendations can be given:

## Governance

---

On the governance level this supervisor will establish concrete controls with respect to the compliance framework.

- ✉ **Set up a Supervisory Authority structure, including operator roles & responsibilities:** The main goal here is to setup a structure for supervision, in order to control the governance framework defined by the Strategy and Coordination Authority, and Standards Authority, for instance a Risk Compliance framework could be setup.

- ✘ **Ensure there is a clear and known compliance framework (architecture, security, financials):** Collaborate with the other roles on defining compliancy frameworks on different aspects: architecture, risk, finance, security, trust.

## Operations

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From an operational perspective the Supervisory Authority will support self-assessments and execute the possible compliance audits.

- ✘ **Facilitate self-assessments at Operational Authority:** The main purpose is to foresee the Operation Authority with means to perform regular controls themselves, to make sure they are still following and applying to the agreed frameworks and standards. For instance risk assessments criteria deal with impact (financial, reputation, legal, regulatory, user satisfaction, and capacity) and vulnerability (previous risk experience, pervasiveness, capability on people and processes).
- ✘ **Possibly execute periodic compliance audits:** This involves the setup, management and execution of compliance audit plans, and this on a regular basis.

## Financing

---

A finance model needs to be created in order to fund the operational work done by the Supervisor role.

- ✘ **Establish financing model / accreditation / membership fee-model:** One of the roles is the setup of a correct financing model for the Supervisory Authority role. This could involve the creation of an accreditation mechanism in which certification for compliancy is offered.
- ✘ In terms of the example of the cross-authority financial structure, it also **includes the creation of a yearly budget plan**, which needs approval of the Strategic and Coordination Architecture.

## Architecture

---

The Supervisory Authority must guard and assure the compliance on architecture, security and standards level.

- ✘ **Establish minimal architecture / security / compliance baselines (and have it evolve):** Applying architectural policies and rules, security standards and controlling compliancy with the overall enterprise and solution architecture is the main goal of the Supervisory Authority.

### 9.1.16 The Operational Authority role

---

In this role the responsibility is taken - especially in the beginning - to run the CPSs and supporting building blocks and/or - in later stages - to do the necessary coordination to keep the corresponding ecosystems running.

When applying the GOFA model the following more detailed recommendations can be given:

## Governance

---

On governance level this Operational Authority role has the responsibility to give input on and deal with tactical service management (including risk management and security).

- **Establish clear service development description and supervise release management:** The Operation Authority will help in the description of the development and release management of the different CSPs and building blocks. He will define the structural rules for dealing with changes, version management and testing.
- **Capacity Management, Performance Management, Service (Level) Management:** The Operational Authority is responsible for the definition and follow-up of capacity and performance management rules, including definition of Service Level Agreements (SLA's) and Operation Level Agreements (OLA's).

## Operations

---

The operator role includes the operational service management and on-boarding of new services, CSPs and building blocks.

- **Develop and build new releases and libraries:** The supervision and effective development and release of new versions are the responsibility of the Operational Authority. He will follow up on testing as well, and make sure new changes and releases get documented in time.
- **Effectuate operations including first, second and third line support:** The Operational Authority needs to foresee the necessary support lines and escalation points, and follows up on defined SLA's.
- **Incident Management, Disaster Recovery, Security Management:** It is important to react quickly on these kind of issues. Operation rules are defined and need to be followed up by this authority.

## Financing

---

Part of the financial funding will be used to operate the different CSPs and building blocks. Setting up a clear operational budget expectation is the responsibility of the Operational Authority.

- **Establish multi-year and yearly budget (both capex and opex):** Both on a longer term and yearly term the authority will need to come up with a budget estimation on operational level. This will include budget for new investments as well as the pure operational costs.

## Architecture

---

On architectural level the Operational Authority role will be responsible for the solution architecture, taking the release management into account.

- **Establish solution architectures (minding release cycles):** Defining the solution architecture, based on and compliant with the conceptual overall enterprise architecture, is the responsibility of the Operational Authority. The solution architecture created here is built from within a white box approach, with an eye for technical details and security aspects.

### 9.1.17 Relevant standards

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Each of the authorities, defined in the previous paragraphs, will be led by European and industry standards, in order to define the necessary frameworks, standards and architecture. The following standards can be relevant (non-exhaustive list):

| Authority                 | Standards            |
|---------------------------|----------------------|
| Strategy and Coordination | COBIT, ISO27001      |
| Standards                 | TOGAF, EIA, ISO27001 |
| Supervisory               | ISO27001             |
| Operational               | ITIL                 |

European Commission

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