



## The technological evolution of environmental data sharing: A perspective from the JRC

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European Commission, Joint Research Centre (JRC)

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# Outline

1. Role of JRC in data sharing and utilisation
2. Lessons learned from past experiences in environmental data sharing
3. Emerging opportunities and recommendations for EuroGEO



# 1

## Role of JRC

**ATHENS 7-9 DECEMBER 2022**



anticipate



integrate



impact

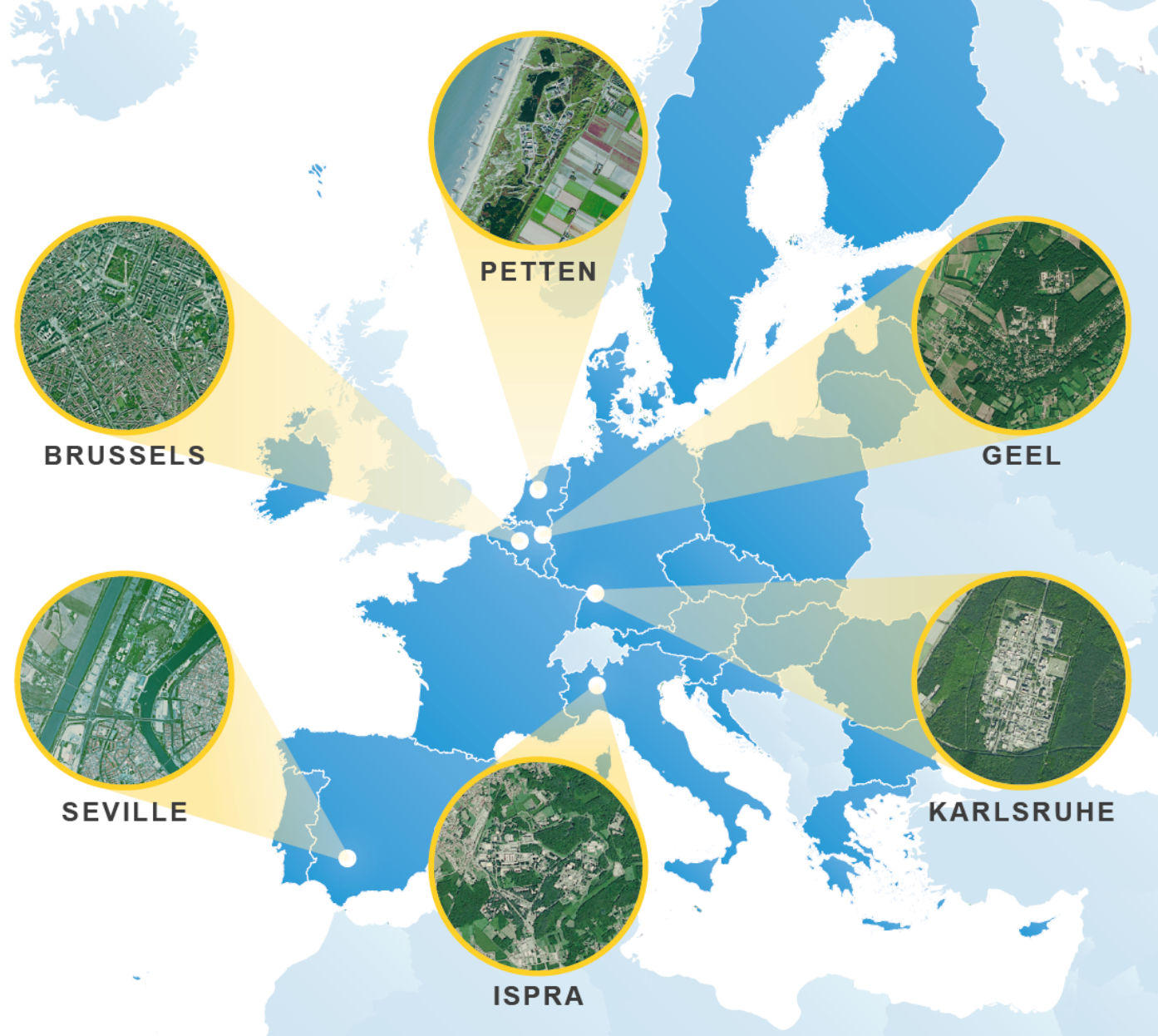
## JRC mission

- Science and knowledge service of the European Commission
- Mission to support policies with independent evidence throughout the whole policy cycle

# JRC sites

Headquarters in **Brussels**  
and research facilities located  
in **5 Member States**:

- Belgium (Brussels & Geel)
- Germany (Karlsruhe)
- Italy (Ispra)
- The Netherlands (Petten)
- Spain (Seville)



# JRC role in data sharing

Long-term experience in provision and use of data

- 110+ harmonised **databases** (mainly EU-wide & global)
- 3000+ **datasets**
- 500+ **publications** on data sharing

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**Floods in Pakistan (2022-08-29)**

Activation time (UTC): 2022-08-29 10:50:00 Event time (UTC): 2022-08-25 19:00:00 Event type: Flood (Riverine flood) Activation reason: Pakistan is experiencing abnormal monsoon rainfall nearly ten times higher than usual, resulting in uncontrollable urb...

WEB DOWN GEO

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**Flood in Pakistan (2022-09-10)**

Activation time (UTC): 2022-09-10 08:34:00 Event time (UTC): 2022-09-10 00:00:00 Event type: Flood (Riverine flood) Activation reason: Due to the on-going floods in Pakistan, the Danish Emergency Management Agency (DEMA) delegation has asked the EU Civi...

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MARTIN Sébastien; GAUTER Prune; TURKI Slim; KOTSEV Alexander

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# JRC role in INSPIRE

- Coordination of technical infrastructure since the adoption of the Directive (2007)
  - operation of software components
  - governance of technical expert groups
- Modernisation of environmental data sharing in line with the vision for the European Green Deal data space
  - 7k+ data providers sharing about 100k datasets
  - focus on high-value datasets



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Dataset Statistics

95665  
Metadata records

69730  
Downloadable Datasets

69387  
Viewable Datasets

Spatial scope coverage: ☐ National ☒ Regional

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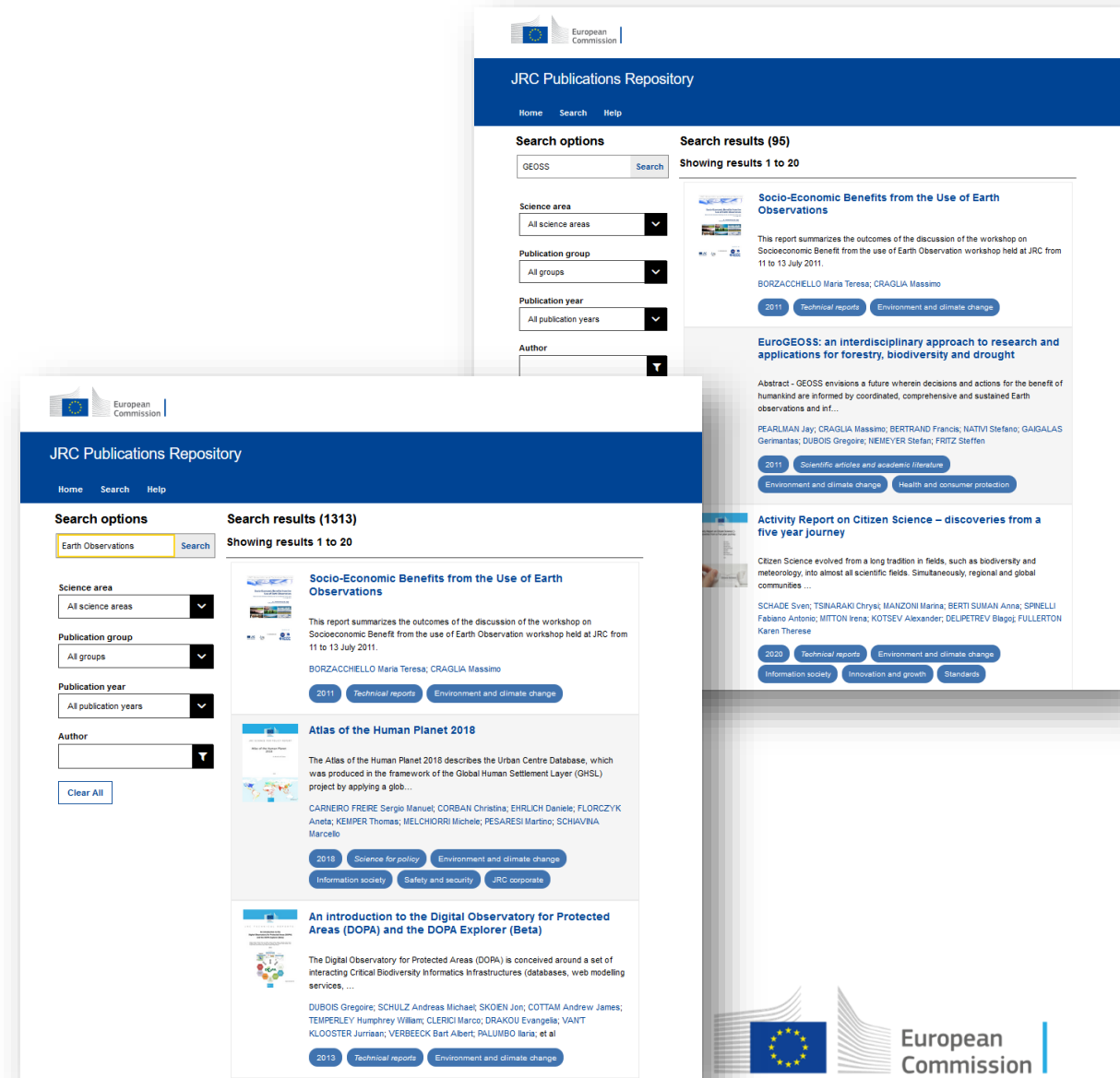
Austria 829   603   509	Finland 628   254   229	Latvia 157   98   95	Portugal 502   316   307
Belgium 582   375   512	France 221   49   13	Liechtenstein 70   11   12	Romania 103   38   39
Bulgaria 305   110   103	Germany 82743   65267   65240	Lithuania 95   95   60	Slovakia 257   164   167
Croatia 151   39   101	Greece 45   43   44	Luxembourg 309   288   277	Slovenia 98   48   59
Cyprus 42   32   34	Hungary 121   23   20	Malta 150   145   148	Spain 242   183   186
Czech Republic 91   74   79	Iceland 95   47   0	Netherlands 212   106   129	Sweden 243   191   202
Denmark 203   96   100	Ireland 80   58   51	Norway 143   72   28	Switzerland 210   0   4
Estonia 89   58   59	Italy 6498   755   487	Poland 151   92   93	

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# JRC contribution to GEO & GEOSS

- Long-term contribution to GEO
  - defined in the Horizon Europe WP
  - EAG, Programme Board, WGs
- in close **collaboration** with other EC services (RTD, DEFIS, CNECT, ENV, etc.) and the GEO community
- multiple **research outputs** with a science for policy emphasis
  - datasets
  - services
  - analyses tailored to the needs of the GEO community







# 2

# Lessons learned

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# Want to know more

Learn more here:



# Relevant lessons learned from our work on data sharing in INSPIRE

- There is almost never **one size-fits-all use case**
- The **role of public sector** as primary provider of data is changing
- If not agreed up-front, **licensing** approaches may lead to data sharing becoming a bottleneck
- Enforcing technical provisions might be challenging
  - There is a risk to **over engineer technical provisions** in data sharing
  - **Hardcoding technical requirements in legislation** is an obstacle to the evolution of the legal framework
- Governance approaches not **community-driven** and shared across different actors often fail



# 3

# Recommendations

# Build strategic partnerships with established communities



UN-GGIM  
UNITED NATIONS INITIATIVE ON  
GLOBAL GEOSPATIAL  
INFORMATION MANAGEMENT



Open  
Geospatial  
Consortium



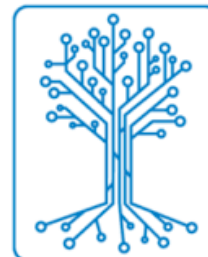
INTERNATIONAL DATA  
SPACES ASSOCIATION



OSGeo



International Society for  
**Digital Earth**



GAIA-X



# Actions

- **Legal:**

1. Avoid **overspecification** in legislation
2. Use a **standard licensing framework**

- **Organisational:**

1. Embrace **co-design** by default
2. Rethink the existing **governance** structures
3. Promote **social coding** and **sandboxing**

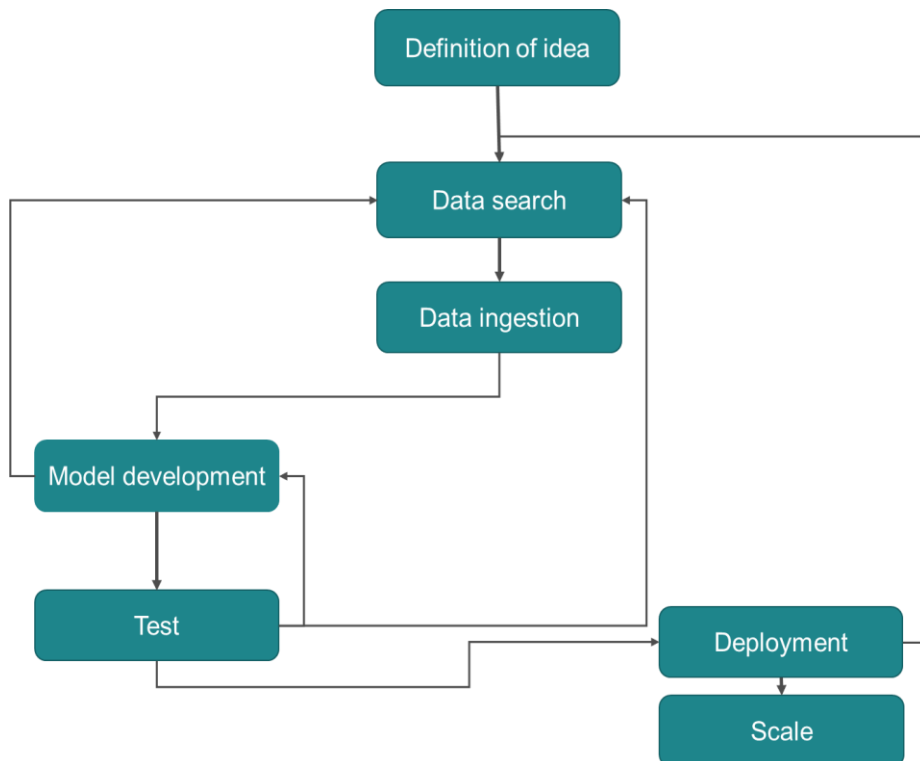
- **Technological:**

1. Consider **interoperability** as a means to an end
2. Ensure **neutrality** and embrace well-adopted standards and technologies
3. Avoid **custom extensions**
4. Embrace well-documented, **standard-based APIs**
5. Optimise data for **search engines**
6. Leverage on the developments of **federated European cloud infrastructure**



# Development life cycle & available options

- JRC working on the definition and prototypical implementation of an end-to-end **developer journey**
  - considering **emerging technologies & trends**
  - based on some **principles**:



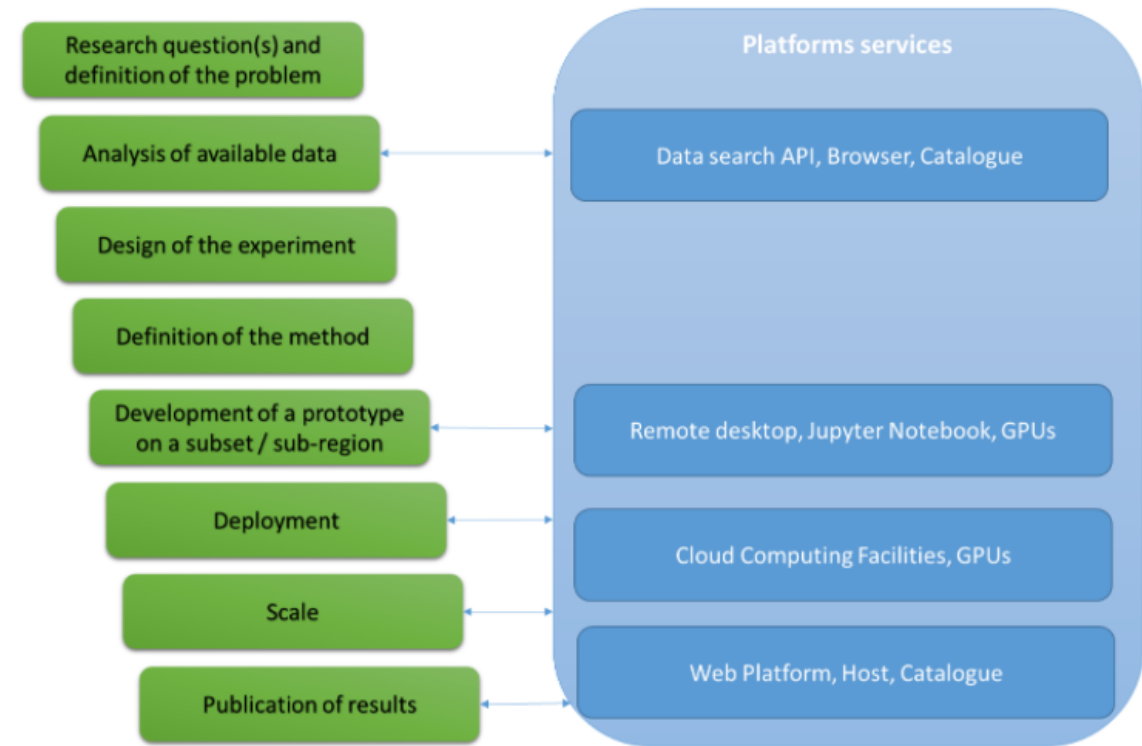
- prefer open source software
- avoid vendor/technology lock-in
- limit data movement as much as possible
- reuse existing tools/modules
- combine data from different infrastructures/services
- adhere to FAIR principles

# Prototypical data-driven EO applications

- based on the knowledge from existing European pilots & the development life cycle
- using decentralised **European infrastructures**
- **2 use cases** from different domains, addressed in an independent way

## Target

- identify inefficiencies and **bottlenecks**
- identify **potential areas of improvement**
- **document** the utility, maturity and reusability of the technical stack
- **distill recommendations** for GEO and EuroGEO
- Inform the post-2025 strategy



# Thank you



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