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Location Interoperability Framework Observatory delivers value for participants across Europe

*Location Interoperability
Framework Observatory
(LIFO) – Case studies*

Massimo PEDROLI

Antonio ROTUNDO

Ray BOGUSLAWSKI

Lorena HERNANDEZ (Editor)

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Contact information

Name: Lorena Hernández Quirós
Address: Via E. Fermi 2749, TP263, I-21027 Ispra (VA), Italy
Email: lorena.hernandez@ec.europa.eu
Tel.: +39 003278 6653

Name: Francesco Pignatelli
Address: Via E. Fermi 2749, TP263, I-21027 Ispra (VA), Italy
Email: francesco.pignatelli@ec.europa.eu
Tel.: +39 0332 786319

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Contents

Abstract.....1

Executive summary2

1. Introduction.....4

 1.2. About LIFO.....4

 1.3. About the case studies4

2. Assessment of the LIFO process.....6

3. LIFO online tools.....7

4. Outreach.....10

5. Usage of LIFO results14

6. Evolution of LIFO.....17

7. Conclusions and recommendations on future use and development of LIFO.....19

 7.2. Conclusions.....19

 7.3. Recommendations.....19

 1.1.1 Assessment of the LIFO process19

 1.1.2 LIFO online tools20

 1.1.3 Outreach20

 1.1.4 Usage of LIFO results.....20

 1.1.5 Evolution of LIFO21

Abstract

The *Location Interoperability Framework Observatory* (LIFO) monitors the implementation of location interoperability good practices in European public administrations, based on the level of adoption of recommendations in the five focus areas of the European Union Location Framework (EULF) Blueprint.

10 countries participated in the LIFO 2019 monitoring and 23 countries in LIFO 2020. Four of the 10 countries that participated in both years contributed to an assessment of LIFO from five perspectives: assessment of the LIFO process, LIFO online tools, outreach, usage of LIFO results and evolution of LIFO. Findings are collated in a structured assessment and overall conclusions and recommendations drawn together. The feedback and assessment will be used to plan appropriate monitoring measures as actions on location interoperability are transitioned from ISA² to the Digital Europe Programme.

Executive summary

The *Location Interoperability Framework Observatory* (LIFO) monitors the implementation of location interoperability good practices in European public administrations, based on the level of adoption of recommendations in the five focus areas of the European Union Location Framework (EULF) Blueprint¹. LIFO results are published on Joinup in the form of Country Factsheets² and a European State of Play Report³ and are available for users to explore in the LIFO Interactive Dashboards⁴. The EULF Blueprint applies the European Interoperability Framework (EIF) principles in the geospatial domain and LIFO supplies secondary indicators to the EIF monitoring undertaken by the National Interoperability Framework Observatory (NIFO).

LIFO information is captured through a national user survey. The number of participating countries increased from 10 in 2019 to 23 in 2020⁵. The information collected and analysed 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.

Given the commitment by participants, it was seen as important to obtain a user assessment of the LIFO process and outputs and to determine what improvements are needed. To this end, four countries participated in a structured 'case study' assessment, which is documented in this report. These were the Czech Republic, Italy, Norway and Slovenia. Views were sought through structured interviews, covering the LIFO process, the LIFO online tools, the approach to outreach, use of LIFO results, and evolution of the LIFO.

The case studies highlighted the awareness in the participating countries of the relevance and usefulness of the LIFO process, even though the process is voluntary rather than mandated. The LIFO process is seen as an important opportunity to:

- have an up-to-date picture of the location interoperability status in the individual countries and across Europe;
- identify possible implementation gaps and support Member States and European bodies to improve national and European (digital government and location) strategies and policies;
- find out about best practices in different countries demonstrating the benefits of the use of location information in digital public services;
- enable exchanges with different organisations from different participating countries by sharing different views and identifying strengths and weaknesses/areas needing improvement.

There is still limited awareness of the use and benefits of LIFO outside of the geospatial community, although some countries have taken steps to extend this awareness.

Various recommendations emerged from the exercise, including:

- Give the EULF Blueprint and LIFO an official/legal basis;
- Streamline the LIFO process where possible through simplified questions and prefilled answers;
- Implement proposals for new features and improved usability of the online tools, including a self-assessment option;
- Increase awareness of EULF Blueprint/LIFO in national, sub-national and local administrations, including supporting countries with additional promotional material and other tools for communication;
- Classify best practices to facilitate easier reuse (e.g. geographical scope, domain etc.);

¹ <https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/solution/eulf-blueprint/about>

² <https://joinup.ec.europa.eu/node/704194>

³ <https://joinup.ec.europa.eu/node/704361>

⁴ <https://joinup.ec.europa.eu/node/704247>

⁵ 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.

- Support Member States in the implementation of specific actions suggested in the EULF Blueprint, including development of relevant tools and solutions;
- Make LIFO a regular and systematic process for location interoperability in all assessment processes;
- Link/align LIFO in a stronger and better way with other processes and frameworks (NIFO, Common European Data Spaces, and UN-GGIM IGIF6).

⁶ The United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Integrated Geospatial Information Framework (IGIF)

1. Introduction

1.2. About LIFO

The *Location Interoperability Framework Observatory* (LIFO) monitors the implementation of location interoperability good practices in European public administrations, based on the level of adoption of recommendations in the five focus areas of the European Union Location Framework (EULF) Blueprint⁷. The EULF Blueprint provides guidance for implementing the European Interoperability Framework (EIF) in the geospatial domain. Consequently, the LIFO complements the EIF monitoring mechanism operated by the *National Interoperability Framework Observatory* (NIFO).

LIFO results are published on Joinup in the form of Country Factsheets⁸ and a European State of Play Report⁹ and are available for users to explore in the LIFO Interactive Dashboards¹⁰.

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 first LIFO data collection in 2019 involved 10 participating countries that are either EU member states or other countries implementing INSPIRE, whereas the LIFO 2020 data collection involved 23 participating countries¹¹.



Location Interoperability Framework Observatory

1.3. About the case studies

After two LIFO runs, an analysis of some participant case studies was performed to collect evidence about the use and value of the LIFO results and outputs, the LIFO online tools and an assessment of the LIFO process and outreach. Furthermore, this analysis aimed to know how participating countries would like to see the LIFO evolve in the *Digital Europe Programme* (DEP) in the next round of data collection in 2022.

To this end, four case studies were discussed and analysed based on information collected through interviews with the representatives of four countries that participated in the LIFO process over two years. The countries identified were the Czech Republic, Italy, Norway and Slovenia. The representatives are thanked for giving their availability to participate in case study interview sessions.

The interview was structured in five sections:

⁷ <https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/solution/eulf-blueprint/about>

⁸ <https://joinup.ec.europa.eu/node/704194>

⁹ <https://joinup.ec.europa.eu/node/704361>

¹⁰ <https://joinup.ec.europa.eu/node/704247>

¹¹ 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.

- **Assessment of the LIFO process**, addressing questions about the point of view of the different actors involved in the LIFO process and feedback about its possible added value in the context of location interoperability and possible improvements of the process at European and national levels;
- **LIFO online tools**, addressing questions about the usage of the tools, made available on the Joinup platform, their usability and how much they have improved the readability and the analysis of LIFO results, as well as possible future improvements and proposals for other types of tools;
- **Outreach**, addressing questions on the way the different actors, including the EIF implementation team, are engaged to collect LIFO data with all the required evidence, and on their engagement in communicating the LIFO results;
- **Usage of LIFO results**, addressing questions about any formal or informal mechanisms put in place to analyse and assess the LIFO results, the usage planned or made of those results and how they have contributed to the further implementation of EULF Blueprint recommendations, what actions/initiatives/activities/tools have been implemented or planned based on the LIFO results, the main benefits expected or achieved and the barriers encountered in the use of the LIFO results to improve location interoperability;
- **Evolution of LIFO**, including questions about the evolution and the enhancement of LIFO in the *Digital Europe Programme* (DEP).

The list of interviewees and the text of the questionnaire used in the interviews are reported in **Annex 1**.

This document is structured according to the five sections of the questionnaire described above. Each chapter provides an overview of the evidence gathered and the findings of the interviews about the issues addressed in each section of the questionnaire.

The **chapters from 2 to 6**, corresponding to the five sections of the questionnaire, include a brief description of the interview findings and a table with a summary of the answers grouped by similar elements and aspects.

The **final chapter** includes the conclusions of the case studies and a set of recommendations based on the feedback provided by the representatives of the countries involved.

2. Assessment of the LIFO process

The first section of the interview aimed to collect the feedback of the participating countries about the assessment and the added value of the LIFO process. Interviewees were also asked to suggest possible actions to improve the process at both the European and national levels.

The assessment was, in general, quite positive. LIFO is recognised as a useful tool with an efficient process to

- have a broader picture of location interoperability (including the identification of possible gaps in the implementation of EULF recommendations) and,
- to increase awareness on location topics and policies and their links with digital government.

Italy declared that LIFO has reached such maturity that it can become a regular and systematic process for assessing location interoperability, as long as it involves all Member States. The Czech Republic highlighted that an interesting aspect is that it allows having exchanges with different organisations across Europe, enabling them to give and receive feedback for improvements (e.g. through the best practices).

LIFO questions and indicators are considered relevant, covering all location interoperability aspects. However, Italy and Slovenia agreed that simplification would be needed in some parts of the questionnaire.

As for the different actors involved, the participating countries highlighted very limited awareness of the relevance and usefulness of the LIFO, probably due to its voluntary nature, as they get a lower priority compared to other activities required by law.

Giving the EULF Blueprint a more structured/legal basis by making it an official reference document endorsed and/or adopted at a higher decision level (ISA or even European Commission as a Notice, Decision or Communication) would improve the overall process while raising awareness.

Another action suggested is to implement a systematic and dynamic monitoring mechanism to collect the information required for the LIFO survey not just close to the launch of the survey itself but throughout the year.

Norway suggested linking/aligning LIFO with UN-GGIM's IGIF (Integrated Geospatial Information Framework).

The table below shows the highlights by the participating countries about the assessment of the LIFO process, its added value and the possible improvements at the European and national level to consider in future data collections.

Legend of symbols used in the table below:

✓ positive assessment

- medium/neutral assessment

✗ negative assessment

★ European level

▮ National level

	Czech Republic	Italy	Norway	Slovenia				
Assessment of the LIFO process	Remarks on the process							
	<ul style="list-style-type: none"> LIFO process was very good and efficient last year more demanding this year. 	✓	<ul style="list-style-type: none"> The LIFO process can become a regular and systematic process for assessing location interoperability. 	✓	<ul style="list-style-type: none"> LIFO is important in digital transformation and the new digital geographic ecosystem and in sharing resources in an overall ecosystem. 	✓	<ul style="list-style-type: none"> LIFO is a useful tool to increase awareness of interoperability and determine where Slovenia stands. 	✓
	Data collection							
	<ul style="list-style-type: none"> Many inputs from different actors needed to be collected and analysed, weakening the existing coordination structure. 	-	<ul style="list-style-type: none"> Indicators and questions defined are relevant and cover all aspects affecting location interoperability. 	✓			<ul style="list-style-type: none"> No particular difficulties in the process of collecting information and reaching data providers. 	✓
	Questionnaire and survey							
			<ul style="list-style-type: none"> Some parts of the questionnaire could be simplified or better supported. 	-			<ul style="list-style-type: none"> Lengthy questionnaire with some questions difficult to reply and requiring further inquiries. 	x
Point of view of the different actors involved								
		<ul style="list-style-type: none"> No awareness of LIFO's relevance and usefulness by the different actors involved. 	x	<ul style="list-style-type: none"> There is a strong relation between EIF and LIFO. However, the interpretation of EIF in a geospatial context requires some time to digest. 	-			
Added-value of the LIFO process in the context of location interoperability	<ul style="list-style-type: none"> LIFO gives with its holistic approach the broader picture of location interoperability and the interconnection of the different activities. LIFO enables the exchanges with different organisations 	✓	<ul style="list-style-type: none"> Good opportunity to have a common assessment mechanism across Europe to measure the real use of location information and have an up-to-date picture of location interoperability. 	✓		<ul style="list-style-type: none"> The most beneficial effect of LIFO is the awareness-raising in terms of interoperability topics. 	✓	

	Czech Republic		Italy		Norway		Slovenia	
	from different participating countries, needed for improvements.		<ul style="list-style-type: none"> LIFO can bring out possible gaps in the implementation of EULF recommendations, and this will allow the Member States and European bodies to update, improve, fine-tune, recalibrate national and European (digital government and location information) strategies and policies. The LIFO process facilitates discovering and recognising the best practices of existing initiatives and applications in different domains. 					
Improvement of the LIFO process at EU and national level	<ul style="list-style-type: none"> Give the EULF Blueprint recommendations a more structured/legal basis. Align EULF Blueprint recommendations with NIFO formal arrangements. 	✦	<ul style="list-style-type: none"> Make the EULF Blueprint an official/legal reference document. Keep the indicators unchanged over time. 	✦	<ul style="list-style-type: none"> Link/align LIFO with UN-GGIM's IGIF (Integrated Geospatial Information Framework) 	✦	<ul style="list-style-type: none"> Make a preselection of the answers given the previous year. 	✦
			<ul style="list-style-type: none"> Increase the awareness of the EULF Blueprint recommendations and actions in every national, sub-national and local administration. Implement a systematic and dynamic monitoring mechanism to collect the information throughout the year. 	📌		<ul style="list-style-type: none"> Possible involvement of other stakeholders, including stakeholders outside the GEO community. 	📌	

3. LIFO online tools

The second section of the interview was aimed at collecting the feedback of the participating countries about the usage of the LIFO tools made available on the Joinup platform, their usability and their contribution to the readability and the analysis of LIFO results, as well as possible future improvements and proposals for other types of tools.

The tools developed under the LIFO initiative include an interactive dashboard that provides customisable visual representations in a series of interactive charts of the level of implementation of the EULF Blueprint in the ISA² countries involved in the Observatory at three different levels of aggregation, i.e. Focus Areas, Recommendations, and Indicators. Users can identify strengths and areas for improvement, compare the 2020 (being validated at time of interviews) and 2019 results and the status of different countries and find out more about the related EULF Blueprint guidance.

All representatives of the participating countries declared they had used the LIFO tools, albeit not yet very thoroughly. They indicated that those tools are very useful for understanding the process, interpreting the data, enabling the decision-makers to know the achievement and the status of location interoperability in their own country and comparing with other countries.

About the usability of the tools, Italy and Norway found them very user-friendly, whereas Slovenia had not expressed a firm opinion, as they deem it necessary to experiment with the tools more thoroughly and use a larger amount of data. Furthermore, the Czech Republic, Italy and Norway agreed that the online tools improve the readability and the analysis of the LIFO results.

Italy has proposed a detailed set of possible improvements in visualising data through maps and charts and has also suggested adding a new feature to make available a printable (visual) summary of the LIFO results at different levels. A common remark with the Czech Republic was the inconsistency found in the colouring of the countries in the charts that should be fixed, whereas Slovenia highlighted the need for the evolution of the tools from a 'simple' display tool of the current status as it is currently. Norway suggested comparing the LIFO result with the input from the questionnaire and other indicators to know how the evaluation of the LIFO team is made.

Future uses of these tools envisaged by the respondents are their embedding in the national systems, infrastructures and action plans and as a quality assessment framework in cooperation with other organisations dealing with location interoperability.

Other tools, such as a self-assessment tools, are considered useful at the organisation or area level and the national level, but the development of new tools is not necessarily encouraged due to the limited national resources available.

The table below shows the highlights from the participating countries about the use of the LIFO online tools made available on Joinup, their usability and their contribution to the analysis of the LIFO results and the proposals for possible improvements.

Legend of symbols used in the table below:

- ✓ positive assessment
- medium/neutral assessment
- ✗ negative assessment
- 🇪🇺 European level
- 🇳🇱 National level

	Czech Republic	Italy	Norway	Slovenia
Use of the tools	<ul style="list-style-type: none"> The dashboard is very useful to interpret data. 	<ul style="list-style-type: none"> The tools are used to first understand how they work, show the LIFO results, and compare the monitoring results. 	<ul style="list-style-type: none"> Tools are quite user friendly. 	<ul style="list-style-type: none"> Brief look at LIFO interactive tool waiting for the validation of the data.
Usability of the tools		<ul style="list-style-type: none"> The website and tools are very user-friendly. The visualisation of the monitoring results at different levels is very useful and helps to understand the process better. 	<ul style="list-style-type: none"> It is easy to evaluate each focus area and compare to other countries. However, it is even more important to compare with previous versions of LIFO. 	<ul style="list-style-type: none"> No clear opinions. A full information visualisation needs a large amount of data in a single dashboard, but the more data there is, the less user-friendly the dashboard becomes.
Readability and analysis of the LIFO results	<ul style="list-style-type: none"> The tools improve the readability and the analysis of the LIFO results; for instance, the dashboard enables comparisons of recommendations from all participating countries. 	<ul style="list-style-type: none"> The tools improve the readability and the analysis of the LIFO results. 	<ul style="list-style-type: none"> The tools improve the readability and the analysis of the LIFO results. 	
Proposals for improvement of the tools	<ul style="list-style-type: none"> When comparing data of several countries, align the colouring of the countries in the map with those corresponding in the chart. 	<p>Possible improvements:</p> <ul style="list-style-type: none"> Add a legend about the colours used in the map; The colours used in the chart and the map should be the same; A better disposition of the items in the frame; Higher dimensions (width and height) of chart and map; Add a link to the country factsheet in the map for each country. 	<ul style="list-style-type: none"> It would be important to compare the LIFO result with the input from the questionnaire and other indicators to know how the evaluation of the LIFO team is made. 	<ul style="list-style-type: none"> The tools should further evolve, as now it is only a display tool of the current state.
		<p>New feature:</p> <ul style="list-style-type: none"> A printable (visual) summary of the LIFO results at different levels. 		
Future use of the tools	<ul style="list-style-type: none"> Using the online tools for quality assessment and checks for data 	<ul style="list-style-type: none"> Linking the online tools in a specific section on the spatial data portal 	<ul style="list-style-type: none"> Comparing the result of LIFO with the action plan for 	

	Czech Republic		Italy		Norway		Slovenia	
	and services maintenance to cooperate with other organisations dealing with location data.		dedicated to the monitoring processes (such as LIFO, INSPIRE ...).		digital transformation.			
Other types of tools	<ul style="list-style-type: none"> A self-assessment tool would help with the data quality assessment; however, at this stage, it would be better to avoid the development of new tools due to the limited resources available. 	-	<ul style="list-style-type: none"> A self-assessment tool would be useful at the organisation or area level. 	✓	<ul style="list-style-type: none"> A self-assessment tool would be useful, related to the outcomes of the indicators and more clearly see the potential gaps. 	✓		

4. Outreach

The third section of the interview aimed at collecting feedback of the participating countries on the engagement of the different actors, including the colleagues involved in the EIF implementation, to collect LIFO data and to capture all the required evidence, the communication of the results planned or made and the possible improvements in the process.

Collecting LIFO data involved different actors and stakeholders in all countries. Those involved were engaged in different ways:

- through a questionnaire similar to the LIFO survey shared at the national level and identification of stakeholders/actors to contact for each EULF recommendation and each question (Italy and Slovenia);
- through the engagement of a recognised panel of internal and external stakeholders dealing with location interoperability (the Czech Republic and Norway).

Good cooperation was also registered with colleagues involved in EIF implementation, who were successfully engaged for issues related to the scope of EIF and linked to LIFO.

Italy highlighted that it couldn't capture all the required evidence through the national survey, and to obtain the missing information, some desk research was performed. Also, Norway registered that it wasn't possible to capture all the necessary evidence and, for this reason, there were missing inputs in the questionnaire. This criticality wasn't registered in the Czech Republic and Slovenia, thanks to experienced work teams and a well-identified panel of stakeholders.

The problems encountered in the data collection process led Italy and Norway to propose some improvements to the process itself, such as:

- implementing the EULF Blueprint recommendations and the LIFO process binding and organised more formally to get the process approved at the management level;
- a priori identification by the LIFO team of the types of actors in charge of providing information and evidence.

The Czech Republic regularly communicated LIFO results by reporting to the national communities, events, and news articles, whereas Slovenia communicated occasionally, and Italy's communication was only planned. Norway made some internal presentations within the national mapping authority and for the digitisation agency. The respondents agreed that communication could be improved and further stimulated by the help of the LIFO team with additional promotional material and presentation of the results and the state of the country's state of play in national events.

The table below shows the highlights in the participating countries in the engagement of the different actors and the process involved to capture the required evidence and the communication of LIFO results.

Legend of symbols used in the table below:

- | | |
|---------------------------|------------------|
| ● complete implementation | ✳ European level |
| ◐ partial implementation | ▮ National level |
| ○ no implementation | |

	Czech Republic	Italy	Norway	Slovenia
Actors involved in the LIFO data collection	Organisations engaged			
	<ul style="list-style-type: none"> Different public organisations were contacted (Czech Republic INSPIRE coordination group, Ministry of Interior, the office of the main architecture of e-government, the office for GDPR, the Ministry for Regional Development). 	<ul style="list-style-type: none"> All the organisations in charge of defining location and digital government policies and/or managing location data and services and implementing INSPIRE, most of them engaged in the National Committee for Spatial and Environmental Information (CNITA). 	<ul style="list-style-type: none"> Colleagues from the Norwegian Mapping Authority, Statistics Norway, Environmental Agency, Road Ministry were involved. 	<ul style="list-style-type: none"> Organisations involved at national level, as the regional level doesn't exist in Slovenia. Engagement of local communities is planned for next year.
	Means used to collect data			
		<ul style="list-style-type: none"> A Google form created by replicating the LIFO questions and sharing it with representatives of administrations in the CNITA. 		<ul style="list-style-type: none"> A questionnaire was filled out by the Surveying and Mapping Authority and distributed to stakeholders to collect their feedback, go through the replies and revise and update it together in a dedicated meeting.
	Other stakeholders involved			
	<ul style="list-style-type: none"> Also in contact with expert groups on education and associations on geographic information. 	<ul style="list-style-type: none"> Identifying recommendation by recommendation and question by question, the stakeholders/actors to contact. 		<ul style="list-style-type: none"> A panel of external stakeholders involved through the channels of the Intersectoral Group and National Interoperability Group.
Capability to capture all the required evidence and possible future improvements	Capturing evidence			
	<ul style="list-style-type: none"> There is an experienced team that could capture all the required evidence. 	<ul style="list-style-type: none"> Only a limited number of actors contributed to the survey through the Google form created. To get the evidence not otherwise 	<ul style="list-style-type: none"> It wasn't possible to capture all the required evidence; as a result, there was missing input in the questionnaire. 	<ul style="list-style-type: none"> It was not difficult to collect evidence for location aspects. On the contrary, the Authority needed to collect some additional

	Czech Republic	Italy	Norway	Slovenia
		captured, some desk research was performed.		data relating to eGovernment, which was not easily findable.
	Possible improvements			
		<ul style="list-style-type: none"> A priori identification by the LIFO team of the types of organisations/actors most appropriate to provide the information and the evidence. 	<ul style="list-style-type: none"> For the future, the LIFO process needs to be organised more formally. The key to doing this is to get this approved as an important task at the management level, both for filling in the questionnaire and presenting and discussing the result, hence leading to concrete actions. 	
Communications made or planned of the LIFO results	<ul style="list-style-type: none"> Communications to the INSPIRE community¹² and KOVIN (INSPIRE coordination body), to the e-gov Conference¹³ and internally. An article on the results achieved has also been produced. 	<ul style="list-style-type: none"> No communications about the LIFO results made so far. But some activities were planned: a dedicated webinar, specific news articles and dissemination through social and institutional channels, a dedicated section in the national portal for spatial data, discussion within the CNITA. 	<ul style="list-style-type: none"> Presentations done both internally within the mapping authority and for the digitisation agency. 	<ul style="list-style-type: none"> LIFO results used within the INSPIRE project (including a presentation at the National INSPIRE Day) and steering group and with Slovenian stakeholders.
Future support of the LIFO team in the communications	<ul style="list-style-type: none"> Reuse presentation formats used in the past for some countries to disseminate LIFO activities. 	Possible support: <ul style="list-style-type: none"> Additional 'promotional' materials for both web and social media; A (visual) summary of the country factsheet. 		<ul style="list-style-type: none"> The LIFO team can present the Slovenian state of play and the possibilities of how the EULF Blueprint recommendations are achieved or not in national events.
Engagement with colleagues	<ul style="list-style-type: none"> Continuous communications with the coordinator for 	<ul style="list-style-type: none"> The LIFO national contact point is also the NIFO reference 		<ul style="list-style-type: none"> There is quite good cooperation with the Ministry of Public Affairs

¹² <http://www.cagi.cz/upload/documents/konference/givs2020/19-givs2020-pauknerova.pdf>; https://inspirujese.cz/wp-content/uploads/2021/09/2020_Abstrakt_Pauknerova_LIFO.pdf

¹³ <https://m.iss.cz/Program?osoba=-846810805>; <https://www.e-government.cz/soubor/location-interopability-framework-observatory-eva-pauknerova/>

	Czech Republic	Italy	Norway	Slovenia
involved in EIF implementation	the ISA tool about the update of the LIFO process or issues linked to NIFO.	organisation. Consequently, the LIFO process is addressed under the EIF aspects.		responsible for eGovernment in Slovenia.

5. Usage of LIFO results

The fourth section of the interview aimed to collect the feedback of the participating countries about the usage (planned or actually made) of the LIFO results, also as a support for the further implementation of the EULF Blueprint recommendations. The respondents were also asked to briefly describe the LIFO results, actions/initiatives/activities/tools carried out/implemented or planned for each EULF Blueprint focus area to improve the adoption of location interoperability, good practices and delivery of benefits. They were also asked to point out the main benefits expected or achieved from any actions taken and the main barriers hampering the use of the LIFO results.

All participating countries declared that no formal or informal mechanisms to analyse and assess the 2019 and 2020 LIFO results were put in place at the national level, and consequently, the LIFO results are not used as yet. There was an informal consultation about a specific aspect only in the Czech Republic.

The intention expressed by all however was to use the results in the future by gradually aligning the national strategies and fine-tuning actions and activities in the field of location interoperability according to the EULF Blueprint recommendations and the LIFO process. In this regard, Slovenia reiterated that the systematic use of LIFO will come when the indicators will be used as a formal reference for the decision-making process, as is the case for the INSPIRE monitoring and reporting.

Only Italy provided a list of actions and activities being carried out at the national and sub-national level for each EULF Blueprint focus area by briefly describing them. The Czech Republic, instead, provided two examples of actions taken.

The respondents highlighted some main benefits expected; inter alia, a broad picture in the use of location information in policy and digital public services, increasing the engagement of stakeholders and user communities and growing awareness. On the contrary, they also reported some barriers that hamper the use of the LIFO results to improve location interoperability, such as:

- the voluntary nature of the LIFO process,
- the limited interest at the management level,
- the unclear identification of the scope (country, regional and local level) for use cases and
- the not aligned data policies and different authorities dealing with location interoperability and digital government.

The table below shows the highlights identified by the participating countries about the usage of the LIFO results and the further implementation of the EULF Blueprint recommendations, as well as about the benefits expected or achieved and the barriers encountered with the LIFO results.

Legend of the symbols used in the table below:

- | | | |
|---------------------------|---|-----------------------|
| ● complete implementation |  Policy and strategy alignment | ✓ positive assessment |
| ◐ partial implementation |  Digital government integration | |
| ○ no implementation |  Standardisation and reuse | ✪ European level |
| |  Return on investment | ▮ National level |
| |  Governance, partnerships and capabilities | |

	Czech Republic	Italy	Norway	Slovenia
Mechanisms to analyse and assess the LIFO results	<ul style="list-style-type: none"> • Consultations with the national coordinating body for e-Government. 	<ul style="list-style-type: none"> • No mechanisms put in place so far. 	<ul style="list-style-type: none"> • There are no mechanisms put in place as yet, but there are plans to focus on this about the new geospatial ecosystem. 	
Contribution of LIFO results to the implementation of the EULF Blueprint recommendations	<ul style="list-style-type: none"> • In general, it is difficult to implement the EULF Blueprint recommendations as they don't have a strong legal basis. Our approach to location interoperability coincides anyway in many respects with the EULF Blueprint. • The national process linked to location interoperability will be gradually aligned with the EULF Blueprint recommendations and LIFO. 	<p>The LIFO results are not used as yet, but their use is planned to:</p> <ul style="list-style-type: none"> • Identify gaps; • Identify new potential measures in the national strategy; • Reference them in a specific section in the spatial data portal. 	<ul style="list-style-type: none"> • The LIFO results can contribute to awareness-raising; there are several initiatives planned to implement the EULF Blueprint recommendations starting from the LIFO results. 	<ul style="list-style-type: none"> • The LIFO results are not used as yet. The systematic use of LIFO will come when some indicators are eventually used as a reference point for the decision making process.
Actions / initiatives / activities / tools implemented or planned	<ul style="list-style-type: none"> • The Digital Technical Map, an activity carried out by ČÚZK with other organisations 	<ul style="list-style-type: none"> • New measures and actions in the national policies 		
		<ul style="list-style-type: none"> • A mechanism to monitor the use of location information in digital public services • Rules about high-value datasets and dynamic data 		
		<ul style="list-style-type: none"> • Development of a crowdsourcing system • Development of a dashboard system for analysing and comparing data. 		
		<ul style="list-style-type: none"> • Improved features in the national portals • The organisation of a webinar series to 		

	Czech Republic	Italy	Norway	Slovenia
		communicate the benefits		
	<ul style="list-style-type: none"> The national forum platform for location information organises seminars with different organisations and associations to debate and find joint solutions on complex topics and issues 	<ul style="list-style-type: none"> Working group for the national guidelines for the implementation of the new rules provided by the Open Data Directive Revision of the national standard on the GI professional profiles 		
Main benefits expected or achieved	<ul style="list-style-type: none"> Providing a broad picture of the use of location information in policy and digital public services Getting inspired by other participating countries, showcasing different views and identifying potential strengths and weaknesses 	<ul style="list-style-type: none"> Improving location operability in general Increasing awareness on location interoperability and the LIFO process Facilitating discovery, access and use of location information in digital public services Increasing the engagement of stakeholders and user communities 		
Main barriers	<ul style="list-style-type: none"> Lack of differentiation of use cases at the country, regional and local level. 	<ul style="list-style-type: none"> The low awareness of the EULF Blueprint leads to limited implementation of the recommendations The voluntary nature of LIFO 	<ul style="list-style-type: none"> Lack of interest at management level. 	<ul style="list-style-type: none"> Barriers in cross border interoperability due to different data policies and authorities.

6. Evolution of LIFO

The fifth section of the interview aimed to collect the feedback of the participating countries about the evolution and the enhancement of the LIFO in the Digital Europe Programme (DEP) and possible proposals for evolution and/or enhancement.

Although not explicit by all respondents, a common opinion is that DEP should further support and strengthen the LIFO to make it a process for assessing the location interoperability with a legal basis. This also means developing tools and solutions needed and strong support for the Member States.

Also, the LIFO process should be (more) strongly linked to other processes carried out in Europe and at the international level, such as the NIFO, the Common European Data Spaces and the IGIF.

All respondents have provided their feedback on how they imagine the evolution and the enhancement of LIFO in the DEP. Italy and Norway have also listed some evolutions and enhancements to consider in the future.

The table below highlights the views from the participating countries about the evolution and the enhancement of the LIFO process.

Legend of symbols used in the table below:

⊕ European level

▮ National level

	Czech Republic	Italy	Norway	Slovenia
Evolution and enhancement of LIFO in the Digital Europe Programme (DEP)	<ul style="list-style-type: none"> A stronger link to the formal instruments built up under NIFO. 	<ul style="list-style-type: none"> Further support and strengthening of the LIFO to make it a regular and systematic process Development of tools and solutions needed for the implementation of the EULF Blueprint recommendations Financing or strong support for the Member States in implementing specific actions suggested in the EULF Blueprint. 	<ul style="list-style-type: none"> Geographic information must be considered to be part of mainstream IT and not domain-specific. Better integration of LIFO with NIFO. 	<ul style="list-style-type: none"> Align the LIFO process with the Common European Data Spaces to achieve the goal of a Green Deal.
List of at least three evolutions/enhancements		<ul style="list-style-type: none"> Defining an EU common monitoring mechanism to measure the effective use of location data and services in digital public services 	<ul style="list-style-type: none"> Enhanced capabilities in LIFO for national assessment Consider integration with IGIF (if possible) 	

	Czech Republic		Italy		Norway		Slovenia	
			<ul style="list-style-type: none"> • Making LIFO the reference process for location interoperability in all assessment processes (EIF, DESI ...). 		<ul style="list-style-type: none"> • Integration with NIFO (spatial is not special) 			

7. Conclusions and recommendations on future use and development of LIFO

7.2. Conclusions

The case studies discussed with the four countries have first highlighted the awareness of the participating countries about the relevance and the usefulness of the LIFO process in the context of location interoperability, although the process is voluntary and not mandated by legislation and/or other binding documents.

This awareness is quite evident as the LIFO process is recognised as an important opportunity and a common assessment mechanism to:

- have a measure and an up-to-date picture of location interoperability in the individual countries and across Europe;
- identify possible gaps in the implementation of the EULF Blueprint recommendations and support Member States and European bodies to improve and fine-tune national and European (digital government and location) strategies and policies;
- find out the best practices of existing initiatives and applications to show the benefits of the use of location information in digital public services;
- enable the exchanges with different organisations from different participating countries by sharing different views and identifying potential strengths and weaknesses/areas needing improvement.

These studies are also useful for identifying possible improvements and enhancements to consider for the future rounds of data collection, for the whole process and for the tools implemented or developed. The proposals for these improvements and enhancements are based on the implementation activities experienced, and the information gathered in the interviews by the participating countries.

There is still limited awareness of the use and benefits of LIFO outside of the geospatial community and for the wider interoperability domain. Some initiatives have been taken to extend this awareness, but LIFO is rather seen as the offer of an additional geospatial solution.

7.3. Recommendations

Based on the findings of these case studies, some recommendations can be drawn concerning the five dimensions investigated with the contributors and described above. The recommendations are listed below, indicating for each of them the entity that could initiate the recommended actions.

1.1.1 Assessment of the LIFO process

Recommendation	Initiator
Recommendation 1: Make the EULF Blueprint an official/legal reference document and give to the LIFO process a structured/legal basis	JRC/DEP management body
Recommendation 2: Simplify some questions in the LIFO survey where relevant	JRC / LIFO team
Recommendation 3: Make a preselection of the answers in the LIFO survey given the previous year	JRC / LIFO team
Recommendation 4: Implement a systematic and dynamic monitoring mechanism to collect information throughout the year	Participating countries (supported by JRC)

1.1.2 LIFO online tools

Recommendation	Initiator
Recommendation 5: Improve the usability of the tools by implementing the interventions suggested by the participating countries	JRC / LIFO team
Recommendation 6: Add new features to the online tools to improve data visualisation and analysis	JRC / LIFO team
Recommendation 7: Implement a self-assessment tool at the organisation/area and national level.	Participating countries (supported by JRC)

1.1.3 Outreach

Recommendation	Initiator
Recommendation 8: Identify a priori the types of organisations/actors to provide the information and the evidence needed for the LIFO survey	LIFO team + participating countries
Recommendation 9: Support the countries with additional promotional material and other tools for communication	JRC/LIFO team + participating countries

1.1.4 Usage of LIFO results

Recommendation	Initiator
Recommendation 10: Increase the awareness of EULF recommendations and actions and the LIFO process in national, sub-national and local administrations	Participating countries (ISA ² WG GS)
Recommendation 11: Classify best practices according to parameters facilitating their search for easier reuse (e.g. geographical scope, domain etc.).	JRC /LIFO team

1.1.5 Evolution of LIFO

Recommendation	Initiator
<p>Recommendation 12: Make LIFO a regular and systematic process for location interoperability in all assessment processes</p>	<p>JRC/DEP management body / LIFO team + participating countries (ISA² WG GS)</p>
<p>Recommendation 13: Support the development of tools and solutions needed for the implementation of the EULF Blueprint recommendations</p>	<p>JRC</p>
<p>Recommendation 14: Support Member States in the implementation of specific actions suggested in the EULF Blueprint</p>	<p>JRC/National co-ordinators</p>
<p>Recommendation 15: Link/align LIFO in a stronger and better way with other processes and frameworks (NIFO, Common European Data Spaces, IGIF)</p>	<p>JRC/DEP management body</p>

Annex 1 – Case study questionnaire and interviewees

Appreciation is given to the following representatives of the four participating countries:

- Czech Republic: Eva Pauknerová (Czech Office for Surveying, Mapping and Cadastre - CUZK);
- Italy: Gabriele Ciasullo (Agency for Digital Italy – AgID);
- Norway: Morten Borrebaek (Norwegian Mapping Authority – Kartverket);
- Slovenia: Tomaž Petek, Irena Ažman (Surveying and Mapping Authority of the Republic of Slovenia).

Below is the questionnaire's text used in the interviews with the country representatives.

1. Assessment of the LIFO process

- 1.1. What is your assessment of the LIFO process, also from the point of view of the different actors involved in your country?
- 1.2. What is, if any, the added value of the LIFO process in the context of location interoperability?
- 1.3. What actions are required from your point of view to improve the LIFO process at EU and national level?

2. LIFO online tools

- 2.1. Have you already used the LIFO online tools made available on Joinup?
- 2.2. How usable are those tools?
- 2.3. Do the online tools improve the readability and the analysis of the LIFO results?
- 2.4. In what ways can the online tools be improved further, e.g. through new interactive features?
- 2.5. How do you envisage using the online tools in the future?
- 2.6. Would it help to have other types of tools, e.g. self-assessment tools? If self-assessment tools were made available, at what level should they be designed - organisation, dataset, digital public service, or a combination?

3. Outreach

- 3.1. What actors have been involved in helping you collect LIFO data?
- 3.2. Have you been able to capture all the required evidence? If not, how can the process be improved to enable this?
- 3.3. What communications have you made of the results? Or plan to make?
- 3.4. How can the LIFO team or the published materials help in these communications?
- 3.5. Do you engage with colleagues involved in EIF implementation? Are there successful synergies? Can you or the LIFO team help further?

4. Usage of LIFO results

- 4.1. Have you put in place any formal or informal mechanisms to analyse and assess the 2019 and 2020 LIFO results (described and analysed in the factsheets and state of play report), possibly in a coordinated and common approach at national level?
- 4.2. To what extent and how have the LIFO results contributed to the further implementation of EULF recommendations in your country?
 - 4.2.1. If the LIFO results are not used yet, do you plan to use them? To what extent and how?
 - 4.2.2. If the LIFO results are used, has the implementation of EULF recommendations in 2020 benefited from the LIFO assessment in 2019? In what way?
- 4.3. Based on LIFO results, what actions/initiatives/activities/tools have been/are being carried out/implemented or planned to improve the adoption of location interoperability good practices and delivery of benefits in your country?
 - 4.3.1. Please select the focus areas that apply and provide a brief description of the actions taken.
 - 4.3.1.1. Policy and strategy alignment
 - 4.3.1.2. Digital government integration
 - 4.3.1.3. Standardisation and reuse
 - 4.3.1.4. Return on investment
 - 4.3.1.5. Governance, partnerships and capabilities
 - 4.3.2. By which actors and at which level of government (national, sub-national, local) are the actions/initiatives/activities/tools described above put in place?
- 4.4. What are the main benefits expected or achieved from any actions taken based on LIFO results?
- 4.5. What are the main barriers that hamper the use of the LIFO results to improve location interoperability in your country?
5. Evolution of LIFO
 - 5.1. How do you imagine the evolution and the enhancement of LIFO in the Digital Europe Programme (DEP) in order to make the process as helpful as possible for the Member States?
 - 5.2. Please list at least three evolutions/enhancements you would like to see considered for LIFO in the DEP.
6. Further remarks
 - 6.1. Please share any other concluding remarks or any materials to support the replies to the questions above.

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