LIFO: Location Interoperability Framework Observatory

2020 COUNTRY FACTSHEET

BELGIUM

ISA²

Contents

1. Introduction

Location Interoperability Framework Observatory

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.

European Union Location Framework Blueprint
EULF Blueprint

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].

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.
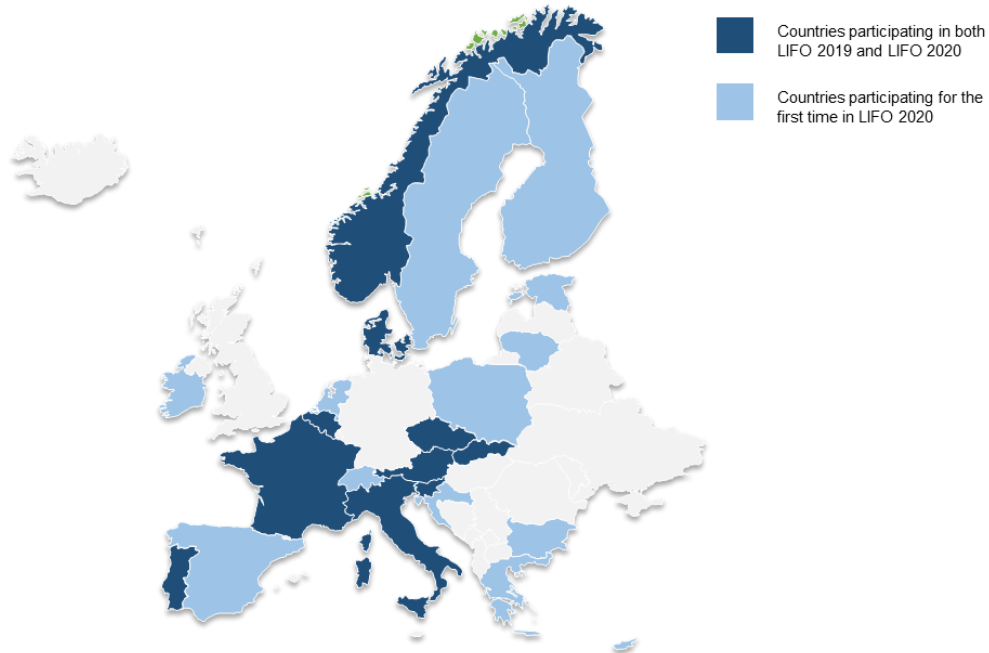
Figure 3 - LIFO participating countries in 2019 and 2020

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 Belgium in 2020. Its main section is the Location Interoperability State of Play where information is provided at two levels:

- *Overview of results*, organised as follows:
  - 2020 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;
  - 2019/2020 Comparison: compares the overall results between 2019 and 2020 across the five focus areas for the country and in relation to European trends; these comparisons are displayed in a comprehensive chart;
- *Detailed results by focus area*, organised in five sections, each with the following:
  - *2020 results*: 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.
  - *2019/2020 comparison*: compares the results between 2019 and 2020 for each recommendation in the focus area, with a chart and explanatory text.

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 Belgium comprising the questionnaire response, scores and charts from the response, and a 2019/2020 comparison table.

The 2020 LIFO monitoring information for Belgium has been provided by *Digitaal Vlaanderen.*

3. Location Interoperability State of Play

3.1. Overview

3.1.1 2020 Results

The information collected through the LIFO 2020 data collection indicates that Belgium scores above the European average across all the five focus areas assessed.

"Policy and Strategy Alignment" is an area of particular strength for Belgium, where the country reached the highest of all five focus area index scores. The high score can be attributed to the extensive alignment between digital and location strategies, the availability of a wide range of location core reference datasets for general use, and the good level of preparedness of organisations for the GDPR.

Another of Belgium's strengths lies in the "Digital Government Integration" focus area, which has the largest edge over the European average. The factors that have contributed to Belgium's positive performance are: the integration of location information in the production of location-based statistics; an extensive adoption of a collaborative approach in developing location digital services; a rigorous approach to both service improvement and take-up of opportunities for new businesses/delivery models.

Belgium also obtains a very positive result in the "Return on Investment" focus area. Two main factors have contributed to this result, firstly, the extensive and consistent set of actions to facilitate the use of public administrations' location data by non-governmental actors, and, secondly, the effective communication of the benefits of integrating and using location information in digital public services.

The "Standardisation and Reuse" focus area scores well above the European average, although with the lowest margin, due to the adoption of a common architecture to develop digital government solutions and a well-organised approach to monitoring, testing and upscaling of new technological developments.

There is a mix of very good and less positive results across the "Governance, Partnerships and Capabilities" focus area. The former lies in the strong joint decision making mechanisms on the role of the SDI in digital transformation and in the large number of formal agreements between public authorities to finance location data services and digital public services. The latter concerns the lack of agreements with the private sector or with public administrations of other countries to build and operate location-enabled services.

Overall, the gaps encountered in the practices adopted by Belgium are concentrated across few domains. Targeted improvement actions may, therefore, enable the country to reach levels of excellence in all focus areas.

The value of the overall LIFO index combining the scores for all focus areas is 0.78, which reflects Belgium's very good performance in terms of location interoperability. This compares with a European average of 0.55.
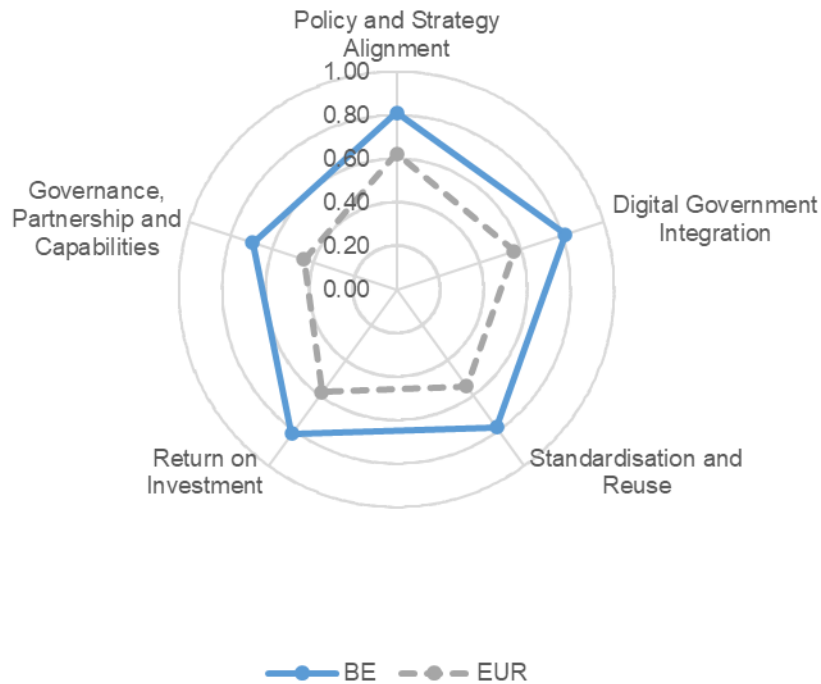
Figure 4 – Overall EULF Blueprint implementation

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

Focus Area	Strengths	Weaknesses
Policy and Strategy Alignment	• The use of authoritative location datasets is mandated by cross-sector legislation and/or cross-sector binding agreements • All organisations are fully prepared for GDPR, including awareness of potential location data privacy issues and processes in place to comply with the rights of data subjects	• There is no common licensing framework for public sector (location) data
Digital Government Integration	• The assessment of opportunities for improving key digital public services is made through a rigorous approach to both service improvement and take-up of opportunities	

Focus Area	Strengths	Weaknesses
	• The public sector SDI is used by the private sector and other organisations in a significant number of good examples • The country is actively involved in delivering many cross-border digital public services using its SDI • An open and collaborative methodology is applied to design and improve location-enabled digital public services at local, sub-national or national level	
Standardisation and Reuse	• The EIF / EIRA based architectural approach is widely adopted in the design and development of location-based digital public services • There is a standardised approach for combining spatial and non-spatial metadata	
Return on Investment	• The benefits of integrating and using location information are conveyed through regular, thorough and convincing communication • Many actions have been implemented to actively support private, non-profit and academic actors in the development of new products, services or research using public sector location data	• Few elements are evaluated to assess the efficiency and effectiveness of location-based services
Governance, Partnerships and Capabilities	• Strong joint decision making on SDI in Digital Transformation, with involvement of all appropriate	• No agreements are in place with public authorities in other countries for developing location-enabled services

Focus Area	Strengths	Weaknesses
	stakeholders and communities • There are many agreements between public authorities in the country to finance, build and operate location data services or digital public services using location data • The national geospatial competency framework is widely adopted	

Table 1 – Strengths and Weaknesses by Focus Area

3.1.2 2019/2020 Comparison

Belgium is one of the countries that have participated in both the LIFO 2019 and LIFO 2020 data collections. Comparisons over the two years can be made both for the country itself and with European averages (see Figure 5).

As the number of participants has increased significantly from 10 in 2019 to 23 in 2020 (including the 10 from 2019), the figure shows two different 2020 European averages for comparison: firstly, the average for all countries participating in 2020 (yellow line); secondly, the average for the subset of countries that participated in both years (green line). The same figure also shows the 2019 averages.
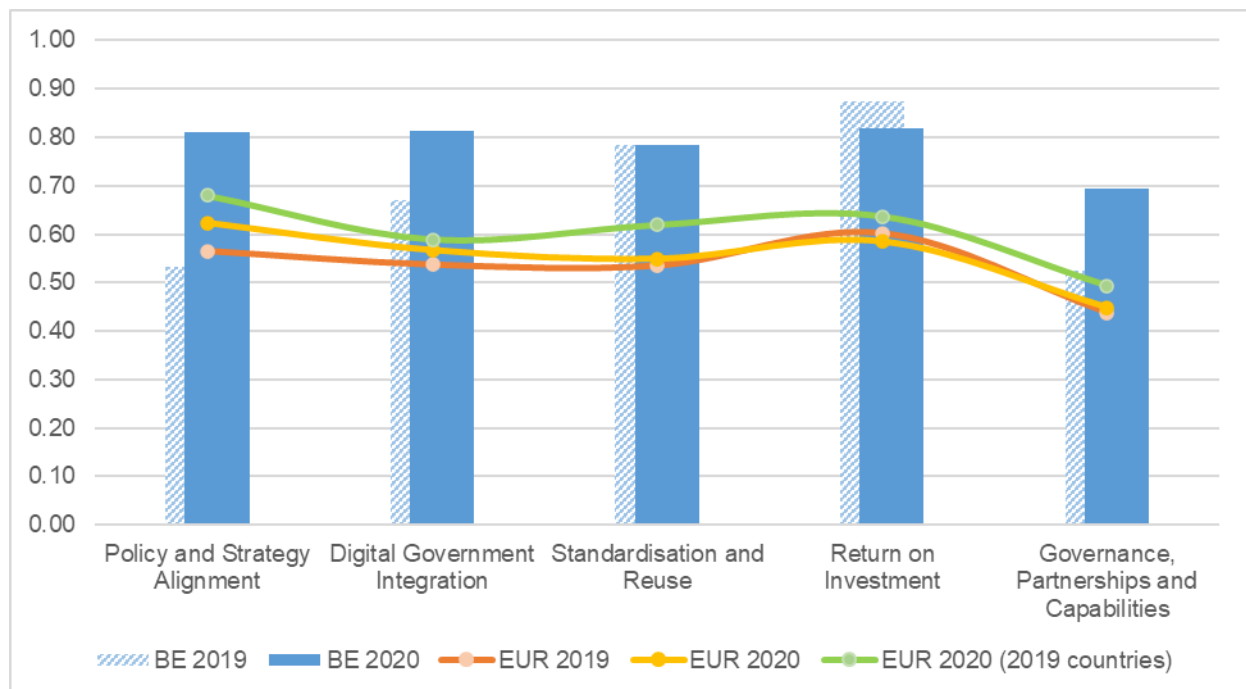
The structure of the EULF Blueprint (and therefore of LIFO) in terms of focus areas and recommendations has remained the same over the two years, allowing valid comparisons at these levels. However, changes were made in 2020 to a small number of specific indicators

Figure 5 - Comparison between LIFO 2019 and LIFO 2020 – Belgium

to reflect learning from 2019 and latest developments impacting location interoperability in Europe. Further details are available in Annex 2.

Between 2019 and 2020, the LIFO index for Belgium has increased from 0.68 to 0.78. This is due in a large part to the positive variations in the "Policy and Strategy Alignment, "Digital Government Integration" and "Governance, Partnerships and Capabilities" focus areas.

In 2020 Belgium has closed, and surpassed, the gap with the European average from 2019 in the "Policy and Strategy Alignment" focus area. The positive gap with the average of all participating countries, (yellow line in Figure 5) is +0.19, while in 2019 this was -0.03. Also the gap with the average of the countries participating in LIFO 2019 (the green line in Figure 5) is positive (+0.13), confirming that Belgium's progress is linked to a distinct approach to improving performance in this focus area. This focus area has also had the most significant improvement, with its index increasing by 0.28 (from 0.53 in 2019 to 0.81 in 2020). due to the positive evolution between 2019 and 2020 across all the focus area recommendations. In particular, under Recommendation 1, Belgium has made a major step forward by implementing general cross-sector legislation mandating the use of authoritative location datasets and services. Under Recommendation 3, the significant gaps in the preparedness of public administrations for the implementation of the GDPR for location data in 2019 have been closed as all the organisations are fully aware and compliant in 2020. Lastly, regarding Recommendation 5, in 2020, the country reports making more specific references in procurement documents to the applicable parts of the INSPIRE Directive compared with 2019.

The focus area index for "Governance, Partnerships and Capabilities" has contributed to the improvement in Belgium's overall positioning as the score increased by 0.17 from 2019 to 2020. This has been mostly due to the consolidation of efforts in communications and skills to improve the use of location information in digital public services (Recommendation 19).

The "Digital Government Integration" focus area has also seen positive progress, compared across the entire 2020 LIFO participating countries ('EUR 2020' in Figure 5) and with the other countries that participated in 2019 ('EUR 2020 (2019 countries) in Figure 5). This focus area has also significantly improved in absolute terms, as the index increased by 0.14 (from 0.67 in 2019 to 0.81 in 2020). This big step forward is linked to the implementation of a variety of actions for the integration of location information in the production of location-based statistics (Recommendation 9) and to the reinforced process for identifying opportunities and implementing improvements to key digital public services (Recommendation 6).

The minor decreases across the "Return on Investment" and "Standardisation and Reuse" focus areas are due to small changes in the scales of some indicators, which only slightly impacted the very good positioning of the country.

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

3.2.1 2020 Results
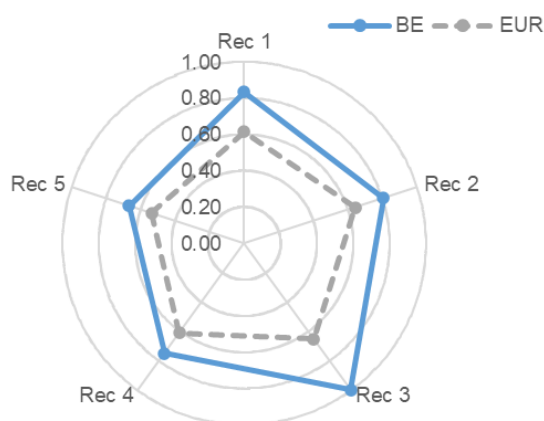
Figure 6 - Policy and Strategy Alignment - scores by recommendation

The scores for each recommendation in the "Policy and Strategy Alignment" focus area are shown in Figure 6 and the underlying indicator scores for each recommendation are shown in Figure 7. In both cases, the country scores are compared with the European averages.

The "Policy and Strategy Alignment" focus area index for Belgium is 0.81, well above the European average of 0.62. The country has performed better than the European average across all five recommendations, distinguishing itself especially in Recommendation 1, Recommendation 2 and Recommendation 3.

There is a significant degree of alignment in the location and digital government strategies (Recommendation 1). In this domain, there are several relevant initiatives, both at national and at local level, with the latter playing a significant role in a federal state such as Belgium. These initiatives are:

- The Strategy for Flexible Geospatial Public e-Services elaborated within the Flexpub project[18] has produced highly relevant conclusions. The ultimate goal of the project was to contribute to the development of a federal strategy for enabling flexibility, adaptability and innovation in the public sector with a focus on a next generation of geospatial electronic services (e-services). Geo-orientation is considered a pillar for flexible and innovative public

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[18] flexpub - project output – flexpub (kuleuven.be)

services. This consists in the use of location as backbone for collaboration and transparency, with a coordinated approach both at federal level as well as regional administrations. The outcomes of the project were consolidated into the Strategy for Flexible Public Geospatial e-Services of the federal government, covering the period 2020-2030;

- The Brussels Whitepaper[19] produced by the CIRB (Centre d'Informatique pour la Région Bruxelloise) describes the challenges of digitalisation for citizens, including the use of location information. CIRB is the Public Interest Organisation (OIP) and regional service integrator in charge of IT for the Brussels region. CIRB's ambition is to accelerate the provision of online public services because their use is lagging behind compared with the technological progress. The Whitepaper states that CIRB, with its UrbIS[20] (Brussels Urban Information System), is at the forefront of the digitalisation of geographical information. Since its conception 30 years ago, UrbIS has combined the tools of cartography with new information and communication technologies;

- With the Flemish Resilience plan, the Flemish government stimulates local authorities in the digital transformation of their services. In order to guide this initiative, a group of experts was commissioned to draw up an ambitious vision[21] for digital local government before 2031. The standards of the new Flanders Open City Architecture (VLOCA[22]) play a fundamental role in this vision because they aim at connecting the various smart city initiatives under one "smart region" umbrella;

- The Digital Strategy for Wallonia[23] establishes the framework under which the Wallonia region needs to operate to be able to grasp the socio-economic opportunities presented by digital transformation over a five-year period. Over 500 million euros have been budgeted over four years for its implementation. The five themes of the strategy (Digital Sector; Digital Business; Smart and connected territory; Public services; Skills and education) provide the framework guiding lawmakers' actions in the digitalisation domain.

There are general cross-sector legislation and cross-sector binding agreements mandating the use of authoritative location datasets in digital government. The website of the Federal Public Service Policy and Support[24] lists all sources of authoritative datasets (including location ones) and the specific laws enforcing their use. Since all territory-related legal responsibilities have been devolved to the regions, it is also necessary to consider the datasets owned by regional organisations. They coordinate their efforts to avoid separate, non-compatible developments of different datasets[25].

Most location datasets in Belgium are available free of charge under an open licence without restrictions, while others are available under minimum restrictions (an example being weather observations data) (Recommendation 2). In general, where the datasets are available under a licence including some restrictions, the most common restriction applied by all data providers is a charge linked to high volumes of data.

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[19] witboek-2019-2024-de-uitdagingen-van-digitalisering-voor-de-burgers (cibg.brussels); see also https://bric.brussels/en/news_publications/cartes-blanches/digital-ambitions-for-a-sovereign-and-protected-brussels-region
[20] https://bric.brussels/en/our-solutions/urbis-solutions/urbis-applications
[21] digitaal leiderschap | vlaanderen intern and https://www.digitalwallonia.be/fr/publications/2019-2024 and https://spw.wallonie.be/sites/default/files/CA_Livre1_20180905.pdf
[22] https://www.imeccityofthings.be/en/projecten/vloca
[23] digital wallonia. digital strategy for wallonia
[24] authentieke bronnen | dg digitale transformatie (bosa.be)
[25] https://cirb.brussels/fr/nos-solutions/infrastructure-solutions/portlet-fidus/sources-authentiques-2 and https://overheid.vlaanderen.be/informatie-vlaanderen/ontdek-onze-producten-en-diensten/authentieke-gegevensbronnen and https://ensemblesimplifions.be/partage-de-donnees

The applicable licensing conditions are the same for most datasets, but not as the result of a national licensing framework. Since territory-related data is the sole responsibility of the regions, the country has three different licensing approaches to open data:

- For Flanders, an "Open data charter"[26] sets out 20 general principles that all Flemish departments and agencies, provincial and local authorities should follow to make data openly available; among these principles, it is stated that the Flemish public administrations "strive for a limited set of licences under which data is published, which are open, internationally usable and machine-readable"; a decree[27] has determined the three applicable model licences:
  - CC0;
  - a model licence for free reuse where the public body does not waive its intellectual property rights but makes data available for reuse for any purpose;
  - a model licence for reuse for a fee (as a rule, compensation is limited to the marginal cost of reproduction, provision and distribution);[28]
- For Wallonia and Brussels, the Digital Agency states on its website that no legal enforcement has been made but that it is recommended that CC0-1.0 be used[29];
- For federal data, unless stated otherwise, CC0 licences are used[30].

A concrete example of such approaches is the address database, which is fully compatible across regions[31], even if the sources are different and apply their own licences:

- The registry of the Brussels Region applies a specific free reuse licence, under the UrbiS project[32];
- In the Flemish Region, the CRAB address register (Centrale Referentie Adressen Bestand) also has a free reuse policy[33];
- The Walloon Region applies the CC-BY 4.0 licence[34] for the ICAR (Centralised Inventory of Addresses and Streets).

A wide range of location reference datasets are made available as part of a broader core reference data policy. In Flanders the policy guidelines are fully developed and described, as per the Open Data Charter mentioned above. On the other hand, in the other regions and at a federal level, these guidelines are currently being developed. Specifically concerning base registries, the relevant policies at the various government levels (federal and regional) include:

- Federal level[35]:
  - The FPS (Federal Public Service) BOSA (Policy and Support): maintains a catalogue of base registries, providing an overview of the data contained in authentic sources and other administrative data sources. BOSA assists the government and supports the federal organisations in various areas: IT, HR, organisational control and integrity policy, budget, accounting and public procurement contracts. The ministers in charge of the FPS Policy and Support are the Minister for the Budget and Civil Service Affairs and the

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[26] https://overheid.vlaanderen.be/informatie-vlaanderen/ontdek-onze-producten-en-diensten/open-data-bij-de-vlaamse-overheid and https://overheid.vlaanderen.be/sites/default/files/media/Digitale%20overheid/Open%20data/Open%20Data%20Charter_20180522.pdf?timestamp=1530089898

[27] https://overheid.vlaanderen.be/sites/default/files/media/Juridische_nota_def_20161206.pdf?timestamp=1548776761

[28] https://overheid.vlaanderen.be/informatie-vlaanderen/ontdek-onze-producten-en-diensten/voorwaarden-voor-het-hergebruik-van

[29] https://www.odwb.be/pages/demarche/

[30] https://data.gov.be/en/terms-use

[31] spf bosa dg td - open data

[32] https://cibg.brussels/nl/onze-oplossingen/urbis-solutions/urbis-data

[33] https://overheid.vlaanderen.be/CRAB-Toegang-tot-CRAB

[34] https://creativecommons.org/licenses/by/4.0/

[35] https://www.belgif.be/eif3/about.en.html and https://www.belgif.be/page/legislations.en.html

Minister for the Digital Agenda. The project is framed in the general context of the 'redesign' of the federal government which was initiated in late 2014;

- Regional level:
  - Flanders[36]: through the Open Standards for Linking Organisations (OSLO²) project, the department Digital Flanders (Digitaal Vlaanderen, formerly Informatie Vlaanderen), together with its partners, focuses more strongly on semantic interoperability;
  - Wallonia[37]: base registries are being developed and implemented according to the Digital Strategy for Wallonia;
  - Brussels: the capital city cooperates in inter-federal structures (e.g. BeSt Address[38]) but does not own base registries.

The pan-government guidelines on the publication of public sector data cover location aspects[39]. More specifically, the strategy of the new federal government relies upon the openness principle, described by the following key pillars:
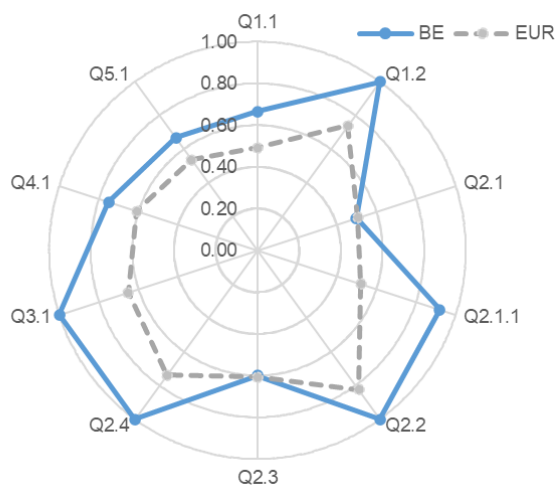

Figure 7 - Policy and Strategy Alignment - scores by indicator

- information sharing and quality of information;
- authentic sources and open data;
- reliability;
- privacy and security;
- innovation;
- open infrastructure
- government as a platform;
- reusable building blocks.

Regarding location data privacy (Recommendation 3), the degree of preparedness for GDPR is high: all organisations are fully prepared and no complaints have been reported so far with regard to location data privacy aspects.

Location-based evidence and analysis is used to help in developing policies in most relevant topics (Recommendation 4). Some important examples where location based evidence has been used are:

- Hinderpremie: a financial allowance for businesses that are confronted with serious nuisance(s) caused by public works executed in the vicinity of their premises (calculated and allocated automatically)[40];
- Kabel en Leidingen internet portaal (KLIP), a platform in Flanders for exchanging digital utility network information based on INSPIRE specifications;
- Zonnepotentieelkaart[41]: a digital map using Earth Observation (EO) data in combination with location data (buildings and digital height model) to calculate the potential of solar panels for citizens and businesses in Flanders (the same exists in the Brussels Region);

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[36] https://joinup.ec.europa.eu/collection/oslo-open-standards-local-administrations-flanders/about
[37] See note 6 and https://overheid.vlaanderen.be/informatie-vlaanderen/ontdek-onze-producten-en-diensten/authentieke-gegevensbronnen
[38] https://www.belgif.be/page/legislation/best2019.en.html and https://weblex.irisnet.be/data/crb/doc/2019-20/139640/images.pdf and https://opendata.bosa.be/index.nl.html
[39] powerpoint-presentatie (kuleuven.be)
[40] wat is de hinderpremie? | agentschap innoveren en ondernemen (vlaio.be)
[41] zonnepotentieel en zonnekaart vlaanderen | vlaanderen intern

- Smart Flanders[42]: a platform where the Flemish regional government uses geospatial data and open architecture to help cities and towns to make the digital transition.

In Belgium, public sector procurements of location information and/or services (Recommendation 5) use the European Standard Procurement Document (ESPD). Even if public procurement laws and regulations do not make specific or explicit reference to INSPIRE, actual procurement documents often explicitly refer to INSPIRE and other national or international standards, without relating the procured components to specific parts of INSPIRE or of those standards.

3.2.2   2019/2020 Comparison

As per Figure 8, compared to 2019, there are improvements over all recommendations, with significant increases of the indexes applying particularly to Recommendations 3, Recommendation 4 and Recommendation 5.

Concerning Recommendation 3, in 2020 Belgium reported all of organisations becoming fully aware of and prepared to potential location data privacy issues and processes (GDPR). This has seen a significant improvement compared to 2019, when the country reported that only some organisations had achieved full preparedness[43].
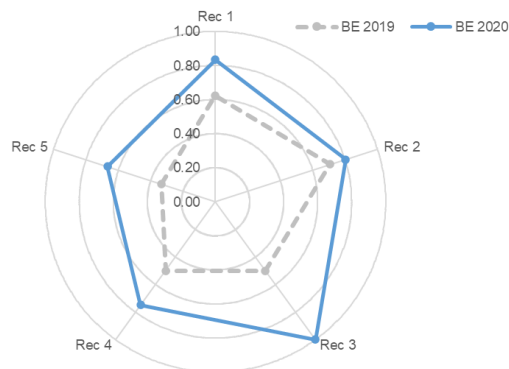
Figure 8 - Policy and Strategy Alignment – 2019/2020 comparison

Belgium extended significantly the use of location-based evidence (Recommendation 4), applying it in most of the relevant policy topics, for example public allowances, infrastructure management, energy, environment, agriculture, economy and mobility.

Under Recommendation 5, Belgium made a step forward in terms of standardisation of public sector procurements of location data and services. In 2020, the country started making specific references to the applicable parts of the INSPIRE Directive and/or of the national standard frameworks, compared with the generic references reported in 2019.

In 2020, Belgium strengthened the legally enforced use of authoritative location datasets and services (Recommendation 1). This is now mandated by general cross-sector legislation, while in 2019 only thematic legislation was applied. The country also reports a significant degree of alignment in the location strategy on digital government elements, confirming the good practice of the previous year.

Under Recommendation 2, the higher score is mostly due to the different indicators used in 2020, which have allowed better identifying the wide range of location core reference datasets available for general use without restrictions.

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[42] VLOCA | Smart Flanders
[43] The 2-year review made by the European Commission on the appliction of GDPR (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0115) reports that Belgium is the country with the lowest number of data privacy complaints of all EU and associated countries except Malta and Iceland, which are however far less populated.

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

3.3.1 2020 Results
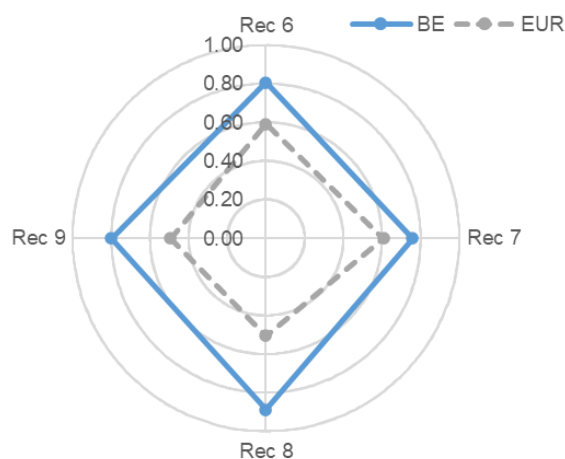
Figure 9 - Digital Government Integration - scores by recommendation

The scores for each recommendation in the "Digital Government Integration" 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 "Digital Government Integration" focus area index for Belgium is 0.81, significantly above the European average of 0.57. All recommendations have higher scores than the corresponding European averages, with the biggest differences in Recommendation 8 and Recommendation 9.

Recommendation 8 is a point of strength for Belgium, as the country has adopted at all possible levels (local, sub-national and national) an open and collaborative methodology to design and improve location-enabled digital public services (e.g. through consultations, user groups, feedback requests, iterative development) as part of a government-wide policy. External parties are also involved in the delivery of location-based public services under different circumstances, such as:

- services are contracted to the private sector or NGOs under public sector accountability;
- public authorities scale back their role relying on models such as public/private partnerships.
- public authorities collect data through particular processes or services to make the data openly available for external parties to develop their own products and services;
- the government encourages 'civic hacking' to develop new ideas, technologies or methodologies that help solve civic problems and improve the lives of citizens.

The following examples illustrate collaboration with external parties and how location data is involved:

Figure 10 - Digital Government Integration – scores by indicator

- Flanders is currently reviewing its role in providing spatial data, scaling back public geoportals and delivering data more via API's to foster private companies to develop more geoportal-like solutions
- Regional and urban development[44]:
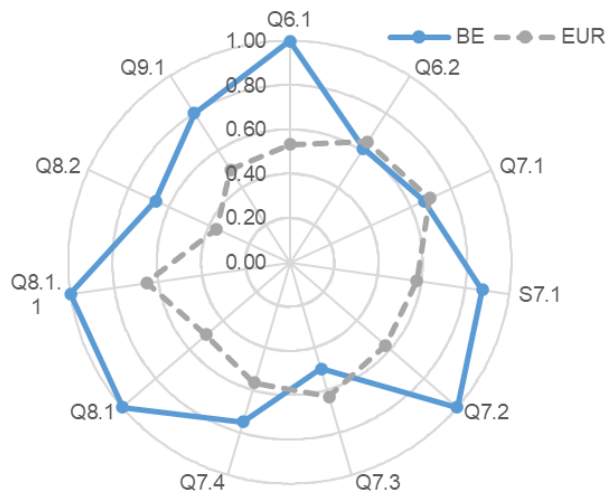- The Brussels Noise impact study made extensive use of all available geo- and environmental data to model the various possible options for the further development of Brussels Airport. As part of the study, the Belgian Federal Public Service (FPS) Mobility and Transport employed a private company to independently review the performance, compliance, effectiveness and completeness of the management and mitigation regime covering noise arising from Brussels Airport (BRU) activities and operations on and around the airfield and to propose mitigation solutions.
  - The "Muntstroom" project was initiated by the Brussels Intercommunal Transport Company (STIB-MIVB), the Brussels Regional Informatics Centre (BRIC), Brussels Mobility and parking Brussels. Its purpose is to monitor the flow of pedestrians around and underneath the square Muntplein (Place de la Monnaie)[45]. The data obtained will make it possible to devise innovative applications that will make the Brussels-Capital Region more attractive to pedestrians.
- Transport:
  - The development of an analysis tool for road accidents[46] has been the base for setting priorities of interventions in road works, rerouting options and further monitoring initiatives. Reducing the number of accidents, demands specific coordinated measures combining behaviour, infrastructure, enforcement and regulations. Information about the specific location of traffic accidents is an essential element to reach the Flemish goals on traffic safety. This initiative contributes to the improvement of the safety of dangerous places, road segments and blind corners, to the use of Automatic Number Plate Recognition (ANPR) and speed control, and to policy-relevant research, evaluation and monitoring. The stakeholders are Digitaal Vlaanderen, the Federal Public Sector Policy Support department, local policy districts, the Mobility and Public Works department of Flanders, the Road and Traffic department of Flanders, the Flemish Traffic Safety Foundation and the VIAS (Road Safety) institute.
  - Another example is the "Mobiscore" tool, developed by the Environment Department of Flanders[47] that calculates how well situated a house or apartment is with regards to sustainable mobility. Factors such as distance to public transport, stores, health providers, public parks etc. are taken into account. These are derived from the public SDI.

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[44]https://mobilit.belgium.be/sites/default/files/resources/files/final_chapter_two_report_d2_bru_noise_impact_study_31052019.pdf
[45] The Brussels-Capital Region is launching an innovative project to monitor the flow of pedestrians | Knowing more | Brussels Smart City
[46] https://policyvisuals.eu/analysing-flanders-road-safety-with-a-traffic-accidents-map/
[47] https://omgeving.vlaanderen.be/mobiscore and https://mobiscore.omgeving.vlaanderen.be/

- Smart cities: There are many smart city initiatives in Belgium. The actions are coordinated by the regions, but this does not refrain cities from initiating their own actions. The following regional websites list the relevant initiatives and give examples of some projects:
  - Brussels region[48];
  - Flemish region [49];
  - Walloon region[50].

With reference to Recommendation 7, the SDI is used in many cases to deliver digital public services across different sectors and levels of government. In most cases, INSPIRE conformant datasets and services are used in digital public services. For example, KLIP is a valid use case of a digital public service reusing data from the SDI. KLIP is based on the INSPIRE data model (as it is in fact an extension of the relevant INSPIRE model) and also uses several data layers from INSPIRE Annex I (Addresses, Administrative units, Cadastral PArcels) and Annex III (Buildings).

The country is actively involved in delivering many cross-border digital public services using its SDI. INSPIRE conformant datasets and services are used in most of the cases. INSPIRE has played a very important role in the production of cross-border compatible data such as land parcel registries, building registries and address databases, which are used to compare spatial planning strategies[51] or to ensure edge matching of data with neighbouring countries[52]. As a result of the common rules within INSPIRE, the regions started the BeSt Address[53] project to align and federate the regional address databases and align their building and land parcel registries. At regional level, the inclusion of INSPIRE data standards within other standards[54] ensures cross-region as well as European compatibility. As a result, the implementation status of the INSPIRE Directive in Belgium is above the European average.

The national SDI, rather than sector SDIs or application specific data, is mostly used for the delivery of key digital public services. In the Belgian case, the term "national SDI" refers to the SDI for the legally responsible entity in each relevant domain, which can be a region or the federal government.

The public sector SDI is used in a significant number of examples by the private sector and other organisations (e.g. NGOs) for the delivery of new and innovative applications, products and services. Some examples include:

- the real estate website "Realo"[55], which has developed a house-price estimation service based on private data that the operator holds in combination with the officially available data (statistics and SDI data);
- the Solar panel adequacy map[56], which uses the address database, the height data and orthofotos to make an estimation of suitability for installation of solar panels or a solar boiler.

A lot of emphasis has been placed on the coordination of the different administrative levels of the country in order to exploit national SDIs. This has been done through the ICEG (Intergovernmental Committee E-Government), a cooperation agreement between the federal, regional and community governments for the harmonisation and alignment of initiatives aimed

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[48] https://smartcity.brussels/
[49] https://smart.flanders.be/smart-flanders-2.0
[50] http://www.smartcitywallonia.be/
[51] https://www.tandfonline.com/doi/full/10.1080/19475683.2021.1875047
[52] See https://eurogeographics.org/wp-content/uploads/2019/04/OpenELS_guidance_edgematching_version1_1.pdf
[53] https://opendata.bosa.be/index.nl.html; the project enabled the consolidation of, and made open, the address data from the Flemish, Walloon and Brussel regions
[54] OSLO Standaardenregister (vlaanderen.be)
[55] https://www.realo.be/
[56] https://www.energiesparen.be/zonnekaart

at the realisation of an integrated e-government. First results of this strengthened cooperation are:

- a description of the process to arrive at a new data standard;
- a Belgian standard to assign a unique identifier (URI: Uniform Resource Identifier) to 'things' (e.g. addresses, buildings, persons, companies,). The URI standard is applied to enterprises and public administrations, with the aim of going a level deeper by assigning identifiers to parts of enterprises (e.g. the HR department within a company) or of a federal public service (for example, a directorate-general within a federal public service).

3.3.2 2019/2020 Comparison

Compared with 2019 (Figure 11), there are improvements across all the four recommendations for Belgium in 2020. The highest improvement is under Recommendation 6 where Belgium strengthened the process for identifying opportunities and implementing improvements to key
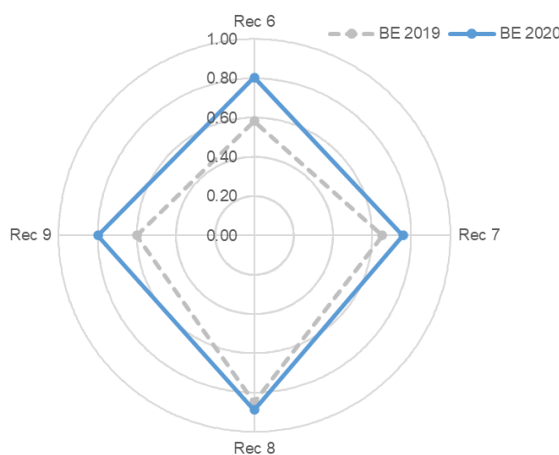
Figure 11 - Digital Government Integration – 2019/2020 comparison

digital public services in their use of location information. In 2019, this process was carried out through incremental upgrades to the use of location information, while in 2020 a rigorous approach has been started to both service improvement and take-up of opportunities for new business or delivery models.

The country has significantly extended the span of actions for the integration of location and statistical information in the production of location-based statistics (Recommendation 9).

Also, under the other recommendations, positive trends can be reported, such as

Recommendation 7 which saw an increase in the number of cases where the public sector SDI is used by the private sector and NGOs for the delivery of new and innovative applications, products and services. The user statistics continue to display a constant rise in the use of the SDI, as confirmed by the extensive market and user research executed in support of the re-design of the geoportal www.geopunt.be or Geopoint. This geoportal is the central gateway to geographic government information and makes geographical information accessible for reuse by public authorities, citizens, no-profit organisations and companies. The country is also now actively involved in delivering many cross-border digital public services using its spatial data infrastructure (SDI), which was not the case in 2019.

Belgium has also shown improvements in the application of an open and collaborative methodology to design and improve location-enabled digital public services (Recommendation 8). In 2020, this practice is reported as being regularly applied as part of a government-wide policy for all new digital service development, while in 2019 its use was reported only in limited, specific cases. This is aligned with the digital approach of the new Federal Government that is actively pursuing a digital transformation of the public sector leveraging, among other priorities, collaboration at all levels.[57]

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[57] See https://soc.kuleuven.be/io/opleidingen/pdf/flexpub-ben-smeets.pdf

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 ISA2 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

3.4.1 2020 Results
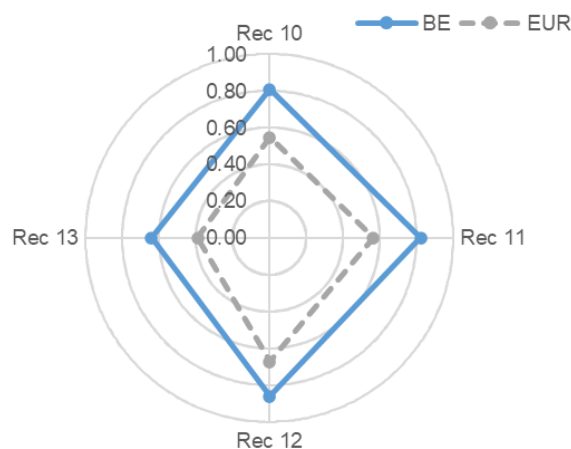
Figure 12 - Standardisation and Reuse - scores by recommendation

The scores for each recommendation in the "Standardisation and Reuse" focus area are shown in Figure 12 and the underlying indicator scores for each recommendation are shown in Figure 13. In both cases, the country scores are compared with the European averages.

The "Standardisation and Reuse" focus area index for Belgium is 0.78, compared with a European average of 0.55. This result is due to particularly high scores and relative differences under Recommendation 10 and Recommendation 11. The adoption of the EIF / EIRA architectural approach, a well organised monitoring of technological developments, and the set of registers of location information implemented by public administrations are among Belgium's most significant strengths. The country also reaches very good scores under the Recommendation 12 and Recommendation 13, the latter being a relative weakness for the European average.

Under Recommendation 10, the country has widely adopted the EIF / EIRA based architectural approach to develop digital government solutions, facilitating the integration of geospatial requirements. A well-organised approach has also been adopted for monitoring, testing and upscaling new technological developments.

Most high-value location datasets are accessible using APIs as part of a national strategy to foster data reuse. The country takes several steps to stimulate the take-up of such APIs:

- APIs are based on recognised standards (e.g. OGC API - Features, OGC SensorThings API);
- 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.

Belgium has planned to re-use generic ICT solutions in the SDI (Recommendation 11). Almost all the registers of location information have been implemented by public administrations, including[58]:

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

The country uses international standards or adaptations of international standards (e.g. INSPIRE) to develop a comprehensive approach for spatial data modelling (Recommendation 12). The Open Standards for Linking Organisations (OSLO) initiative of the Flemish government for linked data is consistent with all relevant international standards[59]. A project has also been launched to implement an ecosystem based on the Solid standard[60], a proposed set of conventions and tools for building decentralised social applications based on linked data principles. The Burgerprofiel[61] application is the first implementation of this standard. Geospatial standards defined in this context (i.e. addresses, buildings, cadastral parcels, etc.) will be integrated (interoperability-wise) in overarching standards (Solid) and/or used in communication/decision processes between administration and individuals.

A standard approach is applied to facilitate discoverability of spatial data through joint access mechanisms which exploits international / European specifications (e.g. GeoDCAT-AP) and tools (e.g. GeoDCAT-AP API). In particular, GeoDCAT AP is used for the information catalogue in Flanders.

The conformity of spatial data sets to INSPIRE implementing rules and technical guidelines is slightly above the European average, while the conformity of INSPIRE network services with Regulation (EC) No 976/2009 is significantly above the average.

Concerning the management of location data quality (Recommendation 13), a wide array of actions is typically implemented to assure quality of location data.

In the design phase, these actions include:

- development and application of a framework for analysis of data quality;
- linking of data quality standards to data standards;
- inclusion of the different dimensions of data quality in the standards, such as timeliness, accuracy, completeness, integrity, consistency, compliance to specifications / standards / legislation;

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[58] Authentieke bronnen | DG Digitale Transformatie (bosa.be)
[59] https://data.vlaanderen.be/standaarden/
[60] https://overheid.vlaanderen.be/informatie-vlaanderen/nieuws-en-agenda/solid-ecosysteem
[61] https://www.vlaanderen.be/uw-overheid/mijn-burgerprofiel. The Burgerprofiel (Citizen profile) compiles an individual's official data and accesses to public e-administration in one personal overview.

- inclusion of multilingualism in the data quality standards.

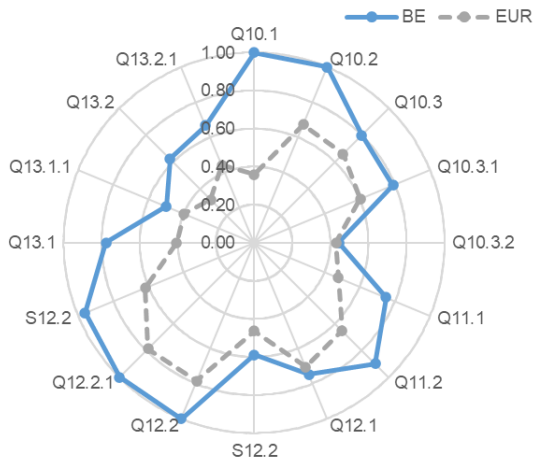In the measurement phase, the actions implemented are:

- regular measurement of data conformity to quality parameters set out in the data policy;
- data quality dashboards for critical information such as authentic data;
- ex-post evaluation of existing data quality issues.

The quality standards applied to location data are:

- ISO 19157 - Geographic information;
- (W3C) Data Quality Vocabulary (DQV).

Regarding location data quality governance, the country puts in place several actions:

- alignment of data quality improvement roadmaps with the information governance vision and strategy;
- well-defined data quality responsibilities;
- existence of a cross-unit or cross-organisation special interest group for data quality;
- definition of a data quality review process for various datasets;
- collection of feedback from users to report problems and help improve data quality.

User feedback is collected through different channels:

- licences for location datasets which typically request feedback on problems and changes made to improve quality;
- a collaborative platform[62];
- a community discussion forum[63] where the administrators involve customers interactively in the offer and use of geographical web services;
- traffic and usage statistics used to improve the SDI.

3.4.2 2019/2020 Comparison

Compared with 2019 (Figure 14), there has been a significant increase in the score under Recommendation 12. While this is partially due to the change of some indicators, Belgium's positioning reflects a consistent practice in using standards for comprehensive spatial data modelling and in adopting a standardised approach for combining spatial and non-spatial metadata.

Belgium maintained its high score under Recommendation 10 from 2019 to 2020; two relevant updates are:

- the EIF / EIRA based architectural approach is now widely adopted, which was not yet the case in 2019.
- In 2019, the use of APIs for location datasets was in development, while in 2020 this phase has ended and APIs are now available for all high value location datasets as part of a national strategy.

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[62] https://github.com/Informatievlaanderen/ and https://vlaamseoverheid.atlassian.net/wiki/home
[63] https://feedback.informatievlaanderen.be/c/geografische-webdiensten/22
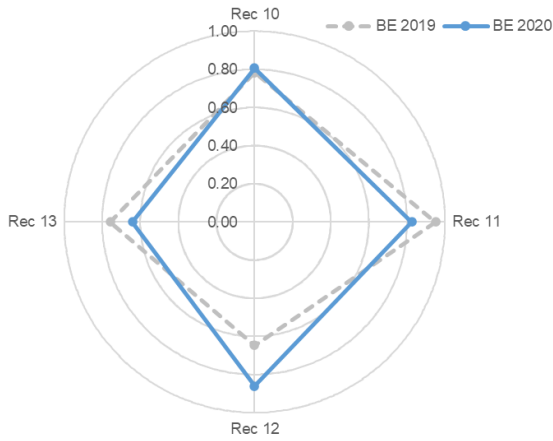
Figure 14 - Standardisation and Reuse - 2019/2020 comparison

This progress is not fully reflected in the increase of the recommendation index because two more indicators on APIs have been introduced in 2020 under this recommendation. The scores of these two extra indicators have somehow offset the progress made on the others.

The improvements under the two above recommendations have been partially offset by the slight reductions of the results obtained under Recommendation 11 and Recommendation 13, respectively due to the change of scale of one indicator under the former and a new indicator under the latter.

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

3.5.1 2020 Results
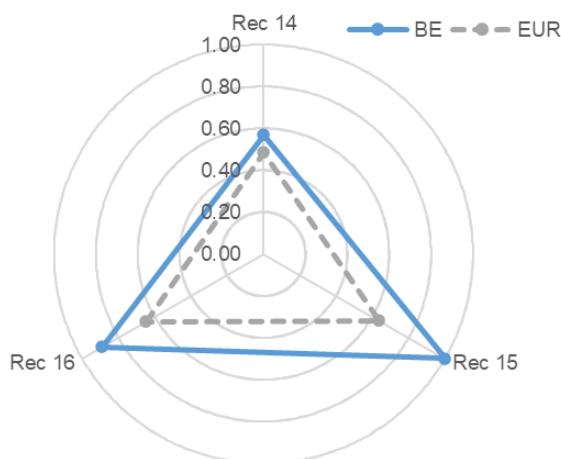
Figure 15 - Return on Investment - scores by recommendation

The scores for each recommendation in the "Return on Investment" focus area are shown in Figure 15 and the underlying indicator scores for each recommendation are shown in Figure 16. In both cases, the country scores are compared with the European averages.

The "Return on Investment" focus area index for Belgium is 0.82, significantly above the EU average of 0.58. In fact, the results for all three recommendation sit about their respective European averages.

Communication on the availability and benefits of location data and location-enabled digital public services is delivered regularly (Recommendation 15). This is a point of strength for the country, which has reached the highest possible score on this recommendation. All the responsible entities have action plans in place to foster digitalisation, open data and the use of locations data and communicate through websites, social media, organise hackathons and hold yearly events presenting their work. These plans include:

- at federal level, the Flexpub plan and blueprint, referenced in previous sections;
- at regional level:
    - the Flemish Open Data action plan (2020-2024)[64]: some actions relate to awareness raising about the reuse of public sector information and open data, promotion of the

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[64]https://overheid.vlaanderen.be/sites/default/files/media/Digitale%20overheid/Open%20data/PDF1_Actieplan_Open_Data_2020_2024_v1.0_def_0.pdf

  open data supply, legal support for the provision of open data or offering a Flemish Open Data portal;

- the Digital Wallonia plan (2019-2024)[65]: Wallonia's digital strategy, developed in partnership with the Brussels Capital Region, sets the framework for all of the Walloon Government's actions in terms of digital transformation. Several actions in the plan aim at fostering the uptake and reuse of open data.

Belgium has implemented many measures 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 (Recommendation 16). These measures include:

- an open data portal merging location data and non-location data[66];
- national discovery geoportal integrating INSPIRE and non-INSPIRE data[67];
- the geoportal being harvested by the European Data Portal;
- thematic portals complementing general search facilities with "specialist" search;
- websites with exposition of data.

In order to support private, non-profit and academic actors in the development of new products and e-services, the country implements the following actions[68]:

- the adoption of an open data policy;
- promotion of open data policy through hackathons;
- testbeds for trial use of public sector data;
- 'innovation labs' or 'innovation hubs';
- including non-government actors in the governance framework for public sector data;
- government sponsorship of 'innovation' pilot projects, potentially with grants / funding;
- adding data and services from non-governmental actors to the public sector (spatial) data infrastructure;
- establishing digital platforms through which a community of data providers, consumers and partners is actively engaged in the sharing, enhancing and using of location data and value is created for all partners in the ecosystem;
- collecting requirements of businesses, research institutions and other (potential) users for consideration in further development of INSPIRE/SDI;
- collecting best practice examples of how private companies, citizens, academic institutions and other users make use of INSPIRE/SDI data and services;
- training in skills necessary to exploit the SDI.

There is an ongoing strategy to fund location reference data at both regional and federal legislative level. This confirms the same level of funding as in the past few years to continue running the services.

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[65] https://www.digitalwallonia.be/en/digital-strategy
[66] https://data.gov.be/nl and https://opendata.vlaanderen.be/ and https://www.odwb.be/pages/home/
[67] https://www.geo.be/home?l=nl and http://www.geopunt.be/ and http://geoportail.wallonie.be/home.html
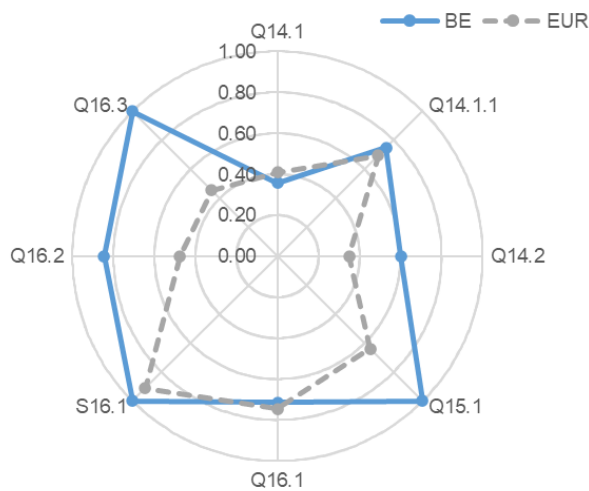[68] https://soc.kuleuven.be/io/opleidingen/pdf/flexpub-ben-smeets.pdf

Figure 16 - Return on Investment – scores by indicator

There are policies[69] supporting the reuse of Public Sector Information both within the public sector and by the private sector, as reported in section 3.2.1. Firstly, the federal open data strategy provides that all data collected by governments in the context of their tasks should be freely available and reusable. Limited exceptions are only due to privacy or security reasons. Secondly, the government must make the data available free of charge. Only the reimbursement of the costs of making data available, for example for storage on electronic media, may be requested. According to this strategy, anyone may reuse public sector information for any purpose, commercial or otherwise.

Assessments of the efficiency and effectiveness of location-based services are carried out by evaluating their total cost of ownership, availability, responsiveness, user satisfaction and user centricity, but leave out other important factors such as reusability, adaptability, reduction in administrative burden and simplification of processes and enhancement of business opportunities (Recommendation 14). The measurements are done at national SDI level (meaning the SDI for the relevant legally responsible entity, federal state or region, as mentioned above[70]). Belgium has also implemented several actions for impact-based improvement in location-enabled processes and services, consisting of:

- the identification and monitoring of the benefits of location information;
- regular monitoring of "upstream" (i.e. production and dissemination) and "downstream" (i.e. use) aspects of location data and services;
- use of the monitoring information to fund improvements in specific location data or services and to prioritise investments across the portfolio of government services.

3.5.2 2019/2020 Comparison
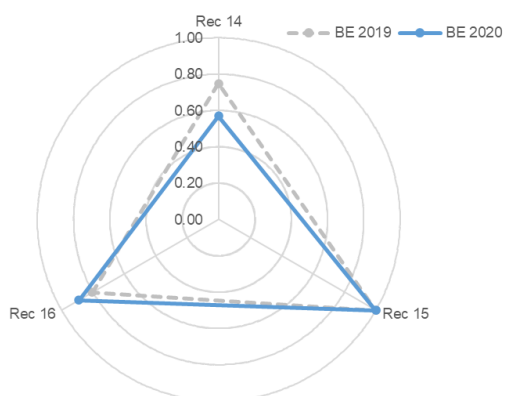
Figure 17 - Return on Investment – 2019/2020 comparison

The results for 2020 are quite similar to those for 2019 (Figure 17), except for Recommendation 14. Here, the decrease is due to the fact that Belgium reports having used in 2020 a slightly smaller range of elements to assess the efficiency and effectiveness of location-based services.

The score for Recommendation 16 in 2020 is slightly above the one achieved in 2019. The main positive driver has been the broad range of actions implemented to actively support private, non-profit and academic actors in the development of new products and e-services.

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[69] https://fedweb.belgium.be/nl/nieuws/2015/20150724_opendata
[70] See section 3.3.1, page 18

Lastly, Belgium confirmed its excellent performance concerning the communication of the benefits of integrating and using location information in digital public services (Recommendation 15).

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

3.6.1 2020 Results
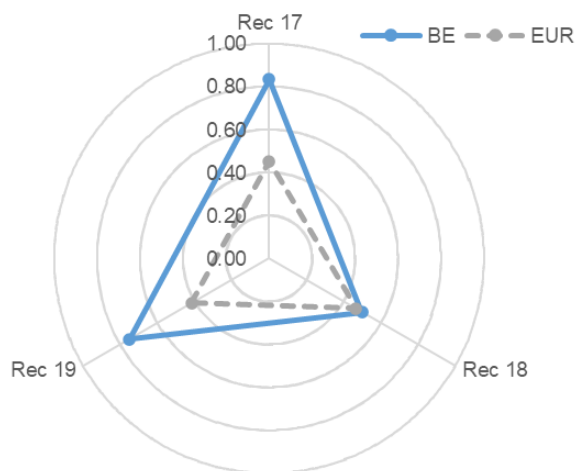
Figure 18 - Governance, Partnerships and Capabilities - scores by recommendation

Scores for each recommendation in the "Governance, Partnerships and Capabilities" focus area are shown in Figure 18 and the underlying indicator scores for each recommendation are shown in Figure 19. In both cases, the country scores are compared with the European averages.

The "Governance, Partnerships and Capabilities" focus area index for Belgium is 0.69, compared with the European average of 0.45. Scores for all the three recommendations are higher than the corresponding European averages. Absolute performances are very high with regard to governance (Recommendation 17) and capacity building (Recommendation

19), while there is margin for improvement in relation to partnerships (Recommendation 18), where the advantage over the European average is much lower.

The integrated governance of location information processes in Belgium includes strong joint decision making on the SDI in Digital Transformation, as well as the involvement of interested communities, location and digital government, thematic domain representatives, administrative levels (central and local) and sectors (public, private, academic, society) (Recommendation

17). The Smart Flanders[71] and Smart Wallonia[72] initiatives are two relevant examples in this respect.

Organisations responsible for SDI and Digital Government coordination operate in a strongly integrated way and jointly coordinate actions and policies. As described in section 3.3.1, the framework for such cooperation is provided under the ICEG (Intergovernmental Committee E-Government), an agreement among the federal, regional and community governments for the harmonisation and alignment of initiatives aimed at the realisation of an integrated e-government approach. The Flexpub strategic papers and blueprint also outline this integrated governance at federal level. Two more examples at regional level are the establishment of the Digital Transition Agency in Flanders and the cooperation of organisations in Wallonia and Brussels documented in the Digital Wallonia plan (2019-2024).

The country has adopted a strategic approach to geospatial capacity building both by acknowledging its value and by promoting it through legal provisions (Recommendation 19). Several initiatives have been organised to raise awareness and develop geospatial skills, such as:
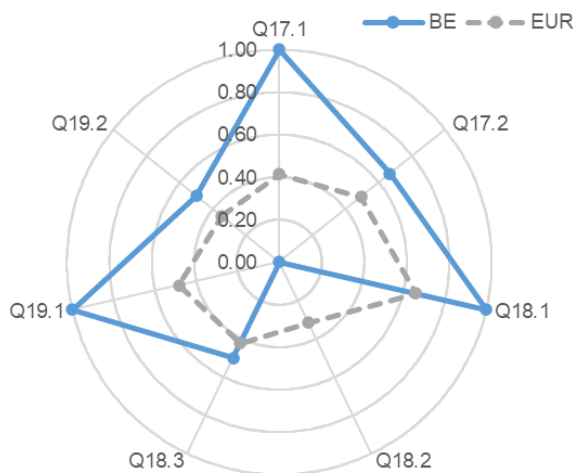

Figure 19 - Governance, Partnerships and Capabilities – scores by indicator

- a public sector location information / GI champion;
- location information / GI champions in organisations where location information plays a significant role;
- spatial literacy awareness raising for non-specialists (e.g. policy makers, legal advisers, project managers);
- training for specialists (e.g. developers or data analysts) delivered by the administrations, units or departments for which they work;
- special interest groups for knowledge sharing within the geospatial community;
- public or cross-government events specialising in location information / GI topics.

A large number of formal agreements are in place between public authorities to finance, build and operate location data services or digital public services using location data (Recommendation 18). For example, GDI (Geographic Data Infrastructure) Vlaanderen is a network that has been set up to help Flanders conform to INSPIRE. It has also been used to fund the development of a geoportal and the former Geographic information agency. This network has now been integrated in the Digital Transition Agency. On the other hand, no agreements are in place with public authorities in other countries and only a limited number of services are established through public-private partnerships. This is the recommendation where the gap towards the target state presented in the EULF Blueprint is the highest in this focus area.

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[71] See note 16
[72] https://www.digitalwallonia.be/en/projects/smart-region

3.6.2 2019/2020 Comparison

As shown in Figure 20, Belgium has obtained higher scores compared to 2019 under Recommendation 19 and Recommendation 18, while the Recommendation 17 index is similar to the previous year.
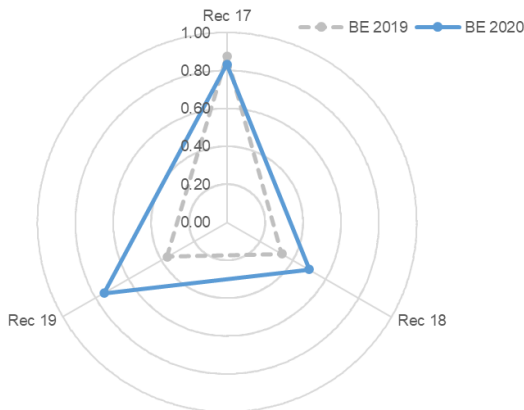
Figure 20 - Governance, Partnerships and Capabilities - 2019/2020 comparison

The country reports a noteworthy step forward compared with 2019 in Recommendation 19: the strategic approach to leverage the skills for innovative geospatial solutions now relies on a high degree of adoption of the geospatial competency framework. The country has also implemented some additional types of initiatives to raise awareness and develop geospatial skills.

The improved score for Recommendation 18 is due to the establishment of more agreements between public authorities in the country to finance, build and operate location data services or digital public services using location data.

The practice reported in 2020 confirms the strong collaboration between the organisations respectively responsible for the coordination of SDI and of digital government on actions and policies related to the role of the SDI in digital government (Recommendation 17).

4. Best practices

Best Practice BE1	Kabel- en Leidinginformatieportaal (KLIP)

Policy domain: Utilities

Process owners: Digitaal Vlaanderen

Short description: KLIP (Kabel- en Leidinginformatieportaal) is a platform aimed at improving the efficiency of underground operations and reducing excavation damage by sharing work plans and exchanging cable and pipe information before work starts. Contractors performing such works are required to submit a KLIP request. The portal forwards their request to all possibly involved cable and pipeline managers (KLBs) and draws up one clear digital plan with their answers. The data model used (IMKL) is an extension to the INSPIRE data model for utility and governmental services.

Plans including all available underground infrastructure are not only available in the KLIP portal but also in the KLIP app for Android, iOS and Windows.

Recommendations: Digital Government Integration (6), Governance, Partnerships and Capabilities (18)

Link: https://overheid.vlaanderen.be/informatie-vlaanderen/producten-diensten/kabel-en-leidinginformatieportaal-klip

Best Practice BE2	Flexpub, a strategy for location-based e-services

Policy domain: Geospatial strategy

Process owners: Katholieke Universiteit Leuven (KU Leuven), Université de Namur (UNamur), Institut Géographique National (IGN)

Short description: A research project aimed at developing a strategic vision for 2018-30 for location-based e-services. In order to develop this Strategy, a baseline measurement of existing federal administrations' practices in terms of location-based e-services was conducted and was complemented with an analysis of stakeholders' requirements. The strategic framework is based on the pillars of Openness, Inclusion, Collaboration, and Geo-orientation.

Recommendations: Policy and Strategy Alignment (1), Digital Government Integration (6)

Link: https://cirb.brussels/fr/images/doc-actualites/doc-urbis-user-club-14-06-18/flexpub-the-development-of-flexible-and-innovative-location-based-e-services; https://www.belspo.be/belspo/brain-be/projects/FLEXPUB_en.pdf

Best Practice BE3	Hinderpremie

Policy domain: Road maintenance, Economic policy

Process owners: Flanders Agency for Innovation and Entrepreneurship

Short description: A geospatial-based solution supports the process for granting compensations to small businesses that are seriously hampered by ongoing works. The compensation is allocated through an automated procedure taking into account all roadworks (that have to be registered in the Platform for General Information of Public Domain (GIPOD) and associated addresses through the central registry of businesses.

Recommendations: Digital Government Integration (6)

Link: https://www.vlaio.be/nl/subsidies-financiering/hinderpremie/wat-is-de-hinderpremie

List of abbreviations and definitions

Abbreviations

Abbreviation	Meaning
ANPR	Automatic Number Plate Recognition
API	Application Programming Interface
BOSA	Beleid en Ondersteuning / Stratégie et Appui
BRIC	Brussels Regional Informatics Centre
CRAB	Centrale Referentie Adressen Bestand
CIRB	Centre d'Informatique pour la Région Bruxelloise
CSW	Catalogue Service – Web
DBGT	Geo-Topographic Data Base
DCAT-AP	Data Catalogue vocabulary – Application Profile
EIF	European Interoperability Framework
ELISE	European Location Interoperability Solutions for e-Government
EO	Earth Observation
EULF	European Union Location Framework
ESRI	Environmental Systems Research Institute
Foss4G	Free and Open Source Software for Geospatial
FPS	The Belgian Federal Public Service
GDPR	General Data Protection Regulation
GI	Geographic Information
GRB	Large-Scale Reference File or Basic Map Flanders
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
ICAR	Centralized Inventory of Addresses and Streets
ICEG	Intergovernmental Committee E-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
KLIP	Kabel en Leidingen internet portaal
LIFO	Location Interoperability Framework Observatory
NGO	Non-Governmental Organisation
NIFO	National Interoperability Framework Observatory
OGC	Open Geospatial Consortium
OIP	Organisation d'Intérêt Public (Public Interest Organisation)
OSLO	Open Standards for Linking Organizations
SDI	Spatial Data Infrastructure
STIB-MIVB	Brussels Intercommunal Transport Company
UrbIS	Brussels Urban Information System
URI	Uniform Resource Identifier
WCS	Web Coverage Service
WFS	Web Feature Service
WMM	Vlaamse Milieumaatschappij (Flemish Environment Agency)
WMS	Web Map 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
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 rightsholder) 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 Identifiers) 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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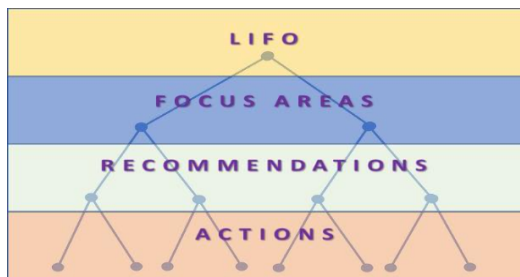List of tables

Annex 1: LIFO 2020 Scoring methodology

Figure 21 – Hierarchy of indicators and indexes

The LIFO model, described in the *LIFO 2020 Guidelines and recommendations*[73], is based on a hierarchy of indicators and indexes, as represented in Figure 21: from bottom to top, (action) indicators, recommendation indexes, focus area indexes and LIFO index.

(Action) Indicators: A number of actions[74] 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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[73] https://joinup.ec.europa.eu/sites/default/files/inline-files/2020_LIFO_Guidelines_2.pdf

[74] 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 five actions in the INSPIRE country fiche: - 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: [ ] 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[75], 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:

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[75] 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 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.

Annex 3: LIFO 2020 Additional information: Belgium

Title	Attachment[76]
LIFO Survey questionnaire 2020 – Belgium	📎 LIFO Survey 2020 Belgium
LIFO Survey questionnaire 2020 scores and charts – Belgium	📎 LIFO 2020 scores and charts Belgium

FOCUS AREA	BE 2020 v BE 2019			BE 2020 v EUR 2020 (all countries)			BE 2020 v EUR 2020 (2019 countries)			BE 2019 v EUR 2019		
	BE 2019	BE 2020	+/-	EUR 2020	BE 2020	+/-	EUR 2020	BE 2020	+/-	EUR 2019	BE 2019	+/-
Policy and strategy alignment	0,53	0.84	0.31	0.62	0.81	0.19	0.68	0.81	0.13	0.57	0.53	-0.04
Digital government integration	0.67	0.81	0.14	0.57	0.81	0.24	0.59	0.81	0.22	0.54	0.67	0.13
Standardisation and reuse	0.78	0.69	-0.09	0.55	0.78	0.23	0.62	0.78	0.16	0.54	0.78	0.24
Return on investment	0.87	0.82	-0.05	0.58	0.82	0.24	0.64	0.82	0.18	0.60	0.87	0.27
Governance, partnerships and capabilities	0.52	0.69	0.17	0.45	0.69	0.24	0.49	0.69	0.20	0.44	0.52	0.08
LIFO INDEX	0.68	0.78	0.10	0.55	0.78	0.23	0.60	0.78	0.18	0.54	0.68	0.14

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[76] 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.