**Key definitions**

**Base registry** refers to a trusted authentic source of information under the control of an appointed public administration or organisation appointed by government. According to the European Interoperability Framework, 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”.

*Source: European Interoperability Framework*

**Base registry owner** refers to the organisation 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 digitisation, e.g. by scanning.
The EIF aims to

- **Promote** and support the delivery of European public services by fostering cross-border and cross-sectoral interoperability;
- **Guide** public administrations in their work to provide European public services to businesses and citizens; and
- **Complement** and tie together national interoperability frameworks at European level.

Source: European Interoperability Framework
…registries are under the legal control of public administrations and are maintained by them, but the information should be made available for wider reuse with the appropriate security and privacy measures.”

Source: European Interoperability Framework
RECOMMENDATION 11
“Public administrations should make their authentic sources of information available to others while implementing the appropriate access and control mechanisms to ensure security and privacy as foreseen in the relevant legislation.”
Source: European Interoperability Framework

RECOMMENDATION 12
“Public administrations, when working to establish European public services, should develop interfaces to authentic sources and align them at semantic and technical level.”
Source: European Interoperability Framework
Why access to Base Registries is important?

- Most of the information on a Business or a Citizen needed by Public Administrations is held in one or more Registries
- Registers are highly specialised (One type of Registry -> one type of information; e.g. Cadastre, Criminal, Business, Census, etc.)
- Public Administrations could (should) get any information from one or another Base Registry without having to require it to the Business or Citizen

**Accessibility and Interoperability** of Base Registries are **enablers of the Once-Only Principle**
EIF’s recommendations

**RECOMMENDATION 11**
“Public administrations should *make their authentic sources of information available to others* while implementing the appropriate access and control mechanisms to ensure security and privacy as foreseen in the relevant legislation.”

*Source: European Interoperability Framework*

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

*Source: European Interoperability Framework*
Approach to BR in the Czech Republic

01/ Czech Point
Universal Contact Point
The system’s fingers

02/ Public Administration
Communication Infrastructure
The system’s blood circulation system

03/ e-Government Act
The system’s heart

04/ Public Administration
Registers
The system’s brain
Interconnecting system of BR in Spain
Legal

**Good practice #1: Equivalence of paper and electronic base registries records is formalised in legislation**

Base registries are reliable sources of basic information on people, vehicles, businesses, etc. and are the cornerstone of public services. The EU already has legal instruments promoting both the principle of commercial and non-commercial re-use of any publicly available information in base registries, and EU-wide interconnection of base registries, starting with company registers. Obtaining this information online reduces administrative burdens. This will create a rising demand for this information to be deemed to be just as authentic as the paper versions. The equivalence of paper and electronic base registries records should therefore be formalised in legislation.

Estonia (X-Road), Spain (Intermediation Platform) and Belgium (Magda)

**Good practice #2: Principles of data sharing across sectors are formalised to bridge differences in legislation**

Citizen, land, vehicle and other registries are generally governed by sector-specific legislation, which may be a barrier to public administrations sharing electronic data across registries. Because this possibility was just not taken into account, the legislation may have – probably unintentionally – created conflicts or obstacles to data sharing. Experience shows that where base registries can adopt common data sharing principles, interoperability agreements on governance, accessibility, data quality and ‘once only data provision’ then follow. This not only bridges differences in legislation, but is also a first step towards cross-base registry legal acts.

Belgium (Fedict), Netherlands (I-NUP)
Good practice #3: European initiatives provide legal support to ensure that personal data is processed in accordance with individuals' fundamental rights and freedoms.

Protecting the sensitive personal data held in base registries is a legal and reputational ‘must’ for public administrations. EU legislation on data protection and electronic communication provides a baseline. Nevertheless, public administrations may still have data protection fears about interconnecting their base registries, even if there will be benefits for citizens. Working with national data protection authorities, involving them in the decision-making process, compliance monitoring and dispute settlement, builds trust.

European initiatives:
ECRIS, EULIS

Good practice #4: Legislation regulating base registries uses technology-neutral terms or standards and specifications which are not proprietary.

Both Member States and the EU need to beware of imposing technological constraints by specifying proprietary technologies when regulating the interconnection of base registries. This is likely to result in a maintenance burden for registries and unnecessary costs for public administrations which will find themselves locked into a single vendor. Over-arching legal requirements describing the interconnection framework should be technology-neutral.

Member State initiatives:
Netherlands (I-NUP), Denmark (Grunddata), Estonia (X-Road)
Legal

Good practice #5: When a common interconnecting infrastructure for base registries is available, legislation is used to force its use

The major challenge in linking up base registries does not relate to design and implementation of technology but to the lack of buy-in by their owners. Legislation is likely to be needed to force the use of interconnecting infrastructure. Estonia and Spain offer models for interconnecting base registries according to a well-defined architecture. Stakeholders should be involved in developing the legislation and be given enough time to prepare for implementation.

Member State initiatives:
Spain (Intermediation Platform), Estonia (X-Road)

Organisational

Good practice #6: Cross-organisational committees, with decision-making power, coordinate the interconnection between base registries

Consensus building and leadership are essential to the success of the interconnection of base registries. A cross-organisational committee at national level with decision-making powers helps achieve this. Its roles include promotion, coordination, harmonisation, monitoring, definition of interoperability principles and SLAs. Typically the committee is attached to a public body or an independent legal entity and several base registry owners will be represented on it. The committee’s powers will normally extend to making decisions on the development of new interconnections between base registries. It may or may not also be responsible for providing the underlying infrastructure and technology management.

Member State initiatives:
Denmark (Grunddata), Estonia (X-Road), Finland (Registry Based Census), Belgium (Fedict)
Good practice #7: Collaborative processes are put in place to design interoperable interfaces used for interconnecting base registries

Base registries are increasingly simplifying access to their data across sectors and across borders by interconnecting to other base registries using interoperable interfaces to the benefit not only of public administrations, but also citizens and businesses. To ensure public administrations are aligned with the real business needs of users, they need to collaborate when defining what interoperable interfaces are required. Cross-organisational committees are a proven way to achieve this.

Member State initiatives:
Finland (Registry Based Census),
Belgium (Fedict) Estonia (X-Road),
Netherlands (I-NUP)

Good practice #8: The conditions for exchanging data between base registries are formalised in interoperability agreements which are respected

Interoperability agreements are essential whenever base registries are to be interconnected in order to formalise the data provider/data consumer relationship and lock in commitment. They can range from declarations of intent to legally binding Service Level Agreements. Typically, looser forms of agreement are used initially. As trust and the areas of consensus increase, more constraining forms of agreement are concluded. Whatever their form, interoperability agreements should cover organisational (governance), and semantic and technical specification aspects.

Member States initiatives:
Spain (Intermediation Platform)
Organisational

Good practice #9: Stakeholder engagement is an integral part of the lifecycle of the interconnection of base registries

Stakeholder engagement should be an integral part of any initiative to interconnect base registries because the initiative is bound to have a major organisational impact. Early buy-in from the base registry owners as future primary users is critical. Stakeholders’ attention needs to be focused on user-centricity, i.e. the services most needed, and the business value, i.e. the benefits of interconnection. Awareness of the potential can be raised through training and an understanding of the benefits can be enhanced by exchange of information with organisations which are already interconnected.

Member State initiatives:
Estonia (X-Road), Denmark (Grunndata)

Good practice #10: All base registries have data management in place

In the absence of interconnection, several base registries will hold the same data. This fragmentation generates inconsistencies, uncertainty as to which information is the most recent, and also breaches the principle of once-only registration in the EU public sector information directive. In addition, it is an administrative burden on citizens and public administrations. Robust data management processes and policies avoid this. The ‘master-slave’ approach is a good solution, which can also work in cross-border interconnection. When deciding which data is the ‘master’ and which is the ‘slave’ and defining the data owners’ responsibilities, it helps to have a catalogue of base registries in place first.

Member States initiatives:
Denmark (Grunndata)
Organisational

Good practice #11: The owners of base registries have a business model for basic data that promotes its re-use

High charges for providing access to or for using base registries’ data are one of the obstacles to effective and efficient cross-sector collaboration, yet may not be the best way to maximise revenue. It is up to each organisation to find the business model which suits it best. However, it has been proven that lowering prices can potentially increase the number of users sufficiently to increase overall revenue even where pricing at marginal cost, the model promoted by the EU Public Sector Information Directive (2013/37/EU). The case can also be made for making basic data that is widely used by public administrations available free of charge.

Semantic

Good practice #12: Base registries are slowly moving towards the re-use of semantic assets

Unless semantic conflicts are resolved, base registries cannot interoperate. When there are no semantic conflicts, data format issues (xml, csv, rdf, etc.) are usually easily resolved. Semantic assets, such as the Core Vocabularies being developed under the ISA Programme address this issue, but for the benefits of semantic interoperability to be realised, Member States and EU projects must begin to use them widely.

Member State initiatives:
- Denmark (Grunddata)
- Pilot in Greece by the International Hellenic University
Good practice #13: EU-wide projects make use of coded values to reduce semantic conflicts

The co-existence of many languages may be a source of semantic conflicts, for example false equivalents. This is particularly challenging for the EU with its more than 20 official languages. Controlled vocabularies containing codes with a direct and unambiguous translation in every language can get round this problem in some cases, though they are not suited to registries containing large amounts of free-form data. The use of coded values created by standardisation organisations is preferable, but controlled vocabularies can be created by the project and contributed to one of these organisations subsequently.

European initiatives: ECRIS, EULIS

Good practice #14: Entities can be unequivocally identified within the Member State and across borders

In order to avoid identification conflicts, the entity controlling the base registry typically assigns a single unique identifier to each, using a well-defined identification schema to mint these and make each unambiguous and ensure their persistency over time. These identifiers are increasingly important in the delivery of public services and in implementing the ‘once-only’ principle for citizens. The hurdles to overcome are data privacy and the lack of EU-wide identification schemes. Sector-specific identifiers, generated through hashing, can be used to preserve data privacy and still avoid conflicts. Concatenation can be a solution when base registries exchange data across borders.

Member State initiative: Austria (Central Register of Residence)
Good practice #15: Modular, loosely coupled service components are used for interconnecting base registries

The technical heterogeneity which has resulted from base registries having been developed independently of each other can be overcome by using modular, loosely coupled service components interconnected through infrastructure. Service Oriented Architecture (SOA) is an implementation of this concept and is emerging as the architectural style of choice for interconnecting base registries. There are two possible models. In the fully distributed model, the service infrastructure’s main function is to facilitate the discovery of the services. Communication is point-to-point. In the semi-distributed model, the infrastructure offers some central services and acts as an interconnection hub.

Member State initiatives: Estonia (X-Road), Spain (Intermediation Platform), Denmark (Grunddata)

Good practice #16: User and application access management is based on a federated structure of authorised users and applications

User access management systems can be a barrier to data sharing across sectors or borders. The ISA Programme is developing a federated user access management model that will show how civil servants of Public Administrations in the Member States can access the applications of the European Commission using their national credentials. This model, where the base registry holding the data delegates management of the user access rights to a level closer to the user, is already in use in some Member States. Personal data can be processed where there is consent from the citizen.

Member State initiatives: Austria (Central Register of Residence), Estonia (X-Road), Belgium (Fedict), Spain (Intermediation Platform)
Technical

Good practice #17: A set of security principles is guaranteed via the appropriate trust-based mechanisms

Secure information exchange requires the use of digital certificates, electronic documents making use of a digital signature to link a public key (used for example when encrypting a document) with identity information. Each Member State publishes a Trusted List of Certification Service Providers and the European Commission maintains a central List of Trusted Lists. Thus a chain of trust is available for secure cross-border exchange between base registries. The European Commission’s ambition is to create a European market for electronic trust services going beyond this, and it has proposed a draft regulation to achieve this.

Member State initiatives: All Member States
<table>
<thead>
<tr>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Obstacles or difficulties in using basic data from other public entities (leading to the multiplication of registers)?</strong></td>
</tr>
<tr>
<td>Legal constraints (i.e. data protection of personal data) …</td>
</tr>
<tr>
<td>Lack of governance</td>
</tr>
<tr>
<td>No guarantees about the data quality (completeness, correction, updates, …)</td>
</tr>
<tr>
<td>No guarantees about the service quality</td>
</tr>
<tr>
<td>No harmonisation of the data descriptions (no semantic alignment)</td>
</tr>
<tr>
<td>Lack of awareness of existing registers (no catalogue) and correspondent service offerings (service guarantees)</td>
</tr>
<tr>
<td>Absence of ICT systems supporting these exchanges</td>
</tr>
<tr>
<td>…..</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Obstacles or difficulties in using electronic data instead of paper?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal constraints…</td>
</tr>
<tr>
<td>Absence of legal value of electronic data</td>
</tr>
<tr>
<td>No guarantees on the preservation of the data</td>
</tr>
<tr>
<td>…</td>
</tr>
</tbody>
</table>
Questions?

Join us

https://joinup.ec.europa.eu/community/abr/