

Tavoitteena eurooppalaisten julkisten palvelujen yhteentoimivuus

Euroopan komissio hyväksyi tänään aloitteen, jonka avulla julkishallintoja kaikkialla EU:ssa kannustetaan maksimoimaan tieto- ja viestintäteknologian tarjoamat yhteiskunnalliset ja taloudelliset mahdollisuudet. Tiedonannon ”Tavoitteena eurooppalaisten julkisten palvelujen yhteentoimivuus” tarkoituksena on määritellä yhteinen lähestymistapa jäsenvaltioiden julkishallinnoille ja auttaa kansalaisia ja yrityksiä saamaan täysi hyöty EU:n yhtenäismarkkinoista. Yhtenäismarkkinoiden täysi hyödyntäminen edellyttää usein sitä, että kansalaiset antavat tai saavat tietoja tai asiakirjoja, joita tarvitaan EU:ssa työskentelyä, opiskelua tai matkustamista varten, ja toimittavat ne toisen jäsenvaltion julkishallinnolle. Sama koskee myös yrityksiä. Siksi on olennaisen tärkeää, että hallinnot tarjoavat tehokkaita ja tuloksellisia rajat ylittäviä sähköisen hallinnon palveluja, kuten komission juuri hyväksymässä sähköisen hallinnon toimintasuunnitelmassa esitetään (ks. [IP/10/1718](#)). Tämä on myös yhtenä tavoitteena [Euroopan digitaalistrategiassa](#) (ks. [IP/10/581](#), [MEMO/10/199](#) ja [MEMO/10/200](#)). Tehokas yhteentoimivuus on keskeinen osa Euroopan digitaalistrategiaa, joka on yksi Eurooppa 2020 -strategian lippulaivahankkeista. Komission tiedonannossa määritellään Euroopan yhteentoimivuusstrategia ja eurooppalaiset yhteentoimivuusperiaatteet, joiden tulisi ohjata julkisten elinten tieto- ja viestintäteknikkapolitiikkaa kaikkialla EU:ssa.

”Euroopan unionissa on kyse yhteistyöstä sellaisten olosuhteiden luomiseksi, joissa kansalaiset ja yritykset voivat menestyä,” totesi komission varapuheenjohtaja Maroš Šefčovič. ”Euroopan julkishallintojen on oltava esimerkkinä tällaisesta yhteistyöstä. Tämä edellyttää julkishallintojen todellista ja tehokasta yhteentoimivuutta kaikilla tasoilla.”

Euroopan sähköisten julkisten palvelujen haasteet

Yhä useammat kansalaiset ja yritykset hyödyntävät EU:n yhtenäismarkkinoiden vapauksia. Kansalaisten on kuitenkin usein pakko ottaa yhteyttä ulkomaisiin julkishallintoihin tai jopa käydä niissä henkilökohtaisesti, jotta he voivat antaa tai saada tietoja tai asiakirjoja, joita tarvitaan EU:ssa työskentelyä, opiskelua tai matkustamista varten. Sama koskee yrityksiä, jotka haluavat sijoittautua useampaan kuin yhteen jäsenvaltioon.

Näiden ”sähköisten esteiden” poistamiseksi julkishallintojen olisi voitava vaihtaa tarvittavia tietoja ja tehdä yhteistyötä julkisten palvelujen tarjoamiseksi yli rajojen. Tämä edellyttää julkishallintojen välisen yhteentoimivuuden varmistamista.

Monet julkishallinnot jäsenvaltioissa ovat jo toteuttaneet toimia julkisten palvelujen yhteentoimivuuden parantamiseksi kansallisella, alueellisella ja paikallisella tasolla, mutta EU:n tasolla yhteentoimivuus jää jälkeen kehityksestä, elleivät jäsenvaltiot ja komissio tee yhteistyötä. Siksi komissio on viime vuosina laatinut yhteisen strategian ja muotoillut yhteiset toteutuspuitteet jäsenvaltioiden kanssa.

Eurooppalaiset julkiset palvelut ovat usein tulosta jäsenvaltioiden hallintojen eri tasoilla nykyisin tarjottavien julkisten palvelujen yhteensulauttamisesta. Eurooppalaisten julkisten palvelujen perustaminen on käytännössä mahdollista vain, jos kyseisiä julkisia palveluja suunniteltaessa muistetaan yhteentoimivuuden vaatimukset.

Tavoitteena eurooppalaisten julkisten palvelujen yhteentoimivuus

Eurooppalaisessa digitaalistrategiassa komissio sitoutui antamaan tiedonannon, jossa määritellään Euroopan yhteentoimivuusstrategia (EIS) ja eurooppalaiset yhteentoimivuusperiaatteet (EIF), eli kaksi keskeistä asiakirjaa, joilla viedään eteenpäin julkishallintojen yhteentoimivuutta.

Tämä hyödyttää suoraan jäsenvaltioiden julkishallintoja ja Euroopan komission yksiköitä, jotka voivat toimia tehokkaammin toteuttaessaan eurooppalaisia julkisia palveluja ja ovat paremmin tietoisia vaarasta, että ne saattavat luoda uusia sähköisiä esteitä, jos ne valitsevat julkisten palvelujen ratkaisuja, jotka eivät ole yhteentoimivia EU:n tasolla. Kansalaiset ja yritykset hyötyvät paremmista eurooppalaisista julkisista palveluista jokapäiväisessä elämässään ja toiminnassaan, jos ne haluavat ulottaa työ- tai vapaa-ajan toimintansa oman maansa rajojen ulkopuolelle.

Sekä EIS:ssä että EIF:ssä tunnustetaan, että yhteentoimivuudella on useita ulottuvuuksia: oikeudellisia, organisatorisia, semanttisia ja teknisiä. Ne ovat kaikki tärkeitä, mutta internetin sekä standardointielinten ja muiden organisaatioiden työn ansiosta teknisessä yhteentoimivuudessa on jo saavutettu merkittävää edistystä, mikä takaa avoimuuden, edistää uudelleenkäytettävyyttä ja lisää kilpailua.

Euroopan yhteentoimivuusstrategian ansiosta EU:n toimet voidaan kohdentaa paremmin asianmukaisen hallinto-organisaation ja yhteisten toimintaperiaatteiden ja aloitteiden avulla, jotta voidaan luoda olosuhteet julkishallintojen väliselle luotettavalle tietojenvaihdolle.

Eurooppalaisten yhteentoimivuusperiaatteiden ansiosta EU:n julkishallinnot voivat soveltaa yhteistä lähestymistapaa ja hyväksyä perusperiaatteita, jotka mahdollistavat todellisen yhteistyön julkishallintojen välillä, samalla kun ne uudenaikaistavat ja järjeistävät järjestelmiään siten, että ne voivat kustannustehokkaasti parantaa valmiuksiaan tarjota korkealaatuisia julkisia palveluja.

Euroopan komissio kehottaa jäsenvaltioita jatkamaan yhteistyötään sen varmistamiseksi, että niiden erilaiset toimet julkisten palvelujen yhteentoimivuuden saavuttamiseksi ovat linjassa keskenään ja että eurooppalainen ulottuvuus otetaan huomioon jo alkuvaiheessa kehitettäessä sellaisia julkisia palveluja, joista saattaa tulevaisuudessa tulla osa eurooppalaisia julkisia palveluja.

Tämän yhteistyön helpottamiseksi on ehdotettu kokonaan uutta eurooppalaisten julkisten palvelujen käsitteellistä mallia. Malli mahdollistaa tällaisten palvelujen tulevaan käyttöönnottoon liittyvien esteiden ja helpottajien määrittelyn.

http://ec.europa.eu/isa/strategy/index_en.htm

Brussels, 16 December 2010

Towards interoperability for European public services

The European Commission has today adopted an initiative to encourage public administrations across the EU to maximise the social and economic potential of information and communication technologies. The Communication 'Towards interoperability for European public services' looks to establish a common approach for Member State's public administrations, to help citizens and businesses to profit fully from the EU's Single Market. Making full use of the Single Market often obliges citizens to deliver or collect information or documents they need to work, study or travel within the EU and send them to public administrations in another Member State. Businesses face a similar reality. That is why it is vital that administrations provide efficient, effective cross-border eGovernment services, as reflected in the eGovernment Action Plan just adopted by the Commission (see [IP/10/1718](#)), in accordance with the [Digital Agenda for Europe](#) (see [IP/10/581](#), [MEMO/10/199](#) and [MEMO/10/200](#)). The need for effective interoperability is a central part of the Digital Agenda, one of the flagship initiatives in the Europe 2020 Strategy. The Commission's Communication introduces both the European Interoperability Strategy and the European Interoperability Framework, which should guide ICT policy for public bodies across the Union.

Maroš Šefčovič, Commission Vice-President, said: "The European Union is about cooperating to create an environment in which citizens and businesses can thrive. European public administrations have to lead the way in working together. This cannot happen without real, effective interoperability between public administrations at all levels."

The challenges of European electronic public services

More and more citizens and businesses are making use of the European single market's freedoms. However, citizens are often obliged to contact, or even to travel to, public administrations abroad to deliver or collect information or documents they need to work, study or travel within the EU. The same applies to businesses that want to establish themselves in more than one Member State.

In order to overcome these constraints (so-called "e-barriers"), public administrations should be able to exchange the necessary information and cooperate to deliver public services across borders. That requires ensuring interoperability among public administrations.

Many public administrations in the Member States are already taking steps to improve interoperability for public services at national, regional and local levels, but unless Member States and the Commission act together, interoperability at EU level will lag behind. That is why the Commission has over recent years worked out a common strategy and built a common framework with Member States.

European public services will often be the result of aggregating existing public services provided at various levels of government within Member States. Setting up European public services will only be feasible if those public services are designed with interoperability requirements in mind.

Towards interoperability for European public services

Within the Digital Agenda for Europe, the Commission committed itself to adopt a Communication that introduces the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF), two key documents that promote interoperability among public administrations.

The direct beneficiaries of this action are Member States' public administrations and European Commission services that will gain in efficiency when establishing European public services and will be more aware of the risk of creating new electronic barriers if they opt for public services solutions that are not interoperable at EU level. Citizens and businesses will benefit from better European public services in their daily life when they want to extend their work or leisure activities beyond the borders of their home countries.

Both the EIS and EIF recognise that interoperability has several dimensions: legal, organisational, semantic and technical. All of them are important, but thanks to the Internet and to the work of standardisation bodies and other organisations, significant progress has already been achieved in the area of technical interoperability, thereby ensuring openness, promoting reusability and fostering competition.

The European Interoperability Strategy will help focus EU efforts through an appropriate governance organisation and common policies and initiatives to create the environment for a trusted information exchange between public administrations.

The European Interoperability Framework paves the way for public administrations in the EU to use a common approach by adopting guiding principles to allow genuine collaboration between public administrations, while modernising and rationalising their systems to increase in a cost-efficient way their capability to provide high quality public services.

The European Commission invites the Member States to continue to work together to ensure that their different efforts to achieve the interoperability of public services are aligned and take into account the European dimension at an early stage in the development of any public service that might become part of European public services in the future.

In order to facilitate this collaboration, a brand new conceptual model for European public services has been proposed. This model will allow the identification of barriers and facilitators for the deployment of such services in the future.

http://ec.europa.eu/isa/strategy/index_en.htm

Brussels, 16 December 2010

Commission adopts Interoperability Strategy and Framework for public services - frequently asked questions

Why a specific Communication on Interoperability? What is the relationship between these documents and the Digital Agenda for Europe?

The need for effective interoperability is at the centre of the [Digital Agenda for Europe](#) (see [IP/10/581](#), [MEMO/10/199](#) and [MEMO/10/200](#)), one of the flagship initiatives in the Europe 2020 Strategy. In the case of public administrations effective interoperability is vital to ensuring that they can provide efficient, effective cross-border eGovernment services, as reflected in the eGovernment Action Plan just adopted by the Commission (see [IP/10/1718](#)). As part of the Digital Agenda and the eGovernment Action Plan, the Commission committed itself to adopt in 2010 a Communication that introduces the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF), two key documents to focus our efforts and work via a common approach to achieve better interoperability for European public services. They complement the Digital Agenda for Europe in establishing a common approach for Member States' public administrations, to help citizens and businesses to profit fully from the single market.

Why is the Commission adopting these documents through a communication?

The European Union has no competencies in the area of public administration organisation and the provision of public services. But via this communication, the Commission acts as a driver, fostering modernisation of public services throughout Europe and as a facilitator, assisting Member States to coordinate their efforts in that domain.

How will the European Parliament and/or the Council react to this communication? What are the Commission's expectations there?

The Commission is confident that both the European Parliament and the EU's Council of Ministers will welcome those documents, as they have been elaborated in a very close collaboration with Member States and represent a common and shared approach to interoperability in Europe. A cross-border interoperability strategy and associated framework have never been attempted on such a scale before, so it will be crucial to involve all stakeholders to ensure success.

What is expected from Member States as a result of this communication?

Member States and the Commission must act together to implement the EIS, taking into account the EIF, through Digital Agenda actions, to help realise the full potential of the digital single market. The European Commission invites Member States to continue to work together to ensure that their efforts to achieve interoperability for public services are aligned with the EIS and the EIF. The Commission also invites Member States to take into account the European dimension at an early stage in the development of any public service that might become part of European Public Services in the future.

How will the Commission implement the EIS and apply the EIF internally for its own IT systems?

Leading by example, the Commission will align its internal strategy with the EIS through the eCommission 2011-2015 initiative where interoperability is one of its guiding principles. The Commission will also ensure that the EIF is applied when implementing systems to support new legislation and establishing new European public services.

Questions related to the EIF, open standards, open specifications

The EIF introduces the notion of “formalised specification”. How do “formalised specifications” relate to “standards”?

The word “standard” has a specific meaning in Europe as defined by Directive 98/34/EC. Only technical specifications approved by a recognised standardisation body can be called a standard. Many ICT systems rely on the use of specifications developed by other organisations such as a forum or consortium. The EIF introduces the notion of “formalised specification”, which is either a standard pursuant to Directive 98/34/EC or a specification established by ICT fora and consortia. The term “open specification” used in the EIF, on the one hand, avoids terminological confusion with the Directive and, on the other, states the main features that comply with the basic principle of openness laid down in the EIF for European Public Services.

It has taken more than two years to prepare the EIF. Why?

Interest in the elaboration of the EIF proves that it was a much needed document. Three elements had to be balanced, which resulted in a lengthier than expected process:

- a) Input from all stakeholders had to be taken into consideration – more than 50 comments were received from the public consultation alone and many organisations continued to provide input even after the public consultation period was over;
- b) The flagship initiative “Digital Agenda for Europe” gave interoperability a much needed boost;
- c) The EIF had to be aligned with a number of other initiatives such as the upcoming revision of the ICT standardisation legislation and the approval of the ISA Programme. At the same time, it has been the subject of an important coordination work with other Commission services and Member States.

The EIF introduces the conceptual model for public services, what is the goal of such model?

This is one of the main novelties and an essential element of the new EIF. That model illustrates that a European public service is a combination of existing public services provided at different levels of government and shows where interoperability is needed in such a complex environment.

What does the EIF says about the relation between open specifications and open source software?

The EIF introduces, as one of the characteristics of an open specification, the requirement that IPRs related to the specification have to be licensed on FRAND terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software. In this way, companies working under various business models can compete on an equal footing when providing solutions to public administrations while administrations that implement the standard in their own software (software that they own) can share such software with others under an open source licence if they so decide.

Why was there so much interest around the EIF?

Some Member States have begun to adopt policies to achieve interoperability for their public services. These actions have had a significant impact on the ecosystem built around the provision of such services, e.g. providers of ICT goods and services, standardisation bodies, industry fora and consortia, etc... The Commission identified a clear need for action at European level to ensure that actions by individual Member States would not create new electronic barriers that would hinder the development of interoperable European public services. As a result, all stakeholders involved in the delivery of electronic public services in Europe have expressed their opinions on how to increase interoperability for public services provided by the different public administrations in Europe.

Citizens' summary

Commission Communication

"Towards interoperability for European public services"

WHAT'S THE ISSUE?

- More and more citizens and businesses are making use of the European single market's freedoms. However, citizens are often obliged to contact, or even to travel to, public administrations abroad to deliver or collect information or documents they need to work, study or travel within the EU. The same applies to businesses that want to establish themselves in more than one Member State.
- Public administrations should be able to exchange the needed information and collaborate to deliver public services across borders. That requires ensuring interoperability among public administrations.
- Within the Digital Agenda for Europe the Commission committed to adopt a Communication that introduces the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF), two key elements that promote interoperability among public administrations.

WHO WILL BENEFIT AND HOW?

- The direct beneficiaries are Member States' Public Administrations and European Commission Services that will gain in efficiency when establishing European Public Services
- The indirect beneficiaries are citizens and businesses who will benefit from better European Public Services in their daily life when they want to extend their work or leisure activities beyond the borders of their respective countries.

WHY DOES ACTION HAVE TO BE TAKEN BY THE EU?

- Many public administrations in the Member States are already taking steps to improve interoperability for public services at national, regional and local levels, but unless Member States and the Commission act together, interoperability at EU level will lag behind. That is why the Commission during the last recent years elaborated with Member States a common strategy and built a common framework in this field.
- European public services will often be the result of aggregating existing public services provided at various levels of government within Member States. Setting up European public services will only be feasible if those public services are designed with common interoperability requirements in mind.

WHAT EXACTLY WILL CHANGE?

- Public administrations will be more aware of the risk of creating new electronic barriers if they opt for public services solutions that are not interoperable at EU level.
- Public administrations will design future public services with common interoperability requirements in mind.

WHEN IS THE PROPOSAL LIKELY TO COME INTO EFFECT?

- The Communication has been adopted by the Commission on the 16th of December 2010.

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EUROPEAN COMMISSION

Brussels, 16.12.2010
COM(2010) 744 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

Towards interoperability for European public services

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
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Towards interoperability for European public services

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1. INTRODUCTION

1.1. Context

Action on interoperability is essential to maximise the social and economic potential of information and communication technologies (ICT). This need was identified in the Digital Agenda for Europe¹, one of the flagship initiatives of the Europe 2020 Strategy. The Digital Agenda can only take off if interoperability based on standards and open platforms is ensured.

Europe could do much more to address some of its most acute societal challenges by realising the potential of ICT. That is why the Digital Agenda stresses the need for European public administrations to provide efficient, effective cross-border eGovernment services. Close collaboration, streamlined cross-border processes and trusted information exchange, based on interoperable ICT infrastructures and systems, are needed to achieve this.

This Communication introduces the **European Interoperability Strategy** (EIS) and the **European Interoperability Framework** (EIF) for European public services, two key elements in the Digital Agenda. Together, they promote interoperability among public administrations.

1.2. Challenges

Member States setting up ICT-supported national public services need to be more aware of the risk of creating new electronic barriers if they opt for solutions that are not interoperable. Such so-called ebarriers fragment the internal market and hinder it from functioning properly. Member States and the Commission should step up their efforts to avoid this.

The European single market relies on cross-border public services that support the implementation of EU policies and help to tackle internal market bottlenecks and missing links, as mentioned in the Commission work programme 2010². Such European public services³ are increasingly delivered by electronic means.

More and more citizens and businesses are making use of the European single market's freedoms, extending their work or leisure activities beyond the borders of their respective countries.

Without ICT-supported European public services and collaboration among public administrations, citizens are obliged to contact, or even to travel to, public administrations abroad to deliver or collect information or documents they need to work, study or travel within the EU. The same applies to businesses that want to establish themselves in more than one Member State.

¹ COM(2010) 245 — A Digital Agenda for Europe — (see: http://ec.europa.eu/information_society/digital-agenda/index_en.htm).

² COM(2010) 135 Commission Work Programme 2010 — Time to act (see: http://ec.europa.eu/atwork/programmes/index_en.htm).

³ European public services are cross-border public sector services supplied by public administrations, either to one another or to European businesses and citizens.

Delivering European public services to European citizens and businesses will be difficult, if not impossible, without interoperability among European public administrations⁴.

The disparate legal landscape across Member States often prevents cross-border exchanges of information between Member State administrations. When such exchanges are allowed, the legal validity of information must be maintained across borders, and data protection legislation in both originating and receiving countries must be respected.

There is a need to align business processes when public administrations establish European public services to achieve mutually agreed goals.

Lack of agreement and guidance on the meaning and format of information to be exchanged between Member States is another stumbling block. Semantic interoperability is jeopardised by different interpretations of the information exchanged between people, applications and administrations.

Multilingualism is another challenge when exchanging information or when businesses and citizens want to approach public administrations in other Member States.

Cross-border interoperability currently also lacks common infrastructures, architectures and technical guidelines that could foster the development of European public services by providing a solid technical basis and avoiding duplication of efforts.

That is why enhanced interoperability at legal, organisational, semantic and technical level should progressively lead to the creation of a sustainable ecosystem. This would facilitate the effective and efficient creation of new European public services.

Many public administrations in the Member States are already taking steps to improve interoperability at national, regional and local levels, but unless Member States and the Commission act together, interoperability at EU level will lag behind.

European public services will often be the result of aggregating existing ‘basic public services’⁵ provided at various levels of government within Member States. Setting up European public services will only be feasible if those basic public services are designed with interoperability requirements in mind.

2. FOUNDATIONS

2.1. Political support

Interoperability has received high political visibility recently, especially during biennial conferences on eGovernment. Declarations on eGovernment agreed under the Belgian, United Kingdom and Portuguese Presidencies all called for interoperability. The eGovernment

⁴ In the context of European public service delivery, interoperability means ‘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, through the business processes they support, by means of the exchange of data between their respective ICT systems’ (definition taken from the European Interoperability Framework).

⁵ Basic public services are the most fundamental service components from which more complex public services are built.

Action Plan 2006-2010⁶ also sought to ensure that eGovernment at national level does not lead to new barriers within the single market because of fragmentation and lack of interoperability.

More recently, in the Malmö Ministerial Declaration of 18 November 2009⁷, ministers responsible for eGovernment policy agreed to improve the trustworthiness, security and interoperability of eGovernment services and systems within the single market. They agreed to align their national interoperability frameworks with applicable European frameworks and invited the Commission to identify gaps in cross-border interoperability and mutual recognition, as well as intensifying activities on key enablers. Moreover, Member States recognised that better public services need to be delivered with fewer resources, and that the potential of eGovernment can be boosted by promoting a culture of collaboration and by improving the conditions for interoperability in European public administrations.

2.2. Achievements so far

The Commission acts as a driver, fostering modernisation of public services throughout Europe, particularly through the Digital Agenda for Europe and the European eGovernment action plan 2011-2015⁸.

In 2006, the Commission issued a Communication on Interoperability for Pan-European eGovernment Services that led to significant results. These were achieved mainly through the Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens (IDABC)⁹ and ICT Policy Support Programme (ICT-PSP)¹⁰ programmes.

The IDABC programme has made important contributions to ensuring interoperability in support of electronic information exchange among European public administrations, with positive spill-over effects for the single market. The final evaluation¹¹ of the IDABC programme concluded that a coordinated approach can contribute to delivering faster, better-quality results, and to meeting EU legislative requirements and policy objectives, by means of common, shared solutions devised and operated in cooperation with Member States. The Interoperability Solutions for European Public Administrations (ISA) programme¹², which succeeds the IDABC programme that came to an end in 2009, lays even more emphasis on the relevance of interoperability and collaboration to implement EU legislation successfully.

⁶ COM (2006) 173 — i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All.

⁷ <http://www.egov2009.se/wp-content/uploads/Ministerial-Declaration-on-eGovernment.pdf>.

⁸ The European eGovernment action plan 2011-2015 is presently being established by the Commission as reaction to the Malmö Ministerial Declaration.

⁹ Decision No 2004/387/EC of the European Parliament and of the Council of 21 April 2004 establishing a programme on interoperable delivery of Pan-European eGovernment services to public administrations, businesses and citizens (IDABC) — OJ L 144, 30.04.2004, p. 62 (Decision located in OJ L 181, 18.05.2004, p. 25).

¹⁰ The ICT-PSP programme is part of the Competitiveness and Innovation Programme (CIP), decision No 1639/2006/EC of the European Parliament and of the Council of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013) — OJ L 310, 09.11.2006, p. 15.

¹¹ COM (2009) 247 — Final evaluation of the implementation of the IDABC programme.

¹² Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on establishing a programme on interoperability solutions for European public administrations (ISA) — OJ L 260, 03.10.2009, p. 11.

The CIP ICT-PSP provides support for the take-up and use of ICT, and contributes to creating better ICT-based public services. Both public and private organisations are taking part in pilot actions, validating EU-wide interoperability among national systems.

Member States are actively participating in the ISA and CIP ICT-PSP programmes, while simultaneously achieving significant results within their own countries.

Likewise, the Commission has taken action internally, mainly through the eCommission initiative¹³, in which interoperability is seen as essential for transforming the organisation.

2.3. Sectoral initiatives

EU initiatives in many sectors have also stressed the importance of interoperability.

Regarding the **internal market**, the Services Directive 2006/123/EC¹⁴ obliges Member States to offer service providers the possibility of completing electronically and across borders all procedures and formalities needed to provide a service outside their home country. Interoperability of eIdentification, eSignatures and eDocuments is essential to enable electronic cross-border procedures to function seamlessly.

Regarding the **environment**, the INSPIRE Directive 2007/2/EC¹⁵ establishes an infrastructure for spatial information in Europe for the purposes of EU environmental policies and policies or activities which may have an impact on the environment. To ensure that the spatial data and services are accessible in the Community and cross border context in an interoperable way, the Directive requires that technical implementing rules are adopted for the elements necessary for the interoperability of the infrastructure: metadata¹⁶, interoperability of spatial data and services, network services¹⁷, data and service sharing¹⁸ and monitoring and reporting¹⁹ and National Infrastructures are adapted accordingly.

Regarding **justice and home affairs**, the Commission has stressed²⁰ the benefits of improved effectiveness, enhanced interoperability and synergies among European databases such as the Visa Information System (VIS), the Schengen Information System (SIS), and European Dactyloscopy system (Eurodac). The management of more complex information such as biometrics poses more challenges in interoperability and usability for European databases and associated IT systems.

Regarding **customs, taxation and excise duties**, the Commission coordinates and manages operational activities relying on trans-European IT systems spanning all Member States. They support interoperable business systems implemented and operated by national administrations and the Commission.

¹³ Decision C(2005) 4473, 23.11.2005 on e-Commission 2006-2010: enabling efficiency and transparency. A new plan for the period 2011-2015 is presently being established by the Commission.

¹⁴ Directive 2006/123/EC of 12 December 2006 on services in the internal market — OJ L 376 of 27.12.2006.

¹⁵ Directive 2007/2/EC of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) — OJ L 108/1 of 25.04.2007.

¹⁶ Regulation (EC) No 1205/2008, OJ L 326, 4.12.2008, p. 12.

¹⁷ Regulation (EC) No 976/2009, OJ L 274, 20.10.2009, p. 9.

¹⁸ Regulation (EU) No 268/2010, OJ L 83, 30.3.2010, p. 8.

¹⁹ Decision No 2009/442/EC, OJ L 148, 11.6.2009, p. 18.

²⁰ COM (2005) 597 final on improved effectiveness, enhanced interoperability and synergies among European databases in the area of Justice and Home Affairs.

As a result of such political initiatives and sectoral experiences, interoperability is recognised as crucial for effective, efficient delivery of European public services fostering and reinforcing the internal market. The successful development and implementation of global and sectoral strategies, legal frameworks, guidelines, services and tools, and the solutions put in place to address the four levels of interoperability are a crucial asset to be taken into account and build upon. For public administrations, interoperability brings benefits such as cooperation. It facilitates the exchange, sharing and reuse of information, thus improving the delivery of European public services to citizens and business, reducing costs and preventing duplication of efforts.

3. PROPOSED ACTIONS

3.1. Recent developments: a Strategy and a Framework for interoperability

Building on work already done, the Commission has worked closely with high-level Member States' representatives on a **European Interoperability Strategy** for European public services (EIS, cf. annex 1). Based on a joint vision, this sets out a common, coherent approach to interoperability. The agreed vision is that by 2015, interoperability will have significantly fostered European public service 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, development of interoperability frameworks, and agreements on interoperability standards and rules.

To achieve this, activities at EU and Member State level should be coordinated. In addition, interoperability governance at EU level should be established.

The EIS provides direction and sets priorities for actions needed to improve interaction, exchange and cooperation among European public administrations across borders and across sectors when establishing European public services.

The strategy clusters future interoperability activities under three headings:

- Trusted information exchange;
- Interoperability architecture;
- Assessment of the ICT implications of new EU legislation.

These activities are to be supported by accompanying measures on awareness-raising and sharing of best practice.

At the same time, the Commission, after extensive consultation with Member States and other stakeholders, has drawn up a **European Interoperability Framework** for European public services (EIF, cf. annex 2).

An interoperability framework is an agreed approach to interoperability for organisations that want to collaborate to provide joint delivery of public services. Within its scope of

applicability, it specifies common elements such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.

The EIF provides guidance to European public administrations as regards the definition, design and implementation of European public services. It introduces:

- 12 underlying principles summarising the expectations of public administrations, business and citizens regarding the delivery of public services;
- a conceptual model for public services, structuring the design of European public services and highlighting why and where interoperability is necessary;
- four levels of interoperability: legal, organisational, semantic and technical;
- the concept of interoperability agreements, based on standards and open platforms.

Finally, the EIF stresses the importance of interoperability governance and the need for coordination across administrative levels.

The EIF introduces a conceptual model for developing European public services. It presents a building block approach to constructing them, allowing service components to be interconnected, and promoting the reuse of information, concepts, patterns, solutions, and specifications in Member States and at European level.

Together, the EIS and the EIF are the basis for future activities intended to improve interoperability for delivering European public services. A cross-border interoperability strategy and associated framework have never been attempted on such a scale before, so it will be crucial to involve all stakeholders to ensure success.

To help realise the full potential of the digital single market, Member States and the Commission must act together to implement the EIS, taking into account the EIF, in Digital Agenda actions.

The EIS and the EIF will be maintained under the ISA Programme and kept in line with the results of other relevant Digital Agenda actions on interoperability and standards such as the ones on the reform of rules on implementation of ICT standards in Europe to allow use of certain ICT fora and consortia standards, on issuing guidelines on essential intellectual property rights and licensing conditions in standard-setting, including for ex-ante disclosure, and on providing guidance on the link between ICT standardisation and public procurement to help public authorities to use standards to promote efficiency and reduce lock-in.

In parallel, the Commission is preparing the eCommission 2011-2015 initiative. Its overarching objective is to evolve from today's Integrated Commission to tomorrow's Transformed Commission. This implies that public services:

- will be built from the viewpoint of external and internal users and no longer be based on an organisation's structure;
- will completely automate end-to-end processes crossing organisational boundaries;
- will share information in transparency among services and allow groups to collaborate and share knowledge and expertise.

This definition of a Transformed Commission shows that interoperability is important for the eCommission 2011-2015 initiative, and it will be one of the guiding principles for implementing it.

3.2. Planned actions

The Commission will implement the EIS through the ISA programme and through activities planned in the CIP ICT-PSP programme.

The ISA rolling work programme is drawn up by the Commission after consulting the Member States represented in the ISA Management Committee. The first ISA work programme was adopted by the Commission on 30 June 2010²¹ and will be revised once a year to reflect changes in policies or priorities. The Commission implements the ISA work programme via public procurement procedures.

The CIP ICT-PSP annual work programme is likewise drawn up by the Commission after consulting the Member States represented in the CIP Management Committee. This work programme is implemented via calls for proposals. The CIP ICT-PSP programme supports a multitude of policy areas, but a number of its large-scale projects are directly linked to improving interoperability for delivering European public services.

Member State administrations and Commission services are encouraged to take the EIF into account in all activities related to setting up European public services. The EIF should also be taken into account when public administrations set up similar frameworks at national, regional or local level, or within a specific sector.

Member States agreed, through the Ministerial Declaration on eGovernment approved in Malmö, Sweden on 18 November 2009, to align their national interoperability frameworks with applicable European frameworks by 2013. Therefore, the Commission now invites the Member States to align their national interoperability strategies with the EIS and their national interoperability frameworks with the EIF.

In order to lead by example, the Commission will align its internal interoperability strategy with the EIS and use the EIF as guidance whenever ICT systems are developed to support EU legislation.

Implementing the EIS

Interoperability support activities are clustered under three headings. The main activities are:

Trusted Information Exchange:

Member States taking part in large-scale pilots supported by the CIP ICT-PSP programme are gaining experience in cross-border interactions. Other Member States are invited to join existing pilots, and new pilots are being proposed. The first large-scale pilots will end in 2011. Reflections are already underway on how best to give further support to the results, and on how the ISA programme can help to convert results into operational services. Where relevant, the Commission takes part in ongoing pilots, such as those on eProcurement and on

²¹ http://ec.europa.eu/isa/workprogramme/doc/isa_work_programme.pdf.

interoperable eIdentities. This ensures that the Commission's infrastructure is interoperable with the results of these pilots.

Interoperability Architecture:

The Commission will work with the Member States towards a common vision for a European interoperability architecture and, if needed, will support such architecture by setting up common infrastructures and by developing common services.

Assessment of the ICT implications of new EU legislation:

The Commission is developing a method that could be used in preparing legislative acts with a view to achieving a better understanding of how ICT can support the effective and efficient implementation of such legislation.

Taking the EIF into account

The EIF should be taken into account when public administrations set up European public services and during the development of ICT systems to support the implementation of EU policy. The framework should also be considered at any level of government when implementing public services that might become part of European public services in future.

As the European and national interoperability frameworks are complementary, the European Commission will continue supporting, in the framework of the ISA programme, the National Interoperability Framework Observatory (NIFO). The main objective of this is to provide information about national interoperability frameworks to allow public administrations to share experiences and knowledge about such frameworks.

SUMMARY: ACTION ON EUROPEAN INTEROPERABILITY

Implementing the Strategy, taking into account the Framework

The Commission will:

- implement the EIS through appropriate instruments such as the ISA programme and the CIP ICT-PSP programme, in close cooperation with Member States and other stakeholders;
- align its internal interoperability strategy with the EIS through the eCommission initiative;
- ensure that the EIF is applied when implementing new legislation and establishing new European public services;
- ensure the governance of the EIS and related global and sectoral interoperability activities, in close coordination with Member States.

Member States should:

- align national interoperability strategies with the EIS and national initiatives and actions with corresponding initiatives and actions at EU level;
- work with each other and with the Commission on implementing the EIS, while monitoring the progress and impact of related actions at national level;

- align their national interoperability frameworks with the EIF;
- take into account the European dimension at an early stage in the development of any public service that might become part of European public services in future;
- contribute to the governance of the EIS and related interoperability activities.

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Annex 1

Annex 1

to the

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services'



European Interoperability Strategy (EIS)
for
European public services

INTRODUCTION AND BACKGROUND

1. This document provides an overview of the European Interoperability¹ Strategy (EIS) developed by the European Commission's Directorate-General for Informatics. The EIS aims to provide guidance and to prioritise the actions needed to improve interaction, exchange and cooperation among European public administrations across borders and across sectors for the delivery of European public services². The strategy was prepared during the IDABC³ programme and finalised after a public consultation under the ISA⁴ programme which maintains it.
2. The goal of this document is to:
 - provide a brief overview of the approach and method used for preparing the EIS to reflect Member States' priorities;
 - present the recommendations made on the basis of the two reports issued during the preparation of the EIS:
 - a. the final report on the first phase, issued in May 2009 and presented at the meeting of Member State Chief Information Officers (CIOs) on 26 June 2009, which summarised the conclusions reached at the end of this first phase: a common vision, problem statements, focus areas, priorities and objectives for interoperability, and a possible method for developing scenarios during the second phase of the project;
 - b. the final report on the second phase, issued in May 2010, which focused on the EIS itself and presented the different levels of the EIS (global, cluster and focus area levels) along with a set of actions derived from an assessment of scenarios, which, together, form the basis of the future strategy;
 - present the overall strategic approach proposed by the Commission for the EIS and agreed by the Member State CIOs.
3. Interoperability between public administrations is crucial for achieving European integration and concerns core aims of the European Union. Member States and end-users have a great interest in overcoming barriers to easy delivery of public services across borders and sectors. While end-users are the final recipients of these services, the prime partners for the EIS are the European public administrations. Increased cooperation and commitment on the part of these key players are therefore essential for the development of the EIS.
4. Interoperability issues are not only technological, but also cover a wide range of aspects, such as: lack of a cross-border and cross-sector legal basis for interoperability, insufficient awareness and political will, or lack of agreement on the governance structures required.
5. 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.

¹ Interoperability, for European public service delivery, 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, through the business processes they support, by means of the exchange of data between their respective ICT systems.

² A European public service means 'a cross-border public sector service supplied by public administrations, either to one another or to European businesses and citizens'.

³ Interoperable delivery of pan-European eGovernment services to public administrations, businesses and citizens, adopted by the European Parliament and the Council on 21 April 2004.

⁴ Interoperability Solutions for European Public Administrations, adopted by the European Parliament and the Council on 16 September 2009.

6. In order to overcome these challenges, in June 2008 during their second annual meeting the Member State CIOs and European Commission representatives agreed that a European Interoperability Strategy would be developed under the IDABC programme to address the drive needed to improve interoperability for European public services.
7. Once fully adopted, the EIS will become the key driving force for the EU's new ISA programme from 2010 to 2015 and possibly other EU initiatives. The EIS will also have an impact on interoperability activities undertaken by the Member States.
8. The final report on the first phase (see point 2) presented the vision statement approved by the Member State CIOs. This reads as follows:

'In 2015, interoperability has significantly fostered European public service 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, development of interoperability frameworks, and agreements on interoperability standards and rules.'

9. Following the third meeting of the Member State CIOs in June 2009, this vision was refined into a set of objectives for nine focus areas. Based on a Commission proposal, it was decided to group the nine focus areas under three different clusters — *Trusted Information Exchange, Interoperability Architecture and Assessment of the ICT Implications of new EU Legislation* — and two accompanying measures — *Raising Interoperability Awareness* and *Sharing Best Practices*.
10. The final report on the second phase (see point 2) proposed for each cluster and each accompanying measure an action plan in the form of a set of scenarios or concrete actions.
11. The Commission produced a synthesis focusing on the main strategic directions in order to steer the cluster activities and the accompanying measures. Based on this synthesis, the Commission proposed an overall strategic approach for the EIS together with specific strategic directions at cluster and accompanying measure level.
12. The Commission proposed to combine top-down and bottom-up approaches, with the aim of generating cross-fertilisation by testing and continuously improving existing frameworks and guidelines against concrete needs and by developing additional services and tools based on clearly defined needs.
13. At their fourth meeting, in November 2009, the Member State CIOs expressed their agreement with the approach and method adopted for the second phase of the EIS project and with the Commission's proposal.
14. The Commission's proposal and the conclusions reached at the fourth meeting of the CIOs constitute the overall strategic approach on which the ISA programme — and possibly other EU initiatives — will base its work programme for the coming years.

EIS OVERALL STRATEGIC APPROACH

The Commission proposes to combine two approaches to drive European interoperability activities within the three clusters and the two accompanying measures mentioned above:

14.1. **Top-down (or global) approach:**

- The political context and its evolution are taken into account: the Europe 2020 strategy and the Digital Agenda for Europe.
- Development of various frameworks such as the EIS, the European Interoperability Framework (EIF), architecture guidelines and other methods and guidelines.
- Assessment of the ICT implications of new EU legislation proposed.

14.2. **Bottom-up (or sectoral) approach:**

- Working via sectoral projects on relevant specific topics (e.g. semantics, trust and privacy or architecture) providing an opportunity to tackle real interoperability challenges. This approach will allow existing frameworks and guidelines to be tested against concrete needs and will furthermore ensure that new services and tools are developed based on clearly defined needs.
- When developing new services and tools in a specific sector, the potential for reusing such solutions in other sectors should be kept in mind.

After applying those combined approaches to the objectives under each cluster, the Commission proposes to focus on the following activities:

14.3. **For the cluster ‘Trusted Information Exchange’:**

- To work via a limited number of politically relevant and concrete sectoral projects at EU and Member State levels;
- To continue supporting, at EU level, efforts towards the interoperability of key enablers such as eID, eSignature, etc.;
- To continue the SEMIC approach and its methodology;
- To work towards opening up base registers, taking into account associated best practices, the possible related risks and opportunities, as well as the various needs and expectations of the main stakeholders.
- To work towards the establishment of a federated catalogue of services offered by public administrations in the EU.

Some challenges identified for this cluster are:

Firstly, how to involve industry, standardisation organisations and other stakeholders in the activities?

Secondly, before taking any initiatives to develop a catalogue of services, the Commission proposes to assess the readiness of the Member States to be involved and the extent to which such a catalogue would support increased interoperability between Member States. Furthermore, existing cases of best practice in this area need to be identified and studied.

14.4. **For the cluster ‘Interoperability Architecture’:**

- To develop a joint vision on interoperability architecture by first defining its scope and the needs for common infrastructure services and common interface standards;
- To provide guidance on architecture domains where Member States share a common interest;
- To ensure the systematic reuse of architectural building blocks by the Commission when developing services to be used by the Member States. Here, existing infrastructure service components (EIS) ⁵ along with generic applications (IMI ⁶, early alert systems, grant management, etc.) could be reused and rationalised. Additionally, a catalogue of architectural building blocks available for reuse by the Member States and the Commission could be set up with contributions from the EU and Member States.

14.5. **For the cluster ‘Assessment of the ICT implications of new EU Legislation’:**

- To develop guidelines and methodologies at Commission and Member State level;
- To test the usefulness of these guidelines by applying them to concrete cases involving policy-makers and legal and ICT experts;
- To ensure continuous improvement of the guidelines and methodologies based on the lessons learned from experience;
- To ensure general application of the practice of assessing ICT implications towards a more systematic approach whenever changes occur in legislation (e.g. amendments or additions to ICT-related legislation).

14.6. **For the accompanying measure ‘Raising Interoperability Awareness’:**

- To develop an overall communication approach;
- To organise communication campaigns, initially targeting decision-makers but then gradually shifting to more operational and technical levels;
- To develop a self-assessment tool/model for public administrations to assess their interoperability maturity level.

14.7. **For the accompanying measure ‘Sharing Best Practices’:**

- To work towards the convergence of existing EU collaborative platforms and to ensure the sustainability of the platforms used;
- To maintain, where relevant, the existing communities at EU level around sharing best practices and reusing common solutions;
- To support the creation of potential new communities resulting from other interoperability activities.

A challenge identified for this accompanying measure is: how to collaborate with similar initiatives elsewhere?

⁵ EIS stands for European Interoperability Infrastructure Services.

⁶ IMI stands for Internal Market Information system.

14.8. Potential risks and opportunities identified so far are:

- Stakeholders' support, commitment and buy-in are essential when following a project-based approach to interoperability. In order to realise the EIS successfully, sectoral experts and interoperability experts will have to work together, at both EU and Member State level;
- Setting up fruitful collaboration with industry and other stakeholders;
- The effect of disruptive technologies (e.g. cloud computing, etc.) on the EIS and its implementation.

NEXT STEPS

15. The next challenge is to convert the EIS into a set of concrete projects and results. The projects will mostly constitute the ISA work programme.
16. During establishment of the ISA work programme, various actions will be defined and initiated to implement the EIS. Project managers will be identified and objectives for individual actions will be drawn up to make significant progress towards the goals set for each interoperability cluster.
17. Adequate project monitoring and reporting will support implementation of the interoperability initiatives, which will entail defining suitable metrics for each action, e.g. key performance indicators (KPIs). Monitoring and reporting will allow performance to be tracked against targets and actions to be assessed to see if they are on track to meet their objectives.
18. A comprehensive portfolio management framework will be used to generate a common view and to produce a roadmap of every action under way or planned. Portfolio management will produce a multidimensional view of the project portfolio, in order to assess each action in the light of the EIS, and will clearly highlight which actions are adding value to the interoperability vision. Based on the overall picture, the relative cost of each action can be balanced against its potential to create value. For example, some actions might have high potential value but a prohibitive risk. Others might be redefined to modify their risk profiles.
19. Adequate portfolio management will ensure the necessary tradeoffs between finite resources, risks, scopes and timing against expected outcomes as the environment changes (including political and other stakeholder priorities reflected in updated strategy objectives). Other key action related to project management governance will be communication with stakeholders on the project portfolio.



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European Interoperability Framework (EIF)
for
European public services

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1 Introduction to the European Interoperability Framework

1.1 Purpose and legal framework

The purpose of the European Interoperability Framework (EIF) is:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectoral¹ interoperability;
- to guide public administrations in their work to provide European public services to businesses² and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

This non-technical document addresses all those involved in defining, designing and implementing European public services.

The EIF should be taken into account when making decisions on European public services that support the implementation of EU policy initiatives. The EIF should also be considered when establishing public services that in the future may be reused as part of European public services.

The EIF is maintained under the ISA³ programme, in close cooperation between the Member States and the Commission. They work together in the spirit of Article 170 of the Treaty on the Functioning of the European Union. Under this Article, to help achieve the objectives referred to in Article 26 concerning the internal market, the European Union should help establish and develop trans-European networks and promote the interconnection and interoperability of national networks as well as access to such networks.

The EIF contributes to the better functioning of the internal market by increasing interoperability among European public administrations.

1.2 Definitions

1.2.1 European public service

In this document, European public service means *‘a cross-border public sector service supplied by public administrations⁴, either to one another or to European businesses and citizens’*.

Although not all European public services are supported by information and communication technologies (ICT), most will rely on the interlinking of software systems which are mainly custom-made⁵ and developed by public administrations.

1.2.2 Interoperability

The EIF addresses interoperability in the very specific context of providing European public services.

¹ Sector is to be understood as a policy area, e.g. customs, police, eHealth, environment, agriculture, etc.

² In the context of the EIF, the concept of businesses includes non governmental organisations, not-for-profit organisations, etc.

³ Interoperability solutions for European public administrations (ISA), OJ L 260, 3.10.2009, p. 20, 2009 <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2009:260:SOM:EN:HTML>.

⁴ Refers to either national public administrations (at any level) or bodies acting on their behalf, and/or EU public administrations.

⁵ Public administrations need custom-made software meeting their specific requirements (tax administration, police cooperation) to complement commercial ‘off the shelf’ software (operating systems, database systems, text processors, spreadsheets, etc.) in order to cover all their needs.

Although the provision of European public services almost always involves exchanging data between ICT systems, interoperability is a wider concept and encompasses the ability of organisations to work together towards mutually beneficial and commonly agreed goals.

Therefore, the following definition is used in the EIF⁶:

‘Interoperability, within the context of European public service delivery, 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, through the business processes they support, by means of the exchange of data between their respective ICT systems.’

Interoperability is multilateral by nature and is best understood as a *shared value* of a community.

1.2.3 Interoperability framework

‘An interoperability framework is an agreed approach to interoperability for organisations that wish to work together towards the joint delivery of public services. Within its scope of applicability, it specifies a set of common elements such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.’

1.3 The needs and benefits of interoperability

Interoperability is both a prerequisite for and a facilitator of efficient delivery of European public services. Interoperability addresses the need for:

- **cooperation** among public administrations with the aim to establish public services;
- **exchanging information** among public administrations to fulfil legal requirements or political commitments;
- **sharing and reusing information** among public administrations to increase administrative efficiency and cut red tape for citizens and businesses.

The result is:

- **improved public service delivery** to citizens and businesses by facilitating the one-stop-shop delivery of public services;
- **lower costs** for public administrations, businesses and citizens due to the efficient delivery of public services.

1.4 The EIF’s recommendations

The EIF provides recommendations that address specific interoperability requirements. Implementing the recommendations will create an environment conducive to public administrations establishing new European public services. This will help cultivate a European public service ecosystem⁷ with people familiar with interoperability, organisations ready to collaborate, and common frameworks, tools and services facilitating the establishment of European public services.

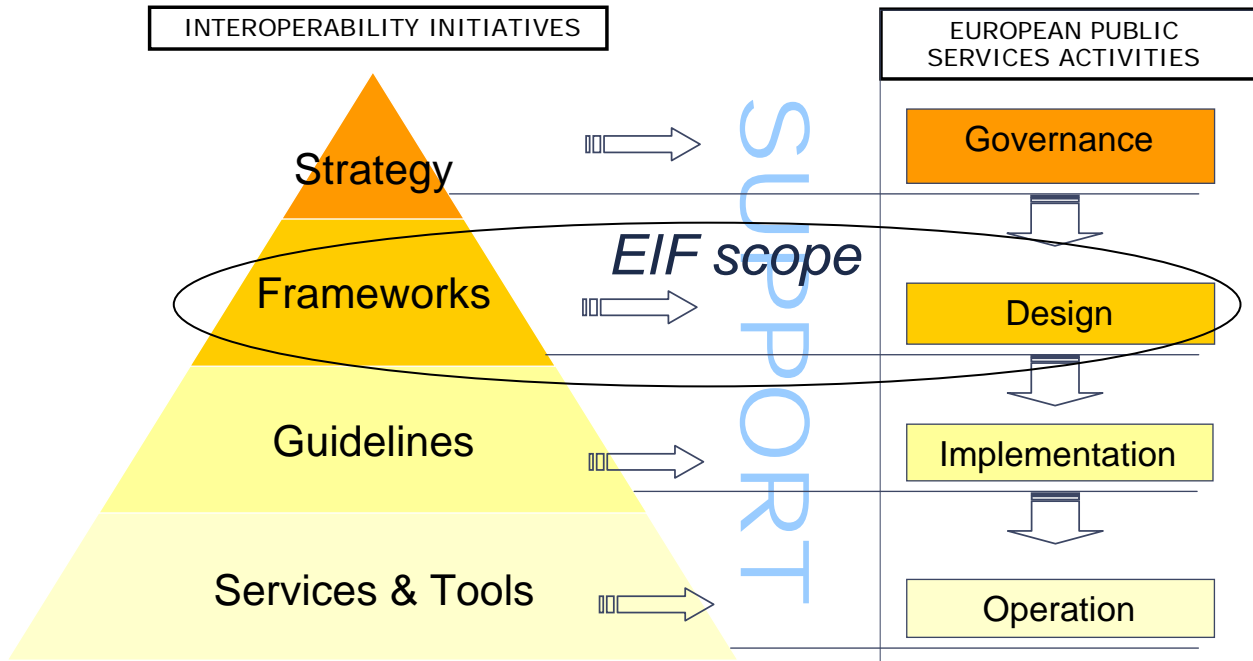
1.5 Context

The EIF is one of a series of interoperability initiatives that aim to support the establishment of European public services.

The figure below shows the relationship between these initiatives: the European Interoperability Strategy (EIS), the EIF, the European Interoperability Guidelines, European interoperability services and tools and activities to establish European public services.

⁶ Article 2 of Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on interoperability solutions for European public administrations (ISA) OJ L 260, 03.10.2009, p. 20.

⁷ An ecosystem is a system whose members benefit from each other’s participation via symbiotic relationships (positive-sum relationships).



Interoperability initiatives supporting activities to establish European public services

Figure 1-1

There should be a systematic approach to governing interoperability at EU level, with specific goals set. To this end, the European Interoperability Strategy (EIS)⁸ provides a basis for an organisational, financial and operational framework to support cross-border and/or cross-sectoral interoperability. The EIS steers the EIF and all other associated efforts by setting strategic priorities and objectives.

The purpose of the EIF is to help design European public services.

The European Interoperability Guidelines help establish European interoperability services and tools that underpin the delivery of European public services.

1.5.1 The political and historical context of interoperability in the EU

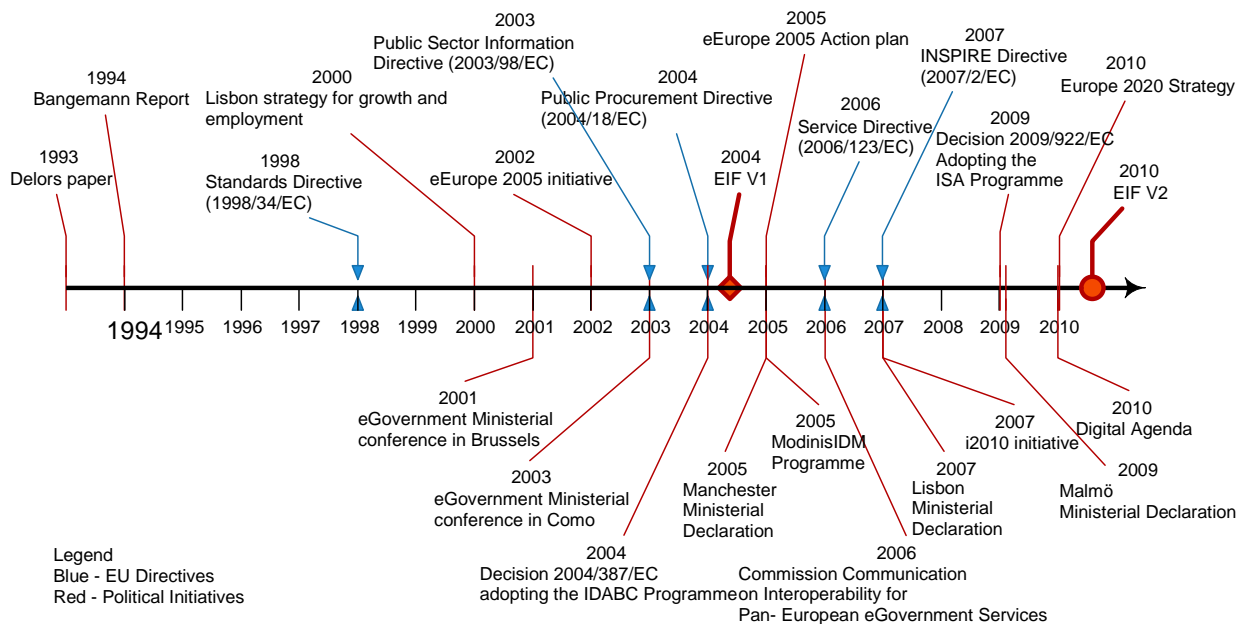
To implement European public services, the public sector must address many challenges. Cross-border and cross-sectoral interoperability is seen as a key factor in overcoming these challenges.

Achieving cross-border interoperability is a political priority in European public service initiatives. The provision of seamless cross-border public services (for which interoperability is a prerequisite) has the potential to have a high impact on businesses and citizens.

⁸ The strategy defines a common vision for European public service delivery, and a set of focused actions at both national and EU level to improve interoperability for public services in Europe.

EUROPEAN INTEROPERABILITY FRAMEWORK FOR EUROPEAN PUBLIC SERVICES

The EU initiatives shown below illustrate, from a historical perspective, the support provided at political level for interoperability among public administrations.



Timeline of EU initiatives concerning interoperability

Figure 1-2

1.5.2 Interoperability frameworks

Many public administrations already have, or are in the process of developing, frameworks addressing interoperability issues at national, regional or local level. The scope of these frameworks is restricted to the jurisdictions within which they have been developed. However, European public administrations must be ready to work together to deliver European public services to meet the needs of businesses and citizens.

It is important that interoperability frameworks used by public administrations, both national (NIFs) and European (EIF), are aligned as regards how to achieve interoperability so that Member States can agree on the concrete implementation of the EIF recommendations when establishing European public services.

By their nature, NIFs are, in general, more detailed and often prescriptive than the EIF, which operates at a higher level of abstraction, as a ‘meta framework’ and, in line with the subsidiarity principle, does not impose specific choices or obligations on the Member States.⁹

Recommendation 1. Public administrations should align their interoperability frameworks with the European Interoperability Framework to take into account the European dimension of public service delivery.

As the EIF and the NIFs are complementary, the European Commission supports a National Interoperability Framework Observatory (NIFO), whose main objective is to provide information about national interoperability frameworks to allow public administrations to share experiences and knowledge.

⁹ The principle of subsidiarity applies not just to the EU vis-à-vis Member States, but in some cases within Member States themselves, at federal/national level or at other levels (e.g. regional, provincial, county and municipality).

1.6 European public service scenarios

Interoperability as covered by the EIF comes into play in a number of interaction scenarios. European public services covered by the EIF can be subdivided into cross-border interaction types, as the following diagram illustrates.

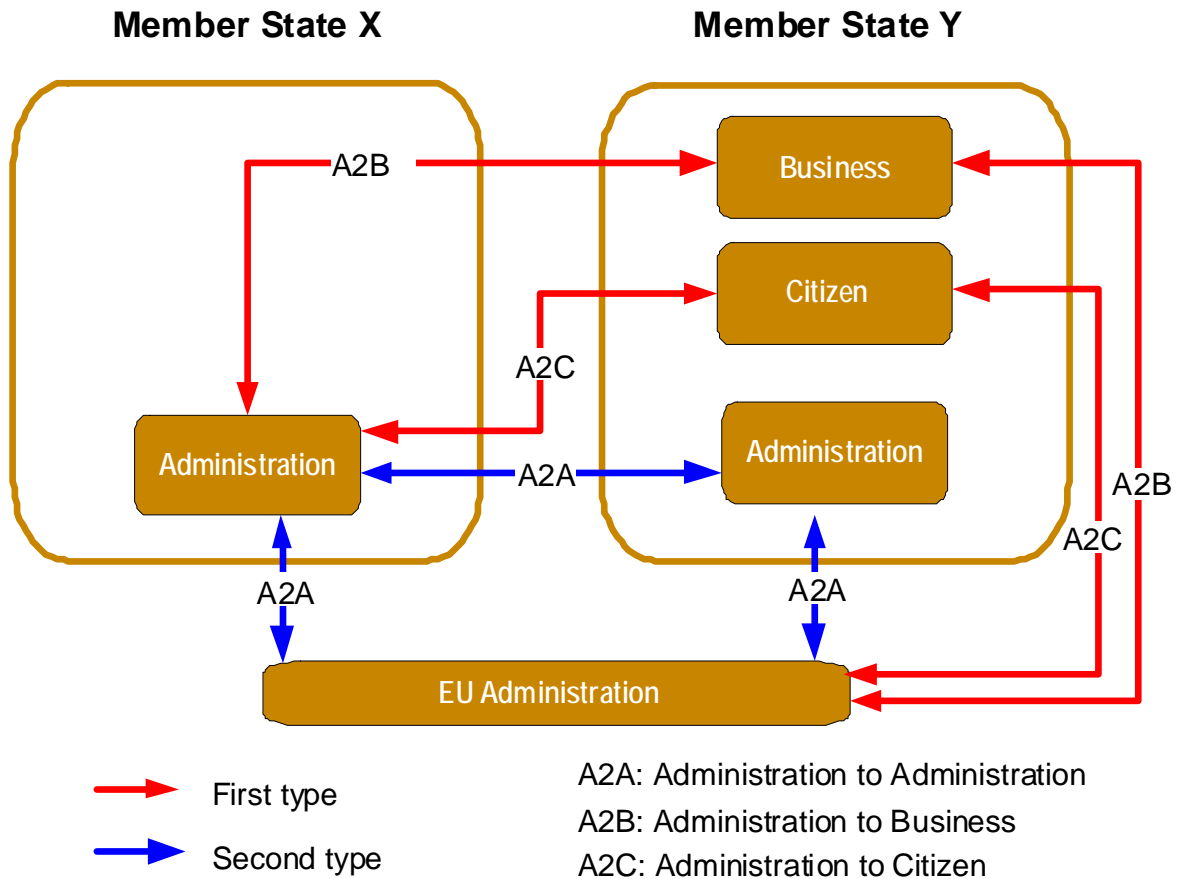


Figure 1-3

The first type is direct interaction between businesses or citizens from one Member State and public administrations in another Member State and/or an EU administration (A2B and A2C) that deliver the public service to those businesses or citizens.

The second type is interaction between administrations from many Member States or EU administrations (A2A). This may support administrations in serving businesses or citizens (A2B and A2C).

1.6.1 Scenario 1: Direct interaction between businesses/citizens and a foreign administration

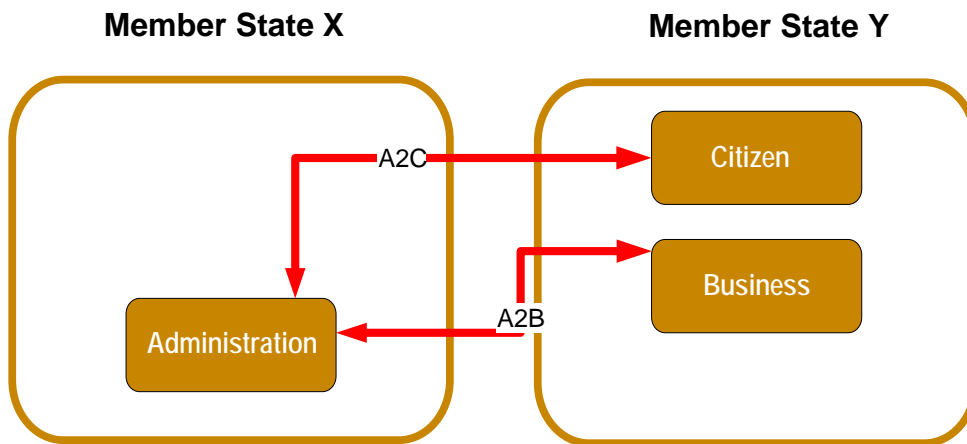


Figure 1-4

Example: a citizen from Member State Y taking up a job in destination Member State X has to complete a number of formalities in Member State X.

1.6.2 Scenario 2: Exchange of information between administrations on business/citizen requests

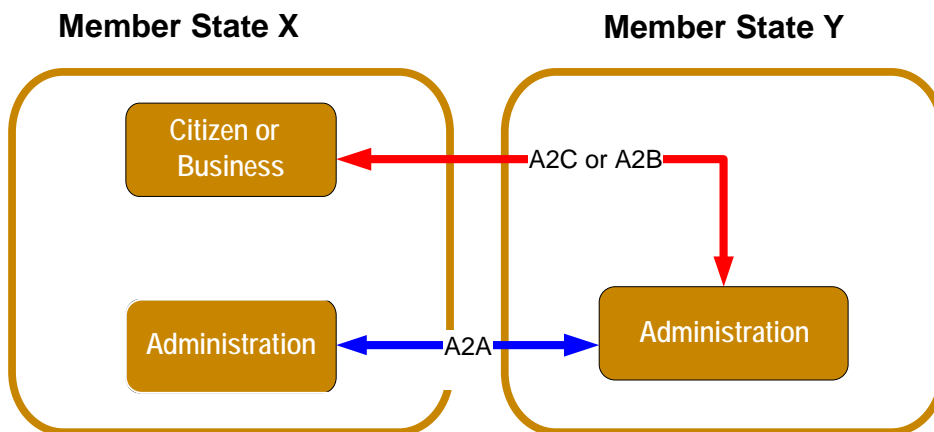


Figure 1-5

Example: a service provider established in Member State X wishing to establish in Member State Y submits a request for establishment in Member State Y. To process his request and avoid asking the required information to the service provider, administrative bodies in both Member State X and Y could exchange information directly. This requires interoperability between the Member States involved.

1.6.3 Scenario 3: Exchange of information between national administrations and EU institutions

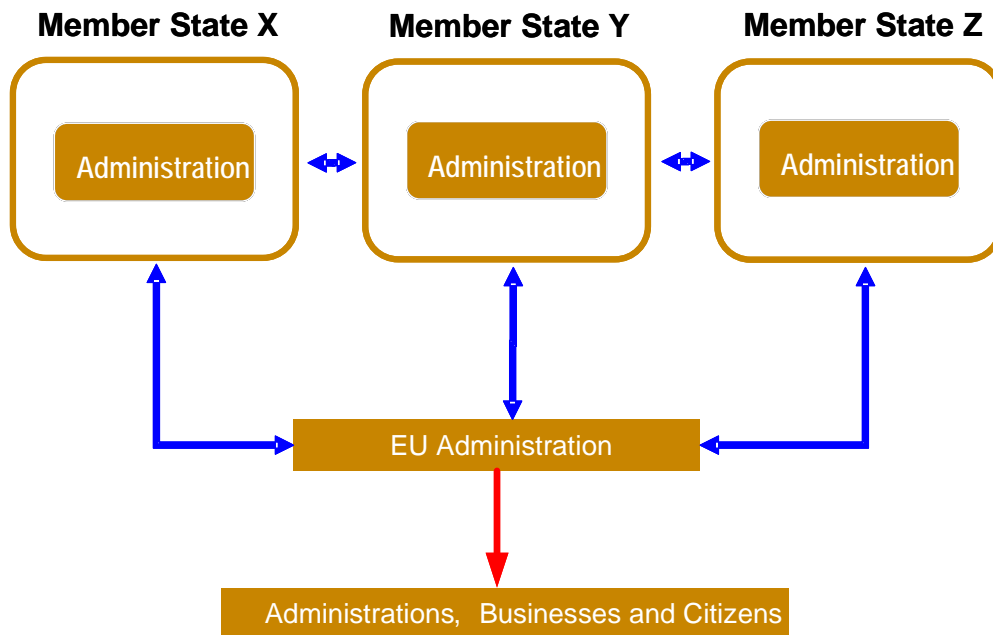


Figure 1-6

Typically, this scenario involves networks of administrations in a given sector where EU law requires Member State administrations to collect, exchange, and share information with each other, and/or with EU institutions and agencies.

Examples include cases where Member States provide information and statistics to a competent European authority, which then disseminates the aggregated information to the public concerned.

1.6.4 Examples of European public services

A non-exhaustive list of examples¹⁰ illustrates generic scenarios for the European public services outlined above:

Sector/Area	Service	Sector/Area	Service
Business development (A2B, A2A)	Start-up of a company Public procurement Registration of patents, trademarks, designs Consumer protection, labelling, packaging	Social security (A2C)	Information service for social security systems Unemployment benefits Child allowances Pensions Public health insurance
Certificates and licenses (A2C)	Birth and marriage certificates Driving licences Passports, visas Residence and working permits Car registration	Supply of statistical data (A2B, A2A)	Tax for businesses VAT refunding Information on tax incentives Declaration of excise goods
Education (A2C)	Enrolment in schools and universities Study grants	Work (A2C)	Recognition of qualifications and diplomas Job search
Taxes for citizens (A2C)	Online Tax	Customs (A2C, A2B, A2A)	Information on Customs duties Customs declarations

1.7 Structure of the document

In the following chapters, the EIF addresses a number of key issues for the efficient and effective delivery of European public services.

Chapter 2, dealing with the ‘underlying principles’, sets out general principles underpinning European public services. They reflect the expectations of citizens, businesses and public administrations with regard to public service delivery.

Chapter 3 presents the ‘conceptual model for public services’. It suggests an organising principle for designing European public services, focusing on basic services that can be aggregated to form aggregated services and help establish other European public services in the future.

Chapter 4 on ‘interoperability levels’ covers the different interoperability aspects to be addressed when designing a European public service and provides a common vocabulary for discussing issues that arise.

Chapter 5 presents an approach to facilitate cooperation among public administrations to provide a given European public service by introducing concepts of ‘interoperability agreements’, formalised specifications and open specifications.

Chapter 6 on ‘interoperability governance’ sets out what is needed to ensure interoperability over time when delivering a European public service and to coordinate interoperability activities across administrative levels to support the establishment of European public services.

¹⁰ Study on stakeholder requirements for pan-European eGovernment Services, Final Report v1.3, providing a ranking and description of various pan-European eGovernment services (see: <http://ec.europa.eu/idabc/servlets/Docc7f6.pdf?id=19649>).

2 Underlying principles of European public services

2.1 Introduction

This chapter sets out general principles of good administration that are relevant to the process of establishing European public services. They describe the context in which European public services are decided and implemented. They complement one another regardless of their different natures, e.g. political, legal or technical.

The twelve underlying principles of the EIF can be broken down into three categories:

- The first principle sets the context for EU action on European public services;
- The next group of underlying principles reflect generic user needs and expectations (2-8);
- The last group provides a foundation for cooperation among public administrations (9-12).

2.2 Underlying principle 1: Subsidiarity and proportionality

The first underlying principle calls for subsidiarity and proportionality as enshrined in the EU Treaty.

The subsidiarity principle requires EU decisions to be taken as closely as possible to the citizen. In other words, the EU does not take action unless this is more effective than action taken at national, regional or local level.

The proportionality principle limits EU action to what is necessary to achieve agreed policy objectives. This means that the EU will opt for solutions that leave the greatest possible freedom to Member States.

Subsidiarity and proportionality also apply to the delivery of European public services and therefore to the exchange of information needed to deliver such services. Exchanging information and the joint delivery of European public services will either be the result of EU legislation or when public authorities willingly and proactively participate in coordinated initiatives.

2.3 Underlying principle 2: User-centricity

Public services are intended to serve the needs of citizens and businesses. More precisely, those needs should determine what public services are provided and how public services are delivered.

Generally speaking, citizens and businesses will expect:

- to access user-friendly services in a secure and flexible manner allowing personalisation;
- multichannel delivery, allowing access to services anyhow, anywhere, anytime;
- to access a single contact point, even when multiple administrations have to work together to provide the service;
- to provide only the information necessary to obtain the public service and to provide any given piece of information only once to administrations;
- administrations to respect privacy.

2.4 Underlying principle 3: Inclusion and accessibility¹¹

The use of ICT should create equal opportunities for all citizens and businesses through inclusive services that are publicly accessible without discrimination.

¹¹ http://ec.europa.eu/information_society/activities/einclusion/policy/accessibility/index_en.htm .

Inclusion means allowing everyone to take full advantage of the opportunities offered by new technologies to overcome social and economic disadvantages and exclusion. Accessibility ensures that people with disabilities and the elderly can use public services with the same service levels as all other citizens.

Inclusion and accessibility must be part of the whole development lifecycle of a European public service in terms of design, information content and delivery, according to e-accessibility specifications widely recognised at European or international level.¹²

Inclusion and accessibility usually involve multichannel delivery. Traditional paper-based or face-to-face service delivery may need to co-exist with electronic delivery, giving citizens a choice of access.

Inclusion and accessibility can also be improved by the ability of a system to allow third parties to act on behalf of citizens who are unable, either permanently or temporarily, to make direct use of public services.

Recommendation 2. Public administrations should ensure that public services are accessible to all citizens, including persons with disabilities and the elderly, according to e-accessibility specifications widely recognised at European or international level.

2.5 Underlying principle 4: Security and privacy

Citizens and businesses must be assured that they interact with public administrations in an environment of trust and in full compliance with the relevant regulations, e.g. on privacy and data protection. This means that public administrations must guarantee the privacy of citizens and the confidentiality of information provided by businesses.

Subject to security constraints, citizens and businesses should have the right to verify the information that administrations have collected about them and to be consulted whether this information may be used for purposes other than those for which it was originally supplied.

Recommendation 3. Public administrations should consider the specific needs of each European public service, within the context of a common security and privacy policy.

2.6 Underlying principle 5: Multilingualism

Multilingualism needs to be carefully considered when designing European public services.

A balance needs to be found between the expectations of citizens and businesses to be served in their own language(s) and Member State public administrations' ability to offer services in all official EU languages.

Ideally, European public services provided EU-wide should be available in all official EU languages to ensure that rights and expectations of European citizens are met.

Multilingualism comes into play not just at the level of the user interface, but at all levels in the design of European public services. For example, choices on data representation may limit the ability to support different languages.

The multilingual aspect to interoperability again becomes apparent when European public services require exchanges between ICT systems across linguistic boundaries, as the meaning of the information exchanged must be preserved. Whenever possible, information should be transferred in a language-independent format, agreed among all parties involved.

Recommendation 4. Public administrations should use information systems and technical architectures that cater for multilingualism when establishing a European public service.

¹² See also EC standardisation mandate No376 on the development of European standards for public procurement of accessible ICT products and services (http://ec.europa.eu/information_society/activities/einclusion/archive/dep/proc/eso-m376/a_documents/m376_en.pdf).

2.7 Underlying principle 6: Administrative simplification

Businesses compile large amounts of information, often solely due to legal obligations, which is of no direct benefit to them and not necessary for achieving the objectives of the legislation imposing the obligations. This creates a considerable administrative burden¹³, which can be expressed as a cost incurred by businesses.

For this reason, the European Commission proposed in January 2007 to reduce the administrative burden on businesses by 25 % by 2012. To achieve this target, public authorities across Europe will have to act together when establishing European public services.

This principle is closely linked to underlying principle 2, user-centricity.

2.8 Underlying principle 7: Transparency

Citizens and businesses should be able to understand administrative processes. They should have the right to track administrative procedures that involve them, and have insight into the rationale behind decisions that could affect them.

Transparency also allows citizens and businesses to give feedback about the quality of the public services provided, to contribute to their improvement and to the implementation of new services.

2.9 Underlying principle 8: Preservation of information

Records¹⁴ and information in electronic form held by administrations for the purpose of documenting procedures and decisions must be preserved. The goal is to ensure that records and other forms of information retain their legibility, reliability and integrity and can be accessed as long as needed, taking into account security and privacy.

In order to guarantee the long-term preservation of electronic records and other kinds of information, formats should be selected to ensure long-term accessibility, including preservation of associated electronic signatures and other electronic certifications, such as mandates.

For information sources owned and managed by national administrations, preservation is a purely national matter. For European public services and for information that is not purely national, preservation becomes a European issue, requiring an appropriate ‘preservation policy’.

Recommendation 5. Public administrations should formulate together a long-term preservation policy for electronic records relating to European public services.

2.10 Underlying principle 9: Openness

In the context of the EIF, openness is the willingness of persons, organisations or other members of a community of interest to share knowledge and stimulate debate within that community, the ultimate goal being to advance knowledge and the use of this knowledge to solve problems.

While respecting data protection and privacy, interoperability involves sharing information among interacting organisations, and hence implies openness.

Applying the principle of openness when jointly developing custom-made software systems, European public administrations generate results that can be interconnected, reused and shared, which also improves efficiency.

Therefore, European public administrations should aim for openness, taking into account needs, priorities, legacy, budget, market situation and a number of other factors.

¹³ http://ec.europa.eu/enterprise/admin-burdens-reduction/faq_en.htm.

¹⁴ As defined by the model requirements for the management of electronic records (MOREQ): a record is (a) document(s) produced or received by a person or organisation in the course of business, and retained by that person or organisation.

Recommendation 6. Public administrations should aim for openness when working together to establish European public services, while taking into account their priorities and constraints.

2.11 Underlying principle 10: Reusability

Reuse means that public administrations confronted with a specific problem seek to benefit from the work of others by looking at what is available, assessing its usefulness or relevance to the problem at hand, and deciding to use solutions that have proven their value elsewhere.

This implies that public administrations must be willing to share with others their solutions, concepts, frameworks, specifications, tools and components. This can be facilitated by applying the principle of openness, as described above.

Reuse and sharing naturally lead to cooperation using collaborative platforms¹⁵, towards mutually beneficial and agreed common goals.

Reuse is consequently key to the efficient development of European public services.

Recommendation 7. Public administrations are encouraged to reuse and share solutions and to cooperate on the development of joint solutions when implementing European public services.

2.12 Underlying principle 11: Technological neutrality and adaptability

When establishing European public services, public administrations should focus on functional needs and defer decisions on technology as long as possible in order to avoid imposing specific technologies or products on their partners and to be able to adapt to the rapidly evolving technological environment.

Public administrations should render access to public services independent of any specific technology or product.

Recommendation 8. Public administrations should not impose any specific technological solution on citizens, businesses and other administrations when establishing European public services.

2.13 Underlying principle 12: Effectiveness and efficiency

Public administrations should ensure that solutions serve businesses and citizens in the most effective and efficient way and provide the best value for taxpayer money.

There are many ways to take stock of the value brought by public service solutions, including considerations such as return on investment, total cost of ownership, increased flexibility and adaptability, reduced administrative burden, increased efficiency, reduced risk, transparency, simplification, improved working methods, and recognition of public administration achievements and competencies.

¹⁵ At EU level, various platforms have been set up to share open source software components (<http://www.osor.eu/>), semantic assets (<http://www.semic.eu/>) and best practices (<http://www.epracice.eu/>). The European Commission has also created EUPL (<http://www.osor.eu/eupl>) in order to facilitate the sharing of software components.

3 The conceptual model for public services

3.1 Introduction

This chapter proposes a conceptual model for public services to suggest ways to organise the creation and operation of these services.

The model is derived from a survey of the implementation of public services in the Member States, and brings together the common aspects and best practices observed. As a blueprint for future implementations of European public services, the model helps develop a common vocabulary and understanding across Member States about the main elements of a public service and how they come together.

The model emphasises a building-block approach to setting up European public services, allowing for the interconnection and reusability of service components when building new services.

The model is generic by nature, so not every existing or future public service will exactly fit into it. However, it is generic enough to be applicable at any level of government providing public services, from local level all the way up to the EU level, and it illustrates the fact that any level of government can be a provider of both basic and aggregate public services. In this sense, the model clarifies and rationalises the relationships among entities that work together to deliver public services.

The aim of the model is to bring practical benefits to establishing European public services. For example, splitting functionalities into basic public services with well-defined interfaces, designed to be reused, will simplify and streamline the implementation of aggregate services and the reuse of service components, avoiding duplication of work.

3.2 The key concepts of the conceptual model

The model promotes the reuse of information, concepts, patterns, solutions, and specifications in Member States and at European level, recognising that European public services:

- are based on information from various sources located at different levels of administration, in different Member States, and
- combine basic public services constructed independently by public administrations in different Member States.

Therefore, the model highlights the need for modular, loosely coupled service components¹⁶ interconnected through infrastructure and for working together to deliver European public services.

It explicitly calls for EU-wide adoption of a service orientation to designing and developing systems, and an ICT ecosystem comprising consistent, and in some cases jointly developed, service components. Its particular service orientation is a specific way of creating and using business processes, packaged as services, throughout their lifecycle.

Recommendation 9. Public administrations should develop a component-based service model, allowing the establishment of European public services by reusing, as much as possible, existing service components.

¹⁶ Service Oriented Architecture (SOA) is an implementation of that concept.

Public administrations will need to agree a common scheme on how to interconnect service components.

There are well-known and widely used technical solutions, e.g. web services, to do this, but implementing them at EU level will require concerted efforts by public administrations, including investment in common infrastructure.

Recommendation 10. Public administrations should agree on a common scheme to interconnect loosely coupled service components and put in place the necessary infrastructure when establishing European public services.

The basic elements of the conceptual model are depicted in the diagram below:

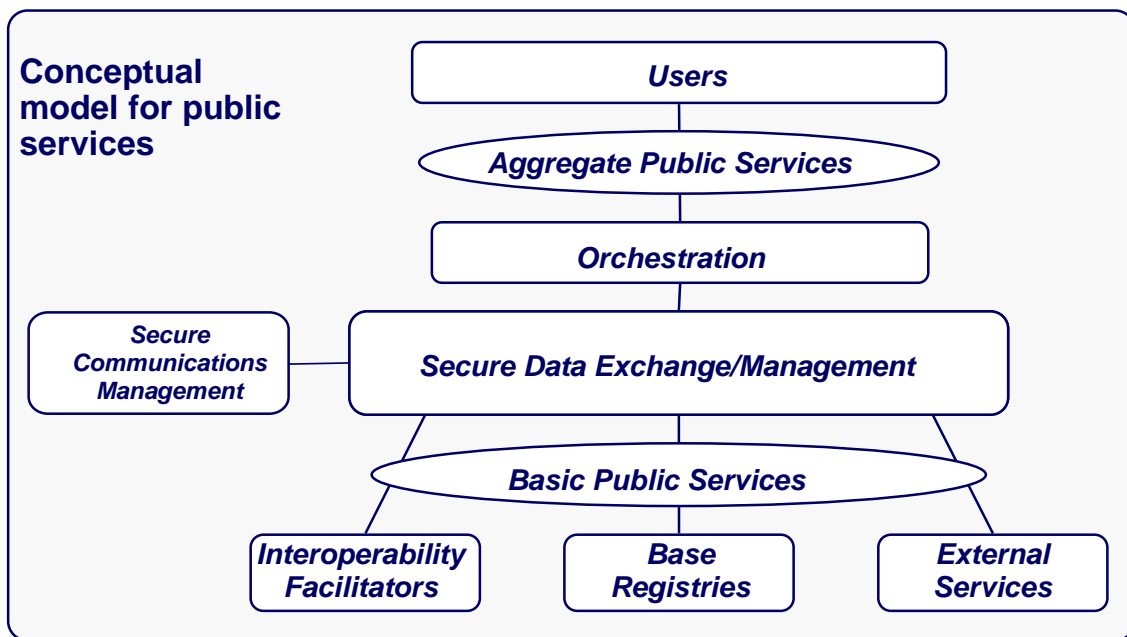


Figure 3-1

In order to understand this model, it is useful to subdivide it into three layers: basic public services, secure data exchange and aggregate public services, which are detailed in the following sections.

3.2.1 Basic public services

The lowest layer of the model deals with the most basic service components from which European public services can be built. It groups three types of components, namely interoperability facilitators, services based on base registries, and external services, together called basic public services.

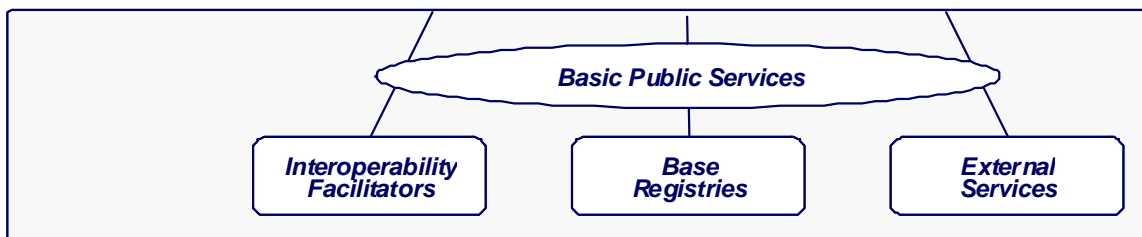


Figure 3-2

Some basic public services have been developed primarily for direct use by the public administration that created them, or by their direct customers, i.e. businesses and citizens, but are made available for reuse elsewhere with a view to providing aggregate public services. Others are generic and/or

infrastructural by nature, while the remainder represent external services, i.e. services provided by third parties. The following sections describe in more detail each type of basic public service.

3.2.1.1 Base registries

The most important components are base registries that provide reliable sources of basic information on items such as persons, companies, vehicles, licences, buildings, locations and roads. Such registries are under the legal control of public administrations and are maintained by them, but the information should be made available for wider reuse with the appropriate security and privacy measures.

The common feature of all implementations of basic registries is the fact that they are authentic and authoritative and form, separately or in combination, the cornerstone of public services. Generally speaking, their content is not static: they also reflect the information lifecycle.

Recommendation 11. Public administrations should make their authentic sources of information available to others while implementing access and control mechanisms to ensure security and privacy in accordance with the relevant legislation.

One of the obstacles to adopting the conceptual model for European public services could be legacy systems. These systems, and their underlying data repositories, have specific characteristics limiting the possibilities for reuse (e.g. lack of published interfaces), and they may require extensive re-engineering in order to make their information available for European public services.

Access to authentic data sources across borders will be facilitated if the interfaces to these sources are published and harmonised, at both semantic and technical level.

Recommendation 12. Public administrations, when working to establish European public services, should develop interfaces to authentic sources and align them at semantic and technical level.

3.2.1.2 Interoperability facilitators

Interoperability facilitators provide services such as translation between protocols, formats and languages or act as information brokers.

3.2.1.3 External services

These include services provided by external parties such as — at business level — payment services provided by financial institutions or — at infrastructure level — connectivity services provided by telecommunications providers.

3.2.2 Secure data exchange layer

This layer is central to the conceptual model since all access to basic public services passes through it.



Figure 3-3

3.2.2.1 Secure data exchange

From a business point of view, administrations and other entities exchange official information that may involve access to base registries. This should go through a secure, harmonised, managed and controlled layer allowing information exchanges between administrations, businesses and citizens that are:

signed and certified — both sender and receiver have been identified and authenticated through agreed mechanisms,

encrypted — the confidentiality of the exchanged data is ensured,

logged – the electronic records are logged and archived to ensure a legal audit trail.

In the proposed conceptual model, these functions are grouped in the ‘secure data exchange’ layer.

This layer should allow the secure exchange of certified messages, records, forms and other kinds of information between the different systems. In addition to transporting data, this layer should also handle specific security requirements such as electronic signatures, certification, encryption and time stamping.

Security is potentially one of the main barriers to interoperability if it is not applied in a harmonised and agreed way among organisations.

The conceptual model highlights this and calls on all service providers to:

- consider the security issues head-on;
- cooperate on a common framework to meet their respective security needs via compatible mechanisms and commonly agreed specifications;
- reach a common understanding on essential characteristics such as protective marking levels, authorisation levels and authentication strength.

Therefore, public administrations should agree on a common security framework when establishing a European public service (see Recommendation No 2).

One of the key prerequisites for implementing the functionality expected in secure data exchange involves leveraging national identification and authentication infrastructures in the Member States to reach a working cross-border scheme. This scheme should establish which ICT architectures and data are needed in a cross-border context to make existing Member State electronic identity infrastructures interoperable.

3.2.2.2 Secure communications management

The provision of secure (i.e. signed, certified, encrypted and logged) data exchange also requires several management functions, including:

- *service management*, to oversee all communications on identification, authentication, authorisation, data transport, etc., including access authorisations, revocation, and audit;
- *service registration*, to provide (subject to proper authorisation) access to available services through prior localisation and verification that the service is trustworthy;
- *service logging*, to ensure that all data exchanges are logged for future evidence, and archived when necessary.

3.2.3 Aggregate services layer

Aggregate public services are constructed by grouping a number of basic public services that can be accessed in a secure and controlled way. They can be provided by several administrations at any level, i.e. local, regional, national or even EU level.

A typical aggregate service should appear to its users (administrations, businesses or citizens) as a single service. Behind the scenes, transactions may be implemented across borders, sectors and administrative levels.

Aggregation is accomplished via mechanisms tailored to specific business requirements. In the most general case, some business logic is required to implement the requirements, and the implementation mechanism could take several forms, such as orchestration or workflow engines, all included in portal-like access infrastructures.

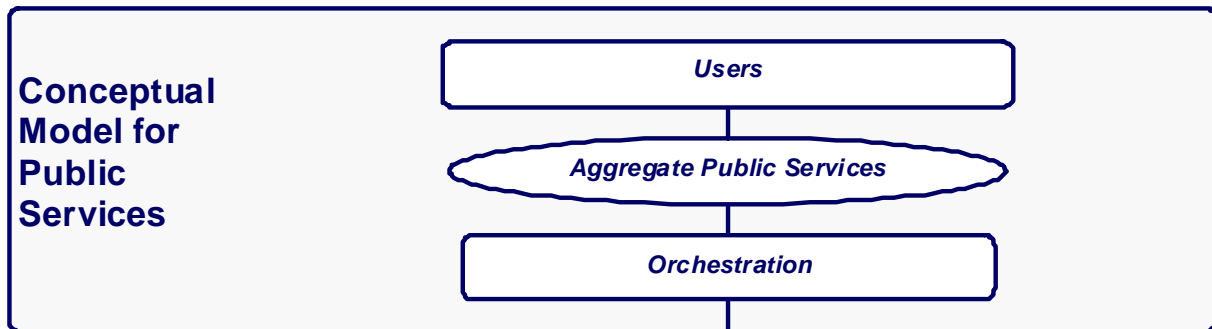


Figure 3-4

Nowadays, users expect to access public services not solely through government portals or websites but also via intermediaries with whom they are in contact on a regular basis. Therefore, public services should be developed in such a way that they can easily be integrated in intermediaries' websites through mechanisms such as mash-ups and widgets, without government losing responsibility for the service itself and with clear indications enabling users to tell the difference between private and public services.

If aggregate public services are provided by intermediaries, public administrations should establish:

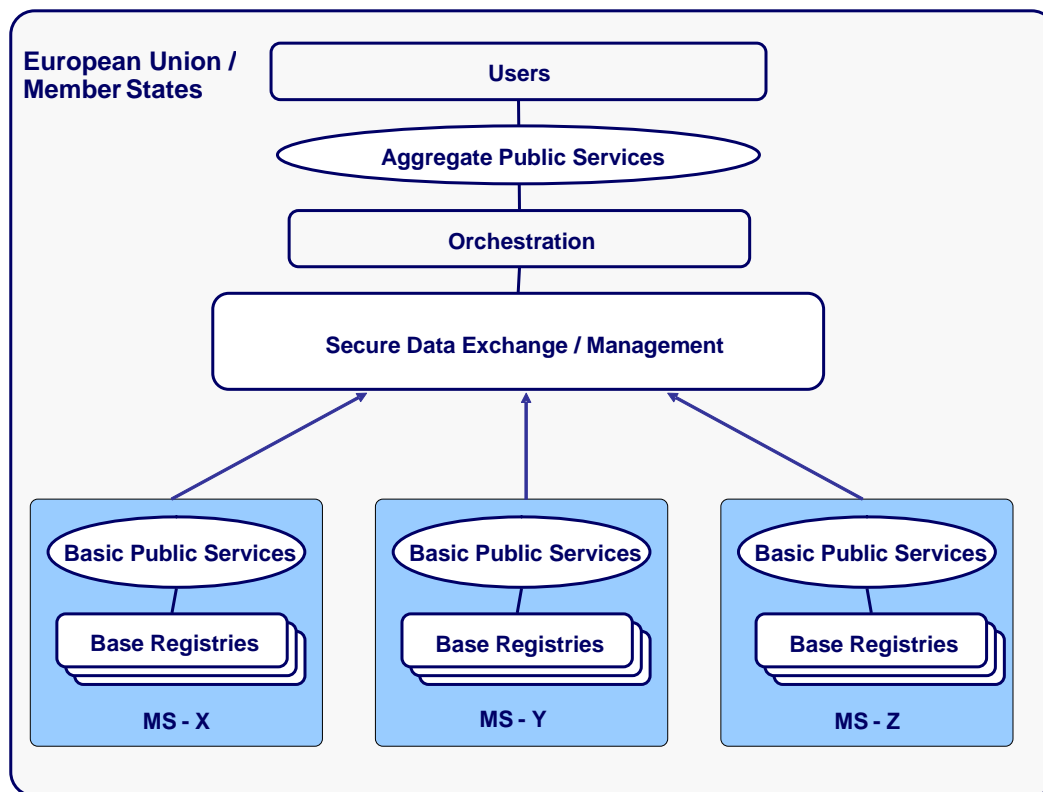
- a process for authorisation to determine which basic public services may be disclosed to which intermediary, and
- a process for certifying intermediaries to establish trust between users and service providers.

3.3 Applications of the conceptual model

What makes the model powerful is its flexibility in allowing different aggregate services to be created by combining basic public services from multiple providers. The model unlocks the potential for further aggregating and combining the different services available. The sections below describe three cases, all with a high added value in the EU context: the cross-border example, the cross-sectoral example and the cross-administrative boundary example.

3.3.1 Cross-border example

This illustrates a European public service implemented by combining basic public services, in this case access to national base registries, implemented in different Member States.



The model has been simplified for the sake of clarity.

Figure 3-5

The situation depicted in the diagram is a variation on the original conceptual model to illustrate its cross-border application by adding national boundaries to indicate where individual sets of basic public services are located.

This raises a number of issues:

Trust: The cross-border application of the model involves allowing external access to national base registries, which requires a high degree of security and trust.

Dependence of European public services and service levels on lower-level services: The aggregated service depends on basic public services provided by different entities.

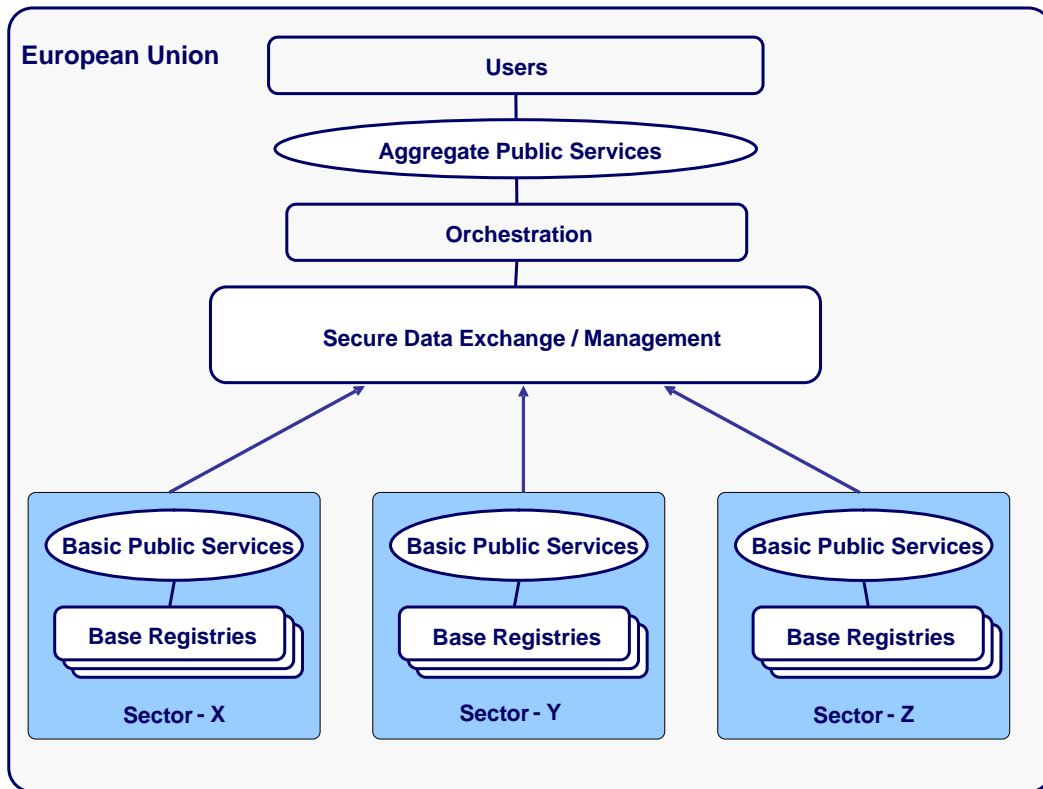
Common specifications for basic public services: The fact that the basic public services on which the aggregated services are based are developed by different public administrations highlights the need for common interface specifications, at technical and semantic level.

Privacy and data protection: Even when personal information is exchanged across borders, national data protection legislations apply. The secure data exchange layer implements and enforces the security requirements for the aggregate service. As data originating from different Member States may be subject to different data protection requirements, a set of common requirements for data protection should be agreed in order to implement the aggregate service.

Recommendation 13. Public administrations, when working together to establish European public services, should use a common taxonomy of basic public services and agree on minimum service requirements for secure data exchange.

3.3.2 Cross-sectoral example

This application of the conceptual model combines basic public services from different sectors to provide new aggregate public services.



The model has been simplified for the sake of clarity

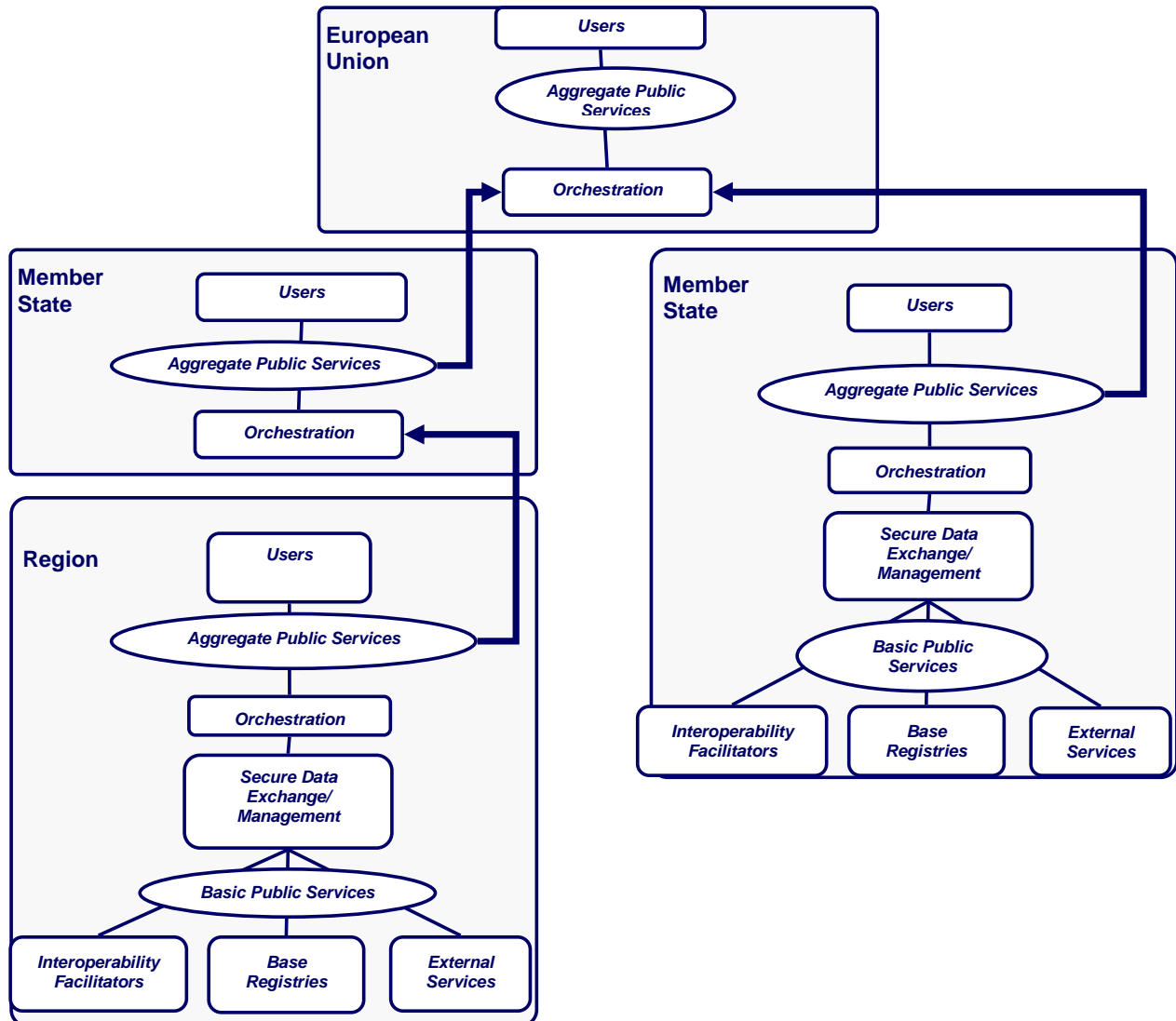
Figure 3-6

This application of the model channels interaction between users and aggregated public services provided through cooperation between different sectors via a single point of contact.

To make this approach successful, it is essential that sectors adopt a common approach to service definition.

3.3.3 Cross-administrative boundary example

This case illustrates the aggregation of services originating in different layers of government at local, regional, national and EU level. A hypothetical example is illustrated below.



The model has been simplified for the sake of clarity

Figure 3-7

The challenge for implementing this application is to master the complexity resulting from multiple service providers. Cooperation among public administrations at each level is essential.

4 Interoperability levels

4.1 Introduction

This chapter describes four levels of interoperability. Each deserves special attention when a new European public service is established. The practical implementation of the conceptual model for cross-border/cross-sectoral services requires each of these levels to be taken into account.

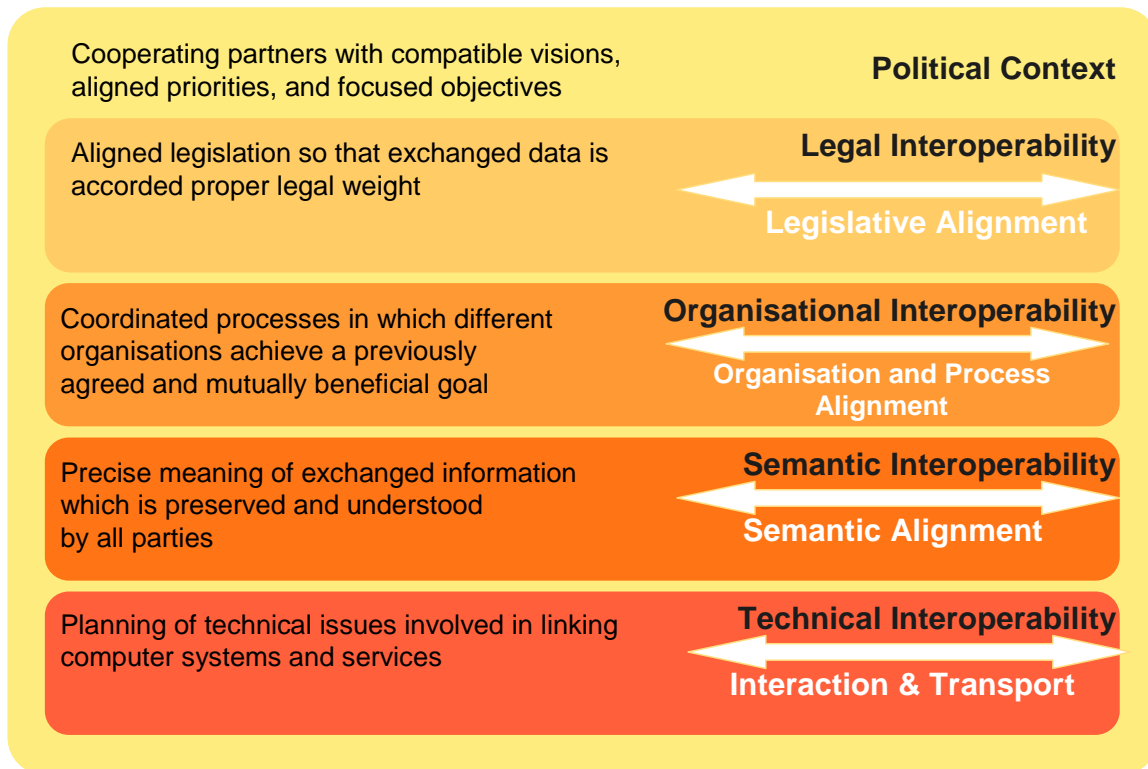


Figure 4-1

4.2 Political context

The establishment of a new European public service is the result of direct or indirect action at political level, i.e. new bilateral, multilateral or European agreements.

If the establishment of a new service is the direct consequence of new EU legislation, the scope, priorities and resources needed to establish and operate the service should be defined when the legislation is adopted.

However, political support and sponsorship is also needed in cases where new services are not directly linked to new legislation but are created to provide better, more user-focused public services.

Likewise, political support is also necessary for cross-border interoperability efforts to facilitate cooperation among public administrations.¹⁷ For effective cooperation, all stakeholders involved must share visions, agree on objectives and align priorities. Action at cross-border level can only be successful if all Member States involved give sufficient priority and resources to their respective interoperability efforts towards agreed goals within agreed timeframes.

¹⁷ The ISA programme is an example of such political support.

4.3 Legal interoperability

Each public administration contributing to the provision of a European public service works within its own national legal framework.

Sometimes, incompatibilities between legislation in different Member States make working together more complex or even impossible, even where such legislation is the result of transposing European directives into national law. Legal initiatives may be needed to remedy such situations.

When information is exchanged between Member States to provide European public services, the legal validity of such information must be maintained across borders and data protection legislation in both originating and receiving countries must be respected.

Recommendation 14. Public administrations should carefully consider all relevant legislation relating to data exchange, including data protection legislation, when seeking to establish a European public service.

4.4 Organisational interoperability

This aspect of interoperability is concerned with how organisations, such as public administrations in different Member States, cooperate to achieve their mutually agreed goals. In practice, organisational interoperability implies integrating business processes and related data exchange. Organisational interoperability also aims to meet the requirements of the user community by making services available, easily identifiable, accessible and user-focused.

4.4.1 Business process alignment

In order for different administrative entities to be able to work together efficiently and effectively to provide European public services, they may need to align their existing business processes or even to define and establish new business processes.

Aligning business processes implies documenting them, in an agreed way, so that all public administrations contributing to the delivery of European public services can understand the overall business process and their role in it.

Recommendation 15. Public administrations should document their business processes and agree on how these processes will interact to deliver a European public service.

4.4.2 Organisational relationships

Service orientation, on which the conceptual model for public services is built, means that the relationship between service providers and service consumers must be clearly structured.

This involves finding instruments to formalise mutual assistance, joint action and interconnected business processes in connection with cross-border service provision. Examples of such instruments are Memoranda of Understanding (MoUs) on joint actions and cooperation and/or Service Level Agreements (SLAs) signed between participating public administrations. For cross-border action, they should preferably be multilateral agreements.

Recommendation 16. Public administrations should clarify their organisational relationships as part of the establishment of a European public service.

4.4.3 Change management

Since delivering a European public service is the result of collective work parties that produce or consume parts of the service, change management processes are critical to ensure the accuracy, reliability and continuity of the service delivered to other public administrations, businesses and citizens.

Recommendation 17. Public administrations working together to provide European public services should agree on change management processes to ensure continuous service delivery.

4.5 Semantic interoperability

Semantic interoperability enables organisations to process information from external sources in a meaningful manner. It ensures that the precise meaning of exchanged information is understood and preserved throughout exchanges between parties.

Achieving semantic interoperability in the EU context is a relatively new undertaking, not achieved before on this scale. However, a number of public administrations have recently acquired experience in this field.

A starting point is to create sector-specific sets of data structures and data elements that can be referred to as semantic interoperability assets. Once these are created, the cooperating organisations will need to agree on the meaning of the information to be exchanged. Given the different linguistic, cultural, legal, and administrative environments in the Member States, this poses significant challenges. Multilingualism in the EU adds further complexity to the problem.

In the context of the EIF, semantic interoperability encompasses the following aspects:

- *Semantic interoperability* is about the meaning of data elements and the relationship between them. It includes developing vocabulary to describe data exchanges, and ensures that data elements are understood in the same way by communicating parties.
- *Syntactic interoperability* is about describing the exact format of the information to be exchanged in terms of grammar, format and schemas.

Achieving semantic interoperability at European level requires at least:

- agreed processes and methodologies for developing semantic interoperability assets;
- agreement by sector-specific and cross-sectoral communities on the use of semantic interoperability assets at EU level.

Due to the complexity of the task and the large number of interested parties, it will take a concerted effort to harmonise processes and methodologies.

4.5.1 The EU Semantic Interoperability Initiative¹⁸

Several initiatives aim to achieve semantic interoperability, at both national and EU level. The EU semantic interoperability initiative aims to lay the foundations of semantic interoperability for European public services, across all sectors and in close cooperation with national initiatives. It provides coaching services for the design and implementation stages, and a web-based platform for cooperating and sharing solutions to semantic interoperability challenges.

Public administrations establishing public services should verify at an early phase of any given project whether existing semantic interoperability assets can be reused. If not, they can use the EU semantic interoperability platform to advertise their goals and approach to a wider European audience, seeking contact and cooperation with other projects with similar needs.

Recommendation 18. Public administrations should support the establishment of sector-specific and cross-sectoral communities that aim to facilitate semantic interoperability and should encourage the communities to share results on national and European platforms.

4.6 Technical interoperability

This covers the technical aspects of linking information systems. It includes aspects such as interface specifications, interconnection services, data integration services, data presentation and exchange, etc.

¹⁸ SEMIC.EU: Semantic Interoperability Centre Europe.

While public administrations have specific characteristics at political, legal, organisational and, partly, semantic level, interoperability at the technical level is not specific to public administrations. Therefore, technical interoperability should be ensured, whenever possible, via the use of formalised specifications, either standards pursuant to EU Directive 98/34 or specifications issued by ICT industry fora and consortia.

Recommendation 19. Public administrations should agree on the formalised specifications to ensure technical interoperability when establishing European public services.

5 Interoperability agreements

5.1 Introduction

This chapter proposes an approach to facilitate cooperation among public administrations to provide a given European public service.

As stated throughout this document, providing European public services requires cooperation among different public administrations at the different interoperability levels described in the previous chapter. For each level, the organisations involved should formalise cooperation arrangements in **interoperability agreements**.

Agreements should be drafted with sufficient detail to achieve their aim — to provide a European public service — while leaving each organisation maximum internal autonomy.

At legal level, interoperability agreements are rendered specific and binding via legislation, including European directives and their transposition into national legislation, or bilateral and multilateral agreements, which are outside the scope of the EIF.

At organisational level, interoperability agreements can, for example, take the form of MoUs or SLAs that specify the obligations of each party participating in cross-border business processes. Interoperability agreements at organisational level will define expected levels of service, support/escalation procedures, contact details, etc., referring, when necessary, to underlying agreements at semantic and technical levels.

At semantic level, interoperability agreements can take the form of reference taxonomies, schemes, code lists, data dictionaries, sector-based libraries and so forth.

At technical level, interoperability agreements include interface specifications, communication protocols, messaging specifications, data formats, security specifications or dynamic registration and service discovery specifications.

While interoperability agreements at legal and organisational level will usually be very specific to the European public service concerned, interoperability agreements at technical level and, to a lesser extent, at semantic level can often be mapped onto existing formalised specifications.

Recommendation 20. Public administrations, when establishing European public services, should base interoperability agreements on existing formalised specifications, or, if they do not exist, cooperate with communities working in the same areas.

When trying to implement interoperability agreements, at technical or semantic level, there may be a choice between a number of equivalent, competing specifications, all of which may be able to provide a basis for such agreements.

Public administrations may decide to support multiple formalised specifications or technologies to communicate with citizens and businesses. However, for reasons of efficiency, they should reduce, as much as possible, the number of formalised specifications and technologies when working together to provide a European public service.

Similar decisions are often taken not just to provide a single European public service but within a wider context of cooperation within or among organisations. In this context, they should be aware that internal interfaces may become external in the future when new European public services are created.

Decisions on what formalised specifications and technologies to use to ensure interoperability for European public services should be based on transparency, fairness and non-discrimination. One way to do this is to agree on a common assessment methodology and selection process.

5.2 Assessing and selecting formalised specifications

When public administrations select the formalised specifications or technologies to ensure interoperability, they should assess relevant formalised specifications.

This assessment should be tailored to the specific interoperability needs of the public administrations in question, but based on objective criteria, primarily related to functional interoperability needs. When several formalised specifications meet functional interoperability needs, additional criteria on quality of implementation, market support, potential for reusability and openness can be used.

Recommendation 21. Public administrations should use a structured, transparent and objective approach to assessing and selecting formalised specifications.

5.2.1 Specifications, openness and reuse

The level of openness of a formalised specification is an important element in determining the possibility of sharing and reusing software components implementing that specification. This also applies when such components are used for the establishment of new European public services.

If the openness principle is applied in full:

- All stakeholders have the same possibility of contributing to the development of the specification and public review is part of the decision-making process;
- The specification is available for everybody to study;
- Intellectual property rights related to the specification are licensed on FRAND¹⁹ terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software²⁰.

Due to their positive effect on interoperability, the use of such open specifications, characterised by the features mentioned above as well as the sharing and reuse of software implementing such open specifications, has been promoted in many policy statements and is encouraged for European public service delivery. The positive effect of open specifications is also demonstrated by the Internet ecosystem.

However, public administrations may decide to use less open specifications, if open specifications do not exist or do not meet functional interoperability needs.

In all cases, specifications should be mature and sufficiently supported by the market, except if used in the context of creating innovative solutions.

Recommendation 22. When establishing European public services, public administrations should prefer open specifications, taking due account of the coverage of functional needs, maturity and market support.

5.3 Contribution to the standardisation process

In some cases, public administrations may find that no suitable formalised specification is available for a specific need in a specific area. If new specifications have to be developed, public administrations may either develop the specifications themselves and put forward the result for standardisation, or request a new formalised specification to be developed by standards developing organisations. The resulting formalised specifications should comply with the characteristics set out in Section 5.2.1.

Even where existing formalised specifications are available, they evolve over time and experience shows that revisions often take a long time to be completed. Active government participation in the standardisation process mitigates concerns about delays, improves alignment of the formalised

¹⁹ FRAND: Fair, reasonable and non discriminatory.

²⁰ This fosters competition since providers working under various business models may compete to deliver products, technologies and services based on such specifications.

specifications with public sector needs and can help governments keep pace with technology innovation.

Recommendation 23. Public administrations should lead or actively participate in standardisation work relevant to their needs.

6 Interoperability governance

Due to their cross-border and in some cases cross-sectoral characteristics, European public services operate in a complex and changing environment.

Ensuring interoperability between legal instruments, organisation business processes, information exchanges, services and components that support the delivery of a European public service is a continuous task, as interoperability is disrupted by changes to the environment, i.e. to legislation, the needs of businesses or citizens, the organisation of public administrations, business processes or technologies.

Recommendation 24. Public administrations should ensure that interoperability is ensured over time when operating and delivering a European public service.

Even if interoperability is maintained for a given European public service, its delivery often relies on components that are common to many European public services. These components, which are the results of interoperability agreements reached outside the scope of the European public service, should also be made available over time.

Moreover, as the common components and interoperability agreements are the results of work carried out by public administrations at different levels (local, regional, national, EU), coordination and monitoring this work requires a holistic approach.

Recommendation 25. Public administrations should establish a framework for the governance of their interoperability activities across administrative levels.

7 Abbreviations and Glossary

7.1 Abbreviations

A2A	Administration to Administration
A2B	Administration to Business
A2C	Administration to Citizen
ABC	Administration, Business and Citizen
EC	European Commission
EIF	European Interoperability Framework
EIS	European Interoperability Strategy
EU	European Union
EUPL	European Union Public Licence
IDABC	Interoperable delivery of European eGovernment services to public administrations, businesses and citizens
ICT	Information and Communication Technology
ISA	Interoperability solutions for European public administrations
MoU	Memorandum of Understanding
MS	Member State
NIF	National Interoperability Framework
NIFO	National Interoperability Framework Observatory
OSOR	Open Source Observatory and Repository
SEMIC.EU	Semantic Interoperability Centre Europe
SLA	Service Level Agreement
SOA	Service Oriented Architecture

7.2 Glossary

Accessibility	<p>To be understood here as Web accessibility, which means that everyone including people with disabilities can perceive, understand, navigate, and interact with the internet, and have the opportunity to contribute to society.</p> <p>While accessibility is a broad concept, eAccessibility aims to ensure that people with disabilities and the elderly can access ICTs on the same basis as others.</p>
Administrative Burden	<p>The cost of administrative work that businesses conduct solely in order to comply with legal obligations (http://ec.europa.eu/enterprise/policies/better-regulation/glossary/index_en.htm).</p>
Aggregate Public Services	<p>A generic term used in the EIF conceptual model for public services to refer to a set of basic public services accessed in a secure and controlled way before being combined and then delivered as a whole to end users.</p>
Authentic Source	<p>An authentic source is information that is stored only once and which is believed to be correct, so can serve as a basis for reuse.</p>
Basic Public Services	<p>Basic public services are the most fundamental service components from which European public services can be built. According to the EIF conceptual model, there are three fundamental types of basic public services: base registries, interoperability facilitators, and external services.</p>
Base Registries	<p>Authentic sources of information under the control of a public administration. Examples include registries of persons, vehicles, companies, licences, VAT numbers, locations, buildings, roads, etc.</p>
Building-Block Approach	<p>An approach to building information systems from architecture to implementation in which the information system is designed as an assembly or aggregation of components that encapsulate data and functionalities in groups that can also be reused as 'building blocks' to build other public services or information systems.</p>
Business Process	<p>A business process is a sequence of linked activities that creates value by turning inputs into a more valuable output. This can be performed by human participants or ICT systems, or both.</p>
Collaborative Platform	<p>A set of specific services and facilities for the use of a specific community and their interactions, the goal being to facilitate cooperation to achieve shared objectives. Typically, the services are communication-related, and incorporate a repository for exchanged objects, information, materials, etc.</p> <p>A notable example is the ePractice.eu platform, designed to enable members of public administrations involved in providing public services to benefit from each other's work, knowledge and experience. Other examples are OSOR.eu and SEMIC.eu.</p>
Custom-made software	<p>Specific software either developed internally within an organisation (for the EIF, a public administration) or developed for this organisation by a contractor to meet the specific requirements of that organisation. In most cases, the custom-made software is paid in full by the organisation which is consequently the owner of the software, holding all rights related to the further use of this software.</p>
Data Repository	<p>Any collection of data meant for use (processing, storage, querying, etc.) by an information system. Typically, a data repository contains additional structural and semantic information about the data in question, designed to aid the use of the data (data model, relationships between data elements, metadata, etc.). It may provide specific functionalities closely tied to the data stored in the repository (searching, indexing, etc.).</p>

Data Representation	The manner in which data are expressed symbolically by binary digits in a computer.
Document	Recorded information or object that can be treated as a unit (see MOREQ specifications at http://ec.europa.eu/transparency/archival_policy/moreq/doc/moreq2_spec.pdf).
eInclusion	eInclusion ('e' standing for electronic) aims to prevent the risks of 'digital exclusion', i.e. to ensure that disadvantaged people are not left behind and to avoid new forms of exclusion due to lack of digital literacy or internet access.
eGovernment	eGovernment is about using the tools and systems made possible by information and communication technologies (ICTs) to provide better public services to citizens and businesses.
Electronic Signature	According to Directive 1999/93/EC, 'electronic signature' means data in electronic form which are attached to or logically associated with other electronic data and which serve as a method of authentication.
Electronic Certification	Electronic certification is the application of an electronic signature, by a specifically authorised person or entity, in a specific context for a specific purpose. It is mostly used to indicate that a certain validation process has been executed and that a given result is being attested by the signer. In the simplest case, it can merely represent the assertion of a given fact by an authorised person.
Electronic Records	A record in electronic form (see MOREQ specifications at http://ec.europa.eu/transparency/archival_policy/moreq/doc/moreq2_spec.pdf).
EPS establishment process	The activities needed to establish a European public service (EPS), making it available for use.
European Interoperability Strategy (EIS)	The European Interoperability Strategy (EIS) provides the basis for defining the organisational, financial and operational framework (including governance) needed to ensure ongoing support for cross-border and cross-sector interoperability, as well as the exchange of information among European public administrations.
European public service (EPS)	A cross-border public sector service supplied by public administrations, either to one another or to European businesses and citizens.
Formalised Specifications	Formalised specifications are either standards pursuant to EU Directive 98/34 or specifications established by ICT industry fora or consortia.
Information	Information is semantically enriched data, i.e. collections of data that have been given relevance and purpose.
Information and Communication Technology (ICT)	Technology, e.g. electronic computers, computer software and communications technology, used to convert, store, protect, process, transmit and retrieve information.
Interface	An interface is a conceptual or physical boundary where two (or more) independent legal systems, organisations, processes, communicators, IT systems, or any variation/combination thereof interact.
Interoperability	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, through the business processes they support, by means of the exchange of data between their respective ICT systems.
Interoperability Agreements	Written interoperability agreements are concrete and binding documents which set out the precise obligations of two parties cooperating across an 'interface' to achieve interoperability.

Interoperability Framework	An interoperability framework is an agreed approach to interoperability for organisations that wish to work together towards the joint delivery of public services. Within its scope of applicability, it specifies a set of common elements such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.
Interoperability Governance	Interoperability governance covers the ownership, definition, development, maintenance, monitoring, promoting and implementing of interoperability frameworks in the context of multiple organisations working together to provide (public) services. It is a high-level function providing leadership, organisational structures and processes to ensure that the interoperability frameworks sustain and extend the organisations' strategies and objectives.
Interoperability Levels	The interoperability levels classify interoperability concerns according to who/what is concerned and cover, within a given political context, legal, organisational, semantic and technical interoperability.
Legacy System	Generally refers to older systems that still perform essential functions or host/provide access to essential data, but which use older technology, pose difficulties for integrating with newer systems, and for which reimplementation is seen to be difficult or expensive. Strictly speaking, however, any IT system, of whatever vintage, including one that has recently been implemented, but which has not been designed with reuse or integration with other systems in mind, can also be classified as such.
Loose coupling	Loose coupling refers to communications between systems that operate more or less independently of one another (asynchronously) and whose internal states are not strongly interdependent. The coupling takes the form of messages passed between the systems in question, typically implemented using some type of middleware layer or queuing system, so that the target system deals with requests as and when it can. Thus, the target system may not even be available at the time of the request, which is simply queued for later action.
Memorandum of Understanding	A bilateral or multilateral written agreement between two organisations which sets out a number of areas and means by which they will cooperate, collaborate or otherwise assist one another. The exact nature of these activities depends on the nature of the two organisations, the domain of activity in question, and the scope of the cooperation envisaged.
Multichannel Delivery	A channel is a means used by an administration to interact with and deliver services to its users, and for users to contact public administrations with the aim of acquiring public services. The term 'user' includes citizens, businesses and organisations as consumers of public services. The set of different possible 'means' for electronic delivery constantly changes, and currently includes the use of web-based technologies, telephony, paper media, face-to-face contacts and many others, applications of these technologies such as the internet, e-mail, SMS, call centres or service counters, and devices to access these applications such as personal computers, mobile phones, kiosks or digital TV. Multichannel delivery refers to the provision of public services simultaneously and independently via two or more such channels, selectable by the user according to needs.
National Interoperability Framework (NIF)	NIFs are interoperability frameworks defined by individual Member States to govern national IT systems and infrastructure within their own countries.
Open Source or Open Source Software (OSS)	See the 10 criteria that define Open Source Software (OSS) at the Open Source Initiative web site: http://www.opensource.org/docs/osd . An alternative definition (of Free Software) can be found at: http://www.gnu.org/philosophy/free-sw.html .

Open Source Observatory and Repository (OSOR)	The Open Source Observatory and Repository for European public administrations (OSOR) is a platform for exchanging information, experiences and OSS-based code for use in public administrations (http://www.osor.eu/).
Orchestration	The aggregation and sequenced execution of sets of transactions involving use of other services and functionalities, according to business rules embodied in one or more documented business processes, with the ultimate goal of performing or providing some other value-added function or service. Orchestration is closely related to the concept of workflow. Usually orchestration involves executing a set of processes, described in a standard language, by an ‘orchestration engine’, which is configurable and capable of executing all the requisite service calls and routing the inputs and outputs of processes according to rules described in that language.
Point of Single Contact (PoSC)	Single institutional interlocutor for a given service provider through which the latter can collect all relevant information and easily complete at a distance and by electronic means all procedures and formalities to access a service activity and to the exercise thereof (see <u>Article 8 of the Services Directive</u> — OJ L376 of 27.12.2006).
Proprietary Software	Software that, generally for a fee, can be used on a limited number of computers and/or by a limited number of users. The internal working of the software (the source code) is not available for study and/or modification by the user.
Proprietary Specifications	Generally refers to specifications that are either partially or totally unpublished, or are only available from a single vendor for a substantial fee, and/or under restrictive terms, thus making the implementation and use by third parties of products that conform to the given specifications subject to control.
Protocol	A set of conventions that govern the interaction of processes, devices and other components within and across systems.
Record	<p>Document(s) produced or received by a person or organisation in the course of business, and retained by that person or organisation (see MOREQ specifications at http://ec.europa.eu/transparency/archival_policy/moreq/doc/moreq2_spec.pdf).</p> <p>Note: a record may incorporate one or several documents (e.g. when one document has attachments), and may be on any medium in any format. In addition to the content of the document(s), it should include contextual information and, if applicable, structural information (i.e. information which describes the components of the record). A key feature of a record is that it cannot be changed.</p>
Reusability	The degree to which a software module or other work product can be used in contexts other than its original, intended or main purpose.
Secure Data Exchange	This is a component of the conceptual model for European public services. Its aim is to ensure that all cross-border data exchanges are done in a secure and controlled way.
Semantic Interoperability Centre Europe (SEMIC.EU)	SEMIC.EU (Semantic Interoperability Centre Europe) is a collaborative platform and service offered by the European Commission to support the sharing of interoperability assets to be used in public administrations and eGovernment (http://www.semic.eu).
Semantic Interoperability Assets	Semantic interoperability assets are a subset of interoperability assets and include any element of the semantic layer, such as nomenclatures, thesauri, multilingual dictionaries, ontologies, mapping-tables, mapping-rules, service descriptions, categories, and web services.
Service Orientation	Service orientation means creating and using business processes packaged as services.

Service Level Agreement	A formalised agreement between two cooperating entities; typically, a service provider and a user. The agreement is expressed in the form of a written, negotiated contract. Typically, such agreements define specific metrics (Key Performance Indicators — KPIs) for measuring the performance of the service provider (which in total define the ‘service level’), and document binding commitments defined as the attainment of specific targets for certain KPIs, plus associated actions such as corrective measures. SLAs can also cover commitments by the user, for example to meet certain notification deadlines, provide facilities or other resources needed by the service provider in the course of service provision, problem solving, or to process inputs given by the service provider to the user.
Service Oriented Architecture (SOA)	Service oriented architecture is a paradigm for organising and utilising distributed capabilities that may be under the control of different ownership domains. It provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations (from OASIS Reference Model for SOA: http://www.oasis-open.org/committees/download.php/19679/soa-rm-cs.pdf).
Standard	As defined in European legislation (Article 1, paragraph 6, of Directive 98/34/EC), a standard is a technical specification approved by a recognised standardisation body for repeated or continuous application, with which compliance is not compulsory and which is one of the following: <ul style="list-style-type: none"> - international standard: a standard adopted by an international standardisation organisation and made available to the public, - European standard: a standard adopted by a European standardisation body and made available to the public, - national standard: a standard adopted by a national standardisation body and made available to the public.
Standards developing organisation	A chartered organisation tasked with producing standards and specifications, according to specific, strictly defined requirements, procedures and rules. <p>Standards developing organisations include:</p> <ul style="list-style-type: none"> - recognised standardisation bodies such as international standardisation committees such as the International Organisation for Standardisation (ISO), the three European Standard Organisations: the European Committee for Standardisation (CEN), the European Committee for Electrotechnical Standardisation (CENELEC) or the European Telecommunications Standards Institute (ETSI); - fora and consortia initiatives for standardisation such as the Organisation for the Advancement of Structured Information Standards (OASIS), the World Wide Web Consortium (W3C) or the Internet Engineering Task Force (IETF).
Taxonomy	A taxonomy represents a classification of the standardised terminology for all terms used within a knowledge domain. In a taxonomy, all elements are grouped and categorised in a strict hierarchical way, and are usually represented by a tree structure. In a taxonomy, the individual elements are required to reside in the same semantic scope, so all elements are semantically related with one another to one degree or another.
Vocabulary	A vocabulary is a set of terms (words or phrases) that describe information in a particular domain.
Workflow	The organisation of a process into a sequence of tasks that are performed by duly designated sets of actors fulfilling given roles in order to complete the process.

