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EUROPEAN COMMISSION
Directorate General for Informatics

Supporting the European Interoperability

Strategy Elaboration

Final Report Phase 1 – 02/07/2009

DOCUMENT CONTROL

Any changes made to the Final Report, including the individuals who made the changes, individuals who approved the changes, and descriptions of the changes are documented below.

Table 1: Document Control Table

Date	Version	Description	Authors	Approved by
05 April 2009	0.1	First draft for review by project quality manager	Deloitte Team	Mira Sallamo
06 April 2009	0.2	Second draft for review by project manager	Deloitte Team	Karim Moueddene
07 April 2009	1.0	Version 1 submitted for review by IDABC	Deloitte Team	Mira Sallamo
14 April 2009	2.0	Version 2.0 submitted for review by IDABC	Deloitte Team	Patrick Wauters
21 April 2009	3.0	Version 3.0 submitted for review by IDABC	Deloitte Team	Karim Moueddene
20 May 2009	4.0	Version 4.0 implementing the comments from EC and the Member States – version for acceptance by IDABC	Deloitte Team	Karim Moueddene
04 June 2009	4.1	Version 4.1 accepted by IDABC	Deloitte Team	Karim Moueddene
15 June 2009	4.2	Version, with correction on page 27.	Deloitte Team	Mira Sallamo
02 July 2009	4.3	Aligning the names of the objectives	Deloitte Team	Mira Sallamo

DISCLAIMER

The views and comments expressed in this text are the responsibility of Deloitte and do not necessarily reflect the opinion of the European Commission.

ACKNOWLEDGEMENTS

TARGET AUDIENCE OF THIS FINAL REPORT

The primary audience for this report are decision makers, such as Chief Information Officers (CIOs), strategy experts and project officers of the European Union Member States or the European Union Institutions who are involved in the establishment of European Public Services. This document is also more generally targeted to all stakeholders involved in European Public Services: managers, suppliers, and policy analysts.

GUIDE FOR THE READER

This document is the final report of the European Interoperability Strategy elaboration, phase 1. The report can be of interest for various stakeholders.

The executive summary provides the context and the outcomes of the study, and is thus sufficient as such to give an overview of the main elements for those readers with limited time.

For those interested in having more details on the study results, chapter 5 will be of interest.

Full results of the study can be found in chapters 2 – 5. And for those interested in the methodological parts, we recommend reading chapters 2 and 6 in more detail.

Finally, the Annexes provide additional details supporting the conclusions and outcomes of the study.

A Glossary will help those for whom this is a new field.

USEFUL DEFINITIONS

European Public Services

In this document, European Public Services mean *"a cross-border public sector service supplied by public administration[1]s, either to one another, or to European businesses and citizens by means of cooperation between those administrations."* [2]

Interoperability

The definition of interoperability endorsed in this document takes into account the fact that interoperability is much more than the exchange of data between ICT systems but that it includes the ability of disparate organisations to *work together*. Interoperability is defined as follows:

"Interoperability within the context of European Public Services is the ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations, via the business processes they support, by means of the exchange of data between their respective information and communication technology (ICT) systems."[3]

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[1] Refers to either national public administrations (at any level), or bodies acting on their behalf, and/or EU public administrations

[2] A definition taken from the *Draft European Interoperability Framework v.2.0* (work in progress).

[3] *Idem.*

EXECUTIVE SUMMARY

Interoperability is a cornerstone of European Public Services

As the European Commission has pointed out, today, a strong drive is needed for gaining commitment to transform and modernise public services in Europe. This transformation should be achieved by avoiding creating barriers to the Internal Market. For this challenging transformation to be successful, cross-border European Public Services' interoperability needs to be addressed at the European level.[4]

CURRENT INTEROPERABILITY ISSUES

Currently, the level of European Public Services' interoperability is not ideal. The importance of interoperability is not sufficiently recognised and the level of awareness around interoperability issues is not adequate.

Current interoperability issues are not only technological, but cover a wide range of aspects, ranging from a lack of a cross borders and cross sectors legal basis for interoperability to a lack of communication, from a lack of awareness and political will to a lack of agreements on the governance structures required, from a lack of agreements on data formats to a lack of agreements on semantics.

The diversity of European Public Services granularity needs to be taken into consideration. Not only have public services in the European Union a diverse reach – from regional to local, sector-specific to cross-border services[5], they also serve very different needs within different scopes.

Today, government at all levels in the European Union are committed to transform and modernise the public services they deliver. But in order to achieve a user centric public services transformation within the European Single Market and to realise the four freedoms, cross-border European Public Services' interoperability needs to be addressed at the European level. For this reason, a systematic approach to the governance of interoperability at EU-level is needed, specifying concrete goals and objectives, mobilising the necessary resources to achieve these goals and objectives and monitoring progress towards these goals and objectives.

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[4] http://ec.europa.eu/idabc/en/document/7772 for this and the following paragraphs.
[5] For a definition of cross-border service provision, see:
http://www.publictechnology.net/modules.php?op=modload&name=News&file=article&sid=4758

THE FOUR LAYERS OF INTEROPERABILITY

Without a comprehensive approach to interoperability, there is a risk that Member States might opt for mutually incompatible solutions that, rather than boosting efficiency and savings, will only build new barriers to the delivery of European Public Services in the internal market and increase the costs and administrative burden.

In order to enable public administrations to provide jointly European public services, interoperability should be addressed at multiple layers.

- Political and legal: The political context must be favourable, with cooperating partners having compatible visions, high awareness of interoperability issues, aligned priorities and being focused on the same objectives. The legislation in the cooperating Member States must be appropriately synchronised[6], including according proper legal weight and recognition to electronic data originating in a given Member State irrespective of wherever in the EU it needs to be used;

- Information Exchange: This level focuses on the data exchanged and related agreements which ensure that the precise meaning of information exchanged (concept, organisation, services, etc) is preserved and well understood by the parties concerned. Information availability and usage as well as trust and privacy are other cornerstones for seamless information exchange across the EU;

- Organisation and Processes: Processes by which different organisations such as different public administrations collaborate within an appropriate governance structure to achieve their mutually beneficial, mutually agreed European Public Service-related goals must be aligned, synchronised or otherwise compatible;

- Service Offering: A consistent architecture is needed for cross-border interoperability based on essential building blocks and related services such as guidelines. This covers technical issues involved in linking computer systems and services.

DIRECT AND INDIRECT BENEFITS OF INTEROPERABILITY

The direct and indirect benefits of interoperability in the domain of European Public Services are numerous. Interoperability is both a prerequisite for the efficient delivery of European Public Services, and a facilitator of them. To be able to promote the benefits of interoperability vis-à-vis all different stakeholders, a list of expected benefits can be summarised as follows.

Interoperability[7] is both a prerequisite for and a facilitator of the efficient delivery of European Public Services. Interoperability addresses the need for:

- cooperation between public administrations aiming at the improvement of public services;

- exchanging information between public administrations to fulfil legal requirements or other political commitments;

- sharing and reusing information among public administrations to increase efficiency and reduce administrative burden on citizens and businesses;

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[6] This also includes any necessary harmonisation that might be needed to eliminate legal barriers impeding Interoperability.

[7] The benefits of interoperability can be found in the *Draft European Interoperability Framework v.2.0 – Beta 01*, p. 2.

- improving interactions between public administrations by enabling efficient synchronization of their respective processes;

- improving public service delivery to citizens and business by facilitating the one-stop shop delivery of public services;

- reducing costs for public administrations, businesses and citizens through efficient and effective delivery of public services.

The European Interoperability Strategy

In order to overcome these challenges and to support these efforts, the IDABC programme (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens) is currently defining a strategy to address cross-border interoperability: the European Interoperability Strategy (EIS).

In June 2008, during the second annual meeting of the Member State Chief Information Officers (CIOs) and the European Commission representative, it was agreed that, in the framework of the IDABC programme, a European Interoperability Strategy (EIS) would be developed in order to address the drive needed for improving European Public Services' interoperability.

The implementation of the EIS can be defined as an action plan to address cross-border interoperability in order to facilitate the implementation of EU policies and initiatives.

The goal of the EIS is to define, in cooperation and in agreement with the Member States, a vision, a problem statement, a set of focus areas comprising concrete actions with a view to improving the delivery of European Public Services through cross-border interoperability.

To this extent, the EIS, by setting strategic priorities and objectives, provides the basis for defining the organisational, financial and operational framework necessary to support cross-border and cross-sector interoperability.

In addition, in terms of interoperability, the EIS will contribute to the future eGovernment vision beyond 2010.

Once adopted, the EIS will become the key driving force of the EU's new programme – 'ISA', the Interoperability Solutions for European Public Administrations – which the Commission has proposed should follow the IDABC programme from 2010 to 2015.

The EIS elaboration has been divided into two phases.

In order to carry out the first phase of the EIS elaboration, the IDABC asked for the support of Deloitte to conduct a study on the following main subjects:

- Defining a vision;

- Collating problems through interviews;

- Defining an EIS problem statement;

- Defining EIS focus areas, priorities and objectives;

- Defining the methodology for scenario development and analysis to be used in the second phase of EIS preparation.

This final report presents the conclusions reached at the end of this first phase: a common vision, the collection of problems through interviews, the problem statements, focus areas, priorities and objectives for interoperability, and a possible methodology for developing scenarios in anticipation of the second phase of the project.

The second phase deals with the EIS itself and aims at reaching an agreement on possible scenarios for achieving the agreed priorities, reaching an agreement on a suitable governance model, endorsing and implementing the EIS. The second phase of the project will be covered by another specific contract, independent of the current one.

APPROACH

During the first phase of the project, over 40 interviews were conducted, involving both the Member States as well as several services of the European Commission. In addition to interviews, three workshops brought together Member State representatives, and provided necessary information and feedback on the work in progress.

The Figure below illustrates the five different steps in the first phase, as well as the associated sub-steps and related outcomes. These five successive steps are represented by five arrows, whereas the two arrows on top of the Figure illustrate the chronological order in which actions need to be taken to create the necessary change from the "as-is" situation to the "to-be" vision by carrying out the EIS.

Figure 1 – EIS Phase I: several steps for bridging the gap between the '*AS-I*S' and the '*TO-BE*'
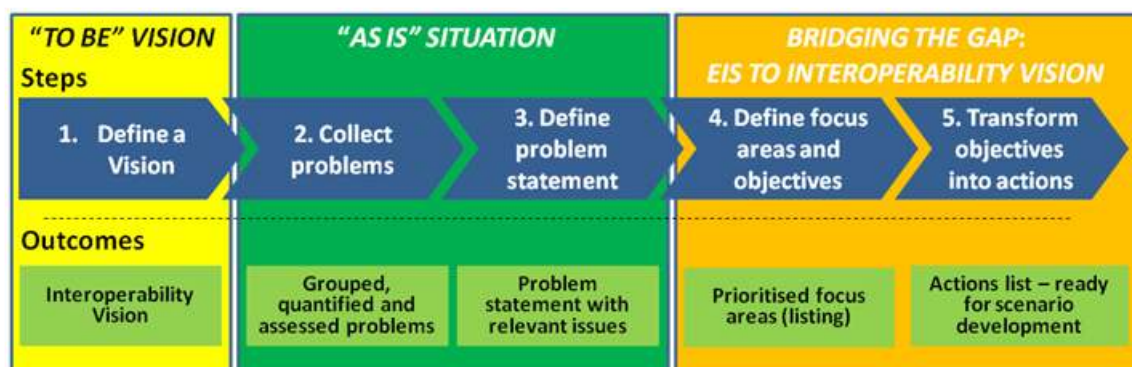
 Source: Deloitte

The term "layer", as mentioned in Box 2.2, refers to the layers of the Deloitte Target Operating Model (or TOM), which communicates how strategic priorities and principles translate to lower, more operational levels. This generic model has been tailored to the four layers identified as most influencing 'interoperability': the 'Politics and Legal' layer, the 'Information Exchange' layer, the 'Organisation and Processes' layer, and the 'Service Offering' layer.

Outcome I: A Vision for Interoperability

As a first concrete outcome of the project, the vision, or desired state, for European Public Services' interoperability, was defined as follows:

> *In 2015, interoperability has significantly fostered European Public Services delivery through:*
>
> - *Appropriate governance organisation and processes in line with European Union policies and objectives;*
>
> - *Trusted information exchange enabled by commonly agreed, cohesive and coordinated interoperability initiatives, including completion of the legal environment, elaboration of interoperability frameworks and agreements on interoperability standards and rules.*

This vision statement is derived from the Vision Workshop[8] held on February 11, 2009 in Brussels, from successive reviews during two workshops that followed and from discussions held during Project Management Board (PMB) meetings.

In addition to drawing up the vision, Deloitte carried out an analysis of the current state of interoperability. This process identified the main barriers to cross-border interoperability in terms of problems, obstacles, issues, and challenges. The problems were analysed, counted, grouped, and their root causes were pinpointed. The main enablers of interoperability, such as best practices and critical success factors, were also collated and analysed.

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[8] The Vision Workshop was conducted with the experts of the following countries: Austria, Denmark, Estonia, Finland, Germany, Greece, Hungary, Netherlands, Norway, Slovenia, Spain, and the UK.

Outcome II: Problems of Interoperability

Today, at the end of the first phase of the EIS elaboration project, it is fair to say that there is a common view of the main problems between the Member States. This common view is derived from the interviews conducted with the experts of 30 countries (of which 26 EU Member States, as well as Iceland, Liechtenstein, Norway and Turkey) and from the Problem Statement Workshop held in Brussels on March 4, 2009, with the Member States' and countries' experts present on that day[9].

The most commonly shared problems (over 50% of the interviewees identified these) relate to:

- the absence of a legal basis for interoperability actions and the different interpretations of EU legislation;

- the absence of agreements and definitions on data formats, security and information availability;

- the lack of coordination, guidance and sharing of best practice;

- the lack of reuse of elements and services developed in Europe.

The study not only identified problems, but also brought clearly to the fore that there is a need at EU-level for support – both to Member State efforts and sector-specific endeavours. This was confirmed by an agreed vision statement for European Public Services' interoperability.

The exercise which followed consisted in looking at how to bridge the gap between the current situation (the various problems and their root causes) and the desired future stage (the interoperability vision for 2015)

Outcome III: Focus Areas for Interoperability

The identification of areas of interest, the so called focus areas, was based on the problems identified, their grouping per layer and categories, and the related problem statements. Typically one focus area was defined, for each problem category.

This section focuses on the six most important focus areas identified by the Member States during the Focus Areas and Objectives Workshop held on April 1, 2009, with the Member States' and countries' experts present on that day[10]. Before their prioritisation, focus areas were derived from the interviews conducted with the experts of 30 countries (of which 26 EU Member States[11], as well as Iceland, Liechtenstein, Norway and Turkey).

Figure 2 shows which focus area needs to be addressed in priority and provides a good indication on how to structure future interoperability efforts and how to define further a set of vision-oriented objectives for each of the focus areas identified.

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[9] Experts from the following countries participated to the Problem Statement Workshop held on March 4, 2009 in Brussels: Austria, Estonia, Finland, Hungary, Lithuania, Norway, Slovakia, Spain, Poland, and the UK.

[10] Experts from the following countries participated to the Focus Areas and Objectives Workshop: Austria, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Lithuania, Luxembourg, Poland, Spain, and the UK.

[11] Due to organisational changes during the interview period it was not possible to arrange an interview with Slovakia.

Figure 2 - Prioritisation of Focus Areas
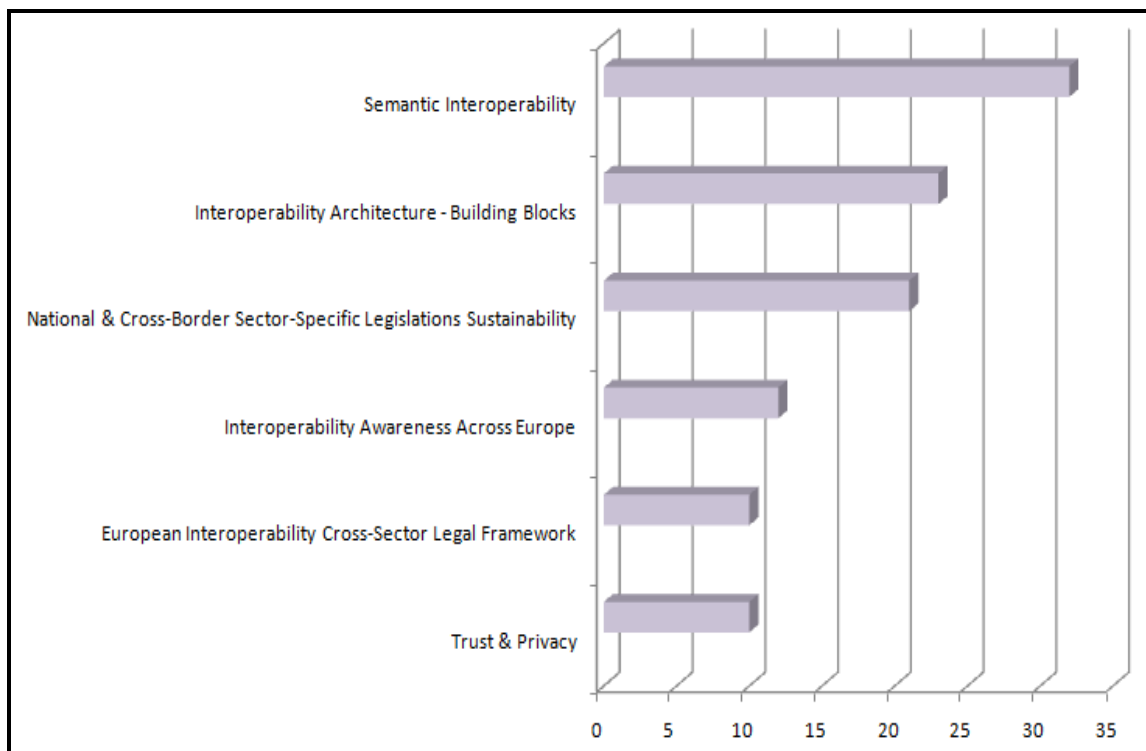
Source: Deloitte

Outcome IV: Objectives for Reaching the Interoperability Vision

After the focus areas had been prioritised, they were mapped against the vision, and the necessary objectives for each of the focus area were identified. These objectives establish the ambitions, or in other words, what should be done under each focus area in order to achieve the vision.

Following the order of priority of the focus areas, the section below presents a high level overview the objectives associated with the six prioritised focus areas.

Priority 1: Focus Area: Semantic Interoperability

Objectives:

- Agree on data formats for both sector-specific and cross-sector information;

- Achieve significant improvements in the field of multilingualism;

- Agree on dictionaries, semantic core components and taxonomies.

Priority 2: Focus Area: Interoperability Architecture – Building blocks

Objectives:

- Identify integration enablers (i.e. technologies and capabilities which facilitate integration and which are designed to provide security, audit-ability, scalability, and performance);

- Identify the most needed architectural building blocks for cross-border/cross-sectoral interoperability of national eService/interoperability architectures by collecting best practise solutions (e.g. from CIP pilots), form a consistent architecture by adding missing building blocks and providing concrete guidelines on how to comply to this architecture;

- Establish an EU catalogue of services at EU and Member States levels;

- Ensure public administrations' knowledge of available services and business processes;

- Reduce redundancy: more cost-effective and greener services;

- Use SLAs in the provision of basic services for enabling European Public Services delivery;

- Identify new opportunities, new technologies and supporting solutions; follow market trends.

Priority 3: Focus Area: National and cross-border sector-specific legislations sustainability (Interoperability- related issues)

Objectives:

- Systematically conduct pre-studies on ICT implications of the implementation of new legislations. Agree on methodology for these studies;

- Provision of guidance to public administrations on interoperability-related issues when implementing EU legislation;

- Systematically conduct post-studies on ICT implications of the implementation of new legislations. Agree on methodology for these studies.

Priority 4: Focus Area: Interoperability awareness across Europe

Objectives:

- Recognise interoperability as an essential cornerstone of European Public Services;

- Cooperate and agree on an approach for linking interoperability to policy issues that are high on the political agenda.

Priority 5: Focus Area: European interoperability cross-sector legal framework

Objectives:

- Agree on the format of the legal framework;

- Establish legal framework.

Priority 6: Focus Area: Trust and Privacy

Objectives:

- Agree on data protection, confidentiality and security levels;

- Trust and rely in data collection and exchange;

- Improve transparency and traceability of the use of EU citizens, businesses and administrations' information.

Outcome V: Scenario Methodology for Second Phase of the EIS

In order to develop the European Interoperability Strategy, Deloitte also provided a methodology for building upon the identified focus areas and objectives. The aim of the methodology is to develop scenarios, each of which is composed of a set of structured actions, in order to implement the EIS objectives. This methodology explains how to draw up scenarios for the EIS by taking into account criteria such as value and risks, resources and skills.

In the context of the second phase of the EIS elaboration, this assessment will allow the European Commission, together with the Member States, to make informed and reasoned decisions, to build a comprehensive EIS and to define further an appropriate governance model.

Overall outcomes and Next Steps of the EIS

At this stage of the preparation of the EIS, as Member States and the European Commission share similar problems and concerns in the field of interoperability, it is clear that there is a need to address interoperability issues at the European Union level. There is already a common understanding of the vision, problems, focus areas and objectives.

The next step is for the Member States and for the European Commission to validate the results presented in this report and to decide upon the way forward in drawing up the European Interoperability Strategy such as agreeing on scenarios and actions for achieving the EIS, and agreeing on the related action plan for the ISA Programme.

After this important milestone, it will be necessary to move from the objectives to scenarios and actions. None of the objectives listed in this document can be achieved without scenarios and related actions being planned and executed. The scenarios will equally need to be assessed against the value and risk criteria, and their feasibility in terms of the estimated resources required. The consolidated scenarios will need to be set to a timeline, and the European Interoperability Strategy (EIS) defined on this basis. A portfolio management approach based on a to-be-defined governance model will support the process from initial assessment through to monitoring and controlling of the execution of the EIS.

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INTRODUCTION

The European Commission requested Deloitte to complete the following project: "Supporting the European Interoperability Strategy Elaboration", through the specific Framework Contract on Enterprise Architecture services N° DI/06211.

The goal of the European Interoperability Strategy (EIS) is to define, in agreement and cooperation with the EU Member States, **a vision, a strategy and a focused set of concrete actions, both at Member State and EU level,** which will improve European Public Services' interoperability delivery.

The EIS elaboration project was divided into two phases. This study covers the first phase, which aims at defining the interoperability focus areas and objectives for European Public Services delivery and at agreeing on a few related priorities. The second phase of the project will aim at defining the EIS itself. The second phase of the project will be covered by another subsequent specific contract, independent of the current one.

The structure of the final report reflects the successive steps undertaken during the first phase of the EIS elaboration project, it contains six different parts:

- The first chapter establishes the institutional and organisational context of the EIS project;

- The second chapter describes how Deloitte's best practice methodologies and tools – the Target Operating Model, the Enterprise Architecture Framework and the IT Strategy Framework methodologies – were tailored to the EIS project. The leverage of these methodologies and tools is described in detail;

- The third chapter describes the first outcomes of the Member State consultation process: the Vision Statement for European Public Services' interoperability in 2015, and the associated Mission Statement envisaged for the future ISA programme;

- For all four layers of the Target Operating Model, the fourth chapter presents the following items:

    o   the interoperability problem statement;
    o   the interoperability problems;
    o   what have been identified as the root causes of these interoperability problems;

- The fifth chapter presents the results of the exercise of bridging the gap between the current situation (the various problems and their root causes presented in the fourth chapter) and the desired future stage (the interoperability vision for 2015, presented in the third chapter);

- The sixth chapter describes the methodology for scenario development, based on Deloitte's best practices and experience in this area. The aim of this methodology is to develop scenarios, each composed of a set of structured actions, in order to implement the objectives of the EIS. Finally, the leveraging of the methodology in the context of implementation of a portfolio management approach is discussed;

- A conclusion summarises the key findings and suggestions for the second phase of the project;

- The Annexes to this final report provide more detailed insight into the topics discussed.

1. BACKGROUND AND CONTEXT

1.1   Organisation Profile

IDABC stands for the Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens.

The IDABC programme aims to encourage and support the delivery of cross-border public sector services to citizens and enterprises in Europe, to improve efficiency and collaboration between European public administrations and to contribute to making Europe an attractive place to live, work and invest.

To achieve its objectives, IDABC issues recommendations, develops solutions and provides services that enable Member States and European administrations to communicate electronically while offering modern public services to businesses and citizens in Europe.

1.2   Interoperability and the European Interoperability Strategy

As the European Commission has pointed out, today, a strong drive is needed for gaining commitment to transform and modernise public services in Europe. This transformation should be achieved by avoiding creating barriers to the Internal Market. For this challenging transformation to be successful, cross-border European Public Services' interoperability needs to be addressed at the European level.[12]

Interoperability can be defined as the ability of disparate and diverse organisations to interact in the pursuit of mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations via the business processes they support, by means of the exchange of data between their respective information and communication technology (ICT) systems[13].

The support of European Public Services' interoperability is a core task of the IDABC programme, which is explicitly requested in the Decision to implement the programme[14].

In June 2008, during the second annual meeting of the Member State Chief Information Officers (CIOs) and the European Commission representative, it was agreed that, in the framework of the IDABC programme, a **European Interoperability Strategy** (EIS) would be developed in order to address the drive needed for improving European Public Services' interoperability.

The main interoperability activities of the IDABC programme include the design of the European Interoperability Framework (EIF), the European Interoperability Architecture Guidelines (EIAG) and the European Interoperability Infrastructure Services (EIIS).

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[12] http://ec.europa.eu/idabc/en/document/7772 for this and the following paragraphs.

[13] European Interoperability Framework v.2.0 (draft for discussion).

[14] Decision 2004/387/EC "Decision of the European Parliament and of the Council on Interoperable Delivery of pan-European Services to Public Administrations, Businesses and Citizens (IDABC)";
http://eur-lex.europa.eu/LexUriServ/site/en/oj/2004/l_181/l_18120040518en00250035.pdf

The figure below illustrates the Interoperability Governance Pyramid. This figure shows the relationship between various interoperability initiatives which support the establishment of European Public Service activities:

Figure 3 - Interoperability Governance Pyramid
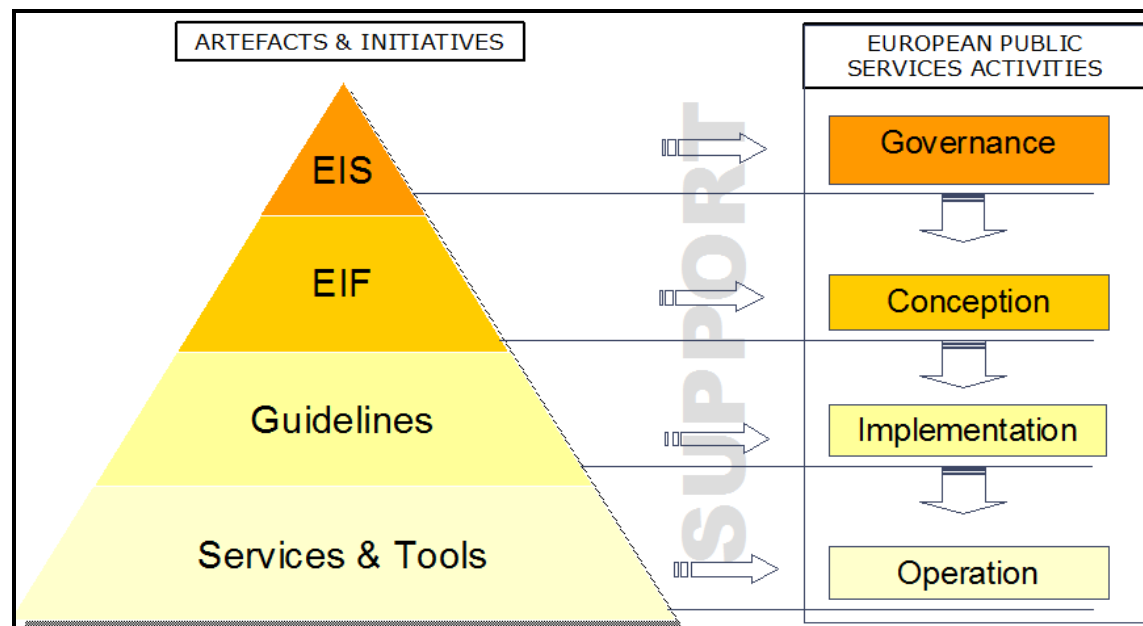
Source: Draft European Interoperability Framework v.2.0 – Beta 01, p. 3.

The European Interoperability Strategy (EIS) will complement the EIF, EIAG and EIIS and steer the subsequent work on cross-border interoperability. The EIS is at the top of the governance pyramid and directly steered by the CIOs of the Member States.

The implementation of the EIS can be defined as an action plan to address cross-border interoperability in order to facilitate the implementation of EU policies and initiatives. The goal of the EIS is to define, in cooperation and in agreement with the Member States, a vision, a problem statement, a set of focus areas comprising concrete actions with a view to improving the delivery of European Public Services through cross-border interoperability.

In order to establish a systematic approach to the governance of Interoperability at EU-level, the EIS will define the organisational, financial and operational framework for supporting cross-border and cross-sectoral interoperability as well as the exchange of information between European public administrations, taking into account existing and proposed EU programmes.

In addition, in terms of interoperability, the EIS will contribute to the future eGovernment vision beyond 2010.

The EIS, once adopted, will become a key input into the EU's new programme – 'ISA', the Interoperability Solutions for European public Administrations[15] – which has been proposed by the Commission. The ISA Programme will focus on those projects derived from the EIS that will contribute most to the interoperability of European Public Services.

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[15] Proposal for a Decision of the European Parliament and of the Council on interoperability solutions for European public administrations (ISA) - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0583:FIN:EN:PDF

2. DELOITTE'S TAILORED APPROACH TO THE EUROPEAN INTEROPERABILITY STRATEGY VISION – STATING THE PROBLEM AND ESTABLISHING OBJECTIVES

2.1 Introduction

The first step in this project was to establish a vision for the European Interoperability Strategy, but to do that, we also had to state the problem and establish the objectives. This was done by leveraging Deloitte's proven Target Operating Model, Enterprise Architecture Framework and IT Strategy Framework methodologies in combination with insights from interviews and workshops. In order to make the most of this whole process, we also applied an adapted version of the Deloitte Government Performance Map. In this chapter we describe these methodologies, and the interview and workshop process.

2.2 The Deloitte Target Operating Model as applied to EIS

The Deloitte Target Operating Model (or TOM) communicates how strategic priorities and principles translate down to lower, more operational levels. This generic Deloitte model has been tailored to the four layers that most influence 'interoperability'. The 'Politics and Legal' layer can be found at the top of the TOM. This layer describes which political priorities and legal issues enable and support interoperability. The second layer is called the 'Information Exchange' layer and focuses on the data exchanged and related semantic requirements. How interoperability is organised and concretely implemented through collaboration between several stakeholders is the subject of the third layer, 'Process and Organisation'. The concrete services delivered for cross-border interoperability and the related supporting technologies are analysed in the 'Service Offering' layer.

The reason for adjusting these categories of interoperability to the EIS project was, firstly, the need to apprehend the provision of European Public Services in a dynamic way. In this sense, this model made it possible to address the relationships, dependencies and underlying processes between layers. Secondly, the TOM was used to support the consultation of the Member States experts with interviews. Thirdly, it was used to structure the approach, methodology and outcomes of the study.

Figure 4 – Four layers of the EIS Target Operating Model
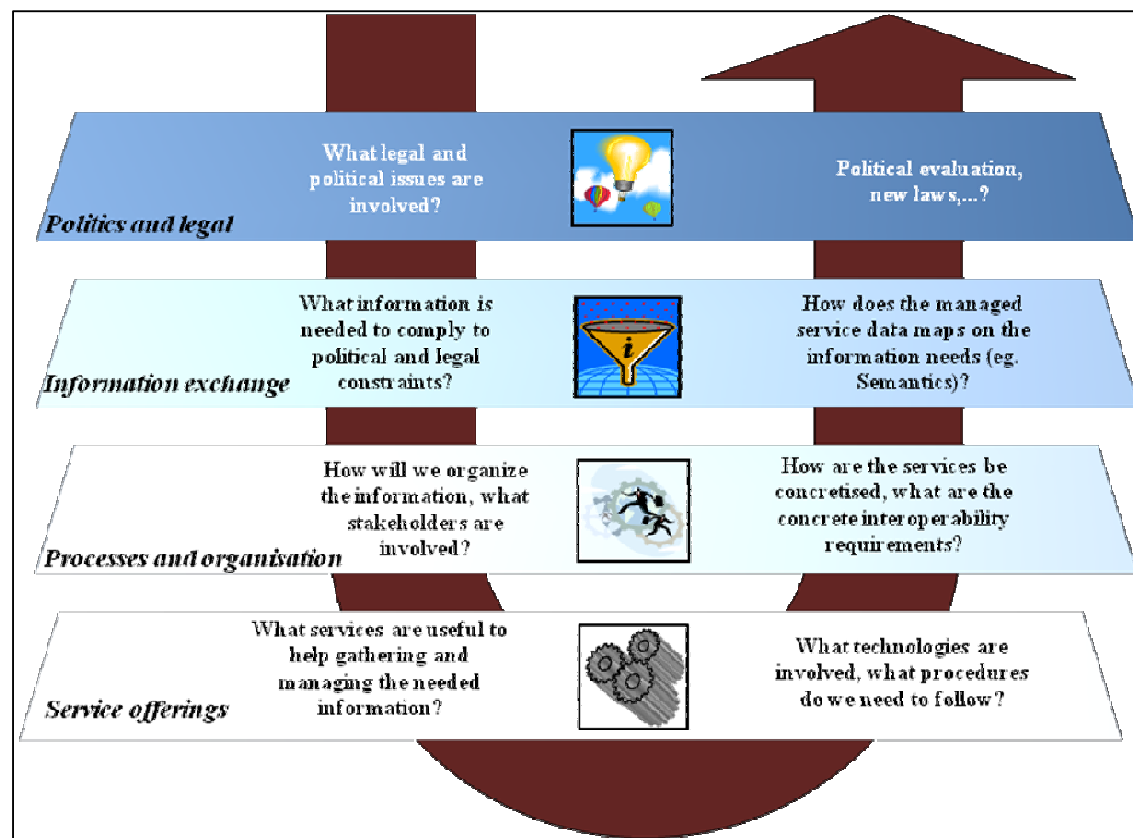
Source: Deloitte

2.3   The Deloitte Enterprise Architecture Model as applied to EIS

The Deloitte Enterprise Architecture Framework provides vital descriptive information about the identification of enterprise architecture 'domains', and their inter-relationships. Based on the Deloitte Enterprise Architecture Framework, public services are categorised in four different granularity domains of interoperability. These four domains are the foundations of the EIS Enterprise Architecture: 'EU cross-sector' services, 'EU sector-specific' services, 'country-specific' services, 'country- and sector-specific' services. The first two domains are used to define the current status and challenges in the context of European Public Services' interoperability. The 'Country-Specific' and 'Country- and Sector-Specific' domains are used to obtain insights from the interoperability status of the Member States in order to define lessons learnt, reusable solutions and skills. All four points-of-view are needed to define a strategy that goes one step further in the realisation of interoperable European Public Services and stays aligned with the situation in the different Member States.

Table 2 – Four different granularity domain of interoperability

Cross-border		Country-specific	
Cross-sector	**Sector-specific**	**Cross-sector**	**Sector-specific**
Information shared between Member States	**Information shared in the same sector**	**Information shared within one country, country-specific information**	**Information shared within one sector, sector specific information**
Example: Interoperable eID throughout EU	Example: Environment-related information exchange in the EU	Example: National eTax applications	Example: National health care registers

Source: Deloitte

2.4 The Deloitte IT Strategy Framework as applied to EIS

The Deloitte IT Strategy Framework provided a step-by-step approach to providing an IT Strategy Framework for EIS: the EIS Strategy Framework (tailored to the first phase of the EIS preparation), with milestones and deliverables aligned to the IDABC/ISA strategic needs.

Figure 5 – EIS Strategy Framework
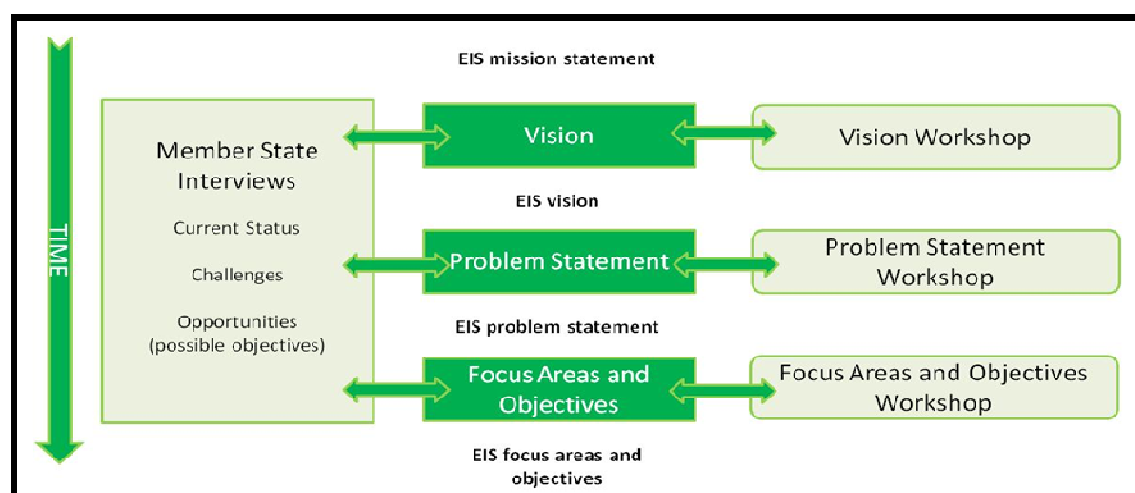
Source: Deloitte

2.5 The Interview Process

This process was supported by interviews with Member State representatives and by one workshop for each of three steps. As a first step within the first phase of the project, the EIS Strategy Framework aimed at defining a mission statement. Once this statement was defined, a challenging strategic vision was drawn up. The second step of the EIS Strategy Framework consisted of defining the gap between the current status and the vision. This gap was described in a separate concrete problem statement for each TOM layer. The third step was to identify the objectives which need to be achieved in order to close the gap and reach the vision.

The interview schedule was thus split into three successive time periods, aligned with the EIS Strategy Framework. During each interview period, interviews were carried out in a series of Member States. By the time of the third workshop, 26 EU Member States had been interviewed together with Iceland, Liechtenstein, Norway and Turkey. In addition, interviews took place with several members of the EIS Project Management Board and with representatives of the following Directorates-General: DIGIT, EMPL, INFSO and TAXUD. Written feedback received from DGs COMP, EAC, and TRADE was also taken into consideration.

The interview process took as its starting point the EIS Target Operating Model and the EIS Enterprise Architecture. These two models were merged and for each intersection (see Figure 6) interoperability-related feedback was sought in relation to the Member State's current status, the challenges they face and the possible opportunities for the ISA programme.

The Member States' current statuses (achievements, future ideas, ambition...) were used to fine-tune the vision and define what the European Interoperability Strategy should focus on. Feedback related to the challenges was leveraged during the process of drawing up the EIS problem statement. Input for the EIS objectives came from the interview discussions about the opportunities which ISA offers.

Interviews with the EIS Project Management Board members and the representatives of the Directorates General of DIGIT, EMPL, INFSO and TAXUD were tailored to the specific needs of these sector-specific stakeholders.

Figure 6 - EIS Interview Process
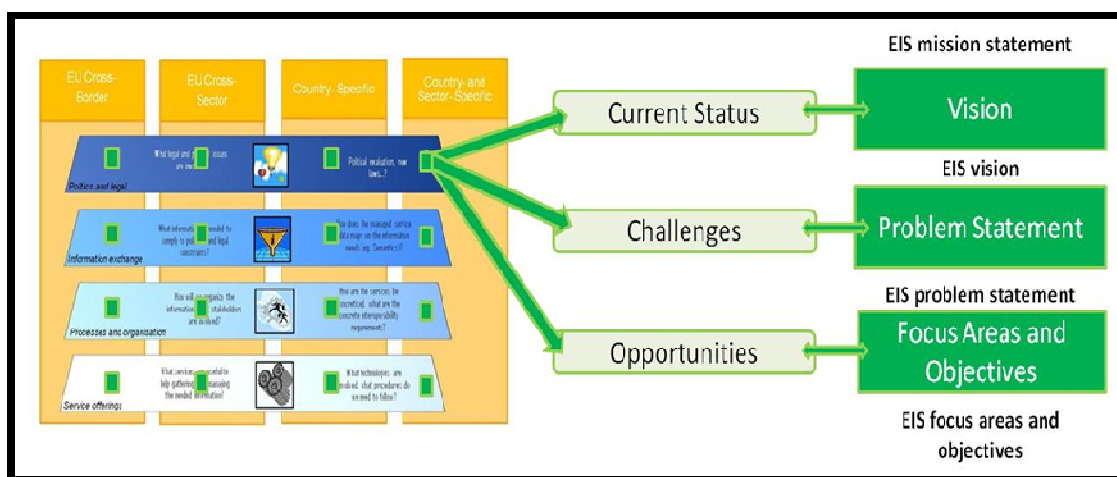
Source: Deloitte

2.6   EIS Workshop Overview

In total three workshops were held. They were a "vision" workshop, a "problem statement" workshop and an "objectives" workshop. They provided important insights related to the associated phases of the EIS Strategy Framework.

For each workshop, an overview of the intermediary project status, the interview results at that stage and the next steps were presented. The participants were randomly grouped for brainstorming sessions about the workshop's topic. Deloitte provided the relevant brainstorming methodologies, for example the Six Sigma Ishikawa/Fishbone Diagram[16], while moderating the workshops.

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[16] The Ishikawa diagram or fishbone diagram or also cause-and-effect diagram are diagrams, that shows the causes of a certain event. A common use of the Ishikawa diagram is in product design, to identify desirable factors leading to an overall effect. See http://commons.wikimedia.org/wiki/Category:Ishikawa_diagrams

2.7 EIS Value Map

In order to leverage its public sector experience and best practices relevant in the context of the EIS project, Deloitte tailored its Government Performance Map to create a European Interoperability Strategy Value Map. This Map is a practical tool that links potential improvement initiatives and government performance for the following areas:

- Policy objectives: effective legislative and executive policies guide the development of programme guidelines. Outcome-focused approaches help translate these policies into tactical programme plans that deliver measurable results;

- Programme delivery: successful programmes comprise activities that deliver real results and essential services. Programmes should be designed to meet or exceed the agency's strategic goals around effectiveness, efficiency and increased constituent satisfaction;

- Operating efficiency: refers to delivering maximum value for money in terms of service levels, product quality or operational support. Performance excellence is driven by the ability to deliver expected outcomes while optimising resource utilisation;

- Asset efficiency: management of organisation assets to maximise utility with minimal cost. Performance excellence is driven by the ability to effectively and efficiently manage human capital, physical assets, and financial assets.

The European Interoperability Strategy Value Map was especially used for identifying and defining focus areas and objectives. For more information, see Chapter 5 and Annex 2 to this report.

3. INTEROPERABILITY MISSION AND VISION STATEMENTS

The European Interoperability Strategy will be drawn up with the purpose of reaching a vision. A prior step covered in this project – and the first step in the project - was to define a vision for European Public Services' Interoperability. As a basis for drawing up that vision, Deloitte first drew up a draft mission statement for the envisaged future ISA programme. This Chapter describes the Mission Statement and the Vision Statement. The Vision and the mission statements guided the study and were especially important for the definition of the focus areas and objectives, which are presented in Chapter 5 of this report.

3.1 Mission Statement

The draft mission statement for the envisaged future ISA programme was drafted by Deloitte and approved IDABC.

Draft Mission Statement for ISA

- To create a sustainable environment:

    o   Addressing the multidimensional aspects of interoperability;

    o   To which all stakeholders can adhere; and

    o   That fosters the delivery of European Public Services.

3.2 Vision Statement

The Vision Statement was draw up with the Member States in the specific Vision Workshop which was part of the process defined in the previous chapter. This vision was further refined during the subsequent workshops on the problem statement and objectives, and through discussions with IDABC representatives.

The vision for European Public Services' interoperability has been defined as:

In 2015, interoperability has significantly fostered European Public Services delivery through:

- *Appropriate governance organisation and processes in line with European Union policies and objectives;*

- *Trusted information exchange enabled by commonly agreed, cohesive and coordinated interoperability initiatives, including completion of the legal environment, elaboration of interoperability frameworks and agreements on interoperability standards and rules.*

This vision statement has been further expanded with definitions of the main key words appearing in the vision. These key words and their respective explanations are listed below:

- *Appropriate governance and processes* = Suitable governance structure is put in place, and it is supported by the necessary processes and these are also followed – with clear interfaces with the Member States' respective organisations and processes;

- *In line with EU policies and objectives* = the interoperability actions are in line with related initiatives and a coherent view is presented vis-à-vis the Member States (includes also the necessary alignment with the sectors). There is a global view of all interoperability activities;

- *Completion of legal environment* = there is an interoperability legal basis, providing the necessary mandates and responsibilities for the organisations involved;

- *Trusted information exchange* = the content, the formats and the means of information exchange are agreed, respect privacy, and are reliable and trustworthy;

- *Commonly agreed, cohesive and coordinated interoperability initiatives* interoperability initiatives (in the broadest sense, i.e. including initiatives on reusable services) are aligned and agreed upon, there is a commitment to these initiatives and they are coordinated (via the governance structure mentioned above);

The vision for European Public Services' interoperability presented above not only guided the work which underlies this report, but should contribute to the realisation of a more general vision for European Public Services, with the ambition of supporting European Public administrations' ability to deliver better services to citizens, businesses and other administrations, and in turn support the completion of the Single Market and mobility in general. It should be noted, however, that the more general vision for European Public Services is under construction by the relevant authorities and is out of scope of this study.

Having in the previous chapter set out the processes we used, and in this chapter the Vision Statement which underpinned the following steps, we move on in the next chapter to the statement of the problems, i.e. the current status, before then looking at the objectives.

4. CURRENT STATUS: FINDINGS AND RESULTS

This Chapter presents the findings and results – i.e. the current status or the problem statement - from the workshops and interview process described in Chapter 2 integrated into the Target Operating Model methodology described in that Chapter.

4.1 Introduction

For all four layers of the Target Operating Model, the first section of this chapter presents:

- the interoperability problem statement which was defined as a result of the workshop and interview process;

- the interoperability problems which were identified and which have been summed up in the problem statement;

- the root causes of these interoperability problems.

The order in which the problems appear in the Table reflects the frequency with which these problems were identified by the Member States and by the representatives of the European Commission DGs during the interviews conducted. The ranking of these problems is a good indication of their respective weight in relation to cross-border interoperability according to the Member States.

The left-hand column of the Table reflects the different types of problems. The central column states the problems which were identified for each type of problem. The root causes of the problems are listed in the right-hand column.

For every layer of the TOM, these problem statements reflect the feedback received from the Member States during the interviews as well as the discussions held during the workshops. Also to be found in Annex 1 is the template used for structuring the information collected. This reflects the methodology Deloitte followed when establishing these problem statements.

The complete problem statements as well as additional information about these problem statements can be found in Annex 5.

Also collected during the interviews were, best practices and critical success factors for cross-border interoperability, about which more detail can be found in Annex 7 of this document.

4.2 Problem Statements and Root Causes Identified

4.2.1 Political & Legal Layer

4.2.1.1 POLITICAL PROBLEM STATEMENT

"There is insufficient awareness of the importance of cross-border interoperability for the delivery of European Public Services, and a resulting lack of political will to promote the necessary cross-border information exchange, independently of shifting political agendas."

4.2.1.2 CURRENT INTEROPERABILITY-RELATED POLITICAL PROBLEMS

Table 3 - Current Interoperability-related Political Problems

Types of Political Problem	Problem Statement	Root Causes
1) Lack of political will	The lack of political will to support cross-border interoperability and information exchange between Member States, at central and local levels.	• Shifting political agendas and priorities • Current economic and financial crisis • Difficulties in linking interoperability to political agenda
2) Lack of trust	The lack of trust, when trust is regarded as a general principle of collaboration between MSs and an important interoperability enabler, prevents cross-border data exchange and cross-border access to registers.	• Lack of a legal framework • Lack of openness and communication • Lack of mandatory use of key registers, reference architectures,…
3) Lack of interoperability awareness	The lack of awareness, and thus commitment, of administrations to the importance of interoperability for the delivery of European Public Services prevents interoperability from being addressed at an early stage. The added-value of interoperability, as reuse, sharing, collaboration and process improvements, are not sufficiently promoted.	• Lack of legal basis • EIF not binding • Lack of communication • Lack of promotion
4) IDABC's mandate is not strong enough	IDABC's mandate is regarded as too weak for creating the necessary synergies and alignment required for cross-border interoperability, i.e. a legal framework for cross-border interoperability, a stronger legal status for EC interoperability documents, trust and standardisation.	• Lack of maturity of the IDABC Programme • Lack of awareness and maturity around the importance of needs for interoperability • Overlapping mandates at EC level in the field of interoperability
5) Current economic crisis	Due to the current economic crisis and the resulting shift in governments' priorities, public spending and interoperability and ICT projects in general have been cut back or delayed. Interoperability and ICT in general are not sufficiently recognised and promoted as enablers of economic growth and employment.	• Lack of recognition of interoperability and ICT as growth and employment enablers (current) • Lack of focus on the objectives of the Lisbon Strategy (long-term)

4.2.1.3 LEGAL PROBLEM STATEMENT

"The differences in Member State legal frameworks do not facilitate cross-border exchange of information between public administrations. At European level, the lack of a cross-sector EU legal framework for interoperability does not support an effective exchange of information."

4.2.1.4 CURRENT INTEROPERABILITY-RELATED LEGAL PROBLEMS

Table 4 - Current Interoperability-related Legal Problems

Types of Legal Problems	Problem Statement	Root Causes
1) Lack of a legal basis for interoperability at European level	The lack of a cross-sector EU legal framework for interoperability prevents effective information exchange across borders. This lack of rules regarding interoperability in the EU results in significant work duplication in the Member States as well as in different services models, thus preventing interoperability.	• Lack of political will • Lack of interoperability awareness • Lack of communication • IDABC's mandate not strong enough
2) Differences in Member Sates legal frameworks	The disparate legal landscape across the EU Member States, and the resulting lack of legal harmonisation, most often prevent cross-border exchanges of information between Member State administrations. Key interoperability enablers such as eAuthentication, eAuthorisation and eID are not adequately emphasised.	• Specific background of the Member States legislation • Member States perception of data protection/privacy • Different interpretations and implementation of EU Directives • Too little guidance and support from EC in the implementation process
3) Personal data protection rules	The lack of legal harmonisation of personal data protection rules and divergent implementations of the personal data protection principles (enshrined in EU law) complicate cross-border information exchange and constitute one of the key inhibitors of interoperability and cross-border information exchange.	• Specificities of Member States legislation on data protection • Different interpretations and implementation of EU Directives • Political sensitivity

The feedback received from the EC Directorates General, either during interviews or in a written format, emphasised the following points for the political and legal layer:

- Trust, as a general principle for collaboration between the MSs, is paramount in achieving cross-border interoperability and information exchange. Trust building should be among the top priorities of the EC authorities;

- Sector-specific agreements are as important for improving interoperability as cross-sectoral agreements. Sectors are indeed regarded as the key enablers for interoperability.

4.2.2   Information Exchange Layer

4.2.2.1 INFORMATION EXCHANGE PROBLEM STATEMENT

"There is a lack of agreement and guidance on semantics and syntaxes, data formats, data security and data archiving between Member States. Multilingualism constitutes an additional challenge when exchanging information."

4.2.2.2 CURRENT INTEROPERABILITY-RELATED INFORMATION EXCHANGE PROBLEMS

Table 5 - Current Interoperability-related Information Exchange Problems

Types of Information Exchange Problems	Problem Statement	Root Causes
1) Lack of agreement on semantics	The problem of semantic interoperability[17] consists in divergent interpretations of the data exchanged between people, applications and institutions, within and between sectors.	• Divergent data interpretations • The richness of EU languages and cultures • Lack of coordination and harmonisation
2) Lack of agreement on syntax	The problem of syntactic interoperability, a pre-requisite for semantic interoperability, lies in the lack of agreement on data formats and common protocols.	• Divergent data formats and models • Lack of common standards and protocols • Lack of agreement on metadata • Lack of coordination and harmonisation

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[17] According to the *European Interoperability Framework for Pan-European eGovernment Services*, semantic interoperability is concerned with ensuring that the precise meaning of information exchanged is understandable by any other application that was not initially developed for this purpose. Semantic interoperability enables systems to combine information received with other information resources and to process it in a meaningful manner. Semantic interoperability is therefore a prerequisite for the front-end multilingual delivery of services to the user: http://ec.europa.eu/idabc/servlets/Doc?id=19529.

Types of Information Exchange Problems	Problem Statement	Root Causes
3) Lack of data security[18] and protection for cross-border information exchange	The lack of data protection and appropriate security levels and agreements on those security levels in the field of cross-border information exchange prevents cross-border interoperability between systems, applications, business processes and actors producing or using eGovernment services. The problem of data protection concerns archived information and who will keep what information about transactions for how long, and who would have access to that information.	• Lack of trust • Lack of multilateral and bilateral and sectoral agreements on security levels and confidentiality • Lack of coordination and harmonisation • Lack of different security encryption systems
4) Multilingualism	The multilingual environment of the EU make cross-border information exchange and the provision of European Public Services difficult as many public services are only available in national language(s), which makes it harder for foreign stakeholders to access these services.	• The meaning of the exchanged data is embedded in textual documents only comprehensible by people or applications which understand the language used • Lack of consideration for the multilingual dimension and related issues, particularly when designing new systems and applications
5) Lack of trust and privacy	Data collection and sharing lacks trust and privacy	• Lack of an appropriate interoperability framework • Missing formal agreements, commitment
6) Obligation to respect the original finality of exchanged personal data	When personal data is exchanged, the recipient of the data must respect the original finality which triggered this exchange of data. The recipient of the data is allowed to use personal data only for the agreed purpose(s).	• Personal data protection rules • Lack of agreement on personal data exchange

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[18] Information security means protecting information and information systems from unauthorised access, use, disclosure, disruption, modification or destruction· The goals of information security are to protect the confidentiality, integrity, availability, authenticity and non-repudiation principles when storing and exchanging information. For a definition of information security, see http://en.wikipedia.org/wiki/Information_security

Types of Information Exchange Problems	Problem Statement	Root Causes
7) Access to stored and/or archived data	The access to data registers by other (Member States or non- Member States) administrations is a sensitive one. Both indirect access (the information is provided by the administration owning the data) or direct access (the data is accessible by third parties) poses serious issues.	• Personal data cannot be stored in one centralised database, for legal or technical reasons • Heterogeneous registers, also at Member State level • Lack of agreement on data storing and archiving • Issues with data quality (copies of data not synchronised) • Problems of exchanging personal or sensitive information • Lack of meta-data registers

The feedback received from the EC Directorates-General, either during interviews or in a written format, emphasised the following points for the Information Exchange layer:

- Cross-sectoral semantic agreements are vital for the success of European Public Services;

- Multilingualism must be addressed very early on when developing new information systems if time, money and energy are not to be wasted later on when trying to make information systems interoperate;

- Data security is very important for cross-border interoperability. Public Key Infrastructures (PKIs), which are arrangements that bind public keys with respective user identities by means of a certificate authority, are needed to create, manage, store, distribute and revoke digital certificates.

4.2.3 Organisation and Processes Layer

4.2.3.1 INFORMATION EXCHANGE PROBLEM STATEMENT

"There is a lack of coordination and guidance in the field of interoperability. This prevents from sharing and reusing sustainable solutions."

4.2.3.2 CURRENT INTEROPERABILITY-RELATED ORGANISATION AND PROCESSES PROBLEMS

Table 6 - Current Interoperability-related Organisation and Processes Problems

Types of Organisation and Processes Problems	Problem Statement	Root Causes
1) Lack of coordination and guidance for interoperability in the EU	Member States and sectors at EU level have identified the lack of coordination and guidance (how to develop eServices and on how to exchange information from an IT architecture point of view) for cross-border interoperability as a major issue for cross-border information exchange and service offering.	• Lack of an interoperability governance structure • Lack of maturity to establish the required governance structure • Lack of authority for and too narrow mandate of the IDABC Programme • Lack of coordination • Disparate organisational and procedural landscape within EU MS public services • Lack of alignment of sectors • Lack of an EU Interoperability Platform • Lack of best practice sharing
2) Lack of coordination and guidance for interoperability at MS level	Lack of organisational interoperability[19] at Member State level: • Lack of collaboration from different organisations such as public administrations in different Member States in order to achieve mutually agreed service-related goals. • Lack of integration and alignment of business processes. • Lack of external interfaces and synchronisation points within and between administrations. • Lack of agreement between service providers on the why and the when of exchanging information, and on common rules.	• Various administrative organisations of the Member States • Lack of appropriate legal framework • Lack of binding Member State interoperability frameworks • Lack of authority of interoperability organisations • Lack of coordination between national & local level • Lack of compatibility of IT governance

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[19] According to the *European Interoperability Framework for Pan-European eGovernment Services*, organisational interoperability is concerned with defining business goals, modeling business processes and bringing about the collaboration of administrations that wish to exchange information and may have different internal structures and processes. Moreover, organisational interoperability aims at addressing the requirements of the user community by making services available, easily identifiable, accessible and user-oriented. See http://ec.europa.eu/idabc/servlets/Doc?id=19529.

Types of Organisation and Processes Problems	Problem Statement	Root Causes
3) Lack of best practice sharing	There is a lack of sharing of best practices and lessons learnt. The most successful cross-border interoperability projects and achievements should be more pro-actively promoted and new initiatives should be based on these success stories.	• Lack of communication • Lack of best practice identification and promotion • Reluctance to learn from other Member States' lessons, "better served by oneself" mindset
4) Lack of reuse of sustainable solutions	Interoperability solutions are not sufficiently promoted, resulting in fragmentation of the picture of results and reusable information at the EU level.	• Lack of communication • Lack of readiness to share solutions
5) Lack of skills and resources	The lack of human and financial resources is an important inhibitor when developing and implementing cross-border interoperability.	• Lack of interoperability awareness • Lack of political will • Insufficient knowledge of solutions and possibilities • Current economic crisis
6) Lack of integrated business processes	The poor level of integration of business processes makes the interoperation of information and communication technology (ICT) systems difficult when trying to exchange data and share information.	• Lack of process modelling • Lack of alignment of business processes • Lack of integrated suites of solutions • Lack of an end-to-end service approach • Silo approach within the sectors

The feedback received from the EC Directorates-General, either during interviews or in a written format, emphasised the following points for the Organisation and Processes layer:

- A governance body overseeing, coordinating and aligning the different programmes and projects related to cross-border interoperability would be an important step forward;

- IDABC's follow-on programme should keep in touch with the sectors, which are considered as the key enablers for interoperability, and should provide sector-specific guidelines for cross-sector interoperability.

4.2.4 Service Offering Layer

4.2.4.1 SERVICE OFFERING PROBLEM STATEMENT

"There is a lack of ICT impact assessment and clear guidelines for the implementation of EU legislation in terms of interoperability. There is a lack of guidelines on service implementation. There is a lack of a clear overview on services available in and between EU Member States."

4.2.4.2 CURRENT INTEROPERABILITY-RELATED SERVICE OFFERING PROBLEMS

Table 7 - Current Interoperability-related Service Offering Problems

Types of Service Offering Problems	Problem Statement	Root Causes
1) Lack of architectural guidelines for cross-border interoperability building blocks	The lack of concrete and reusable, use-case-based interoperability guidelines, rules and principles on standards, architecture, and specifications on how to develop information exchange between ICT systems.	• Lack of concrete implementation guidelines • Lack of best practice sharing • No catalogue of public services available within MS
2) Lack of common infrastructures, i.e. Interoperability Platform	Cross-border interoperability currently lacks common infrastructures (i.e. an Interoperability Platform or a European Enterprise Service Bus (EESI)) at EU level for providing generic and standardised services at EC level (i.e. PKI, eID, eAuthentication, eAuthorisation).	• Lack of coordination and communication • Lack of cross-sectoral understanding and approach • Lack of support for an Interoperability Platform from MS and from EC • Lack of funding • Lack of resources • Lack of secure and resilient networks • Uncertain future of sTESTA
3) Lack of interoperability expertise support	Expertise support is lacking, for the Member States, and certainly for the different DGs confronted with cross-border interoperability issues.	• Lack of guidelines for implementing EU Legislation • Lack of ICT impact assessment methods • Lack of standards assessment methods • Lack of a catalogue of services in the EU

The feedback received from the EC Directorates-General, either during interviews or in a written format, emphasised the following points for the Service Offering layer:

- The IDABC and its follow-on programme should support and promote initiatives which have a high impact on interoperability, such as the CIP ICT PSP pilot projects20. These initiatives should form the basis of most urgently needed building blocks for cross-border interoperability. IDABC's follow-on Programme could play an active role at the beginning and at the end of these CIP ICT PSP pilot projects. Firstly, by providing a review of EU and national legislation and by collecting the needs and requirements from Member States and sectors for specific interoperability solutions, and secondly, by enabling the implementation of the specifications within pilot projects.

- IDABC's follow-on Programme should take the lead in establishing inter-service cooperation between the DGs most frequently involved in interoperability projects (including DIGIT, INFSO, and MARKT). Common infrastructures, such as a middleware European Enterprise Service Bus based on recognised standards and rules and providing fundamental services via an event-driven and standards-based messaging engine, are needed at EU level.

- A multilingual central repository, which is a multilingual lexical database, developed and maintained at EU level, would greatly help tackle the issue of multilingualism. Machine translation engines and systems would also help perform cross-lingual tasks.

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[20] The ICT Policy Support Programme (or ICT PSP) of DF INFSO aims at stimulating innovation and competitiveness through the wider uptake and best use of ICT by citizens, governments and businesses. The ICT PSP is a multi-annual specific programme, part of the Competitiveness and Innovation framework Programme (CIP) which runs for the years 2007-2013. See http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm

5. BRIDGING THE GAP: FROM CURRENT STATUS TO THE VISION

5.1 Introduction

The previous Chapters presented the vision (the desired future stage), the problems, their root causes and the related problem statements (the current situation). This chapter presents the results of the exercise which consisted of defining how to bridge the gap between the current situation (the various problems and their root causes) and the desired future stage (the interoperability vision for 2015).

The Figure below illustrates the five different sub-steps of the first phase of EIS – within as well as the associated sub-steps and related outcomes. The 'To Be' Vision was described in Chapter 3; the 'As-Is' situation was described in Chapter 4. This Chapter looks at the first sub-step in bridging the gap using EIS. Chapter 6, which deals with scenarios, relates to the final column below – transforming objectives into actions.

Figure 7 – Phase I: several steps for bridging the gap between the '*AS-IS*' and the '*TO-BE*'
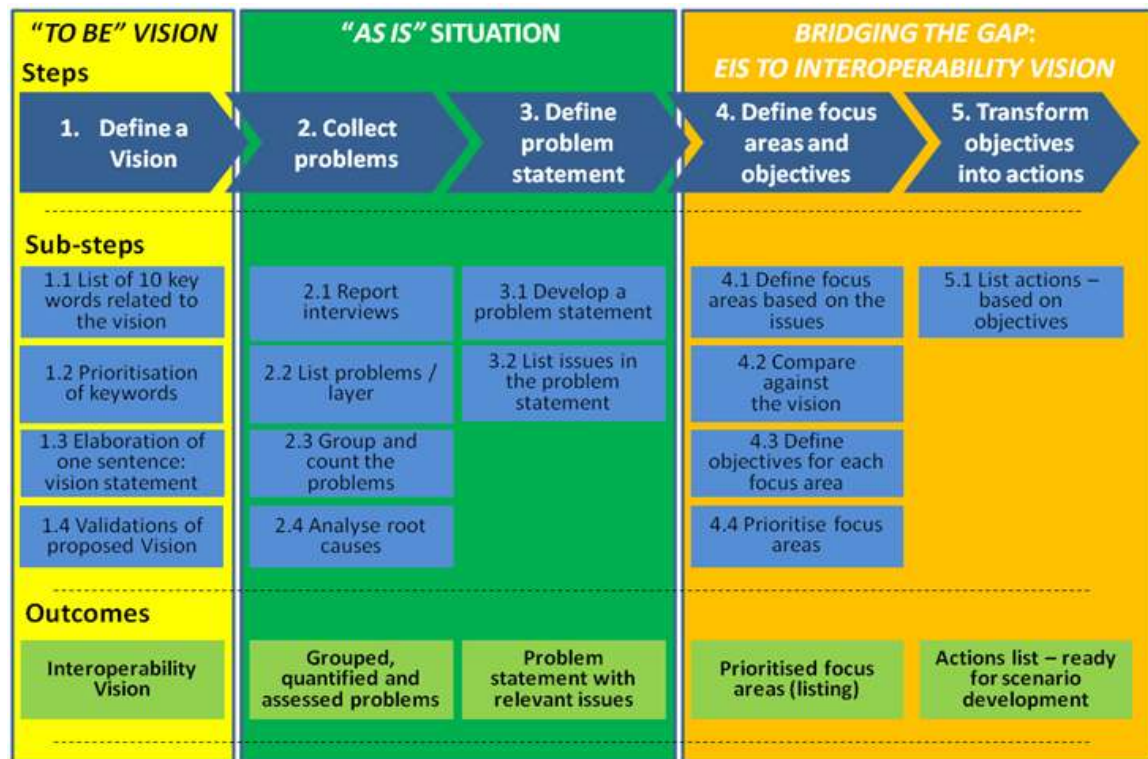
Source: Deloitte

5.2 Focus Areas

As the Figure above shows, the first step is the identification of areas of interest, the so-called focus areas based on the problems identified, their grouping per layer and categories, and the related problem statements. Typically one focus area was defined for each problem category. This was further split into the four Target Operating Model (TOM) layers.

For the "***Legal and Politics***" layer, three focus areas were identified:

1. European interoperability cross-sector legal framework;
2. National and cross-border legislation sustainability (interoperability-related issues);
3. Interoperability awareness in Europe.

The *European interoperability cross-sector legal framework* focus area includes topics such as definition of the format of the legal basis and implementation of this basis. It should be noted that the legal framework could take many forms: depending on the approach chosen, it could, for example, be a directive, a recommendation and opinion, a communication or a resolution.

The *National and cross-border legislation sustainability* focus area refers to support and verification activities, ensuring that cross-border initiatives and related legislation have been assessed from the interoperability impact point of view, and that relevant support is provided to European public administrations when implementing EU legislation.

The interoperability *awareness in Europe* focus area concentrates on activities which improve the awareness of the importance of interoperability at political and decision-making levels.

For the second layer "***Information Exchange***", three focus areas were identified:

1. Semantic interoperability;
2. Information availability and usage;
3. Trust and privacy.

The *Semantic interoperability* focus area refers to agreements and definitions of the content of the information exchanged.

The *Information availability and usage* focus area refers to principles and agreements on data access, data quality and data pricing.

The *Trust and privacy* focus area is concerned with topics such as (data) reliability, security, confidentiality, transparency and traceability.

Two focus areas were identified for the "***Organisation and Process***" layer:

1. European interoperability organisation;
2. Supporting processes.

The *European interoperability organisation* focus area aims at establishing an organisation structure to ensure coordination and collaboration in interoperability-related matters throughout Europe.

The *Supporting processes* focus area is closely related to the *European interoperability organisation* focus area. These supporting processes and related actions define the necessary processes and ways of working for the abovementioned *European interoperability organisation* focus area.

For the "***Service Offering***" layer three focus areas were identified:

1. Interoperability Architecture – Building blocks;
2. European interoperability platform;
3. Expertise support and methodologies.

The *Interoperability Architecture – Building Blocks* focus area refers to various aspects of sharing and reusing results, components and best practises identified/developed in various European initiatives, with, as guiding principles, reuse and reduction of redundancy.

The *European interoperability platform* relates to infrastructure, service provision guidelines and governance of the European interoperability platform.

The focus area *Expertise support and methodologies* aims at finding ways to provide support and methodologies to European public administrations in their interoperability endeavours.

The focus areas were compared to the vision, making sure that the problem grouping and problem statements were aligned with the focus areas and further with the vision. In addition, Deloitte identified elements that were relevant for all layers and for all focus areas. These are called fundamentals, principles that guide all the efforts regardless of the specific focus area. These are: Continuous improvement, Openness and innovation, Community of shared interest. The Table below gives an overview of the mapping per layer.

Table 8 – Mapping of identified focus areas per layer

TOM layer	Politics and Legal	Information Exchange	Organisation and Processes	Service Offering
Vision	**Interoperability actions aligned with EU policies & actions** **Completion of legal framework for interoperability (cross-sector & cross-border)**	**Content, formats and meaning of exchanged information are agreed** **Information exchanges respect privacy, are reliable and trustworthy**	**Stable governance structure for interoperability** **Structure supported by necessary processes** **Interfaces established with Member States' public administration**	**Common, cohesive and coordinated interoperability** **Interoperability is enabled by agreed standards**
Focus areas	European interoperability cross-sector legal framework National and cross-border sector-specific legislation sustainability (interoperability-related issues) Interoperability awareness across Europe	Semantic interoperability Information availability and usage Trust and privacy	European interoperability organisation Supporting processes	Interoperability architecture building blocks European interoperability platform Expertise support and methodologies
Fundamentals: Continuous improvement, Openness and innovation, Community of shared interest				

5.3   Objectives per Focus Areas and per TOM Layer

Focus areas allow the efforts in the field of cross-border interoperability to be organised and structured. However, focus areas alone are not enough as they are not sufficient for defining the way forward. In order to move from focus areas to expected outcomes, it was necessary to identify objectives for each of the focus areas. After the focus areas had been prioritised, they were mapped against the vision and the necessary objectives for each of the focus area were identified.

The objectives focus on the activities that should be done in order to reach the vision, how to reach the desired state via the focus areas. These objectives establish the ambitions, or in other words, what should be done under each focus area in order to achieve the vision. The objectives identified are the result of the four complementary exercises: firstly, they reflect the outcomes of the interviews conducted with the Member States; secondly, they reflect the outcomes of the workshop dedicated to Focus Area and Objectives held with the Member States on April 1, 2009; thirdly, they reflect the specific needs of the various European Commission services consulted; and finally, some of these objectives were identified by Deloitte as a result of best practice and experience in this area. In order to do so, the Deloitte EIS Value Map was used to benchmark and to identify new objectives, which were not addressed during the previous exercises. (see section 2.7 on the EIS Value Map and Annex II).

Per TOM layer, the section below presents a high level overview of the objectives associated with each of the focus areas.

5.3.1   Political and Legal Layer

FOCUS AREA 1: EUROPEAN INTEROPERABILITY CROSS-SECTOR LEGAL FRAMEWORK

- Objective 1.1: Agree on the format of the legal framework;

- Objective 1.2: Establish legal framework.

FOCUS AREA 2:   NATIONAL AND CROSS-BORDER SECTOR-SPECIFIC LEGISLATIONS SUSTAINABILITY (INTEROPERABILITY- RELATED ISSUES)

- Objective 2.1: Systematically conduct pre-studies on ICT implications of the implementation of new legislations. Agree on methodology for these studies;

- Objective 2.2: Provision of guidance to public administrations on interoperability-related issues when implementing EU legislation;

- Objective 2.3: Systematically conduct post-studies on ICT implications of the implementation of new legislations. Agree on methodology for these studies.

FOCUS AREA 3:   INTEROPERABILITY AWARENESS ACROSS
EUROPE

- Objective 3.1: Recognise interoperability as an essential cornerstone of European Public Services;

- Objective 3.2: Cooperate and agree on an approach for linking interoperability to policy issues that are high on the political agenda.

5.3.2   Information Exchange Layer

FOCUS AREA 4:   SEMANTIC INTEROPERABILITY

- Objective 4.1: Agree on data formats for both sector-specific and cross-sector information;

- Objective 4.2: Achieve significant improvements in the field of multilingualism;

- Objective 4.3: Agree on dictionaries, semantic core components and taxonomies.

FOCUS AREA 5:   INFORMATION AVAILABILITY AND USAGE

- Objective 5.1: Achieve significant improvements on the respect of the "single entry of data" principle;

- Objective 5.2: Achieve data consistency and high quality;

- Objective 5.3: Agree on metadata to support the access to data;

- Objective 5.4: Ease the use and exchange of data, and agree on:

  o Objective 5.4.1: who can access data, when and how;

  o Objective 5.4.2: data pricing for data reuse.

FOCUS AREA 6:   TRUST AND PRIVACY

- Objective 6.1: Agree on data protection, confidentiality and security levels;

- Objective 6.2: Trust and rely in data collection and exchange;

- Objective 6.3: Improve transparency and traceability of the use of EU citizens, businesses and administrations' information.

5.3.3　Organisation and Processes Layer

FOCUS AREA 7: EUROPEAN INTEROPERABILITY ORGANISATION

- Objective 7.1: Agree on the tasks, roles and responsibilities for the interoperability organisation;

- Objective 7.2: Agree on interfaces and methodologies between Member States' public administration interoperability organisations and the European interoperability organisation;

- Objective 7.3: Align European Public Services business processes, based on their granularity;

- Objective 7.4: Establish a consistent approach to stimulate and support Member States' interoperability organisations;

- Objective 7.5: Encourage proactive discussions between public administrations on interoperability matters.

FOCUS AREA 8: SUPPORTING PROCESSES

- Objective 8.1: Establish and follow work processes:

  - o Objective 8.1.1: Communication;

  - o Objective 8.1.2: Execution;

  - o Objective 8.1.3: Planning;

  - o Objective 8.1.4: Control;

- Objective 8.2: Define and follow decision-making processes' timeliness;

- Objective 8.3: Establish common requirements and rules, supported by reporting based on precise Key Performance Indicators (KPIs) defined in close collaboration with the Member States;

- Objective 8.5: Establish knowledge management processes;

- Objective 8.6: Define and follow evaluation & improvement processes.

5.3.4 Service Offering Layer

FOCUS AREA 9: INTEROPERABILITY ARCHITECTURE – BUILDING BLOCKS

- Objective 9.1: Identify integration enablers (i.e. technologies and capabilities which facilitate integration and which are designed to provide security, audit-ability, scalability, and performance);

- Objective 9.2: Identify the most needed architectural building blocks for cross-border/cross-sectoral interoperability of national eService/interoperability architectures by collecting best practise solutions (e.g. from CIP pilots), form a consistent architecture by adding missing building blocks and providing concrete guidelines on how to comply to this architecture;

- Objective 9.3: Establish an EU catalogue of services at EU and Member States levels;

- Objective 9.4: Ensure public administrations' knowledge of available services and business processes;

- Objective 9.5: Reduce redundancy: more cost-effective and greener services;

- Objective 9.6: Use SLAs in the provision of basic services for enabling European Public Services delivery;

- Objective 9.7: Identify new opportunities, new technologies and supporting solutions; follow market trends.

FOCUS AREA 10: EUROPEAN INTEROPERABILITY PLATFORM

- Objective 10.1: Agree on the role of EU-wide secured networks (i.e. sTesta) and agree on the scope, the architecture, the functionalities and the interactions between the European Interoperability Platform and the Information Systems of the Member States;

- Objective 10.2: Establish effective governance of European Interoperability Platform;

- Objective 10.3: Make available interoperability implementation guidelines for services provision.

FOCUS AREA 11: EXPERTISE SUPPORT AND METHODOLOGIES

- Objective 11.1: Provide expertise and support to public administrations on interoperability matters;

- Objective 11.2: Coordinate integration efforts;

- Objective 11.3: Make methodology for assessing standards available and promote its use;

- Objective 11.4: Make methodology for ICT impact assessment available and promote its use.

The objectives listed above provide a sound and challenging basis for future endeavours in the field of European Public Services' interoperability.

5.4 Prioritisation of Focus Areas

During the workshop dedicated to the Focus Areas and Objectives (see next paragraph), Deloitte requested the participating Member States to prioritise the focus areas identified.

Eleven focus areas were identified and prioritised. The following three focus areas were ranked as the most important to tackle:

- Semantic interoperability (focus area 4);

- Interoperability Architecture – Building blocks (focus area 9);

- National and cross-border sector-specific legislations sustainability (interoperability-related issues) (focus area 2).

These were followed by "*Interoperability awareness across Europe*" and "*European Interoperability cross-sector legal framework*".

Figure 8 - Prioritisation of Focus Areas
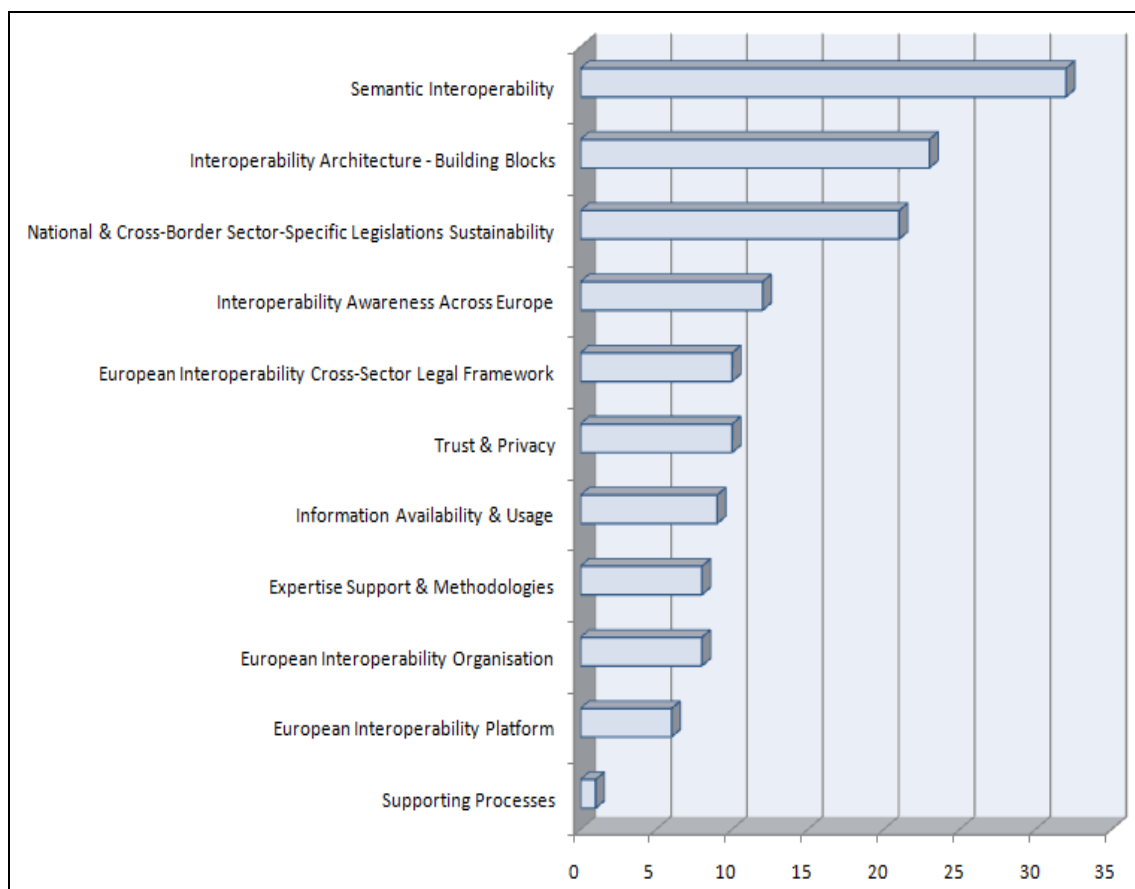
Source: Deloitte

As there is a clear link between the European interoperability organisation and the supporting processes, these two focus areas are directly complementary. It is therefore not surprising that only one of them scored highly and the related focus area, supporting processes, was ranked as the least important.

When mapping the current IDABC projects to the Target Operating Model layers, it seems that the majority of the projects focus on the "*information exchange*" and the "*service offering*" layers, whereas the next important layer "*politics and legal*" seems to be a new area for the programme to tackle. The Figure below provides an overview of current IDABC's cross-sector actions and measures mapped on the four TOM layers.
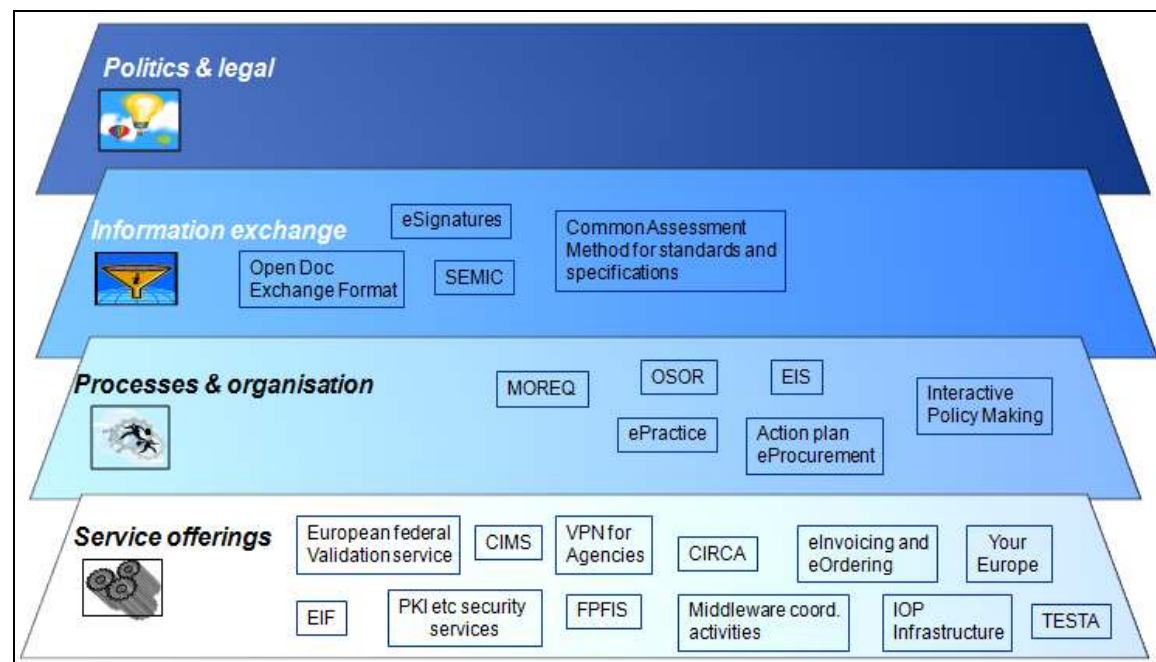
Figure 9 – Cross-sector actions and measures: overview of current IDABC's projects mapped on the TOM

Source: Deloitte

A complete mapping of problems, root causes, problem statements, focus areas, objectives and the vision can be found in Annex 4 of this document.

This Annex presents, per TOM layer, a more detailed description of the focus areas, their related objectives and the corresponding part of the vision statement. For the sake of clarity, the focus areas and related objectives are numbered. They are put into a time-order and, in addition, the links between the different objectives have been mapped in the fourth column.

It is not possible to achieve 100% mapping between the focus areas, objectives and the vision as the vision statement and its key word explanations are on a higher level and can refer to various layers, or to various focus areas. Nevertheless, the mapping below gives a fair indication of the existing links between the focus areas, the objectives and the vision.

6   METHODOLOGY FOR SCENARIO DEVELOPMENT

6.1   Introduction

In order to develop the European Interoperability Strategy, Deloitte provided a methodology for building upon the identified focus areas and objectives. This methodology explains how to draw up scenarios for the EIS by taking into account criteria such as value and risks, resources and skills. In the framework of the second phase of the EIS elaboration, this assessment will allow the European Commission, together with the Member States, to make informed and reasoned decisions, to build a comprehensive EIS and to define further an appropriate governance model.

This chapter describes the methodology for scenario development, based on Deloitte's best practices and experience in this area. The aim of the methodology is to develop scenarios, each of which is composed of a set of structured actions, in order to implement the EIS objectives. A complete overview of the methodology steps is provided, together with insights on how to fine-tune the methodology and concretely assess possible actions. Finally, the leveraging of the methodology in context of implementing a portfolio management approach is discussed.

6.2   Overview of the Scenario Methodology

The scenario methodology starts with the previously defined EIS objectives and focus areas. The first step is a brainstorming session, with the aim of defining the possible actions and scenarios necessary to reach the objectives. As typical for a brainstorming session, it is the intention to identify the widest possible coverage of actions and scenarios. The results will then have to be organised and grouped. The outcome of the activity will be a set of scenarios, each composed of closely related actions. At the end, each objective will thus have one or more scenarios linked to it.

A set of value and risk criteria has been defined to assess these scenarios (see below). The assessment of the scenarios, based on the set of value and risk criteria, takes place in the second step of the methodology. The third step selects the most valuable scenarios with the least risk. It is worth noting that in some cases the choice of a specific scenario will be based on a compromise as the most valuable scenario will probably not be the one presenting the least risk. Some scenarios may have the same outcome, which might cause redundancy. Eliminating redundancy is the topic of the fourth step. If the final set of scenarios realises all objectives, the preferred scenarios are grouped into feasible and realistic EIS scenarios. Otherwise, new scenarios have to be identified and the scenario methodology needs to be re-applied with the improved set of scenarios.

Figure 10 - Overview of the Scenario Methodology
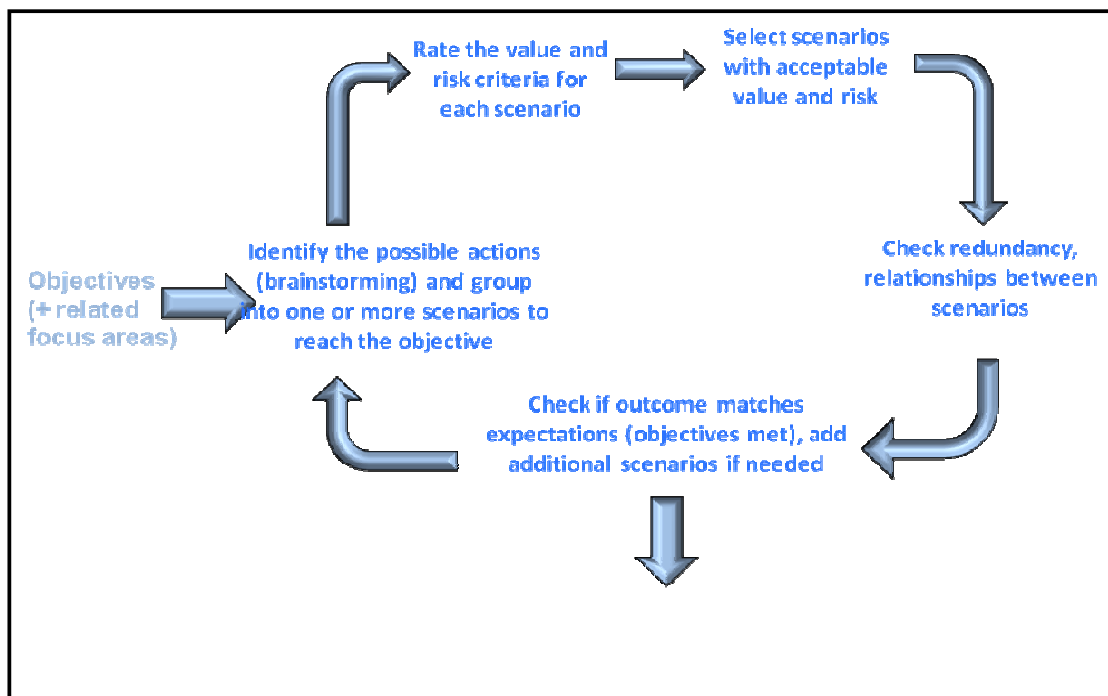
Source: Deloitte

6.3   Value and Risk Criteria

Based on best practices built through literature review and project experience, Deloitte has selected a set of value and risk criteria. The list of value criteria is the following:

- **Business Case Sensitivity:** Evaluates the value imbedded in the business case through the quality of financial modelling, proper risk and cost-benefit analysis, and overall degree of research of outstanding assumptions. As the action matures and previous assumptions become confirmed, the action value will increase;

- **Financial Benefits Created:** Evaluates the projected ROI of the initiative;

- **Time to Benefits Creation:** Evaluates the speed with which the action generates benefits, both financial and non-financial. Counted from the start of spending to the moment when benefits are first realised;

- **Impacts the Objectives:** Evaluates the strategic alignment of the actions. The impact of the actions is measured by aligning it to the EIS objectives;

- **Impacts on Citizens'/Businesses' Satisfaction:** Evaluates the impacts on citizens'/businesses' satisfaction. The impact of an action is measured by identifying and assigning impacts to citizens'/businesses' satisfaction;

- **Value at Risk:** Evaluates the potential loss that would result in the non-realisation of the action. Only the costs incurred by the status-quo should be taken into account;

- **Foundation-builder:** Evaluates the investments in infrastructure required by other investments to deliver their intended outcomes. Other investments or outcome improvements that will be enabled by critical foundation elements are easily identifiable;

- **Window of Opportunity:** Evaluates the timeframe within which the action must be realised to capture its value;

- **Environment and Social Value:** Evaluates the environmental and social impacts of the action (broader reuse of the action outcome at local level, industry, etc.);

- **Alignment with Cultural and European Values and Contribution to European Reputation:** Evaluates the alignment with cultural and European values, as well as the contribution to the overall European reputation;

- **Compliance with Regulatory Requirements:** Evaluates the necessity of the action to help Member States comply with current or future regulatory requirements;

- **Impacts on the Critical Administrative Processes:** Evaluates the impact on the critical administrative processes. The impact of an action is measured by identifying and assigning impacts to the sub-process of the administrative process framework.

An overview of the risk criteria is provided below:

- **Action Owner:** Evaluates the risk associated with the absence of an action owner;

- **Stakeholder Alignment and Support:** Evaluates any perceived risks associated with the alignment of stakeholders, such as misalignment of objectives, working styles, political opinions, etc. and support to the action;

- **Action Complexity:** Evaluates the complexity of the action in terms of planning, execution and control. This relates to the various governance processes (scope, time, cost, quality, resource, communication, procurement);

- **Degree of Change:** Evaluates the risk associated with the degree of change required with respect to work methods, processes, procedures and training upon completion of the action;

- **Availability of Skilled Resources:** Evaluates the risk associated with the competence, experience or availability of the resources required by the action. Also evaluates the availability of resources which are not constrained by those capacities;

- **Organisational Stability:** Evaluates any risk that may result from other organisational changes that could concurrently occur (e.g.: structural adjustments, management changes…etc.);

- **Limited Financial Resources and/or Schedules:** Evaluates the risk associated with a lack of financial resources and/or too tight a schedule;

- **Novelty:** Evaluates the risk associated with **the experience related to this type of actio**n and/or technology;

- **Dependencies and Inter-relationships:** Evaluates the risk associated with the interdependencies with other actions and/or external parties (e.g. other departments, other organisations…etc). For example, a phase of the action under study may see its success dependant on the success of another action;

- **Duration:** Evaluates the risk associated with the duration of the action;

- **Regulatory, Legal and Political Risk:** Evaluates the regulatory, legal and political risk associated with the implementation of the action. This includes the different laws, operational regulations and the political context (elections, high-visibility subjects, etc.);

- **Technology Complexity:** Evaluates the technical complexity of realising the action.

It should be noted that, depending on the scenario (set of actions) and on the relevance of the abovementioned criteria, the list of criteria to be applied will be decided upon only when applying the methodology.

A complete overview of all value and risk criteria and their possible assessment scores can be found in annex to this report (Annex 3). The same annex provides also additional details on an approach to weigh the scenarios, if so deemed necessary.

6.4   Assessing the Scenarios Identified

Once the total value and total risk scores for all scenarios have been defined, the scenarios can be compared to each other and to the value and risk thresholds. This is shown in the Figure below.

Figure 11 - Assessing the scenarios identified
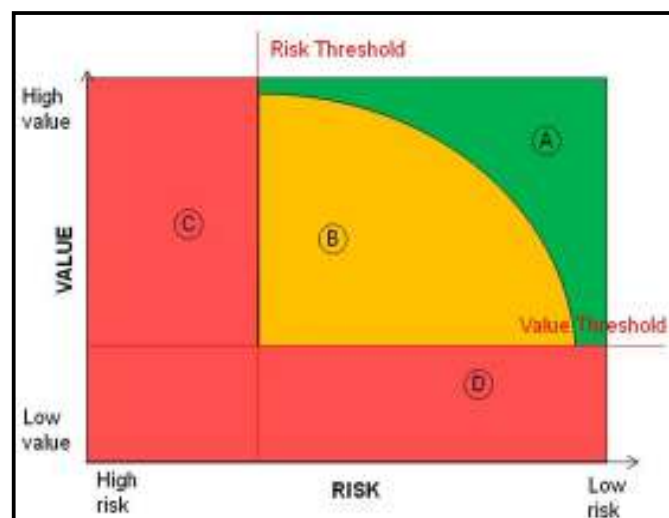
Source: Deloitte

The figure above implies that Scenario A is a "must do" scenario, with low risk and high value. Scenario B must be reassessed. Scenario C in turn is too risky and scenario D does not create enough value.

6.5 Outcome and Next Steps

The outcome of the Scenario Methodology is a concrete set of actions that can be implemented as realistic scenarios. The Scenario Methodology embodies the first step towards a tangible European Interoperability Strategy based on a portfolio management approach.

The next step is the concrete analysis, prioritisation and implementation of the scenarios selected and developed, based on the Scenario Methodology. The monitoring and execution of the scenario is the final step and will be encapsulated in the to-be defined governance model. This is shown in the Figure below.

Figure 12 - Outcome of the scenario methodology and next steps
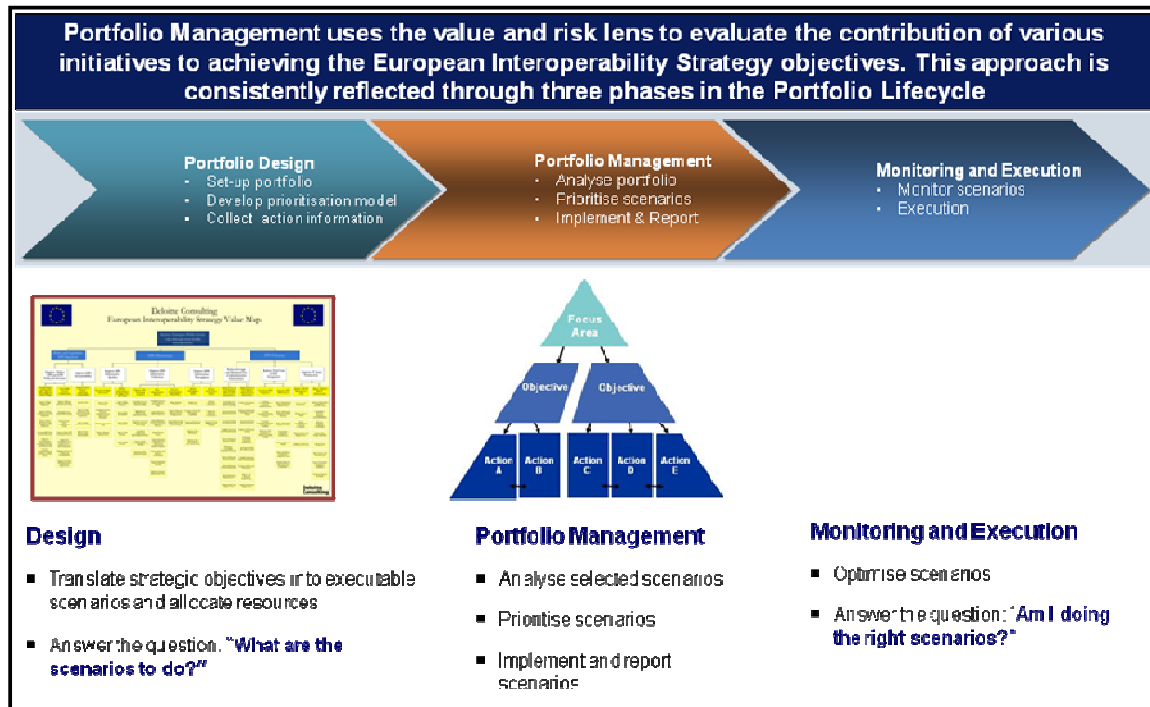
Source: Deloitte

CONCLUSION AND NEXT STEPS

To conclude, interoperability is an issue that the Member States and the European Commission all share. There are several problems (obstacles, barriers, challenges and issues) that prevent European Public Services from interoperating in an efficient manner.

There are commonalities between the Member States, as well as some obvious differences. The purpose of this study was to identify commonalities and shared areas of interest.

The main and commonly shared problems (over 50% of the interviewees identified these) relate to the 1) absence of a legal basis for interoperability actions and the different interpretations of EU legislation; 2) absence of agreements and definitions on data formats, security and information availability, 3) coordination, guidance and sharing of best practice and 4) reuse of elements and services developed in Europe.

The study not only identified problems, but also brought clearly to the fore that there is a need at EU-level for support – both for Member State's efforts and sector-specific endeavours. This was confirmed by an **agreed vision statement for European Public Services' interoperability**.

In order to reach the vision and to tackle these problems, several **focus areas** were defined, bridging the gap between the current state and the desired vision.

Eleven focus areas were identified and prioritised. The following three focus areas were ranked as being the most important to tackle: "*Semantic interoperability*", "*interoperability architecture – Building blocks*" and "*national and cross-border sector-specific legislations sustainability*". These were followed by "*interoperability awareness cross Europe*" and "*European interoperability cross-sector legal framework*". This mapped to the target operating model layers indicates that the "Information Exchange" and "Service Offering" layers would be the most important, whereas the focus areas ranked 3 – 5 all related to the "Politics and Legal" layer.

When mapping the current IDABC projects to the Target Operating Model layers, it seems that the majority of projects focus on the "*Information Exchange*" and the "*Service Offering*" layers, whereas the next most important layer "*Politics and Legal*" seems to be a new area for the programme to tackle. Further details on this mapping can be found in Annex 6.

The Next Step in drawing up a European Interoperability Strategy is an agreement on the priorities at the level of the Chief Information Officers (CIOs) of the Member States.

After this important milestone, it will be necessary to move from the objectives to scenarios and actions. None of the objectives listed in this document can be achieved without scenarios and related actions being planned and executed. The scenarios will equally need to be assessed against the value and risk criteria, and their feasibility in terms of the estimated resources required. The consolidated scenarios will need to be set to a timeline, and the European Interoperability Strategy (EIS) defined on this basis. A portfolio management approach based on a to-be-defined governance model will support the process from initial assessment through to monitoring and controlling of the execution of the EIS.

Once an agreement on the strategy has been reached, part of the second phase is also the commitment at European Union and Member State levels to the strategy and its implementation.

LIST OF ABBREVIATIONS

CIO:	Chief Information Officer
CIP:	Competitiveness and Innovation Programme
CIP ICT PSP:	CIP ICT Policy Support Programme
DG COMP:	Directorate-General for Competition
DG DIGIT:	Directorate-General for Informatics
DG EAC:	Directorate-General for Education and Culture
DG EMPL:	Directorate-General for Employment, Social Affairs and Equal Opportunities
DG INFSO:	Directorate-General for Informatics and Media
DG TAXUD:	Directorate-General for Taxation and Customs Union
DG TRADE:	Directorate-General for Trade
EA:	Enterprise Architecture
EC:	European Commission
EESI:	European Enterprise Service Bus
EIAG:	European Interoperability Architecture Guidelines
eID:	Electronic Identification
EIIS:	European Interoperability Infrastructure Services
EIF:	European Interoperability Framework
EIS:	European Interoperability Strategy
EWRS:	Early Warning and Response System
ICT:	Information and Communication Technologies
IDABC:	Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens
IMI:	Internal Market Information System
ISA:	Interoperability Solutions for European Public Administrations
IT:	Information Technology
KPI:	Key Performance Indicator

MS:	Member State
MSs:	Member States
PKI:	Public Key Infrastructure
PMB:	Project Management Board
ROI:	Return on Investment
SOA:	Service Oriented Architecture
SEMIC:	SEMIC is a participatory platform and a service by the European Commission that supports the sharing of assets of interoperability to be used in public administration and eGovernment
SR:	Risk Criteria
sTESTA:	Highly Secure Trans European Services for Telematics between Administrations
SV:	Value Criteria
TOM:	Target Operating Model
WR:	Risk Weights
WV:	Value Weights
XML:	eXtensible Markup Language

GLOSSARY

Access: in general, the right to enter or make use of. In a computer context, entry granted to a software path that establishes the right to use a system and its resources; to read, write, modify, or delete data; and/or to use software processes with various capabilities to achieve the status of having access.

Administration: a public authority in charge of delivering a public service.

Authentication: an adjunct step to identification that confirms an asserted identity with a specified, or understood, level of confidence. Authentication can be used to provide high assurance that the purported identity is, in fact, the correct identity associated with the entity that provides it. The authentication mechanism can be based on something that the entity knows, has, or is (e.g. a password, smart card that uses some encryption or random number for a challenge-response scheme, or a fingerprint).

EIS Enterprise Architecture: The Deloitte Enterprise Architecture Framework provides vital descriptive information regarding the identification of enterprise architecture 'domains', and their inter-relationships. Based on the Deloitte Enterprise Architecture Framework, public services are categorised in four different granularity domains of interoperability. These four domains are the foundations of the EIS Enterprise Architecture: 'EU Cross-Border' services, 'EU Cross-Sector' services, 'Country-Specific' services, 'Country- and Sector-Specific' services. The first two domains are used to define the current status and challenges in the context of European Public Services' interoperability. The 'Country-Specific' and 'Country- and Sector-Specific' domains are used to get insights from the interoperability status of the Member States in order to define lessons learnt, reusable solutions and skills. All four points-of-view are needed to define a strategy that goes one step further in the realisation of interoperable European Public Services and stays aligned with the situation in the different Member States.

EIS Strategy Framework: The elaboration of the EIS vision, problem statement and objectives has been placed in the context of the Deloitte IT Strategy Framework. This results in a phased approach, the EIS Strategy Framework (tailored to the first phase of the EIS elaboration), with milestones and deliverables aligned to the IDABC/ISA strategic needs. The EIS Strategy Framework started with the definition of a mission statement. Once this statement was defined, a challenging strategic vision was drawn up. The next phase defined the gap between the current status and the vision. This gap was described in a concrete problem statement separately for each TOM layer. The third phase identified the objectives which need to be achieved in order to close the gap and reach the vision.

European Enterprise Service Bus: In computing, an enterprise service bus refers to a software architecture construct typically implemented by technologies found in a category of middleware infrastructure products, usually based on recognised standards, which provide fundamental services for complex architectures via an event-driven and standards-based messaging engine (the bus). An ESB generally provides an abstraction layer on top of an implementation of an enterprise messaging system, which allows integration architects to exploit the value of messaging without writing code. Contrary to the more classical enterprise application integration (EAI) approach of a monolithic stack in a hub and spoke architecture, the foundation of an enterprise service bus is built of base functions broken up into their constituent parts, with distributed deployment where needed, working in harmony as necessary.

An ESB does not implement a service-oriented architecture (SOA) but provides the features with which one may be implemented. An ESB should be standards-based and flexible, supporting many transport mediums. Based on EAI rather than SOA patterns, it tries to remove the coupling between the service called and the transport medium.

European Public Services: According to latest version of the draft EIF, in this document European Public Service means *"a cross-border public sector service supplied by public administrations[21] by*

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[21] Refers to either national public administrations (at any level), or bodies acting on their behalf, and/or EU public administrations.

means of cooperation between those administrations, either to one another, or to European businesses and citizens."

Focus Area: in order to identify various groups of similar thematic reach (i.e. problems, interest, goals and objectives), focus areas are addressed in order to structure the future efforts in interoperability and to further define a set of vision-oriented objectives.

Interoperability is a property referring to the ability of diverse systems and organisations to work together (inter-operate).

- **Organisational interoperability** is about being able to identify the players and organisational processes involved in the delivery of a specific eGovernment service and achieving agreement among them on how to structure their interactions, i.e. defining their "business interfaces".

- **Technical interoperability** is about knitting together IT systems and software, and defining and using open interfaces, standards and protocols in order to build reliable, effective and efficient information systems.

- **Semantic interoperability** is about ensuring that the meaning of the information exchanged is not lost in the process that it is retained and understood by the people using it, and applications and institutions involved.

- **Political and legal interoperability:** corresponding to the compatibility among Member States' legal frameworks.

It is worth mentioning here that Deloitte has categorised interoperability following the Target Operating Model (or TOM, which is further defined below). This classification of interoperability, although showing major similarities with the definition of interoperability made by the IDABC, differs from this definition in some respects to the extent that it is structured according to four distinctive layers. The first layer relates to the political and legal dimensions of interoperability; the second layer is concerned with the information exchange dimension of interoperability; the third layer is concerned with the organisation and process of interoperability; the fourth and last layer relates to the service offering in the field of interoperability.

The reason for adjusting these categories of interoperability to the EIS project was, firstly, the need to apprehend the provision of European Public Services in a dynamic way. In this sense, this model allowed to address the relations, dependencies and underlying processes between layers. Secondly, the TOM was used to support the consultation of the Member States experts with interviews. Thirdly, it was used to structure the approach, methodology and outcomes of the study.

Objective: an objective is a projected state of affairs that a person or a system plans or intends to achieve - a desired strategic development towards a vision.

Problem: a problem is an obstacle, barrier, challenge or issue which makes it difficult to achieve a desired goal, objective or purpose. It refers to a situation, condition, or issue that is yet unresolved. In a broad sense, a problem exists when an individual becomes aware of a significant difference between what actually is and what is desired.

Problem Statement: a problem statement is a clear and concise description of the issues that needs to be addressed and which should be defined before any attempt to solve problems. A good problem statement should answer these questions:

- What is the problem, the probability it will occur and the risks it entails?

- Who has the problem or who is the client/customer? This should explain who needs the solution and who will decide the problem has been solved.

- What form can the resolution take? What are the scope and limitations (in time, money, resources, and technologies) that can be used to solve the problem?

Root Cause: a root cause is an initiating cause of a causal chain which leads to an outcome or to a problem. Commonly, root causes are used to describe the depth in the causal chain where an intervention could reasonably be implemented to change performance and prevent an undesirable outcome.

Target Operating Model (TOM): The Deloitte Target Operating Model (or TOM) communicates how strategic priorities and principles translate to lower, more operational levels. This generic Deloitte model has been tailored to the four layers that most influence 'interoperability'. The 'Politics and Legal' layer can be found at the top of the TOM. This layer describes which political priorities and legal issues enable and support interoperability. The second layer is called the 'Information Exchange' layer and focuses on the data exchanged and related data semantic requirements. The subject of the third, 'Organisation and Processes' layer is how interoperability is organised and concretely implemented through collaboration between several stakeholders. The concrete services delivered for cross-border interoperability and the related supporting technologies are analysed in the fourth and final 'Service Offering' layer.

For other definitions, please refer to the IDABC glossary: http://ec.europa.eu/idabc/en/document/649/5892.

ANNEXES

- Annex 1: Interview guideline – template;

- Annex 2: European Interoperability Strategy Interoperability Value Map;

- Annex 3: Listing of the detailed risk and value criteria for scenario assessment;

- Annex 4: Mapping of problems, root causes, problem statements, focus areas, objectives and vision;

- Annex 5: Problem statements for each layer;

- Annex 6: Current IDABC actions per layer mapped against the objectives of the future ISA Programme.

- Annex 7: Critical success factors