



LIFO: Location Interoperability Framework Observatory

2020 COUNTRY FACTSHEET

CYPRUS



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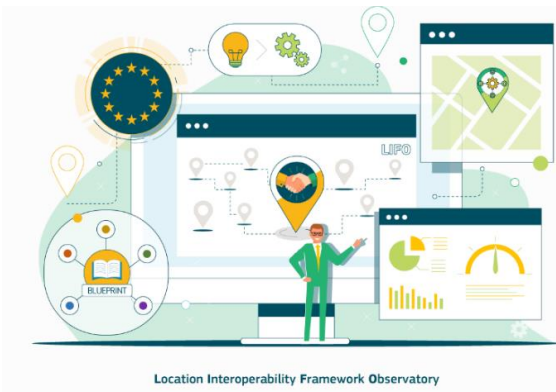
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1. Introduction



The Location Interoperability Framework Observatory (LIFO¹) 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) Blueprint² (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 (ISA²)⁶ programme.



Figure 1 - EULF Blueprint focus areas

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 model⁷. 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 Directive⁸. 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 Directive⁹, obligations under the General Data Protection Regulation (GDPR)¹⁰, approaches under the Public Procurement Directive¹¹, and factors relevant to the EIF¹².

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 [.](#)) 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.



Figure 2 - LIFO online resources

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.

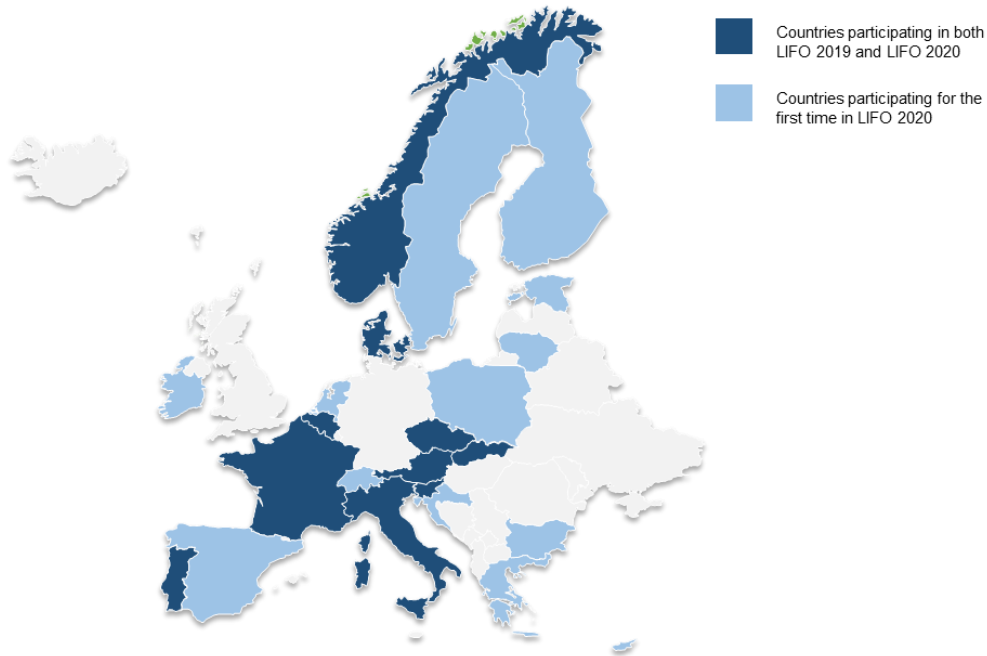


Figure 3 - LIFO participating countries in 2019 and 2020

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.

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 Cyprus 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 [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 Cyprus comprising the questionnaire response and the scores and charts based on the response.

The 2020 LIFO monitoring information for Cyprus has been provided by the *Department of Information Technology Services*.

3. Location Interoperability State of Play

3.1. Overview

The information collected through the LIFO 2020 data collection indicates that Cyprus is positioned overall close to the European average except under the “Governance, Partnerships and Capabilities” focus area, which presents a more significant gap.

Under the “Policy and Strategy Alignment” focus area, the gap against the European average is minimal. Cyprus’ main strength is the availability of a wide range of location data free of charge under an open licence ([Recommendation 2](#)). Another positive element is the use of a standards-based approach in the procurement of location data and related services in line with broader ICT standards-based procurement ([Recommendation 5](#)). These good results are partially offset by the lack of location strategy and by the fact that only some public organisations are fully prepared for the GDPR concerning location data.

The gap with the European average is also quite narrow in the “Return on Investment” focus area. The country has applied a consistent and systematic approach to monitoring the performance of location-based services ([Recommendation 14](#)) but is lagging behind in terms of communication of the benefits coming from integrating and using location information in digital public services ([Recommendation 15](#)).

In “Standardisation and Reuse”, the country has implemented a good number of location data registers ([Recommendation 11](#)) and has put in place APIs for accessing all high-value location datasets ([Recommendation 10](#)). Location data quality practices are instead an area of improvement, particularly concerning the link of data to policy and organisational objectives ([Recommendation 13](#)). The level of conformity of network services with INSPIRE implementing regulation is low ([Recommendation 12](#)).

“Governance, Partnership and Capabilities” is the focus area where the gap against the European average is most evident. Here, there is space for improvement particularly regarding the inclusion of stakeholders in the decision making process on the role of location information in digital government ([Recommendation 17](#)).

The second widest gap against the European average is in “Digital Government Integration”. Cyprus’s positioning is lower due to the limited use of an open and collaborative methodology to design and improve location-enabled digital public services ([Recommendation 8](#)). The country has comprehensive or even innovative use of location information in some digital government services and processes ([Recommendation 6](#)) and to a lesser extent from the use of spatial data infrastructures (SDIs) in cross-border digital public services ([Recommendation 7](#)).

The value of the overall LIFO index combining the scores for all focus areas is 0.48, compared with the European average of 0.55. This reflects a few gaps in terms of location interoperability.

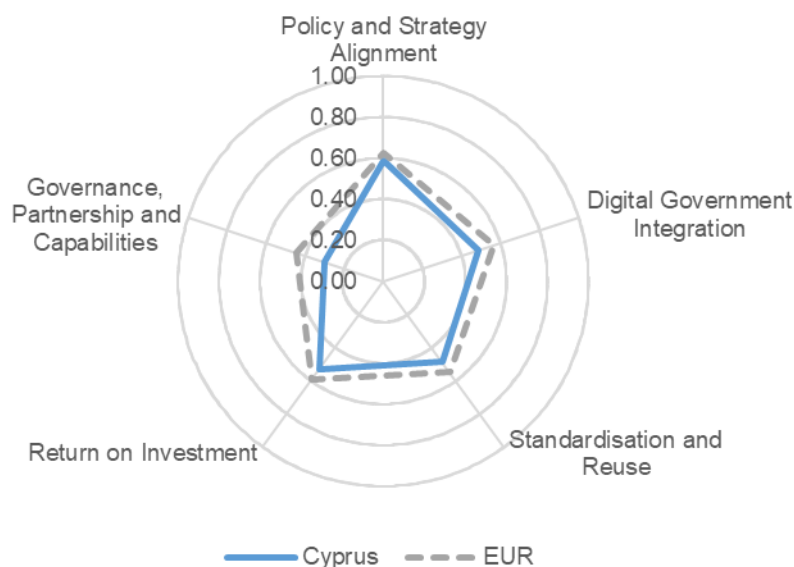






Figure 4 - Overall EULF Blueprint implementation

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

Focus Area	Strengths	Weaknesses
 Policy and Strategy Alignment	<ul style="list-style-type: none"> Many location datasets are available free of charge under an open licence Public procurements of location data and services make specific references to the applicable parts of the INSPIRE Directive and / or national / international standards 	<ul style="list-style-type: none"> There is no location strategy and only tactical actions are ongoing Only some public sector controllers and processors of location data are fully prepared for GDPR
 Digital Government Integration	<ul style="list-style-type: none"> The level of optimisation of the use of location data in digital public service 	<ul style="list-style-type: none"> The involvement of external parties in developing or delivering location-based digital public services
 Standardisation and Reuse	<ul style="list-style-type: none"> A good number of location data registers have been implemented APIs are available for all high value public sector datasets including location datasets as part of a national strategy Network services are fully conformant to the INSPIRE implementing Regulation 	<ul style="list-style-type: none"> Only a limited set of actions are implemented for location data quality governance
 Return on Investment	<ul style="list-style-type: none"> Measurements of efficiency and effectiveness of location-based services are made at a national level 	<ul style="list-style-type: none"> Only basic communication is delivered on the availability and benefits of location data


Focus Area	Strengths	Weaknesses
 <p><i>Governance, Partnerships and Capabilities</i></p>	<ul style="list-style-type: none"> • Some partnership agreements are in place to ensure the successful development and exploitation of Spatial Data Infrastructures 	<ul style="list-style-type: none"> • Limited involvement of communities, thematic domains, central and local administrative levels and sectors on decisions where the role of location information in digital government is crucial • Limited training and awareness raising for developing geospatial skills

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

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.

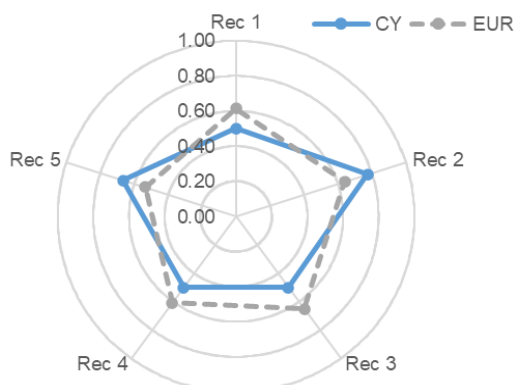


Figure 5 - Policy and Strategy Alignment – scores by recommendation

The "Policy and Strategy Alignment" focus area index for Cyprus is 0.59, slightly below the European average of 0.62. The positive drivers for this result are the consistent approaches to the availability of open location data ([Recommendation 2](#)) and the use of a standard based approach in the procurement of location data ([Recommendation 5](#)). The indexes for [Recommendation 1](#), [Recommendation 3](#) and [Recommendation 4](#) reduce the focus area index, due to the gaps in the following areas:

- connection between location information strategy and digital government strategy;
- level of preparedness for GDPR of controllers and processors of public sector location data;
- use of location-based analysis for policy making.

One of the major strengths for the country is that most location data are available free of charge under an open licence, with minimum restrictions ([Recommendation 2](#)). Those datasets include:

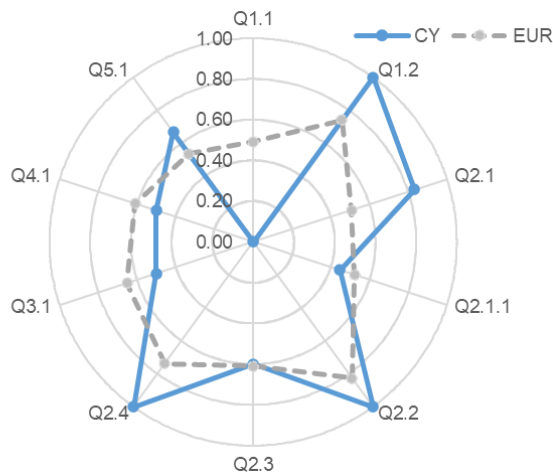


Figure 6 - Policy and Strategy Alignment – scores by indicator

- administrative units;
- air quality;
- buildings;
- cadastral parcels;
- elevation;
- geographical names;
- health statistics (illness and cause of death);
- hydrography;
- land cover;
- land use;
- population distribution and demography;
- protected sites;
- statistical units;
- transport networks;
- transport timetables;

- water quality;
- weather observations.

The datasets published on the open data portal www.data.gov.cy are available under Creative Commons – Attribute 4.0 International (CC BY 4.0) licence. Reusers are only required to reference the source and highlight the changes and elaborations done on the original data.¹⁸ The main restriction consists in attribution. In a few cases, charges based on volumes of data or types of access are also applied.

One of the most promising initiatives on the publication of location data is the project initiated by the Department of Lands and Surveys (DLS) for the development of the DLS Portal which is intended to be the main gateway through which spatial data are published and made available.¹⁹

Under [Recommendation 5](#), public procurements of location data and services make specific references to the applicable parts of the INSPIRE Directive and / or national and international standards²⁰. The European Single Procurement Document (ESPD) is not used.

Regarding [Recommendation 1](#), Cyprus does not have a location strategy, only tactical actions are ongoing. The only consistent legislative framework promoting cross-sector location interoperability is represented by INSPIRE, while the use of authoritative location datasets and services is mandated by legislation mostly at sector level. The provisions of Law 205(I)/2015, harmonising the national legislation with the Directive 2003/98/EC and the revised Directive 2013/37/EU, set out the necessary institutional framework for the terms and conditions ensuring the fair, proportionate and equitable re-use of public bodies' documents.

The national documents on the publication of Public Sector Information also cover location aspects, concerning sharing and reuse, use charges and formats.

Only some organisations are fully prepared for GDPR, in terms of awareness of potential location data privacy issues and of processes in place to comply with the rights of data subjects

¹⁸ [Συνθήσεις Ερωτήσεις | Εθνική Διαδικτυακή Πύλη Ανοικτών Δεδομένων \(data.gov.cy\)](http://www.data.gov.cy)

¹⁹ [DLS Portal \(moi.gov.cy\)](http://moi.gov.cy)

²⁰ See for example the public call for the procurement of services for the “Preparation of a Strategic Plan, assist the creation of basic e-services, and then the provision of web-hosting and training for the Implementation of Directive 2007/2/EC (INSPIRE) in the Republic of Cyprus” (<https://www.eprocurement.gov.cy/epps/cft/prepareViewCftWS.do?resourceId=1236301>). This calls makes specific references to the applicable provisions of the INSPIRE directive.

([Recommendation 3](#)). No complaints, cases or fines in relation to location data privacy are known to date.

Location-based evidence and analysis is used to help in developing relevant policies and monitoring outcomes on specific topics ([Recommendation 4](#)). Examples of this approach are:

- COVID-19 reports and analysis provided on a daily basis by the Ministry of Health and Academia; information is recorded per village/municipality and the analytical statistics are presented publicly on a website²¹; these data are used to take decisions such as restrictions to apply per administrative unit;
- Information on property (evaluation, disputes and tax estimation) based on location data through the Lands and Surveys Portal ²²;
- records and analysis of crimes, accident and incidents by location²³;
- environmental monitoring, particularly on air quality²⁴.

²¹ [Πύλη Πληροφόρησης Πανεπιστημίου Κύπρου για το COVID-19 \(ucy.ac.cy\)](http://ucy.ac.cy)

²² [Dashboard \(moi.gov.cy\)](http://moi.gov.cy)

²³ https://www.police.gov.cy/police/police.nsf/dmlstatistical_en/dmlstatistical_en?opendocument

²⁴ <http://www.airquality.dli.mlsi.gov.cy/>

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

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 Cyprus is 0.49, below the European average of 0.57. The country is better positioned than the European average under [Recommendation 6](#), aligned with it under [Recommendation 7](#), and slightly below the average under [Recommendation 9](#). On the other hand, there is considerable space for improvement in [Recommendation 8](#), which is the main driver for the gap against the average in this focus area.

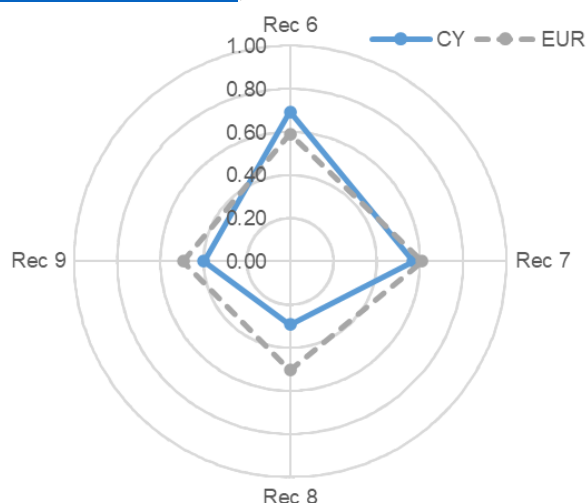


Figure 7 - Digital Government Integration – scores by recommendation

Under [Recommendation 6](#), Cyprus has adopted in a certain number of cases approaches to strengthen key digital public services through the use of location information. In several sectors (agriculture, business, crime, defence, disaster management and civil protection, education, health and transport), the use of location data is still at a basic or even sub-optimal level. There are however other sectors exploiting location information in a more comprehensive way (energy, environment, marine, tourism and culture) or even innovative way (property and land administration).

An example of a digital public service using location data in an innovative way is the Demarcation of Immovable Property²⁵, in the property and land administration sector. When a citizen requires official information regarding the physical boundaries of his/her land/property, an online application allows him/her to

²⁵ [Demarcation of Immovable Property \(moi.gov.cy\)](http://moi.gov.cy)

interactively select boundary points on a map showing their property and then request for an official visit by a private or public employee to identify and confirm those points on the ground. The measured results are also used for updating the cadastral information and relevant official reports.

Current and planned examples of comprehensive use of location information are:

- Tourism and Culture²⁶: the [visitcyprus.com](https://www.visitcyprus.com) site offers custom-made maps for various interests besides an online map to navigate the island of Cyprus and its tourism sites;
- Smart cities²⁷: Nicosia will become the first smart city on the island, improving services and increasing sustainability. This project is part of the smart city strategy 2018-2028 of the municipality, which aims to transform the capital into a smart city by 2022. The necessary infrastructure is being installed and the first services should be available in 2022. In the longer term the service offered will include smart waste management, air quality monitoring and several others in the environment, energy, transport and tourism domains.

Cyprus delivers many cross-border digital public services using its spatial data infrastructure (SDI) ([Recommendation 7](#)).

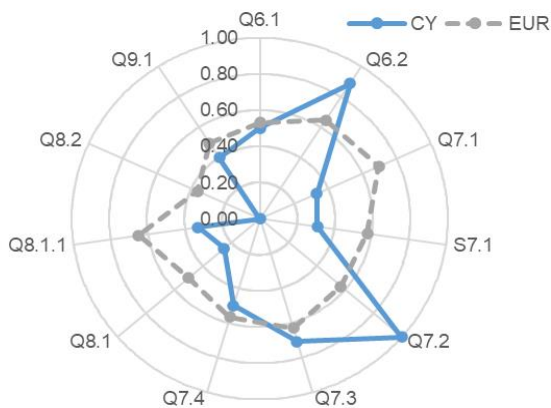


Figure 8 - Digital Government Integration - scores by indicator

EuroGeographics, Eurostat, and the two British base areas in Cyprus (outside EU jurisdiction) and both local and foreign students. Since the DLS Portal was implemented, anyone requesting such data is redirected to identify and download it through the digital public services available at the portal.

Cyprus has avenues for improvement regarding the use of SDI and INSPIRE conformant datasets in delivering digital public services across different sectors and levels of government. The SDI is used in delivering digital public services across government only in some cases, and INSPIRE conformant

datasets and services are used sparingly, or not at all, in digital public services.

In most of the sectors where location information is used with a certain degree of optimisation a national SDI approach is used for the delivery of key digital public services. Agriculture, environment, regional and urban development are using a national framework, whereas property and land administration and business are using a hybrid approach mixing application-specific data, sector and national SDI. INSPIRE is rarely used as reference framework, except in the business sector, where it is exploited a bit more frequently.

The public sector SDI is used by the private sector and other organisations (e.g. NGOs) for the delivery of new and innovative applications, products and services in a number of good examples. An example of this synergy is the use of cadastral data for property sale listings by the Bank of Cyprus²⁸.

²⁶ <https://maps.geomatic.com/geomatic-maps>

²⁷ <https://www.cyens.org.cy/en-gb/media/news/smart-city-nicosia-rise-developing-synergies-with/> and <https://cyprus-mail.com/2021/02/23/transformation-of-nicosia-into-smart-city-officially-gets-underway/>

²⁸ <https://www.remuproperties.com/Cyprus/listing-27583>

[Recommendation 8](#) is an area for improvement in Cyprus due to the limited use of an open and collaborative methodology to design and improve location-enabled digital public services with the contribution of various public administrations at different levels (local and national).

On the positive side, external parties are involved in developing or delivering location-based digital public services in a number of ways:

- services are contracted to the private sector or NGOs under public sector accountability;
- public authorities make location data openly available for external parties to develop their own products and services;
- public authorities use location data from external parties (e.g. businesses, citizens, NGOs) in their digital public services;
- the government encourages 'civic hacking' to develop new ideas, technologies or methodologies to help solve civic problems and improve the lives of citizens.

An example of this involvement of third parties in the development of public services is the new Internet e-Services Platform (DLS Portal) of the Department of Lands and Surveys²⁹ aimed at implementing a new kind of interactive, bidirectional communication with citizens. Further development and updates of the portal are driven by clients' requirements, such as those coming from banks and private businesses.

Finally, with reference to [Recommendation 9](#), Cyprus has implemented a certain number of actions for the integration of location and statistical information in the production of location-based statistics:

- use of INSPIRE to support the location reference framework for statistics;
- dynamic update to location-based statistics to give an up-to-date snapshot on which to make decisions;
- collection of census data based on the location reference framework for statistics;
- contribution to European projects aiming at establishing a data and production infrastructure for location-based statistics (e.g. GEOSTAT).

²⁹ [Launch of the new DLS Internet e-Services Platform – The DLS PORTAL \(moi.gov.cy\)](#)

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

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.

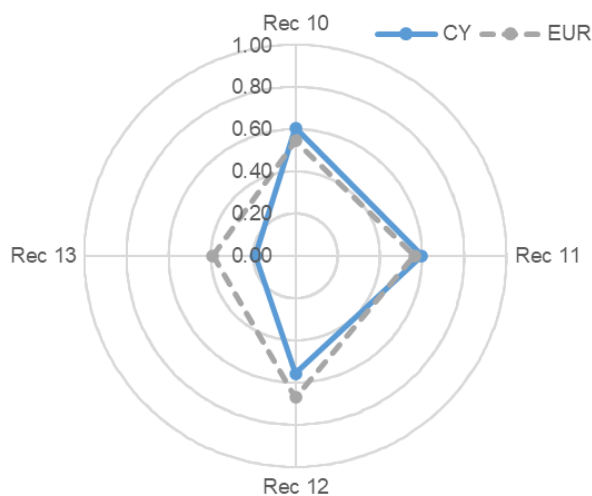


Figure 9 - Standardisation and Reuse – scores by recommendation

The “Standardisation and Reuse” focus area index for Cyprus is 0.49, compared with a European average of 0.55. Cyprus is quite well positioned under [Recommendation 10](#) concerning the adoption of a common architecture, and [Recommendation 11](#), concerning the reuse of data. On the other side, [Recommendation 13](#) shows quite a large space for improvement. [Recommendation 12](#) also lags behind the European average.

The index for [Recommendation 10](#) reaches a good score due to the availability of APIs for all high value public sector datasets including location datasets based on a national strategy. For instance, an

INSPIRE REST API is available at DLS Portal³⁰: the Geoportal Server REST interface enables searches of the Geoportal's catalogue. Through the REST API, it is possible to query the locally-hosted resources, and also resources hosted on remote repositories.

Most of the “high value” location datasets can be accessed using APIs: administrative units, air quality, buildings, cadastral parcels, elevation, geographical names, health statistics, land

³⁰ <https://portal.dls.moi.gov.cy/en-us/FrontEndHelp/Pages/inspiregeoportalmapviewer.aspx> and <https://github.com/Esri/geoportal-server/wiki/REST-API-Syntax>

cove, population distribution and demography, protected sites, statistical units, transport networks, water quality, weather observations.

The following steps are taken to stimulate the take-up of APIs and ensure they are as useful as possible:

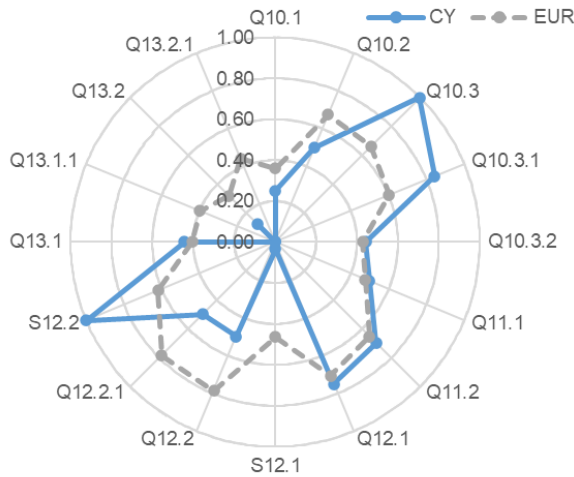


Figure 10 - Standardisation and Reuse – scores by indicator

- API design best practices are used (e.g. REST APIs);
- APIs are discoverable in both public sector catalogues/portals and external catalogues (alongside non-public sector APIs);
- APIs have simple standard licences which specify their use;
- API impact, usage and performance metrics help in ensuring API services meet user needs.

There is a policy for a common location architecture, however it is not widely adopted. Only ad-hoc approaches are taken to discover, explore and incorporate new technological features or emerging

technologies.

National and international generic ICT solutions are reused in the SDI ([Recommendation 11](#)). For example, ESRI’s generic solution “ArcGIS for INSPIRE” is utilised for the implementation of the INSPIRE Directive by DLS³¹. This covers database schemas, updates, services and website components. ESRI’s software platform “ArcGIS Enterprise” is utilised for the national SDI by DLS³². The same platform, as well as copies of the same schema, are used by several other government departments such as the Department of Town Planning and Housing, the Water Development Department, the Geological Survey and the Meteorological Department.

Reuse of data is facilitated by the implementation of a good number of registers of location information: geographical names, administrative units, cadastral parcels, buildings, hydrography, transport networks and code lists. All these registers are available within Lands and Surveys' "DLS Portal" through both an API and a user interface³³.

The following types of geospatial standards are used in various domains ([Recommendation 12](#)):

- international standards (like ISO/TC211, OGC, IHO, GDF);
- adaptations of international standards (e.g. INSPIRE);
- stand-alone domestic standards.

Lands and Surveys and the Government Gateway Portal are using a combination of international standards, adaptations thereof and standalone standards while the Cyprus Open Data Portal is aligned mostly with international standards.

³¹ <https://www.esri.com/en-us/arcgis/products/arcgis-for-inspire>

³² <https://enterprise.arcgis.com/en/get-started/latest/windows/what-is-arcgis-enterprise-.htm>

³³ [DLS Portal \(moi.gov.cy\)](https://dls.gov.cy)

Ad hoc specifications and tools are used for metadata to facilitate discoverability of spatial and non-spatial data. Metadata are mostly based on the ISO Standard 19139 and INSPIRE metadata. All network services are in conformity with Regulation (EC) No 976-2009.

Lastly, the results for [Recommendation 13](#) are quite weak. The quality of location data is ensured through a limited set of actions. These include the development and application of a framework for analysis of data quality, linking data quality standards to data standards and including multilingualism in the data quality standard as well as the implementation of data quality dashboards for most critical data³⁴. On a negative note, the actions adopted do not consider different dimensions of data quality, nor rely on measurements on an agreed frequency based on policy or on ex-post evaluation of data quality issues. Location data quality governance is also relatively basic.

³⁴ Although data quality dashboards are still little used, the Department of Lands and Surveys as well as the Department of Transportation have relevant implementation projects in progress for their implementation.

3.5. Return on Investment

Vision	
	<p>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.</p>
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

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 Cyprus is 0.53, slightly below the European average of 0.58. The overall performance appears to be driven by the [Recommendation 14](#)

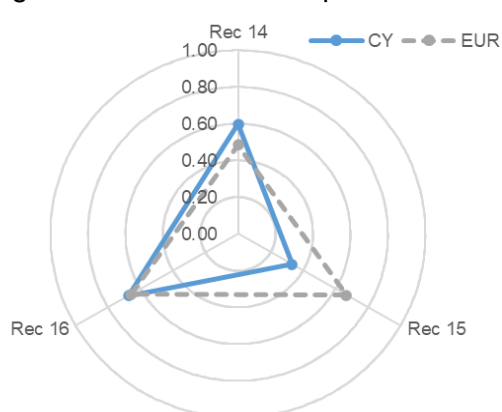


Figure 11 - Return on Investment – scores by recommendation

which is above the other member states' average performance. Of the other two recommendations, one is slightly above the average ([Recommendation 16](#)) while the other is considerably below the average ([Recommendation 15](#)).

The country measures the efficiency and effectiveness of location-based services at an SDI/national level using quite an extensive number of factors ([Recommendation 14](#)). Those factors concern reusability, risks, availability, responsiveness, reduction in administrative burden, simplification of administrative processes, increased participation, enhanced business opportunities and user-satisfaction.

Impact-based improvement in location-based services is not yet systematically applied and is based on a limited set of factors: the identification and monitoring of the benefits of location information at organisational level and the use of a common maturity assessment and benchmark method across EU member states. Furthermore, that maturity assessment method only applies to specific EU initiatives such as INSPIRE or those promoted under EuroGeographics.

Only some basic communication is delivered on the availability and benefits of location data and location-enabled digital public services to raise awareness and understanding ([Recommendation 15](#)). The DLS Portal and the Cyprus Open Data Portal are the two channels

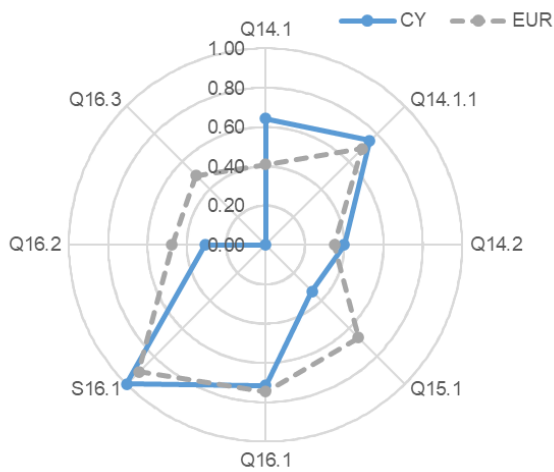


Figure 12 - Return on Investment – scores by indicator

through which communication is mostly delivered, including presentations, news articles and calendars of events. The resulting benefits consist of data from the portals being used by both government and private sector, additional data and services being requested and feedback on the portals being constantly provided.

The country has implemented a certain number of channels 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, with the aim of stimulating innovation in products and

services and enabling job creation and growth ([Recommendation 16](#)). Those channels include:

- the above mentioned national data portal merging location data and non-location data;
- the DLS portal as national discovery geoportal integrating INSPIRE and non-INSPIRE data;
- the geoportal being harvested by the European Data Portal³⁵
- thematic portals complementing general search facilities with “specialist” search³⁶;
- websites with exposition of data³⁷.

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. Those actions include:

- an open data policy³⁸ that aims at centralising all the open government data through the National Open Data Portal;
- promoting access to open data through hackathons³⁹: To encourage the use of open data, Cyprus organised the first ever hackathon on the island from 10 to 11 September 2016 to introduce people to the potential of open data; the 'crowd-hackathon' was the final and largest activity of an effort to implement and promote a coherent open data policy in Cyprus;
- collecting requirements of businesses, research institutions and other (potential) users for consideration in further development of INSPIRE/SDI;
- making public sector experts available to advise on / participate in the external use of data in the SDI; assistance by public sector experts has been provided on multiple occasions, such as to banks, the police departments and private citizens and businesses; any interested party can request assistance through the DLS Portal helpdesk⁴⁰.

³⁵ https://inspire.ec.europa.eu/sites/default/files/fiche_inspire_-_cyprus_-_2021.pdf

³⁶ <https://bit.ly/3EO6FFq>

³⁷ <https://data.europa.eu/data/datasets/padx5z29nh6q7q7n4ww?locale=en>

³⁸ https://inspire.ec.europa.eu/sites/default/files/fiche_inspire_-_cyprus_-_2021.pdf

³⁹ <https://data.europa.eu/en/news/exploring-open-data-cyprus> and <https://bit.ly/3kegioZ>

⁴⁰ <https://portal.dls.moi.gov.cy/en-us/Pages/Contact-Us.aspx>

3.6. Governance, Partnerships and Capabilities


Vision	
	<p>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.</p> <p>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.</p>
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

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.

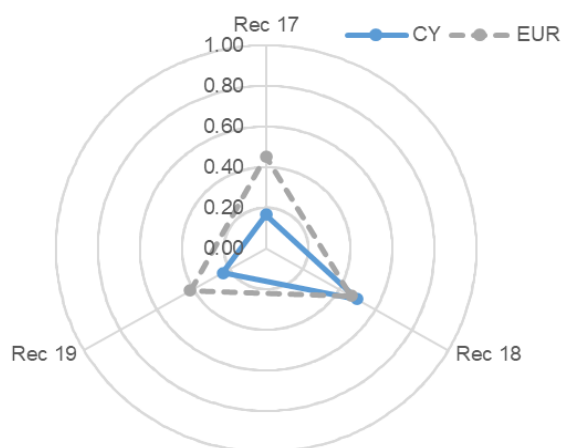


Figure 13 - Governance, Partnerships and Capabilities – scores by recommendation

The "Governance, Partnerships and Capabilities" focus area index for Cyprus is 0.30, thus the lowest of all five focus areas, and is well below the European average of 0.45.

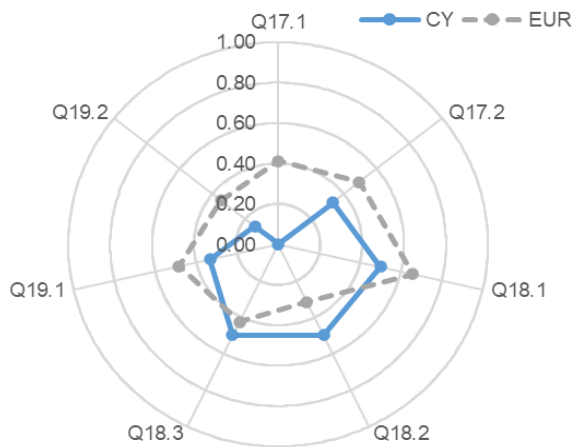
The country is well positioned in terms of partnership agreements to finance, build and operate location data services ([Recommendation 18](#)). Conversely, [Recommendation 17](#) and [Recommendation 19](#) are significantly below the European averages and are two of the lowest scoring of all nineteen recommendations.

Some formal agreements are in place between public authorities in the country, as well as with public authorities in other countries and with private partners to finance, build and operate location data services or digital public services using location data ([Recommendation 18](#)). Examples thereof are:

- the Department of Lands and Surveys has financed, built and currently operates location data services that include spatial and non-spatial data from many other departments and authorities (Department of Town Planning and Housing, Water Development Department, Meteorology Department, etc.) and has provided a customised web-based platform for municipalities to centrally update the road network that falls under their jurisdiction;

- the initiatives led within EuroGeoGraphics are an example of partnership agreements with public administrations of other countries;
- a COVID-19 dynamic dashboard including spatial information has been developed as the result of a public-private partnership, between the Deputy Ministry of Research, Innovation and Digital Policy and the University of Cyprus⁴¹.

Concerning [Recommendation 17](#), relevant communities (in location and digital government), organisations managing thematic domains, central / local administrative levels and different sectors (public, private, academic and society) are not frequently involved in decisions where the role of location information in digital government is crucial. The organisations respectively responsible for SDI (the Department of Lands and Surveys under the Ministry of Interior) and digital government (the Department of Information Technology Services under the Deputy Ministry of Research, Innovation and Digital Policy) are collaborating, although without a strongly integrated leadership.



There is no strategic approach to improve geospatial skills. Only a limited set of training and awareness initiatives are undertaken to meet specific needs but not as part of a recognised or accredited competency framework ([Recommendation 19](#)).

Such initiatives consist in:

- the creation of location information / GI champions in the DLS; and
- training for specialists, e.g. developers and data analysts.

Figure 14 - Governance, Partnerships and Capabilities – scores by indicator

⁴¹ [Πύλη Πληροφόρησης Πανεπιστημίου Κύπρου για το COVID-19 \(ucy.ac.cy\)](https://ucy.ac.cy)

4. Best practices

Best Practice CY1	System to improve the efficiency and effectiveness of DLS activities
Policy domain: Geospatial	
Process owners: Department of Lands and Surveys	
<p>Short description: The Government of Cyprus through the Department of Lands and Surveys (DLS) has implemented a system to improve the efficiency and effectiveness of departmental activities taking advantage of available information technology and modern cost-effective survey instrumentation and techniques.</p> <p>The country aims at establishing an effective and coordinated cadastral system after a systematic resurvey. This will pass through the computerisation of the land records, cadastral plans, and topographical maps, the development of a number of computerised systems to support the survey, registration, valuation and management functions of the DLS, and the staged development and implementation of a National Land Information System (LIS), where all agencies with land related activities can share available data for the benefit of the economy of the country.</p>	
<p>Recommendation: Policy and Strategy Alignment (2, 4); Standardisation and Reuse (11); Return on Investment (14)</p>	
<p>Link: DLS Portal (moi.gov.cy)</p>	

List of abbreviations and definitions

Abbreviations

Abbreviation	Meaning
API	Application Programming Interface
BIS	Department of Public Administration and Personnel
CSW	Catalogue Service – Web
DCAT-AP	Data Catalogue vocabulary – Application Profile
DLS	Department of Lands and Surveys
DQV	Data Quality Vocabulary
ECDIS	Electronic Chart Display and Information System
EFQM	European Foundation for Quality Management
EIF	European Interoperability Framework
ELISE	European Location Interoperability Solutions for e-Government
e-PPS	electronic-Public Procurement System
EULF	European Union Location Framework
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
IHO	International Hydrographic Organization
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 Agency
OGC	Open Geospatial Consortium
PSI	Public Sector Information
REMU	Real Estate Management Unit
REST	Representational state transfer
SDI	Spatial Data Infrastructure
WCS	Web Coverage Service
WFS	Web Feature Service
WMS	Web Map Services
WMTS	Web Map Tile Service

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
ESPD	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 non-contributors 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/javasee/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

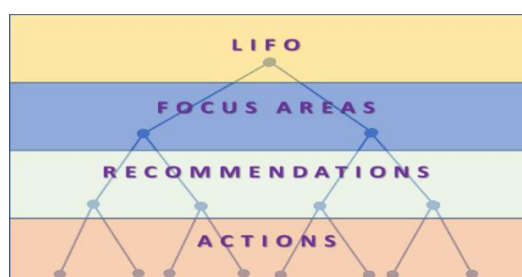


Figure 15 - Hierarchy of indicators and indexes

The LIFO model, described in the *LIFO 2020 Guidelines and recommendations*⁴², 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 actions⁴³ 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.

⁴² https://joinup.ec.europa.eu/sites/default/files/inline-files/2020_LIFO_Guidelines_2.pdf

⁴³ 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 through 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 five actions in the INSPIRE country fiche: <ul style="list-style-type: none"> - Availability of spatial data and services - Conformity of metadata - Conformity of spatial data sets - Accessibility of spatial data sets through view and download services - Conformity of the network services 	Change of calculation method for the INSPIRE country fiche
Q7.2	Use of SDI in cross-border services	Is the country actively involved in delivering cross-border digital public	Change in scale

		services using their spatial data infrastructure (SDI)?	
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?	

Focus Area: Standardisation and Reuse			Changes vs 2019
No.	Indicator	Question	
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 spatial with non-spatial metadata in national implementations?	New question
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: <input type="checkbox"/> At a project or service level <input type="checkbox"/> At an organisational level <input type="checkbox"/> At an SDI / national level <input type="checkbox"/> 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 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 2019⁴⁴, with the aim to improve the capability of the LIFO 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:

⁴⁴ 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>



- 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 2019⁴⁵ 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.

⁴⁵ The indicators used in LIFO 2019 are listed at <https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/solution/lifo-location-interoperability-framework-observatory/lifo-indicators>

Annex 3: LIFO 2020 Additional information: Cyprus

Title	Attachment ⁴⁶
LIFO Survey questionnaire 2020 – Cyprus	 LIFO Survey 2020 Cyprus
LIFO Survey questionnaire 2020 scores and charts – Cyprus	 LIFO 2020 scores and charts Cyprus

⁴⁶ 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.