

# Data integration

## An asset for policy support and research

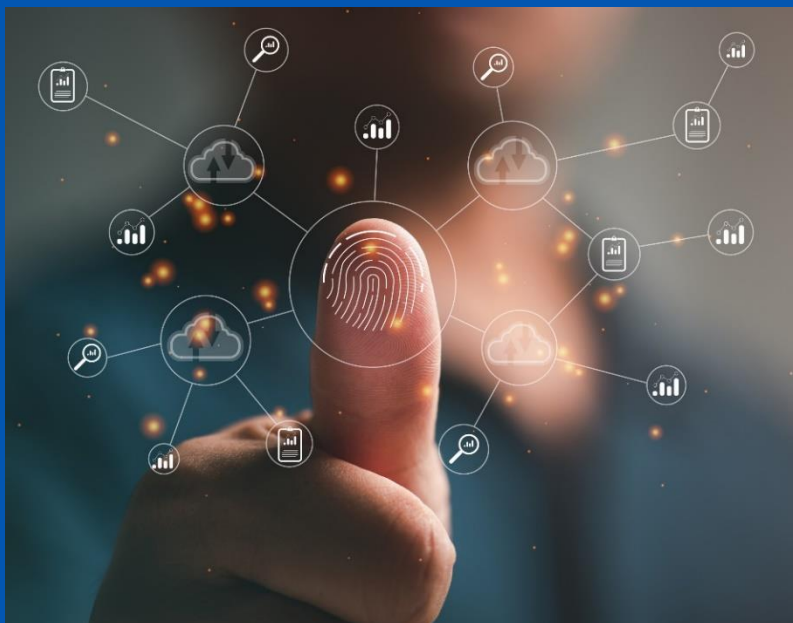


photo by Looker Studio, image #315352794. Source: [stock.adobe.com](https://www.stock.adobe.com)

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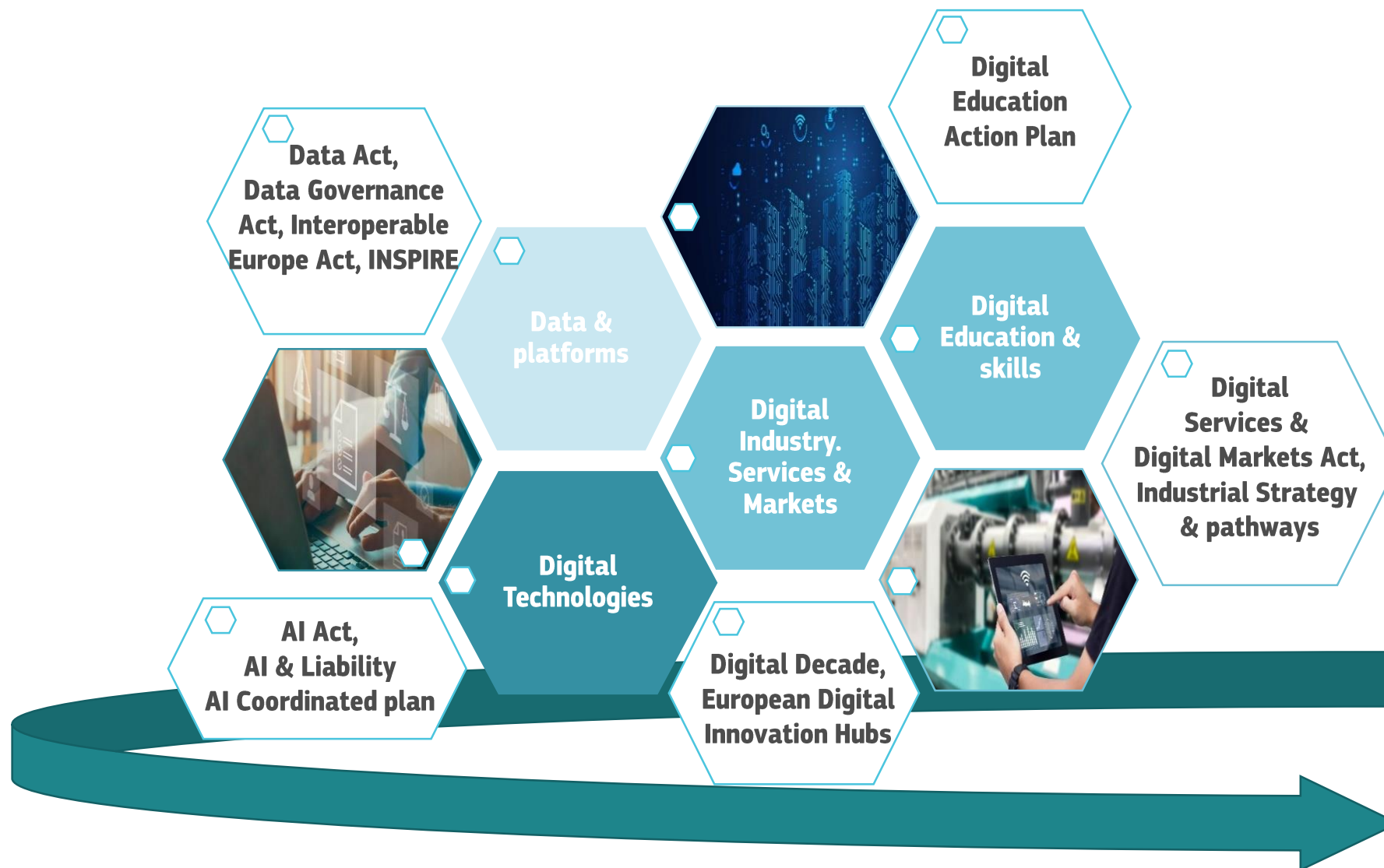
*Data integration in Europe – A perspective on challenges, findings, added value and cost savings in the EU context*

*UNGGIM: Europe webinar – 15<sup>th</sup> March 2023*



The **JRC Digital Economy Unit** studies the **current and emerging facets of digital transformation**, and its **impacts on the European economy, society and environment**, in support of EU digital policies. In particular, the unit provides **techno-socio-economic research** on the impacts and strategic role of **digital technologies, data and digital platforms** for the economy and society, as well as on **digital skills and digital education**, and the **modernisation of the public sector**.

# EU's Digital Strategy: building blocks



# Horizontal data sharing legislation

## Overview of data actions

**[D]** What data are we talking about?

**[H]** Who holds such data?

**[A]** What policy intervention?

Data governance Act

### *Good governance of data cannot wait*

**[D]** Data voluntarily made available by data holders

**[H]** Public sector, business, individuals, researchers

**[A]** Make such data is easier to share in a controlled manner (technical, legal and with organisational support); Build trust in data sharing; Ensure data interoperability access sectors

Digital Market Act

### *Data: a key element of Big Tech's market power*

**[D]** Data held by online platforms originating from the users (both businesses and individuals)

**[H]** Online platforms

**[A]** Among other policy options, identify appropriate data access and data portability remedies

Implementing Act under Open Data Directive

### *High quality government data for SMEs & innovation*

**[D]** 'High value' Open Government Data (core reference data)

**[H]** Public sector

**[A]** Make such data available for re-use free of charge

Data Act

### *Better access to and control over data for a fair data economy*

**[D]** Co-generated, IoT data from industry and individuals, Big Data sources held by business

**[H]** Business

**[A]** Ensure flexible use of Big Data sources by government for the common good; Establish fairness in use of co-generated, IoT data; Make sure that Europeans stay in control over their data vis-à-vis third country jurisdictions; Examine IPR legislation for possible obstacles

## *“Europe fit for the Digital Age”*

Entered into force on 23 June 2022

Proposed by EC on 15 December 2020

Entered into force on 1 November 2022

Open Data Directive  
Entered into force on 16 July 2019

Implementing Act on High Value Datasets  
Adopted on 21 December 2022  
Published on 20 January 2023  
(Official Journal of the EU)

Proposed by EC on 23 February 2022



# Data economy and digital platforms

*Building a data - oriented economy that respects European values.*



**Organisational and technical enablers** for data sharing  
(European data spaces,  
Interoperability solutions,  
standards)



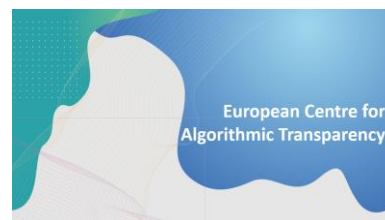
**Economic incentives** for digital economy, **benefits of digital platforms** and associated risks

**Input to the regulatory interventions** needed to develop a fair data economy  
(DSA and DMA)



**INSPIRE, Green Deal Data Space, Digital Twins**

**European Centre for Algorithmic Transparency**



# European strategy for data

- Aims to create a European single market for data
- Highlights the problems to address
  - data availability, interoperability, quality
  - governance & infrastructures
  - skills & data literacy
  - cybersecurity
- Envisages the establishment of
  - a common European data space
  - sectoral data spaces

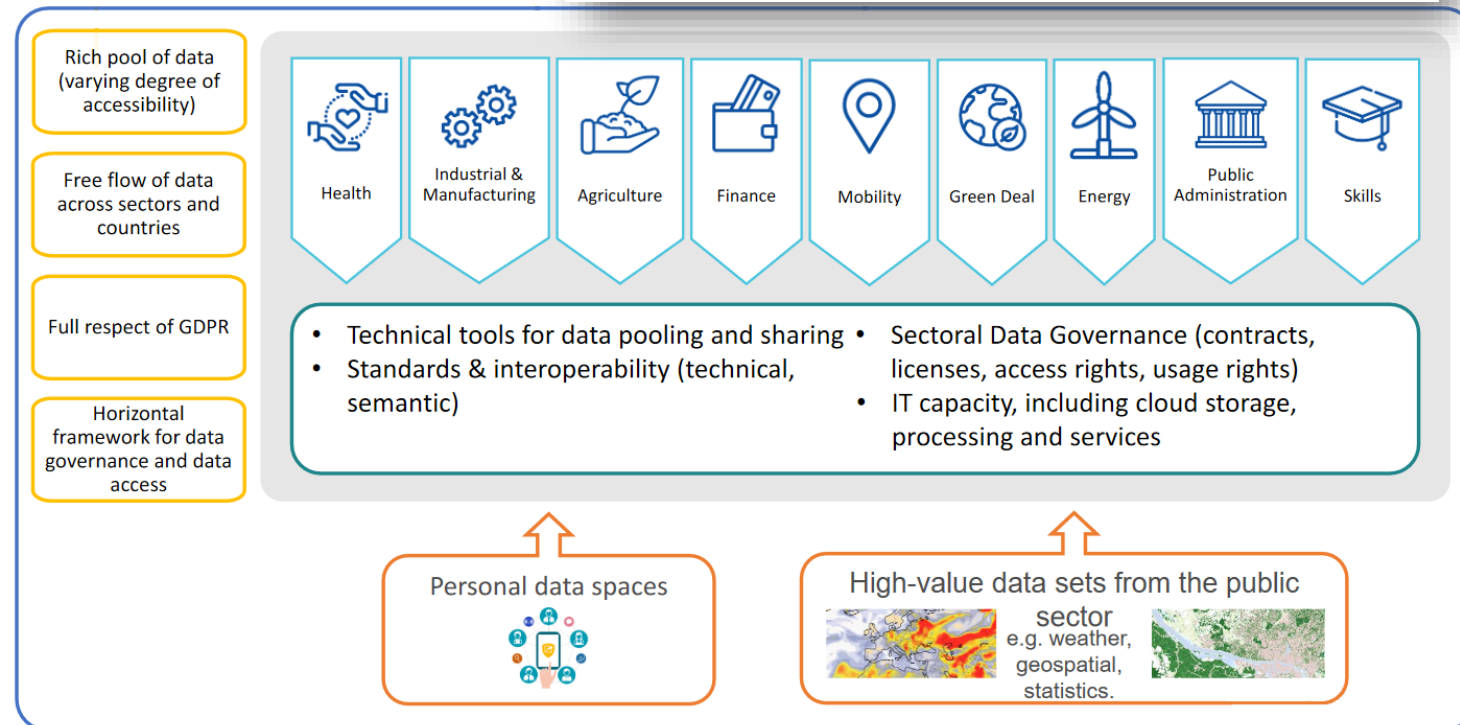
<https://digital-strategy.ec.europa.eu/en/policies/strategy-data>



Brussels, 19.2.2020  
COM(2020) 66 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European strategy for data



# Implementing Act on high-value datasets

- High-value datasets (HVD)
  - datasets the **re-use** of which is associated with important **socio-economic benefits**
- To be made available
  - for **free**, under **open access** licenses (CC BY 4.0 or less restrictive)
  - in **machine-readable formats**, via **APIs** and (when relevant) as a bulk download
- Thematic categories of HVD

*Geospatial*

*Earth observation  
and environment*

*Meteorological*

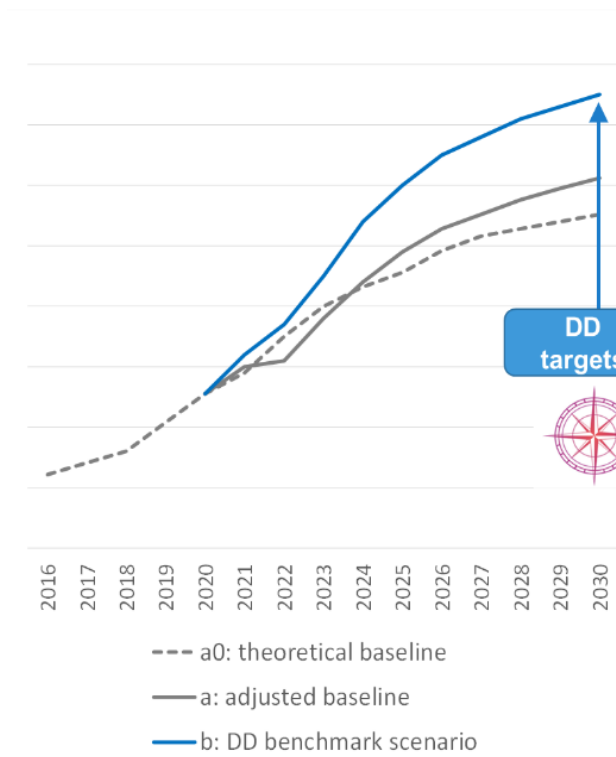
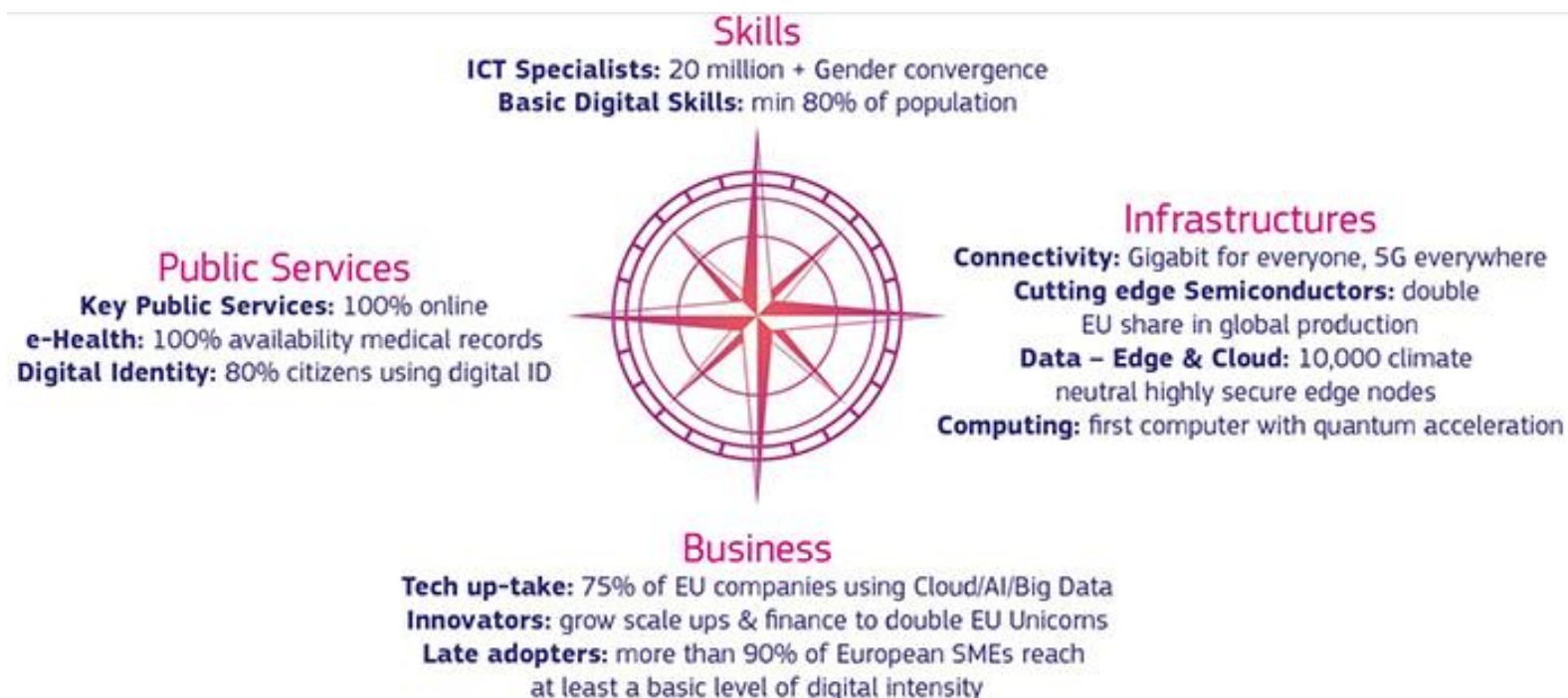
*Statistics*

*Companies and  
company ownership*

*Mobility*

- The Implementing Act defines
  - the **list of high-value datasets** for each thematic category
  - the **requirements** for their provision: key attributes, granularity, formats, license, etc.

# Europe's Digital Decade targets by 2030



- What does need to do to achieve its **Digital targets** for skills, infrastructures, business and government by 2030?
- We help **define** and **monitor** the **projected trajectories** of the EU and Member States towards their 2030 objectives.



# Innovation for the public sector

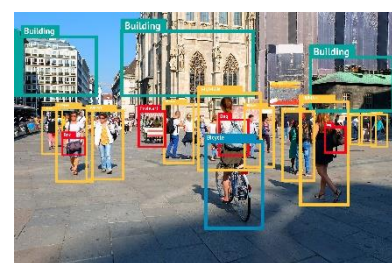


**Interoperability solutions** for public administrations



Framework, methodology and tools to improve the **innovative use of technology** for delivery of public services

**Emerging** technologies, standards and approaches that can **catalyse innovation** across the EU



Impact of **emerging technologies** on new **forms of governance** in the public sector, like **smart communities**

Regional and local innovation, **Digital Innovation Hubs**



Roles of **digital technologies** and **interoperability** in public administration, and in particular in the use of **trustworthy AI**

# Challenges with cross-border interoperability in practice



Car driver wants to get a digital parking ticket in a city outside the country his car is registered in.

*But: The parking app only allows to enter national license plates.*

A hospital wants to share the capacities of free intensive care beds with the nearest hospital that is on the other side of the border.

*But: The current legal and technical framework just allows to share nationally.*



A city wants to implement traffic management solutions. They are looking for a good example.

*While such good examples exist across Europe, they are difficult to find and reuse.*

# EU policy on interoperability – What is already happening?



Non-binding **European Interoperability Framework** (latest version from 2017). National implementation monitored through National Interoperability Framework Observatory (NIFO).



**Support to interoperability activities** since 1995 (currently under DEP), solutions to be found on **online platform (JoinUp) for interoperability solutions** and **community** since 2011 through the ISA and ISA<sup>2</sup> programmes.



**Cooperation with Member States** through the informal CIO network (since 2015), and the Expert Group on interoperability of European public services (since 2020).

# Why a legislative package?



## EU's digital strategy

- Key Public Services: 100% online by 2030
- Cross-border interoperability as an enabler



## Gaps in existing legislation



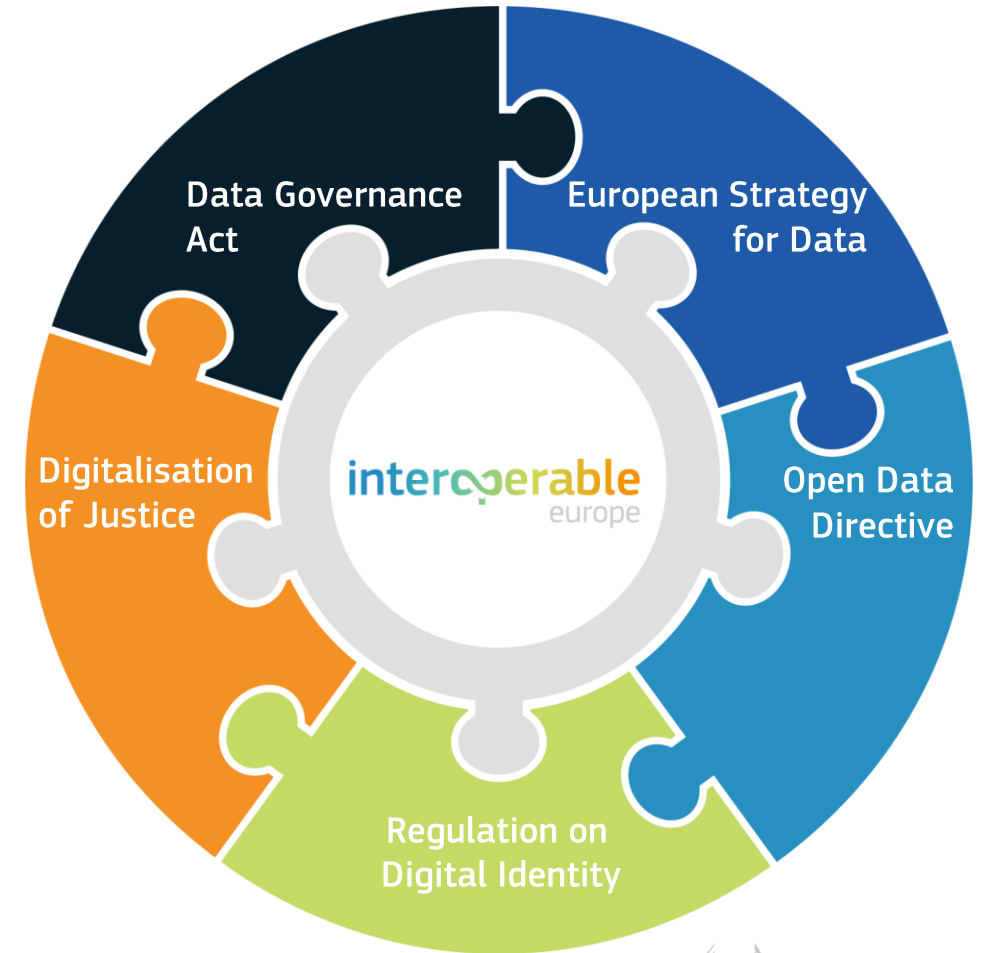
**Inefficient governance of interoperability efforts** between EU policies, the Commission and Member States for all administrative levels and sectors.



**Lack of common minimum interoperability specifications, shared solutions, standards.**



**Lack of an 'interoperability-by-default' approach** in the design and implementation of EU and MS's legislation and policies.



# Interoperable Europe Act – Ambition and objectives

Help EU and Member States administrations to deliver connected digital services to citizens and businesses across Europe



To ensure a **consistent, human-centric EU approach** to interoperability from policy-making to policy implementation



To establish an interoperability **governance structure** to enable public administrations to work together and agree on shared interoperability solutions



To create an ecosystem of interoperability solutions for the EU's public sector so that public administrations in the EU and other stakeholders can **contribute to and re-use such solutions, innovate together and create public value**

Communication  
to set the context  
and next steps

Supports the  
achievement of the  
Digital Decade 2030  
targets



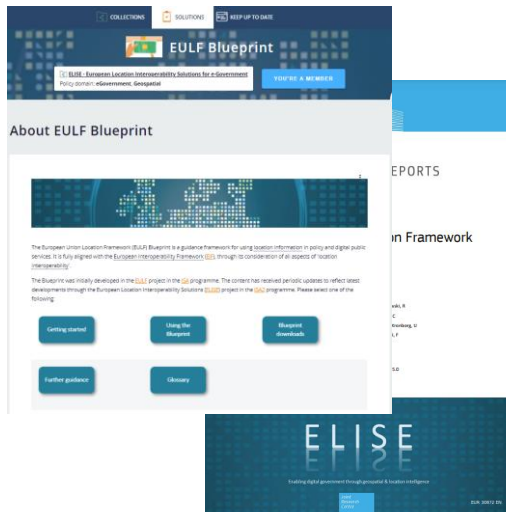
# Main deliverables of the Regulation

- Mandatory **interoperability assessment**: Impacts on cross-border interoperability of the legal, organisational, semantic and technical requirements for the IT system in scope (Art 3)
- Keeping '**European Interoperability Framework**' (EIF) up-to-date and strengthening alignment (Art 6)
- Common '**Interoperable Europe**' label for openly accessible & reusable solutions (Art 7), published in the **Interoperable Europe Portal** (Art 8)
- Mandatory **share and reuse** of publicly developed solutions (Art 4)
- **Innovation measures**, such as GovTech (Art 10) and regulatory sandboxes (Art 11-12)
- **Policy implementation support** projects (Art 9.), incl. trainings (Art 13) and peer reviews (Art 14)
- **Interoperable Europe Agenda** - annual strategic planning (Art 19)
- **Monitoring** - implementation of EIF, take-up of IOP solutions and development of OS solutions (Art 20)

**Join the Interoperable Europe Community!**

# European Union Location Framework (EULF) Blueprint

A **European ‘location interoperability framework’** with **guidance** for the **exchange** and **use** of location information in government policy and digital public services, allied closely to the interoperability principles and scope of the **EIF**



Online and downloadable versions

[European Union Location Framework \(EULF\) Blueprint | Joinup](#)

5 FOCUS AREAS



19 RECOMMENDATIONS



6 ROLES



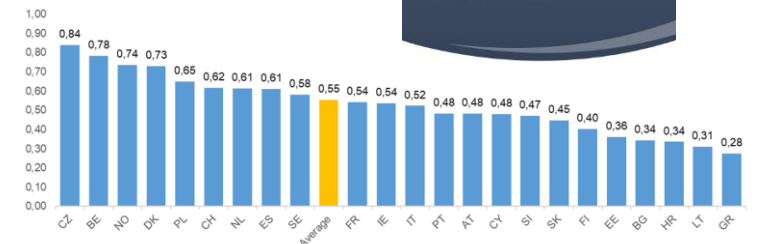
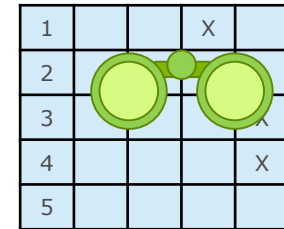
2 RELATED FRAMEWORKS



92 BEST PRACTICES



15 BENEFITS ILLUSTRATIONS



Adoption monitored through the LIFO

[Location Interoperability Framework Observatory \(LIFO\) | Joinup](#)

# EULF Blueprint and EIF

- Detailed two-way cross references in [EULF Blueprint](#) and [EIF Toolbox](#) solutions on Joinup
- Enables users to access resources from both frameworks

# Blueprint and EIF

Two-way cross references in [EULF](#) and [EIF Toolbox](#) solutions on Joinup

Click on the icons to access resources from both

			EIF UNDERLYING PRINCIPLES											EIF INTEROPERABILITY LAYERS					EIF CONCEPTUAL MODEL								
			Subsidiary and proportionality	Openness	Transparency	Reusability	Technological neutrality and data portability	User centricity	Inclusion and accessibility	Security and privacy	Multilingualism	Administrative Simplification	Preservation of information	Assessment of effectiveness and efficiency	Interoperability governance	Integrated public service governance	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability	Conceptual model	Internal information sources and services	Base registries	Open data	Catalogues	External information sources and services	Security and privacy
EULF BLUEPRINT RECOMMENDATION TOPICS	Policy and Strategy Alignment	1. Digital policy alignment												X		X		X									
		2. Data policy alignment		X	X										X									X			
		3. Location data privacy			X				X														X				X
		4. Location data for policy evidence																	X				X				
		5. Standards based procurement					X								X												
	Digital Government Integration	6. Location enabled digital public services						X				X						X									
		7. SDI integration					X								X				X						X		
		8. Open and collaborative development				X		X																		X	
		9. Location-based statistics						X															X				
	Standardisation and Reuse	10. Common architecture					X													X	X	X					
		11. Authentic data reuse				X		X													X				X		
		12. Use of standards		X			X								X			X	X	X			X				
		13. Location data quality									X								X				X	X			
	Return on Investment	14. Assessing and monitoring benefits											X														
		15. Communicating benefits											X														
		16. Innovation through access to data		X				X															X	X			
	Governance, Partnerships and Capabilities	17. Integrated governance					X							X	X												
		18. Effective partnerships					X								X		X	X									
		19. Communication and skills				X																					

# EULF Blueprint and UN-GGIM IGIF

Presented at the Geospatial World Forum (GWF) 2022  
GKI Training programme in Amsterdam

- EULF Blueprint contains detailed two-way cross references between EULF Blueprint recommendations and IGIF strategic pathways, key elements, actions and tools
- Updated in EULF Blueprint v5.2 to 2022 versions of IGIF Implementation Guides
- Enables users to access resources from both frameworks in defining their strategies, implementation actions, guidance and monitoring
- Start your exploration here:  
<https://joinup.ec.europa.eu/node/704325>

		UN-GGIM IGIF STRATEGIC PATHWAYS								
		Governance and Institutions	Policy and Legal	Financial	Data	Innovation	Standards	Partnerships	Capacity and Education	Communication and Engagement
EULF BLUEPRINT RECOMMENDATION TOPICS	Policy and Strategy Alignment	1. Digital policy alignment	X	X			X			
		2. Data policy alignment		X						
		3. Location data privacy		X						
		4. Location data for policy evidence				X	X			
		5. Standards based procurement				X		X		
	Digital Government Integration	6. Location enabled digital public services					X			
		7. SDI integration	X	X		X	X			
		8. Open and collaborative development						X		X
		9. Location-based statistics				X	X			
	Standardisation and Reuse	10. Common architecture				X	X			
		11. Authentic data reuse				X	X			
		12. Use of standards						X		
	Return on Investment	13. Location data quality				X				
		14. Assessing and monitoring benefits	X	X	X					X
		15. Communicating benefits	X	X	X					X
	Governance, Partnerships and Capabilities	16. Innovation through access to data		X			X			
		17. Integrated governance	X							
		18. Effective partnerships						X		
		19. Communication and skills			X				X	X

# JRC knowledge base on data

- Several findings around (geospatial) data sharing

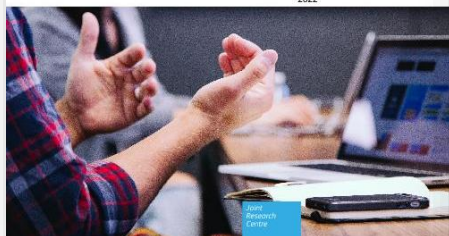


Emerging approaches for data-driven innovation in Europe

*Sandbox experiments on the governance of data and technology*

Granell C, Mooney P, Jirka S, Rele M, Ostermann F, van den Broeck J, Sarrett Verhulst S, Denck L, Dost H, Michel M, Minghini M, Kotsev A, Schade S.

2022



**INSPIRE - A Public Sector Contribution to the European Green Deal Data Space**

*A vision for the technological evolution of Europe's Spatial Data Infrastructures for 2030*

Alexander Kotsev, Marco Minghini, Viado Celi, Friso Penninga, Joeri Robbrecht, Michael Lutz

EUR 30632 EN



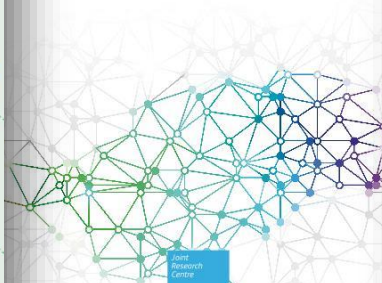
JRC SCIENCE FOR POLICY REPORT

**Application Programming Interfaces in Governments: Why, what and how**

*Channelling government digital transformation through APIs*

Vaccari L, Pozzoli M, Boyd M, Gottwiler D, Novidis D, Smith R, S, Santoro M, Nativ S, Medjaoui M, Reusa L, Switzer S, and Friis-Christensen A.

2020



**Establishment of Sustainable Data Ecosystems**

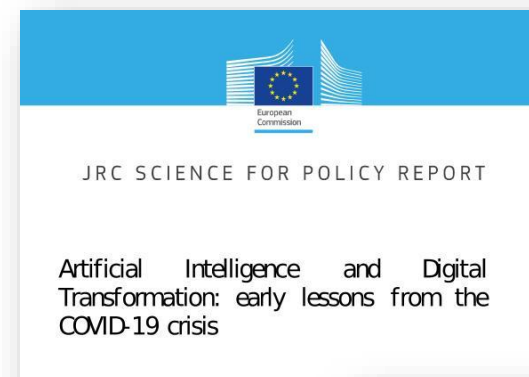
*Recommendations for the evolution of spatial data infrastructures*

Sébastien Martin, Prune Gautier, Slim Turki, Alexander Kotsev

2021

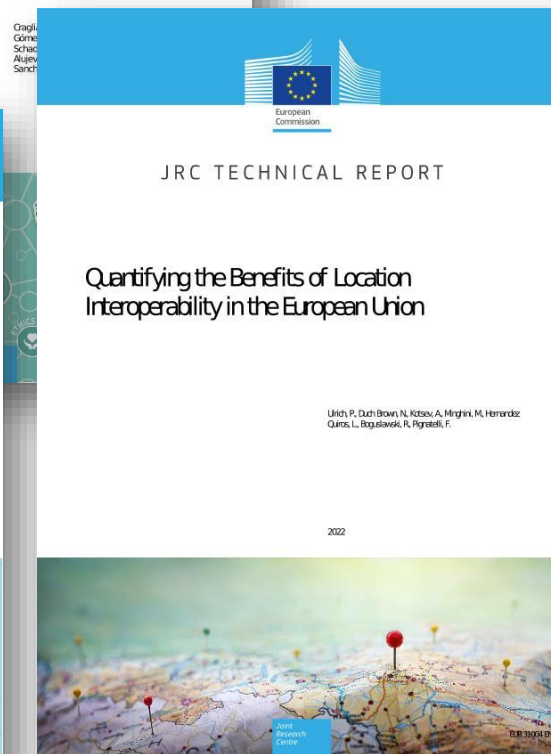


EUR 30626 EN



JRC SCIENCE FOR POLICY REPORT

**Artificial Intelligence and Digital Transformation: early lessons from the COVID-19 crisis**



JRC TECHNICAL REPORT

**Quantifying the Benefits of Location Interoperability in the European Union**

Ulrich P, Duch Brown N, Kotsev A, Minghini M, Hernandez Quiroz L, Bogutowski R, Pignatelli F.

2022





# Thank you!



EU Science Hub – Joint Research Centre



EU Science, Research and Innovation



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@EULocation



EU Location Interoperability & Innovation



<https://joinup.ec.europa.eu/collection/interoperable-europe/interoperable-europe>



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