

ELISE action
Webinar Series

Interoperable Frameworks and Solutions for cross- border and cross-sector services

Massimo PEDROLI, Deloitte IT
Lorena HERNANDEZ, European Commission JRC
Simon VREČAR, European Commission JRC (consultant)

05/05/2021 14:00 CEST (UTC+2)



European Location Interoperability Solutions for e-
Government

*Enabling Digital Government through
Geospatial and Location Intelligence*



What is ELISE?



WHAT?

ELISE stands for **E**uropean **L**ocation **I**nteroperability **S**olutions for e-Government. It is one of the more than 50 actions in the European Interoperability Programme ISA2

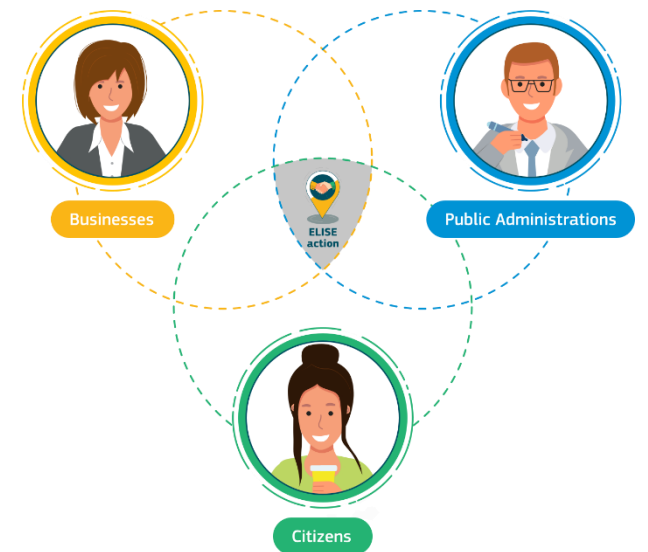


WHAT FOR?

To support Digital Government Transformation by making the best use of location data and technologies in an interoperable manner

FOR WHOM?

For all: citizens, businesses and public administrations



A BIT OF HISTORY...

- 2004**
IDABC: Interoperable Delivery of European eGovernment Services
- 2010**
ISA: Interoperability solutions for public administrations
Actions:
EULF
ARE3NA
- 2016**
ISA²: Interoperability Solutions for European Public Administrations, Businesses and Citizens
ELISE
- 2021**
DIGITAL: Digital Europe Programme

ELISE builds upon the outcomes of the former ISA actions EULF and ARE3NA. It is the only action of the ISA² Programme, aiming to improve Digital Government through Location Interoperability.

ELISE action objectives



ELISE action



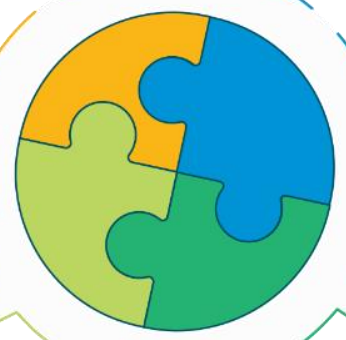
Policy support

Supporting different policy initiatives at European and national levels



Interoperable frameworks and solutions

Providing reusable interoperable cross-border and cross-sector frameworks and solutions for public administrations, business and citizens



Emerging trends and technologies

Discovering how emerging trends and technologies enable more effective use of location data for policy and digital public services



Building a Knowledge base

Building a Geo-Knowledge base to inform and train stakeholders and promote the adoption of good practices and innovations in location data

ELISE outputs and topics



STUDIES



APPLICATIONS



FRAMEWORKS AND SOLUTIONS



GEO KNOWLEDGE
BASE SERVICE

Evolution of Spatial Data
Infrastructures

Support of data ecosystems

Technologies for location
-enabled innovation

Collaboration models

Spatial skills for Digital
Government Transformation

Location data privacy

Improving access to spatial
datasets

Supporting cross-border
and cross-sector data sharing

Location intelligence for policy
and digital public services

Supporting innovation, growth
and Return of Investment

Managing data quality

Supporting the creation of
common EU public services

5 Years

SOME ACHIEVEMENTS

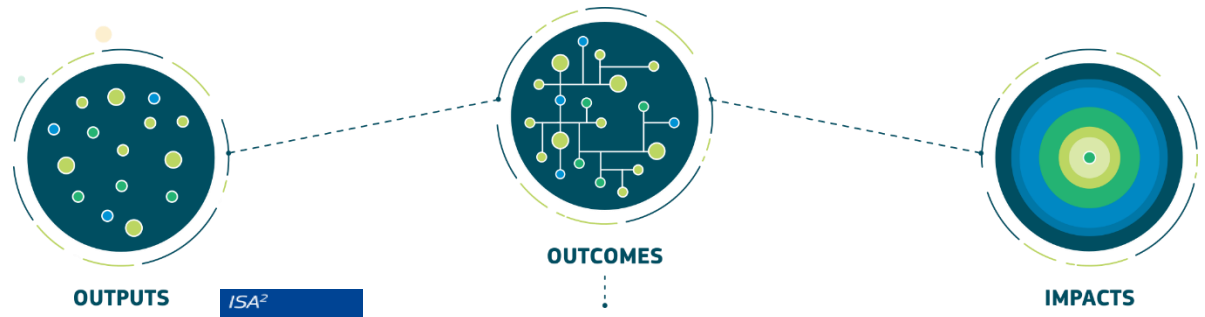
Active
engagement of
ISA² Member
States

- ✓ Complemented the EIF and NIFO with an extensive location interoperability framework and state of play assessments
- ✓ Helped put the INSPIRE Directive into practice with tools for data providers and a strong focus on use cases
- ✓ Built an extensive community of European and international stakeholders
- ✓ Raised awareness on new approaches to location-enabled digital transformation
- ✓ Helped to assess the role of SDIs in evolving business models, e.g. data ecosystems, digital platforms.
- ✓ Assessed new policies (e.g. GDPR, European Data Strategy) and technologies (e.g. Artificial Intelligence, Blockchain, API...)
- ✓ Promoted and facilitated better links on location data between public and private actors
- ✓ Provided guidance on improving spatial awareness and analytical skills for best use of data

3 EIF
Toolbox
solutions



Aims of Knowledge Transfer





Our speaker

Massimo PEDROLI








Senior consultant in Public
Sector

Deloitte.

The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.



What we will cover today

-  1. Location data and location interoperability for cross-border services
-  2. State of play on sharing and using location data across European borders
-  3. User journeys: Interoperable cross-border solutions on society
-  4. ELISE action outcomes fostering location-based cross-border services
-  5. Key messages, challenges and future outlook
-  6. Q&A
-  7. References

1

*Location data and location
interoperability for cross-border services*

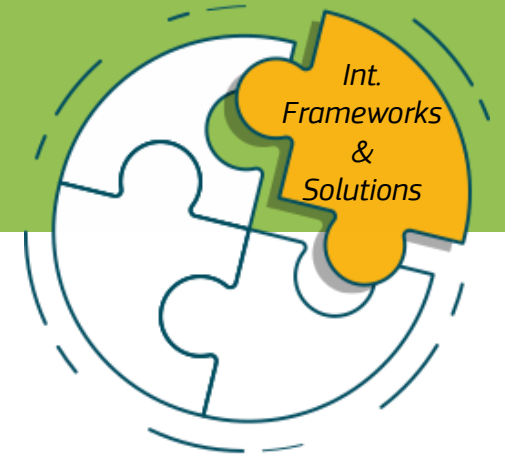
BUT... WHY THE FOCUS ON “LOCATION”?

Location data or geospatial data can comprise anything from addresses, buildings, road networks, bus stops and public spaces to distribution of population, species or diseases and dynamic data such as weather, traffic, air quality and more. In this respect, we can say, “Location is all around us” or “spatial is everywhere”.

Moreover, location data:

- 01** Facilitates data integration
- 02** Allows taking data-driven decisions based on where and why things happen
- 03** Eases communication through intuitive map representations
- 04** Enables visualisation of sophisticated models and simulations



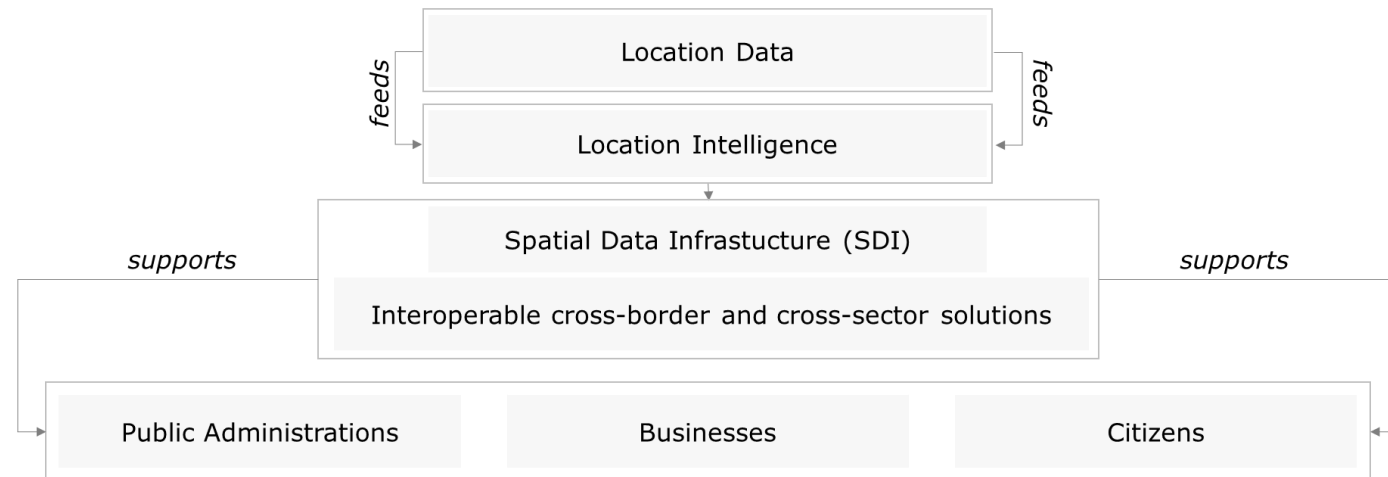


Location interoperability

“Location interoperability is the ability of organisations, systems and devices to exchange and make use of **location data** with a coherent and consistent approach”

Location data are among the **most borderless datasets** in a data ecosystem

Solutions exploiting cross-border datasets can offer public administrations, businesses and citizens **seamless cross-border services** thus facilitating the creation of a **Digital Single Market**





Cross-border services for the European Digital Single Market



Breaking down barriers to **cross-border** online activity, allowing individuals and businesses to seamlessly access and engage in online activities irrespective of their nationality or place of residence

This objective has been at the core of the **European Digital Single Market Strategy**:



- Pillar 1 – Access:** Ensure better access for consumers and business to online goods and services **across Europe**
- Pillar 2 – Environment:** creating the right conditions and a level playing field for digital networks and innovative services to flourish
- Pillar 3 – Economy & Society:** maximising the growth potential of the digital economy and implementation of the **Digital Single Gateway**



Location data is an enabler for the achievement of the Digital Single Market pillars as it **facilitates data integration**

ELISE support to the development of interoperable frameworks and solutions



Interoperable frameworks and solutions

Overcoming interoperability barriers requires investments in **common and reusable interoperable solutions**, which are most effective when included in a **consistent framework** leveraging common approaches, data and components

ELISE is developing a framework of **guidelines, recommendations** and **reusable tools** for implementing and enabling geospatial interoperability

The *European Location Interoperability Framework Blueprint* is a **key guidance to Location interoperability**



2

*State of play on sharing and using
location data across European borders*

State of play on sharing and using location data across European borders

Current State



Digital innovation and collaborative developments are progressing in different policy areas but **more can be achieved with partnerships**. A **user-driven SDI** support for digital public services, data ecosystems and digital platforms across the policy landscape is required.

Indicators	LIFO 2019 average
7.2 Delivering cross-border digital public services across government using the country's spatial data infrastructure (SDI)	0,63
7.2.1 To what extent are INSPIRE conformant datasets and services from the country used in cross-border digital public services?	0,70

Vision



Adoption of a **coordinated** and **collaborative** approach to the **development** of interoperable cross-border and cross-sector solutions

Benefits



- Reduced time for implementation
- Reduced costs
- Guaranteed interoperability
- Burdens' reduction

Development of interoperable & reusable tools

ELISE has funded the **development** of several interoperability tools.

The two **ELISE flagship solutions** are:

Re³gistry



Examples of re-user	Instance
Slovakia	Systém registrov ENIPI
Republic of North Macedonia	NSDI registry
European Commission	Geosmartcity registry

Reference Validator

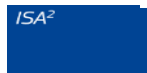
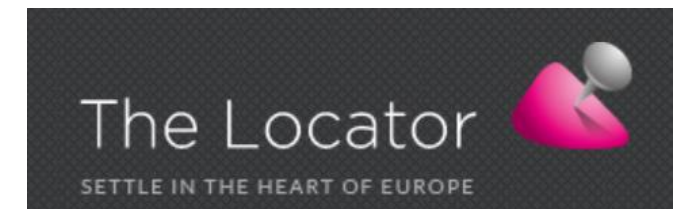


Examples of re-user	Instance (if public)
The Netherlands - Geonovum	https://validatie.geostandaarden.nl/
Germany - Federal state Baden-Württemberg (BW)	https://www.geoportal-bw.de/validator/
Denmark - Danish Map Supply	https://etfvalidator.kortforsyninge.n.dk/validator/

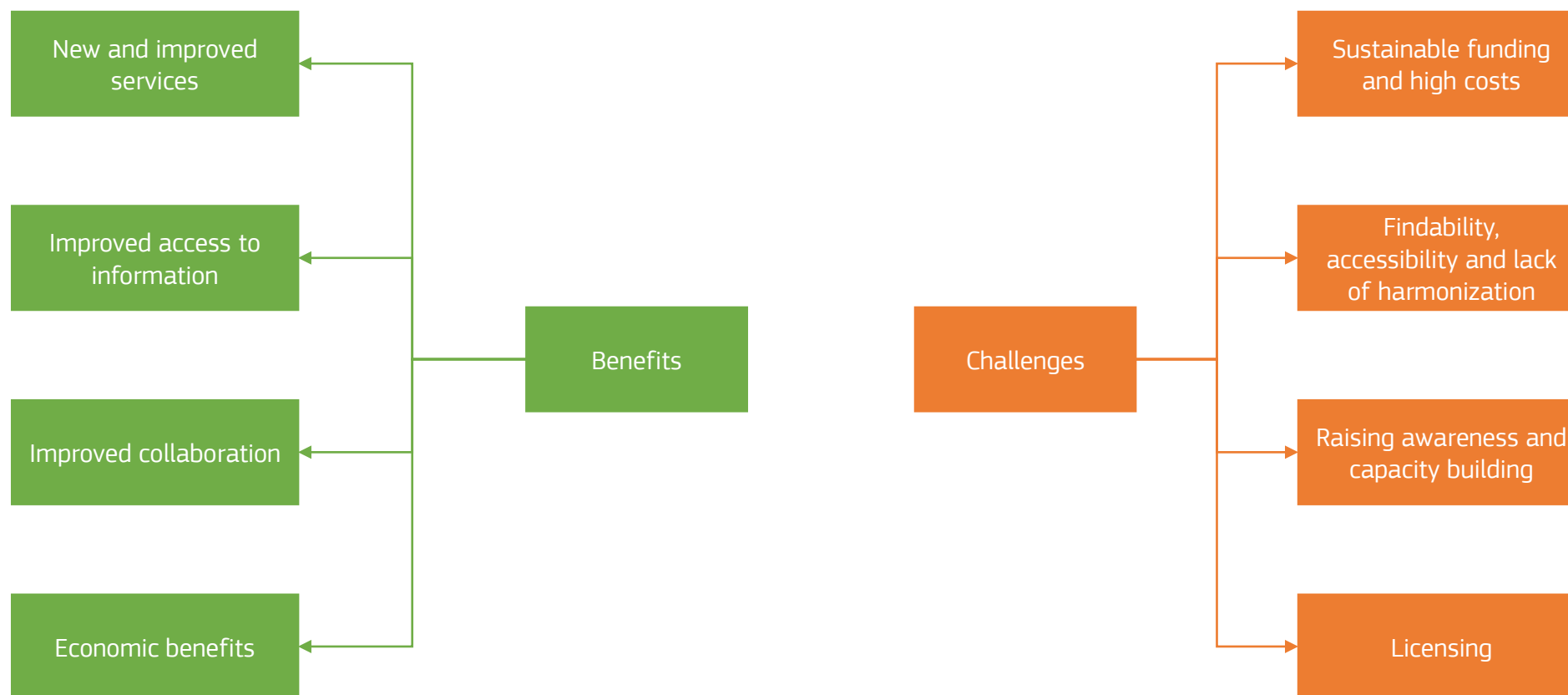


Using location information to enable cross-border services

ELISE has studied **how location data is used across borders** by both the public and the private sector



Analysis of the benefits and challenges in the use of location data in cross-border contexts



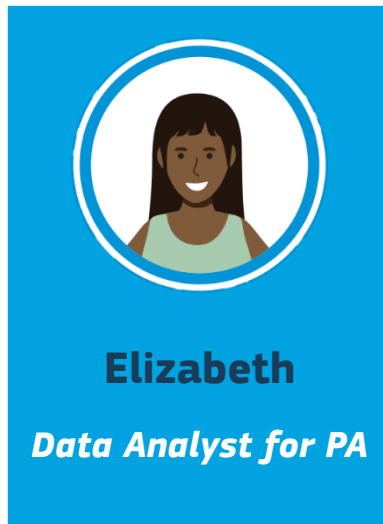
3

User journeys: Interoperable cross-border solutions on society

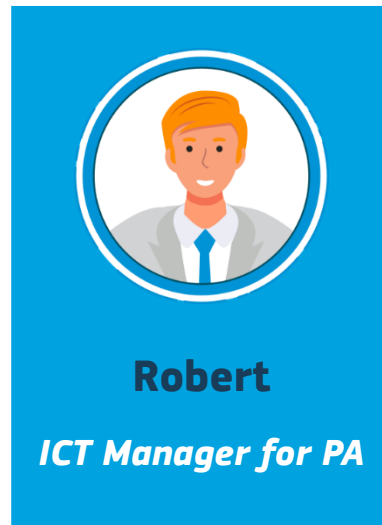
Supporting different “*personas*” dealing with cross-border (location) services

Representatives of different stakeholders groups covering:

- National and local level
- Private and public sector



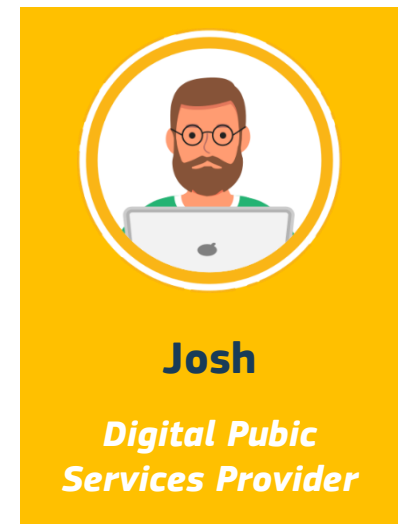
Elizabeth
Data Analyst for PA



Robert
ICT Manager for PA



Anne
Citizen



Josh
Digital Public Services Provider

The “User journey approach”, tackling **real needs** of

- Data Analyst for PA
- ICT Manager for PA
- Digital Public Services
- Citizen



Elizabeth



Data analyst in
Public
Administration



About

Elizabeth is a data analyst in the Public Administration. She has to understand **how to transform national SDIs data** in data which meet the requirements defined in the **INSPIRE Technical Guidelines** as she is preparing an environmental impact assessment for a cross-border project.



Challenges and Risks

- Access to **reliable and sustainable data in the right format** for most private sector actors trying to work with open geospatial data.
- **Integrate** and link geospatial **data with other data types**.



ELISE Guidance

The **INSPIRE reference validator** allows to pick the resources (data, services or metadata), select the tests to launch and check the results to see how well if the data are aligned with the requirements defined in the INSPIRE Technical Guidelines (or if they should be optimised).



Robert



ICT manager in
Public
Administration



About

Robert is an ICT manager in the Public Administration of a border region. He wants to **develop a geoportal** which enables users to view the majority of the maps created by GIS-GR in the form of cross-border layers on an interactive map.



Challenges and Risks

- **Miswriting** in data entering.
- Limited users experience due to **linguistic barriers**.



ELISE Guidance

The user can leverage **INSPIRE Re3gistry** to:

- **Avoid common errors**
- Facilitate **internationalization of user interfaces** by providing multilingual labels
- Ensure **semantic interoperability** when exchanging data between systems and applications



Josh



Digital public
services provider



About

Josh is a digital public services provider in the transportation domain. He wants to provide an **online service** offering a **multimodal public transport planner** integrating international, national, regional and urban public transport connections including bus, rail and air.



Challenges and Risks

- Cost and time for developing a new online service may determine **low Return on Investment**
- Required data quality may come at a **price** that is **not affordable**.
- If a single authentic data source exists, it **may not be fit for purpose**
- **Difficulties in connecting data**



ELISE Guidance

- Use an **online catalogue** (e.g. <https://joinup.ec.europa.eu>) of re-usable technical solutions
- **Use authentic data registers** and **data services**
- Use **persistent unique identifiers** when reusing location data solutions.



Anne



Citizen



About

Anne has to **obtain a unique identifier** (in particular, a tax identification code), which serves as an identification in many life events in communication with public authorities as well in business or other commercial processes. That unique identifier is **calculated based on an algorithm with input of many parameters**. One of the input parameters is the country of birth of the applicant.



Challenges and Risks

- **Integration, fading** and changes in the **name of the countries** over the years
- Authorities **without the historical lineage** of the datasets available
- **Different authorities** providing **different unique identifiers** for the same person (applicant)



ELISE Guidance

EU gazetteer data service(s) would be useful in relation to:

- Detailed and accurate information on addresses
- Historical information on administrative units
- Buildings and their function of use

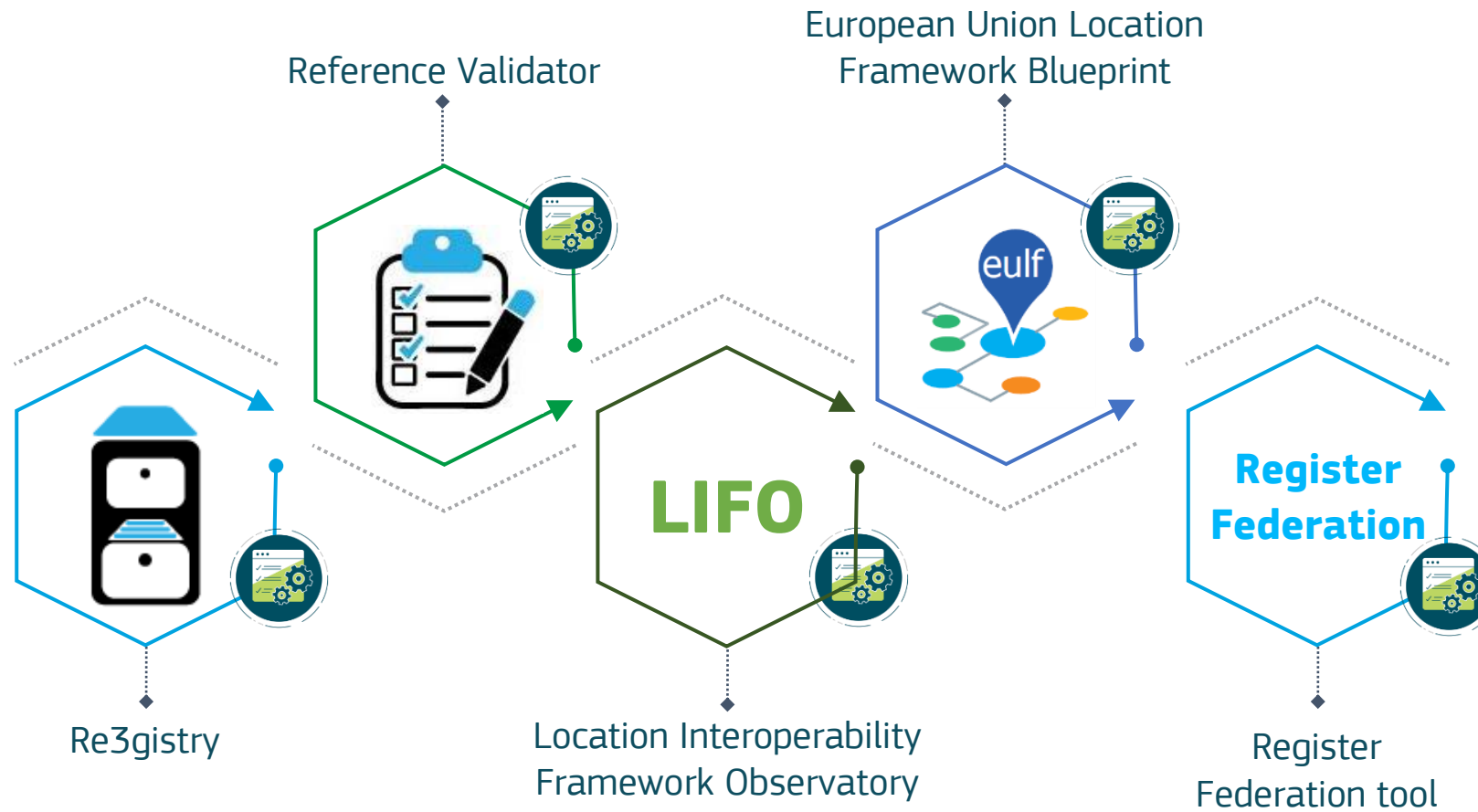


4

*ELISE action outcomes fostering
location-based cross-border services*



ELISE interoperable solutions





Re3gistry & Register Federation



The **Re3gistry** software is a **reusable open-source solution for managing and sharing 'reference codes'** through the use of persistent URIs

The **Register Federation** is a distributed federation of registers



Re3gistry provides a **central access point** that allows **labels** and **descriptions** for **reference codes** to be easily looked up by humans or retrieved by machines.



Non-domain specific



Developed in a context neutral way to be deployed in any sector



Licensed under EUPL 1.2



OPENAPI INITIATIVE

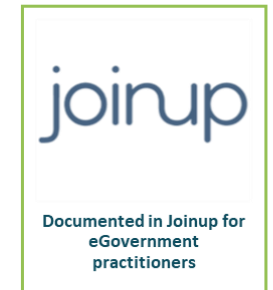
Built-in APIs compliant to Open API initiative



Moved to GitHub to improve collaboration



Development community driven



Documented in Joinup for eGovernment practitioners



EIF Toolbox

Recognised in the European Interoperability Framework toolbox



Reusers in public administrations but also in the private sector



Continued support under the Digital Europe Programme



Reference Validator



Reusable **open source tool**, based on the ETF open source testing framework

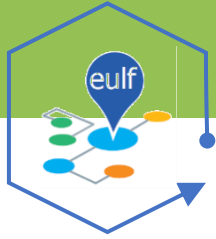


Allows **checking automatically** the correctness of data based on predefined rules



Non-domain specific





The EULF Blueprint and its “future vision” on cross-border services



The EULF Blueprint is a **guidance framework** for using location information in policy and digital public services



List of **recommendations** and implementation guidance, both from **demand-side** and **supply-side**.



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



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



Location Interoperability Framework Observatory

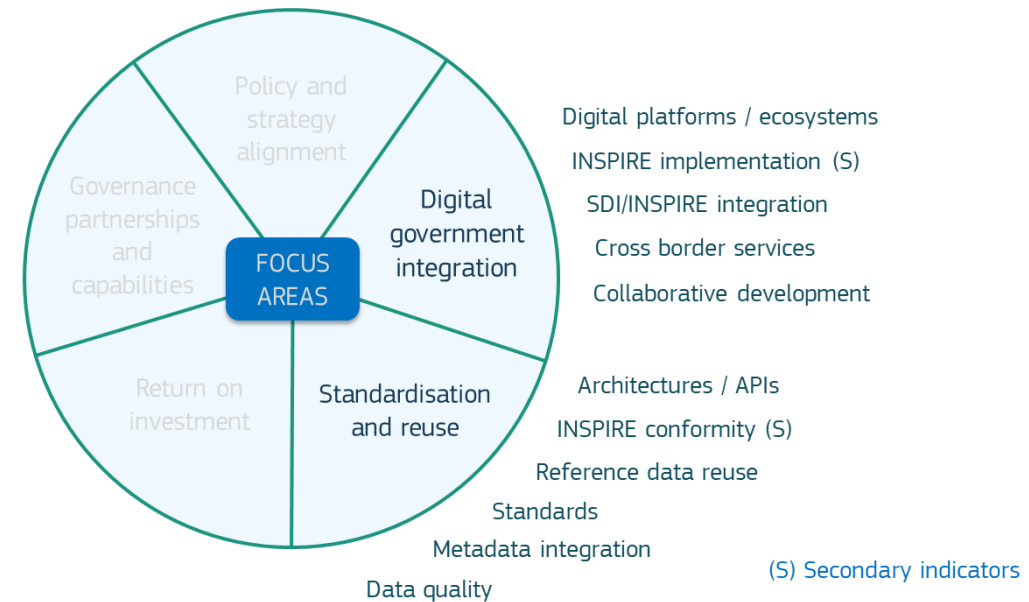


The **Location Interoperability Framework Observatory** (LIFO) is a domain-specific observatory relating to location interoperability.



Tool to **monitor, assess** and **report** on the state of play of location data in Member States' **digital government programmes**

EULF Blueprint and LIFO indicator topics





ELISE cross-border/trans-national pilots

ELISE has developed **cross-border pilots** and applications to test location data interoperability principles in the following sectors:



Energy efficiency

- Common structured data models
- Data access agreements
- Common data access mechanisms
- Centralised and distributed ICT infrastructures



Transport

- Up-to-date flow of road safety data
- Agreement between road authorities and commercial map providers in Norway and Sweden
- Guidance on linear referencing and exchange standards



Marine

- Requirements analysis to link INSPIRE and MSFD
- MSFD spatial data requirements mapped to INSPIRE data models
- Recommendations for the alignment of EMODnet and INSPIRE



Cultural heritage

- Evaluate the feasibility of using existing Pan European Gazetteer solutions to satisfy users' requirements in terms of lining location with place names and vice versa respecting

Location facilitates **data integration** across **sectors and borders**



ELISE's upcoming studies on location data used in cross-border context

Sharing and using geospatial data across-borders

Increased use of spatial data for more advanced analysis and processing

Difficulties in **accessing** (cost) and **using** spatial data (data quality)

Significant impact of the INSPIRE Directive, Copernicus programme and Open Data Directive on the **availability of spatial data**

Evolution of the access to spatial data for environmental purposes

Technological approaches to have **an increasing impact** on the facilitation of sharing and using cross-border data

Data-sharing is the **key enabler** and challenge to cross-border sharing of data

Building **sustainable ecosystems** and adopting **collaborative approaches** is essential to SDIs

5

Key messages, challenges and future outlook

Key messages



Location interoperability is a **key enabler** to cross-border sharing of data



Adopting a **common interoperability framework** and **reference architecture** ensures that interoperability is addressed, especially when there is the intention to reuse existing solutions



Spatial data Infrastructures and their evolution **into data spaces** can foster the cross-border exchange and use of location data.



Ensure location assets being procured are **interoperable** and **reusable**

Cross-border services in the Digital Europe Programme

Digital Europe Programme (DIGITAL),

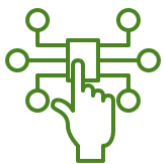
Objective 5: Deployment, best use of digital capacities and Interoperability.



Implementing **harmonised cross-border digital services infrastructure** and promote interoperable, multi-lingual, cross-border or cross-sector solutions and common frameworks within public administration.



Supporting **interoperability** and **standardisation**, as well as fostering the deployment of EU cross-border applications.



Deploying **decentralised solutions** and **infrastructures** required for large-scale digital applications, such as smart rural areas in support of transport, energy, agricultural and environmental policies.

Building on ELISE for the Digital Europe Programme



Supercomputing



Artificial intelligence



Advanced digital skills



Ensuring the wide use of digital technologies across the economy and society



Cybersecurity



ELISE action

Set up a true European data space

Support the design and delivery of specialised programmes and traineeships for the future experts in key capacity areas

Support the upskilling of the existing workforce through short trainings reflecting the latest developments in key capacity areas

Support European public administrations and industry to deploy and access state-of-the-art digital technologies and build trust in the digital transformation

Support high impact deployments in areas of public interest, such as smart communities

6 Q&A

7

References



Bibliography

1/4

STUDIES	Reference Validator	Location Interoperability Framework Observatory (LIFO)	European Union Location Framework (EULF) Blueprint	Register Federation	Re3gistry
Boguslawski, Valayer, van Gansen, Keogh, Pignatelli, European Union Location Framework Blueprint, EUR 30374 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-22068-8, doi:10.2760/096595, JRC117551.			X		
JRC, 2020, LIFO: Location Interoperability Framework Observatory. 2019 State of play report		X	X		
Pignatelli, F. Boguslawski, R. Fernández de Soria, A. Gielis, I. Bargiotti, L. Goedertier, S. Feasibility study for an EU Gazetteer common service			X		



Bibliography

2/4

STUDIES	Reference Validator	Location Interoperability Framework Observatory (LIFO)	European Union Location Framework (EULF) Blueprint	Register Federation	Re3gistry
Sharing and using geospatial data across-borders	X			X	X
Evolution of the access to spatial data for environmental purposes	X			X	X
Martirano G; Pignatelli F. INSPIRE Harmonisation of existing Energy Performance Certificate datasets: European Union Location Framework Energy Pilot . EUR 28304 EN. Luxembourg (Luxembourg): Publications Office of the European Union; 2016. JRC104587			X		



Bibliography

3/4

STUDIES	Reference Validator	Location Interoperability Framework Observatory (LIFO)	European Union Location Framework (EULF) Blueprint	Register Federation	Re3gistry
<p>Borzacchiello, M., Boguslawski, R. and Pignatelli, F., Improving accuracy in road safety data exchange for navigation systems: European Union Location Framework Transportation Pilot , EUR 28301 EN, Publications Office of the European Union, Luxembourg, 2016, ISBN 978-92-79-64456-6 (online),978-92-79-75032-8 (ePub), doi:10.2791/227108 (online),10.2791/643543 (ePub), JRC104569.</p>			X		
<p>Martirano G; Borzacchiello M; Boguslawski R; Pignatelli F; Zangheri P; Paci D; Maschio I; Bertoldi P. Buildings related datasets accessible through the INSPIRE geoportal European Union Location Framework (EULF) Project Energy Pilot . EUR 28014. Luxembourg (Luxembourg): Publications Office of the European Union; 2016. JRC102276</p>			X		
<p>Bloem J, Boguslawski R, Borzacchiello M, Cipriano P, Kona A, Martirano G, Maschio I, Pignatelli F. Location data for buildings related energy efficiency policies . EUR 27411. Luxembourg (Luxembourg): Publications Office of the European Union; 2015. JRC96946</p>			X		



Bibliography

4/4

STUDIES	Reference Validator	Location Interoperability Framework Observatory (LIFO)	European Union Location Framework (EULF) Blueprint	Register Federation	Re3gistry
Martirano, G., Pignatelli, F., Borzacchiello, M., Boguslawski, R., Maschio, I., Bloem, J., Kona, A. and Rivas Calvete, S., EULF Energy Pilot - Final Report Phase 1 , EUR 28939 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-77077-7, doi:10.2760/079326, JRC109578..			X		

Join us tomorrow...

06/05 at 14:00h
**Emerging Trends &
Technologies**





Thank you



Unless otherwise noted the reuse of this presentation is authorised under the CC BY 4.0 license.
Icons in pages 13, 16, 20, 32, 36, 41, 42, 43 by thenounproject.com



Stay tuned



Join the *ELISE* community in [JoinUp](#)

JOIN THIS COLLECTION



[@eu_location](#)



eu-location@ec.europa.eu



[ELISE channel](#)

SUBSCRIBE