Vision of the development of national Spatial Data Infrastructures

Joep Crompvoets & Anka Lisec

Some slides adapted from EC JRC (Alexander Kotsev)

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Objective

Present some visionary thought about (national) spatial data infrastructures

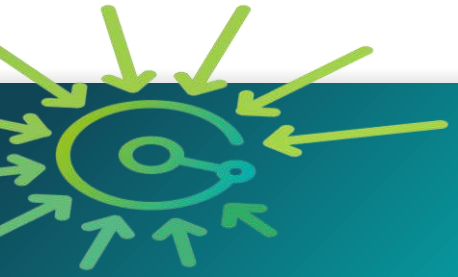
Outline

INSPIRE

Policy context

Technology trends

Conclusion



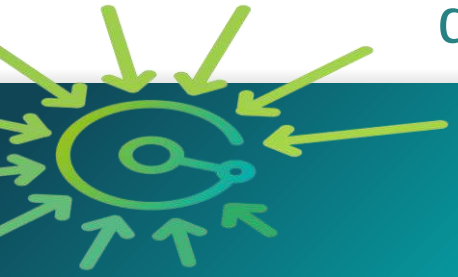
INSPIRE

Directive entered into force in 2007

- Technical and governance framework
- Data: 90000+ datasets documented through metadata
- Exposed through services, some are harmonised

Community

- 7000+ data providers
- Close collaboration with open source communities, spatial data organisations and academia



INSPIRE – the benefits

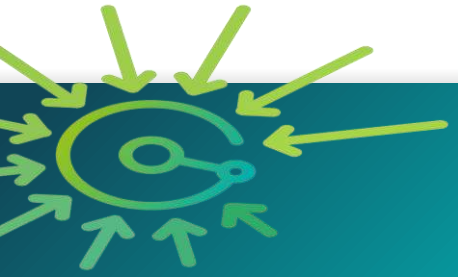
Change of mind set towards open data and data sharing

Improved efficiencies on the national level

Enabler of open-source technology

Impact on standardisation

A strong community



INSPIRE – the limitations

Provider/public sector centrism

Hardcoding of technical aspects in legislation

Overly complex specifications

Strong influence of specific standards

Parallel implementations

No evidence of who is using what and why

INSPIRE – Vision

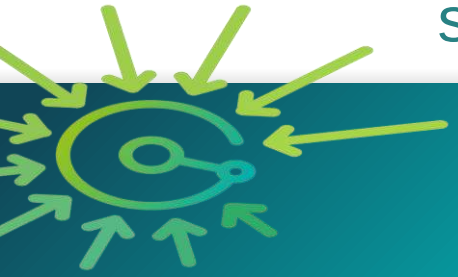
Data sharing is not a goal in itself. To remain fit for purpose, INSPIRE should support data-driven decision-making and innovation

To be sustainable, INSPIRE should ‘blend in’ with the broader ecosystem of spatial and non-spatial data, infrastructures, technologies and policies

Opening up to a broader community of implementers and users and to a wider range of applications and use cases

Making the INSPIRE framework more flexible and agile will significantly lower the entry level to the sharing and use of data

Technical approaches need to be simplified by reusing well-adopted standards and technologies



INSPIRE – Suggested actions

Legal

Avoid overspecification in legislation

Use a simple licensing framework

Organisational

Embrace co-design by default

Rethink the existing governance structures

Adopt an ecosystem approach

Technological

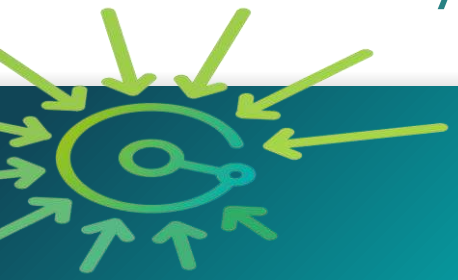
Continue to improve the discoverability/accessibility of data

Ensure neutrality and embrace well-adopted standards and technologies

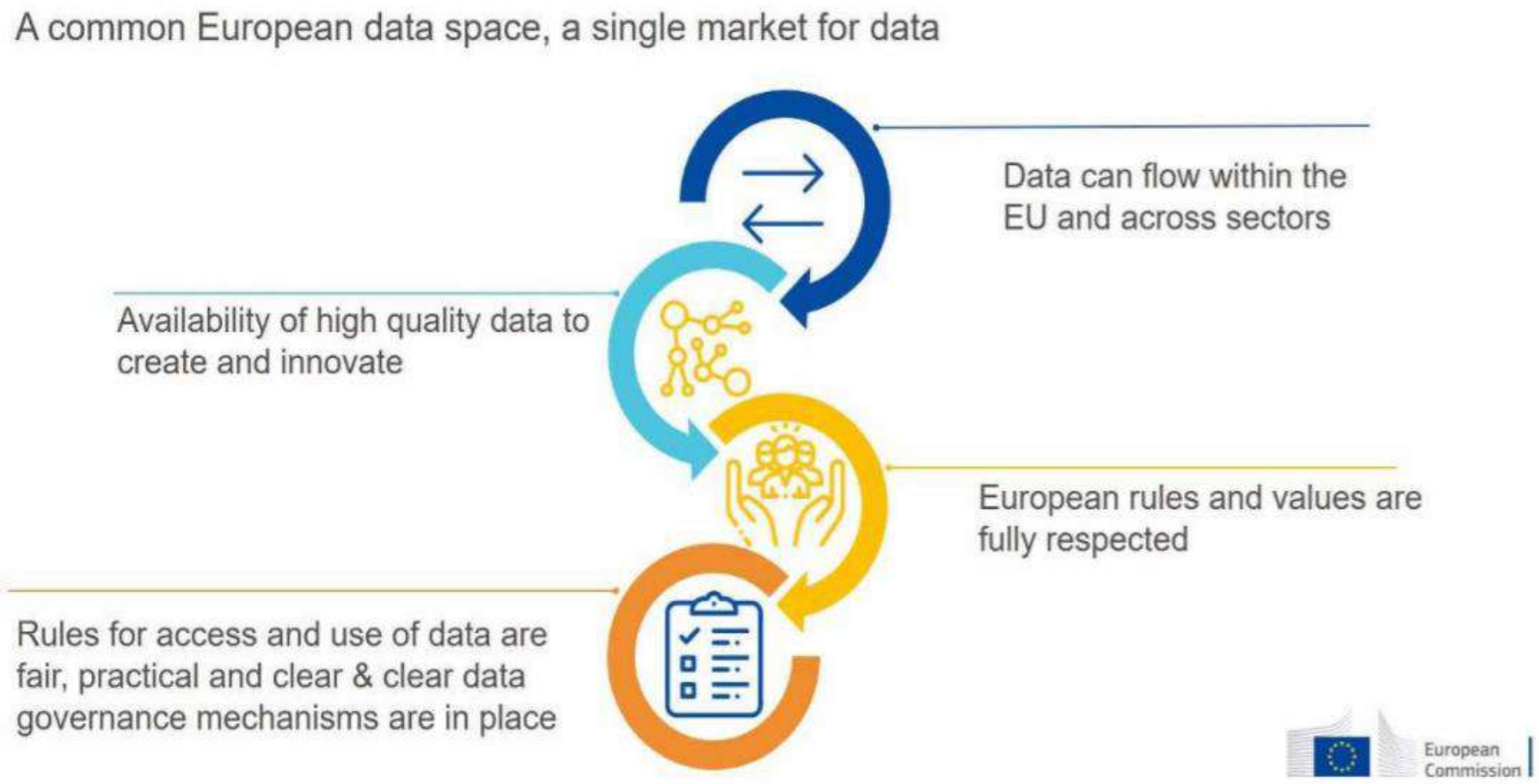
Embrace well-documented, standard-based APIs

Optimise data for search engines

Leverage on the developments of federated European cloud infrastructure



Policy context – European strategy for data (2020)



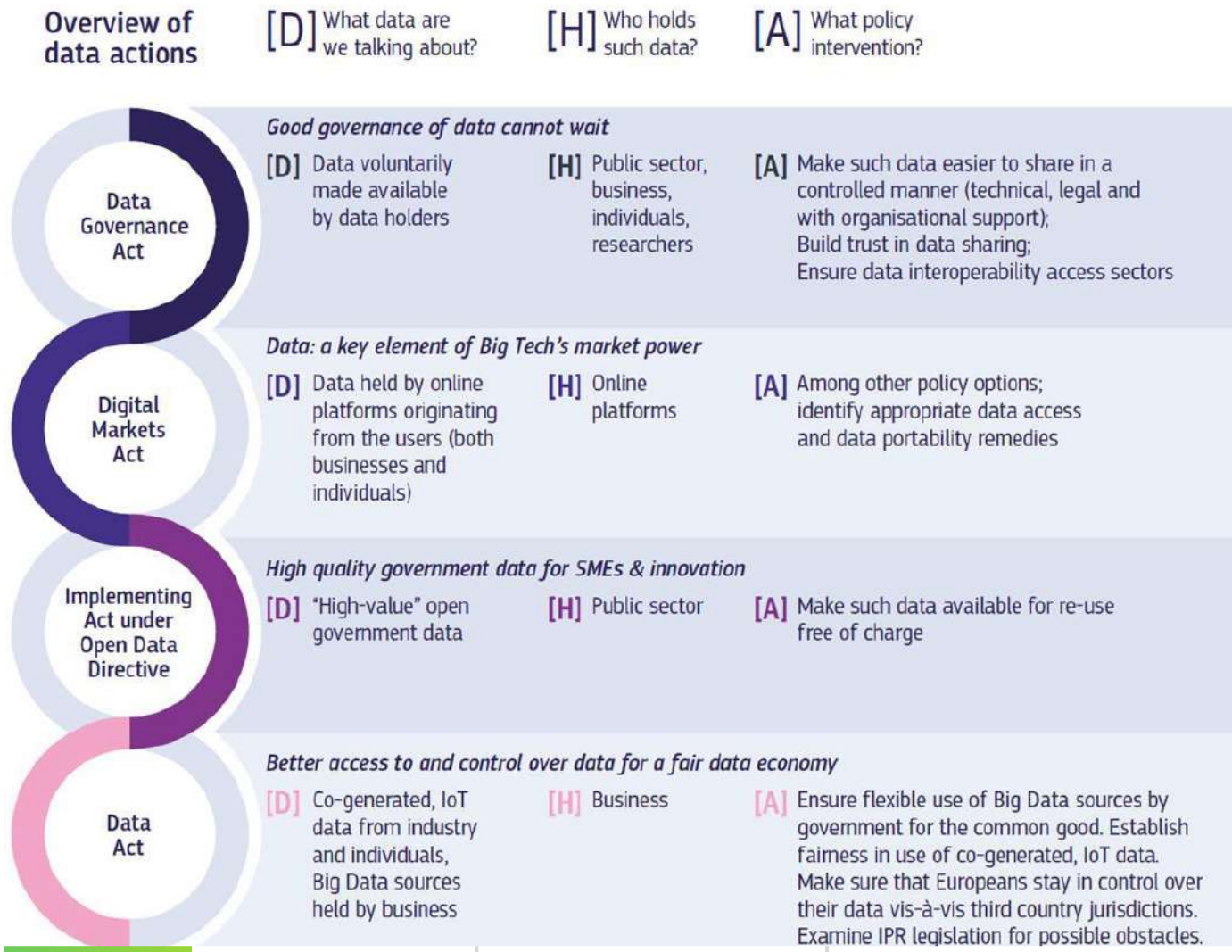
Policy context – Legal framework

Data Governance Act – data spaces
- Build trust in data sharing.
- Data altruism, data intermediation.
- Data interoperability.

Digital Markets Act
- Data portability.
- Regulate practices of ‘gatekeepers’.

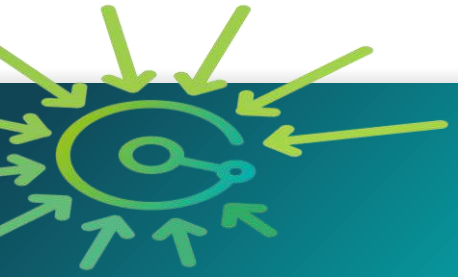
Open Data Directive
- Increase data availability and access.
- Reduce heterogeneity in licensing.

Data Act
- Increase data availability to foster innovation / Incentivize data generation.
- Fair access to and use of data.
- Data sovereignty.



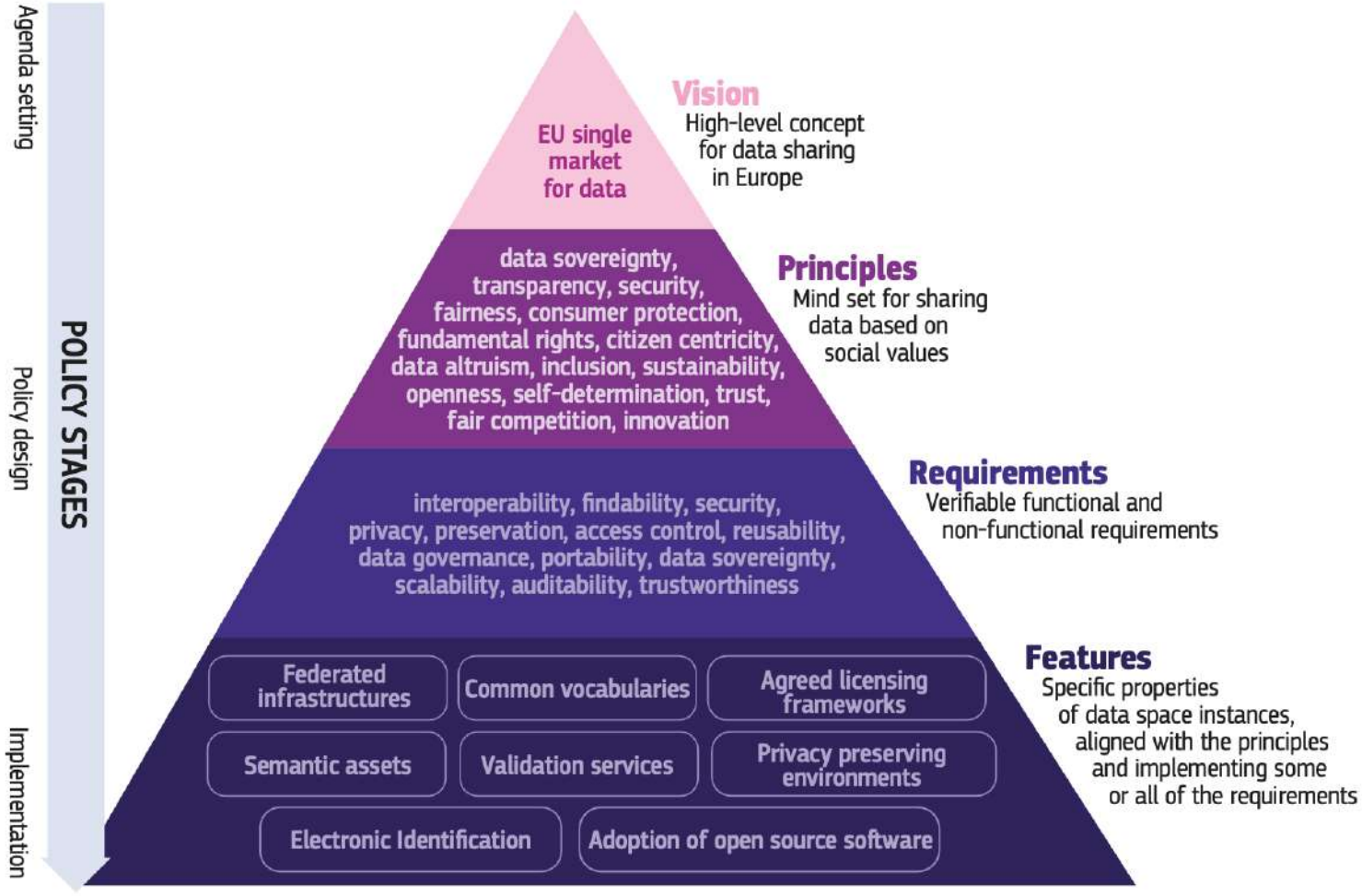
Policy context - Data space

*A distributed system defined by a **governance framework** that enables secure and trustworthy **data transactions** between **participants** while supporting trust and **data sovereignty**. A data space is implemented by one or more **infrastructures** and enables one or more **use cases**.*



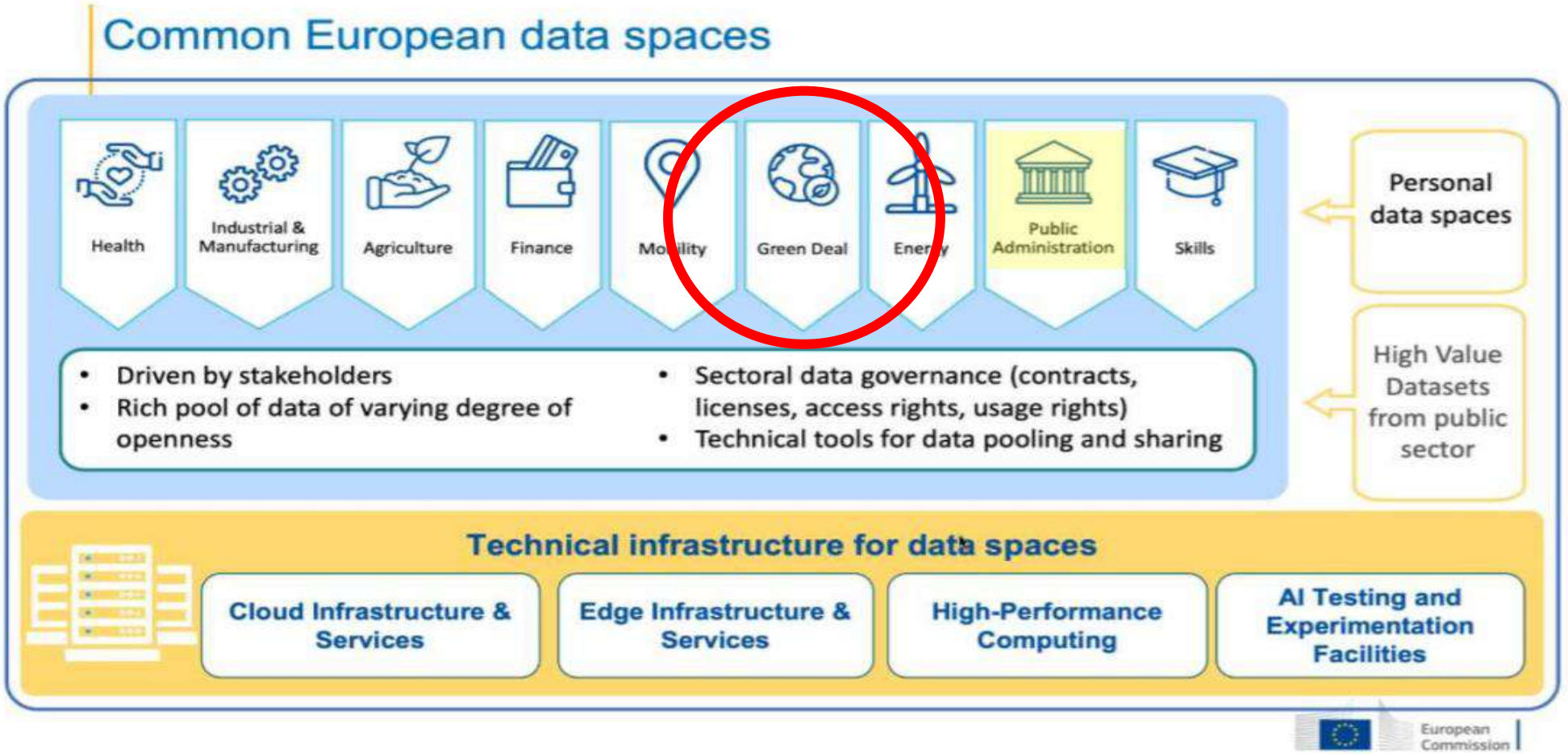
Policy context - Data space

European Data Spaces - Scientific Insights into Data Sharing and Utilisation at Scale, JRC Publication 2023



Source: JRC's own elaboration based on existing EU policy documents.

Policy context – Common data spaces



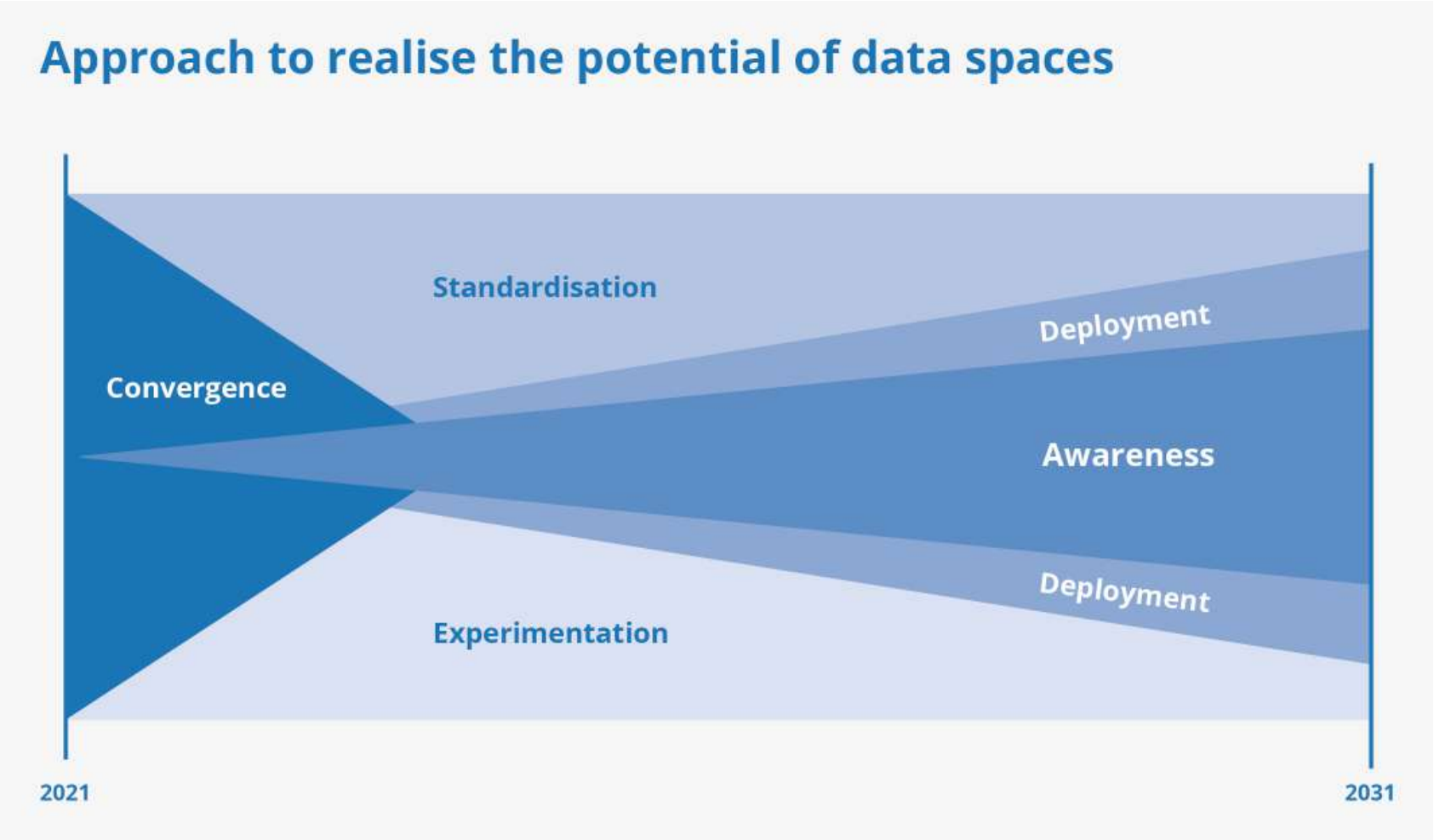
Policy context – EU initiatives on data spaces

Legislations:

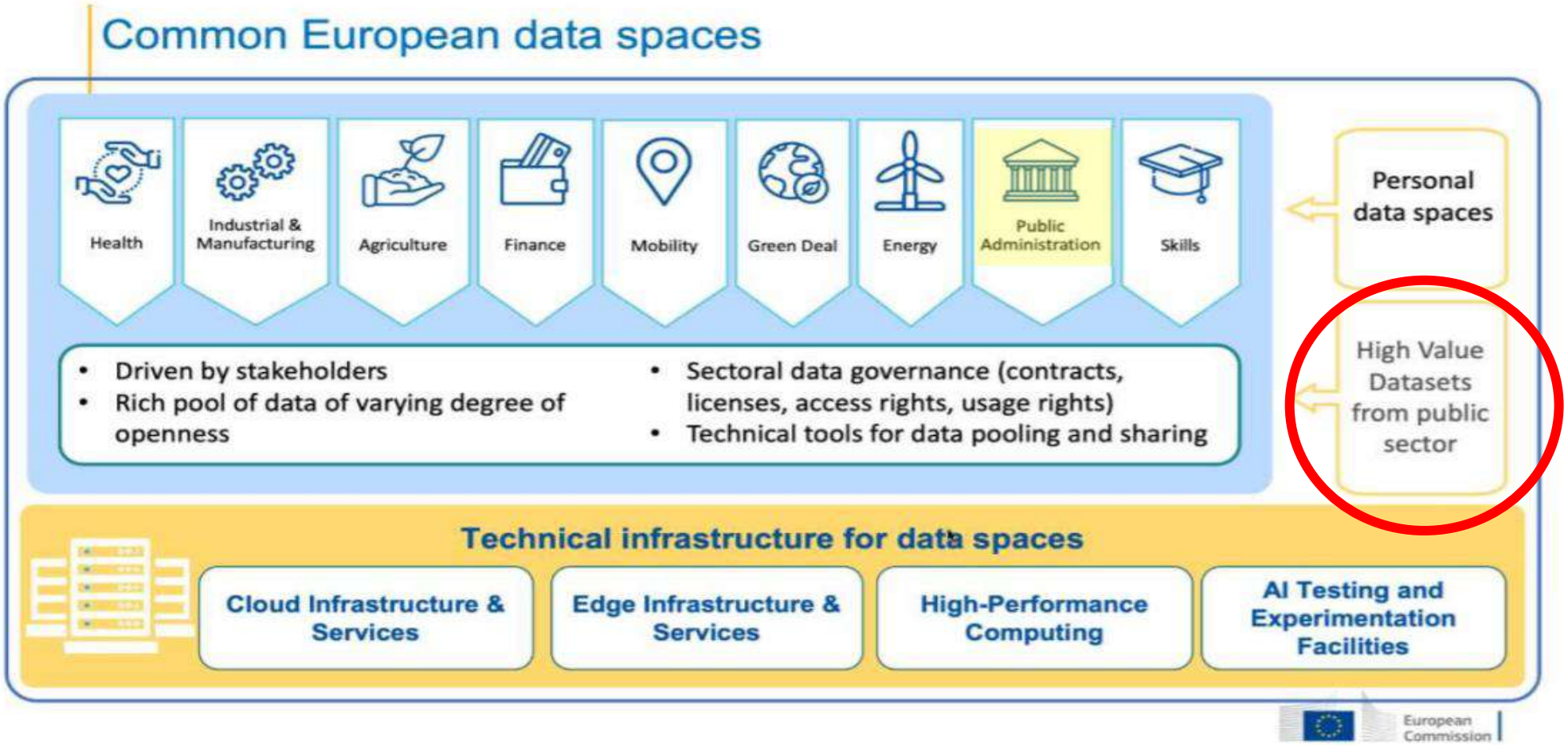
Funding:

Consolidation and development:

Policy context – Timing of data spaces



Policy context – Common data spaces



Policy context - Open data directive / High Value Datasets

Implementing Rule HVD – In force 9 June 2024

- Availability for re-use under the conditions of CC0 or, CC BY 4.0 licence, or any equivalent or less restrictive open licence
- Availability via API and where indicated also as a bulk download
- Datasets in scope and arrangements for the publication and re-use for the following 6 categories:

1. Geospatial
2. Earth observation and environment
3. Meteorological
4. Statistics
5. Companies and company ownership
6. Mobility

Policy context – Digital Compass for Europe's Digital Decade

Skills

ICT Specialists: 20 million + Gender convergence
Basic Digital Skills: min 80% of population

Government

Key Public Services: 100% online
e-Health: 100% availability medical records
Digital Identity: 80% citizens using digital ID

Infrastructures

Connectivity: Gigabit for everyone, 5G in all populated areas
Cutting edge Semiconductors: double EU share in global production
Data – Edge & Cloud: 10,000 climate neutral highly secure edge nodes
Computing: first computer with quantum acceleration

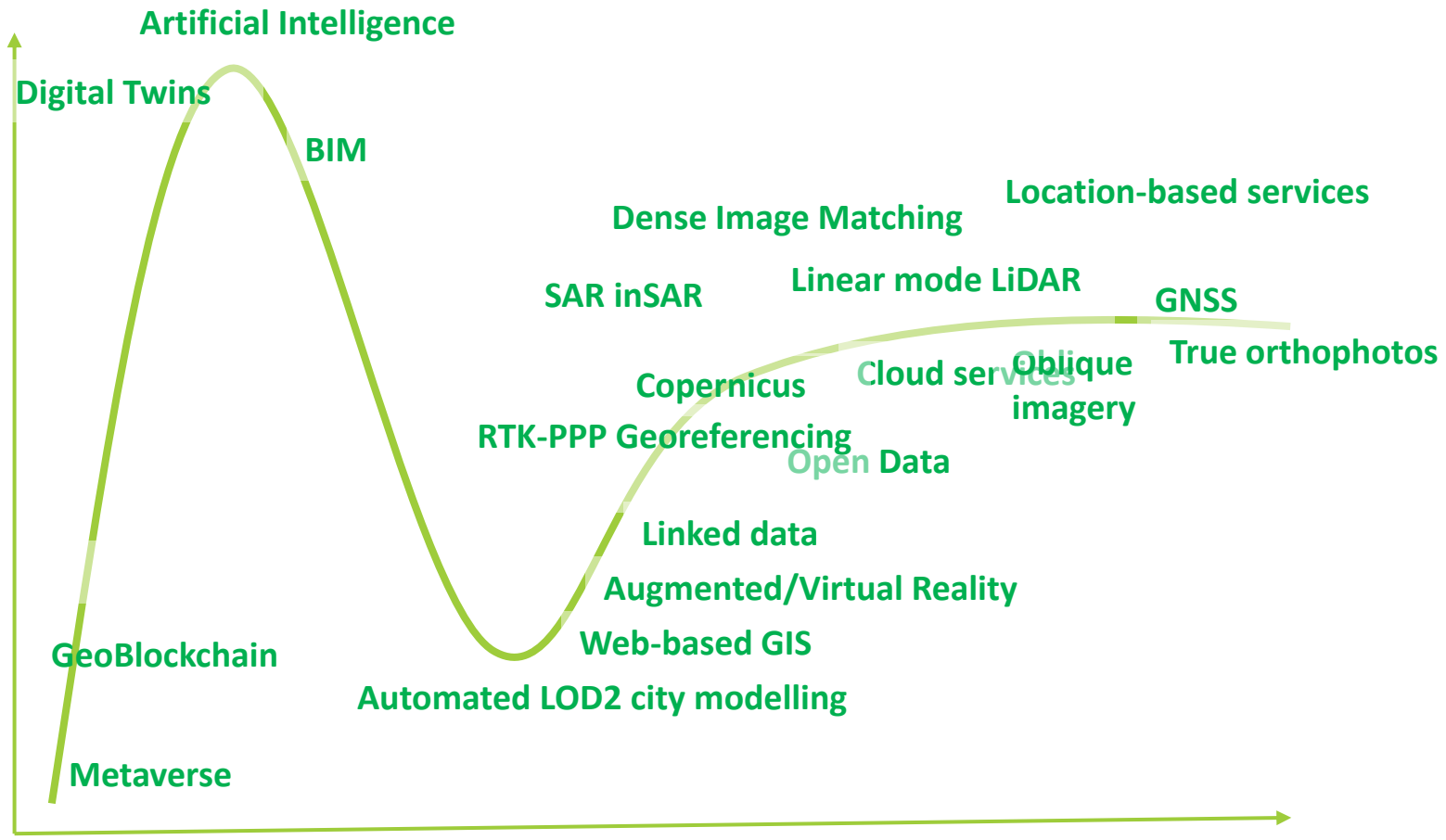
Business

Tech up-take: 75% of EU companies using Cloud/AI/Big Data
Innovators: grow scale ups & finance to double EU Unicorns
Late adopters: more than 90% of European SMEs reach at least a basic level of digital intensity

European Commission

Technology trends

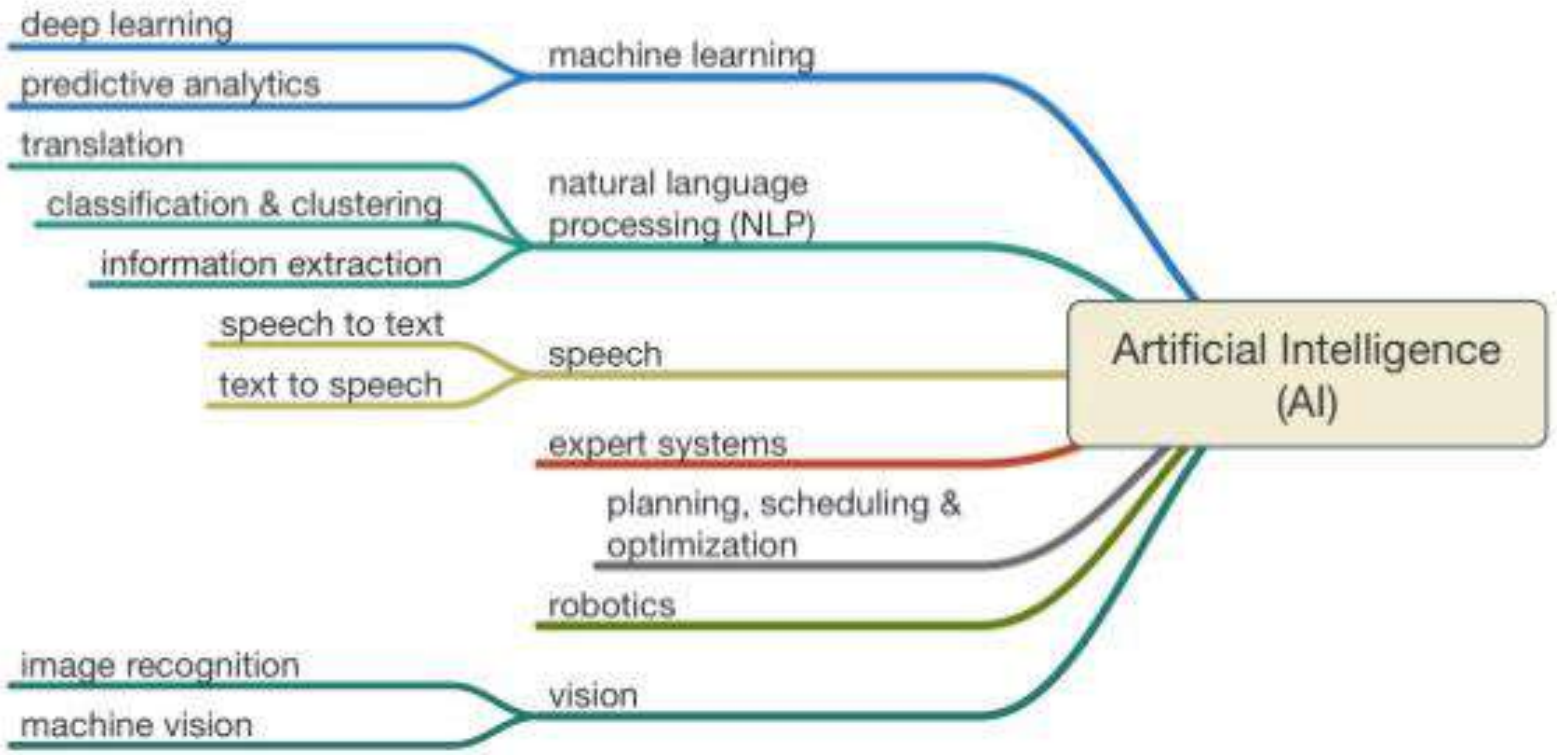
Technology trends – Geospatial hype cycle 2024



Technology trends – Digital Twins

A digital replica or representation of a system, process or place which mimics its real-world behaviour

Technology trends – AI -> GeoAI



Vision

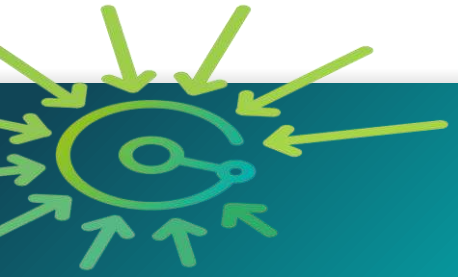
Geospatial data will become mainstream -> so not so special

Spatial data infrastructure will blend in broader data ecosystems

Future spatial data infrastructures demand legal, organizational and technological focus

Future spatial data infrastructures will be the foundation for numerous data spaces – in particular the Green Deal data space

Spatial data infrastructure will be the foundation for ‘exploiting’ emerging technologies such as Digital Twins and AI



Thanks for your attention

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