Factsheet:

Access to Base Registries in Iceland

Published 10/09/2018

Table of Contents

Iceland towards Interoperability 3
Legal Interoperability 5
Organisational Interoperability 8
Semantic Interoperability 10
Technical Interoperability 11
Cross-border Interoperability 12
E-Government Public Services making use of Base Registries data 13

Iceland towards Interoperability

In the 1990's, Iceland decided to outsource its IT to be more cost effective and to focus on other administration tasks. They outsourced their data centre and decentralised the main registries and applications. Over the years, this decentralisation showed side effects such as non-harmonisation and difficulties to interconnect and communicate in a standard way.

Around 2007, a pilot was launched to work with a central broker to enhance the interconnection. Strategies such as **Iceland the eNation - Icelandic Government Policy on the InformationSociety 2008 - 2012**[1] highlighted the need for an integrated architecture to improve the effective, uniform and interoperable communication between state government information systems. It was described that the objective for a simpler public administration could be achieved through **sharing and coordinating interoperable centralised databases,** such as the National Registry, Enterprise Registry and Vehicle Registry. A working group formulated some proposals to coordinate interoperability at organisational, semantic and technical level[2].

The financial crisis in 2011, however, put a halt to these initiatives and the focus was shifted on keeping registries and applications running to overcome the crisis. However, the strict regime that was performed during the following years paid off. Throughout the recent years, Iceland has noted significant improvements in the application of e-Government services – opening up services and registries to citizens and businesses. This resulted in Icelanders being at the forefront in Europe in the usage of online public services.

At the same time, some consolidation happened in a few registries. The Property Registry Database was created by the merger of existing property databases, along with the Real Property Valuation Registry and the local, paper-based, Title and Mortgage Registries. And in 2010, the National Registry and Property Registry were merged into Registers Iceland.

The e-Government policy 2013-2016[3] identified specific actions to be taken, detailing that special policy, criteria, standards and rules should be formulated for government websites, so that these can develop in step with technological progress and the demands of society. Furthermore, access has always to be available to authentication solutions which meet current security level requirements, including access to IceKey[4] and a qualified digital certificate. On an organisational level, it identified specific actions on cooperation between agencies on data sharing. Throughout Iceland, a coordinated structure should be established to ensure that a synergy of state and municipal information systems can fulfil specific security and quality criteria. For specific base registries, for example, it included an action on the improvement[5] of the National Population Registry to reduce tax and welfare benefit fraud.

National research on improving interoperability indicated that further interoperability could only be achieved through comprehensive harmonisation and communication between systems, concluding the need for strategies and corresponding frameworks. Hence, Iceland published a **draft National Interoperability Framework**[6] that has been made available for public consultation and started the process of setting up the NIF with a focus on the technical level of interoperability, followed by semantic and organisational interoperability. Several parties are involved in the establishment of the framework including all government levels, the public institutions and private entities. Iceland believes in a broad stakeholder engagement to

[1] Iceland the e-Nation, https://eng.forsaetisraduneyti.is/media/utgefidefni/Iceland_the_eNation.pdf
[2] http://www.ut.is/media/Skyrslur/grunnskraskyrsla.pdf
[3] E-Government Policy 2013-2016: http://www.ut.is/media/utvefur-skjol/e-power-enska-okt2013.pdf
[4] https://www.island.is/en/icekey-e---certificate/about-icekey/
[5] Examples of improvements are name field improvement in population registry; adding information on family connections and custody registration; providing more details in domicile registration, down to apartment numbers.
[6] Interoperability Framework, http://samvirkni.ut.is/

actively stimulate the usage of open standards. It has a specific process to define these standards in collaboration with standardisation bodies, together with all interested parties in all layers of government and the public. It is expected that the NIF is to play a bigger role in the next policy on the Information Society.

Since access to data and information is still in silos, Iceland is further developing plans to reform public administration and services. In the program **Iceland 2020**[7]**,** there is a particular focus on exploring ideas for multi-functional state and municipal service centres at a local level (one-stop shops).

[7] "Iceland 2020", https://eng.forsaetisraduneyti.is/media/2020/iceland2020.pdf

Legal Interoperability

The main source of authentic information in Iceland is the **Registers Iceland**[8], which holds a range of information on Iceland's residents and real properties. To create this main source, the National Registry and Property Registry were merged in 2010 into Registers Iceland. The National Registry System[9] is the basic registries of the Icelandic population. It provides current information about Icelandic citizens and foreign citizens who are or have been domiciled in Iceland.

The registries mentioned above, along with the Business Registry and Vehicle Registry, can be considered as the basic information resources in Iceland. For the maintenance of such registries, specific legal provisions have been established.

Although there is no direct focus on interoperability in the Icelandic legal framework, neither a definition of the characteristics constituting an authentic registry or data source, there are legal provisions handling the main registries.

Specific Acts defining base registries are the following:

- Act nr. 54/1962 on National Population Registry;
- Act nr. 21/1990 on Legal Domicile;
- Act nr. 6/2001 on Registration and Evaluation of Properties;
- Act nr. 17/2003 on Business Registry;
- Act nr. 119/2012 on Communication Agency, including article 7 on the Vehicle Registry.

Some examples in detail are:

- The **Act**[10] **on the National Register and National Registration** defines the National Registry as a database of basic information on population. It keeps records on identity (name, sex, birth place, nationality, personal identity number, etc.), marital status, domicile and place of abode of people who are or have been residents in Iceland. All individuals that are residents in Iceland longer than six months must be registered in the national registry. The majority of the registered particulars in the National Registry are by law sent to Register Iceland from other governmental authorities within Iceland, for example, to provide information about birth, death, marriage, divorce, custody of children, etc. A person is obliged to report certain particulars for inclusion in the National Registry such as changes of domicile, the name of children, changes of names, registration of cohabitation, etc. Individuals are identified with the ID numbers in the National Registry System.
- The **Act on the Registration and Assessment of Real Property** no. 6/2001[11] [12], defines the Property Registry. Iceland Property Registry is the custodian of the Property Registry Database, which is the central framework for all real estate data in Iceland. The core of the Real Property Registry contains information on land and lots, the coordinates of their borders, structures thereon and rights related to it. The Real Property Registry is the basis for the Titleholder Registry of Real Property, the assessment of real property and the building registry of Registers Iceland and should be organised as to be a database for land information systems. The history of changes in the registration of real property should be kept in the Real Property Registry.

[8] http://www.mcc.is/english/eng-administration/registers-iceland/
[9] Article 19, Act on the National Registry and National Registration, http://www.althingi.is/lagas/nuna/1962054.html
[10] Act on National Registry, http://www.althingi.is/lagas/nuna/1962054.html
[11] http://www.skra.is/lisalib/getfile.aspx?itemid=8224
[12] http://www.skra.is/lisalib/getfile.aspx?itemid=8223

- The **Real Property Registry** consist of a basic part, a structures part, an assessment part and a title registry part that contain the following:
  (1) The basic part registers the name, the characteristics and coordinates of the real property that should be pictorially published in the Real Property Registry;
  (2) The structures part contains structural characteristics of real property and their use or individual parts, as applicable;
  (3) The assessment part contains assessment documents along with the real property and fire insurance assessment;
  (4) The title registry part documents the title owners and their share in the property along with title-registered hypothecations, easements and other facts kept in the title registry. The Property Registry Database is created by the merger of existing property databases, along with the real property valuation registry, and the local paper based title and mortgage registries. The cadastre is based on the legal framework of certified surveyors and cadastral legislation for the determination of property boundaries. Further developments of the Database include the creation of a multipurpose cadastre.

From a legal perspective, no specific steps have been undertaken by the base registries to make the '**Once-Only' Principle** possible. There is, however, informal work ongoing to investigating the possibilities of OOP. Some examples are:

- A pilot on whether telephone numbers and email addresses could be stored centrally in the Icelandic Identification and Authentication System;
- A new permit portal that makes use of the OOP principle. Currently, the portal has one permit. Iceland is working on further additions to launch within a short period;
- When performing the tax declaration, almost all information is "pre-registered" on the declaration form. Iceland has the highest rate of e-delivery of tax declarations in the world (99%), using this prefilled service.

The Once-Only Principle is defined in strategies and initiatives and is implemented and integrated in Iceland's public e-services. More concretely, **Iceland the eNation - Icelandic Government Policy on the Information Society 2008 – 2012**[13] was built on three main pillars: service, efficiency, and progress. The main purpose in the realisation of this goal is to offer Icelanders online "self-service of high quality at a single location", endorsing the Once-Only Principle.

Moreover, the real implementation is identified in the government portal **island.Is,** where there is no need to submit information which public bodies already have.

Regarding base registries, data accessibility and reusability**,** the **e-Government policy 2013-2016** includes an action to provide base registry (master) data as open data. Some registries make their date available at no cost on the open data portal[14] such the Land Registry, Address Registry, Map of Estimated Farmland Registry, etc.

Other registries provide access to certain data on specific websites at no cost. On the Registers Iceland website[15], one can view single property data by looking up the address or the property number. On the site of the Directorate of Internal Revenue, one can access information on businesses.

Another relevant strategy linked to accessing data in Iceland's base registries is the **'ePower Expansion - create, connect, and participate. Icelandic State and Municipal Policy on the Information Society 2013-2016'**[16], which states that the necessity of access to public sector information and databases should be a priority with the aim of giving the general population opportunities to monitor public sector activities

[13] https://eng.forsaetisraduneyti.is/media/utgefidefni/Iceland_the_eNation.pdf
[14] www.opingogn.is
[15] www.skra.is
[16] http://www.ut.is/media/utvefur-skjol/e-power-enska-okt2013.pdf

while encouraging innovation and the reuse of public sector information for commercial purposes. It continues stating: “The general public, businesses and stakeholders shall have easy access to non-personal information and files kept by the State or municipalities. The basis for State and municipal policies shall be openly accessible data, providing a single portal for accessing such data or databases.” At the beginning of 2013, digital maps and spatial data held by the National Land Survey of Iceland were made available free of charge.

Furthermore, the Icelandic government policy on the use of free and open-source software by state bodies is based on the compliance of software procurement with rules appearing in the Public Procurement Act, No. 94/2001[17]; the Act on Tender Procedures, No. 65/1993; and other laws in effect on government procurement, in addition to the current Government Procurement Policy.

The Icelandic **Freedom of Information Act**[18] grants the right of public access to information and national archives, by introducing terms and conditions, as well as restrictions. The Freedom of Information Act also incorporates the harmonised criteria and provisions of EU Directive 2003/98 on the reuse of Public Sector Information (PSI). Specifically, in chapter 8 article 26, it is stated that: "It is permissible to reuse public information that according to law shall be accessible to the public, provided that certain requirements are always fulfilled”.

The most relevant legal constraint is concerning the data protection, which is implemented in Iceland’s **Act on Data Protection[19].** Iceland has published many pieces of legislation and amendments throughout the years concerning data protection, the first one being published in 1981. The purpose of this law is to promote the personal data compliance by fundamental data protection regulations and privacy and to ensure the reliability and quality of such data and the free movement in the internal market of the European Economic Area. Moreover, in Article 9, the processing of sensitive personal data is prohibited except for some certain circumstances which are defined in the law. In cases where these rules are not being honoured, data protection fines can amount to ISK 100,000. **The Data Protection Authority[20]** is in charge of supervising the implementation of the Act on the protection of privacy with regards to the processing of personal data and to provide a perspective on the implementation policy at local authorities and municipalities level.

[17] https://eng.fjarmalaraduneyti.is/legislation/nr/612
[18] http://inspire.ec.europa.eu/reports/stateofplay2011/rcr11ISv121.pdf
[19] http://www.althingi.is/lagas/126a/2000077.html
[20] DPA, http://www.personuvernd.is/information-in-english/

Organisational Interoperability

Iceland does not have a complete catalogue of base registries. However, there exists a list of base registries. As depicted in the following table, the administration of the base registries is coordinated by a number of public bodies in Iceland, whereby each base registry handles its respective master data type(s):

Base Registry	Authority	Master Data
National population and properties Registry[21]	Ministry of Interior/Central Government	PERSONAL DATA (NATURAL AND LEGAL PERSONS); PROPERTY DATA
Vehicle Registry[22,23]	Ministry of Interior/Regional Government	VEHICLES
Business Registry[24]	Ministry of Industries and Innovation	BUSINESS and LEGAL PERSONS
Property Registry[25]	Ministry of Interior	LAND, PROPERTIES

For the specific base registries, however, there are different bodies responsible under the authority of the ministries. These bodies are dealing with the governance, management and data sharing agreements:

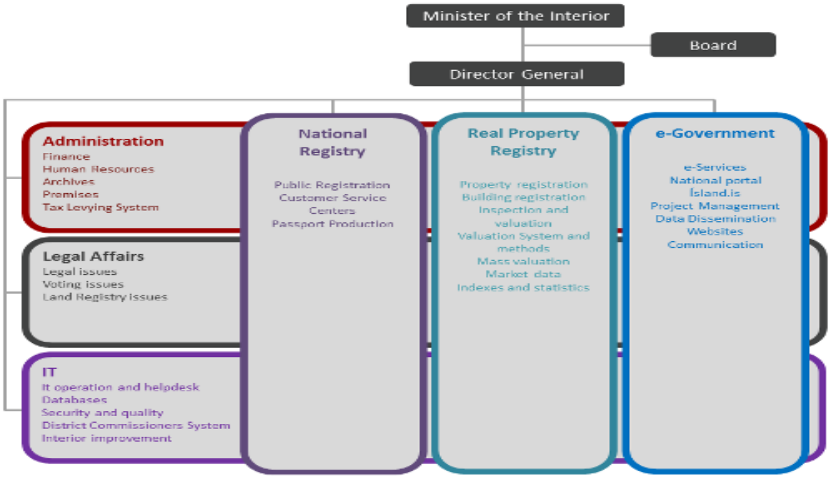
- Registers Iceland, for the National Population and Properties Registry;
- Directorate of Internal Revenue, for the Business Registry;
- Icelandic Transport Authority, for the Vehicle Registry.

There are also data sharing agreements in place:

- The National Population Registry is distributed by brokers throughout the society and widely used, both by public and private entities. Public authorities have access to more information than private entities to be able to fulfil their duties. The entities pay for the usage according to an agreement with Registers Iceland.
- The Properties Registry is both accessible online and shared to various entities. The entities pay for the usage according to an agreement with Registers Iceland.
- The Business Registry is both accessible online and shared to various entities. The entities pay for the usage according to an agreement with Registers Iceland.

For broader aspects such as the Digitalisation Policy, Iceland has a centralised organisational approach, with the **Ministry of the Interior** guiding the initiatives. On the other hand, the different government authorities and public bodies are in charge of the implementation of strategies. As an example, the **Registers Iceland** operates most of the relevant common e-Government solutions and operational measures.

[21] National Registry, http://www.skra.is/english/population-register/
[22] Vehicle Registry, https://www.island.is/en/travel_and_transport/the_car/registration_and_examination/
[23] Vehicle data, http://www.road.is/
[24] Business Registry, https://www.rsk.is/fyrirtaekjaskra/
[25] Property Registry, http://www.skra.is/english/property-register/



Registers Iceland also supervises the management of the registration of real property according to the Act on the Registration and Assessment of Real Property, as well as the operation of data and information system, named the Real Property Registry. All real property in the country shall be registered in the Real Property Registry. The design and maintenance of the registration, according to this Act, is administered by Registers Iceland. The agency operates under the responsibility and supervision of the Ministry of Interior.

Semantic Interoperability

The Icelandic National Interoperability Framework sets out the **recommendations** on standards, semantic assets and technical interoperability information, key prerequisites to electronic services delivery. Semantic interoperability synergy allows public authorities and organisations to ensure a common understanding to define the concept of data structures and data elements.

Some metadata are available for all the base registries. An example is the unique identification number, for persons and enterprises, which is recorded in the National Registry and Business Registry. The National Registry, the administrative department within Statistics Iceland[26], in charge of the Registry, maintains the following data elements: name, ID-number, full residence, marital status, nationality, place of birth and registration of a consensual union.

The **standards** and **protocols** to facilitate the Information Exchange Process are SOAP and EDI respectively, definitions and standards for commercial messages, including EDI messages and messages based on XML. Standards based on XML are used to formalise and define the entry description data which is then further elaborated by XML architecture. Descriptions of web services are available to some extent for all the base registries.

The portal **Island.is** follows data security policy based on ISO 27001: 2005, conforming the basis for data integrity and confidentiality.

Opingogn.is[27] is the central open data portal regarding location datasets and the data comes from two different public bodies, the National Registry and the National Land Survey. This portal is based on CKAN, an open software for data access. For the available reusable date, **Instructions for reuse**[28] are provided based on formats such KML, CSV and JSON.

[26] Statistics Iceland, http://inspire.ec.europa.eu/reports/stateofplay2011/rcr11ISv121.pdf
[27] http://xmlns.com/foaf/spec/
[28] https://opingogn.is/dataset?license_id=is-ogl&_tags_limit=0

Technical Interoperability

Iceland does not have a catalogue of registries, and connection information is shared on an ad-hoc approach. Hence, all the before-mentioned base registries interconnect via Web Services in a peer-to-peer exchange without any interconnection platform as an intermediary. Some registries use FTP or other protocols. Therefore, the base registries connect to each other, e.g. the Properties Registry accesses the Population Registry, the Population Registry accesses the Business Registry, etc.

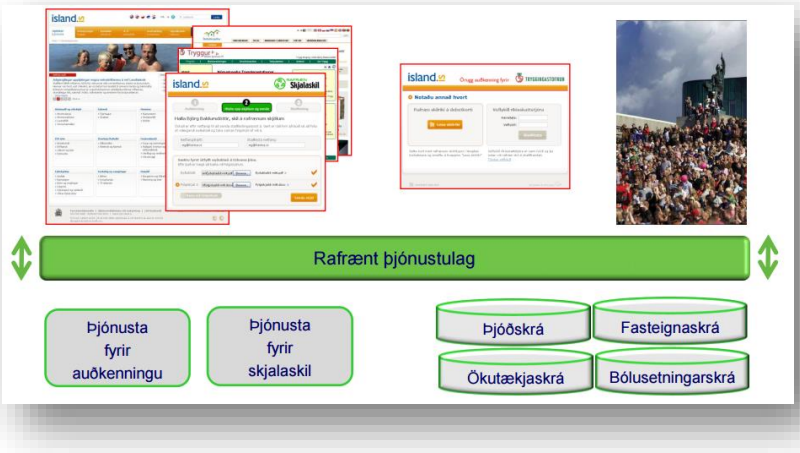
The e-Government **toolbox** is the pillar of the data exchange layer and is part of the service of the national portal **island.is,** which acts as the Electronic Service Layer in Iceland and is developed and operated by Registers Iceland. The toolbox aims to ease the development of public bodies and is available to any national or local public body free of charge. The toolbox realises three functions:

- First, it consists of a service layer that eases public bodies to offer electronic services and access to data. The service layer also encompasses a pool of central solutions such as document delivery and access to central registries;
- Second, it assists in the document delivery as it is suitable for public bodies with many different formats while guaranteeing secure electronic service delivery due to prior authentication of users;
- Third, it provides authentication, which can be used to provide access to secure individual services of public bodies, such as “My pages”. The users can authenticate themselves by using an electronic ID issued by the Internal Revenue Directorate.

The service layer consists of two main software servers and a SOAP station built on Web Methods Integration Server. Included in the service layer is an authentication module which uses a SAML certificate to authenticate users, either with an e-ID card or a web key. The delivery of the electronic documents is also based on the service layer. All the solutions are based on open standards.

Island.is form runs through the Adobe Life Cycle Designer. The electronic documents are then marked with a special code for electronic delivery through the service layer. The code directs the document to the relevant agency (owner of the form).

The web forms for authentication and electronic delivery are based on the Eplica product suite for web development. Eplica is a platform-independent J2EE based tool.



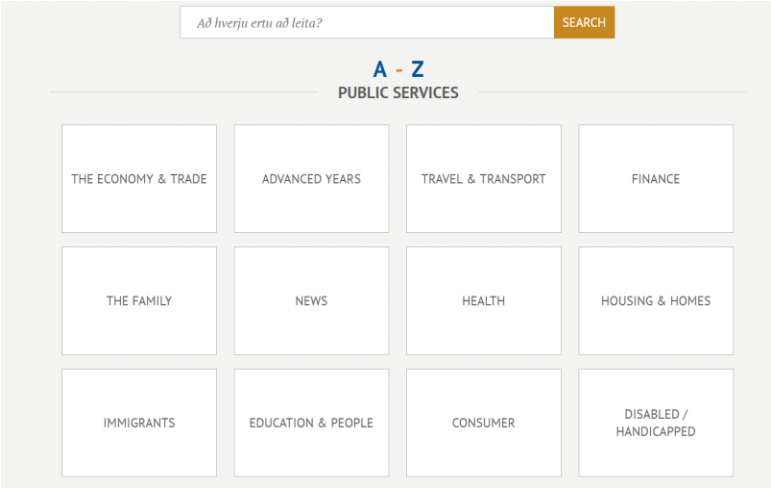
Cross-border Interoperability

Iceland is a member of EUCARIS and EULIS, sharing master data cross-border. Additionally, Registers Iceland is a member of the EULIS, Stork and Stork 2.0 projects, as well as the ELF and e-Sens projects.

Registers Iceland operates a PEPS-broker, built in the Stork project, to retrieve the ID attributes needed for cross-border authentication. It is now upgrading to the e-IDAS node to comply with the e-IDAS Regulation and CEF funding, to federate the Icelandic e-ID systems to the EU e-ID ecosystem. This will enable the exchange of ID attributes from the Member States' Population Registries for cross-border identification and authentication.

E-Government Public Services making use of Base Registries data

The island.is[29],[30], [31] is the central point of access to public services. Information, e-services and forms have been collected under twelve topics on the portal. The island.is offers services through the service layer which facilitates sharing of information, reuse of components, standardisation, integration and cooperation between organisations. The portal is improving the services it provides to adapt better to citizens' demands.



The portal is administered by the Registers Iceland and is meant for citizens and businesses as it allows users to access and make use of a wide range of public e-services. More and more municipal and state services, as well as private sector, are publishing data through the portal.

The portal offers three different means of logging in with different security levels:

- IceKey;
- Multi-factor IceKey (IceKey plus a code sent to a mobile phone);
- A digital certificate on a smart card or in a mobile telephone.

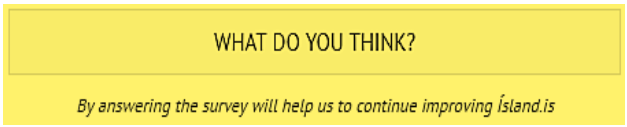
The Icelandic Identification and Authentication System makes use of the National Population Registry´s information. After authentication, citizens can access personal information via **"My pages",** which offers individualised access to vital records in the public and access to documents from public sources. Access is granted to the National Registry, Property Registry, Vehicle and Immunisation Records.

Netskil, formed through Ísland.is, allows users to send documents electronically after logging in. It is especially intended for organisations that do not find it possible to make large investments for Netskil.

For certain e-Government Public Services, such as the National Population Registry, the Properties Registry and the Businesses Registry, accessing the available data is charged with a fee.

[29] About island.is, https://www.island.is/um/island.is/
[30] https://eng.forsaetisraduneyti.is/media/English/Tolvumal_Island_is.pdf
[31] https://eng.forsaetisraduneyti.is/information-society/English/nr/2674

Citizens also have the possibility to provide suggestions and feedback through the portal:



The portal has three main functions: (1) It operates as a government information and service portal, (2) it provides easy access to information on public services and a large number of public forms, (3) it offers electronic document delivery (C2G and B2G) and electronic document distribution (G2C and G2B).