LIFO: Location Interoperability
Framework Observatory

2020 COUNTRY FACTSHEET

IRELAND

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The monitoring information for Ireland has been provided by the *Ordnance Survey Ireland.*

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ISA²

Contents

1. Introduction

The Location Interoperability Framework Observatory (LIFO[1]) monitors the implementation of location interoperability good practices in European public administrations.

The monitoring is based on the level of adoption of the recommendations set out in the five focus areas of the European Union Location Framework (EULF) Blueprint[2] (see Figure 1).

The EULF Blueprint provides guidance for implementing the European Interoperability Framework (EIF)[3] in the geospatial domain.

Consequently, the LIFO complements the EIF monitoring mechanism operated by the National Interoperability Framework Observatory (NIFO)[4].

LIFO is coordinated by the European Location Interoperability Solutions for e-Government (ELISE)[5] action in the Interoperability Solutions for European Public Administrations, Businesses and Citizens (ISA[2])[6] programme.

Policy and strategy alignment
a consistent EU and Member State policy and legislative approach where location information plays a significant role

Digital government integration
making location a key enabler in G2B, G2C and G2G digital government processes and systems

Standardisation and reuse
adoption of recognised geospatial and location-based standards and technologies, enabling interoperability and reuse

Return on investment
ensuring funding of activities involving location information is value for money, and taking action to stimulate innovation and growth

Governance, partnerships and capabilities
effective decision making, collaboration, knowledge and skills related to the provision and use of location information in the context of digital government

Figure 1 - EULF Blueprint focus areas

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[1] https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/solution/lifo-location-interoperability-framework-observatory/about
[2] http://data.europa.eu/w21/8e942bc2-657a-4289-b057-f2a285ee7375
[3] https://ec.europa.eu/isa2/eif_en
[4] https://ec.europa.eu/isa2/solutions/nifo_en
[5] https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/about
[6] https://ec.europa.eu/isa2/home_en

The LIFO data collection is carried out through an online questionnaire sent to country representatives for digital government in the geospatial domain. The questionnaire is based on the LIFO analytical model[7]. This model is composed of primary indicators, calculated using information provided by respondents to the online questionnaire, and secondary indicators, reusing information from existing sources, for example, the monitoring under the INSPIRE Directive[8]. The indicators address good practices in the provision and use of location data in digital government and are shaped by the European policy context. They include measures relating to several EU directives and regulations including, for example, required datasets and means of access under both the INSPIRE Directive and the Open Data Directive[9], obligations under the General Data Protection Regulation (GDPR)[10], approaches under the Public Procurement Directive[11], and factors relevant to the EIF[12].

LIFO involves participating countries that are either EU Member States or other countries implementing the INSPIRE Directive. Results for the non-EU Member States, which apply EU legislative provisions on a voluntary basis, have their own alternatives, or apply the provisions only for specific aspects, must be read taking this into account.

The first LIFO data collection was in 2019 and the second in 2020. The LIFO 2020 model improves the monitoring capabilities of the model used in 2019, while being substantially aligned with it.

LIFO results are published on Joinup (see Figure 2) in the form of *Country factsheets*[13] and a *European State of Play Report*[14] and are available for users to explore in the *LIFO interactive dashboards*[15], which are linked in their turn to the *EULF Blueprint*[16].

Country factsheets   European state of play   Interactive dashboards   EULF Blueprint

Figure 2 - LIFO online resources

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[7] See Annex 1 for the scoring methodology used in the model and Annex 2 for a list of indicators

[8] See https://inspire.ec.europa.eu/inspire-directive/2. As reported in the EULF Blueprint, "Geospatial or location interoperability has been a major feature of both the ISA2 Programme and the predecessor ISA Programme. There was a strong basis for this with the adoption and implementation of INSPIRE. INSPIRE has driven forward the implementation of harmonised pan-European geospatial data for European environmental policy, and has paved the way to stronger location interoperability in other domains where harmonised geospatial data play a significant role.".

[9] https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32019L1024

[10] https://eur-lex.europa.eu/eli/reg/2016/679/oj

[11] http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0024&qid=1428299560152&from=EN

[12] As introduced by the Communication from the European Commission of 23/3/2017: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A134%3AFIN

[13] https://joinup.ec.europa.eu/node/704194

[14] https://joinup.ec.europa.eu/node/704361

[15] https://joinup.ec.europa.eu/node/704247

[16] https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/solution/eulf-blueprint/about

The information collected through LIFO can be used to examine current national and European status, compare countries, identify strengths and areas needing improvement, uncover best practice solutions, and plan appropriate measures, including potential partnerships and reuse of solutions.

The LIFO State of Play and the emerging best practices are incorporated in updates to the EULF Blueprint, ensuring the guidance framework remains up-to-date.
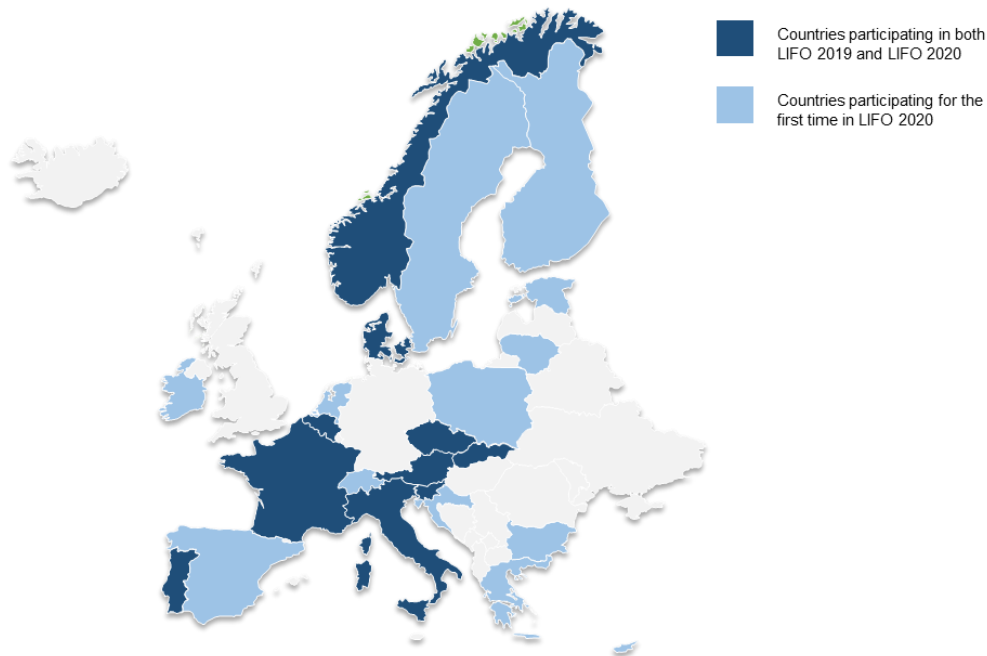

Figure 3 - LIFO participating countries in 2019 and 2020

The LIFO 2019 data collection involved 10 countries, whereas the LIFO 2020 data collection involved 23 countries. Appreciation is given to all participants who contributed to the survey responses and provided further information to ensure the results are representative of the national state of play (see Figure 3)[17].

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[17] Countries participating in both LIFO 2019 and LIFO 2020: Austria, Belgium, Czech Republic, Denmark, France, Italy, Norway, Portugal, Slovakia and Slovenia;
Countries participating for the first time in LIFO 2020: Bulgaria, Croatia, Cyprus, Estonia, Finland, Greece, Ireland, Lithuania, Netherlands, Poland, Spain, Sweden and Switzerland.

2. Structure of the document

This factsheet provides an overview of the information collected on location interoperability in Ireland in 2020. It contains the following sections:

- Location Interoperability State of Play where information is provided at two levels:

  - *Overview of results*: describes the location interoperability state of play in the country across all five focus areas, together with a summary chart and a table with the main strengths and weaknesses;
  - *Detailed results by focus area:* organised in five sections; while the overview section gives a bird's eye view of the status across all focus areas, the focus area sections give a more detailed picture, with the vision and recommendations for the focus area, followed by an analysis of the state of play in the country for each of the recommendations. Two focus area charts are included, one displaying the average scores for each recommendation and the other the individual scores for the underlying indicators. In both charts, scores are compared with the average of the monitored countries. The titles of the charts are linked respectively to the table of recommendations in the focus area and to the relevant indicators in Annex 2.

- Best practices: This section highlights initiatives and applications provided as survey 'evidence' which demonstrate the adoption of EULF Blueprint good practices in one or more focus areas / recommendations.

Lists of List of abbreviations and definitions, figures and tables: These aid cross-referencing in the document.

Annexes to the document are:

- Annex 1: The method of scoring and normalisation applied to the indicators;
- Annex 2: A list of indicators used for each of the recommendations, together with a summary of 2020 indicator changes;
- Annex 3: Additional information for Ireland comprising the questionnaire response and the scores and charts based on the response.

The 2020 LIFO monitoring information for Ireland has been provided by the *Ordnance Survey Ireland.*

3. Location Interoperability State of Play

3.1. Overview

The information collected through the LIFO 2020 data collection indicates that Ireland reaches an overall level of location interoperability equal to the European average. This is the result of positive deviations relative to the corresponding European averages under the "Return on Investment" and "Governance, Partnerships and Capabilities" focus areas balanced by a shortfall under the "Standardisation and Reuse" focus area (see Figure 4). "Standardisation and Reuse" is also the weakest focus area for Ireland, while for most participating countries this position is held by "Governance, Partnerships and Capabilities". Deviations from the European average scores in the different focus areas are relatively small.

Ireland obtains the best results in the "Return on investment" focus area. The advantage over the European average is due to the frequent, thorough and convincing communication on the availability and benefits of location data and location-enabled digital public services. Another contribution to this result is given by the extent of the measures taken to make the process of searching, finding and accessing location data and web services as easy as possible. Several actions are implemented to actively support private, non-profit and academic actors in the development of new products, services or research using public sector location data.

Under the "Policy and Strategy Alignment" focus area, Ireland is closely aligned with the European average. A wide range of location core reference datasets are available for general use and location data is available under a national licensing framework. Only generic reference is made to INSPIRE and other relevant standards in public procurements of location information and services.

"Digital Government Integration" is another focus area where Ireland is closely aligned with the European average. There are a good number of cases in Ireland where comprehensive use is made of location information when delivering digital public services and where there is consistent use of the SDI for the development and delivery of digital public services. These good results are counterweighed by the limited use of an open and collaborative methodology when developing and delivering location-enabled digital public services.

As mentioned above, "Standardisation and Reuse" is a relative weakness of Ireland's location interoperability status compared to the European average. This is due to the lack of a common architectural approach for location data and services in the SDI, the low number of core "high value" location datasets that can be accessed using APIs and the limited scope of its location data quality practices. However, Ireland scores highest on conformity with the INSPIRE regulations of all participating countries.

Finally, the "Governance, Partnerships and Capabilities" focus area shows margins for improvement due to the low involvement of stakeholders in the decision-making process on the role of location information in digital government and to the small number of formal agreements existing between public authorities to finance, build and operate location data services or digital public services using location data.

> *The value of the overall LIFO index combining the scores for all focus areas is 0.54, almost aligned with the European average of 0.55.*
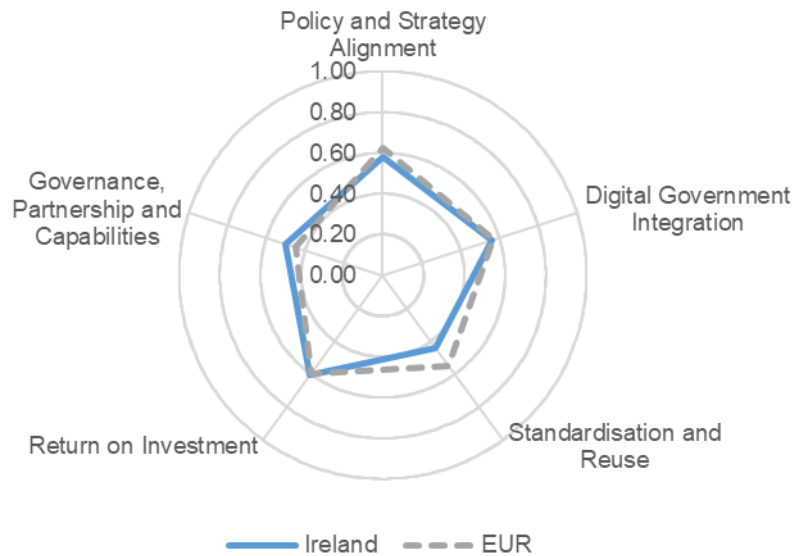
Figure 4 - Overall EULF Blueprint implementation

The following table summarises Ireland's main strengths and weaknesses across the five focus areas:

Focus Area		Strengths	Weaknesses
	Policy and Strategy Alignment	• A wide range of location core reference datasets is available for general use • Location data are available under a national licensing framework	• Only generic reference is made to INSPIRE and other relevant standards in public procurements of location information and services
	Digital Government Integration	• Location information is often used in a comprehensive way when delivering digital public services • The national SDI is effectively combined with sector-specific SDIs when delivering digital public services	• The public sector SDI is used only occasionally by the private sector and other organisations for the delivery of new and innovative applications, products and services • An open and collaborative methodology is used to a limited extent for the design and improvement of location-enabled digital public services
	Standardisation and Reuse	• Several registries of location information have been implemented • The percentages of both spatial data sets in conformity with Regulation (EU) No. 1089-2010 and network services in conformity with Regulation (EC) No. 976-2009 are the	• No commonly used architectural approach for location data and services in the SDI • Little or no re-use is made of generic ICT solutions in the SDI • A limited array of actions is undertaken to ensure location data quality

Focus Area		Strengths	Weaknesses
		highest of all participating countries	
	Return on Investment	• Frequent, thorough, and convincing communication is made on the availability and benefits of location data and location-enabled digital public services • Several methods are used to make the process of searching, finding and accessing location data and web services as easy as possible • Several actions are implemented to actively support private, non-profit and academic actors in the development of new products, services or research using public sector location data	• There is no strategic approach to funding public sector location reference data
	Governance, Partnerships and Capabilities	• There is strongly integrated leadership and coordination on actions and policies related to the role of the SDI in Digital Government • There are public-private partnerships aimed at funding digital public services using location data	• Few stakeholders are involved in the decision-making process on the role of location information in digital government • Only a limited number of formal agreements exist between national or cross-border public authorities to finance, build and operate location data services or digital public services using location data

Table 1 - Strengths and Weaknesses by Focus Area

The following sections present the results in detail for each focus area.

3.2. Policy and Strategy Alignment

Vision	
	There is an aligned and coordinated policy and strategic approach across Europe for the use of location information that enables more efficient and effective integration of cross-sector and cross-border location-based applications, reducing costs and increasing social and economic benefit. Public sector location policies promote accessibility and interoperability. There are simple and consistent approaches to licensing, progressive open data policies that balance the needs of data users and suppliers, and authentic registers in which 'location' has a prominent role.
Recommendation 1	Connect location information and digital government strategies in all legal and policy instruments
Recommendation 2	Make location information policy integral to, and aligned with, wider data policy at all levels of government
Recommendation 3	Ensure all measures are in place, consistent with legal requirements, to protect personal privacy when processing location data
Recommendation 4	Make effective use of location-based analysis for evidence-based policy making
Recommendation 5	Use a standards-based approach in the procurement of location data and related services in line with broader ICT standards-based procurement

Table 2 - Focus Area "Policy and Strategy Alignment" - vision and recommendations
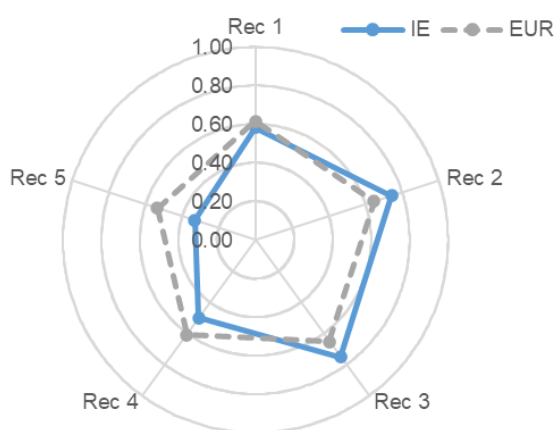

Figure 5 - Policy and Strategy Alignment - scores by recommendation

The "Policy and Strategy Alignment" focus area index for Ireland is 0.58, slightly below the European average of 0.62. The scores for each recommendation in the "Policy and Strategy Alignment" focus area are shown in Figure 5 and the underlying indicator scores for each recommendation are shown in Figure 6. In both cases, the country scores are compared with the European averages.

On most recommendations in this focus area, Ireland is aligned, with or slightly above, the European averages. Recommendation 2 and Recommendation 3 are two particularly strong areas.

Under Recommendation 2, concerning the alignment of location information policy with wider data policy, the following location datasets are available free of charge under an open licence without restrictions: administrative units, air quality, geographical names, health statistics, hydrography, population distribution and demography, protected sites, statistical units and transport networks, transport timetable and water quality.

Under this recommendation, Ireland makes available many location datasets under a national licensing framework, providing open access to data and metadata through the national portal data.gov.ie under the Creative Commons Attribution (CC-BY) licence. Public bodies may waive copyright and associate datasets with CC0, if it is considered appropriate. Moreover, the licence should be clearly identified in the metadata.

Another strength is the wide range of core location reference datasets that are available for general use. The domains concerned are[18]:

- agriculture, fisheries, forestry and food;
- arts, culture and heritage;
- business;
- economy and finance;
- education and sports;
- energy;
- environment;
- geology;
- government and public sector;
- health;
- hydrography;
- housing and zoning;
- justice, legal system and public safety;
- money and tax;
- planning and development;
- population and society;
- regions and cities;
- science and technology;
- transport.

Government guidelines on the publication of public sector data specifically cover location aspects. These are outlined in the "Public Service Data Strategy 2019-2023[19]", which sets out a detailed vision with a set of goals and actions to deliver a more joined-up whole-of-Government approach to how data is used and managed within the public service. In the strategy, planned actions covering location aspects are:

- encouraging public service bodies to catalogue and share geospatial datasets, where appropriate to do so using a common reference (i.e. a Unique Geographic Identifier or UGI);
- further developing the State's geospatial data hub (GeoHive) providing discovery, evaluation and access to Government geospatial data;
- ensuring that an appropriate governance structure and best practice methodologies are in place through the Data Governance Board to optimise the State's geospatial data and related resources.

The Public Service Data Catalogue aims to promote openness and transparency around the data held by public services by cataloguing and describing public service data, including location data[20].

Ireland is well positioned with respect to the European average on Recommendation 3, due to controllers and processors of public sector location data being fully prepared for the GDPR, specifically on the awareness of potential location data privacy issues and implementation of processes to comply with the rights of data subjects.

From a strategy perspective under Recommendation 1, there is a significant degree of alignment in the digital strategy with location elements. In particular, the digital information

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[18] See https://data.gov.ie/, https://geohive.ie/, https://datacatalogue.gov.ie/ and https://inspire.geohive.ie/geoportal/#searchPanel

[19] See https://assets.gov.ie/7107/7ac4ae109cd944dc99c9e178962fa095.pdf

[20] See https://datacatalogue.gov.ie/

strategy is set by the "National Digital Strategy"[21], which among its objectives has to improve the quality of location data to underpin future policy formation and benchmarking of progress.

The use in digital government of authoritative location datasets and services is mandated by the "Data Sharing and Governance Act 2019"[22], whose aims are:

- to provide for the regulation of the sharing of information, including personal and location data, between public bodies;
- to provide for the regulation of the management of information by public bodies;
- to provide for the establishment of base registries;
- to provide for the collection of public service information;
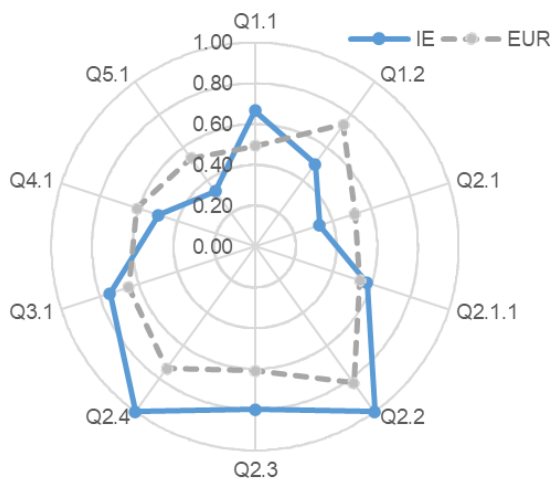- to establish the Data Governance Board.

Figure 6 - Policy and Strategy Alignment - scores by indicator

Location-based evidence and analysis is used to help in developing some relevant policies and monitoring outcomes on some specific topics (Recommendation 4). An example is the "myProjectIreland map viewer"[23] which is a citizen-focussed interactive viewer that provides citizens with updated information on what has been achieved and what is planned for their own local area.

Another example is the Environmental Sensitivity Mapping (ESM) Webtool[24], which is a decision-support tool for strategic environmental assessment (SEA) and planning processes that allows users to create area-specific environmental sensitivity maps.

Public sector procurements of location information make only general references to INSPIRE or other standards but not to specific provisions (Recommendation 5), with use of INSPIRE as a reference for public procurement being quite limited.

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[21] See https://www.gov.ie/en/publication/f4a16b-national-digital-strategy/
[22] See http://www.irishstatutebook.ie/eli/2019/act/5/enacted/en/print.html
[23] https://geohive.maps.arcgis.com/apps/webappviewer/index.html?id=26b6e93dcd1044ff8fa2bd1a772a6080 and best practice IE1
[24] https://enviromap.ie/

3.3. Digital Government Integration

Vision	
	Location is well integrated in digital government processing supporting G2G, G2B and G2C interactions, through location related services across government. Users do not have to supply the same mandatory information multiple times. There is visibility of common coordinating and support structures, expert groups and technologies, a strong user voice in the design, evaluation and improvement of location-based services, and good evidence of take-up of services.
Recommendation 6	Identify where digital government services and processes can be modernised and simplified through the application of location-enabled services and implement improvement actions that create value for users
Recommendation 7	Use spatial data infrastructures (SDIs) in digital public services and data ecosystems across sectors, levels of government and borders, integrated with broader public data infrastructures and external data sources
Recommendation 8	Adopt an open and collaborative methodology to design and improve location-enabled digital public services
Recommendation 9	Adopt an integrated location-based approach in the collection and analysis of statistics on different topics and at different levels of government

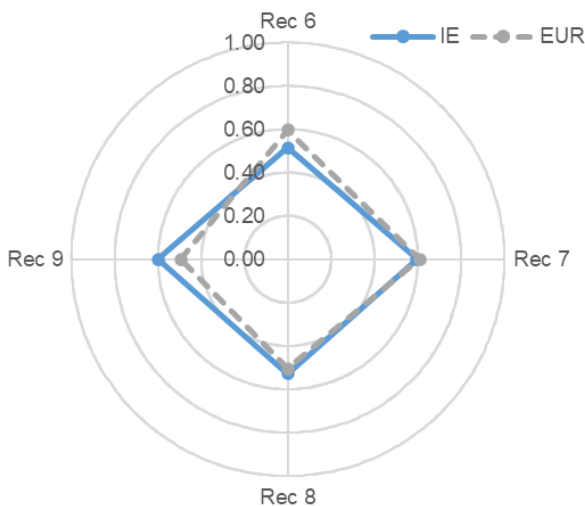*Table 3 - Focus Area "Digital Government Integration" - vision and recommendations*

Figure 7 - Digital Government Integration - scores by recommendation

The scores for each recommendation in the "Digital Government Integration" focus area are shown in Figure 7 and the underlying indicator scores for each recommendation are shown in Figure 8. In both cases, the country scores are compared with the European averages.

The "Digital Government Integration" focus area index for Ireland is 0.56, aligned with the European average of 0.57.

Ireland is positioned slightly above the European average under Recommendation 9, due to the fact that it implements several actions for the integration of location and statistical information, namely:

- an accurate and up-to-date knowledge base is maintained with data of where citizens and businesses are located;
- there is a common geospatial reference framework for statistics to enable timely, accurate and efficient production of location-based statistics;
- the collection of census data is based on the location reference framework for statistics;
- location-based statistics are updated dynamically to give an up-to-date snapshot on which to make decisions;
- the location intelligence infrastructure is continuously upgraded to meet growing and evolving needs based on a regular quality assessment of whether the infrastructure is fit for purpose;
- the country contributes to European projects aiming at establishing a data and production infrastructure for location-based statistics (e.g. GEOSTAT).

Good practices can also be highlighted under Recommendation 7. The SDI is used in many cases in order to deliver digital public services across government, often by combining the national SDI with sector-specific SDIs in various domains such as agriculture, environment, marine, property and land administration, regional and urban development and transport. Ireland reports an advanced implementation of the INSPIRE directive, with the corresponding indicator, based on the INSPIRE monitoring, scoring above the European average. INSPIRE conformant datasets and services are generally used in digital public services in the environment and marine sectors, with property and land administration, regional and urban development and transport, still using INSPIRE datasets, but to less of a degree. Conversely, the agriculture sector makes very limited use of INSPIRE datasets and services. Examples of use cases include Ireland's Sustainable Development Goals (SDGs) data hub[25], Ireland's COVID-19 Data Hub[26], Open Data for Census 2016 Ireland[27] and Myplan.ie[28].

There are interesting examples of where location information is used in a comprehensive way to improve key digital public services across the agriculture, environment, marine, property and land administration, regional and urban development and transport sectors (Recommendation 6). An example is the "Environmental Sensitivity Mapping (ESM) Webtool", also mentioned under the focus area Policy and Strategy Alignment[29].
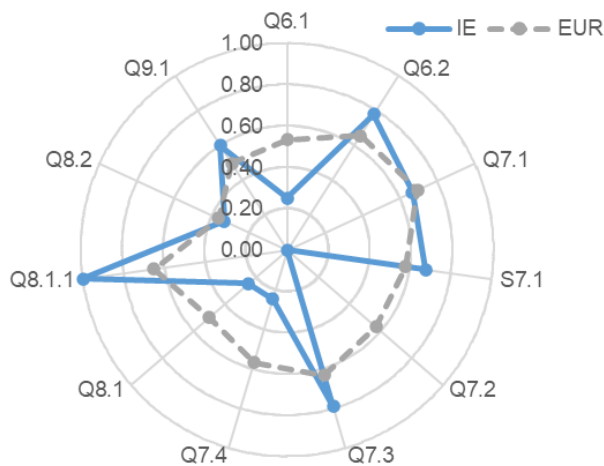

Figure 8 - Digital Government Integration - scores by indicator

An opportunity for improvement under this recommendation is due to the public sector SDI being used only occasionally by the private sector (e.g. insurance and banks) and other organisations (e.g. NGOs) for the delivery of new and innovative applications, products and services.

From the information collected for this factsheet it is not known if and how the country exploits its SDI to deliver cross-border digital public services.

Finally, only limited use is made of an open and collaborative methodology to design and improve location-enabled digital public services in specific initiatives, at local, sub national and national levels (Recommendation 8). Public authorities scale back their role, by relying on models such as public / private partnerships and tend to use location data from external parties, such as businesses, citizens and NGOs in their digital public services.

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[25] See https://irelandsdg.geohive.ie/
[26] See https://covid19ireland-geohive.hub.arcgis.com/
[27] See https://census2016.geohive.ie/
[28] See https://myplan.ie/
[29] See note 24

3.4. Standardisation and Reuse

Vision	
	Core data has been defined and a funding model has been agreed for its ongoing maintenance and availability. Consistent use of geospatial and location-based standards and technologies, enabling interoperability and reuse, and integration with broader ICT standards and technologies, including the standards and solutions promoted by the ISA[2] programme. Use of these standards in all areas related to the publication and use of location information in digital public services, including metadata, discovery, view, exchange, visualisation etc.
Recommendation 10	Adopt a common architecture to develop digital government solutions, facilitating the integration of geospatial requirements
Recommendation 11	Reuse existing authentic data, data services and relevant technical solutions where possible
Recommendation 12	Apply relevant standards to develop a comprehensive approach for spatial data modelling, sharing, and exchange to facilitate integration in digital public services
Recommendation 13	Manage location data quality by linking it to policy and organisational objectives, assigning accountability to business and operational users and applying a "fit for purpose" approach

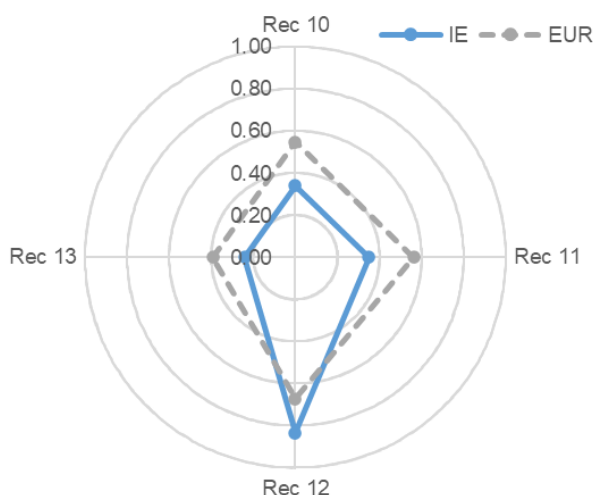*Table 4 - Focus Area "Standardisation and Reuse" - vision and recommendations*

Figure 9 - Standardisation and Reuse - scores by recommendation

The scores for each recommendation in the "Standardisation and Reuse" focus area are shown in Figure 9 and the underlying indicator scores for each recommendation are shown in Figure 10. In both cases, the country scores are compared with the European averages.

The "Standardisation and Reuse" focus area index for Ireland is 0.44, compared with the European average of 0.55. This is the largest shortfall recorded by Ireland against the European average, due to factors related to common architectural approaches and to data quality assurance and governance.

Ireland is the country with the highest percentage of spatial data sets in conformity with Regulation (EU) 1089-2010 and network services in conformity with Regulation (EC) 976-2009 (Recommendation 12). Ireland adopts either international geospatial standards (like ISOTC211, OGC, IHO, GDF) or adaptations thereof, including those taken from the INSPIRE directive.

The adoption of a common architecture to develop digital government solutions shows significant margins for improvement (Recommendation 10). This is due to the lack of a commonly used architectural approach for location data and services in the SDI. Ireland also adopts a rather ad-hoc approach to monitoring new developments related to emerging technologies, with very little testing carried out for this purpose.

A series of location data APIs have been developed, documented and are accessible, allowing access to the following high-value datasets: administrative units, air quality, geographical

names, protected sites and statistical units. However, the steps taken to stimulate take-up and use of APIs are quite limited, as they do not include many of the applicable measures such as, the use of open specifications for documentation, discovery through private and public catalogues, or the establishment of service level agreements (e.g. on availability, data quality etc.). The measures adopted for this aim are:

- consultation with user communities for the development / enhancement of APIs;
- adoption of recognised standards (e.g. OGC API - Features, OGC SensorThings API) to develop such APIs;
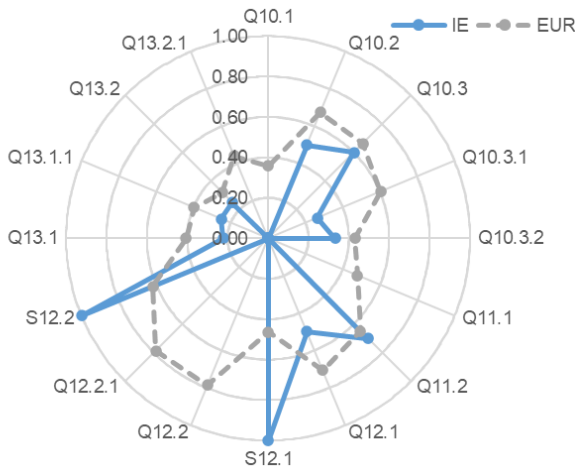- use of API design best practices (e.g. REST APIs).

Figure 10 - Standardisation and Reuse - scores by indicator

There is little re-use of generic ICT solutions in the SDI (Recommendation 11). As for data reuse, Ireland has implemented various registers[30] of location information, namely:

- addresses
- geographical names;
- administrative units;
- cadastral parcels;
- buildings;
- hydrography;
- transport networks.

Finally, management of location data quality (Recommendation 13) is the area where Ireland has the largest margin for improvement. Measures adopted consist of linking data quality standards to data standards (the reference standard is W3C Data Quality Vocabulary - DQV) and measuring the conformance of data to quality parameters set out in the data policy on an agreed frequency. The approach implemented does not include relevant practices such as the adoption of data quality frameworks, the consideration of the multiple dimensions of data quality (accuracy, completeness, integrity), the use of dashboards for measuring quality or the evaluation of data quality issues. Moreover, the country fails to adopt a consistent range of data quality governance principles and actions.

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[30] Such data registers are available through https://datacatalogue.gov.ie/dataset/

3.5. Return on Investment

Vision	
	There is a strategic approach to national and European funding, procurement, and delivery of location information and location-based services to minimise costs and maximise benefits for government, businesses and citizens, recognising best practices, and building on INSPIRE and standardisation tools. The funding and sourcing model for collection and distribution of core location data takes into account user needs from different sectors and the strategic importance of continued supply of
data at a suitable quality. Procurement recognises INSPIRE and other standardisation tools in a meaningful way. There are compelling impact assessments and business cases, a rigorous approach to targeting and tracking benefits, and good evidence that benefits are being achieved.	
Recommendation 14	Apply a consistent and systematic approach to monitoring the performance of location-based services
Recommendation 15	Communicate the benefits of integrating and using location information in digital public services
Recommendation 16	Facilitate the use of public administrations' location data by non-governmental actors to stimulate innovation in products and services and enable job creation and growth

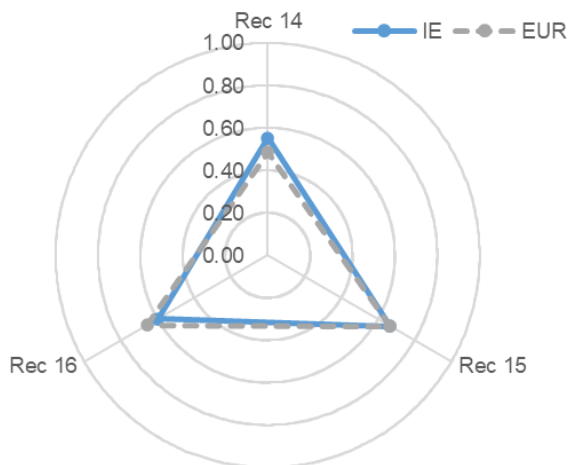*Table 5 - Focus Area "Return on Investment" - vision and recommendations*

Figure 11 – Return on Investment - scores by recommendation

The scores for each recommendation in the "Return on Investment" focus area are shown in Figure 11 and the underlying indicator scores for each recommendation are shown in Figure 12. In both cases, the country scores are compared with the European averages.

The "Return on Investment" focus area index for Ireland is 0.61, slightly above the European average of 0.58. This is the best relative score reached by Ireland, due to factors related to the communication of location information's benefits (Recommendation 15). In this regard, frequent, thorough, and convincing communication of the availability and benefits of location data and location-enabled digital public services to raise awareness and understanding of such benefits is performed by the country.

Ireland's practices are almost in line with the European average under Recommendation 14, as the performance of location-based services is monitored through the evaluation of a certain number of elements, such as:

- return on investment;
- reusability;
- reduction in administrative burden;
- simplification of administrative processes;
- enhanced business opportunities.

No information is currently available on the actions taken by Ireland to improve location-enabled processes and services.

Finally, with reference to [Recommendation 16](), Ireland is aligned with the European average because it facilitates the process of searching, finding and accessing location data and web services for companies, research institutions, citizens and other interested parties through several means:
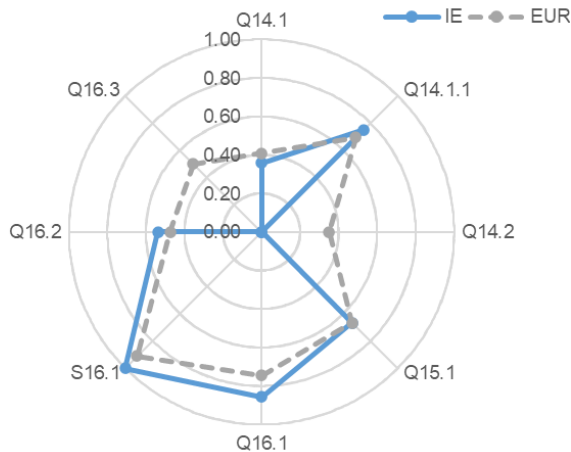
Figure 12 - Return on Investment - scores by indicator

- a national data portal merging location data and non-location data;[31]
- a national discovery geoportal integrating INSPIRE and non-INSPIRE data;[32]
- the geoportal being harvested by the European Data Portal;
- thematic portals complementing general search facilities with "specialist" search;
- websites with exposition of data;
- availability of spatial data sets on web search engines.

Active support is given to private, non-profit and academic actors in the development of new products, services or research using public sector location data through a wide range of actions, such as:

- open data policy;
- promoting access to open data through hackathons where the primary goal is to create applications which use location data;
- testbeds for trial use of public sector data;
- government sponsorship of 'innovation' pilot projects, potentially with grants / funding sponsorships of master's degrees and PhD courses specifically around location data;
- collecting requirements of businesses, research institutions and other potential or actual users for consideration in further development of INSPIRE/SDI;
- training in necessary skills to exploit the SDI;
- making public sector experts available to advise on / participate in the external use of data in the SDI.

The Ordnance Survey Ireland and Trinity College have also co-authored a large number of papers on some of the above initiatives.

Conversely, the country does not present a strategic approach to funding public sector location reference data.

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[31] https://data.gov.ie/
[32] https://inspire.geohive.ie/geoportal/

3.6. Governance, Partnerships and Capabilities

Vision

There is high level support for a strategic approach to the funding and availability of location information at Member State and EU level, based on INSPIRE and other tools to achieve interoperability. Effective governance, partnerships, work programmes, responsibilities and capabilities to progress such an approach have been established, taking into account the needs and expectations of stakeholders at Member State and EU level. Governments recognise the importance of 'location' understanding and skills and invest in awareness raising, training and resourcing. Service design takes account of user capabilities. Specialists form communities to share knowledge and develop new ideas related to location information. As a result, there is a sufficient level of understanding and skills to develop, deploy and use effective location-based services.

Recommendation 17	Introduce an integrated governance of location information processes at all levels of government, bringing together different governmental and non-governmental actors around a common goal
Recommendation 18	Partner effectively to ensure the successful development and exploitation of Spatial Data Infrastructures
Recommendation 19	Invest in communications and skills programmes to ensure sufficient awareness and capabilities to drive through improvements in the use of location information in digital public services and support growth opportunities

Table 6 - Focus Area "Governance, Partnerships and Capabilities" - vision and recommendations
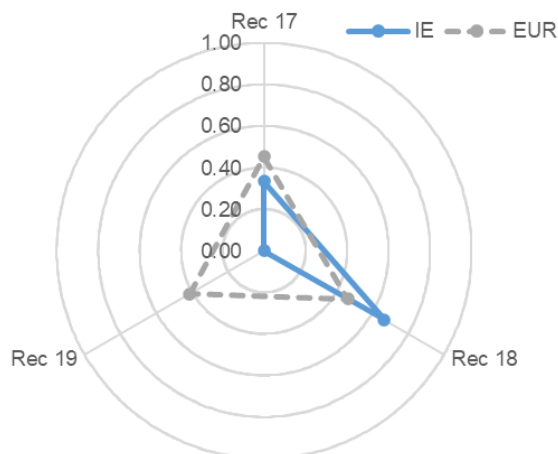

Figure 13 - Governance, Partnerships and Capabilities - scores by recommendation

The scores for each recommendation in the "Governance, Partnerships and Capabilities" focus area are shown in Figure 13 and the underlying indicator scores for each recommendation are shown in Figure 14. In both cases, the country scores are compared with the European averages.

The "Governance, Partnerships and Capabilities" focus area index for Ireland is 0.50, above the European average of 0.45. However, it must be noted that the indicators and the index for Recommendation 19 have not been taken into account, as information concerning Ireland's maturity under Recommendation 19 is not available at the moment.

Ireland is well positioned under Recommendation 18, especially in terms of partnership agreements to finance, build and operate location data services or digital public services using location data at the cross-border level. An example is the Ordnance Survey of Northern Ireland (ONSI)[33] which is the official producer of current geographic mapping data for Northern Ireland.

Another strength under this recommendation is linked to the large number of examples of public-private partnerships aimed at funding digital public services using location data.

A limited number of formal agreements exist between public authorities in Ireland to finance, build and operate location data services or digital public services using location data. Examples

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[33] See https://www.nidirect.gov.uk/campaigns/ordnance-survey-northern-ireland

are Eircode[34], which is Ireland's postcode system, and the National Mapping Agreement (NMA)[35], which provides government departments and Public Sector Bodies (PSB's), including both existing and new users, unrestricted access to most of Ordnance Survey Ireland's (OSi) geospatial data.
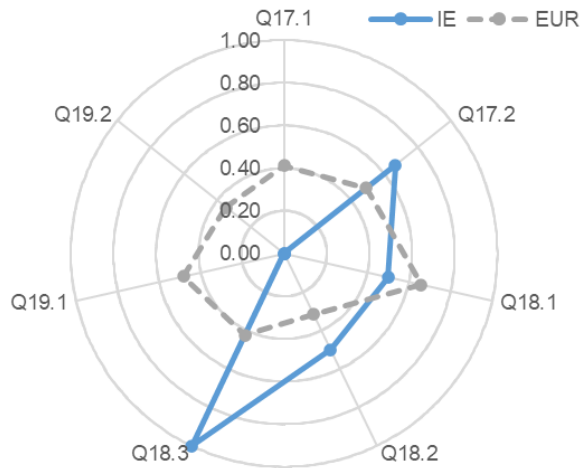
Figure 14 - Governance, Partnerships and Capabilities - scores by indicator

With regard to Recommendation 17, only a few stakeholders are involved in decision-making on the role of location information in digital government. There is, however, strong leadership and coordination on the role of the SDI in digital government, jointly actioned by the Office of the Government Chief Information Officer (OGCIO) in the Department of Public Expenditure and Reform, which is the organisation in charge of digital government, and OSi, the organisation in charge of the SDI. The OGCIO generally works in collaboration with organisations across the Civil and Public Service and has growing involvement in supporting sectoral digital development such as increased cyber security, the contact tracing app, and vaccination roll-out.

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[34] See https://www.eircode.ie/
[35] See https://www.osi.ie/services/national-mapping-agreement/

4. Best practices

Best Practice IE1	myProjectIreland

Policy domain: Public Infrastructure investment; Citizen participation

Process owner: Ordnance Survey Ireland

Short description:

Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all of its people. The plan changes how investment is made in public infrastructure in Ireland, moving away from the approach of the past, which saw public investment spread too thinly and investment decisions that didn't align with a well-thought-out and defined strategy. The interactive map myProjectIreland encourages citizens' participation in the process by making them aware of the projects planned in their areas.

MyProjectIreland was launched in May 2019 alongside the first Project Ireland 2040 Annual Report. Developed collaboratively by Ordnance Survey Ireland, MyProjectIreland is a citizen-focussed interactive map. The latest update in December 2020 has been extended to include almost 800 projects across the country. By clicking on the map on gov.ie, citizens can find updated information on what has been achieved and what is planned for their own local area. This version features a dashboard with charts, enabling citizens to see the progress being made on projects at a glance. New search facilities also allow citizens to view projects in their regional area or by city.

The policy topics involved are:

- airports and ports;
- climate actions;
- culture, heritage and sport;
- education, health and childcare;
- enterprise, skills and innovation capacity;
- environmentally sustainable public transport;
- housing and sustainable urban development;
- national road network;
- rural development;
- water infrastructure.

Recommendation(s): Policy and Strategy Alignment (4), Digital Government Integration (6, 8)

Link: https://geohive.maps.arcgis.com/apps/webappviewer/index.html?id=26b6e93dcd1044ff8fa2bd1a772a6080

List of abbreviations and definitions

Abbreviations

Abbreviation	Meaning
API	Application Programming Interface
CC	Creative Commons
CSW	Catalogue Service – Web
DCAT-AP	Data Catalogue vocabulary – Application Profile
DQV	Data Quality Vocabulary
EIF	European Interoperability Framework
ELISE	European Location Interoperability Solutions for e-Government
EULF	European Union Location Framework
ESM	Environmental Sensitivity Mapping
GDPR	General Data Protection Regulation
GI	Geographic Information
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
ICT	Information and Communication Technology
INSPIRE	Infrastructure for Spatial Information in the European Community
ISA[2]	Interoperability Solutions for European Public Administrations, Businesses and Citizens Programme
ISO	International Standard Organisation
LIFO	Location Interoperability Framework Observatory
NGO	Non-Governmental Organisation
NIFO	National Interoperability Framework Observatory
NMA	National Mapping Agreement
OGC	Open Geospatial Consortium
OGCIO	Office of the Government Chief Information Officer
ONSI	Ordnance Survey of Northern Ireland
OSi	Ordnance Survey Ireland
PSI	Public Sector Information
SDG	Strategic Development Goal
SDI	Spatial Data Infrastructure
SEA	Strategic Environmental Assessment
UGI	Unique Geographic Identifier
WCS	Web Coverage Service
WFS	Web Feature Service
WMS	Web Map Service
WMTS	Web Map Tile Service
W3C	World-Wide Web Consortium

Definitions

Term	Meaning	Link
Application Programming Interface (API)	A set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service.	Application Programming Interface | Joinup (europa.eu)
Authentic data	Data that provides an accurate representation of reality with quality parameters that are fit for the intended purposes.	Authentic data | Joinup (europa.eu)
Authoritative data	Data from officially regarded sources. A subset of spatial data may be described as 'authoritative data', where it has legal value because it is defined by a competent authority.	Authoritative data | Joinup (europa.eu)
Core location dataset / High value dataset	Open Data Directive introduces the concept of 'high-value datasets' as datasets holding the potential to (i) generate significant socio-economic or environmental benefits and innovative services, (ii) benefit a high number of users, in particular SMEs, (iii) assist in generating revenues, and (iv) be combined with other datasets. Given this, the Directive requires that such datasets are available free of charge, are provided via Application Programming Interfaces (APIs) and as a bulk download, where relevant, and are machine-readable. The Directive does not include the specific list of high-value datasets—which is expected in the future—but only their thematic categories, one of which is 'Geospatial'. The 'high value dataset' concept is also considered in national data policy and programmes in different European countries, typically incorporating 'core' datasets, including geospatial data.	High Value Dataset | Joinup (europa.eu)
Core reference dataset	Core reference dataset can be defined as the minimum set of authoritative, harmonised and homogeneous framework data needed to either meet common requirements for applications at cross-border, European and global levels or to geo-reference and locate other thematic data. In the latter case, core data may be used as a framework on which other richer, more detailed, thematic geospatial and statistical data would rely.	http://ggim.un.org/meetings/GGIM-committee/documents/GGIM5/E-C20-2015-4%20Fundamental%20Data%20Themes%20Report.pdf
Digital government	Government designed and operated to take advantage of information in creating, optimising, and transforming, government services.	Digital government | Joinup (europa.eu)

Term	Meaning	Link
European Single Procurement Document	The European Single Procurement Document (ESPD) is a self-declaration by economic operators providing preliminary evidence replacing the certificates issued by public authorities or third parties. As provided in Article 59 of Directive 2014/24/EU, it is a formal statement by the economic operator that it is not in one of the situations in which economic operators shall or may be excluded; that it meets the relevant selection criteria and that, where applicable, it fulfils the objective rules and criteria that have been set out for the purpose of limiting the number of otherwise qualified candidates to be invited to participate. Its objective is to reduce the administrative burden arising from the requirement to produce a substantial number of certificates or other documents related to exclusion and selection criteria	Commission Implementing Regulation (EU) 2016/7 of 5 January 2016
Evidence-based policy making	The development of public policy which is informed by objective evidence, e.g. through data related to the content of the policy.	Evidence-based policy making	Joinup (europa.eu)
GeoDCAT-AP specification	Data Catalogue vocabulary (DCAT) Application Profile extension for describing geospatial datasets, dataset series, and services.	GeoDCAT-AP	Joinup (europa.eu)
Geographical Information (GI) Champion	The GI Champion can be appointed to drive through the changes related to running a major GI improvement programme, promoting public sector modernisation through the use of GI, and ensure that the organisation is aware of and convey the benefits of geospatial information and technologies. A GI champion may also be appointed with a pan-government remit.	LIFO Guidelines and Recommendations
Key digital public services	The most frequently accessed and sometimes mandatory public services which are delivered with the extensive use of ICT, e.g. registration of land and property, health and welfare, civil status registration, transport, environmental protection, energy production and distribution, public safety, transport, public education etc. National legislation may define which services must be considered key.	https://joinup.ec.europa.eu/collection/european-union-location-framework-eulf/document/recommendation-6
Location data framework	Location data framework describes all the elements – including data assets, standards and technologies, policies and guidance, people and organisations – that are required to unlock the power of location. An SDI is a location data framework	LIFO Guidelines and Recommendations Unlocking the Power of Location: The UK's geospatial strategy 2020 to 2025
Location information strategy	A strategic approach for managing and maximising the value of location information.	Location information strategy	Joinup (europa.eu)

Term	Meaning	Link
Open and collaborative methodology	Any system of innovation or production that relies on goal-oriented yet loosely coordinated participants who interact to create a product (or service) of economic value, which they make available to contributors and noncontributors alike. Prominently used for the development of open source software.	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1096442
OpenAPI	Specification for machine-readable interface files for describing, producing, consuming, and visualising RESTful web services.	https://swagger.io/specification/
Open licence	An open licence is a way for the copyright holder (creator or other rightholder) to grant the general public the legal permission to use their work. The applied open licence is usually indicated directly on the work and wherever the work is shared. As in the case of other licences, open licences do not imply a transfer of copyright or other intellectual property rights. Someone granting an open licence for their work still remains the copyright holder of their materials and can themselves use the materials as they wish, e.g. to commercialise their project outcomes.	https://ec.europa.eu/programmes/erasmus-plus/programme-guide/part-c/important-contractual-provisions/open-licence-intellectual-property-rights_en
RESTful web services	Web services built on Representational State Transfer (REST) principles, where resources used by the services are made available through URIs (Uniform Resource Identifier) and can be updated without affecting the service	https://docs.oracle.com/javaee/6/tutorial/doc/gijqy.html
Sector legislation	Legislation about a particular domain (e.g. health, environment) or sub-domain (e.g. hospitals, water). Within INSPIRE, reference can be made to the nine thematic clusters, which have associated legislation, e.g. E-PTRT (European Pollutant Release and Transfer Register) IED (Industrial Emissions Directive).	https://inspire.ec.europa.eu/call-facilitators-%E2%80%93-thematic-clusters/50
Spatial Data Infrastructure (SDI)	In general terms, a Spatial Data Infrastructure (SDI) may be defined as 'a framework of policies, institutional arrangements, technologies, data, and people that enable the effective sharing and use of geographic information' [Bernard et al, 2005]. INSPIRE as an SDI for European environmental policy is defined as 'metadata, spatial data sets and spatial data services, network services and technologies, agreements on sharing, access and use, and coordination and monitoring mechanisms, processes and procedures, established, operated or made available in accordance with the Directive'.	Spatial Data Infrastructure | Joinup (europa.eu)

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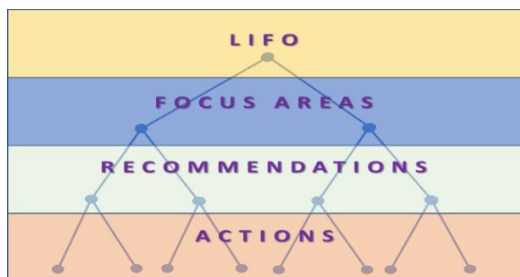
Annex 1: LIFO 2020 Scoring methodology

Figure 15 - Hierarchy of indicators and indexes

The LIFO analytical model, described in the *LIFO 2020 Guidelines and recommendations*[36], is based on a hierarchy of indicators and indexes, as represented in Figure 15: from bottom to top, (action) indicators, recommendation indexes, focus area indexes and LIFO index.

(Action) Indicators: A number of actions[37] have been selected in the EULF Blueprint as being representative of the scope of the recommendations to which they belong. An indicator has been designed to measure how monitored countries are progressing towards the "vision" outlined in the EULF Blueprint for each of these actions. Each primary indicator is represented by a code *Qx.y.z* where *x* is the recommendation number, *y* the progressive indicator number for that recommendation and *z* (where applicable) a second-level indicator providing additional information on the corresponding Qx.y first level indicator. Information to calculate each primary indicator is collected through the replies provided by participating countries to a question for each indicator. The model also includes secondary indicators, represented by a code *Sx.y*. These latter are computed reusing information from existing sources, for example, the INSPIRE monitoring. See Annex 2 for a list of the indicators and pertinent questions for each recommendation.

Each indicator is calculated on a specific scale, which best reflects the nature of the action (e.g. if it can be measured over a continuous or a discrete scale, if it is a binary phenomenon, i.e. yes/no or similar, etc.). Indicators are then normalised over a scale of 0-1, as follows:

Score attributed to the answer / maximum applicable value, where the maximum applicable value is the upper end of the scale that the non-normalised value of the indicator can reach.

Note: Optional questions in the LIFO survey capture supplementary information relevant to corresponding mandatory questions about the actions. The mandatory questions (i.e. those marked '*' in the survey) are scored, whereas the optional questions are not scored.

(**Multi-level) indexes:** indexes aggregate the action indicators at the levels of recommendations, focus areas, and LIFO overall to represent each country's performance at the respective levels. The relationships between (action) indicators, recommendation indexes, focus area indexes and the overall LIFO index are described in Table 7.

Level	No.	Scoring method
LIFO	1	Average of the 5 focus area indexes
Focus area	5	Average of scores for all recommendations associated with a focus area
Recommendation	19	Average of normalised scores for all indicators associated with a recommendation
Action	48	Scores calculated using different scoring methods converted to standard normalised scores in range 0-1.

Table 7 – Relationships between indicators and indexes

Action indicators, *recommendation indexes* and *focus area indexes* are thus equally weighted in the calculation of their respective upper-level indexes.

Note: Some questions have a "*don't know*" response as an option. Respondents are encouraged to provide answers wherever possible. Where a "*don't know*" response is given, the indicator gets a null score. This is shown as zero in the indicator charts, and the indicator is ignored in calculating the index scores.

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[36] https://joinup.ec.europa.eu/sites/default/files/inline-files/2020_LIFO_Guidelines_2.pdf
[37] Described in the "How" section of each Recommendation.

Annex 2: LIFO 2020 Indicators

Focus Area: Policy and Strategy Alignment			Changes vs 2019
No.	**Indicator**	**Question**	
Recommendation 1			
Q1.1	Alignment between location and digital government strategies	Is there a location strategy in your country that is closely connected to your digital government strategy?	Change in scale
Q1.1.1	Link to strategies	Please supply links to the location strategy and digital government strategy.	
Q1.2	Use in digital government of authoritative location datasets and services	To what extent is the use in digital government of authoritative location datasets and services regulated by legislation and/or binding agreements?	
Recommendation 2			
Q2.1	Licensing policy	To what extent is location data available free of charge under an open licence without restrictions or with minimum restrictions?	Change in scale
Q2.1.1	Licensing policy – covered datasets	Which of the following core location datasets with high importance for multiple external users (also known as "high value datasets" in national and European open data strategies) can be accessed (e.g. through APIs or downloads) free of charge under an open licence without restrictions or with minimum restrictions?	New question
Q2.2	Core reference data policy on location data	Are core location reference datasets (for the list of core location datasets please refer to Q2.1.1) made available as part of a broader core reference data policy (which also includes people, businesses, vehicles etc.)?	Change in scale
Q2.3	Use of common data licensing frameworks	To what extent is location data available under a common licensing framework for all government data?	Change in scale
Q2.4	Coverage of location data by national guidelines on the publication of Public Sector Information	Do your pan-government guidelines on the publication of public sector data cover location aspects? "Cover location aspects" means that in the guidelines some specific geospatial topics are highlighted (e.g. formats, encoding, accessibility trough specific web services, specific legislation,).	

Recommendation 3			
Q3.1	Preparedness for GDPR under location aspects	How well-prepared are controllers and processors of public sector location data in your country for GDPR, including awareness of potential location data privacy issues and processes in place to comply with the rights of data subjects?	
Recommendation 4			
Q4.1	Use of location-based analysis for evidence-based policy making	Is location-based evidence and analysis used to help in developing relevant policies and monitoring outcomes?	
Recommendation 5			
Q5.1	References to INSPIRE and relevant standards in procurement documents	For public sector procurements of location information or services, what references are made to INSPIRE and relevant standards in the procurement documents?	

Focus Area: Digital Government Integration			Changes vs 2019
No.	Indicator	Question	
Recommendation 6			
Q6.1	Improvement of location information use in digital public services	To what extent is there a process for identifying opportunities and implementing improvements to key digital public services in their use of location information, including considering new business and delivery models?	Change in scale
Q6.2	Optimal use of location information is used optimally in key digital public services	Please select up to 6 sectors where location information has the most significant role to play in digital public services. For these sectors, please specify how well 'optimised' is the use of location data in digital public services. In this respect, 'optimisation' relates to extent of use and contribution to innovation and quality of service.	Change in scale
Recommendation 7			
Q7.1	Use of SDI in cross-government digital services	To what extent is the SDI used in delivering digital public services across government (in different sectors and levels of government)?	Change in scale
S7.1	Implementation status of the INSPIRE directive	Average of indicators for the following five actions in the INSPIRE country fiche: - Availability of spatial data and services	Change of calculation method for the INSPIRE

		- Conformity of metadata - Conformity of spatial data sets - Accessibility of spatial data sets through view and download services - Conformity of the network services	country fiche
Q7.2	Use of SDI in cross-border services	Is the country actively involved in delivering cross-border digital public services using their spatial data infrastructure (SDI)?	Change in scale
Q7.3	SDI approach used	Please specify the main SDI approach used for delivery of key digital public services in the sectors selected in 6.2.	New question
Q7.4	Use of the public sector SDI by private sector and other organisations (e.g. NGOs)	To what extent is the public sector SDI used by the private sector and other organisations (e.g. NGOs) for delivery of 'new and innovative' applications, products and services?	
Recommendation 8			
Q8.1	Use of an open and collaborative methodology in location-enabled digital public services	To what extent is an open and collaborative methodology applied, to design and improve location-enabled digital public services at local, sub-national or national level (e.g. through consultations, user groups, feedback requests, iterative development)?	
Q8.1.1	Level of government where a collaborative approach is used	At what level of government is the collaborative approach applied?	Single choice in 2019, multiple choice in 2020
Q8.2	Collaboration with external parties in service delivery	When developing or delivering location-based digital public services, in what ways are external parties involved? This includes the private sector, NGOs and citizens.	Change in scale
Recommendation 9			
Q9.1	Approach for integration of statistical and location information	What actions are implemented for the integration of location and statistical information in the production of location-based statistics?	

No.	Indicator	Question	Changes vs 2019
Focus Area: Standardisation and Reuse			
Recommendation 10			
Q.10.1	Adoption of a common architectural approach	In your country, does the architecture for location data and services in the SDI fit within a broader national ICT architecture approach that is applied in the design, re-engineering, interconnectivity and reuse of ICT and data in digital public services?	
Q10.2	Procedure to incorporate new technological features	Please describe the approach (if any) to discover, explore and incorporate new technological features or emerging technologies.	
Q10.3	Status of development of APIs for INSPIRE / SDI	Please describe the status of development of APIs for SDI / INSPIRE.	
Q10.3.1	Access to high-value location datasets through APIs	Which core "high value" location datasets can be accessed using APIs?	New question
Q10.3.2	Action to foster APIs take-up	Where there are APIs for location datasets, what steps are commonly taken to stimulate take-up and ensure they are as useful as possible?	New question
Recommendation 11			
Q11.1	Reuse of generic ICT solutions in the SDI	Please describe the reuse status of generic ICT solutions in the SDI.	Single choice in 2019, multiple choice in 2020
Q11.2	Implementation of location information registers	What registers of location information are implemented?	
Recommendation 12			
Q12.1	Use of geospatial standards	What type of geospatial domain standards are used in your country?	Change of question
S12.1	Conformity of spatial data sets to INSPIRE implementing rules	Conformity of spatial data sets with Regulation (EU) No 1089/2010 (from INSPIRE monitoring)	
Q12.2	Use of a standardised metadata approach	To what extent is a standardised metadata approach adopted to facilitate discoverability of spatial and non-spatial data through joint access mechanisms such as those listed in the question Q16.1?	New question
Q12.2.1	Use of specifications for combining spatial and non-spatial metadata	Where an approach to facilitate a joint discoverability of spatial and non-spatial data is adopted, what specifications and tools are used to a significant degree to combine	New question

		spatial with non-spatial metadata in national implementations?	
S12.2	Conformity of the INSPIRE network services with INSPIRE implementing rules	Conformity of the INSPIRE network services with Regulation (EC) No 976/2009 (from INSPIRE monitoring)	
Recommendation 13			
Q13.1	Approach to location data quality	What actions are typically implemented to assure quality of location data in your country?	
Q13.1.1	Use of data quality standards	What data quality standard is applied to location data?	New question
Q13.2	Approach to location data quality governance	What type of actions relating to location data quality governance are put in place in your country?	
Q13.2.1	Collection of feedback from users	Where feedback is obtained from users, what approach is taken?	

Focus Area: Return on Investment			Changes vs 2019
No.	Indicator	Question	
Recommendation 14			
Q14.1	Performance monitoring of location-enabled digital public services	What of the following elements are evaluated to assess the efficiency and effectiveness of location-based services in your country?	
Q14.1.1	Performance monitoring scope	Are the measurements done: [ ] At a project or service level [ ] At an organisational level [ ] At an SDI / national level [ ] A combination of the above	
Q14.2	Approach to impact-based improvement	What actions are implemented for impact-based improvement in location-enabled processes and services in your country?	
Recommendation 15			
Q15.1	Approach to communication of benefits	Is communication delivered on the availability and benefits of location data and location- enabled digital public services to raise awareness and understanding using, for example, factsheets, news articles, web-based communication, videos, events?	Change of question
Recommendation 16			
Q16.1	Ease of searching, finding and accessing location data	What measures are implemented to make the process of searching, finding and accessing location data and web services as easy as possible for companies, research institutions, citizens and other interested parties?	

S16.1	Existence of policies supporting the reuse of PSI	Existence of policies supporting the reuse of Public Sector Information by the private sector (from the Open Data Maturity Report)	
Q16.2	Support to the development of products and services by external parties	Which of the following actions are implemented in your country to actively support private, non- profit and academic actors in the development of new products, services or research using public sector location data?	Change of scale
Q16.3	Existence of a strategic approach to funding location reference data	Is there a strategic approach to funding public sector location reference data to make access at point of use cost effective?	

Focus Area: Governance, Partnerships and Capabilities			Changes vs 2019
No.	**Indicator**	**Question**	
Recommendation 17			
Q17.1	Involvement of stakeholders in decision making on location information in digital government	To what extent are all relevant communities (location and digital government), domains (thematic), administrative levels (central and local) and sectors (public, private, academic, society) involved in decision making on the role of location information in Digital Government?	Multiple choice in 2019, single choice in 2020
Q17.2	Coordinated governance of SDI and digital government	To what extent do organisations responsible for SDI and Digital Government coordination deal jointly with the governance of the SDI in the context of Digital Government?	Multiple choice in 2019, single choice in 2020
Recommendation 18			
Q18.1	Use of formal agreements between public authorities in the country to operate location data services	To what extent do formal agreements exist between public authorities in the country to finance, build and operate location data services or digital public services using location data?	
Q18.2	Use of formal agreements to operate cross-border location data services	To what extent do formal agreements exist with public authorities in other countries to finance, build and operate cross-border location data services or digital public services using location data?	
Q18.3	Use of public–private partnerships to operate location data services	To what extent do public-private partnerships exist to finance, build and operate location data services or digital public services using location data?	

Recommendation 19			
Q19.1	Use of a strategic approach to geospatial capacity building	To what extent is there a strategic approach to skills and training for innovative geospatial solutions?	Multiple choice in 2019, single choice in 2020
Q19.2	Awareness raising initiatives in the geospatial domain	What type of initiatives are organised to raise awareness and develop geospatial skills?	Change in scale

Note: Some indicators have been modified in LIFO 2020 compared with LIFO 2019[38], with the aim to improve the capability of the LIFO analytical model to represent consistently the state of play of location interoperability at country and European level. The main changes, and the focus areas / recommendations impacted are:

- Digital Government Integration:
  - Reduced focus on INSPIRE as reference SDI for the delivery of location-enabled services (Recommendation 7);
  - Changes in the calculation of INSPIRE country fiche indicators (Recommendation 7).
- Standardisation and Reuse:
  - More emphasis on the use of APIs for access to and reuse of location data, with new indicators (Recommendation 10);
  - New indicators on the use of metadata for joint discoverability of spatial and non-spatial data (Recommendation 12).
- Governance, partnerships and capabilities:
  - Questions on governance (approaches to joint involvement of all relevant stakeholders in the governance of SDI – Recommendation 17) and capabilities (approaches to geospatial training and skills - Recommendation 19) have passed from multiple choice to single choice

Where changes have been made to the indicators from 2019 to 2020, they are classified as follows:

- "Change in scale": one or more options of reply have been added (or eliminated);
- "Change of question": the question has been completely redrafted;
- "New question": the question was not included in LIFO 2019 questionnaire;
- "Single choice in 2019, multiple choice in 2020": in 2019 it was possible to select only one option as reply, in 2020 more than one option can be selected;
- "Multiple choice in 2019, single choice in 2020": in 2019 it was possible to select more than one option as reply, in 2020 only one option can be selected.

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[38] LIFO 2019 indicators are listed at https://joinup.ec.europa.eu/node/704929, while LIFO 2020 indicators are listed at https://joinup.ec.europa.eu/node/704251

Annex 3: LIFO 2020 Additional information: Ireland

Title	Attachment[39]
LIFO Survey questionnaire 2020 – Ireland	LIFO Survey 2020 Ireland
LIFO Survey questionnaire 2020 scores and charts – Ireland	LIFO 2020 scores and charts Ireland

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[39] Attachments can be accessed by clicking on the respective icon when opening the factsheet in Adobe Acrobat Reader, provided that the application preferences are set to do so.