



ISA Work Programme – Access to Base Registries

Initial Report: Description of the approach and initial analysis

Disclaimer

This specification was prepared for the ISA programme by: Deloitte Consulting CVBA

The views expressed in this draft specification are purely those of the authors and may not, in any circumstances, be interpreted as stating an official position of the European Commission.

The European Commission does not guarantee the accuracy of the information included in this study, nor does it accept any responsibility for any use thereof.

Reference herein to any specific products, specifications, processes, or services by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favouring by the European Commission.

All care has been taken by the author to ensure that s/he has obtained, where necessary, permission to use any parts of manuscripts including illustrations, maps, and graphs, on which intellectual property rights

Table of Contents

1. Structure of the document	7
2. Introduction.....	8
3. EU dimension	11
3.1 Service Directive	12
3.2 Directive on the re-use of public sector data	14
3.3 Directive on the legal protection of databases.....	18
3.4 Directive on the protection of personal data	20
3.5 Directives and communications related to business registries	23
3.5.1 Company Law Directive.....	24
3.5.2 Cross-mergers, branches in other Member States and the European Company Statute.....	24
3.5.3 Directive on the Interconnection of Central, Commercial and Companies Registers	25
3.5.4 Green Paper on “The interconnection of business registries”	27
3.6 Binding and non-binding documents related to land registries.....	28
3.6.1 INSPIRE Directive	28
3.6.2 EU Certificate of Succession.....	32
3.6.3 Green Paper : mortgage credit in the European Union (COM (2005) 327) 33	
3.7 Legal frameworks related to vehicle registries	34
3.7.1 Council Decisions related to cross-border cooperation with the aim to combat terrorism and cross-border crime	34
3.7.2 Directive on the exchange of information on road safety related to traffic offences	35
3.7.3 Proposal for Regulation on simplifying the transfer of motor vehicles registered in another Member State within the Single Market.....	37
3.8 Communications and decisions related to citizen registries.....	38
3.8.1 Green Paper on the effects of Civil Status Records.....	39
3.8.2 Council framework decision on the exchange of information extracted from civil records across the Member States	40
3.8.3 Council Decision on the establishment of the European Criminal Records Information System (ECRIS)	41

3.8.4	Regulation on the coordination of social security systems (No 883/2004)	42
3.9	Conclusion	44
4.	Cross-border dimension	57
4.1	Initiatives related to business registries.....	58
4.1.1	The European Business Register (EBR)	58
4.1.2	Business Registry Interoperability Throughout Europe (BRITE)	59
4.2	Initiatives related to land registries.....	60
4.2.1	European Land Information Service (EULIS).....	61
4.2.2	Project LINE	63
4.2.3	Cross-Border eConveyancing (CROBECO) from European Land Registries Association (ELRA)	64
4.2.4	Permanent Committee on Cadaster in the European Union.....	64
4.2.5	Association of National Mapping Land Registry and Cadastral Agencies (EuroGeographics)	65
4.2.6	European Location Framework (EULF)	65
4.2.7	Community of European Semantic Asset Repositories (CESAR)	66
4.3	Initiatives related to vehicle registries.....	66
4.3.1	The European CAR and driving license Information System (EUCARIS) 66	
4.4	Initiatives related to citizen registries.....	69
4.4.1	The International Commission on Civil Status (ICCS) and its platform for data exchange	69
4.4.2	European Civil Registry Network (ECRN)	70
4.4.3	Registry Information Service on European Residents (RISER)	72
4.4.4	European Criminal Records Information System (ECRIS)	72
4.5	Other relevant initiatives.....	75
4.5.1	Business processes: E-Justice portal.....	76
4.5.2	Core Vocabularies	81
4.5.3	Internal Market Information System (IMI)	82
4.5.4	Secure Identity Across Borders Linked (STORK)	84

4.6	Conclusion	87
5.	National dimension	100
5.1	Interoperability of base registries in Europe	100
5.1.1	Legal interoperability	100
5.1.2	Organisational interoperability	100
5.1.3	Semantic interoperability	101
5.1.4	Technical interoperability	102
5.1.5	Security and privacy	103
5.1.6	Conclusion	103
5.2	Cross-sector dimension	104
5.3	eGovernment level – Public Service: Registry based census (Finland)	106
5.4	eGovernment level – Program: I-NUP Program (The Netherlands)	108
5.5	eGovernment level – Program: Grunddata program (Denmark)	109
5.6	Interconnection level – Infrastructure: X-Road (Estonia)	112
5.7	Interconnection level – Infrastructure: Intermediation platform (Spain)	115
5.8	Base registry level – Services: central register of residence (Austria)	117
6.	Non-EU initiatives	120
6.1	eGovernment level – Program: Administrative data sharing (Republic of Korea)	120
6.2	eGovernment level – Open data: Data.gov (United States)	124
6.3	eGovernment level – Open data: Singapore	128
7.	Description of the study method	132
7.1	Interoperability parameters at legal level	140
7.2	Interoperability parameters at organizational level	140
7.3	Interoperability parameters at semantic level	140
7.4	Interoperability parameters at technical level	141
8.	Annex I: Glossary of terms	143
9.	Annex II. Interview guide	151

Glossary of basic terms

The basic terms used throughout this report are:

Base registry refers to a trusted authentic source of information under the control of an appointed public administration or organization appointed by government. According to the European Interoperability Framework 2.0, base registries are: “reliable sources of basic information on items such as persons, companies, vehicles, licenses, buildings, locations and roads” and “are authentic and authoritative and form, separately or in combination, the cornerstone of public services”.

Base registry owner refers to the organization that is the appointed controller of the data in the base registry.

Basic data: base registries’ data is sometimes referred to as ‘basic data’.

Electronic record: a record which is in electronic form as a result of having been created by a software application or as a result of digitization, e.g. by scanning.

The complete glossary of terms can be found in **Annex I**.

1. STRUCTURE OF THE DOCUMENT

This document presents the European landscape of base registries.

- Chapter 2: explains several sections of the document;
- Chapter 3: looks into the EU legal landscape which sets the scene for the interconnection of base registries;
- Chapter 4: presents the cross-border initiatives which interconnect base registries;
- Chapter 5 explains the interoperability of base registries at national and EU level;
- Chapter 6 presents non-European initiatives;
- Chapter 7 explains the study's method.

2. INTRODUCTION

The purpose of this section is to provide a high-level overview of the current state of interoperability of base registries in Europe (and by extension in the world). This chapter comprises **3 main sections**, each discussing base registries at a different dimension:

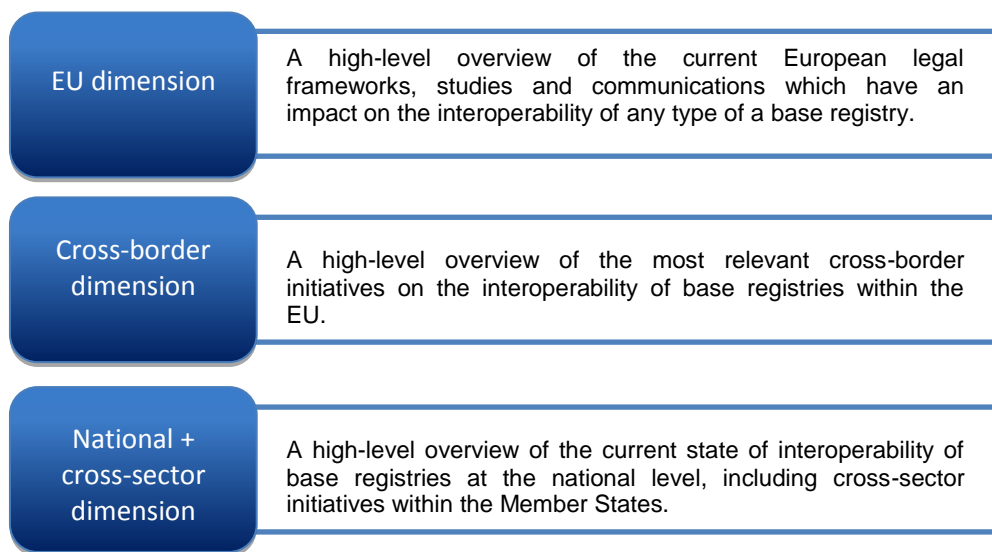


Figure 1. Main sections of initial report.

In particular the high-level overview will focus on the four main types of base registries¹:

- **Business registry**: a business registry is a registry containing data related to companies such as the company name, type of enterprise, accounting period, address, main operating sector, bank account number;
- **Land registry**: a land registry is a registry containing data related to land or property such as boundaries, value of the property, owner's rights,
- **Vehicle registry**: a vehicle registry is a base registry containing data that can be related to a vehicle such as model, colour, owner details, engine capacity, vehicle identification number (VIN);
- **Citizen registry**: a citizen registry is a registry containing data related to natural persons such as first name, family name, birth data, gender, citizenship, address.

¹ ISA ACCESS TO BASE REGISTRIES Phase II: D1.0.2. Typology of base registries, Deloitte Consulting, Brussels, 2011

The objective of this report is to provide a high-level picture of the current landscape and context of interoperability of base registries in Europe. It is not the objective to provide an exhaustive inventory of all EU-legislation or cross-border and national initiatives related to base registries. The findings of this high-level overview will provide the input for the next phase of this study, in which a more detailed analysis of cross-border and national initiatives will be provided.

The high-level overview is structured by the **European Interoperability Framework (EIF)**, in particular by its conceptual model and the four interoperability levels.

Looking at the lowest layer of the **conceptual model** for public services as described in the EIF (see Figure 2 below), base registries are represented as an important component of basic public services. These basic public services are orchestrated into aggregated public services through a secure data exchange/management platform.

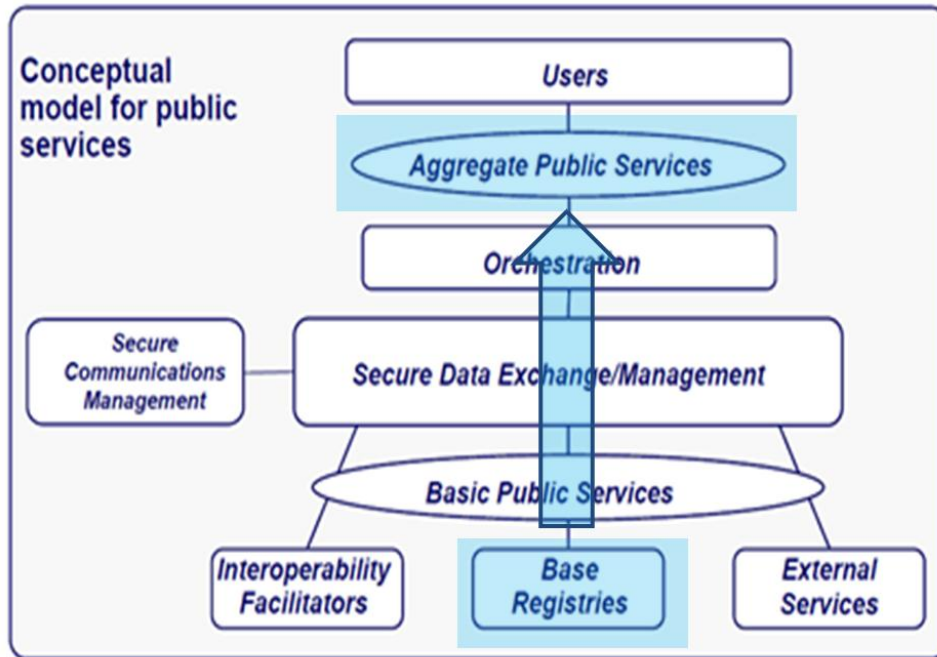


Figure 2. EIF Conceptual model.

The main purpose of base registries is to support the delivery of public services. Public services are based on information from various trusted sources (base registries) located within different public authorities at different levels of administration and different sectors in a cross-border setting. As a consequence, the well-functioning of public services strongly depends on the availability and interoperability of the underlying base registries. The main focus of this high-level overview is on base registries, though it is almost impossible to discuss the interoperability of base registries without discussing the public services they support.

3. EU DIMENSION

This section provides a high-level overview of the current European legal frameworks, studies and communications, which have an impact on the interoperability of base registries. This section focuses on the legal dimension as it provides the context in which base registries have to operate and sets the boundaries and specification for the interoperability of base registries. Most of the legal frameworks discussed below are formalized (i.e. directives, regulations, decisions), and for this reason have a real impact on the interoperability of base registries.

Firstly there is a set of general directives that apply to all types of base registries including the Service Directive, the Directive on the re-use of public sector data, the Directive on the legal protection of databases, the Directive on the protection of personal (section 3.1 till section 3.4) Secondly, additional publications related to one specific type of base registry (business, land, vehicle or citizen) are summarized. These publications can be split into 2 categories: binding legislation, such as directives or decisions and non-binding publications such as green papers, studies and recommendations (section 3.5 till section 3.8.).

Service Directive (2006/123/EC)				
Directive on the re-use of public sector data (2003/98/EC) + Proposed amendments				
Directive on the legal protection of databases (96/9/EC)				
Directive on the protection of personal data (95/46/EC) + Proposed revision				
Business Registries	Land Registries	Vehicle Registries	Citizen Registries	
<ul style="list-style-type: none"> Company Law Directive + Amendment Regulation on the Statute of the European Company Regulation on the Statute of the Cooperative Society Directive on the disclosure requirements with respect to branches in other EU Member states Directive on cross-border mergers Directive on the interconnection of central, commercial and companies registries. 	<ul style="list-style-type: none"> INSPIRE Directive (2007/2/EC) The EU Certificate of successions 	<ul style="list-style-type: none"> Council Decisions on cross-border cooperation for combatting terrorism and cross-border crime Directive on facilitating cross-border exchange of information on road safety related to traffic offences 	<ul style="list-style-type: none"> Council Framework Decision on the exchange of information extracted from criminal records across Member States. Council Decision on the establishment of ECRIS Regulation on the Coordination of Social Security Systems 	Binding legislation
<ul style="list-style-type: none"> Green Paper on "The interconnection of business registries" 	<ul style="list-style-type: none"> Green Paper: mortgage credit in the European Union (COM (2005) 327) 	<ul style="list-style-type: none"> Proposal for Regulation on simplifying the transfer of motor vehicles registered in another MS within the Single Market 	<ul style="list-style-type: none"> Recommendation on cross-border interoperability of electronic health record systems. Green paper on the effects of Civil Status Records 	Non-Binding

Figure 3. Overview of EU dimension.

3.1 SERVICE DIRECTIVE

Impact on base registries:

Establishment of “Points of Single Contact” that should provide access to public registries on providers and services.

The Internal Market Information System database with a searchable directory of national base registries.

a. Scope

Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market² (hereinafter “Directive 2006/123/EC”), also referred to as the Service Directive, introduces provisions aiming explicitly at **simplifying the life of and increasing transparency for European businesses and citizens.**

b. Main elements and impact on base registries

Directive 2006/123/EC requires Member States to remove burdens and facilitate cross-border provision of services. To this end, the Directive sets an obligation to designate “Points of Single Contact” that fulfil two functions: information dissemination and procedure management/processing. “Points of Single Contact” are “one-stop-shops” through which service providers can obtain all relevant information and deal with all administrative procedures. The “Points of Single Contact” should:

- give information about the requirements, procedures and formalities required for the exercise or access to a service activity;
- list contact details of competent authorities as well as means of redress in case of dispute;
- **concerning base registries, they should provide access to public registers on providers and services;**
- provide necessary forms online to be able to perform procedures electronically;
- receive the applications filed and redirect them to a competent authority;
- receive the decision and replies/requests by a competent authority and communicate them to the applicant.

It also sets the obligation for the “Points of Single Contact” to be accessible at a distance, not only in the country of the administration, but also in other countries

² Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 *on services in the internal market*.
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:376:0036:0068:en:PDF>

and by electronic means. Part of Directive 2006/123/EC contains more specific provisions related to the electronic exchange of information between public administrations across Member States. For this purpose the Commission, in cooperation with the Member States, has established the Internal Market Information System (IMI) for the electronic exchange of information. According to the IMI glossary of terms³ *“the IMI database of registers is a searchable, multilingual directory of national registers with information about the content of the register, its geographic coverage, access conditions (e.g. fees to be paid) and direct links to on-line registers (where available). It also contains the contact details of the authorities responsible for the register. All IMI users have access to the registers database and can search the information about registers in their own language”*.

c. Background

Directive 2006/123/EC is seen as one of the main components of the of the Lisbon Agenda which was an action plan for the European Economy between 2000 and 2010 and its aim was to make the EU *“the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion”*. The first draft of Directive 2006/123/EC was published in 2004. The Directive 2006/123/EC was criticised by politicians and citizens, who stated that it would lead to competition between workers in different parts of Europe resulting in a downward spiral in income levels. As a result the first proposal provoked a debate and protests in various EU countries such as France, Belgium, Sweden, Denmark, Germany, Italy and the Netherlands. However, the Directive did not disappear from the pipeline and after a far reaching revision by the EU leaders the European Parliament voted in favour of the Directive on 16 February 2006.

Directive 2006/123/EC needed to be fully transposed by Member States into their national systems by 28 December 2009. However, many Member States failed to bring the directive into their national law before this deadline as its impact on national laws was high on all levels of administrations. Also the establishment of the national point of single contact proved to be an ambitious undertaking, in the electronic interoperability required for the online completion of procedures and formalities. It took until May 2012 for all Member States to transpose the directive.

A public consultation in 2010 related to Directive 2006/123/EC revealed some additional gaps in the text: such as the lack of standards for services in order to ensure the quality of services as well as the need for a horizontal mechanism at EU-

³ The Internal Market Information System (IMI). Glossary of IMI terms. European Commission.

level to monitor the quality of service provision through Europe. Others argued that, to reach its full potential, more extensive administrative cooperation (e.g., harmonisation of labour law and social protection) is needed on top of the provisions currently defined in the directive.

3.2 DIRECTIVE ON THE RE-USE OF PUBLIC SECTOR DATA

<p style="text-align: center;">Impact on base registries:</p>
--

<p style="text-align: center;">Enhancement and the re-use of the public information resources</p>

a. Scope

On 17th November 2003 the Council and the European Parliament have adopted **Directive 2003/98/EC on the re-use of public sector information**⁴, also referred to as the PSI Directive, which provides guidelines to the Member States on how to enhance the re-use of the public information resources. It addresses information held by public sector bodies in the Member States, at national, regional and local levels, but also by organizations for the most part financed by or under the control of the public authorities, such as national meteorological institutes. These pieces of information include any content whatever its medium (written on paper or stored in electronic form or as a sound, visual or audio-visual recording).

b. Main elements and impact on base registries

Directive 2003/98/EC defines a minimum set of rules on the re-use of public sector data throughout the European Union. The rules are related to various aspects such as:

- The **availability of documents** for re-use in all formats and languages in which the information exists; where possible, the material shall be made available **by electronic means**;
- The **procedures to deal with requests** for re-use (e.g. by electronic means if possible, within appropriate time limits, in case of a negative decision the public authority shall clearly communicate the ground for the refusal);
- **An upper-limit for charging** (based on the cost incurred to produce the information and a reasonable ROI);
- **Transparency** of the terms applicable to re-use, charges and other conditions;

⁴ Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 *on the re-use of public sector information*: http://ec.europa.eu/information_society/policy/psi/docs/pdfs/directive/psi_directive_en.pdf

- The obligation to **avoid discrimination in the conditions for re-use**, as well as a prohibition of exclusive arrangements, with an exception for exclusive rights necessary for the provision of a service in the public interest;
- Availability of **standard, on-line licenses** or in any case licenses should not unnecessarily restrict possibilities for a re-use to restrict competition;
- Availability of **practical tools** that make it easier to find the material available for re-use (i.e. lists of information assets or portal sites).

Member States had to transpose the directive into national law by 1 July 2005. By 8 May 2008, all 27 Member States have notified complete transposition of the directive.

Concerning the **base registries** themselves, the PSI Directive also applies to public data held by base registries such as business registries, vehicle registries, land and property registries as well as procurement information registries. As a general principle, public authorities shall ensure that, where the re-use of documents is allowed, these documents shall be re-usable for commercial or non-commercial purposes.

c. Review and amendment

The Commission has conducted and ordered several studies to review the way in which the public sector information rules are applied, to assess their impact and to define the way forward.

In 2006 the Commission ordered a benchmark on the exploitation of public sector information in the EU (**the MEPSIR study**)⁵. This study measured 5 main conditions related to the re-use of public sector information (availability, accessibility, transparency, accountability and non-discrimination) as well as the economic effects of such re-use, both at the level of the Member States as well as for the main categories of public sector information.

In the context of the review of Directive 2003/98/EC, the Commission undertook a **public consultation on the PSI Directive** in 2010. The main conclusion of the public consultation was that, although significant progress has been made in many Member States, much remains to be done to reach the full potential of the PSI re-use. In particular, the unclear pricing and complex and lengthy licensing procedures formed a major obstacle in the re-use of public sector data. In addition, the promotion of the re-use friendly data formats that are machine readable and based

⁵ Study on Exploitation of public sector information – benchmarking of EU framework conditions, MEPSIR, 2006:
http://ec.europa.eu/information_society/policy/psi/docs/pdfs/mepsir/executive_summary.pdf

on opens standards was strongly supported. Also the lack of information on available data remained one of the main barriers to the re-use of public sector data. This called for a need for national and European portals as a tool for finding, using and trading information. Further down the line, re-users still encounter restrictive or unclear conditions for access and re-use. In general, the differences in implementation of Directive 2003/98/EC across Member States remain to prevent re-use in a pan-European context. A specific problem arises with respect to the issue of public tasks. The scope of application of the directive is currently defined by reference to activities falling within the scope of the public task of the public sector bodies concerned as defined by national law. This has led some public sector bodies to misuse the concept of public task in order to escape the scope of the directive. The original directive also excludes 3 sectors of activity: public broadcasting, educational and research establishments and cultural institutions. The exclusion of these 3 sectors from the directive is now put to the question. Finally, the lack of effective enforcement mechanisms on the re-use provision is identified as an issue.

Additionally the Commission also commissioned the following studies:

- **Vickery Study** (2011)⁶ to estimate the market value of PSI re-use in Europe. The Study estimated that overall direct and indirect gains of the re-use of public sector data are 140 billion euros annually, which is a significant increase compared to the 27 billion euros estimated by the MEPSIR study in 2006.
- **POGIS (Pricing of Public Sector Information Study, 2011)**⁷, which assessed the different models of supply and charging for public sector information and their impact on providers and users. The study indicated there is a clear trend towards lowering charges in order to facilitate re-use. However, in those cases where public administrations charged the re-use of their data, the calculation basis for charges appeared to be weak. The study showed that decreasing the charges for re-use of PSI can increase the number of users up to 10% and may attract new types of users such as Small and Medium Enterprises (SMEs), while the impact on the providers (public administration) is limited.
- A study on the **re-use of PSI in the cultural sector**⁸ (2011). The conclusion was that very few institutions are dependent on the income they receive from the re-use to enable them to undertake their public task.

⁶ *Review of recent studies on PSI re-use and related market developments*, Graham Vickery, Paris, 2011:

⁷ *Pricing of Public Sector Information Study*, Deloitte 2011:

http://ec.europa.eu/information_society/policy/psi/docs/pdfs/opensource2012/reports/Deloitte/summary.pdf

⁸ *PSI re-use in the cultural sector*, Curtis & cartwright, 2011:

http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/cc462d011_1_1final_report.pdf

However, the income that they receive from re-use is in many cases essential to enable the future re-use and development of services.

Following an extensive review of the impact of the original Directive 2003/98/EC through the above mentioned studies and the related impact assessment⁹, the European Commission in 2011 submitted a proposal for an amendment to the directive¹⁰. The main changes introduced to Directive 2003/98/EC are:

- The original directive of 2003 does not contain an obligation to re-use public sector data. The decision whether or not to authorise a re-use remained with the Member States or the public sector body concerned. At the same time, Directive 2003/98/EC builds on the national rules on access to documents. Some Member States have explicitly linked the right of re-use to the right of access, so that all generally accessible documents are re-usable. In other Member States, the link between the two sets of rules is less clear and it is a source of legal uncertainty. For this reason, the Commission wishes to **make the re-use a legal obligation** rather than a recommendation or suggestion of best practices;
- In the original text of the Directive 2003/98/EC, the form and format in which public administrations have to make their data available is very open. The original text also does not make any mention of metadata. However, the proposal now states that public sector information must be **available in machine-readable format together with metadata**. This could be interpreted as data that must be available in a form for use in software/services (e.g., web services);
- The proposal also brings **stricter rules on charging** for the re-use of public sector data. Public sector bodies must apply a transparent and verifiable formula or criteria to support the charges and the burden of proving that the charges apply with the directive;
- The new proposal also states that Member States need to provide practical arrangements facilitating the **cross-lingual search** for documents;
- Taken from the INSPIRE Directive's officially bringing monitoring and reporting requirements, the new proposal implies that Member States need to submit a **yearly report** to the Commission on the extent of the re-use of public sector data and the conditions under which it is performed.

Though the proposal already comprises more obligations, there are still a lot of elements left open to the discretion of the Member States. The concept of 'machine-readable' format is not further specified and the proposal does not

⁹ Impact assessment accompanying the proposal for an amendment of the Directive on the re-use of public sector data:

http://ec.europa.eu/information_society/policy/psi/docs/pdfs/opendata2012/impact_assessment/impact_assessment_report.pdf

¹⁰ Proposal for an amendment of Directive 2003/98/EC on the re-use of public sector data:

http://ec.europa.eu/information_society/policy/psi/docs/pdfs/opendata2012/revision_of_PSI_Directive/proposal_directive_EN.pdf

mention any specific metadata standards. The requirement for a cross-lingual searching capability provides no further direction concerning the choice of languages that need to be supported. The proposal will now be discussed by the European Parliament and the Council. The revised directive is likely to come into effect in 2013. Member States will then have 18 months to transpose it into their national legislation.

d. Background

Besides the legislative measures the Commission also implemented several other actions to facilitate the re-use of public sector data and support the implementation of Directive 2003/98/EC:

- **PSI** (Public Sector Information) **group**, a group composed of Member States' experts created to the exchange good practices and initiatives supporting public sector information re-use;
- **PSI** (Public Sector Information) **platform**, a 'one-stop-shop' web portal provides news on European PSI developments, good practices, examples of new products and services, and legal cases concerning PSI re-use;
- **LAPSI** (Legal Aspects of Public Sector Information) **network**, a thematic workgroup which aims to analyse the legal issues related to access to and re-use of public sector information, foster debate among researchers and players in the field, among other things through dissemination exercises and awareness-raising events and contests, and produce a set of policy guidelines that will help the PSI re-use.

3.3 DIRECTIVE ON THE LEGAL PROTECTION OF DATABASES

Impact on base registries:

Protection of schema or structure and content of databases.

a. Scope

Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases¹¹ (hereinafter "Directive 96/9/EC") provides a **legal framework for the protection of databases**.

b. Main elements and impact on base registries

The Directive 96/9/EC both protects the **schema or structure of the database** (*copyright* protection for the intellectual creation involved in the selection and

¹¹ Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1996:077:0020:0028:EN:PDF>

arrangement of materials) and the **content of the database** (*sui generis* rights: the creator of a database, where a natural or legal person, can prohibit the unauthorized retrieval and/or re-use of its contents). Directive 96/9/EC applies to databases, irrespective of their form (e.g. electronic or print media). A database is defined as "a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means".

Directive 96/9/EC has significant relevance for the accessibility of base registries as base registries are a type of data base that can fall under the provisions of this directive. The directive will especially be of importance for the cross-sector data exchange involving the private sector.

c. Background

The directive was issued as a reaction to the fact that databases were not sufficiently protected in all Member States by existing legislation and that where legislation existed there were significant discrepancies between the Member States. Such differences in the legal protection of databases offered by the legislation of Member States has direct negative effects on the functioning of the internal market and on the provision of online database services by natural and legal persons in particular.

In 2005 Directive 96/9/EC on the legal protection of database was evaluated¹². During this evaluation the Directive 96/9/EC, in particular the '*sui generis*' part, was criticized for that it put a lock on data, especially data that is in the public domain. There is a long standing principle that copyright should not be extended to cover basic information and raw data. However, the *sui generis* protection principle seems to go against this principle. Opponents of the Directive 96/9/EC also argue that its scope is unclear, bringing more legal uncertainty than before. Nevertheless, others were convinced of the value and the need for the directive and stated that it had led to a significant reduction in the cost for protection and security of databases. Following this evaluation the Commission launched a public consultation to discuss the next steps. Four scenarios were introduced including 1) withdrawal of the entire Directive 96/9/EC; 2) withdrawal of the part on *sui generis*; 3) amendment to the part on *sui generis* (refine scope) or 4) retention of the *status quo*. Most participants of the consultation were in favor of the forth option (retain *status quo*) closely followed by option 3 (review the scope of the *sui generis* rights). European legislators opted to maintain the *status quo* and to leave the *sui generis* right unaltered.

¹² http://ec.europa.eu/internal_market/copyright/prot-databases/index_en.htm

3.4 DIRECTIVE ON THE PROTECTION OF PERSONAL DATA

Impact on base registries:

Rules for personal data collection and use by public administrations: public registers containing data about the controller.

a. Scope

Within the context of the free movement of persons, goods, services, capital and related personal data, **Directive 95/46/EC** of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data¹³ (hereinafter “Directive 95/46/EC”) provides a regulatory framework at European level which seeks to ensure a high-level of **protection of the privacy of individuals**. To do so, Directive 95/46/EC sets strict limits on the collection and use of personal data by public administrations within the Member States, and demands that each Member State **sets up an independent national supervisory body** responsible for monitoring the application of the directive within its territory. All data exchange between base registries across Member States should comply with the directive.

b. Main elements and impact on base registries

In summary, the guidelines included in the legislation are related to:

- **Quality:** personal data must be processed fairly and lawfully, and collected for specified, explicit and legitimate purposes. They must also be accurate and, where necessary, kept up to date;
- **Data minimisation:** the directive states that all users should have the right to request their personal data to be deleted. The principle of data minimisation is presented by the directive as a right. The “right to be forgotten” is based on three elements. The first one states that a minimum amount of data should be collected and processed. The second implies that privacy controls for all users are automatically set to the most private and in the absence of good reasons to maintain data it can be deleted completely. The third element refers to the fact that deleting data would interfere with free expression or public safety. In case data is made public, the service that received a deletion request must ensure that third parties are aware of deletion request and that they stop processing that information.;

¹³ Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1995:281:0031:0050:EN:PDF>

- **Legitimacy of data processing:** personal data may be processed only if the data subject has unambiguously given his/her consent or processing is necessary:
 - for the performance of a contract to which the data is subject to or;
 - for compliance with a legal obligation to which the controller is subject or;
 - in order to protect the vital interests of the data subject or;
 - for the performance of a task carried out in the public interest or;
 - for the purposes of the legitimate interests pursued by the controller.
- It is forbidden to process personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade-union membership, and the processing of data concerning health;
- **Information and access rights:** every data subject should have the right to obtain from the controller information related to whether or not data relating to him/her is being processed, the purposes of the processing, recipients of the data, the identity of the controller, etc.;
- **The right to object:** the data subject should have the right to object, on legitimate grounds, to the processing of data relating to him/her. He/she should finally be informed before personal data are disclosed to third parties for the purposes of direct marketing, and be expressly offered the right to object to such disclosures;
- **Exemptions and restrictions:** the scope of the principles relating to the quality of the data, information to be given to the data subject, right of access and the publicising of processing may be restricted in order to safeguard aspects such as national security, defence, public security, the prosecution of criminal offences, an important economic or financial interest of a Member State or of the European Union or the protection of the data subject;
- **The confidentiality and security of processing:** the controller must implement appropriate measures to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorized disclosure or access;
- The directive sets an obligation to set up a supervisory authority to monitor the data protection at Member States level, to advise about administrative measure and to start legal proceeding in case of non-compliance with the regulation. The controller must notify the supervisory authority before carrying out any processing operation. The notification should contain the following information held in **public registers**:
 - name and address of the controller and of his representative;
 - the purpose of the processing;

- a description of the category of data subject and of the data or categories of data relating to them;
- the recipients or categories of recipients to whom the data might be disclosed
- proposed transfers of data to third countries;
- a general description of the measures taken to ensure security of processing.

c. Background

However, **new developments in technology and globalisation have brought new challenges for the protection of personal data**. Today, technology allows individuals to share data about their personal life on an unprecedented scale (e.g. social networking, cloud computing). Also the ways of collecting personal data have become increasingly elaborated. Public administrations are more and more exchanging and making use of personal data for various purposes.

For this reason the Commission in 2009 started a **review of Directive 95/46/EC** on the protection of personal data including a conference, a public consultation and a number of studies. The review found that the core principles of Directive 95/46/EC are still valid. However, some specific issues were identified:

- The application of data protection principles to new technologies;
- Increased outsourcing of processing, even outside the EU, in the context of globalisation;
- Despite the directive there is still a lack of sufficient harmonisation between Member States' legislation on data protection;
- The role of Data Protection Authorities needs to be strengthened so as to ensure better enforcement;
- The need for an overarching legal framework applying to data processing operations in all sectors of the European Union to ensure a seamless, consistent and effective approach to data protection.

As an answer to these challenges **the Commission in January 2012 proposed a comprehensive reform of Directive 95/46/EC¹⁴**. Key changes in the reform include:

- A **single set of rules** on data protection, valid across the EU, and clear rules on when EU law applies to data controllers **outside the EU**;

¹⁴ Proposal for a Revision of the Directive on the protection of personal data, 2012: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0010:FIN:EN:PDF>

- **Simplification of the administrative requirements** (e.g. notification requirements);
- Increased **responsibility and accountability** for those processing personal data;
- Mandatory **notification on personal data breaches** to the national supervisory authority (if feasible within 24 hours);
- **Improved modalities for actual exercise of the rights of access** (e.g. deadlines for responding to request, electronic access, free of charge);
- **Right to data portability**: people will be able to transfer personal data from one service provider to another more easily;
- A **'right to be forgotten'** will help people better manage data protection risks online: people will be able to delete their data if there are no legitimate grounds for retaining it;
- Individuals will have the right to refer all cases to their home national data protection authority, even when their personal data is processed outside their home country;
- **Independent national data protection authorities will be strengthened** so they can **better enforce** the EU rules at home. They will be empowered to fine companies that violate EU data protection rules. This can lead to penalties of up to €1 million or up to 2% of the global annual turnover of a company;
- Extension of application of the Directive 95/46/EC to the data protection principles and rules for **police and judicial cooperation** in criminal matters. The rules will apply to both domestic and cross-border transfers of data.

The Commission's proposals will now be passed on to the European Parliament and Member States (meeting in the Council of Ministers) for discussion. They will take effect two years after they have been adopted.

3.5 DIRECTIVES AND COMMUNICATIONS RELATED TO BUSINESS REGISTRIES

This section covers the Company Law Directive, related to the lifecycle of European companies (section 3.5.1) and cross-mergers, branches in other Member States and the European Company Statute, and Cooperative Society requiring European business registries to interconnect in Europe (section 3.5.2). It then continues with Directive on the Interconnection of Central, Commercial and Companies Registers (section 3.5.3) and the description of the Green Paper on "The interconnection of business registries" (section 3.5.4).

3.5.1 Company Law Directive

<p>Impact on base registries:</p>
--

<p>Defines an obligation for Member States to maintain a company registry.</p>
--

a. Scope

The First Council Directive 68/151/EEC of 9 March 1968, also referred to as the **European Company Law** is a set of directives¹⁵, which **defines a set of minimum requirements related to the formation, operation and termination of companies in Europe.**

On 15 July 2003, the European Parliament and the Council adopted an **amendment** (Directive 2003/58/EC) the first Company Law Directive 68/151/EEC **to include the use of modern technologies for the filling and disclosure of company documents.** The aim of the amending directive is to simplify the disclosure formalities imposed on companies and to facilitate access to company information by interested parties, in particular through the use of **electronic means.** It also proposed that cross-border access to company information could be improved by allowing voluntary registration of company documents and particulars in **additional languages.**

b. Main elements and impact on base registries

A specific part of the EU Company Law Directive 68/151/EEC is concerned with business registries. The directive imposes **Member States to maintain a(n) (electronic) central registry, commercial registry or companies registry** in which for each company a defined minimum set of documents and particulars needs to be kept. A copy of the whole or any part of the documents or particulars must be obtainable by application in writing at a price not exceeding the administrative cost thereof.

3.5.2 Cross-mergers, branches in other Member States and the European Company Statute

<p>Impact on base registries:</p>
--

<p>Interconnection of business registries in Europe.</p>
--

¹⁵ First Council Directive 68/151/EEC of 9 March 1968:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=DD:I:1968_I:31968L0151:EN:PDF

Other relevant EU legislations that implicitly requires the interconnection of business registries across Europe in order to comply are:

- Eleventh Council Directive 89/666/EC of 21 December 1989 **concerning disclosure requirements in respect to branches opened in a Member State by certain types of company governed by the law of another**,¹⁶
- Directive 2005/56/EC of the European Parliament and of the Council of 26 October 2005 **on cross-border mergers** of limited liability;¹⁷
- Council Regulation No 2157/2001 of 8 October 2001 **on the Statute for a European company (SE)**¹⁸ and Council Regulation No 1435/2003 of 22 July 2003 **on the Statute for a European Cooperative Society (SCE)**,¹⁹ which sets a legal statute for a European company and a European cooperative society in order to enable companies present in different Member States to be established as one entity.

3.5.3 Directive on the Interconnection of Central, Commercial and Companies Registers

Impact on base registries:

Obligation of electronic connection of base registries.

a. Scope

The recent **Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 on the interconnection of central, commercial and companies registers**²⁰ on the interconnection of business registries **requires Member States to connect their base registries in an electronic way** in order to facilitate cross-border exchange of business information.

b. Main elements and impact on base registries

The provisions in the Directive include the following elements:

¹⁶ Eleventh Council Directive 89/666/EC of 21 December 1989 *concerning disclosure requirements in respect of branches opened in a Member State by certain types of company governed by the law of another State*:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1989:395:0036:0039:EN:PDF>

¹⁷ Directive 2005/56/EC of the European Parliament and of the Council of 26 October 2005 *on cross-border mergers of limited liability companies*: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:310:0001:0009:EN:PDF>

¹⁸ Council Regulation No 2157/2001 of 8 October 2001 *on the Statute for a European company (SE)*: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:294:0001:0021:EN:PDF>

¹⁹ Council Regulation No 1435/2003 of 22 July 2003 *on the Statute for a European Cooperative Society (SCE)*: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:049:0035:0035:EN:PDF>

²⁰ Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 *on the interconnection of central, commercial and companies registers*: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:156:0001:0009:en:PDF>

- The interoperability of base registries should be made possible by registries of Member States providing services which should be interfaces to the European central platform. The platform should form a centralized set of ICT tools that integrate services and form a common interface used by domestic registries. The platform should provide services forming interface to the portal that serves as the European electronic access point. The funding of the platform should be equitable and should involve the European Union and the Member States. The Member States should be financially responsible for adjusting their registers to the system, while the Commission should be responsible for the central elements of the platform and the portal serving as the European electronic access point;
- National laws remain applicable to business registries. Member States should attach clear information on the provisions in national law related to the use and value of the transmitted data;
- The directive aims to ensure that the data in the Member States' business registry is always up-to-date;
- The directive aims to ensure that companies and their branches have a **unique European identifier**;
- Sending an **electronic notification** about the registration of new data or changes to existing data in the registry and during cross-border merger procedures, should be done using standard notification forms. Member States retain the freedom to decide on the procedures on how to react upon notifications about new data or changes to existing data;
- The European Commission shall adopt related acts concerning: governance models, management, operation and funding of the European electronic platform, the minimum security standards for the platform, the method for transmitting data between base registries, languages used on the electronic platform, standard forms and formats of notifications, etc.;
- The EU e-Justice portal will be one of the electronic access points.

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with Directive 2012/17/EU by 1 January 2014 at the latest.

3.5.4 Green Paper on “The interconnection of business registries”

Impact on base registries:

Cooperation frameworks/initiatives between business registries.

In 2009 the European Commission published a green paper²¹ **describing the existing cooperation framework/initiatives between business registries, such as EBR, BRITE and IMI** (explained in section 4) and discussing some possible scenarios on the way forward:

- **For access to business registries the green paper made the following recommendations:**
 - All Member States should give access to a basic set of information via the Internet (e.g. using web services), independently from any portal or network;
 - The network of business registries only has real added value if it comprises the registries of all 27 Member States. A possible way to ensure extensive involvement in a network would be to lay down a requirement to connect all business registries to the EBR-network in EU legislation. Details of the cooperation should be determined through an agreement on the governance of the EBR-network (e.g., management, funding, conditions for joining, dispute resolution, minimum security requirements);
 - The EBR should be integrated into the European e-Justice portal.

- **For registry-to-registry integration serving to support cross-border processes and services the following two scenarios were proposed:**
 - BRITE’s results should be used: the advantage is that it ensures registry-to-registry interoperability. However, it is a research project (pilot) owned by the BRITE consortium only covering a limited set of Member States;
 - IMI’s results should be used: it is already operational in many Member States. However, it was not developed specifically for the integration of base registries, but the functionality is very generic and could be easily adapted to the context of business registries.

²¹ Green Paper “The interconnection of business registries”:
http://ec.europa.eu/internal_market/consultations/docs/2009/interconnection_of_business_registers/green_paper_en.pdf

The results of the public consultation following the publication of the green paper not only provided options on the way forward but also suggested the need for an improved legal basis related to the interoperability of base registries. This resulted into a **proposal for a directive** on the interconnection of central, commercial and companies' registries.

3.6 BINDING AND NON-BINDING DOCUMENTS RELATED TO LAND REGISTRIES

3.6.1 INSPIRE Directive

Impact on base registries:

Establishment of infrastructure for spatial information in Europe

a. Scope

The aim of the **Directive 2007/2/EC** of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)²² (hereinafter "Directive 2007/2/EC"), also referred to as the INSPIRE Directive, is to **establish an infrastructure for spatial information in the European Community**. To ensure that the spatial information infrastructures of the Member States are compatible, the Directive 2007/2/EC has established common **Implementing Rules (IR) in a number of specific areas: metadata, data specifications, network services (Discovery services, View services, Download services and Transformation services), data and service sharing and monitoring and reporting**. This will facilitate the sharing of environmental spatial information among public sector organisations and access to spatial information across Europe. The Directive 2007/2/EC and corresponding IRs will be implemented in various stages, with full implementation scheduled in 2019.

b. Main elements

The Directive 2007/2/EC defines spatial data as any data with a direct or indirect reference to a specific location or geographical area. As such, the Directive 2007/2/EC also applies to land registries, which in the future will have to comply with the specification set in the Directive. Below, all main components within the Directive 2007/2/EC are presented. These are metadata and data specifications descriptions, network services, data and service sharing and monitoring and reporting organising the functioning of the spatial data.

²² <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/47>

Metadata

For the proper functioning of the common spatial information infrastructure it is necessary to provide descriptions in the form of metadata to spatial datasets and spatial services in order for users to identify these resources and validate if they are fit for purpose. The IR on metadata prescribes the minimum set of metadata elements that should be added to spatial data sets and services. The minimum set includes: identification (title, abstract, unique identifier, language), classification, geographic location, temporal reference, quality and validity, conformity, constraints related to access, responsible organisation(s), metadata on metadata (e.g. date, language). For each of these sets of metadata more detailed rules are described to ensure the compatibility in the way the metadata sets are described.

Data specifications

The data model is accessible on the INSPIRE site and contains:

- A **catalogue** which is meant to be an easy entry point to the INSPIRE data models and data specifications for implementers and decision makers. It gives an informative overview of the spatial object types and data types defined in the INSPIRE data specifications. These types are used by data providers for the exchange and classification of spatial objects from data sets that relate to one or several INSPIRE spatial data themes;
- An **interactive HTML view of the complete UML data models**. This view includes detailed definitions of spatial object types, data types, enumerations and code lists and UML class diagrams;
- Definition of data definitions and semantics related to spatial data sets.

Network services

Network services are necessary for sharing spatial data between the various levels of public authority in the Community. Those network services should make it possible to discover, transform, view and download spatial data and to invoke spatial data and e-commerce services. The services of the network should work in accordance with commonly agreed specifications and minimum performance criteria in order to ensure the interoperability of the infrastructures established by the Member States. The network of services should also include the technical possibility to enable public authorities to make their spatial data sets and services available.

The Implementing Rules²³ (hereinafter “IR”) on Network Services describe criteria related to the:

- **Quality of services**, including performance criteria, availability criteria and capacity criteria. Examples of described quality indicators are:
 - Probability of a Network Service to be available shall be 99 % of the time;
 - Response time for sending the initial response to a Discovery service request shall be maximum 3 seconds in normal situation.
 - Minimum number of served simultaneous requests to a Discovery service according to the performance quality of service shall be 30 per second.
- Criteria related to the specific services including:
 - **Discovery services** making it possible to search for spatial data sets and services on the basis of the content of the corresponding metadata and to display the content of the metadata. The goal of discovery services is to support discovery of data, evaluation and use of spatial data and services through their metadata properties. Metadata is the information and documentation, which makes these resources understandable and sharable for users over time. Indexed and searchable metadata provide a controlled vocabulary against which discovery can be performed;
 - **View services** making it possible, as a minimum, to display, navigate, zoom in/out, pan or overlay viewable spatial data sets and to display legend information and any relevant content of metadata;
 - **Download services**, enabling copies of spatial data sets, or parts of such sets, to be downloaded and, where practicable, accessed directly;
 - **Transformation services**, enabling spatial data sets to be transformed with a view to achieving interoperability. Transformation service is a special case among the recognized INSPIRE service types, as its function is to help other services in achieving compliance with the relevant INSPIRE specifications. It cannot thus be required at the Member State level, if all the existing services already comply with the INSPIRE rules.

Aside the IR, at the disposition of the implementing authorities there is also a:

²³ The Implementing Rules prescribe a minimum set of condition to ensure a coherent approach to the provision of access to spatial data sets and spatial services.

- A **set of technical guidance documents**: for each type of service (discover, transform, view and download), there is technical guidance foreseen. The purpose of these guidance documents is to enable interoperability by alleviating ambiguities that could arise from different interpretations of required operations and parameters. For example, the guidance document for transformation services provides a concrete interface specification and supporting documentation for INSPIRE Transformation Network Services (TNS). **Technical framework**: a variety of technical documents that describe the proposed INSPIRE SOAP framework and architecture part of the Network Services (discover, transform, view and download). Examples are:
 - the Technical Report on INSPIRE NETWORK SERVICES SOAP Framework which provide a definition and rationale for a proposed INSPIRE SOAP framework (SOAP nodes policy, RPC, attachments, WS-I, WSDL...) taking into account the issues and solutions pertaining to the specific geospatial domain.
 - The Network Services Architecture document which describes the architecture part of the Network Services. The INSPIRE Directive asks Member States in article 11(1) (b) to establish and operate 4 types of network services: discover, view, transform and download.

Data and service sharing

Access to spatial data and services constitutes an important basis for environmental policies for all public authorities and is therefore a central aspect of the infrastructure for spatial information in the European Community. On one hand, since the Community institutions and bodies in most cases have to integrate and assess spatial information from all the Member States, the INSPIRE Directive recognizes the need to gain access to and use spatial data and spatial data services in accordance with an agreed set of harmonised conditions. Principles for sharing of spatial data sets and services between public authorities within and Member States, on the other hand, are contained directly in the directive; the definition of the concrete measures to be implemented to this end is left to the responsibility of each Member State and is not within the scope of these implementing rules.

Monitoring and reporting

According to Directive 2007/2/EC, Member States need to report annually on a number of indicators for monitoring the implementation and use of their infrastructures for spatial information.

3.6.2 EU Certificate of Succession

Impact on base registries:

Integrated data of the EU Certification of Succession

a. Scope

An international will or succession can be very complex given that each Member State supports its own succession law which differs greatly from one Member State to another. The new uniform rules of Regulation ²⁴(EU) No 650/2012 are introduced due to the high value of cross-border successions and it simplifies the legal side for the European citizens. These regulations enforce the following:

- Each succession is handled coherently, under a single law and by one single authority;
- Each citizen is able to choose between the regulation of the Member State of origin or their habitual residence;
- Avoidance of any parallel proceedings and conflicting judicial decisions;
- Ensure mutual recognition of decisions within the EU;
- Modifications to the substantive national rules are not allowed.

The next elements are not covered by the EU certificate of successions but are managed on national level:

- Determination of the person(s) who will inherit or share the assets;
- The property law and family law;
- The tax arrangements.

The new Regulation results into faster, easier and cheaper procedures because it generates a European Certificate of Succession which enables a person to prove his status and rights to execute a will.

b. Main elements

In order to simplify the procedures of cross-border successions for the citizens, it will have an impact on land registries:

- The authority is not informed about another Member State's registration system, therefore Art.40(3) of the proposal for a Regulation mentioned that Member States need to grant access to the land registers and provide the needed information to the competent courts in other Member States;
- The land registry of a Member State needs to include standard information (e.g. property rights and charges, description of the nature and effects of the property rights and charges and brief assessment of the information) for registering successions and wills

²⁴ Successions and wills, 2012: http://ec.europa.eu/justice/civil/family-matters/successions/index_en.htm

to ensure the communication and cooperation between Member States;

- The requirements to record the transmission of a right in immovable or movable property are supported by the land registers of the Member State in which the property is kept and is not in scope for the Regulation.

3.6.3 Green Paper : mortgage credit in the European Union (COM (2005) 327)

Impact on base registries:

Minimum rules for information exchange per type of loan and creation of Euromortgage.
Requirement for Member States to make land registries available and accessible for cross-border mortgage credit activities.

a. Scope

The Green Paper is an initiative which takes an important role in the assessment process of the cross-border credit. The mortgage credit markets within the Member States vary significantly. The similar concern is in place for the consumer protection within the credits markets. To resolve these topics the European Commission introduced the Green Paper initiative which promotes the cross-border loans and improves the growth within EU.

b. Main elements and impact on base registries

Consumers within the European countries should receive greater protection and more transparency with regards to the information about mortgages. The following elements will have an impact on the base registries concerning the Green Paper initiative:

- Minimum rules for the information exchange per type of loan and the creation of a Euromortgage will be determined and this will reduce the degree of information asymmetry between the lenders and investors. The Land Registers are responsible for determination and record of the legal property ownership rights. Member States, in turn, should maintain these registers and make them available and accessible for all kinds of cross-border mortgage credit activities.

3.7 LEGAL FRAMEWORKS RELATED TO VEHICLE REGISTRIES

This section describes a Council decision and directive related to vehicle registries, namely Council decisions related to cross border cooperation with the aim to combat terrorism and cross border crime (section 3.8.1) and Directive on the exchange of information on road safety related to traffic offences (section 3.8.2).

3.7.1 Council Decisions related to cross-border cooperation with the aim to combat terrorism and cross-border crime

Impact on base registries:

Improvement of information exchange between national vehicle registries and obligation to follow technical specifications for electronic data exchange.

a. Scope

In 2008 the Council adopted **three decisions** (2008/615-617/JHA)²⁵²⁶²⁷ **related to cross-border cooperation with the aim to combat terrorism and cross-border crime** and which replace the previous Prüm Treaty. These decisions include *inter alia* the legal provisions to **improve the exchange of information between national vehicle registries**.

b. Main elements and impact on base registries

In particular the legal provisions related to vehicle registries state:

- Each Member States should **make vehicle registration data available** 24/7 through an **automated** data exchange, enabling automated searches based on vehicles as well as on owners/operators;
- Each Member State should designate a **national contact point** for incoming requests. In case automated data exchange fails agreements on temporary data exchange solutions should be made through the national contact points;
- List of mandatory and optional data to be maintained and exchanged should exist;

²⁵ Council Decision 2008/615/JHA of June 2008: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:210:0001:0011:EN:PDF>

²⁶ Council Decision 2008/616/JHA of June 2008: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:210:0012:0072:EN:PDF>

²⁷ Council Decision 2008/617/JHA of June 2008: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:210:0073:0075:EN:PDF>

- List of search triggers (chassis number, registration/licence plate number, owner/operator) should exist;
- **Technical specifications for electronic data exchange:** electronic exchange shall take **place through TESTA and in particular through EUCARIS**, using encrypted XML-messages. The decision specifies further the “features of technical specifications of the automated search procedure are regulated in the implementing measure that guarantee”: technical measure for data protection and security, encryption and authorisation procedures recognised by the competent authorities and the admissibility of searches in accordance with Article 30(2), (4) and (5).

In this sense these Council Decisions provide a legal framework for EUCARIS (see section 4.3.1).

3.7.2 Directive on the exchange of information on road safety related to traffic offences

Impact on base registries:

Facilitation of information exchange related to traffic offences (vehicle registry).

a. Scope

The Council Decisions related to cross-border cooperation with the aim to combat terrorism and cross-border crime discussed above have implication on the exchange of information between vehicle registries. However, they do not provide a legal base for the cross-border exchange of information related to traffic offences. For this reason certain road traffic offences are often not enforced if those offences are committed with a vehicle which is registered in a Member State other than the Member State where the offence took place. To this end the European Parliament and the Council have adopted the **Directive 2011/82/EU²⁸ on facilitating the exchange of information on road safety related to traffic offences**.

b. Main elements and impact on base registries

At present the exchange of information related to traffic offences between Member States is regulated based on bilateral agreements. However, the EU has published a Directive with the aim to **improve road safety by ensuring a consistent enforcement of sanctions for traffic offences** (e.g. speeding, drink-driving,

²⁸ Directive 2011/82/EU of the European Parliament and the of the Council of 25 October 2011 *on facilitating the cross-border exchange of information on road safety related to traffic offences*:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:288:0001:0015:EN:PDF>

ignoring a red traffic light, not using the safety belt, driving under the influence of drugs, not wearing a safety helmet and using a mobile phone or other communication device while driving). **To this end, a system of cross-border exchange of information should be put in place**, granting the Member State of the offence access to vehicle registration data (VRD) of the Member State of vehicle registration. Directive 2011/82/EU should apply regardless of how those offences are qualified under national law. Nevertheless, greater convergence in traffic rules and control measures between Member States should be encouraged as well as the establishment of common criteria for follow-up procedures. For the purpose of the data exchange **each Member State shall designate a national point of contact**.

Member States should be able to contact the owner, the holder of the vehicle or the otherwise identified person suspected of committing the road safety related traffic offence in order to inform the person concerned of the applicable procedures and the legal consequences under the law of the Member State of the offence. In doing so, Member States should consider sending the information concerning road safety related traffic offences in the language of the registration documents or the language most likely to be understood by the person concerned.

The provisions concerning **technical specifications and the availability of the automated data exchange should as far as possible be similar to those set out in the Council Decisions (2008/615-617/JHA)** on cross-border cooperation to combat terrorism and cross-border crime. Existing software applications should be the basis for such data exchange, **such as the European Vehicle and Driving Licence Information System (EUCARIS)**.

Member States will need to have the Directive 2011/82/EU transposed in their national regulation by 7 November 2013.

3.7.3 Proposal for Regulation on simplifying the transfer of motor vehicles registered in another Member State within the Single Market

Impact on base registries:

Procedures for registering a registered vehicle in another Member State:
electronic cooperation of authorities at base registry level, temporary
registration system for trade of second hand motor vehicles.

a. Scope

The proposal for regulation on registrations of motor vehicles is another decision of the Council related to cross-border cooperation within the Member States. The proposal for the regulation emerged as more and more European citizens wanted to travel, live and work abroad and they faced the problem of 'where to register their car'. There are two main causes for the problems:

- The first situation is when a European citizen wants to move permanently to another Member State. She\he is obliged to register the vehicle in the Member State where she\he moves to although it is already registered in another Member State;
- The other cause is when a citizen wants to transfer a motor vehicle from one Member State to another. These formalities and procedures of re-registration are more heavy and lengthy.

Introducing a more integrated method for re-registering in European-wide administration brings not only less administrative work and shorter procedures for the citizens but it also has benefits for the authorities as it improves tracking of stolen cars between the Member States.

b. Main elements and impact on base registries

The cross-border cooperation between the European countries aims for a more integrated approach. The main operational objectives are:

- Determine the European countries where the transfer will take place;
- Reduce the time of procedures for re-registering a car in another Member state to a minimum;
- Reduce the conditions, formalities and administration on citizens and improve the data exchange between national registration authorities.

The proposal for Regulation does not imply any changes to:

- Vehicle and registration taxes;

- Any procedures for vehicles that are re-registered in the same Member State, e.g. selling cars.

Concerning the **base registries**, and in particular, the vehicle registries themselves, Article 4 sets a rule for registration *“where the holder of the registration certificate moves his normal residence to another Member State, he requests the registration of his vehicle within a period of six months following his arrival”*. In case a national vehicle authority of the destination Member State should seek any missing data it can do so by **searching in the vehicle registry of the original Member State** through a software application described in Article 7 Annex II. Article 6 explains the case of trade of second hand motor vehicle. When the selling transaction takes place between two Member States, the seller deregisters the sold vehicle as he/she would not wish that the buyer drives the registration number of the seller. This is the reason of introduction of a temporary registration system to bridge the temporary gap between old and new registration. This **system allows the registration authorities to maintain the quality of registration data** as it can be exchanged and verified via the software application described in Article 7. In addition, Article 9 *“obliges the Member States to inform the Commission of the names and contact details of the vehicle registration authorities which are responsible for managing the official registers of vehicles on their territory and for the application of this Regulation. The Commission will then publish a list of vehicle registration authorities and any updates to that list on its website”*.

3.8 COMMUNICATIONS AND DECISIONS RELATED TO CITIZEN REGISTRIES

This section describes binding and non-binding legal acts related to persons registries. These are the Green paper on the effects of Civil Status Records (section 3.8.1), Council framework decision on the exchange of information extracted from civil records across the Member States (section 3.8.2), Council Decision on the establishment of the European Criminal Records Information System (section 3.8.3), the Commission Recommendation on cross border interoperability of electronic record systems (section 3.8.4) and the Regulation on the coordination of social security systems (section 3.8.5).

3.8.1 Green Paper on the effects of Civil Status Records

<p style="text-align: center;">Impact on base registries:</p>
--

<p style="text-align: center;">Proposal for recognition of the effects of certain civil status records.</p>

a. Scope

On 14 December 2010 the European Commission published a **green paper calling for “less bureaucracy for citizens”²⁹ aimed at “promoting free movement of public documents and recognition of the effects of civil status records”**. The main issue at hand is the fact that two studies published by the Commission in 2007 and 2008 showed that citizens run into problems concerning civil status records when faced with a requirement to legalise documents within another Member State.

b. Main elements and impact on base registries

Concerning the free movement of public documents, the green paper notes that the legal framework is fragmented “*because it is based on several sources: national laws that differ considerably from one another; and a number of international multilateral and bilateral conventions which have been ratified by a varied and limited number of countries*”, resulting in a lack of clarity. **Four possible solutions are put forward:**

- “The **abolition of administrative formalities** for the authentication of public documents”, so that citizens could present any original document issued by an Member State authority without taking additional steps;
- “**Cooperation** between the competent national authorities”, which concerns the effective exchange of information between public administrations in the Member States to foster awareness of records and keeping information up-to-date. Suitable electronic means would be required for this. The IMI system is listed as a possible electronic solution as well as the ICCS platform and the organisation of a network of civil registries;
- “**Limiting translations** of public documents”. This option would involve introducing standard forms at least for the most common public documents, which could be multilingual forms produced by the ICCS;
- “The **European civil status certificate**”, which suggests the introduction of a European civil status certificate that would exist alongside national civil

²⁹ GREEN PAPER “Less bureaucracy for citizens”: promoting free movement of public documents and recognition of the effects of civil status records: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0747:FIN:EN:PDF>

status records (not replacing national civil status certificates) based on a standardised certificate.

Concerning the mutual recognition of the effects of civil status records the green paper highlights the major issues that particularly derive from semantic differences between Member States due to different history, culture, and legal systems. Also here different options are explored including: a) “*Assisting national authorities in the quest for practical solutions*”, b) “*Automatic recognition*” and c) “*Recognition based on the harmonisation of conflict-of-law rules*”. These options particularly deal with legal issues and harmonisation of rules.

3.8.2 Council framework decision on the exchange of information extracted from civil records across the Member States

Impact on base registries:

Framework for development of a computerised system to enable exchange of information on convictions (criminal records).

a. Scope

The objective of the **Council Framework Decision 2009/315/JHA** of 26 February 2009 on the organisation and content of the exchange of information extracted from the criminal records between Member States³⁰ is **to facilitate the exchange of criminal status records across Member States**. The Decision 2009/315/JHA defines the obligations of the convicting Member State and the Member State of origin of the convicted person, and establishes a framework for the development of a computerised system to enable the exchange of information on convictions.

b. Main elements and impact on base registries

In summary, the obligations defined in the framework include:

- **Member States should designate a central authority**, responsible for the exchange of information on convictions;
- The **central authority of the convicting Member State is obliged to notify** the central authorities of the Member State(s) of which the convicted person is a national about any convictions of that person, including any subsequent alterations or deletions of this information;

³⁰ Council Framework Decision 2009/315/JHA of 26 February 2009 on the organisation and content of the exchange of information extracted from the criminal record between Member States:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:093:0023:0032:EN:PDF>

- The **Member State of which the convicted person is a national** has an obligation to **store information** transmitted to it, as well as to **reply to requests** for information on convictions within the given period of time.

3.8.3 Council Decision on the establishment of the European Criminal Records Information System (ECRIS)

Impact on base registries:

Legal base for the European Criminal Records Information System.

a. Scope

Council Decision 2009/316/JHA of 6 April 2009 on the establishment of the European Criminal Records Information System (ECRIS)³¹ implements Framework Decision 2009/315/JHA by providing a legal base for the European Criminal Records Information System. The system will enable an electronic interconnection of criminal records in order to enable the exchange of information on convictions between Member States.

b. Main elements and impact on base registries

The objectives of this decision are to:

- Set up the general architecture for the electronic exchange of information extracted from criminal records: ECRIS is a **decentralised information technology system** based on the criminal record databases in Member States. It consists of an interconnection software that allows exchanges of information between the national databases and of a common communication infrastructure, which will initially be the Trans-European Services for Telematics between Administrations (S-TESTA) network;
- Create a standardised **European format** of transmission of information on convictions. In this respect it provides for two **reference tables of categories of offences and categories of sanctions**, which should facilitate the automatic translation and enable the mutual understanding of the information transmitted by using a system of codes. Member States are to refer to these tables when transmitting information on the offence giving rise to the conviction and information on the content of the conviction.

³¹ Council Decision 2009/316/JHA of 6 April 2009 on the establishment of the European Criminal Records Information System (ECRIS): <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:093:0033:0048:EN:PDF>

3.8.4 Regulation on the coordination of social security systems (No 883/2004)

Impact on base registries:

Personal data needs to be available for other Member State but the protection of the data need to be guaranteed

a. Scope

This regulation is initiated by the fundamental right of free movement of persons, asylum and immigration within the European Union. This right is realized through the area of freedom, security, justice and elimination of the internal borders between the Member States.

Hereby the social security systems of the countries need to be adapted to guarantee the right of free movement. The coordination of the social security systems should be at the EU level, except the social benefits and the conditions for granting them should be defined and managed on national level. This regulation applies mainly to:

- All nationals of an EU country who are/have been covered by the social security in the land of origin;
- Third country nationals who are living in the EU and whose situation connects them to several Member States;
- The persons residing in that country (without being a national) have the same rights and obligations as nationals of the national legislation;
- The same rights and obligations are in force for the members of the family and the survivors of a national or a third country national of an EU country.

b. Main elements and impact on base registries

Impact on base registries:

- The coordination and data exchange of the social security systems need to be available for other Member State. The cooperation and processing should be improved to enforce the free movement (of personal data);
- The rules of the social security system of one Member State should be transparent and available for another Member State. Whenever something changes in the legislation a Member State needs to communicate the necessary information to the other Member State;
- When a Member State needs information of a person registered in another Member State, then the State of origin needs to provide all the necessary data of the rights and obligations of the person (without any delay);

- The institutions and the person have the duty of mutual information and cooperation to ensure that the data is accurate and correct;
- To provide better administrations to citizens, the Member States institutions need to respond to all the questions and queries within a reasonable period of time and provide all the necessary information;
- The Administrative Commission need to determine the structure, content and format for the data exchange (e-docs) between the Member States;
- Each Member State is responsible for managing its own part of data-processing services and according with the Community provisions to protect natural persons;
- The data-exchange between the Member States will be progressed by Electronic Exchange of Social Security Information (ESSI), Structured Electronic Documents (SEDs) and e-Forms.

3.9 CONCLUSION

The study team can conclude that there is no overall EU legal framework on the interoperability of base registries (a complete overview of legal binding and non-binding acts and its contribution to the EIF levels can be found in Table 1 below). Most directives focus on the service level, which has only an indirect impact on the exchange of data between base registries. In case there is a legal framework compelling for the interoperability of base registries it is specific to one type of base registry only (e.g. directive on the interconnection of central, commercial and companies' registries for business registries).

Most provisions in the directives focus on the organisational and technical aspects of interoperability. However, the technical specifications remain often high-level as most directives aim to keep a certain level of technical neutrality. Concrete specifications related to semantics are very scarce.

At the highest organisational level there is the **Service Directive**, which aims to facilitate the cross-border provisions of services. To this end the Service Directive contains provisions related to the electronic exchange of information between public administrations across Member States, and as such between their base registries. However, the main focus of the Directive remains on the service level and concrete specifications related to electronic data exchange are limited to for example the establishment of reference type of electronic signatures and formats to be followed by the Member States for the exchange of signed electronic documents between competent authorities.

Of particular importance for base registries is the **Directive on the re-use of public sector data**, which provides guidelines to Member States on how to enhance the re-use of their public information sources, including base registries. The original directive provides high-level specifications related to organizational and technical interoperability required for such re-use. However, a public consultation revealed that there is still a lack of clarity on the charging and licensing procedures, a lack of guidance related to data formats and metadata standards and a lack of information on the available data. A proposal for amendment of the directive aims to solve some of these issues. However, it still does not provide specifications related to data formats and metadata standards.

Then there is the directive on the legal protection of databases and the Directive on the protection of personal data to which base registries have to comply as they both deal with databases and personal data. Although the **directive on the legal**

protection of database aims to harmonize the legal regimes across the Member States, it does not remove technical and semantic barriers related to the provision of online database services. On the contrary, improper application of the directive might put a restriction on the availability of basic information sources. Concerning the **directive on the protection of personal data**, it sets strict limitations on the processing of personal data by public administrations and mainly has an impact on the organizational interoperability of base registries. From a technical perspective the directive implies that public administrations implement the appropriate security measure to secure their information systems and data exchange. Nevertheless, the directive remains technically neutral. The proposed amendment to the directive on personal data protection only strengthens the legal coverage and organizational aspects related to the protection of personal data.

Within each type of base registry there is an additional set of specific legislation and communications that have a direct or indirect impact. There is a concentration of directives and communications on business registries, while the legal frameworks related to the other types of base registries, especially citizen registries, are limited. The focus on business registries can be explained by the fact that they touch the fundamentals of the European Single Market. Faced with the worldwide financial and economic crisis, which highlighted once again the importance of transparency, the European Commission has recently put a lot of effort in the review of the legal framework on companies and in particular on the establishment of a directive for the interoperability of business registries. Improving access to up-to-date and official information on companies can be seen as a means to restore confidence in the markets all over Europe. Besides, the economic benefits of interconnection business registries are clearer than for any other type of base registries.

In the area of **business registries**, first there is a set of directives which implicitly require the interconnection of business registries in Europe such as the Company Law Directive and directives related to cross-border mergers, branches in other Member States and the European Company Statute. To this end, several European countries have voluntarily participated in initiatives to establish cooperation between business registries as discussed in the corresponding Green Paper. However, it was only recently that the European Parliament and the Council adopted the directive on the interconnection of central, commercial and companies registries. Though the provisions in this directive remain high-level, the European Commission plans to set related actions on governance models, security standards, methods for data transmission and data formats to provide more specific guidance on all levels of interoperability. It also plans to set up an interconnection infrastructure for the registries through a platform.

There is no explicit directive to compel or facilitate the interconnection of **land registries**. Nevertheless there is the INSPIRE Directive, which provides concrete technical and semantic specifications. In addition, the Green Paper on mortgage credit in the European Union provides minimum rules for information exchange per type of loan and proposes creation of Euromortgage. What is more, it proposes a requirement for Member States to make land registries available and accessible for cross-border mortgage activities.

For **vehicle registries** there are two legal frameworks of particular relevance: the Council decisions related to cross-border cooperation with the aim to combat terrorism and cross-border crime and the directive on the exchange of information on road safety related to traffic offences. Both legal frameworks explicitly promote the exchange of data between vehicle registries across Member States, in particular through the use of EUCARIS (European CAR and driving license Information System). In addition, there is the Proposal for Regulation on simplifying the transfer of motor vehicles registered in another Member State within the Single Market, which simplifies re-registration administrative procedures across borders.

At present there is no explicit directive governing the interoperability of **citizen registries**. The scope of existing legal frameworks on the exchange of data related to natural persons is limited to very specific area (e.g. criminal convictions, patient information, social security systems). For this reason it is not surprising that today European citizens are still confronted with various obstacles to exercising their rights as European citizens, free to move to any other country in the EU. The main issues are discussed in a Green Paper from 2010, which has revealed the need for an EU legislative framework on the free movement of public documents and the recognition of the effects of civil status records across the EU. As long as the legal basis which ensures that citizen data from one Member State is recognized by another Member State is not in place, the establishment of a legal cooperation between citizen registries will have limited value impact.

Table 1: Overview of EU legal binding acts.

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
Service Directive	Elimination of barriers to the free movement of services across the EU.	<ul style="list-style-type: none"> Facilitation of cross-border provision of services. Establishment of point of single contact per Member State where to complete electronically the administrative formalities in order to set up a service business. 	NA	<ul style="list-style-type: none"> Point of single contact should be accessible by electronic means. Electronic exchange of information between public administrations. Promoting IMI. Promoting the use of advanced and qualified electronic signatures for the exchange of signed documents, as well as the use of Trust Status Lists
Directive of the re-use of Public Sector information	Provision of guidelines on how to enhance re-use of Public Sector Information, including base registries.	<ul style="list-style-type: none"> Setting rules related to procedures dealing with requests for re-use. 	NA	<ul style="list-style-type: none"> Data available by electronic means. Practical tools to facilitate search for available data.

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
		<ul style="list-style-type: none"> • Upper-limit to charges. • Transparency in the conditions for re-use. 		
Proposal for revision of the Directive on the re-use of public sector information (by 2013)	Re-use becomes a legal obligation rather than a best practice.	<ul style="list-style-type: none"> • Transparent and verifiable formula and criteria for charging. 	<ul style="list-style-type: none"> • Including metadata. • Cross-lingual search. 	<ul style="list-style-type: none"> • Public sector data must be available in a machine-readable format.
Directive on the legal protection of databases.	<ul style="list-style-type: none"> • Copyright: protection of the structure of the database. • Sui generis: protection of the content of the database. 	NA	NA	NA
Directive on the protection of	Ensure the protection of the privacy of	<ul style="list-style-type: none"> • Set-up an independent 	NA	<ul style="list-style-type: none"> • Obligation to the controller to implement appropriate

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
personal data	individuals by setting strict limits on the collection and use of personal data by public administrations in the Member States.	national supervisory body. <ul style="list-style-type: none"> • Personal data can only be processed under strict conditions. • Transparency on the processing. 		measures to protect personal data against unauthorised access or disclosure.
Proposal for revision of the Directive on the protection of personal data	Revision of the current Directive to: <ul style="list-style-type: none"> • Meet new challenges concerning technological development and globalisation. • Strengthen 	<ul style="list-style-type: none"> • Simplification of the administrative procedures. • Increased responsibility of processors of personal data. • Mandatory obligation on 	NA	NA

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
	individual rights. <ul style="list-style-type: none"> • Reduce administrative burden. • Ensure coherence through single set of rules across the EU. 	personal data breaches.		
INSPIRE Directive	Facilitate the sharing of spatial information across Europe by providing specification of a compatible infrastructure.	<ul style="list-style-type: none"> • Provisions to ensure a coherent approach to the provision of spatial data and services across the EU. Member State annual reporting on the implementation and use of infrastructures for spatial information. 	<ul style="list-style-type: none"> • Minimum set of metadata that should be added to spatial data services • Rules to ensure consistency in the way metadata is described. Common data definitions and semantics for spatial	<ul style="list-style-type: none"> • Performance criteria for network services (discovery, view, download and transform). • Technical guidance on all network service (e.g. interface specifications). Proposed technical framework/Architecture (SOAP based).

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
			data.	
Directives/regulations applicable for business registries				
Company Directive	Law Member States need to maintain a(n) (electronic) company registry.	NA	<ul style="list-style-type: none"> Voluntary disclosure of company documents and information in additional languages (Amendment 2003). 	<ul style="list-style-type: none"> Use of modern technologies to facilitate disclosure and access to company information and documents (Amendment 2003).
Regulation on the Statute of the European Company	Implicitly requires the interoperability of business registries.	NA	NA	NA

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
Regulation on the Statue of the Cooperative Society	Establishes a legal statute for a European Cooperative Society (SCE). This statute guarantees equal terms of competition between cooperative societies and capital companies.	European Cooperative Society: <ul style="list-style-type: none"> • is formed under the law of a Member State; • has its registered office in that Member State; • has a real and continuous link with a Member State's economy 	NA	NA
Directive on the disclosure requirements with respect to branches in other EU Member	Implicitly requires the interoperability of business registries.	NA	NA	NA

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
States				
Directive on cross-border mergers	Implicitly requires the interoperability of business registries.	NA	NA	NA
Directive on the interconnection of central, commercial and companies registries	Requires Member States to connect their business registries in an electronic way. However, national laws remain applicable to the business registries.	<ul style="list-style-type: none"> • 1 single EU platform (accessible via e-justice portal). • Freedom related to the procedures in the Member States. 	<ul style="list-style-type: none"> • Unique European Identifier for companies. • Standard notification form. 	<ul style="list-style-type: none"> • Member States need to make their business registries interoperable to the EU platform. • Sending electronic notification on changes to the data.
Directives/Initiatives applicable for vehicle registries				
Council Decisions related to cross-border cooperation with the aim to combat terrorism and cross-border	Include legal provisions on the exchange of information between national vehicle registries for the	<ul style="list-style-type: none"> • National contact point per Member State. 	<ul style="list-style-type: none"> • List of mandatory and optional data to be exchanged. • List of search triggers. 	<ul style="list-style-type: none"> • Electronic exchange of vehicle registration data shall take place over TESTA and in particular through EURCARIS, using encrypted XML-messages.

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
crime.	<p>purpose of combatting cross-border crime.</p> <p>It provides a legal framework for EUCARIS.</p>			<ul style="list-style-type: none"> Specifications related to standards, user authentication, logging and security.
Directive on the exchange of information on road safety related to traffic offences	Facilitating cross-border exchange of information related to traffic offences.	<ul style="list-style-type: none"> National contact point per Member State. 	<ul style="list-style-type: none"> List of mandatory and optional data to be exchanges. 	<ul style="list-style-type: none"> A system for cross-border exchange of vehicle registration data should be put in place. To his end, EUCARIS is put forward.
Decisions/regulations applicable for citizen registries				
Council Framework Decision on the exchange of information extracted from criminal records across Member States	Facilitate the exchange of criminal status records across Member States	<ul style="list-style-type: none"> Member States are to designate a central authority obliged to notify other MS on the convictions related to their nationals Member States 	NA	<ul style="list-style-type: none"> Establishes a framework for the development of a computerised system to enable the exchange of information on convictions.

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
		store all convictions related to their nationals and reply to requests for information		
Council Decision on the establishment of ECRIS	Implements Framework Decision 2009/315/JHA by providing a legal base for the European Criminal Records Information System.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Create a standardised European format of transmission of information on convictions • Provides two reference tables of categories of offences and categories of sanctions to facilitate automatic translation 	<ul style="list-style-type: none"> • Set up the general architecture for the electronic exchange of information extracted from criminal records: ECRIS: <ul style="list-style-type: none"> ◦ Decentralised system • Over S-TESTA.
Regulation on the	Coordination of the	<ul style="list-style-type: none"> • Each Member State 	<ul style="list-style-type: none"> • The Administrative 	<ul style="list-style-type: none"> • Data exchange between

ISA Work Program – Access to Base Registries

GENERAL DIRECTIVES APPLICABLE TO ANY BASE REGISTRY				
	Legal coverage \ Scope	Organisational interoperability	Semantic interoperability	Technical interoperability
Coordination of Social Security Systems	social security systems at European level with exception of social benefits and conditions for granting them which remain at Member State level	is responsible for managing its own part of data processing services	Commission determines structure, content and format for data exchange (e-docs) between the Member States	Member States done by Electronic Exchange of Social Security Information, Structured Electronic Documents and e-Forms.

4. CROSS-BORDER DIMENSION

In this section the most relevant cross-border initiatives related to the accessibility and interoperability of base registries are summarized for each of the 4 main types of base registries: business registries, land registries, vehicle registries and citizen registries. Most of these initiatives have established a technical solution or platform to enable the exchange of information between base registries.

In addition, other EU-initiatives related to all types of base registries are described as they represent main enablers for the interoperability of base registries. These initiatives include: Core Vocabularies, the e-Justice Portal, STORK and the Internal Market Information system (IMI). Figure 5 illustrates an overview of the cross border initiatives and their scope in terms of impact on a specific base registry type.

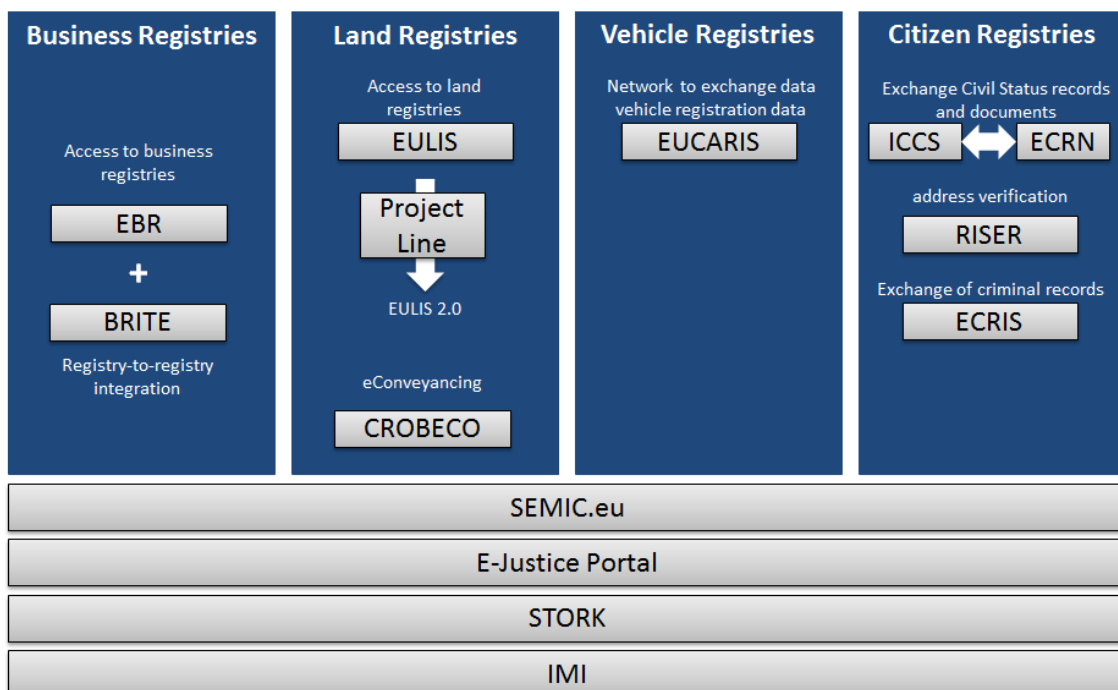


Figure 4. Overview of cross-border initiatives.

Below, each of these initiatives is discussed in details. The information about the initiatives is structured according to the 4 levels of interoperability as defined in the EIF.

4.1 INITIATIVES RELATED TO BUSINESS REGISTRIES

This section provides for an overview of initiatives related to business registries. The section starts with the description of the European Business Register (EBR), an initiative providing information about European companies (section 4.1.1). It continues with a description of the Business Registry Interoperability Throughout Europe (BRITE), an initiative dealing with integrated registry-to-registry communication (section 4.1.2).

4.1.1 The European Business Register (EBR)

EBR³² is a **network of business registries** which objective is to offer reliable information on companies all over Europe. It allows citizens, businesses and public authorities **to search for information on a company** in all the business registries of Member States and non-EU countries (Macedonia, Norway, Serbia and Ukraine) which are connected to EBR by submitting a single query in their **own language** through one of the EBR information distributors. As the result of the search, the requested information becomes available in the language of the query.

Table 2 below, illustrates how the EBR initiative addressed the four EIF levels.

Table 2 : EBR

Legal level	<ul style="list-style-type: none"> • The legal aspects of data transmission through the EBR are governed by the national laws of the participating countries. • Nevertheless it is subject to the EU-legal framework on personal data protection.
Organizational level	<ul style="list-style-type: none"> • Participation is voluntary (through an information sharing agreement) • The network is managed by a European Economic Interest Group (EEIG)³³.
Semantic level	<ul style="list-style-type: none"> • A query for data can be submitted in the own language and the results of the search will also be available in the language of the query. • The EBR is often criticized for its lack of uniform datasets across business registries.
Technical level	<ul style="list-style-type: none"> • The aim of the EBR is to provide access to base registries, but it

³² <http://www.ebr.org/>

³³ A European Economic Interest Group is a type of legal entity created by the European Commission and formalized in its Council Regulation. The aim is to make it easier for organisations (public and private) to form a consortium and to facilitate cooperation such as when taking part in EU-programs.

	does not support registry-to-registry data exchange.
--	--

4.1.2 Business Registry Interoperability Throughout Europe (BRITE)

BRITE³⁴ is a research **project on integrated registry-to-registry communications**. The aim of BRITE was to set-out, develop and pilot an ICT and organisational solution allowing business registries to exchange data in order to **support public administrations in cross-border business registration and other related cross-border e-government services**. The objective was to define an advanced and innovative interoperability model and ICT service platform for business registries to interact across the EU, focusing in particular on the cases of cross-border seat transfers, mergers and on the better control of branches of companies registered in other Member States. The initiative tackled both the technical, semantic and organizational aspects of interoperability of base registries. The approach of BRITE is based on conceptual knowledge management frameworks.

The BRITE project was completed in 2009. However, as the BRITE project was a research project its results were **only implemented in a few countries to test the functionality**. Table 3 below presents an overview of how the BRITE initiative addressed the four EIF levels.

Table 3: BRITE

Legal level	<ul style="list-style-type: none"> • Business registries remain subject to national legislation. • The initiative supports the EU Company Law. This Law aims to facilitate business to open branches in other EU countries, etc. It implies a need for appropriate cross-border services and as a consequence for interoperable business registries.
Organizational level	<ul style="list-style-type: none"> • Definition of the cross-border workflow based on EU Directives. • Definition of a process ontology used to map and coordinate the national processes onto the cross-border workflow.
Semantic level	<ul style="list-style-type: none"> • Definition of data ontology to mitigate semantic heterogeneity. • Registered Entity Identifier (REID): a unique number to identify business in business registries across the EU.
Technical level	<ul style="list-style-type: none"> • Technical architecture comprises two main components: <ul style="list-style-type: none"> • Knowledge repository, which stores: <ul style="list-style-type: none"> • Process ontologies • Data ontologies • Additional data / intelligence to support the

³⁴ <http://imu.ntua.gr/sweg/papers/SS0606vanElstL.pdf>

	<p>execution of the cross-border processes and services (e.g. relevant EU and national legislation).</p> <ul style="list-style-type: none">• Service oriented interoperability layer: technical infrastructure that interconnects the different business registries and uses the knowledge repository to execute cross-border processes/services.• The solution and its infrastructure complies with high reliability and privacy standards.
--	--

4.2 INITIATIVES RELATED TO LAND REGISTRIES

This section describes the European initiatives undertaken in the area of land registries. In particular, the European Land Information Service (EULIS) providing access to land registries across Europe is discussed in section 4.2.1 The section then continues about the Project LINE aiming at creation of a solution to connect land registries organisations to EULIS 2.0 platform (section 4.2.2). The section continues with the Cross Border eConveyancing (CROBECO) project which goal is to set up a European framework for obtaining foreign property (section 4.2.3). The section finishes with a description of the Permanent Committee on Cadaster in the European Union (section 4.2.4) and the Association on National Mapping Land Registry and Cadastral Agencies (4.2.5).

Land and cadastral registration systems structure results from historical and institutional developments. There exist three main types and combinations of cadastral and registration systems (see Figure 5 below)³⁵.

- Case A: basic real property registry identifying the property and providing some description of the areas, land use and the origin of the property. Upon this structure, other base registries can be built, such as land registries administered by local courts or other juridical institutions;
- Case B: system based on (legal) land registries with\without map support;
- Case C: systematic cadastre for taxation purposes that was historically created at the start with sporadic link to cadastre; land registry connection was established at a later stage;
- Between case B and case C linkage between cadastral and land registration systems may be strong, weak or non-existent.

³⁵ "Land registration and cadastral systems. Tools for land information and management", Gerhard Larsson. Longman Scientific&Technical, New York 1991.

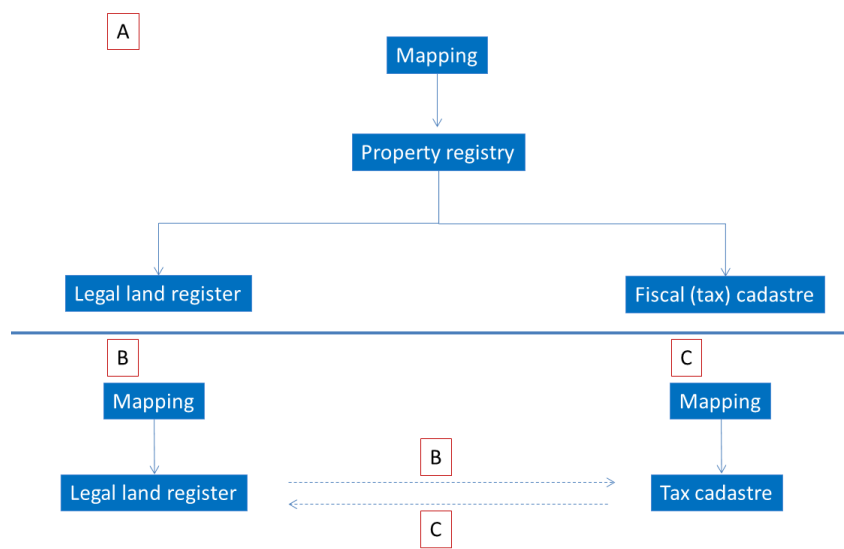


Figure 5. Alternative ways of building cadastral/land registration systems.

4.2.1 European Land Information Service (EULIS)

EULIS³⁶, established in 2006, is an online portal **enabling access to land registries across Europe**. The objective of the project is to combine information from cadastres, land registries and other data sources dealing with property and location information. The aim is to provide professional customers such as banks, lenders, estate agents and lawyers with easy access to land and property information. In addition to access to land registries, the portal is also a hub of **information about land registration conditions** in each country.

In particular, this contextual information includes:

- Link to the website of the national portal or the website of the responsible authority;
- Description of the information that is available within the land registry;
- Description of how the information in the land registry be searched, including available search criteria, who can apply, where and how to obtain it;
- Information on the national registration processes and other related processes such as how to perform a land transaction and how to establish a mortgage;
- Legal aspects related to the land registry and information request from these registries.

³⁶ <http://eulis.eu/>

At present, 6 countries have fully connected their national land registries to the EULIS portal: Spain, Austria, Lithuania, Sweden, the Netherlands and Ireland. This means that the land registry of these countries is directly accessible via the EULIS portal for subscribed users. The Table 4 below illustrates how the EULIS initiative covers the four EIF levels.

Table 4: EULIS

<p>Legal level</p>	<ul style="list-style-type: none"> • The land registries remain subject to their national law, which can differ from Member State to Member State. A summary of the national legal conditions is provided on the EULIS portal. • In case there is a question concerning the choice of law in matters concerning civil disputes, the Convention on the Law Applicable to Contractual Obligations (Rome Convention 1980 - Article 4) will be valid. • Data is exchanged in accordance with stringent European rules governing the protection of privacy. The initiative is also subject to other general EU directives related to the protection of databases and the re-use of public sector data.
<p>Organizational level</p>	<p><u>EULIS Consortium/EEIG</u></p> <ul style="list-style-type: none"> • EULIS is owned and governed by a consortium of 8 Member States: England and Wales, Ireland, Lithuania, the Netherlands, Sweden, Austria, Finland and Scotland. Additional funding for the start-up of the portal was provided by the European Commission. • Decisions are made by the managing board. The board has a board meeting three times a year. In the consortium every member country has a vote and a representative in the managing board. However, as the number of member was growing, a more efficient organization structure was needed and after many inquiries all members agreed on the use of the European Economic Interest Grouping (EEIG)³⁷. In 2010 the Consortium became an EEIG. The chair of the EEIG is in the Netherlands. A new board was elected (with a limited number of representatives). • Once a year there is a general meeting for all member countries and for all countries that are interested in becoming a member. <p><u>National Authorities</u></p> <ul style="list-style-type: none"> • National registration authorities remain responsible for their own registrations. This means that countries cannot alter the data recorded in the registries of other participant countries. • The national registration process as well as other related processes can be described on the EULIS portal. These processes can differ from Member State to Member State. Also the data in the registries

³⁷ A European Economic Interest Group is a type of legal entity created by the European Commission and formalized in its Council Regulation. The aim is to make it easier for organisations (public and private) for form a consortium and to facilitate cooperation such as when taking part in EU-programs.

	<p>and the types of search can differ.</p> <ul style="list-style-type: none"> • Also the governance structure and responsible authorities related to the national base registries can differ across Member State the portal provides link to responsible national authority.
<p>Semantic level</p>	<ul style="list-style-type: none"> • The EULIS portal provides a glossary of terminology. The EULIS glossary and reference information assist in better understanding of the local environment, not only literally but also the meaning of terminology.
<p>Technical level</p>	<ul style="list-style-type: none"> • EULIS is not a central repository but a portal providing access to the national base registries of the connected countries. Access to the base registries in the connected countries is realised via web services (SOAP/XML). • The portal is easily accessible through a web browser. However, to access these base registries users need a registered account. Log-in can be done both on the EULIS website or within a national portal. • All communication between the servers is done with SSL-encryption and authentication. The EULIS portal also requires that connecting servers authenticate with client certificates.

4.2.2 Project LINE

Related³⁸ to EULIS is the Project LINE (started in September 2010 for a 2 year period). Lead by EULIS and supported by the Official Justice Programme, the project aims to **develop a sustainable and financially viable solution, to enable new land registry organisations to cost-effectively connect to the next generation EULIS 2.0 platform.** The new version of the EULIS platform (EULIS 2.0) that will be developed through the project is intended to be flexible and future proof in order to cope with the evolving national technical land registry systems. However, facilitating and expanding access to the platform is only a part of the project objectives. Further developments will increase data exchange functionalities, by **integrating new features such as e-Signatures and e-Registration.** It also includes actions to ensure compliance and **alignment with the European e-Justice portal.** EULIS has become the solution for providing land registry information throughout Europe, both direct registry access and contact information. In line with the Council’s European e-Justice Action Plan a link to EULIS will be established on the European e-Justice portal.

³⁸ <http://eulis.eu/project-line/>

4.2.3 Cross-Border eConveyancing (CROBECO) from European Land Registries Association (ELRA)

ELRA³⁹ is a European association formed by 26 organisations representing the land registries of 20 Member States, with the aim to **represent the interest of land registries in the EU**. The primary purpose of ELRA is the development and understanding of the role of land registration in real property and capital markets. ELRA aims to promote mutual knowledge of Land Registry systems and lay the conditions for a profitable cooperation with the European institutions in order to highlight importance of Land Registries in Europe as juridical institutions due to the effects of registration on the progress in the rule of law in the field of property and rights on immovable.

Cross-Borders eConveyancing (CROBECO) is a research project funded by the European Commission and carried out by ELRA. The purpose of the project is to set up a European framework for obtaining foreign property (e.g. the sale and transfer or ownership of land between two parties from different Member States), taking into account the existing circumstances such as legislation, responsibilities of registrars and conveyancers and existing conveyance systems. The framework is based on electronic communication supporting the need for timely receipt of information from the land registry by conveyancers and of conveyance documents by registrars. To help getting a better impression of the possibilities and difficulties of the CROBECO approach, ELRA intends to start pilot projects with electronic cross border conveyancing between different European countries.

4.2.4 Permanent Committee on Cadaster in the European Union

As the result of the “First Congress on Cadastre in the European Union” that took place in 2002, a proposition of creation of the “Permanent Committee on Cadastre in the European Union” was put forward. The Committee was created by the representatives of the institutions responsible for cadastre in 15 Member States. The objective of the Committee is to create a network of information on Cadastre to facilitate the exchange of information and best practices among the members. The aim of the Committee is also to provide a privileged link between cadastral institutions and the organs of the EU, which is of a special importance in case of proposed European regulation subject to debate. To this end, the Committee can be treated as a point of reference for companies developing software, products for common use that answer a standard demand.

³⁹ <http://www.elra.eu/>

To meet its objective the Committee focuses only on the cadastre and on its users, it limits the activity to the Member States and single institution per Member State to represent it.

4.2.5 Association of National Mapping Land Registry and Cadastral Agencies (EuroGeographics)

The objective of EuroGeographics is to create a European Spatial Data Infrastructure through improving collaboration between the Member States to gain a centralised system for geographical information in the EU (including topographic information, cadastre and land information). The actions of the Association will focus on the support collection and maintenance of the definitive reference data. The main activities performed by EuroGeographics for the European Spatial Data Infrastructures are:

- Keep the European Commission and Parliament informed by the relevant developments and contribute to initiatives, policies and project;
- Provide best practices and guidelines to the users;
- Integrate and harmonise the national spatial datasets into European products and services for analysis and policy developments;
- Create standard data specifications and policies to safeguard the quality, compatibility and interaction;

The main objectives of EuroGeographics are:

- Provide single interface for National Mapping and Cadastral Agencies;
- Establish knowledge exchange between the Member States and build stronger relations between the related institutes;
- Promote the European and National Mapping and Cadastral Agencies services, products and their role for the European Spatial Data Infrastructure (ESDI);
- Manage the topographic reference datasets and related services for cross-border requests (including the tasks for creating, maintaining and distributing data).

4.2.6 European Location Framework (EULF)

The EULF is based on a set of specifications for *geospatial reference data* which provides information about places. This information can be linked or connected with other information or features. The EULF supports *interoperability across resolutions, themes and between countries for topographic, administrative and cadastral reference data*.

The European Location Framework builds a geospatial reference infrastructure enabling users to build their work on the reference data and services from national information assets.

The main goal of EULF is to implement and realize the full INSPIRE data potential in various sectors, to support cross-sector and cross-border applications and to make a significant contribution to eGovernment.

The EULF is under development and is expected to be finished by 2014.

4.2.7 Community of European Semantic Asset Repositories (CESAR)

The Community of European Semantic Assets Repositories (CESAR)⁴⁰ is a community of practice that has the objective to bring together national e-Government policy makers and e-Government professionals to:

- disseminate good practices on metadata management;
- encourage Member States to set policies, processes, and infrastructures for “metadata” management; and
- improve, expand and promote the federation of semantic asset repositories.

As the main goal of the CESAR community is to share and reuse Semantic Assets, the Federation of Semantic Asset Repositories is very important. This Federation is enabled by the Asset Description Metadata Schema (ADMS) which allows to search for semantic assets available on different semantic asset repositories on the web from a single point of access.

4.3 INITIATIVES RELATED TO VEHICLE REGISTRIES

This section describes a European initiative related to vehicle registries. In particular, it focuses on the European CAR and driving license Information System (EUCARIS) which provides a possibility to consult and exchange data about vehicles and driving licenses (section 4.3.1).

4.3.1 The European CAR and driving license Information System (EUCARIS)

EUCARIS⁴¹ is a **communications network which allows participating countries to consult and exchange data relating to vehicles and driving licences kept in the national registries of participating countries**. The aim of the system is to support cooperation between Member States in the fight against car theft, registration and document fraud and other related violation of law. In addition to providing the infrastructure for exchange of vehicle registration data between Member States, the EUCARIS (public) website also provides **country pages**, providing details on organisations and contact persons within the Member State that handle vehicle and driving licence data.

⁴⁰ <https://joinup.ec.europa.eu/community/cesar/description>

⁴¹ <https://www.eucaris.net/>

Table 5 presents an overview of how the EUCARIS addressed the four EIF interoperability levels.

Table 5: EUCARIS

<p>Legal level</p>	<ul style="list-style-type: none"> • The EUCARIS is operational since 1994 as a result of an initiative of the Dutch “Department of Road Transport” and the IT company Unisys, which had an initiative to set up a communication network to share vehicle and driver registration information. The main obstacle to data sharing was juridical as driving licence registration data would be accessible to outside parties and modification of national legislation would require an exchange of personal data. In 2006/2007 EUCARIS developed a functionality to exchange vehicle information as provided by the Prüm Treaty. Since the Prüm Treaty in 2008 was changed into the Council Decisions (2008/615-617/JHA), EUCARIS is now part of the legal framework of the European Union. Because of these Counsel Decisions, soon all 27 EU Member States will implement EUCARIS for the exchange of vehicle and owner/holder information. • EUCARIS also allows countries to exchange information on a bilateral basis, based on bilateral agreements. For example, the exchange of vehicle and its owner/holder data for the enforcement of traffic violations, toll collection. In 2008 The Netherlands and Germany were the first two countries that started using this function for the exchange of data regarding traffic offenders. In 2009 EUCARIS also started supporting a bilateral information exchange between France and Germany, Belgium and France, The Netherlands and France as well as between the Netherlands and Belgium. • The requirement to re-register, in the receiving Member State, a motor vehicle registered in the Member State of origin was a source of complaints and court cases. To this end, a proposal for regulation on simplifying the transfer of motor vehicles registered in another Member State within the Single Market was put forward. The objective of the initiative is to streamline and simplify the procedure of re-registration a motor vehicle already registered in another Member State for stakeholders such as citizens, employees, employers, car rental and leasing companies and registration authorities. • Directive 2011/82/EU on information exchange on road safety related to traffic offences.
<p>Organizational level</p>	<ul style="list-style-type: none"> • Each country maintains the responsibility over its own vehicle registries. • In each country that participates in EUCARIS, the registration

	<p>authority and other governmental organizations are responsible for a series of administrative processes, including registration of vehicles, issuing driving licenses, collecting traffic fines and enforcement. The procedures and organizations involved differ from Member State to Member State.</p>
<p>Semantic level</p>	<ul style="list-style-type: none"> • Data is exchanged via specified XML-messages. This means that each data-element has been described in a very exact way. The definitions of the data are derived from the EU directives and guidelines, if possible. Not only the interpretation of each data-element, but also the content of the data has been standardized, so each country will use the same code to indicate to other countries that a car is 'blue', even if in their own registry a completely different description or code is used. • The interface between the vehicle registry and the core application ensures all coded information is translated to standardized values (e.g. color-codes or the indication that the vehicle is stolen). • A multilingual web client.
<p>Technical level</p>	<ul style="list-style-type: none"> • EUCARIS is not a central repository, but provides the infrastructure to access and exchange data between vehicle registries across Europe. The system comprises 2 main components: a web client and the core application. <ul style="list-style-type: none"> • The web client (HTTPs) provides access to the system via a common web browser. Public administrations can use this web client to send requests to other countries and display the responses. Requests can be sent directly to another Member State or broadcasted to all connected Member States. • The core application is a set of web services and generic functionalities to support the exchange of data, such as routing, security, logging, etc. Data is exchanged by sending encrypted XML-messages. • In each country, the vehicle registry is connected to the core application via a standardised interface in order to retrieve and provide the requested information. • The core application can also be connected to other 'customized' client applications. This offers the opportunity to request EUCARIS, for instance, from a police application or a registration supporting technical vehicle inspections. • The infrastructure of EUCARIS is based on Microsoft window servers and Microsoft SQL databases (e.g. to store logging data). • All information is exchanged via a secured, closed network: sTESTA. • Security is ensured: use of a closed network (TESTA), SSL-encryption, XML-signing. Currently, the EUCARIS members run their own managed PKI that makes use of Verisign certificates, logging of all information exchanged. Member State and user

	authorisation is based on bilateral agreements and roles.
--	---

4.4 INITIATIVES RELATED TO CITIZEN REGISTRIES

This section describes European initiatives related to the interconnection of citizen registries. It starts with the International Commission on Civil Status that proposes a platform to exchange information about civil status (section 4.4.1). The section continues about the European Civil Registry Network providing a pilot solution to exchange civil status data and information in electronic form (section 4.4.2). The next part of this section describes the Registry Information Service on European Residents aiming to facilitate retrieval of information from population registries for the purposes of address verification over the Internet (section 4.4.3). The section finishes with a description of the European Criminal Records Information System that refers to exchange of information about criminal convictions between the Member States (section 4.4.4).

4.4.1 The International Commission on Civil Status (ICCS) and its platform for data exchange

The International Commission on Civil Status (ICCS)⁴² is an intergovernmental organisation, founded after World War II, with the aim to **facilitate international co-operation in civil status matters** and to further improve the exchange of information between civil registries.

The ICCS has **developed a prototype platform for the exchange of some civil status forms among registries in Member States**. The automated electronic platform allows the form to be sent between public administration within Member States or by a civil status officer of one Member State to the civil status officer of another Member State. Table 6 below illustrates how the ICCS addresses the EIF levels of interoperability.

Table 6: ICCS

Legal level	<ul style="list-style-type: none"> • The legal basis of the ICCS platform consists of 32 conventions, of which 28 are in force and other are recommendations. They can be signed by a Member State of ICCS and by any Member State of the Council of Europe and the EU. • Many of these conventions provide for an international exchange of civil-status data (either automatically or on request) or for the issue
--------------------	--

⁴² <https://joinup.ec.europa.eu/event/iccs-ciec-seminar-data-exchange-platform-international-communication-civil-status-data-electro>

	<p>of civil-status documents to individuals which are accepted, with full legal value, without translation and legalization (or any equivalent formality) in the territory of each contracting Member State.</p> <ul style="list-style-type: none"> • In addition there is a specific Convention regulating the use of the Platform, dealing with the legal value of the data transmitted over the platform and its compliance with applicable European data protection requirements.
Organizational level	<ul style="list-style-type: none"> • The platform comprises a Civil-Status Authorities Directory (Municipality Table) and the Routing Scheme.
Semantic level	<ul style="list-style-type: none"> • One of the actions of the ICCS is to provide standard translations of vital terms in civil status record. • Platform uses standardised XML-schemas, either multilingual or coded. AMDS specification of SEMIC.eu (now on JoinUp) will be used to describe the metadata about these XML-schemas.
Technical level	<ul style="list-style-type: none"> • The Data Exchange Platform of the ICCS provides secure IT tools to facilitate the international and electronic exchange of civil-status data and documents between civil registries of the different ICCS Member States. • XML-schemas are used to exchange the civil status records. • In the pilot phase XML-schemas are exchanged via email. • Security: two-way SSL secure communication with digital certificates.

4.4.2 European Civil Registry Network (ECRN)

The European Civil Registry Network (ECRN)⁴³ is a project co-funded by the European Union under the ICT Policy Support Programme (PSP) and launched by a Consortium of 12 partners within 6 Member States, which started halfway 2008 and ended in November 2010. It deals with the establishment of a **pilot solution that allows civil registries of national administrations across the EU to exchange of civil status data and documents in electronic form over the Internet in a fast, secure and certified way**. Additional services include information and guidance services for actors of the civil registry sector.

ECRN allows the Civil Status Registry office of Member State to request specific certificates from its counterpart in another Member State.

The possible requests of documents are related to:

- Birth of a child;
- Preliminary requirements to marriage;
- Marriage celebrations;
- Marriage contract drew up by the notary;

⁴³ <http://www.ecrn.eu/BBB/index.php?lang=en>

- Death of a relative;
- Parentage recognition;
- Change of nationality.

Obtaining a certificate from one Member State to another will take 2-3 working days through a web platform (compared to 2-3 months in the old system using ordinary mail).

The ECRN project also investigated the common requirements for interoperability related to such key enablers as e-Signatures and e-Identity (for the latter ECRN has realized a successful cooperation with the STORK project), and investigated legal rules and obstacles.

The Table 7 below illustrates how the ECRN addresses the EIF interoperability levels.

Table 7: ECRN

Legal level	<ul style="list-style-type: none"> • NA
Organizational level	<ul style="list-style-type: none"> • ANUSCA (Italian Association of Civil Status Officer) is the owner of the solution, which works together with two main bodies: <ul style="list-style-type: none"> • Administration Committee comprised of representatives of all members and chaired by a representative of ANUSCA, which is responsible for supervision and coordination of the project and related decision-making. • Technical board committee • Additionally there are the executive functions of the Platform Director, CRM Manager (relationship with the Citizens), and a Quality Control Manager.
Semantic level	<ul style="list-style-type: none"> • NA
Technical level	<ul style="list-style-type: none"> • The system comprises: <ul style="list-style-type: none"> • A software platform, providing the basic functionalities of the ECRN (business logic layer). • Web application, serves as the only access point to all these functionalities presentation layer / front office. • Data layer allows the interaction with the underlying registries. • Integration layer provides integrated external components to the platform (realized via an Enterprise Service Bus). • There are two main external components that play an important role in the ECRN platform: the Central Authentication Service (CAS), which provides the user authentication service (by communicating with the Presentation Layer and the Credential Registry) and CryptoServer, which exposes the security

	functionalities (e.g. digital signature, encryption, certificate validation etc.).
--	--

4.4.3 Registry Information Service on European Residents (RISER)

The Registry Information Service on European Residents (RISER)⁴⁴ project started in 2004 as an innovation project within the European Commission eTEN Programme. The project ended in 2010. Since then, a private company has maintained and provided the service.

The RISER ID Services **facilitate the retrieval of information from official population registries in the Member States for the purpose of cross-border address verification over the Internet**. It acts as a data processor on behalf of its customers (e.g. businesses and administrations) who can submit inquiries about official address information from several Member States. RISER provides verification addresses to its customers, after verifying that they have proof of their legal interest for that information. The result of inquiry consists of full names and full addresses (and age in some cases) as listed in the respective official registry or electoral roll registry. Towards the end of 2010 RISER provided information from the official citizen registries of twelve European countries: Austria, Estonia, Germany, Hungary, Ireland, Italy, Lithuania, Sweden, Switzerland, the United Kingdom and Finland.

RISER does not store any data in central database but passes inquiries for data to official registries throughout Europe. The user can submit a request for information for different countries or communities via a central web portal. Request for data can be submitted based on: Full name, Former names, Last known address, Gender, Date of birth or personal ID number. RISER distributes the requests to the respective registry offices in a given Member State. Subsequently, the registry offices process the request and send the results back to RISER. Finally, the user can download the results of his address search from the web portal.

4.4.4 European Criminal Records Information System (ECRIS)

ECRIS⁴⁵ is a computerised system, established in April 2012, in order to achieve an efficient **exchange of information related to criminal convictions between EU countries**. The system establishes an **electronic interconnection of criminal record databases** across the EU to ensure that criminal records can be exchanged in a uniform, efficient way. Thanks to ECRIS, **judges and prosecutors can easily**

⁴⁴ <http://www.riserid.eu/home/>

⁴⁵ http://ec.europa.eu/justice/criminal/european-e-justice/ecris/index_en.htm

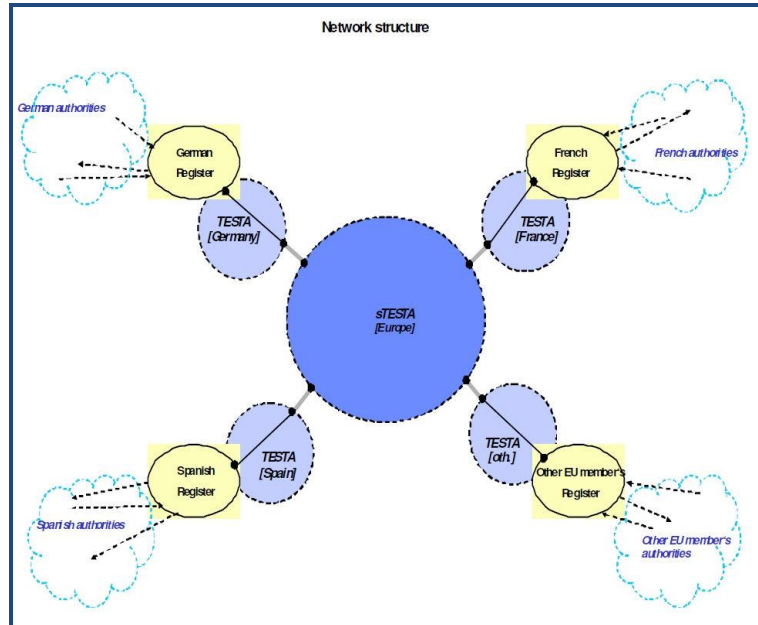
access information on the offending history of any EU citizen, no matter in which EU countries that person has been convicted in the past.

The Table 8 below illustrates how the ECRIS addressed the interoperability as defined by the EIF levels.

Table 8: ECRIS

<p>Legal level</p>	<ul style="list-style-type: none"> • Council Framework Decision 2009/315/JHA of 26 February 2009 on the organisation and content of the exchange of information extracted from the criminal record between Member States. • Council Decision 2009/316/JHA of 6 April 2009 on the establishment of the European Criminal Records Information System (ECRIS).
<p>Organizational level</p>	<ul style="list-style-type: none"> • The Member State of nationality of a person maintains the central repository of all convictions handed down to that person. The country's authorities must store and update all the information received and retransmit them when requested. • Each Member State shall designate one or more central authorities responsible for the transmission of information on criminal records and using ECRIS. • A Member State convicting a non-national is obliged to immediately send information, including updates, on this conviction to the Member State(s) of the offender's nationality.
<p>Semantic level</p>	<ul style="list-style-type: none"> • Information is transmitted through a standardised European format, using two reference tables listing categories of offences and penalties. These tables facilitate automatic translation and enhance mutual understanding of the information transmitted. When transmitting information on a conviction, Member States have to indicate appropriate codes for the category of the offence and the penalty or sanction, which is automatically translated into the language of the recipients, enabling them to react immediately upon receipt of the information.
<p>Technical level</p>	<ul style="list-style-type: none"> • Decentralised architecture: criminal records data is stored solely in national databases and exchanged electronically between the central authorities of Member States upon request. • Infrastructure is composed of 2 main components: <ul style="list-style-type: none"> • sTESTA network as the common communication infrastructure: sTESTA backbone network and the segments of the national networks connecting the central authority site to the national sTESTA access point. The Commission has put special software called 'reference implementation' at disposal to facilitate the interconnection • Interconnection software: piece of software that allows sending and receiving requests and corresponding answers. • Requests are exchanged using web services based on HTTPs and

SOAP/WSDL communication protocol based on XML-messages.



4.5 OTHER RELEVANT INITIATIVES

This section describes a selection of representative EU-initiatives related to the interoperability of base registries. The initiatives are mapped into the EIF conceptual model, refined within the EIA (European Interoperability Architecture) deliverable⁴⁶(see Figure 6). The initiatives and the corresponding elements of the EIF conceptual model, are the following:

- eJustice is mapped within the **Business Processes** (Aggregate Public Services) and this is a portal based on a business model of a single point of access and business processes that govern access to base registries from different domains;
- eCodex is mapped within the **Secure Data Exchange/Management** element as it aims to establish a secure electronic platform to exchange data and document between citizens, businesses, governments and judicial authorities (i.e. eDelivery, eIdentity);
- IMI (Internal Market Information System) is mapped within **Secure Data Exchange/Management** as it aims to manage and coordinate in a secure way the exchange of information between public administrations;
- STORK (Secure Identity Across Border Linked) is mapped within the **Identity and Access Management** (Secure Communication Management) as it acts as an authentication mechanism and it interconnects the identity providers in different Member States;
- Core Vocabulary is mapped within the **Semantic translation** (Interoperability Facilitators) as Core Vocabularies describe data entities by defining their components in a context independent way, thus being a foundation of for new context specific vocabularies for exchange of public sector information.

The initiatives are not specific to any of the 4 types of base registries but have relevance to all of them. Section 4.5.1 illustrates eJustice portal that has as the objective of assistance in the work of judicial authorities and facilitation of access of citizens and businesses to judicial and legal information. Section 4.5.2 illustrates the Core Vocabularies as data models covering basic characteristics of data entity in a domain independent way. Section 4.5.3 presents the IMI (Internal Market Information System) which is a secure online application enabling national, regional and local authorities to quickly communicate with their counterparts in other Member States. Section 4.5.4 illustrates the the STORK (Secure Identity Across Borders Linked) initiative having as objective development and testing of common specifications for mutual recognition of national electronic identity (eID) between the participating countries.

⁴⁶ EC, ISA Work Programme, European Interoperability Architecture, November 2011. http://ec.europa.eu/isa/documents/isa_2.1_eia-finalreport-commonvisionforaneia.pdf

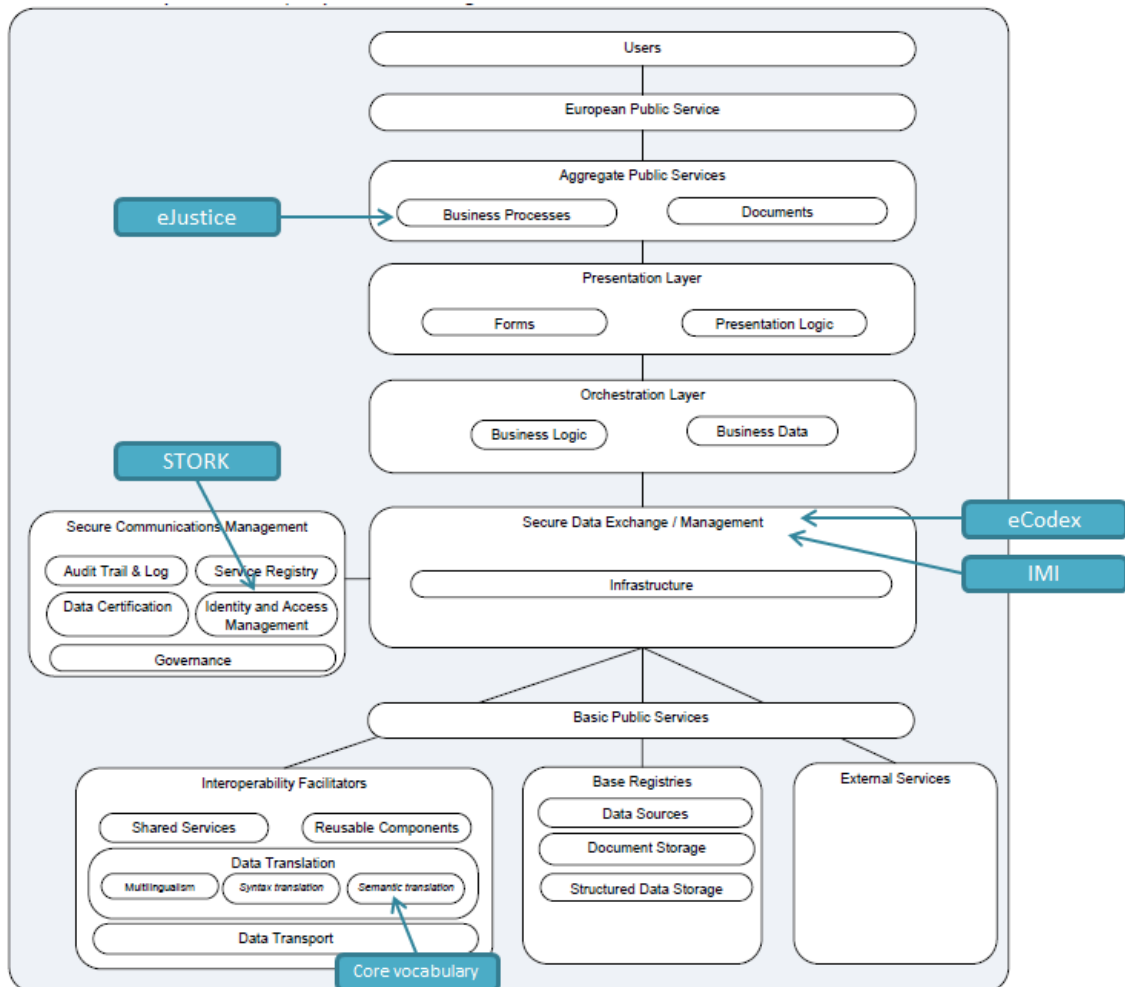


Figure 6. Mapping of selected EU-initiatives on the refined EIF conceptual model.

4.5.1 Business processes: E-Justice portal

The e-Justice project aims at assisting the work of judicial authorities and facilitating the access of citizens and businesses to judicial and legal information. One of the specific projects within the e-Justice program, which should yield tangible results, is the establishment of the European e-Justice portal. The portal should become an electronic one-stop-shop for access to legal information, legal and administrative institutions, registries, databases and other services within the framework of the European justice project.

At present, the e-Justice action plan for 2009-2013⁴⁷ has taken steps to integrate relevant base registries in the e-Justice portal. This action plan

⁴⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:075:0001:0012:EN:PDF>

defines steps towards the E-justice scope, the function of European e-Justice, the e-Justice portal, technical and linguistic aspects, the need for a work infrastructure and financing. It has already been decided to establish a link between the e-Justice portal and European Land Registries Information system (EULIS). Furthermore, the e-Justice action plan is dealing with the question of the integration of the European Business Register in the portal (EBR). It is certain that in the future even more base registries, including citizens and vehicle registries, will become accessible through the e-Justice portal.

At Commission level, the system is composed of two main modules:

- Front office: implemented following a one-stop stop mechanism, it offers a set of web pages permitting to consult the Insolvency Registers of participating Member States;
 - o Business Use Cases: These use cases define the functionalities effectively exposed to the end-users by the system;
 - o System Use Cases: These use cases centralize the functionalities necessary for the proper realisation of the functionalities identified as 'Business Use Cases'. Taking into account that the system is mainly used for consultation purposes, these use cases describe how the information is retrieved from the different storages (i.e. MS Registers, Glossary, etc).
- Back-Office: this module permits to dynamically manage and configure the connection to the MS Web Services. It also permits to manage other tools necessary for properly display the information in the Front-Office (i.e. Glossary, etc).
 - o Authentication/Authorisation Use Cases: Access to the functionalities exposed by the Back-Offices is subject to authorisation. Only authenticated and authorised users have access to these functionalities;
 - o Maintenance Use Cases: These use cases are the most important part of the Back-Office. They centralise all the functionalities for managing the information used as reference data/configuration data by the Front-End module;
 - o Statistic Use Cases: This last set of use cases encompasses the functionalities more specifically oriented toward the creation of statistics.

A practical example is the interconnection of Insolvency Registries on Member state level.

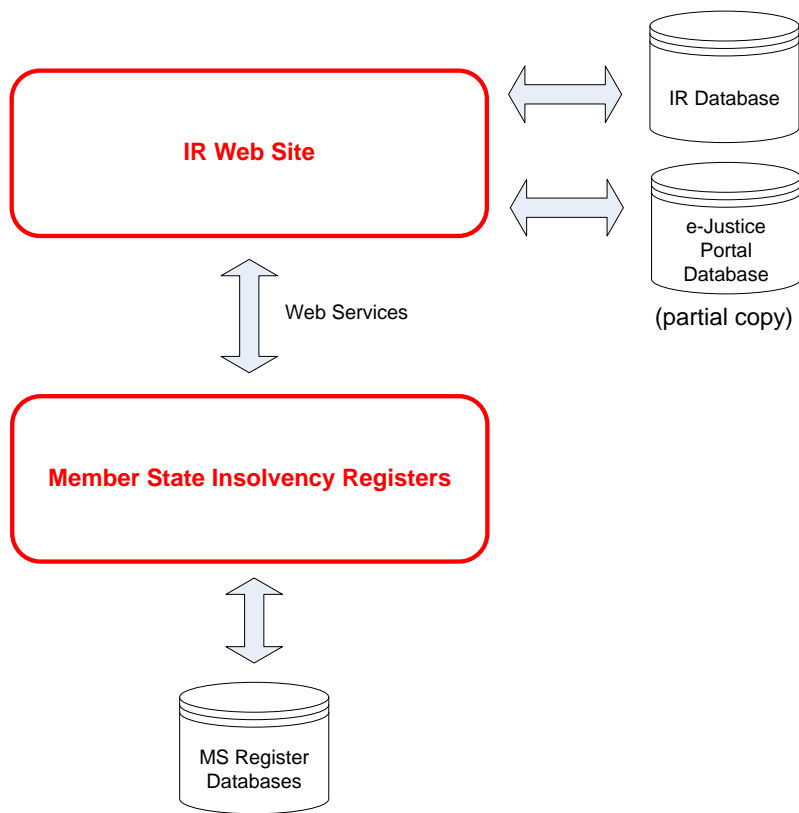


Figure 6. Insolvency Registries.

The Insolvency Registry system is made of several responsibility-based layers:

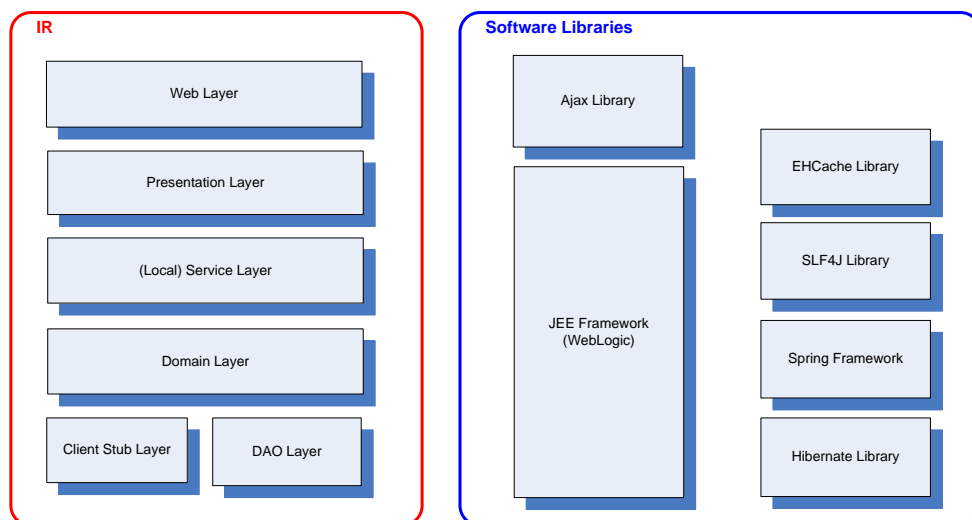


Figure 7. Insolvency Registries.

- The Web Layer contains all the functionalities used to implement dynamic interactions with the user without having to make a round-trip to the server. Such a layer typically includes JavaScript running in the client browser (e.g. jQuery implementation of AJAX);
- The Presentation Layer contains the logic to handle the interactions between the user and the system over HTTP. The Presentation Layer is responsible for producing all the web pages used for interacting with the user. It is also responsible for calling high-level functions, provided in the Service Layer;
- The (Local) Service Layer contains the business logic structured in high-level methods oriented around use cases. In the particular case of IRI, this layer has very limited business logic. It mainly includes specific technical features such as data caching and query parallelism. It is interacting with the real (Remote) Service Layer implemented by the MS Registers by means of the Client Stub Layer;
- The Domain Layer contains data, common rules and logic of the model: business or technical, persistent or transient. This layer is unaware of how the domain object persistence is managed. That is the responsibility of the Data Access Layer;
- The Client Stub Layer is an extension of the Service Layer. This layer hides the complexity of interacting with the remote Service Layer by exposing the Web Services as a set of Java Classes. These Classes are automatically generated by a third party product (the wsimport tool, provided by WebLogic) based on the WSDL and XSD files defining those Web Services;
- The Integration (Data Access) Layer acts as a medium between the entities of the Domain Layer and the technical solutions insuring its durability. The Data Access Layer knows how and where the persistent entities are stored. Typically, an entity of the Domain Layer has a corresponding Data Access Object (DAO) in the Integration layer that exposes methods to manage the object persistence.

On the other hand, the software libraries are made of the following components:

- JEE Framework: It defines a complete framework for implementing enterprise applications on top of Java Technology;
- EhCache Library: This library is used for exposing standard caching strategy. It is mainly used by IRI to cache the results coming from the MS Registers, but can also be used by other software libraries (e.g. Hibernate). In the context of Web Services, it is very important to remind the underlying technologies used for exchanging information over the Web Services. The most important thing to take into account is that the information is exchanged by means of XML Fragments. Marshalling (a.k.a. Serializing) objects as XML fragments is rather slow compared to the same operation executed via RMI invocation. Moreover, there can be latency or even unavailability of those Web Services.

Consequently, IRI is putting a caching strategy in place so that the overall performance of the system is not too drastically impacted. This cache also allows to temporarily store the retrieved results of asynchronous requests, until the browser refreshes the page with those results (e.g. using AJAX);

- SLF4J Library: This small component offers the possibility to include tracing information in components designed in the responsibility-based layers, in a way that allows easy switching of its implementation. It is mainly used in the Service Layer;
- Spring Framework: This is a modular framework that simplifies the definition of the Service Layer by managing the service dependencies using the Inversion of Control pattern. It also manages the database transactions by smoothly integrating with JPA. Finally, its Web MVC module provides a complete solution for implementing the Presentation Layer using the Model-View-Controller pattern;
- Hibernate Library: This library is an implementation of JPA for object/relational mapping. It provides several useful extensions that were later included in JPA2 (not yet supported in the last version of Weblogic);
- Ajax Library: Ajax is a cross-platform initiative defining a set of rich graphical components enhancing web graphical interfaces. The library is mainly defined as a set of JavaScript functions running in the web browser of the user. A specific version of the library, named jquery, is used in the context of the IRI web sites (Back-Office and Front-Office).

Part of the e-Justice program and related to the exchange of data between Member States is the eCodex Initiative. The goal of **e-Codex (e-Justice Communication via Online Data Exchange)** is to improve the **cross-border access of citizens and businesses to legal means** in Europe as well as to improve the interoperability between legal authorities within the EU to facilitate the **cross-border exchange of information on legal proceedings**. To this aim, e-Codex is developing the building blocks to establish a secure and electronic platform to exchange documents and data between citizens, businesses, governments and judicial authorities and to support cross-border processes in the field of justice. The core building blocks of e-Codex are:

- e-Delivery: exchange of documents and data: a technical infrastructures and interface specifications to enable cross-border exchange of documents (using standards protocols for routing, addressing, security, etc.), based on web services;
- Document standards and semantics: a container format and related metadata, interpreting and processing of electronic documents;
- e-identity and e-signature: a solution to validate federated e-identities and e-signatures in a cross-border context.

e-Codex builds on the outcomes of other large scale pilots such as PEPPOL, SPOCS and STORK. In order for the results to be practically tested in a realistic environment the developed components will be validated through several pilots related to different judicial cases. These pilots are scheduled for the beginning of 2013 and are planned to run for 12 months.

Concerning the **base registries** themselves, eJustice portal provides information about business, land, will, criminal records and insolvency registries. Regarding the business registries, information about European Business Registers and national business registries in Member States is provided. For land registries, information about EULIS and national land registries is given. A pilot project is being undertaken for the interconnection of registers of wills. This pilot project has established an effective interconnection between France and Belgium. Steps undertaken are the determination of the possibilities for cooperation with ENWRA (CNU) and a feasibility study by the Commission. Concerning the interconnection of criminal records, a pilot project between Spain, Belgium, Germany, and France was extended to Luxembourg and the Czech Republic in 2008, with 14 Member States that are currently partners. Future step is the establishment of EU co-financing to prepare for connection to national criminal records. Finally, for insolvency registries a prototype is covering data from the insolvency registries of certain Member States. In the future, data from the insolvency registers from other Member States will be added, a multilingual interface and a legal and semantic glossary will be created..

4.5.2 Core Vocabularies

Core vocabularies are data models covering the basic characteristics of a data entity in a domain independent way. They can be used by information systems to exchange information, and so enable information to be sent in a cross-border setting. Core vocabularies define basic components of data entities and constitute a basis for context specific vocabularies to exchange public sector information and can also be used for mapping and aligning other vocabularies.

The ISA Programme developed three types of Core Vocabularies: Core Person, Core Location and Core Business (Registered Organisation). The Core Public Service Vocabulary is under development⁴⁸.

Core Person Vocabularies collect the data of a person and improves the communication between people registries and other IT systems that uses data about people. The Core Person data model is based on 8 elements (Full Name, Given Name, Family Name, Gender, Date of Birth, Place of Birth, Country of Birth

⁴⁸ https://joinup.ec.europa.eu/sites/default/files/D4.3.2_Case_Study_Linked_Data_eGov.pdf

and Citizenship) was established⁴⁹. The model contains only 8 elements in order to reduce any semantic conflict. This model describes the basic characteristics of a person, regardless the context of data entity. It can be used as a basic element of a person-related data exchange in e-Government project.

Core Location Vocabularies collects the data of a location and improves the communication between location registries and other IT systems that uses data about locations. Currently, a pilot project, Interconnecting Belgian National and Regional Address Data is being performed in order to address fragmentation of address data across various registries⁵⁰.

Core Business Vocabularies contribute to reliable and up-to-date information about businesses and therefore strengthen confidence in the single market. They also improve access to cross-border official business information for citizens, businesses and public administrations. Information about businesses is stored in business registries. In order for the core business services, supported by the business registries, to function effectively across borders, a common semantic standard for interconnecting business registries is needed. However, several semantic barriers originating from national Member States context (e.g. culture, legal setting, and organisation) persist jeopardizing efficient international business information exchange. To this end, Core Business Vocabularies aim to create semantic fundamentals for business information exchange across border.

Core Public Services Vocabularies capture the characteristics of the services offered by public administrations and supports the communication between IT systems that supports data of the public services.

4.5.3 Internal Market Information System (IMI)

The Internal Market Information System (IMI)⁵¹ is a secure online application that allows national, regional and local authorities to quickly and easily communicate with their counterparts in other Member States. The application helps users to **find the right authority to contact in another country** and to **communicate with them based on a translated set of questions and answers**. The below Table illustrates how the IMI addresses the four interoperability levels of the EIF.

⁴⁹ https://joinup.ec.europa.eu/sites/default/files/Case-Study-Core-Vocabularies_0.pdf

⁵⁰ <http://location.testproject.eu/BEL/>

⁵¹ http://ec.europa.eu/internal_market/imi-net/index_en.html

Table 9: IMI

<p>Legal level</p>	<ul style="list-style-type: none"> • The legal framework for the IMI was adopted by the European Commission on August 2011⁵², including: <ul style="list-style-type: none"> • Common rules defining the roles and responsibilities of the different actors involved in IMI. • Framework for the processing of personal information in IMI. • List of legal provisions supported by the IMI. • A list of areas to which the IMI could be expanded in the future.
<p>Organizational level</p>	<ul style="list-style-type: none"> • The purpose of IMI is to overcome national organisational differences by facilitating public authorities at all levels of administration to find their counterparts in other Member States. • The Commission supplies and manages the software and IT infrastructure for IMI, ensures the security of IMI, manages the network (registration) of the national IMI coordinators. • Each country needs to appoint 1 national coordinator which registries other IMI coordinators and IMI users in the Member State, serves a helpdesk, provides training to users and solves disputes. • Member States have the freedom to decide to which national authorities carry out the obligations resulting from this IMI Regulation and adapt the functions and tasks related to IMI to their national structures In addition, IMI offers a transparent set of procedures on how to deal with requests, agreed by all Member States.
<p>Semantic level</p>	<ul style="list-style-type: none"> • Information requests are handled within IMI, using a structured set of pre-defined questions and answers. The questions have been translated into all official languages by the European Commission translation services.
<p>Technical level</p>	<ul style="list-style-type: none"> • IMI is a web-based application. • IMI has been developed with the requirements of data protection legislation

Concerning base registries level, according to the Service Directive (Directive 2006/123/EC) Member States need to give authorities in other Member States access to registers that contain information on service providers. To this end, a

⁵² Regulation No 1024/2012 of the European Parliament and of the council of 25 October 2012 on administrative cooperation through the internal Market Information System: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0001:0011:EN:PDF>

directory of registers was created providing an overview of Member States' registries thus facilitating the access⁵³.

4.5.4 Secure Identity Across Borders Linked (STORK)

The STORK project is co-funded by the European Union under the Competitiveness and Innovation Programme (CIP). The STORK project seeks to make it easier for citizens and businesses to access online public services across borders by developing and testing common specifications for mutual recognition of national electronic identity (eID) between participating countries. After developing and testing rules and specifications to support mutual recognition of eIDs across Europe, it would be possible to use cross-border services over the Internet exploiting secure eID authentication. It would then be easier, quicker and cheaper for citizens to live and work in different EU countries, and for business to operate across Europe. The cooperation of the project with other EU initiatives on interoperability is also foreseen, as well as a possible future integration. STORK came to an end in 2011 and ISA action 1.5 is taking over to foster the sustainability of the technical infrastructure and common specifications as well as to facilitate the governance and the deployment of the services in production. In parallel, STORK 2.0 is currently exploring the identification of legal entities and the connection of the eID platforms to private sector applications.

Participating Member States:

Table 10.

Member States for STORK 1.0	Member States for STORK 2.0
<ul style="list-style-type: none"> • Austria • Belgium • Estonia • France • Germany • Greece • Iceland • Italy • Luxembourg • Portugal • Slovenia • Spain 	<ul style="list-style-type: none"> • Austria • Belgium • Estonia • France • Greece • Iceland • Italy • Lithuania • Luxembourg • Portugal • Slovenia • Slovakia

⁵³ http://ec.europa.eu/internal_market/imi-net/registers/index_en.htm

ISA Work Program – Access to Base Registries

<ul style="list-style-type: none"> • Sweden • The Netherlands • United Kingdom 	<ul style="list-style-type: none"> • Spain • Sweden • Switzerland • The Netherlands • Czech Republic • Turkey • United Kingdom
---	---

STORK and STORK 2.0 affect the interoperability of business and citizen registries indirectly, as they aim at developing mutual recognition of national eIDs and the exchange of identity attributes derived from base registries like population and business registries. This way, both projects are enabling interconnecting and opening of some base registries to all domain applications and in a cross border way. The Table below presents how the STORK project addressed the four interoperability levels of the EIF.

Table 11: STORK

Legal level	<ul style="list-style-type: none"> • NA
Organizational level	<ul style="list-style-type: none"> • The STORK consortium included a total of 35 members composed of national governments, academia and research, non-profit and private organizations. • Extensive consultation of all Member States was considered paramount to ensuring that the common specifications developed in STORK are applicable across Europe. It is to this end that the Member States Reference Group was created, which will allow governments and institutions from EU, which were not already in the project, to remain fully informed of developments throughout the duration of the project and to feedback their comments to the Consortium. A similar group was created to involve industry stakeholders from the private sector (the Industry Group). In addition, representatives from non-EU countries and non-industry stakeholders were brought together in the Community of Interest Group. • A common multilevel assurance model for eIDs (QAA model) was agreed by the Consortium. • A common federated architecture has been established where each Member State deploys a PEPS (Pan European Proxy Service) or a MW component that provides the common protocols to exchange eID data for cross-border electronic authentication or identification processes.
Semantic level	<ul style="list-style-type: none"> • Communicating information between Member States requires a shared understanding about what identity attributes are available

	and what each attribute means.
Technical level	<ul style="list-style-type: none">• The STORK solution comprises 2 main components:<ul style="list-style-type: none">• National instances, which are responsible for 2 roles: capturing electronic identification requests from national service providers and issuing electronic identification statements (carrying identity attributes) of national citizens to foreign applications. The national instances can be adapted to the specific needs of the Member State such as the type of interfaces to local service providers, attribute providers like citizen or business registries and local ID providers.• Common interoperability platform / layer connecting the national instances, providing common functionalities. Communication between the national instances over the common platform is standardised (SAML 2.0 is the chosen messaging standard).• A standard Java API is defined as an interface between the common functionalities and specific ones within the Member States.

4.6 CONCLUSION

In chapter 4 the main EU-initiatives related to the interoperability of base registries are discussed for each type of base registry. These initiatives involve the establishment of a technical solution or platform to enable the electronic access to and/or data exchange between national base registries. For this reason they deal a lot with the technical and semantic level of interoperability.

From an architectural point of view, all solutions have established a decentralised architecture. None of the initiatives aims to establish a central (EU-level) repository; rather all solutions aim to provide access or integrate existing national base registries in a decentralised manner. Most solutions are build based on service oriented architecture, using web services and related communication protocols (SOAP) for the exchange of information in the form of XML-schemas/messages. Some solutions (for example ECRN and RISER) exchange data over the internet, while other solutions (for example EUCARIS and ECRIS) prefer a more private and secure communications network such as sTESTA. Most solutions make use of standard security technologies and protocols such as SSL to encrypt the data exchange, sometimes combined with the use of electronic certificates for authentication.

The aim of the solutions is never to establish integration between base registries, but base registries are interconnected to support the delivery of specific e-services: cross-border mergers, opening a branch in another Member Staten, eConveyancing, address verification, etc. In addition to access to and/or integration between national base registries some solutions also provide additional information on the national conditions (responsible national public authorities, legal conditions, available data, processes, etc.) related to base registries on the online portal (for example: EULIS, EUCARIS, Civil-Status Directory of the ICCS platform).

Almost all solutions are managed through a consortium of partners (e.g. specific public administrations) across several Member States, which launched the project on a voluntary basis based on a practical need for cooperation. For the operational management, most solutions go hand in hand with the establishment of a national single point of contact, which manages the national instances of the solution, in order to overcome the differences in organisational structure between the Member States. One exception is Registry Information Service on European Residents (RISER), which is provided and maintained by an independent organisation and acts as an intermediary between public users and the public administrations maintaining the base registries.

At the process level, none of the initiatives really aims at harmonising the national processes and procedures across the Member States. Rather they try to cope with differences across Member States by providing additional information related to national conditions on the portal and/or providing flexible interfaces that can be adapted to the national situation. Of particular interest for this topic is BRITE, which has established process ontology used to easily map the national processes onto the cross-border workflow.

Only EUCARIS, the ICCS platform and ECRIS have a legal basis that provide for the use of the solution itself. Most base registries interconnected by one of the solutions remain subject to national laws.

Finally, this chapter described the Core Vocabularies that are simplified, reusable and extensible data models covering basic characteristics of a data entity in a context independent way. There are currently three Core Vocabularies that were defined by the ISA Programme (Core Person, Core Location, Core Business). Core Public Service is under development.

The e-Justice Portal aims to become a one-stop-shop for access to relevant base registries (e.g. EULIS, EBR). STORK is working on a solution for cross-border recognition of IDs, and the exchange of identity attributes derived from base registries like population and business registries (to be done in STORK 2). This way, STORK is enabling the interconnecting and opening of some base registries to all domain applications and in a cross border way. In particular the European Civil Registry Network (ECRN) has established cooperation with the STORK initiative. The Internal Market Information system (IMI) is an application, helping public administrations to find their counterparts in other Member States and to establish a standardised communication with them. The system was established in the context of the Service Directive and its use is governed by a specific legal framework, which among other things defines the roles and responsibilities of the actors involved and the procedures to deal with request. The IMI is of importance to base registries as the system can help to overcome some of the organisational and process differences across Member States.

The below Table provides all details on how the presented initiatives address the four interoperability levels of the EIF.

Table 12: Overview cross-border initiatives

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
European Business Register Network (EBR)	Business registries: Access to business registries only	<ul style="list-style-type: none"> • Subject to national laws 	<ul style="list-style-type: none"> • Managed by EEIG • Participation is voluntary 	<ul style="list-style-type: none"> • Search query in the own language. 	<ul style="list-style-type: none"> • Query into the national business registries.
Business Registry Interoperability Throughout Europe (BRITE)	Business registries: Registry-to-registry integration Pilot	<ul style="list-style-type: none"> • Subject to national laws 	<ul style="list-style-type: none"> • Cross-border workflow • Process ontology 	<ul style="list-style-type: none"> • Data ontology • Registered Entity Identifier (REID) 	<ul style="list-style-type: none"> • Service oriented interoperability layer: connecting business registries to execute cross-border processes/services. • Knowledge repository providing intelligence to support the interoperability layer.

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
European Land Information Service (EULIS)	Land registries: Access + information on national conditions	<ul style="list-style-type: none"> • Subject to national laws • Portal provides information on the legal conditions in the Member State. 	<ul style="list-style-type: none"> • Managed by an EEIG (elected management board to make decisions supported by functional directors and project staff). • Portal provides additional information on the national responsible authorities, data available, processes, etc. 	<ul style="list-style-type: none"> • Glossary of terminology 	<ul style="list-style-type: none"> • Online portal providing access national registries, based on web services.
Project LINE	Land registries: Update to EULIS	NA	NA	NA	<ul style="list-style-type: none"> • More flexibility • New features:

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
	2.0				eSignature and eRegistration <ul style="list-style-type: none"> • Integration with e-Justice portal • New infrastructure for EULIS: Enterprise service bus and SOA architecture
CROBECO	Land registries: Electronic communication to support eConveyance (obtaining foreign property)	NA	<ul style="list-style-type: none"> • Developed by the European Land Registration Association (ELRA): General Assembly + Operational Board 	NA	<ul style="list-style-type: none"> • Electronic communication between land registries and conveyancers to support cross-border eConveyancing.
European CAR and driving licence	Vehicle registries: Electronic exchange	<ul style="list-style-type: none"> • Council Decisions 2008/615- 	<ul style="list-style-type: none"> • Country pages provide information 	<ul style="list-style-type: none"> • Data definitions and standardised 	Infrastructure to exchange data between vehicle registries:

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
Information System (EUCARIS)	of data on vehicles and driving licenses between national registries + country pages	617/JHA <ul style="list-style-type: none"> • Bilateral and multilateral agreements on exchange of data related to traffic offences • Directive on the exchange of information on road safety related to traffic offences. 	details on the national organisation.	values <ul style="list-style-type: none"> • Interface to national registries takes care of translation between standardised values and national values. • Standardised XML-messages • Multilingual user interface 	<ul style="list-style-type: none"> • Web client • Core application (back office providing generic functionalities for data exchange to which the national registries connect via a standardised interface). • Based on web services • sTESTA

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
ICCS platform	<p>Citizen registries: Electronic exchange of civil status forms between civil status registries.</p>	<ul style="list-style-type: none"> Legal basis consists of 32 Conventions, with a specific Convention regulating the use of the platform. 	<ul style="list-style-type: none"> Developed by the International Commission on Civil Status (ICCS) Civil-Status Authorities Directory. 	<ul style="list-style-type: none"> Standard translation of vital terms in civil status records. Standardised XML-schemas for exchange. Metadata based on SEMIC.eu standards. 	<ul style="list-style-type: none"> Platform for the exchange of XML-schemas via email-alike communication.
European Civil Registry Network (ECRN)	<p>Citizen registries: Electronic exchange civil status documents between civil status registries.</p> <p>Pilot</p>	NA	<ul style="list-style-type: none"> Owned by the Italian Association of civil Status Officers (ANUSCA) Representatives from all 12 partners of the consortium in 	NA	<p>Main components:</p> <ul style="list-style-type: none"> Software platform providing basic functionalities ESB for integration Data layer connects to underlying

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
			<p>Administration Committee to decide on the platform.</p> <ul style="list-style-type: none"> • Technical Board to provide advice. • Additional executive functions for day-to-day operations. 		<p>registries</p> <ul style="list-style-type: none"> • Web application for access <p>External components:</p> <ul style="list-style-type: none"> • Central Authentication Service • CryptoServer (security functionalities) • Over the Internet • Cooperation with STORK
<p>Registry Information Service on European Residents (RISER)</p>	<p>Citizen registries: Retrieval of information from population registries for cross-border address</p>	NA	<ul style="list-style-type: none"> • Maintained by an independent company, which acts as an intermediary. 	NA	<ul style="list-style-type: none"> • Platform passes query from user to official registries in the Member State. • By internet, access via a web portal.

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
	verification (intermediary)				
European Civil Record Information System (ECRIS)	<p>Citizen registries: Electronic interconnection between criminal record databases.</p>	<ul style="list-style-type: none"> • Council Framework Decision 2009/315/JHA on the exchange of information extracted from criminal records across Member States. • Council Decision 2009/316/JHA on the establishment of ECRIS. 	<ul style="list-style-type: none"> • Member States should designate Central Authority responsible for data exchange. • Each country maintains central repository of criminal records of their nationals. • Member States need to notify other Member States on convictions. 	<ul style="list-style-type: none"> • Standard European format • References tables on categories of offences and penalties. 	<ul style="list-style-type: none"> • sTESTA network • Interconnection software for sending and receiving requests. • Based on web services
SEMIC.eu	<p>All registries: Online community</p>	NA	<ul style="list-style-type: none"> • 3 online communities 	<ul style="list-style-type: none"> • Asset Description 	<ul style="list-style-type: none"> • Communication platform + public

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
	promoting semantic methodologies and technologies + public web repository		active in 6 semantic projects related: <ul style="list-style-type: none"> ○ Metadata ○ Software Forges ○ Core vocabularies • Face-to-face conferences, workshops and meetings 	Metadata Schema (ADMS) <ul style="list-style-type: none"> • ADMS.SW (for software) • Core Business Vocabulary • Core Person Vocabulary • Core Location Vocabulary • Core Public Service Vocabulary 	web repository
e-Justice Portal and e-Codex	All registries: One-stop-shop for access to base registries + eCodex to facilitate cross-border exchange of documents/data	NA	NA	<ul style="list-style-type: none"> • e-Codex: document standards and related semantics and metadata 	<ul style="list-style-type: none"> • Online portal providing access to base registries (EULIS, EBR) • E-Codex: technical infrastructure and specification for electronic

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
					document/data exchange.
Secure Identity Across Borders (STORK)	<p>Citizens and business registries: Establish common specifications for cross-border recognition of national eIDs and the exchange of identity attributes derived from base registries like population and business registries. This way, STORK 1 and STORK 2 are enabling the interconnecting and opening of some</p>	NA	<ul style="list-style-type: none"> • Managed by a consortium of 35 partners including national governments, academia and research centres and private organisations. • Capture feedback from all stakeholders through Reference Group Meetings. • Establish a common understanding 	<ul style="list-style-type: none"> • Establish a common understanding on identity attributes for natural and legal persons. 	<ul style="list-style-type: none"> • Common interoperability layer and national instances connected by a standard API.

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
	base registries to all domain applications and in a cross border way/		on eID assurance levels		
Internal Market Information system (IMI)	<p>All registries: Application to identify the right authority in another Member State and establish a standardised communication with them.</p>	<ul style="list-style-type: none"> • Legal framework for IMI exists 	<ul style="list-style-type: none"> • Roles and responsibilities of the actors involved defined in the legal framework • Purpose of IMI is overcome national differences. • System is managed by the EC • National coordinator per country • Set of 	<ul style="list-style-type: none"> • Communication based on standardised questions and answers, translated into all official languages. 	<ul style="list-style-type: none"> • Web-based application

ISA Work Program – Access to Base Registries

	Coverage	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
			procedures to deal with request.		

5. NATIONAL DIMENSION

This chapter provides a high-level overview of the current state of interoperability of base registries at the national level. Section 5.1 describes interoperability at national level from the EIF levels perspective (legal, organisational, semantic and technical) and security point of view. Section 5.2 presents interoperability of base registries by means of cross sector national initiatives.

5.1 INTEROPERABILITY OF BASE REGISTRIES IN EUROPE

This section aims to provide an overview of activities and solutions representative of interoperability of base registries in Europe identified within the NIFO project⁵⁴. The Member States insights are presented according to the EIF (European Interoperability Framework) levels and security and privacy dimension.

5.1.1 Legal interoperability

The analysis of the NIFs reveals that most countries have various aspect of interoperability of base registries covered by legislations, especially security aspects to ensure protection of the privacy and personal data.

5.1.2 Organisational interoperability

One of the recommendations of the EIF is that public administrations should document their processes in an agreed way. Of particular interest in this area is **Greece**, which refers in its NIF to a Documentation Model for Public Administration Processes and Data (DMPAPD) that aims at defining the notation, the rules and the specifications that must guide the process documenting processes in a unified way, based on BPMN and UML. Also the **French** NIF recommends public administrations to use UML and BPMN notation to document business processes. Other countries that mention the importance of documenting administrative processes in a unified way are Denmark, the Netherlands and Estonia. The recommendation on business process modelling is supported by the EIF principle on (organisational) transparency, which is also identified in the NIFs of Austria, Germany, Finland and Spain as an important pre-requisite to organisational interoperability. In Austria, cooperation between all levels of government is promoted, especially through well-defined and jointly developed interfaces. The German e-government strategy stresses the importance of transparency of administrative procedures and states that users should be able to request information about the processing of their data at all times. In Spain, the organisational model to interconnect base registries by

⁵⁴ National Interoperability Framework Observatory, September 2011, Deloitte

means of architecture based on broker services is worth mentioning (NIF and eGov Law 11, 2007). The model is governed by interoperability agreements to be signed by participating parties.

Two other recommendations in the EIF related to organisational interoperability are clear organisational relationships and well-defined change management processes. In **Finland** the NIF is elaborated in the form of an Enterprise Architecture Framework, there is an explicit part that models organisational relationships. Other countries that are worth mentioning within this aspect of organisational interoperability are **Estonia, Germany, Greece** and **Italy**. The **Danish** NIF describes that the role of a change architect must be included in each new project. Other NIFs that make a reference to change management processes are those of **Estonia, Finland, Germany, Italy** and **the Netherlands**.

5.1.3 Semantic interoperability

According to the NIFs, the countries that are the most actively engaged in defining common dictionaries, code lists, classifications, taxonomies, ontologies, metadata and XML-schemas to structure the data exchange between public administrations are Austria, Denmark, Finland, Estonia, Germany, Greece, Italy, Slovenia and Spain.

In **Austria** the government is working on the establishment of various XML-structures for communication among public administrations, such as the XML structure for personal data that uniquely describes a person based on various blocks such as person, address and signature and which is used by all administrations that handle personal data. Besides its Electronic Data Interchange Format (EDI AKT) comprises a specification on metadata. **Denmark** has been working on the development of a XML catalogue, FORM catalogue and a service and technology reference model (STORM). The XML catalogue comprises a set of common XML-schemas to structure data exchange between public administrations. The FORM catalogue provides a "common language" across the public sector. The service and technology reference model (STORM) creates a common classification of IT public services. Sector communities are taking ownership of the development of data standards to ensure interoperability between IT systems in these sectors as well as across sectors. In **Finland**, an interoperability portal was developed (based on the SEMIC.eu platform, now part of JoinUp) for the different public administrations to share their semantic assets. **Estonia** is working on the definition of a semantic interoperability framework that comprises common agreements and rules to facilitate interoperability at a semantic level. The framework also encourages private companies and associations to participate in the creation and implementation of semantic assets. In **Germany** the Deutschland-online

"Standardisierung" project encourages the definition of a uniform presentation form and semantics for the elements of the XML-files to be exchanged, for instance by specifying concrete data models in the form of XML schemas (XSD) or by a Regular Language Description for XML New Generation (Relax NG). In **Greece**, semantic aspects of data exchange are addressed in the Documentation Model for Public Administration Processes and Data. In **Italy**, the data and metadata schemas and the domain ontologies are published and made available by the administrations through the schemas and ontologies catalogue service. The NIF here also states that public administrations will need to make their public data available in open formats that can be reprocessed by third parties. Also in **Slovenia**, there are various initiatives to stimulate the common use of semantic methodologies (e.g. XML-schemas, naming and identification principles for data elements and e-documents). **Spain** has established a Centre of Semantic Interoperability of the Administration: it will publish the data models for data exchange, both common and sectorial, together with the associated definitions and codifications. What is more, Spanish NIF illustrates a technical norm setting up a semantic model for the interconnection of base registries through a broker.

Multilingualism needs to be carefully considered when designing European public services. However, as public services and the base registries on which they are based on are still seen predominantly as a domestic effort, multilingualism of base registries is not prominent in Europe besides Austria, Denmark, Finland, Norway, Latvia, Spain and Sweden. The NIF of Estonia is identified as the best practice and describes the importance of having user interfaces and information systems in other languages.

5.1.4 Technical interoperability

The following countries have defined technical specifications to ensure interoperability within their national interoperability frameworks: **Bulgaria, Denmark, Estonia, Germany, Greece, Italy and Latvia**. In Denmark these standards are even mandatory unless a proper reason can be documented. **Austria, Bulgaria, Denmark, Estonia, Finland, Latvia, Portugal, Spain, the Netherlands** explicitly promote the use of open standards during the development of systems and integration platforms. Denmark states that standards must be documented and publicly available and free to implement without any economic, political or legal limitations. The Estonian public sector has an open standards framework and working group which defines a minimum set of open standards and monitors their application. The decision to use closed standards and specifications should be justified appropriately. Latvia promotes the use of platform independent file formats and data transmission protocols for system interfaces, based on open

standards. In Spain the principles of technological neutrality and the use of open standards are embedded in their interoperability law. In addition, the Spanish NIF developed a technical norm setting up the technical standards for the interconnection of base registries through a broker.

5.1.5 Security and privacy

In **Austria**, where citizens put high value on the protection of privacy, there is a high degree of confidence in the Austrian administration with regard to data protection. This is realised through the sector-specific personal identifiers (ssPINs), which ensure that only authorised persons within the administration have access to personal data, in compliance with the established data protection standards. Security is also a primary concern of the **Danish** NIF. In Denmark, all EU legislation on privacy and security is fully implemented and it is mandatory for all public administrations to comply with the ISO 27000 family of security standards. The **Netherlands** has defined a set of principles that should help to operationalize the security and privacy demands related to public services. Some countries such as **Latvia, Portugal, Spain, Italy** and **Greece** have fixed security requirements within a legal framework. Other Member States that pay attention to the security and privacy within their NIF are **Bulgaria, Finland, Estonia, Germany, France and Portugal**.

5.1.6 Conclusion

From the high-level overview of the current state of base registries at national level it can be concluded that within the legal interoperability a variety of legal provisions concerning different aspects of interoperability of base registries exist. Regarding the organizational interoperability, as an example of addressed EIF's recommendations to document public administration processes, interesting insights were identified in Greece that uses the Documentation model for Public Administration Processes and Data (DMPAPD). This recommendation is also highlighted in the NIFs of France, Denmark, Netherlands, Estonia, Austria, Germany, Finland and Spain. The EIF recommendations of clear organizational relationships and defined change management processes are mentioned in the NIFs of Finland, Estonia, Germany, Greece, Italy, Denmark and Netherlands. Regarding the semantic interoperability layer, the Member States which are the most active in defining common dictionaries, code lists, classifications, taxonomies, ontologies, metadata and XML schemas to structure data are Austria (XML for personal data), Denmark (XML catalogue, FORM catalogue and service and technology reference model STORM), Finland (interoperability portal), Estonia (definition of semantic interoperability framework), Germany (Standardisierung project to define uniform presentation forms and semantics for XML exchanges), Greece (Documentation

Model for Public Administration Process and Data), Italy (data and metadata schemas and domain ontologies available to public administrations via schemas and ontologies catalogue), Slovenia (initiatives to support common use of semantic ontologies) and Spain (centre of semantic interoperability and administration, technical norm setting up a semantic model for the interconnection of base registries through a broker).

5.2 CROSS-SECTOR DIMENSION

This chapter provides an overview of the cross-sector initiatives at national level (EU and non-EU). In particular, it focuses on 9 representative for base registries initiatives that are categorized according to the following organisational levels they intend to address:

Table 13. Overview of initiatives.

Organisational level	Category	Initiative	Explanation
eGovernment level	Public Service	Registry based census (Finland)	Registry based population census service done by public administrations by combining persons, business and buildings and dwellings registries
	Program	iNUP (Netherlands)	Governmental program aiming at improving access of government information for citizen and digital services for businesses, integration of several base registries (catalogue, infrastructure, standards for data exchange)
	Program	Grunddata (Denmark)	Governmental program to reuse and share of different types of public sector data retrieved from one single point for public administrations, public and private sector

ISA Work Program – Access to Base Registries

Organisational level	Category	Initiative	Explanation
	Program	Administrative Data Sharing ⁵⁵ (Republic of Korea)	Governmental program to establish a government-wide information sharing system integrating major administrative databases
	Open Data	Data.gov ⁵⁶ (United States)	Open data initiative coordinated by the US federal government aiming to facilitate access to different federal datasets
	Open Data	Data.gov.sg ⁵⁷ (Singapore)	Open data initiative giving access to over 5000 datasets from 50 governmental agencies and ministries
Interconnection level	Infrastructure	X-Road (Estonia)	Infrastructure solution enabling delivery of web-based services and access to governmental base registries for public administrations, public and private sectors
	Infrastructure	Brokerage Service (Spain)	Several types of base registries connected through one single point of contact or interconnecting infrastructure called brokerage services infrastructure for personal data verification
Base registry level	Services	Civil Registration Services (Austria)	Delivery of civil registration services related to personal and residence data

⁵⁵ More details are provided in section 6

⁵⁶ More details are provided in section 6

⁵⁷ More details are provided in section 6

The eGovernment level initiatives are covered within sections 5.3.1 till 5.3.3 (EU initiatives) and then are presented in sections 6.1 till section 6.3 within the chapter on non-EU initiatives. Interconnection level is accounted for within sections 5.3.4 and 5.3.5. Base registry level is covered within section 5.3.6.

5.3 EGOVERNMENT LEVEL – PUBLIC SERVICE: REGISTRY BASED CENSUS (FINLAND)

Finland is among the world pioneers in the use of administrative registers (base registries) for the purpose of statistics production (census). The following lists the most important registers used by Statistics Finland in its own statistics production:

- The Population Information System, containing information on the population, buildings, dwellings, business premises and summer cottages;
- The Customer Register of Taxation (from the customer database), Payment Control Register (contains monthly data on value added tax and employer contributions); taxation registers (e.g. Business Taxation Register), income and property data, employers' annual control data, the Trade Registration Code Register (which is being transferred to the business information system);
- The Trade Register;
- Employment data in the employment pension systems;
- The Register of Job Applicants and Labour Market Training;
- Elderly people, disability and unemployment pension, and information on housing allowances and illnesses;
- The Register of Income Support;
- The Conscript Register;
- Student registers;
- The Register of Completed Education and Degrees;
- The Vehicle Register;
- The Business Register.

Some statistics are based on one registry only, while other statistics require the combination of data from several registries. An overview of the units covered by the registry-based census system is provided in the figure below.

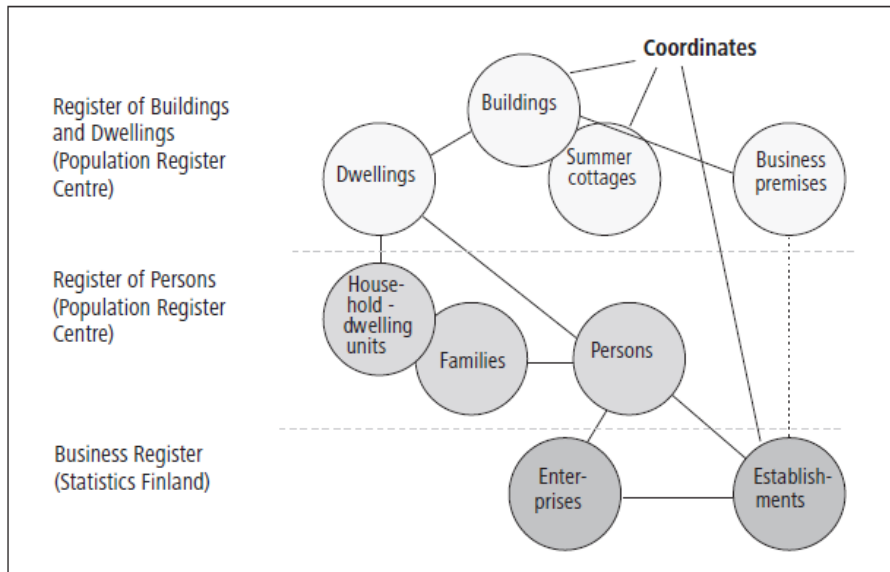


Figure 8: Units of the registry-based census system

The Table below presents how the Registry based census in Finland corresponds to the four interoperability EIF levels.

Table 14. Registry based census.

Legal level	<ul style="list-style-type: none"> The Finnish Statistics Act (2004) is based on the principle that whenever possible, statistics shall be compiled using administrative records and gives power to Statistics Finland to access administrative data and link it for statistical purposes. Furthermore, the Statistics Act provides a detailed definition of data protection.
Organizational level	<ul style="list-style-type: none"> Statistics Finland has appointed for each register authority a contact person whose job it is to maintain open channels of communication with that authority, to monitor developments within the field concerned, and to work towards maintaining or improving the statistical applicability of register data. In addition Statistics Finland arranges annual meetings on the Directors General level with register authorities to discuss key issues and monitor progress in cooperation.
Semantic level	<ul style="list-style-type: none"> Use of unified identification systems across different sources
Technical level	NA

5.4 EGOVERNMENT LEVEL – PROGRAM: I-NUP PROGRAM (THE NETHERLANDS)

I-NUP is a national program⁵⁸ for better services and e-government, bringing together the national government, provinces and municipalities. Key action points in the programme are:

- Improved access and availability of governmental information for citizens.
- Improved digital service offering towards businesses (improved information on applicable laws, online request for licenses and permits, etc.)
- Integrating the various base registries by providing a base registries catalogue and an infrastructure and standards for data exchange.

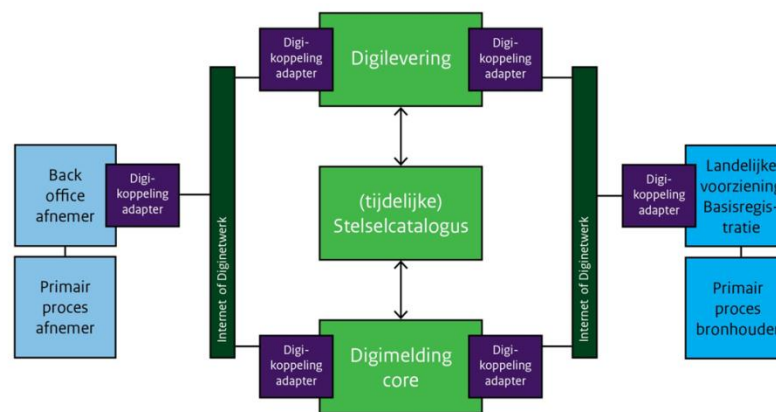
The below Table presents how the I-NUP program corresponds to the four EIF interoperability levels.

Table 15: The Netherlands - I-NUP Program

Legal level	<ul style="list-style-type: none"> • Legal provisions are included in the base registries catalogue (Stelselcatalogus).
Organizational level	<ul style="list-style-type: none"> • Online catalogue describing the structure of the base registries, there relationships, the responsible administration and the related legal provisions (Stelselcatalogus).
Semantic level	<ul style="list-style-type: none"> • Standards for data exchange between public administrations (Digikoppeling).
Technical level	<ul style="list-style-type: none"> • Infrastructure and tools for data exchange (Stelselvoorzieningen) including the following elements (see also figure below): • Digikoppeling: set of standards for electronic data exchange between administrations. • Digimelding: supports the reporting of error discover in the register to the owner of the register. • Digilevering: enables the delivery of electronic data from base registries in support of events (i.e. starting a new business, birth of a child) according to a subscription mechanism between user and provider.

⁵⁸ <http://e-overheid.nl/onderwerpen/e-overheid/over-i-nup>

- Stelselcatalogus: online catalogue describing the structure of the base registries, their relationships, the responsible administration and the related legal provisions.



NUP Infrastructure - Stelselvoorzieningen

5.5 EGOVERNMENT LEVEL – PROGRAM: GRUNDDATA PROGRAM (DENMARK)

In Denmark **'good basic data for everyone'** is part of the public sector digitalisation strategy (e-government strategy 2011 – 2015)⁵⁹. Though Denmark has come a long way in its efforts to facilitate the re-use and sharing of basic public sector data across public administrations and sectors, there are still some barriers. To this end, the Danish government has established a detailed **Roadmap, also referred to as the 'Grunddata program', paving the way towards open and easy-to-access high-quality basic data within the public as well as for businesses and citizens**. The 5 main focus areas of this action plan include:

1. **More basic data will be released** for free use by other public administrations, the public and the private sector.
2. **Enhance the quality of the basic data** (expanding some base registries while phasing out others).
3. Ensure that **all basic data is conforming to the same technical requirements** in order to facilitate data sharing.
4. Establishment of a **common infrastructure** for stable and efficient distribution of different types of basic data across various public administrations and business in different sectors (the Data Distributor).

⁵⁹ <http://epsiplatform.eu/content/danish-basic-registries-roadmap>

5. Establishment of a **cross-institutional basic data committee** in order to coordinate the efforts.

Thanks to the Grunddata program, in particular the establishment of the Data Distributor, public administrations and businesses from various sectors will benefit from an improved quality and access to different types of public sector data retrieved from one single point. Some practical examples include:

- Police forces will be able to easily access and combine the many types of basic data they use to perform their day-to-day jobs as well as to react to crisis situations. Some concrete examples are:
 - Link business data to map data in order to identify places in the country where fireworks businesses are situated in close vicinity to residential areas.
 - Combine business data (i.e. sector, number of employees), personal data and geographic data to plan for an evacuation following and major accident.
 - Prevent burglaries by using location-specific data about a new wave of burglaries in order to warn citizens and business owners in the hardest hit areas.
- Common environmental data will improve the collaboration between local government and water utilities in order to make climate efforts more efficient and effective.
- With free access to the Cadastral Map the sector can establish more efficient administrative procedures across estate agents, land registry, mortgage-credit institutions, sellers and buyers.
- E-government services across all sectors will automatically retrieve the address data, so that the user does not have to spend time entering this data and risk errors in data entry.
- Up-to-data addresses and place names linked to geographical maps are vital when the emergency services have to respond to an accident or crises.
- Many businesses will be able to use the open basic data on addresses to optimise their business processes and achieve more efficient logistics.

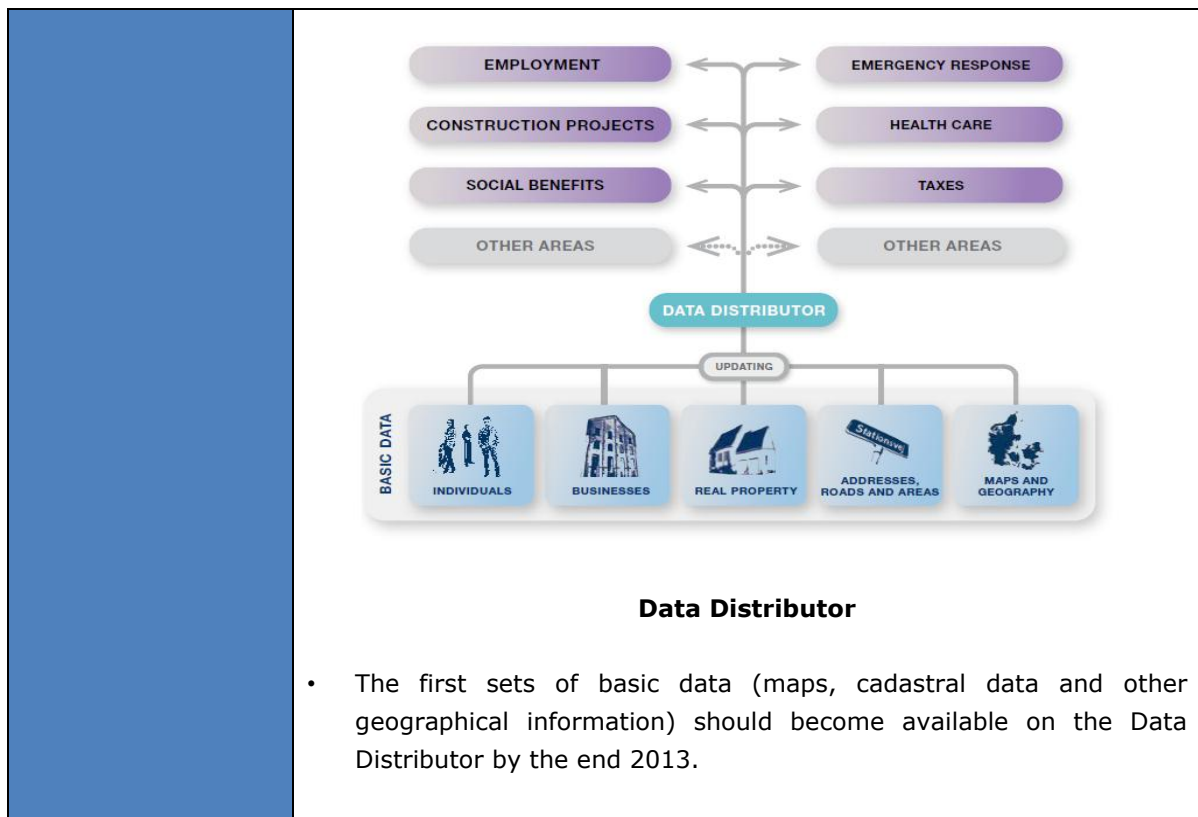
The below Table illustrates how the Grunddata program fits into the four levels of the EIF interoperability.

Table 16: Denmark - Grunddata program

Legal level	NA
Organizational level	<ul style="list-style-type: none"> • A cross-institutional basic-data committee is established to help ensure efficient and coordinated development and use of basic data

ISA Work Program – Access to Base Registries

	<p>across the public sector. The basic-data committee will:</p> <ul style="list-style-type: none"> • Ensure the coordination of large development initiatives and changes to existing basic data; • Draft proposals for new developments and projects relating to basic data; • Ensure that the interfaces, standards and data models for basic data are coordinated with each other; • Manage the Data Distributor; • Enter into dialogue with public and private-sector users about the potentials in better use of public-sector basic data; • Ensure that all public authorities are fully exploiting the potentials in efficient use of basic data; • Document and follow up on use of basic data by public authorities and report annually about this to the government and Local Government Denmark.
Semantic level	<ul style="list-style-type: none"> • Establishment of common data standards and models to which all basic data needs to comply.
Technical level	<ul style="list-style-type: none"> • Definition of common technical requirements to be met by all basic data. • Establish the Data Distributor, which is a common infrastructure for the distribution of basic data across various sectors (see figure below).



5.6 INTERCONNECTION LEVEL – INFRASTRUCTURE: X-ROAD (ESTONIA)

The X-Road is a technical solution (or data exchange layer), established with the objective of facilitating the delivery of web-based services to enable public administrations, citizens and business to access governmental databases and base registries. A standard X-Road service consists of a predefined query-response. In addition to the standard services, the X-Road can be used to transfer documents, files and large structured data sets. Besides providing the software and hardware for the technical solution the X-Road project also established a supporting organisation for the implementation and operation of the 'data exchange layer'.

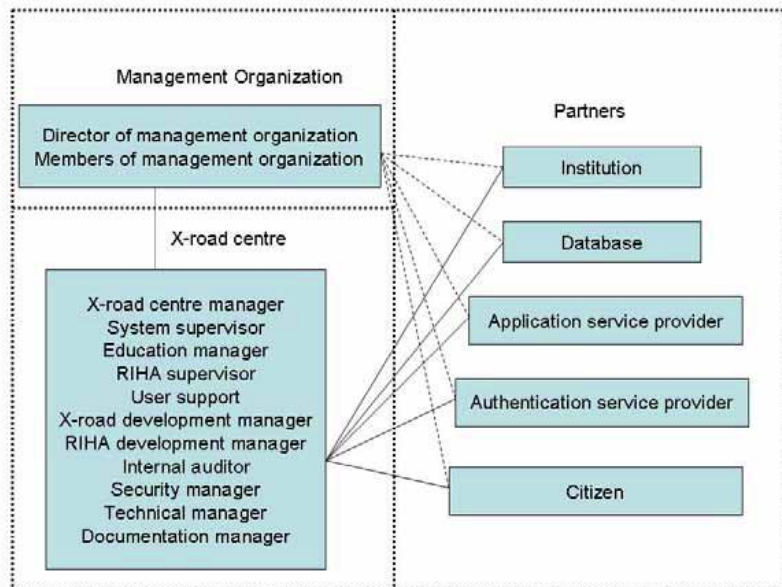
The below Table presents how the X-Road addresses the four EIF interoperability levels.

Table 17. X-Road.

Legal level	<ul style="list-style-type: none"> • Public Information Act (previously the Estonian Databases Act). • Personal data protection law.
Organisational level	<ul style="list-style-type: none"> • The X-Road is maintained by a dedicated X-Road organisation, which duty is to ensure the proper functioning of the X-Road as well as the on-going development of the X-Road in accordance with the

needs of the users. The X-Road organization consists of the following (see figure 8):

- Management organisation: responsible for planning and leading the X-Road and consisting of the Estonian Informatics Centre (RIA) director and department heads.
- Operational organisation (X-Road Centre): consisting of various individuals from various departments of RIA that administer and develop the X-Road
- Cooperative organisation: the X-Road partners which consist of service providers, service consumers and application service providers.

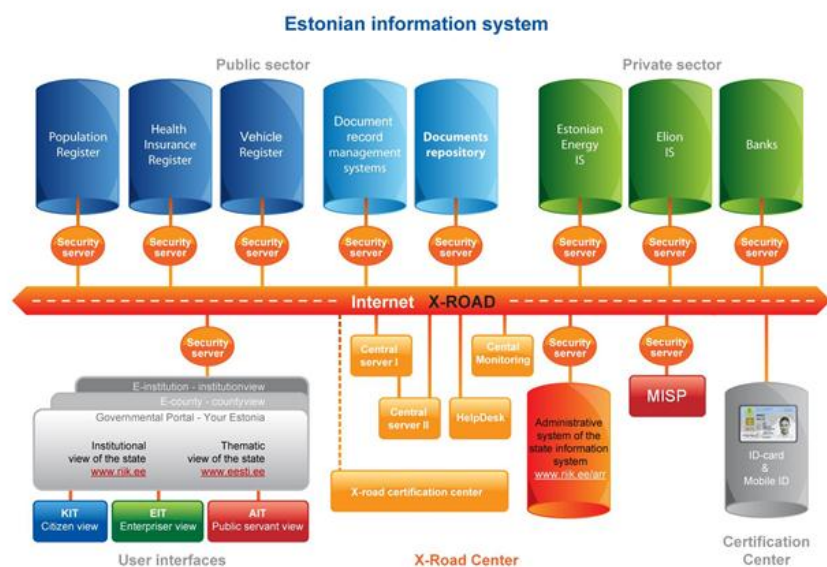


X-Road Organisation

- The roles and responsibilities of all parties in the X-Road organisation are defined in the 'X-Road regulations'. The X-Road Regulations also describes the related administrative processes such as the procedures for joining the X-Road, maintenance (i.e. patches, assign users, back-up) and incident management. In addition it also defines the minimum security requirements to be implemented by each party involved.
- The administration of the X-Road is supported by a system called RIHA (the administration system of the state information system), which contains contact information and technical information for all institutions that have joined the X-Road and metadata on the services and databases they provide (i.e. service ID, inputs, outputs, classifications, semantic description, security grade).

Semantic level	<ul style="list-style-type: none"> • Service description in RIHA contains semantic description of the services and data they provide.
Technical level	<ul style="list-style-type: none"> • Based on web services using SOAP protocol

- Implemented through a set of servers:
 - Security servers (local): the security server is a standard software solution which is installed in every institution (public or private) that joins the X-Road. All data exchange runs via the security servers, which represent the institution's access point to the X-Road. Security servers encrypt/decrypt the data, generate usage logs and control access rights.
 - Central server (central): routes queries to the appropriate service provider.
 - Certificate server (central): ensures all security servers are certified.
 - Monitoring server (central/local): centralised server, monitoring the status of the security servers and collecting usage statistics.



X-Road

- Institutions need an Adapter Server (SOAP server) to adapt and link their database to the X-Road and/or a SOAP client to link their information systems to the X-Road.
- Access: In case of citizens, the X-Road enables using the services of the X-Road via different portals. Officials can use the services via the information systems of their own institutions (if connected) or via a Mini Information System Portal (MISP).
- Individuals are authenticated by use of their ID-card or by use of the authentication services provided by the banks.

5.7 INTERCONNECTION LEVEL – INFRASTRUCTURE: INTERMEDIATION PLATFORM (SPAIN)

Most administrative procedures involving citizens require documents such as identity and place of residence in order to verify these personal data. However, applicable legal acts also limit the need for citizens to present those documents that are already held (in an electronic form) by public administrations. To this end, the Spanish authorities have introduced data verification services⁶⁰ on personal data. The aim of the Spanish data verification services is to establish an intermediate service (brokerage services) for the consultation and validation of citizen's personal data by public administrations in various sectors. An overview of the sectors making use of the personal data verification service is provided in the figure below. The services allow any public administration within these sectors to launch a query for data verification or consultation as long as it is strictly necessary for the administrative procedure and the citizen's consent has been gathered. Based on the query the service will perform a validation or consultation of the data against the databases of the competent authority (i.e. the Directorate General and Police (GDP) for identity data, the National Institute of Statistics (INE) for data on citizen's residence and the 'Servicio Publico Empleo' (SPEE) for data on unemployment benefits). The provision of the services is supported by a platform enabling electronic document exchange, interconnecting Public Administrations and their base registries.

⁶⁰ http://administracionelectronica.gob.es/?_nfpb=true&_pageLabel=PAE_PG_CTT_General&langPae=es&iniciativa=223



Figure 9: Personal data verification service – sectors involved

The below Table shows how the Brokerage services contribute to the four EIF levels.

Table 18: Brokerage services for personal data verification.

<p>Legal level</p>	<ul style="list-style-type: none"> • Law 30/1992 of 26 November on the Legal Regime of Public Administrations and the Common Administrative Procedure, states the right of a citizen not to present those documents that are already held by the acting administration. • Similarly, Article 6 of Law 11/2007 of 22 June on electronic access of citizens to public services, recognizes the right of a citizen not to provide the information and documents held by public authorities, which use electronic means to collect this information if, in the case of personal data, it has the consent of the persons concerned. • NIF defines the interoperability elements for the consultation or exchange of personal data from base registries
<p>Organizational level</p>	<ul style="list-style-type: none"> • The broker services are based on interoperability agreements and an interconnection architecture defined in the NIF. These services are offered by one particular entity (Ministry of Finance and Public Administration) who is responsible for the exploitation and maintenance of the system and for the connection to the base registries
<p>Semantic level</p>	<ul style="list-style-type: none"> • Semantic data is defined for the data exchange based on XML schemes as one of the technical standards developed under the NIF

Technical level	<ul style="list-style-type: none">• The current platform is defined as a service-oriented architecture. XML documents/messages are exchanged via web services (WSDL and SOAP) and electronically signed by XMLDsig.• The data is exchanged through the private administrative telecommunication network (SARA) which connects all the public entities of the country. This network is also connected to sTESTA.• The personal data can be consulted in 2 ways:<ul style="list-style-type: none">• Automatically via a web service• Manually by PA's agent using a web client (HTTP)
------------------------	--

5.8 BASE REGISTRY LEVEL – SERVICES: CENTRAL REGISTER OF RESIDENCE (AUSTRIA)

To support the effective and efficient delivery of civil registration services (i.e. certificate of residence, validation of reference information) the Austrian Government has established the Central Register of Residence (CRR)⁶¹, which is central repository containing the personal and residence data of all Austrian residents. The CRR is the core of all public services provided to citizens where up-to-date residence information is needed.

The Central Register of Residence combines several data repositories:

- Register of Persons (contains personal data of all identified natural persons staying or residing in Austria – Austrians and foreigners)
- Supplementary Register to the Register of Persons (contains personal data of all Austrians living abroad and foreigners transacting electronic procedures with Austrian authorities, e.g. foreign carriers)
- Residence data of Persons (contains the residence data that belong to the personal data)

Also connected to the CRR is the Register of Buildings and Dwellings of the Austrian Statistics.

⁶¹ <http://unpan1.un.org/intradoc/groups/public/documents/other/unpan022349.pdf>

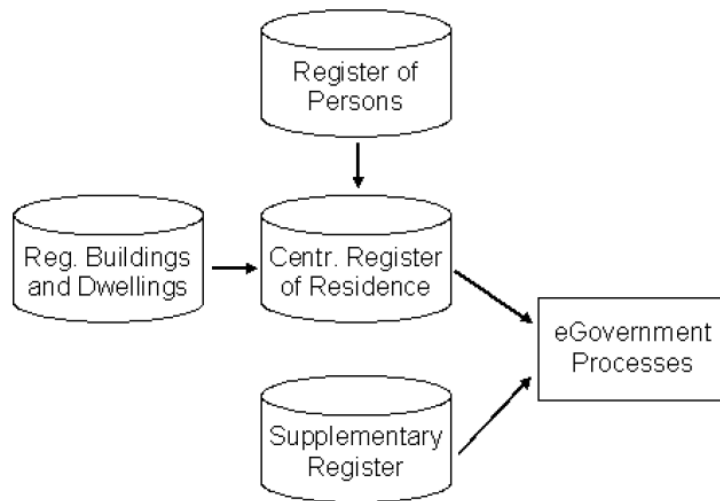


Figure 10: Central Register of Residence (CRR)

The CRR is the biggest register in the Austrian administration and is accessible by all government authorities of all levels and areas and it is the basis for many tasks of the public administration including:

- Address information and validation services
- Change of address
- Request for certificate of Residence
- Declaration to the police
- Services related to elections, plebiscites and referenda
- Request of further certificates (e.g. birth, death)
- Census
- Citizens card

The below Table 17 illustrates how the Civil registration services in Austria fit into the four EIF interoperability levels.

Table 19. Civil registration services.

Legal level	<ul style="list-style-type: none"> • Citizen Registration Act
Organisational level	<ul style="list-style-type: none"> • The CRR was developed by a newly founded organisation, the 'Zentrales Melderegister' (ZMR). The ZMR is responsible for the overall project organisation, the maintenance of the Central Register of Residence and serves as contact point for the enclosed public authorities. • Local registration offices remain responsible for recording and updating the data. All local registration office within Austria are connected to the Central Register of Residence and feed their data

ISA Work Program – Access to Base Registries

	into the central repository. This means, the personal data of all Austrian residents are kept in decentralised local data bases and a copy of these records combined in one single central register – the Central Register of Residence (CRR).
Semantic level	NA
Technical level	<ul style="list-style-type: none">• Data is exchanged based on web services (SOAP) using standardised XML schemas and interfaces.• Via the internet.• Access is generally provided via a gateway with LDAP directories, including comprehensive roles and rights administration

6. NON-EU INITIATIVES

This chapter provides an overview of initiatives undertaken outside the EU. The United States of America, South Korea and Singapore were chosen as countries outside the European Union with advanced eGovernment development according to the United Nations eGovernment 2012 survey⁶². South Korean's "Administrative Information Sharing Expansion" program is illustrated in section 6.1. The data.gov is described for the United States and Singapore as an open data initiatives respectively in sections 6.2 and 6.3.

6.1 EGOVERNMENT LEVEL – PROGRAM: ADMINISTRATIVE DATA SHARING (REPUBLIC OF KOREA)

The Republic of Korea is one of the world leaders in e-government and has the 1st place since 2010 as achieving the greatest e-government both in development and participation indices. Its Administrative Computerized Network project that started in 1987 paved the way for the advanced e-government environment the country has today. It included the set-up of a database containing basic country data encompassing residence, real estate and automobiles and the establishment of core infrastructures such as the Government for Citizen (G4C) Civil Service Information System. In 2003 Korea proposed its new e-government roadmap. In particular, the roadmap focused on the integration and connectivity of administrative databases as the foundation for innovating services for citizens and it formed the occasion to launch the 'Administrative Information Sharing Expansion' program⁶³. The objective of the program is to establish a government-wide national information sharing system integrating and connecting major administrative databases. The administrative information sharing system facilitates the sharing of a set of information types in eight areas: residence, real estate, vehicles, taxation, enterprises, veterans' affairs, military service and legal affairs. In addition, the program seeks to introduce legal and institutional improvement for settlement of information sharing. It will also extend the use of administrative information sharing to the private sector, which was difficult before due to the lack of an appropriate legal basis.

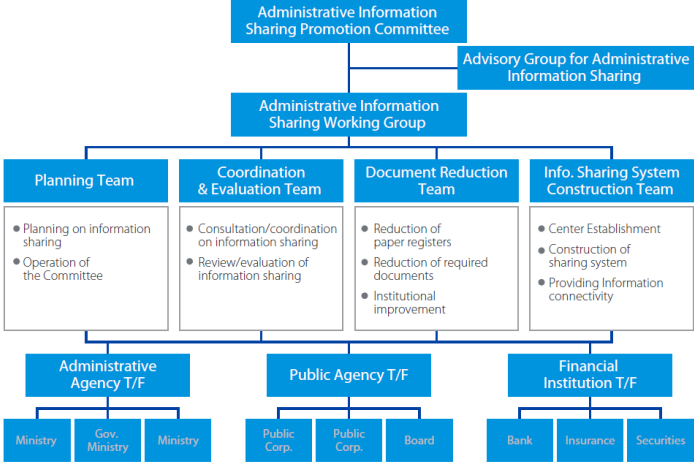
⁶² e-Government development index - is a composite indicator measuring the willingness and capacity of national administrations to use information and communication technology to deliver public services. It is based on a comprehensive survey of the online presence of all 193 Member States, which assesses the technical features of national websites as well as e-government policies and strategies applied in general and by specific sectors for delivery of essential services, United Nations eGovernment survey 2012, <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf>,

⁶³ <http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN042705.pdf>

The Table 21 below explains how the administrative data sharing in South Korea addresses the four EIF levels.

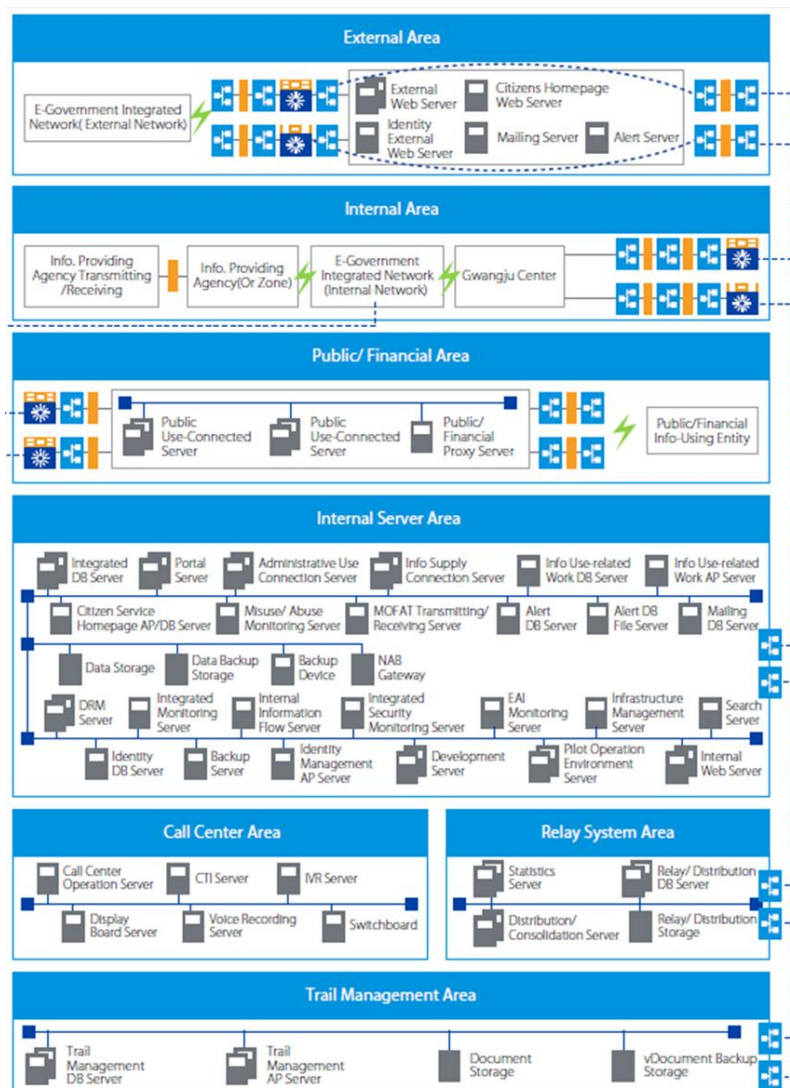
Table 20. Administrative sharing of datasets in South Korea.

<p>Legal level</p>	<ul style="list-style-type: none"> • e-Government Act is considered a basic act on administrative information sharing, including basic matters on sharing among administrative agencies, mainly stipulated in the previous 'Regulations Related to Sharing of Administrative Information' (1998). • Additional, individual laws on specific aspects of information sharing or related to specific types of information. • In the context of the Administrative Information Sharing Expansion program the relevant laws have been amended. In particular the e-Government Act was amended to: <ul style="list-style-type: none"> • Expand the scope of entities subject to information sharing to include public agencies and financial institutions (private sector). • To incorporate the regulations related to obligation and prohibition to avoid misuse/abuse of sharing and related penalties.
<p>Organizational level</p>	<ul style="list-style-type: none"> • To facilitate the sharing of administrative information the Korean Government has established a specific organizational structure, which is stipulated by law (see figure below). The main body in this structure is the 'Administrative Information Sharing Promotion Committee', created to pursue the "Administrative Information Sharing Expansion Program" on a government-wide level. In particular the Committee is tasked with deliberating and coordinating matters relating to establishment and implementation of policy for the expansion of administrative information sharing. The Administrative Information Sharing Promotion Committee is co-chaired by the Prime Minister (an automatic position) and a member from the private sector (an appointed position), and comprises 20 members in total both including Ministers (automatic positions) and appointed Members. Its sub-structure includes a subcommittee and the Advisory Group and its execution and administrative support wings include the Administrative Information Sharing Promotion Units.

	 <p style="text-align: center;">Administrative Information Sharing Governance</p> <ul style="list-style-type: none"> • In addition, a central organization responsible for the overall operation and implementation of the administrative information sharing system has been established (Administrative Information Sharing Center).
<p>Semantic level</p>	<p>NA</p>
<p>Technical level</p>	<ul style="list-style-type: none"> • The aim of the program is to establish a government-wide national administrative information sharing system (Administrative Information Sharing Centre). The system will serve as a central hub for information sharing. The database will be located in the systems of the information owning agencies, yet an index database will be built at the Administrative Information Sharing Centre. The system is built on a Web service-based international standard technology, in particular SOAP-communication. The Administrative Information Sharing Centre comprises several components as shown in the figure below: <ul style="list-style-type: none"> • Citizen’s Portal providing integrated search function, bulletin board service, information services and customizable services • Call Centre System systematic response to complaints of users. It comprises several components such as including switchboard, which is the call control part, CTI server which can control calls and data, and IVR (Interactive Voice Response), etc. • Connectivity infrastructure: <ul style="list-style-type: none"> • Possibility to establish connection to the systems of information receiving authorities standard Application Programming Interfaces (APIs) with strengthened security features are established. • Enterprise Application Integration (EAI) adapters are provided to establish connection with information providing agencies.

ISA Work Program – Access to Base Registries

- Security and Personal Information Protection system.
- Authentication system based on the based on the Government Public Key Infrastructure (GPKI).
- Monitoring system.
- Train management system: safe storage and management of shared administrative information and providing a history of shared information.
- Alert service: to alert users and officials about applications, approvals, cancelations, etc. An alert service was also introduced to inform about changed content.
- Operational Management systems: integrated system connecting functions related to operation of the information sharing system such as change request management, incident history management, operation record management, etc.



Administrative Information Sharing Structure

Concerning the **base registries** themselves, their connectivity and integration forms foundation for innovating services for citizens, which was a trigger to launch the “Administrative Information Sharing Expansion” project⁶⁴. At the base registries level, the project focuses on the facilitation of the expansion of shared information in 8 areas: residence, real estate, vehicles, taxation, enterprises, veterans’ affairs, military service and legal affairs. Examples of the expansion of information include family registers that shifted to five types of information including family relation certificates. Information belonging to land registries was disseminated by city and by county in order to connect land registration maps and forest cadastral maps. As a result of the project, due to phased upgrading of information system for information sharing, a number of types of shared administrative information was expanded. A total of 71 types of information are currently shared by the Administrative Information Sharing System including land registries and certificates for business registration compiled and owned by 17 administrative agencies.

6.2 EGOVERNMENT LEVEL – OPEN DATA: DATA.GOV (UNITED STATES)

In May 2009, the United States launched its data.gov website⁶⁵ as a flagship in the Open Government Initiative. Data.gov is a website maintained by the U.S. federal government with the objective to facilitate public access to (machine-readable) federal datasets. In addition to the raw data itself, the platform also provides tools for analysing and visualising the data.

The below Table 20 provides an overview on how the data.gov initiative addressed the European four interoperability levels of the EIF.

Table 21: EIF levels and data.gov.

Legal level	<ul style="list-style-type: none"> • The Open Government Directive (2009), which <i>inter alia</i> requires the government authorities to publish their data online. • Other related acts: <ul style="list-style-type: none"> • Paperwork Reduction Act • Information Quality Act • E-Government Act and related provisions on the security and privacy of data • Privacy Act
Organizational level	<ul style="list-style-type: none"> • Maintained by the U.S. federal government. • The Data.gov governance framework outlines the associated governing bodies and their decision-making authority relative to the

⁶⁴ <http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN042705.pdf>

⁶⁵ http://www.data.gov/sites/default/files/attachments/data_gov_conops_v1.0.pdf

	<p>Data.gov initiative. The diagram below summarises the entities within the Data.gov governance framework.</p> <ul style="list-style-type: none">• Federal agencies are the key partners responsible for populating Data.gov. Each agency has designated a Point of Contact (POC) to coordinate both within their agency and between their agency and the Data.gov Program Management Offices (PMO). The roles and responsibilities of the agencies are clearly described as they remain the source of the data posted on Data.gov, including deciding which data sets to make available, ensure data quality and privacy, complete the data catalogue and related metadata, provide transparency on how the data is created, document data definitions and their relationships, ensure the data is available in the appropriate formats, etc.
--	---

ISA Work Program – Access to Base Registries

	<table border="1"> <thead> <tr> <th data-bbox="564 347 751 371">Group / Role</th> <th data-bbox="751 347 1342 371">Overview of Roles and Responsibilities</th> </tr> </thead> <tbody> <tr> <td data-bbox="564 371 751 506"> Executive Sponsor and Business Owner <i>Steven VanRoekel</i> <i>Federal CIO</i> </td> <td data-bbox="751 371 1342 506"> Senior-most-executive-level official with decision making authority for the Data.gov initiative. The executive sponsor and business owner serves as the champion for Data.gov and is the final authority on the vision for the initiative and its intended results. </td> </tr> <tr> <td data-bbox="564 506 751 842"> Data.gov Executive Steering Committee (DESC) </td> <td data-bbox="751 506 1342 842"> The DESC is designed to provide executive leadership, direction, and fundamental support for the project including review and acceptance of the architecture. The DESC makes policy and strategy recommendations to the executive sponsor and business owner. The DESC consists of the executive sponsor and business owner, the Data.gov Lead, volunteer representatives from the Federal CIO Council, the Manager of the Federal Enterprise Architecture Program Office, and executive from the Host Agency . The DESC works to promote collaboration and an exchange of ideas to build consensus for the vision and direction of Data.gov. In the event consensus cannot be reached, decisions will be made by voting. Each member of the DESC has one official vote. </td> </tr> <tr> <td data-bbox="564 842 751 1028"> Data.gov Initiative Lead </td> <td data-bbox="751 842 1342 1028"> The lead for the initiative is a senior official with the authority to make decisions on the Data.gov initiative. The lead is responsible for interpreting the guidance, oversight, and expertise from the DESC to provide direction and operational controls to the Project Manager. The lead secures funding, appoints key personnel, approves the completed tasks, and makes other decisions as required. </td> </tr> <tr> <td data-bbox="564 1028 751 1191"> Data.gov Project Manager (PM) </td> <td data-bbox="751 1028 1342 1191"> The PM is the operational leader for project activities and is responsible for achieving the overall Data.gov objectives. The PM is responsible for executing the vision defined by the DESC and articulated by the co-leads. The PM is responsible for organizing efficient and effective day-to-day management and operations of the Data.gov project. </td> </tr> <tr> <td data-bbox="564 1191 751 1328"> Data.gov Project Delivery Teams </td> <td data-bbox="751 1191 1342 1328"> The Data.gov Project Delivery Teams take direction from the Data.gov PM to execute the project plan and activities and fulfill the Data.gov objectives. The Data.gov Project Delivery Teams are responsible for the full lifecycle of the project from business requirements through implementation </td> </tr> <tr> <td data-bbox="564 1328 751 1395"> Federal CIO Council </td> <td data-bbox="751 1328 1342 1395"> The Federal CIO Council provides executive level counsel to the Data.gov project via the Data.gov co-leads and project manager. </td> </tr> <tr> <td data-bbox="564 1395 751 1507"> Data Architecture Sub-Committee (DAS) </td> <td data-bbox="751 1395 1342 1507"> The DAS provides the Data.gov project with data related guidance on a review basis. The Data.gov Project Delivery Teams will produce deliverables that are reviewed by many of the advisory teams including the DAS. </td> </tr> <tr> <td data-bbox="564 1507 751 1619"> American Public </td> <td data-bbox="751 1507 1342 1619"> Data.gov thrives on citizen input. Public feed-back venues described in Section 1 provide mechanisms by which any member of the public can provide feedback and suggestions for the Data.gov initiative. </td> </tr> </tbody> </table>	Group / Role	Overview of Roles and Responsibilities	Executive Sponsor and Business Owner <i>Steven VanRoekel</i> <i>Federal CIO</i>	Senior-most-executive-level official with decision making authority for the Data.gov initiative. The executive sponsor and business owner serves as the champion for Data.gov and is the final authority on the vision for the initiative and its intended results.	Data.gov Executive Steering Committee (DESC)	The DESC is designed to provide executive leadership, direction, and fundamental support for the project including review and acceptance of the architecture. The DESC makes policy and strategy recommendations to the executive sponsor and business owner. The DESC consists of the executive sponsor and business owner, the Data.gov Lead, volunteer representatives from the Federal CIO Council, the Manager of the Federal Enterprise Architecture Program Office, and executive from the Host Agency . The DESC works to promote collaboration and an exchange of ideas to build consensus for the vision and direction of Data.gov. In the event consensus cannot be reached, decisions will be made by voting. Each member of the DESC has one official vote.	Data.gov Initiative Lead	The lead for the initiative is a senior official with the authority to make decisions on the Data.gov initiative. The lead is responsible for interpreting the guidance, oversight, and expertise from the DESC to provide direction and operational controls to the Project Manager. The lead secures funding, appoints key personnel, approves the completed tasks, and makes other decisions as required.	Data.gov Project Manager (PM)	The PM is the operational leader for project activities and is responsible for achieving the overall Data.gov objectives. The PM is responsible for executing the vision defined by the DESC and articulated by the co-leads. The PM is responsible for organizing efficient and effective day-to-day management and operations of the Data.gov project.	Data.gov Project Delivery Teams	The Data.gov Project Delivery Teams take direction from the Data.gov PM to execute the project plan and activities and fulfill the Data.gov objectives. The Data.gov Project Delivery Teams are responsible for the full lifecycle of the project from business requirements through implementation	Federal CIO Council	The Federal CIO Council provides executive level counsel to the Data.gov project via the Data.gov co-leads and project manager.	Data Architecture Sub-Committee (DAS)	The DAS provides the Data.gov project with data related guidance on a review basis. The Data.gov Project Delivery Teams will produce deliverables that are reviewed by many of the advisory teams including the DAS.	American Public	Data.gov thrives on citizen input. Public feed-back venues described in Section 1 provide mechanisms by which any member of the public can provide feedback and suggestions for the Data.gov initiative.
Group / Role	Overview of Roles and Responsibilities																		
Executive Sponsor and Business Owner <i>Steven VanRoekel</i> <i>Federal CIO</i>	Senior-most-executive-level official with decision making authority for the Data.gov initiative. The executive sponsor and business owner serves as the champion for Data.gov and is the final authority on the vision for the initiative and its intended results.																		
Data.gov Executive Steering Committee (DESC)	The DESC is designed to provide executive leadership, direction, and fundamental support for the project including review and acceptance of the architecture. The DESC makes policy and strategy recommendations to the executive sponsor and business owner. The DESC consists of the executive sponsor and business owner, the Data.gov Lead, volunteer representatives from the Federal CIO Council, the Manager of the Federal Enterprise Architecture Program Office, and executive from the Host Agency . The DESC works to promote collaboration and an exchange of ideas to build consensus for the vision and direction of Data.gov. In the event consensus cannot be reached, decisions will be made by voting. Each member of the DESC has one official vote.																		
Data.gov Initiative Lead	The lead for the initiative is a senior official with the authority to make decisions on the Data.gov initiative. The lead is responsible for interpreting the guidance, oversight, and expertise from the DESC to provide direction and operational controls to the Project Manager. The lead secures funding, appoints key personnel, approves the completed tasks, and makes other decisions as required.																		
Data.gov Project Manager (PM)	The PM is the operational leader for project activities and is responsible for achieving the overall Data.gov objectives. The PM is responsible for executing the vision defined by the DESC and articulated by the co-leads. The PM is responsible for organizing efficient and effective day-to-day management and operations of the Data.gov project.																		
Data.gov Project Delivery Teams	The Data.gov Project Delivery Teams take direction from the Data.gov PM to execute the project plan and activities and fulfill the Data.gov objectives. The Data.gov Project Delivery Teams are responsible for the full lifecycle of the project from business requirements through implementation																		
Federal CIO Council	The Federal CIO Council provides executive level counsel to the Data.gov project via the Data.gov co-leads and project manager.																		
Data Architecture Sub-Committee (DAS)	The DAS provides the Data.gov project with data related guidance on a review basis. The Data.gov Project Delivery Teams will produce deliverables that are reviewed by many of the advisory teams including the DAS.																		
American Public	Data.gov thrives on citizen input. Public feed-back venues described in Section 1 provide mechanisms by which any member of the public can provide feedback and suggestions for the Data.gov initiative.																		
Semantic level	<p style="text-align: center;">Data.gov Governance Framework</p> <ul style="list-style-type: none"> • Data.gov is increasingly enhancing the public's ability to find information by offering metadata catalogues, providing prescriptive information about each dataset and tool. Each data set is described using a predefined metadata template to be completed by the responsible authority. • For the purpose of data quality the federal agencies continue to work on: <ul style="list-style-type: none"> • Standard taxonomies and ontologies • Data definitions • Standard file formats 																		

Technical level

- The technical architecture of Data.gov is visualized in the figure below. The main components or modules include:
 - Website and search
 - Dataset Management System (DMS): facilitates the submission of datasets by the responsible agencies via a web-based user interface (in case the Agency does not have the resources to leverage the Data.gov API).
 - Catalogue: relational database that maintains the catalogue of datasets and tools listed in Data.gov, along with the associated metadata. It is the heart of Data.gov, it is how Data.gov knows what datasets are available, what is in them, and where they are hosted.
 - A performance tracking and analysis engine: to measure and follow-up on a set of performance metrics.

The diagram illustrates the Data.gov Technical Architecture. It shows a central 'Data.gov Catalog' (3) connected to various components. 'Citizens' interact with the 'Data.gov' website (1) and the 'Agency Performance Dashboard'. The 'Agency Performance Dashboard' is linked to the 'Performance Tracking and Analysis Engine' (4). The 'Agency' (5) uses the 'DMS' (2) to interact with the 'Data.gov Catalog'. The 'Agency' also has an 'Audit Tool'. The 'Data.gov Catalog' is connected to the 'Data.gov Data Storage Shared Service' (6) via a 'Harvesting' process. The 'Data.gov Data Storage Shared Service' is linked to a 'Metadata Feed (RSS, RDF)'. The 'Data.gov Catalog' also interacts with a 'Search API' and the 'USA Search Index'. A 'Developer' interacts with the 'Data.gov' website (1) and the 'Data.gov Catalog' (3) via a 'Dev API'.

Data.gov Technical Architecture

- The modules are interconnected through a set of application programming interfaces (APIs).
- An API to provide customizable RSS feeds allowing users to describe to specific topics so they can be notified by email or by RSS when new or updated information is posted.

As it comes to the **base registries** level itself the following types of data sets are provided by means of "data.gov" initiative:

- Business (data supporting starting and expanding business, financing, exporting)
- Cities (data from participating cities managed at city level)
- Counties (data from participating counties managed at county level)
- Data for developers (data is available from over 30 governmental agencies including Federal Register, White House or National Information Exchange)

- Model to enable creation of applications supporting web services; also information about the Semantic Web - Web 3.0 is available for consultation)
- Education (detailed information on the state of education on all levels leveraging Learning Registry)
 - Energy (combines federal data with private sector data to support innovation in clean energy economy)
 - Ethics and Health (government data for entrepreneurs, researchers and policymakers coming from the registries of the Department of Health and Human Services)
 - Law (data coming from governmental agencies providing information on administrative decisions by agency heads, boards, and administrative law judges, as well as advisory opinions and legal interpretations by agency general counsels)
 - Ocean (data made accessible by National Ocean's Council's portal, which is a one-stop hub to support planners and to provide useful information to the public)
 - Restore the gulf (provides trusted geospatial data via Geospatial Platform)
 - Safety (provides data based on federal (e.g. Population Information – Census) and non-federal (e.g. City of Chicago Public Safety Data) data resources concerning various citizen safety matters)
 - States (data provided by participating states and federal government data for citizens, developers and policy makers).

6.3 EGOVERNMENT LEVEL – OPEN DATA: SINGAPORE

Singapore has been granted the second place on the online public services index and is the leader in the South Eastern Asia region. Singapore started its journey of e-governance in 1980 with the formulation of a 5-year National Computerization Plan (NCP - 1980-1985) by the Committee for National Computerization (CNC), followed by eGAP I (eGovernment Action Plan), eGAP II, iGov2010 and finally eGov2015 which has a focus on collaboration within and outside the Government.

Singapore is among the world leaders in the use of cloud computing to leverage ICT infrastructure and online services. Its national citizen's portal (eCitizen⁶⁶) is characterised by extensive online payment services, providing citizens with multiple ways to pay taxes, fees, fines and licences.

Linked to eCitizen is the data.gov.sg⁶⁷ initiative. Launched in 2011, this initiative, being a first-stop portal, enables searching and accessing publicly-available data published by the Singapore Government. Data.gov.sg brings together over 5000

⁶⁶ <http://www.ecitizen.gov.sg/Pages/default.aspx>

⁶⁷ <http://data.gov.sg/home.aspx>

datasets from 50 government ministries and agencies. The initiative is part of the eGov2015 Masterplan which includes the Singapore ICT vision and strategic thrusts.

The goal of the portal is to:

- Provide convenient access to publicly-available data published by the government;
- Create value by catalysing application development;
- Facilitate analysis and research.

Next to supplying government data and metadata, data.gov.sg also offers a separate list of applications that were built to support data provided by the initiative.


The data.gov.sg is a cooperation between the Ministry of Finance with the Infocomm Development Authority of Singapore. Key partners for this initiative are the Singapore Land Authority and the Singapore Department of Statistics.

Table 22. Data.gov.sg


Legal level	Data.gov.sg is part of the eGov2015 Master plan ⁶⁸ which is the ICT strategy put forward by the Singaporean government in 2011. The vision is to be a Collaborative Government that co-creates and connects with citizens. eGov 2015 is about building an interactive environment where the government, the private sector and the people work seamlessly, through the enabling power of information and communication technologies.
Organizational level	Over 5000 datasets from 50 governmental ministries and agencies are made available.
Semantic level	Data sets are available in xls, csv, txt and xml formats.
Technical level	The data.gov.sg allows searching for 5000 different data sets in the data catalogue organised by a governmental agency or a ministry. The number next to the institution name indicates the number of available data sets.

⁶⁸ http://www.egov.gov.sg/c/document_library/get_file?uuid=4f9e71be-fe35-432a-9901-ab3279b92342&groupId=10157

ISA Work Program – Access to Base Registries



discovering data, inspiring ideas



Integrity • Service • Excellence

[Contact Us](#) | [Feedback](#) | [Sitemap](#)

Home > Data Catalogue

Browse our data catalogue or use the search tools below

Search Filter Options

Google™ Custom Search

A - K


- Accountant-General's Department [26]
- Accounting and Corporate Regulatory Authority [58]
- Agency For Science, Technology & Research [15]
- Agri-Food & Veterinary Authority of Singapore [47]
- Attorney-General's Chambers [5]
- Building & Construction Authority [95]
- Central Narcotics Bureau [4]
- Central Provident Fund Board [42]
- Civil Aviation Authority of Singapore [8]
- Council For Private Education [1]
- Council for Estate Agencies [2]
- Department of Statistics [3101]
- Economic Development Board [1340]

L - M


- Land Transport Authority [86]
- Majlis Ugama Islam Singapura [13]
- Maritime & Port Authority of Singapore [3]
- Media Development Authority [3]
- Ministry of Defence [4]
- Ministry of Education [91]
- Ministry of Finance [84]
- Ministry of Foreign Affairs [8]
- Ministry of Health [187]
- Ministry of Law [1]
- Ministry of Law – Community Mediation Unit [1]
- Ministry of Manpower [109]
- Ministry of Social and Family Development [25]
- Ministry of Transport [1]

N - Z

- Nanyang Polytechnic [12]
- National Environment Agency [77]
- National Heritage Board [8]
- National Library Board [14]
- National Parks Board [10]
- Ngee Ann Polytechnic [7]
- People's Association [12]
- Public Service Division [22]
- Public Transport Council [24]
- Public Utilities Board [35]
- Republic Polytechnic [8]
- Sentosa Development Corporation [2]
- Singapore Civil Defence Force [3]
- Singapore Customs [18]



discovering data, inspiring ideas



Integrity • Service • Excellence

[Contact Us](#) | [Feedback](#) | [Sitemap](#)

Home > Data Catalogue

Browse our data catalogue or use the search tools below

Search Filter Options

Google™ Custom Search

91 record(s) found.

First [1](#) [2](#) [3](#) [4](#) [5](#) ... [Last](#)

Results per page: [10](#) [30](#) [50](#)

Name	Download	Category	Agency	Data Type
<p>COMBINED AND GROSS ENROLMENT RATIO FOR PRIMARY, SECONDARY & TERTIARY EDUCATION</p> <p>Percentages of children in school - the number of pupils enrolled in a given level of education regardless of age expressed as a percentage of population in the theoretical age group for that level of education</p> <p>Update Frequency : Annually</p>	XLS CSV TXT XML	Education	Ministry of Education	Textual
<p>Enrolment - Junior College One/ Pre-University One by Course</p> <p>Enrolment in pre-u level</p> <p>Update Frequency : Annually</p>	XLS CSV TXT XML URL	Education	Ministry of Education	Textual
<p>Enrolment - Junior College Two/ Pre-University Two by Course</p> <p>Enrolment in pre-u level</p> <p>Update Frequency : Annually</p>	XLS CSV TXT XML URL	Education	Ministry of Education	Textual
<p>Enrolment - Pre-University Three by Course</p>	XLS CSV TXT XML URL	Education	Ministry of Education	Textual

Concerning the base registries themselves, examples of available data sets⁶⁹:

- Land Transport Authority (age of vehicles, type of fuel, car population);
- Ministry of Manpower (employment statistics, recruitment rates, average paid weekly hours by employees);
- Ministry of transport (air accident investigation);
- Health Sciences authority (information on blood banks, licensed pharmacies and dealers);
- Agency for Science, Technology & Research (patents awarded, R&D expenditure);
- Judiciary, Supreme court (annual caseload, advocates and solicitors who have been taken out practising certificates);
- Singapore Police Force (Causes of road accidents, Driving license information);

⁶⁹ <http://www.data.gov.sg/common/search.aspx?ag=1>

7. DESCRIPTION OF THE STUDY METHOD

The EIF provides a list of interoperability aspects, per interoperability level, to be addressed when designing a cross-border and/or cross-sector public service. These aspects provide fundamental guiding principles for interconnecting base registries, as they promote interoperability across public administrations in the EU.

The study team has further refined the interoperability aspects of the EIF in a list of key parameters relevant for the interconnection between base registries (hereafter referred to as interoperability parameters). These parameters were used as a guiding light in the design of the good practices (top-down approach). The good practices were developed through the study of different initiatives (bottom-up approach) using different techniques (desk research, questionnaire, interviews, etc.) and by identification of interconnection obstacles and the solutions to address them.



Figure 11. Approach.

All interoperability levels of ISA's EIF (i.e. legal, organizational, semantic, and technical) are taken into account in this study (see table 23). In that context, 17 Member States and European initiatives regarding the interconnection of base registries are analysed (see table 24 and 25).

Table 23.

Analysis in the context of EIF		
Legal	Analysis of the regulatory environment	The regulatory environments at EU and Member State level were considered in the formulation of the good practices.
Organisational	Interviews with organisations responsible for cross-sectorial initiatives in Member States	Interviews were conducted with organisations responsible for interconnecting base registries across different sectors. Additional information was collected through desk research and a web-based survey.
	Interviews with organisations responsible for cross-border initiatives	Interviews were conducted with organisations responsible for interconnecting base registries across borders. Additional information was collected through desk research and a web-based survey.
Semantic	Analysis of semantic trends	This study draws on the work of ISA's action on semantic interoperability as well as Member State and EU-wide initiatives.

Analysis in the context of EIF		
Technical	Analysis of technology trends	The latest technology trends, including several on-going studies of the European Commission, were used as input for this study.

Table 24.

List of cross-sector initiatives			
Member State	Initiative	Description	Organization responsible
Austria	Central Register of Residence (www.bmi.gov.at)	Centralized repository of resident registries with online access to all of them.	Federal Ministry of Interior
Belgium	Fedict (www.fedict.belgium.be)	Fedict is responsible for Belgium's national eGovernment strategy. It promotes cooperation across the initiatives led by the Belgian communities and regions (e.g. Magda). Fedict provides an interconnecting infrastructure of base registries at federal level.	Federal Public Service for Information and Communication Technology
Belgium	Magda (www.corve.be/producten/magda-diensten/)	Interconnecting infrastructure of base registries at regional level in Belgium.	Flemish eGovernment Coordination Unit (CORVE)

List of cross-sector initiatives			
Member State	Initiative	Description	Organization responsible
Denmark	Grunddata (www.digst.dk)	Digitization strategy for 2011-2015.	Agency for Digitisation - Ministry of Finance
Estonia	X-Road (www.ria.ee/x-road/)	Interconnecting infrastructure initiative of base registries at national level.	Information System's Authority - Ministry of Economic Affairs and Communications
Finland	Registry based census (www.stat.fi)	Population census based on base registries data.	Statistics Finland - Ministry of Finance
Netherlands	I-NUP Program (www.rijksoverheid.nl/ministeries/bz k)	Government programme of municipal governments, provincial governments, water boards and central government aiming to create building blocks for the Dutch public sector.	Ministry of Interior Affairs
Spain	Intermediation Platform (www.administracionelectronica.gob.es)	Interconnecting infrastructure initiative of base registries at national level.	Ministry of Finance and Public Administration

Table 25.

List of cross-border initiatives			
Base registry type	Initiative	Description	Organisation responsible
Business	BRITE (www.ecgi.org)	BRITE was a project funded by the European Commission involving 19 organizations such as the European Business Registers and Chambers of Commerce, IT Companies, Universities and SMEs. Its main objective was to set up an ICT service platform for register-to-register communications across the EU.	EEIG (European Economic Interest Grouping)
	BRIS (N/A)	BRIS stands for Business Registries Interconnection System. BRIS is a new EU-wide project aiming to leverage existing business registry initiatives and harmonise information flows involving business registries. BRIS will use a service-based platform (EU Central Platform) and a portal (eJustice Portal). BRIS builds on the experience of EU-wide projects such as BRITE, EBR, ECRF, xEBR and XBRL, RMS, Interegisters, LEI and e-CODEX.	European Commission
	(EBR www.ebr.org)	EBR stands for 'European Business Registers'. EBR is a network of business registers and information providers from 28 jurisdictions whose objective is to offer reliable information on	EEIG (European Economic Interest Grouping)

List of cross-border initiatives			
Base registry type	Initiative	Description	Organisation responsible
		companies from all over Europe. It allows persons, businesses and public authorities to search for a company name or, in certain countries, a natural person through all the member business registers by submitting a single query in their own language.	
People	ECRN (www.ecrn.eu)	ECRN stands for 'European Civil Registry Network'. This initiative provides an interconnecting infrastructure to enable the exchange of information about civil acts (birth, death, marriage, divorce) across the EU. ECRN was initially co-funded by the ICT Policy Support Programme (PSP) of the EU. ECRN was originally a pilot among the 'Civil Acts Registry of National Administrations' to allow safe transmission, and certain identification, of Civil Acts among public administrations at local level.	European Commission
	ECRIS (www.ec.europa.eu/justice/criminal/european-e-justice/ecris/)	ECRIS stands for 'European Criminal Records Information System'. ECRIS provides an infrastructure interconnecting registries of criminal records. Member States exchange information on convictions with one another.	European Commission
	RISER (www.riserid.eu)	RISER stands for 'Information Service on European Residents'. RISER started in 2004 as an innovation project within the European Commission eTEN Programme. The project ended in 2010 and since then a private company has	RISER ID Services GmbH

List of cross-border initiatives			
Base registry type	Initiative	Description	Organisation responsible
		further developed the service. RISER ID Services GmbH acts as a data processor on behalf of its customers (e.g. businesses and administrations) by providing them with full names and full addresses (and age in some cases) as listed in the respective official register or electoral roll register.	
Land	ELRA (www.elra.eu)	ELRA stands for 'European Land Registry Association'. ELRA is a non-profit organisation having as its mission: "the development and understanding of the role of land registration in real property and capital markets". ELRA's main objective is to provide legal support and follow-up of land registries in Europe.	European Land Registry Association
	EULIS (www.eulis.eu)	EULIS stands for 'European Land Information Service'. The main objective of EULIS is to sell land registry information. It provides easy access to land and property information for professional customers in Europe. It also is a hub of information about different land registration conditions in each country (EULIS glossary). Its long-term mission is to underpin a single European property market through cross-border lending. The service is aimed at professional customers who use land registry information to assist them in their day-to-day work life. It helps with access to land and property information via computer applications. It is not meant to be a database itself, but simply to facilitate access to and retrieval of information. The EULIS platform was	Consortium of Member States specialising in land registration

List of cross-border initiatives			
Base registry type	Initiative	Description	Organisation responsible
		improved to v2 by the project LINE.	
Vehicle	EUCARIS (www.eucaris.net)	EUCARIS stands for 'European CAR and driving licence Information System'. EUCARIS is a communications network (developed within the i2020 Agenda) which allows participating countries to consult and exchange data relating to motor vehicles and driving licences kept in the national registers of affiliated countries. This system helps fight car theft and registration fraud across the EU.	EUCARIS

According to the study's research, there are a number of parameters that need to be considered by public administrations when interconnecting base registries. These parameters are aligned with the interoperability aspects put forward in the EIF (see figure 4). A mapping of the parameters to the good practices is provided in the next sections.

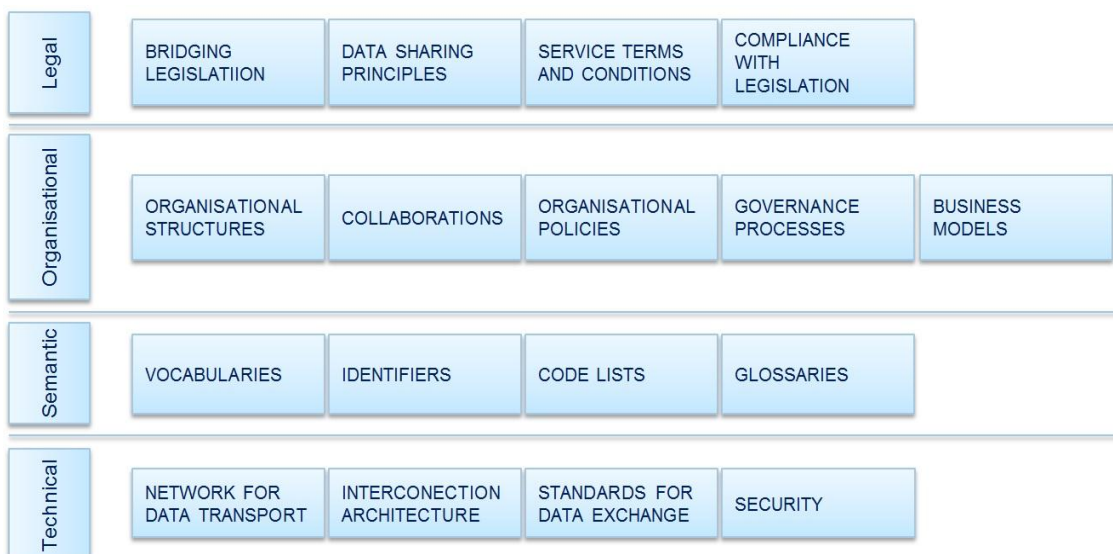


Figure 12. Analysis of the interoperability aspects.

7.1 INTEROPERABILITY PARAMETERS AT LEGAL LEVEL

This layer concerns the **alignment of legislation across Member States**.

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

The following parameters are taken into account within the legal level:

- Bridging legislation;
- Data sharing principles;
- Service terms and conditions;
- Compliance with legislation.

7.2 INTEROPERABILITY PARAMETERS AT ORGANIZATIONAL LEVEL

This layer concerns the **alignment of business processes across different organizations**.

Many aspects need to be covered, as a need to document business processes are documented, an agreement on how processes will interact, clarified organizational relationships and an agreement on change management processes.

The following parameters are taken into account within the organisational level:

- Organizational structures;
- Collaboration;
- Organizational policies;
- Governance processes;
- Business models.

7.3 INTEROPERABILITY PARAMETERS AT SEMANTIC LEVEL

This layer concerns the **alignment of the meaning of information**.

Many aspects need to be covered, such as a necessity to use a common taxonomy of basic public services and the necessity of a support to the establishment of sector-specific and cross-sector communities aiming to facilitate semantic interoperability.

The following parameters are taken into account within the semantic level:

- Vocabularies;
- Identifiers;
- Code lists;

- Glossaries.

7.4 INTEROPERABILITY PARAMETERS AT TECHNICAL LEVEL

This layer concerns the **alignment of technical issues**.

Many aspects need to be covered, such as a necessity of the formalisation of specifications to ensure technical interoperability when establishing European public services.

The following parameters are taken into account within the technical level:

- Network for data transport;
- Interconnection architecture;
- Standards for data exchange;
- Security.

ISA Work Program – Access to Base Registries

8. ANNEX I: GLOSSARY OF TERMS

GLOSSARY OF TERMS		
Term	Description	Source
Basic data	Base registries' data is sometimes referred to as 'basic data'.	Deloitte
Base registry	A base registry is a trusted authentic source of information under the control of a Public Administration or organisation appointed by government. According to the EIF 2.0, base registries are: "reliable sources of basic information on items such as persons, companies, vehicles, licences, buildings, locations and roads" and "are authentic and authoritative and form, separately or in combination, the cornerstone of public services".	www.ec.europa.eu/isa/documents/isa_annex_ii EIF_en.pdf
Business base registry	A business base registry is a registry containing data related to a company. This registry may contain the following data: company name, type of enterprise (date of creation, limited company, association, co-operative, public limited company etc.), accounting period, address, main operating sector, bank account number, etc.	www.ec.europa.eu/isa/
Base registry owner	Base registry owner refers to the organisation that is the appointed controller of the	Deloitte

GLOSSARY OF TERMS

Term	Description	Source
	data in the base registry.	
Core vocabulary	Core vocabulary is a simplified, reusable, and extensible data model that captures the fundamental characteristics of an entity in a context-neutral way. Well known examples of existing Core Vocabularies include the Dublin Core Metadata Set. E-Government Core Vocabularies are the starting point for developing interoperable e-Government systems as they allow mapping with existing data models. This guarantees that Public Administrations can attain cross-border and cross-sector interoperability.	www.joinup.ec.europa.eu
Comitology Decision	The Commission's activities are assisted by the representatives of the Member States organised into committees chaired by the Commission. Relations between the Commission and the committees are based on models set out in the Council "Comitology Decision" established by Regulation No 182/2011 of the European Parliament and of the Council laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers.	www.europa.eu

GLOSSARY OF TERMS

Term	Description	Source
Decision	A "decision" is binding on those to whom it is addressed (e.g. an EU country or an individual company) and is directly applicable.	http://europa.eu/eu-law/decision-making/legal-acts/index_en.htm
Digital Agenda	The Digital Agenda for Europe (DAE) aims to reboot Europe's economy and help people and businesses in Europe to get the most out of digital technologies. It is the first of seven flagships initiatives under Europe 2020, the EU's strategy to deliver smart sustainable and inclusive growth.	www.europa.eu
Digital certificate	A digital representation of information which at least: 1) identifies the certification authority issuing it, 2) names or identifies its subscriber, 3) contains the subscriber's public key, 4) identifies its operational period, and 5) is digitally signed by the certification authority issuing it.	www.nvlpubs.nist.gov/nistpubs/ir/2013/NIST.IR.7298r2.pdf Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on electronic identification and trust services for electronic transactions in the internal market /* COM/2012/0238 final - 2012/0146 (COD) */
Directive	A "directive" is a legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to decide how.	http://europa.eu/eu-law/decision-making/legal-acts/index_en.htm
eGovernment	eGovernment refers to the utilizing of the Internet and the worldwide-web for delivering government information and services to the citizens.	www.un.org

GLOSSARY OF TERMS

Term	Description	Source
EIF	The European Interoperability Framework is a set of recommendations organised into an enterprise architecture framework targeting all those involved in the definition, design and implementation of European Public Services.	Deloitte www.ec.europa.eu
EIF Conceptual model	The EIF Conceptual model describes organising principles for European Public Services. It is based on a survey on the implementation of European Public Services in the Member States, and embodies the common elements and good practices observed. It is a blueprint for future implementations of European Public Services.	www.ec.europa.eu
Electronic record	An electronic record is a record which is in electronic form as a result of having been created by a software application or as a result of digitisation, e.g. by scanning.	Deloitte
ESB	Enterprise Service Bus is an architecture pattern that enables interoperability between heterogeneous environments, using service orientation.	www.oracle.com
Interconnecting infrastructure	An interconnecting infrastructure is an IT infrastructure enabling base registry data exchange without the need to integrate base registries' data bases. This infrastructure is based on the concept of interconnection of base registries by a defined base registry data exchange layer.	Deloitte

GLOSSARY OF TERMS

Term	Description	Source
Interoperability	Interoperability 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 IT systems.	www.ec.europa.eu
Interoperability agreement	Interoperability agreements are means through which public administrations formalise collaboration with one another from an organisational, semantic and technical point of view.	www.ec.europa.eu www.webgate.ec.europa.eu CISE Architecture Visions Document
ISO	International Organization for Standardization is the world's largest developer of voluntary international standards.	www.iso.org
Land base registry	A land base registry is a registry containing data that can be related to land. This registry may contain the following data: owner's rights, value of property, boundaries etc.	www.ec.europa.eu/isa/
Master-slave governance	In the context of base registries, master-slave governance refers to a model where the master base registry is the primary source of data, while the slave base registry has to synchronise with it.	Deloitte
Marginal cost	Marginal cost is a change in the total cost resulting from an increase of an output by one unit.	Deloitte

GLOSSARY OF TERMS

Term	Description	Source
Opinion	An "opinion" is an instrument that allows the [EU] institutions to make a statement in a non-binding fashion, in other words without imposing any legal obligation on those to whom it is addressed. An opinion is not binding. It can be issued by the main EU institutions (Commission, Council, Parliament), the Committee of the Regions and the European Economic and Social Committee. While laws are being made, the committees give opinions from their specific regional or economic and social viewpoint.	http://europa.eu/eu-law/decision-making/legal-acts/index_en.htm
Persons base registry	A persons base registry is a registry containing data that can be related to a natural person. Data in a person registry can be the following: first name and family name, birth date, gender, citizenship, address, title of insurance (insurance context), record of mouth-map for Dental Benefit (healthcare context), etc.	www.ec.europa.eu/isa/
Point-to-point connection	Point-to-point connection refers to a communication between two end points (i.e. two base registries).	Deloitte
Recommendation	A recommendation is not binding. It allows the [EU] institutions to make their views known and to suggest a line of action without imposing any legal obligation on those to whom it is addressed.	www.europa.eu

GLOSSARY OF TERMS

Term	Description	Source
Regulation	A "regulation" is a binding legislative act. It must be applied in its entirety across the EU.	http://europa.eu/eu-law/decision-making/legal-acts/index_en.htm
SOA	<p>Service Oriented Architecture is an architectural style that supports service-orientation.</p> <p>Service-orientation is a way of thinking in terms of services and service-based development and the outcomes of services.</p> <p>A service: is a logical representation of a repeatable business activity that has a specified outcome (e.g., check customer credit, provide weather data, consolidate drilling reports), is self-contained, may be composed of other services, is a "black box" to consumers of the service.</p>	www.opengroup.org
SLA	A Service Level Agreement is an agreement between an IT service provider and a customer. A service level agreement describes the IT service, documents service level targets, and specifies the responsibilities of the IT service provider and the customer. A single agreement may cover multiple IT services or multiple customers.	www.itsm-officialsite.com
Standard	A standard means a technical specification, adopted by a recognised standardisation body, for repeated or continuous application, with which compliance is not compulsory.	www.eur-lex.europa.eu (Regulation on European Standardisation)

GLOSSARY OF TERMS

Term	Description	Source
Technical specification	A technical specification means a document that prescribes technical requirements to be fulfilled by a product, process, service or system.	www.eur-lex.europa.eu (Regulation on European Standardisation)
UAM	User Access Management is the process responsible for allowing users to make use of IT services, data or other Assets. Access Management helps to protect the confidentiality; integrity and availability of assets by ensuring only authorized users are able to access/modify the assets.	www.itilnews.com
Vehicle base registry	A vehicle registry is a registry containing data that can be related to a vehicle. This registry may contain the following data: engine capacity, colour, model, owner’s details, VIN (Vehicle Identification Number), etc.	www.ec.europa.eu/isa/
W3C	The World Wide Web Consortium is an international community where member organizations, a full-time staff, and the public work together to develop Web standards.	www.w3.org

9. ANNEX II. INTERVIEW GUIDE

1. Inception Phase

1.1. Define Scope

1.1.1. Have you received any communication/update from any authority/regulator, etc. on any regulations in your country which may have an impact in the way you handle/communicate information on base registry?

1.1.2. Is there maybe any specific division or person within your service who has to follow up regulatory evolution/updates that may affect the services of your base registry?

1.1.3. A) If the answer to Question 1 is "yes", what, to the best of your knowledge, is the effect of such regulations/new rules on the set-up of the base-registry?

B) In the answer to Question 1 is "no", please explain if the creation of the base registry stems from another policy/government initiative.

1.2. Define Services

1.2.1. What services are provided at base registry level (i.e. plain access like a search query or cross-base registry workflow designed to provide a service)?

1.2.2. Are these services provided cross-sector, cross-border? If not, are there any plans to do so?

1.2.3. What is the origin of the services (i.e. what is the use case, is there a triggering event)?

1.2.4. Are there any agreements foreseen for operational functioning of base registries (e.g. SLAs)? Please explain in details how these agreements function (especially in case a hub architecture model is in use)

1.3. Define high level requirements (O,S,T)

1.3.1. Based on the AS-IS analysis, what are the organisational requirements vis-à-vis changes covering interconnection and data exchange of base registries? (i.e. any required changes to the governance model?)

1.3.2. Based on the AS-IS analysis, what are the semantic (meaning of data) and syntactic (data format) requirements vis-à-vis changes covering interconnection and data exchange of base registries? (i.e. any required changes, additions to guidelines, data sets of normalised vocabulary, taxonomy, ontology, data dictionary, meta data definition, data format, data model etc.?)

1.3.3. Based on the AS-IS analysis, what are the technical interconnection infrastructure requirements vis-à-vis changes covering interconnection and data exchange of base registries? (i.e. interconnection infrastructure, interfaces, etc.)

1.3.4. Based on the AS-IS analysis, what are the technical interconnection architecture requirements vis-à-vis changes covering interconnection and data exchange of base registries?

2. Design Phase

2.1. Semantic design (S,T)

2.1.1. In order to interconnect and exchange data between base registries (e.g. cross-sector or cross-border), do you have to design any semantic assets, such as for example:

- a new conceptual model (i.e. scope, entities, key attributes and their relationships);
- a data dictionary (i.e. data definitions, default values and naming conventions)?
- a metadata repository (i.e. metadata definitions, values);
- data formats?

2.1.2. If the answer to question 1 is "yes", please provide information about any plans of sharing of your semantic assets with other parties (i.e. cross-sector, cross-border)?

2.1.3. If the answer to the question 1 is "no", are the semantic assets that you use created by another competent authority whose mission is to provide them to base registry owners?

2.1.4. Is the web portal available in more than one language?

2.1.5. Is data stored in more than one language? If yes, please specify and justify.

2.2. Organisational design (O)

2.2.1. In order to interconnect and exchange data between base registries (e.g. cross-sector or cross-border) did you have to design new set of roles and responsibilities, policies, processes?

2.2.2. Do you also establish a sustainable organisation structure after the project was implemented?

2.2.3. Do you design new data management rules for new semantic assets and technical components due to changes introduced by your project?

2.2.4. Did you have to design support service for the monitoring of the interconnection and for keeping the base registry data base alive at all times or during working hours?

2.3. Technical design (T)

2.3.1. What integration architecture do you have/did you design in order to interconnect and exchange data between base registries (e.g. cross-sector or cross-border; high-level interaction of systems/base registries and corresponding data flow)?

2.3.2. Please specify the interconnection architecture model you use (e.g. hub model, broker)

2.3.3. In case the architecture model you use is a hub model, please specify interoperability agreements enabling the interconnection of the base registries to relying parties (i.e. involved parties, scope and areas covered, responsibilities etc.)

2.3.4. What technical solution for interoperability of base registries do you have? (i.e. including hardware, applications, web portal, system interfaces, networks, data storage, technologies standards, data centre)?

2.3.5. To what extent are your technologies based on open standards for potential usage by other European countries?

2.3.6. Is the API (Application Programming Interface) documented?

2.3.7. Is the API publicly available?

2.4. Develop security plan (SE, T)

2.4.1. In order to interconnect and exchange data between base registries (e.g. cross-sector or cross-border) how the security governance is modified? (e.g.. principles: migration plan, disaster recovery plan; policies; roles and responsibilities; audits; information classification)

2.4.2. Do you have IAM (Identity and Access Management)? If yes, please specify (user profiles)

2.5. Develop change management plan (O)

2.5.1. What elements of your project did you have include in the change management plan (e.g. training of new resources, communication)?

3. Build Phase

3.1. Build technical solution (T)

3.1.1. Did you manage to build the technical solution as specified in your design? If not, please list the encountered difficulties, obstacles per area, if applicable:

legal area

organisational area

semantic area

technical area

security area

3.2. Prepare data (T)

3.2.1. What approach did you use to map (meta)data to the new (meta)data model? (e.g. point-2-point, canonical data model)

3.2.2. How did you address the issue of interpretation and codifications of the data based on common specification in the context of interconnection of base registries with relying parties?

3.2.3. What obstacles did you face regarding preparation of data? (i.e. within data cleansing, data mapping)

3.3. Develop cutover plan (O)

3.3.1. What elements did you include in the cut-over plan?

3.4. Develop support and maintenance (O,T)

3.4.1. What elements did you include in the support and maintenance plan?

3.4.2. What elements did you foresee regarding the sustainability of your project solution after the project?

3.4.3. Did you foresee a centralised support service responsible for the monitoring of the whole infrastructure (particularly important for the hub model) and for keeping the service alive most of the time and also assisting the relying parties or other base registries in case of any technical fault or problem?

4. Transition Phase

4.1. Cut over ("go live") (O)

4.1.1. What obstacles did you face while executing the cut over plan?

4.1.2. What obstacles did you face while executing change management plan?

4.1.3. Please explain how you faced obstacles related to (especially relevant for hub models):

- semantic and technical level for keeping the metadata model up-to-date together with corrective and evolutive maintenance,
- communicating the updates to all involved parties,
- solving any interconnection problems,
- keeping a good technical support and response team to face any contingency in the whole interconnection infrastructure?

5. Support phase

5.1. (O)

5.1.1. What obstacles are you facing in maintenance and support of the solution after the project?

5.1.2. Did you foresee within your governance model (bodies, roles and responsibilities) particularities to facilitate interconnection to new base registries?

5.1.3. Did you foresee procedures and a requirements list governing interconnection to new base registries?