EOSC FESTIVAL 2023
National Tripartite Event

Poland

06 | 11 | 2023 by Krzysztof Kurowski

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National Science Centre Poland

Ministry of Education and Science

Digital infrastructures

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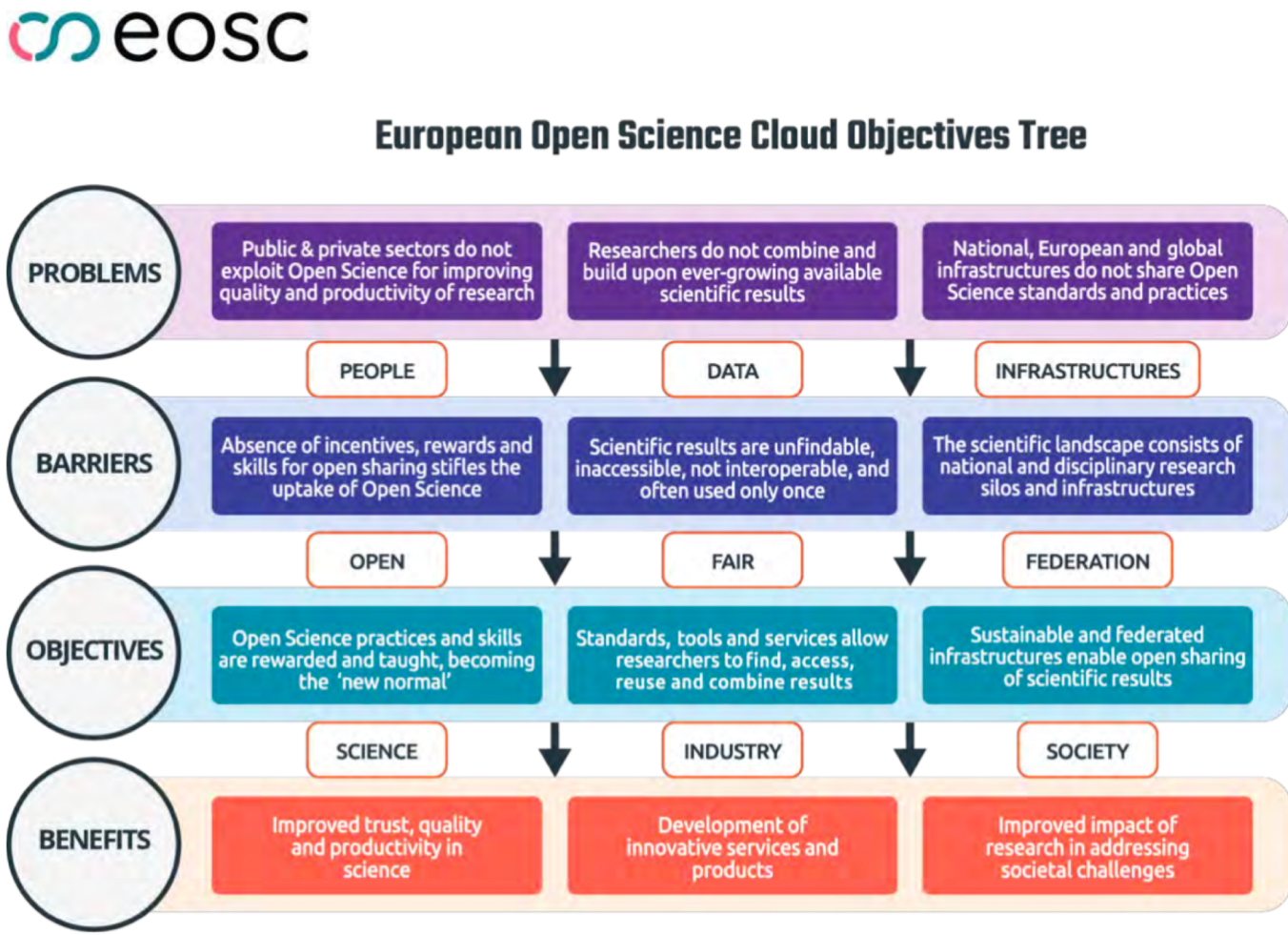
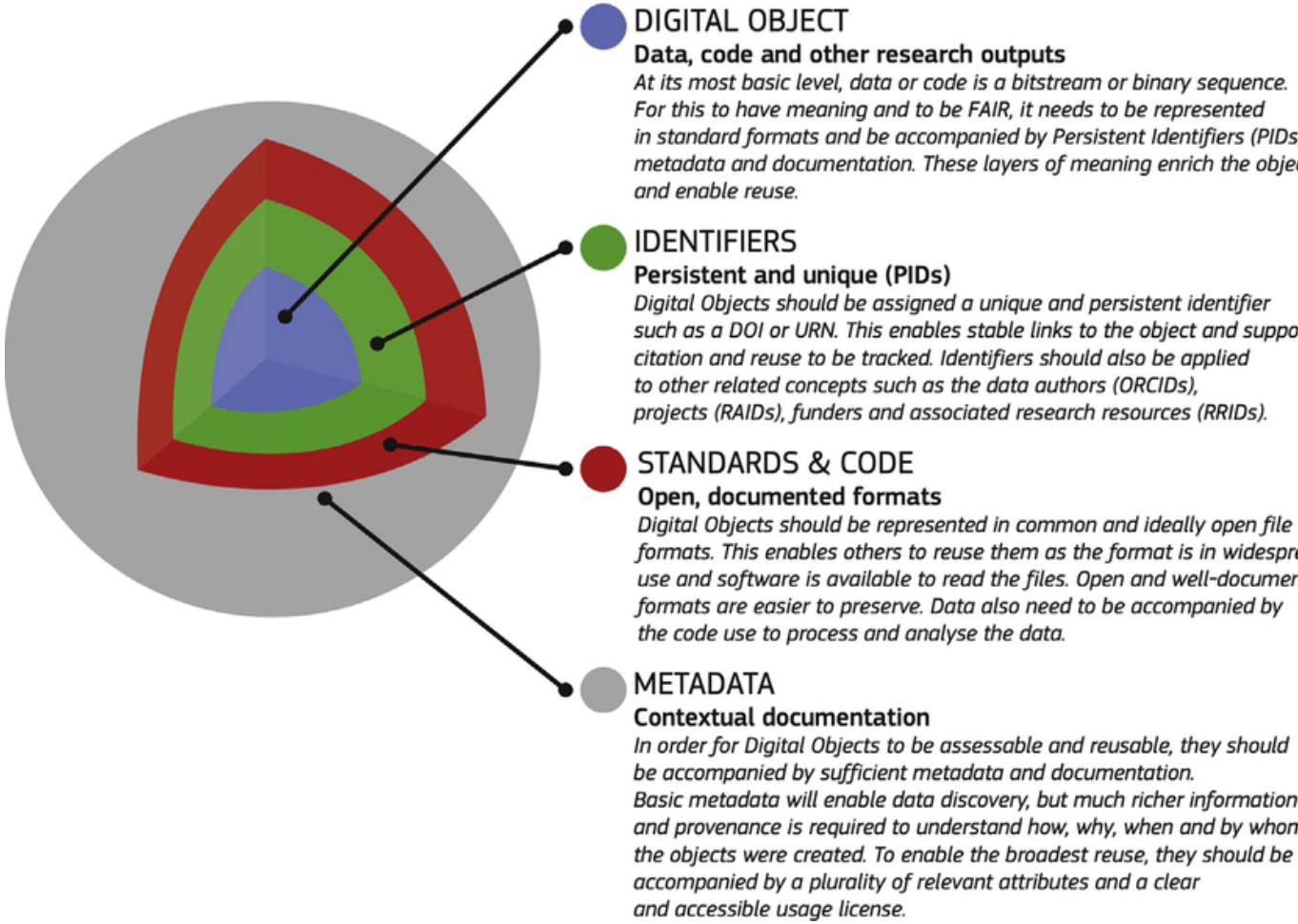
Strategic Research and Innovation Agenda of EOSC

- The **FAIR principles** in EOSC are no longer limited to open data issues, and they have been extended to cover the entire research lifecycle (**not only DMP**)
- The FAIR principles apply to **entire, often complex, and time-consuming research processes**, including distributed pipelines, raw data, metadata, publications, software, etc. located not only on your laptop
- Independently, we have been observing a **significant increase in the volumes of data** generated and used by scientific communities and instruments
- Thus, we need **reliable digital infrastructures**, but …



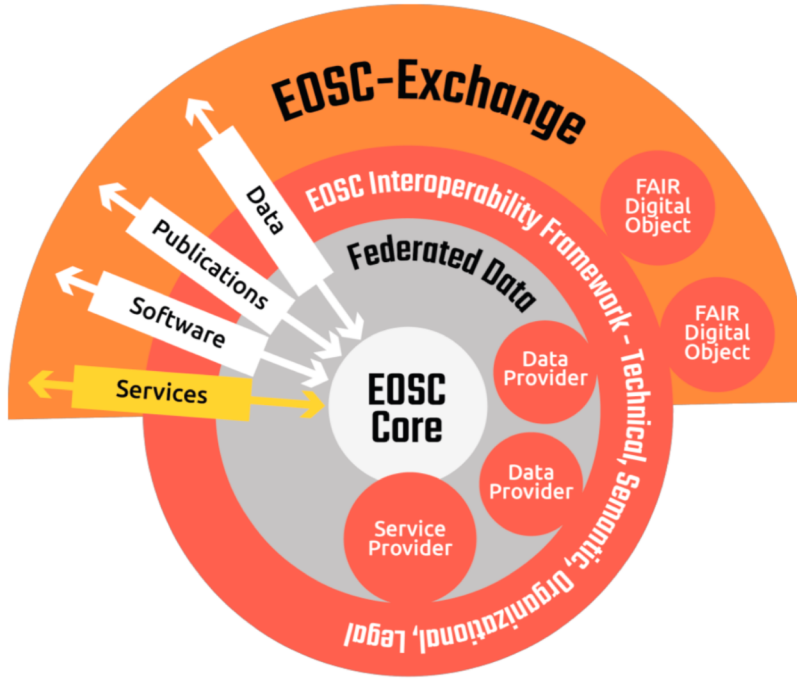
Strategic Research and Innovation Agenda of EOSC

- Additional requirements related to semantic descriptions of data (metadata) and data identifiers - **digital research objects**
- Open standards and requirements for **scientific data processing** (workflows/pipelines)
- New requirements for **long-term storage**, and archiving of **scientific data and repositories**
- Requirements for **federated**, secure and **controlled access** to scientific data
- Ensuring and supporting **interoperability** at technical, semantic, legal and organizational levels

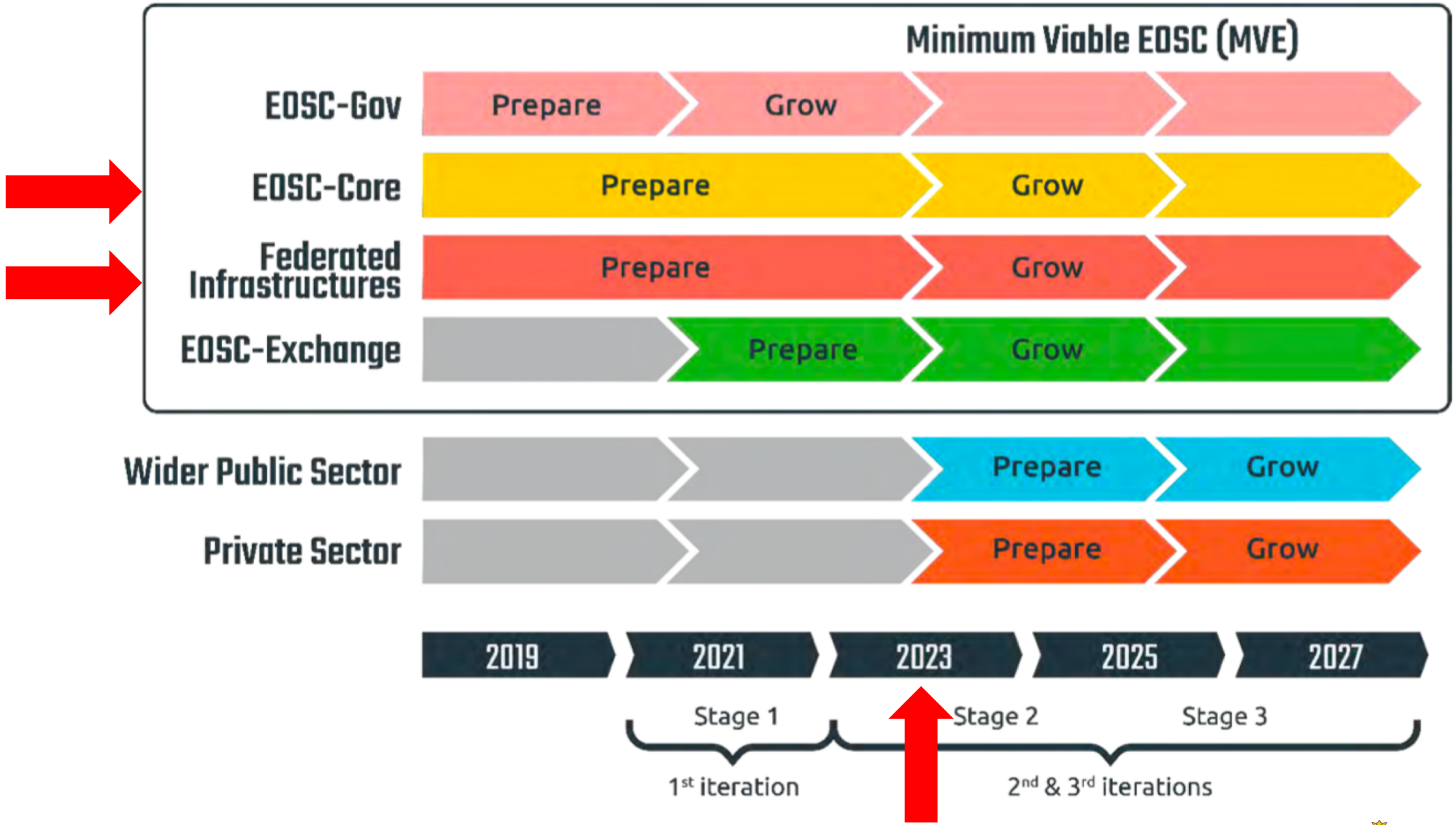


Strategic Research and Innovation Agenda of EOSC

- One of the key EOSC objectives is to develop added value from a federation of infrastructures by providing the core functions of the **Minimum Viable EOSC (MVE)** that should enable **EOSC operations (the EOSC-Core)**
- Multi-user environments like EOSC require **federated infrastructure for Authentication Authorization Infrastructure** (**AAI**), an identity management service for scientists to enable them **easy access** to all the digital objects and resources (e.g. Eduroam for WiFi)
- New rules for accessing and sharing scientific data including **Persistent Identifiers** for digital objects (PIDs) with services for generating unique IDs for scientific data



Strategic Research and Innovation Agenda of EOSC



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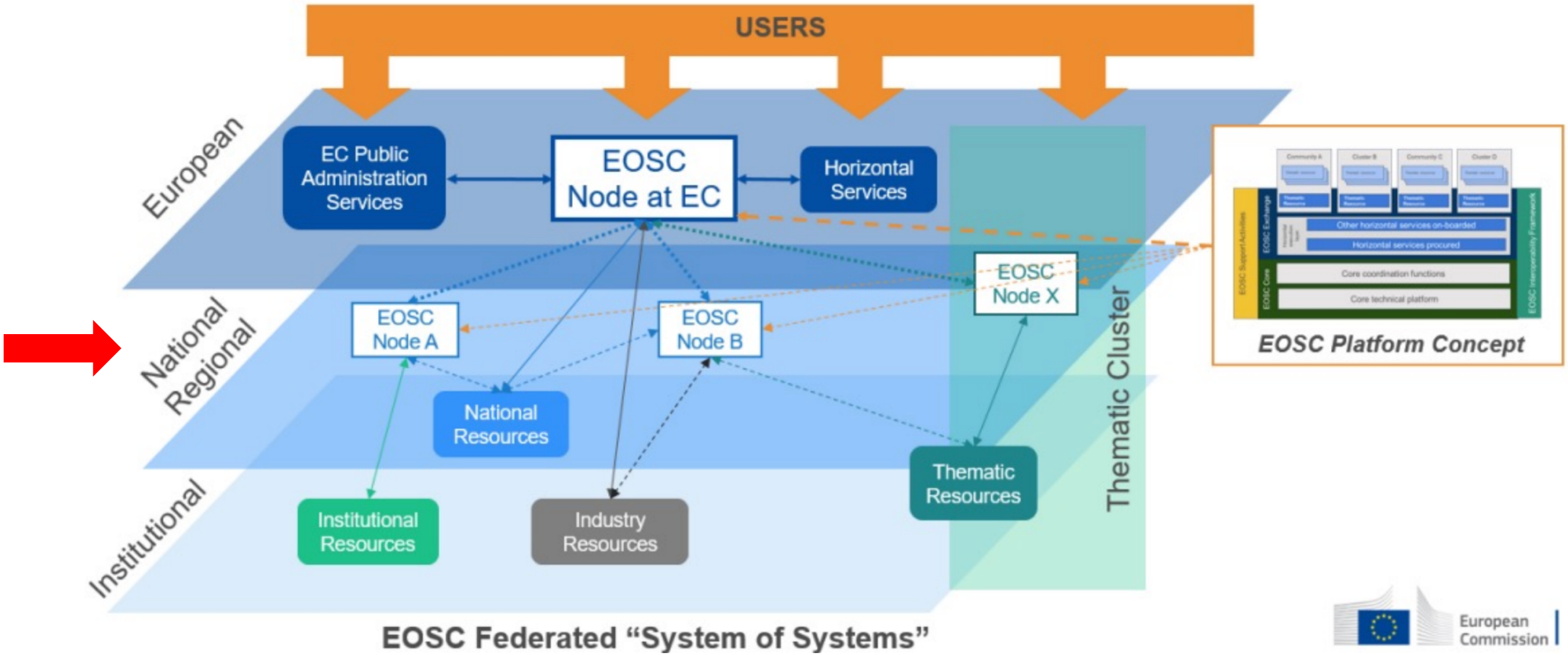
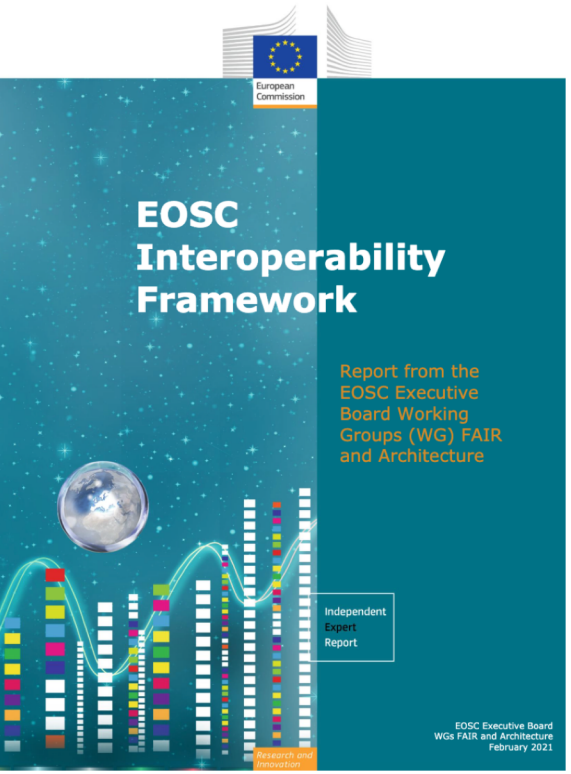
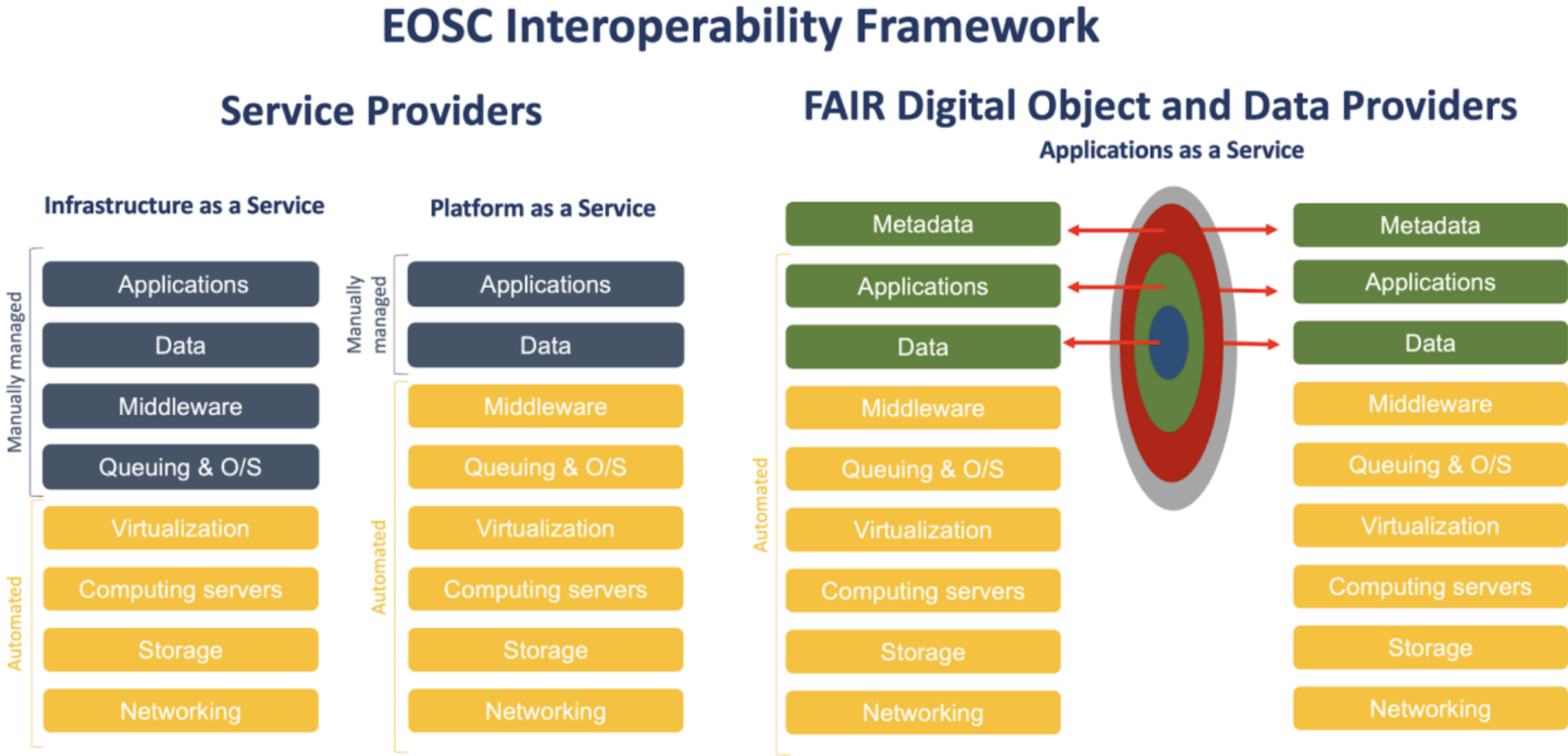
EOSC Federated „System of Systems”



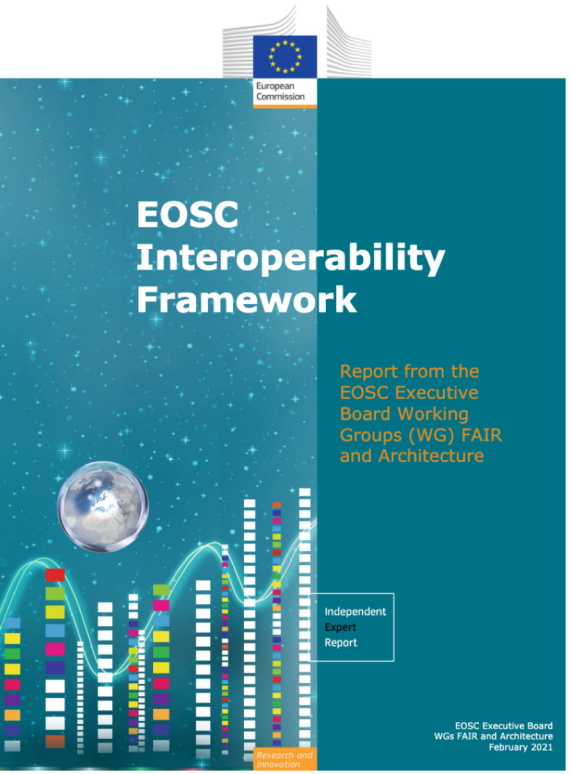
EOSC Interoperability Framework

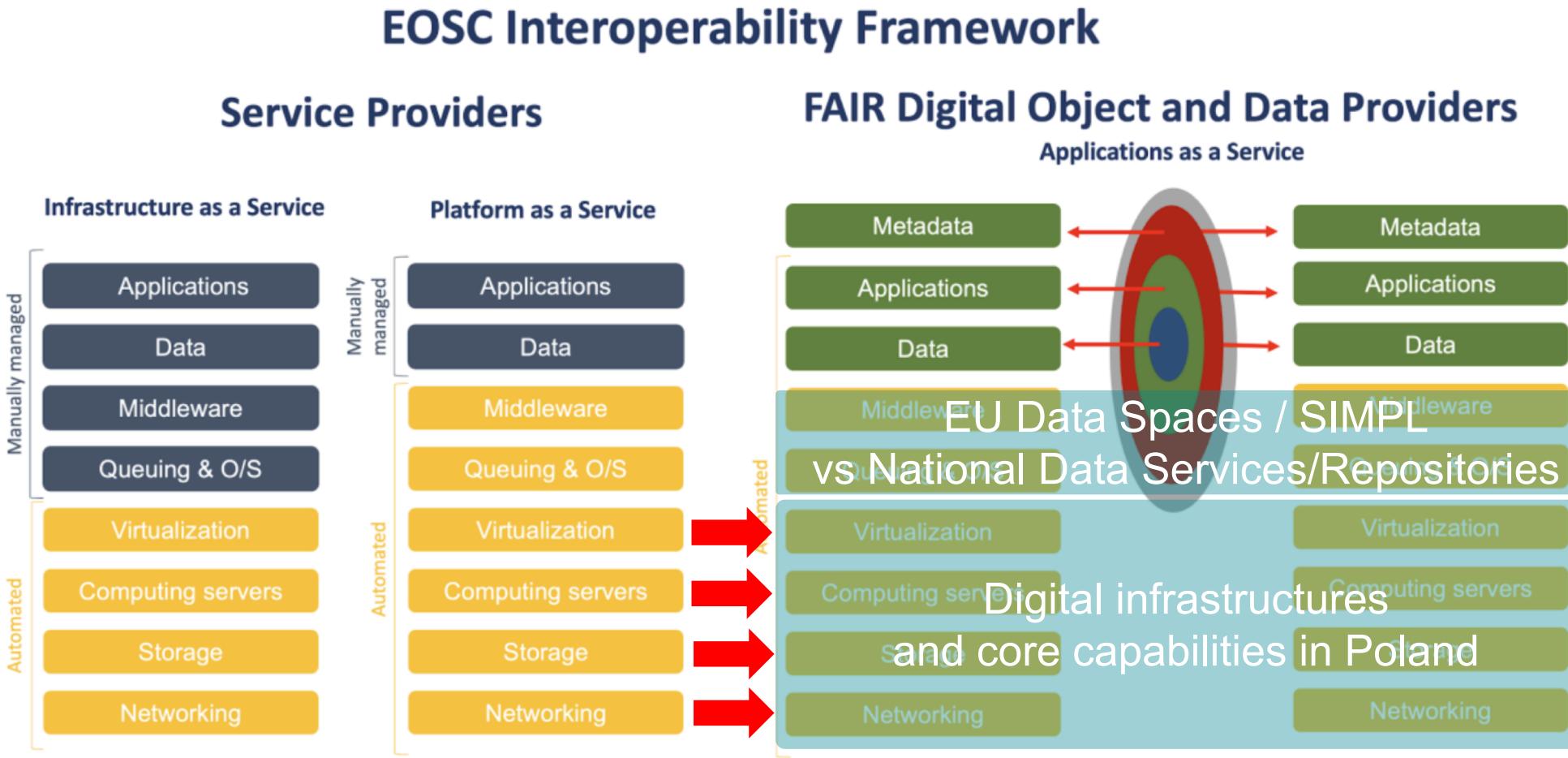




European Commission, Directorate-General for Research and Innovation, Corcho, O., Eriksson, M., Kurowski, K. et al.,
EOSC interoperability framework – Report from the EOSC Executive Board Working Groups FAIR and Architecture, Publications Office, 2021,
https://data.europa.eu/doi/10.2777/620649

EOSC Interoperability Framework





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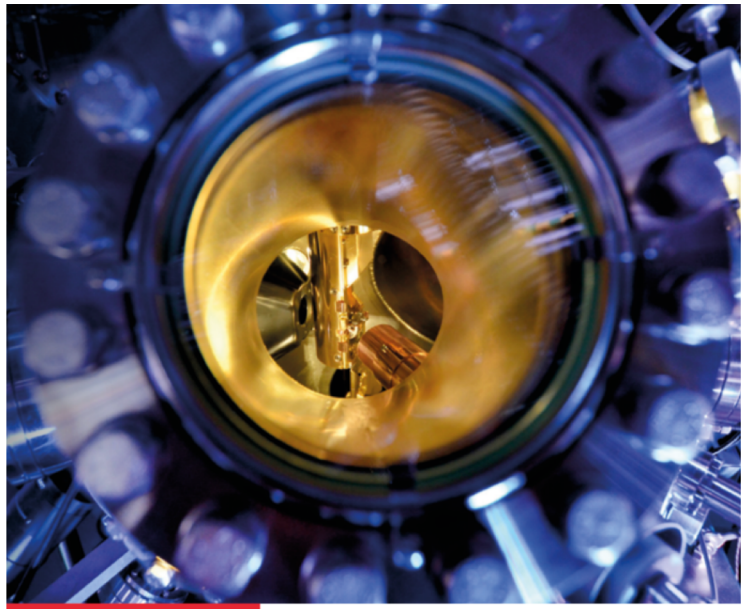
Polish Roadmap for Research Infrastructures



Polish Roadmap
for Research
Infrastructures

Ministry of Science
and Higher Education
Republic of Poland

EOSC Core
& EOSC Node

Earth & environmental sciences

Digital infrastructures

Technical sciences & energy

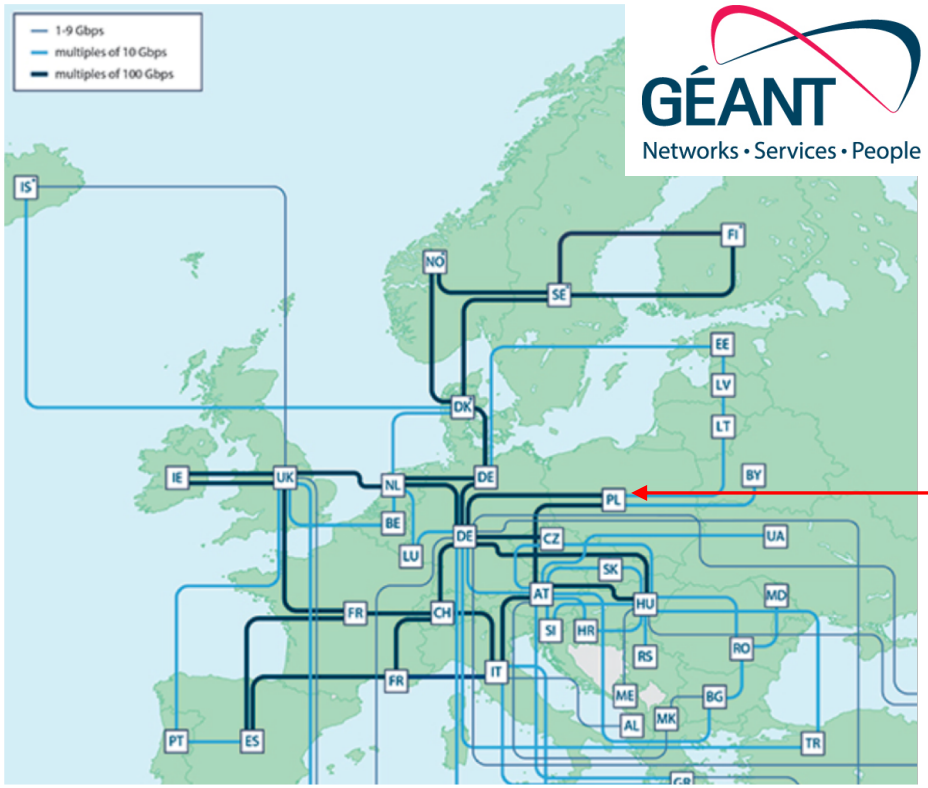
Medical, biological & agricultural sciences

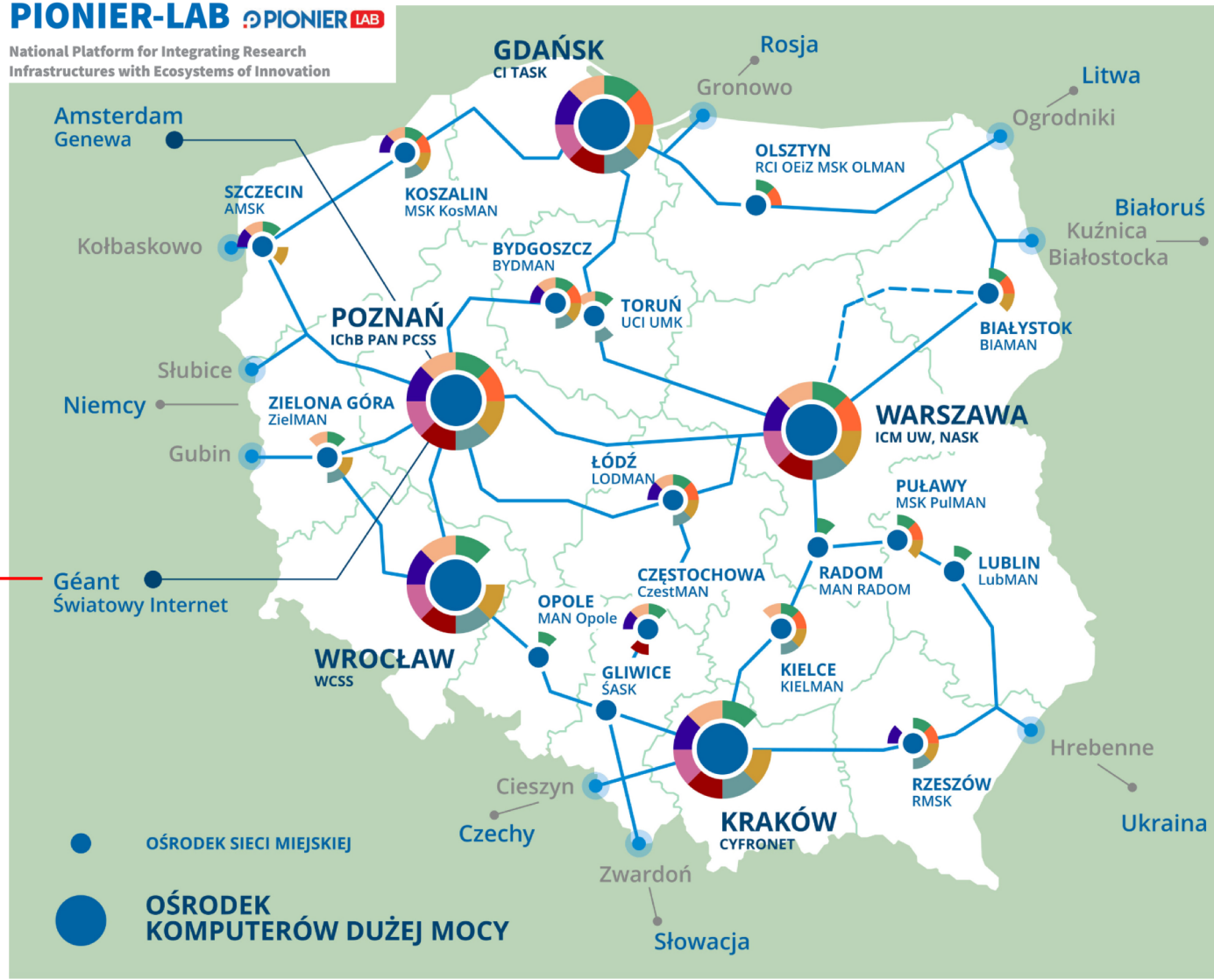
Physical sciences & engineering

Social sciences & humanities

https://www.gov.pl/web/edukacja-i-nauka/polska-mapa-infrastruktury-badawczej--70-najlepszych-infrastruktur-w-jednej-broszurze

Networking: PIONIER NREN





https://pionier-lab.pionier.net.pl/

Networking: PIONIER NREN

PIONIER
POLSKI INTERNET OPTYCZNY

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COMPATIBLE

Tożsamość i logowanie

PIONIER .id

Usługa PIONIER.id - zarządzanie tożsamością, uwierzytelnianie

EOSC CORE

Identyfikatory danych

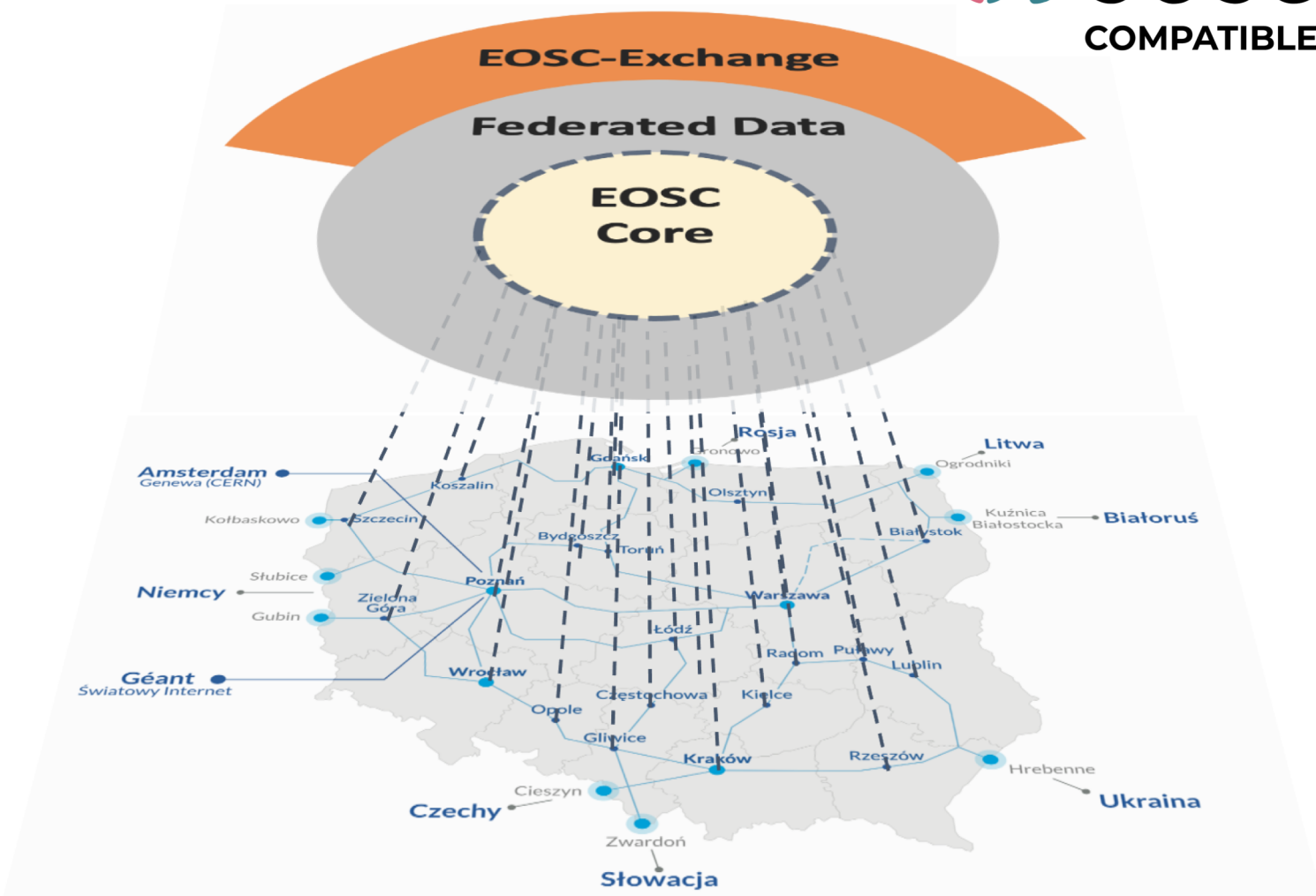
data-id PIONIER

Usługa PIONIER data-id - rejestracja identyfikatorów DOI

EOSC FEDERATED DATA

PIONIER .id Erasmus+

FEDERACYJNE ZARZĄDZANIE TOŻSAMOŚCIĄ W SIECI PIONIER DLA ERASMUS+



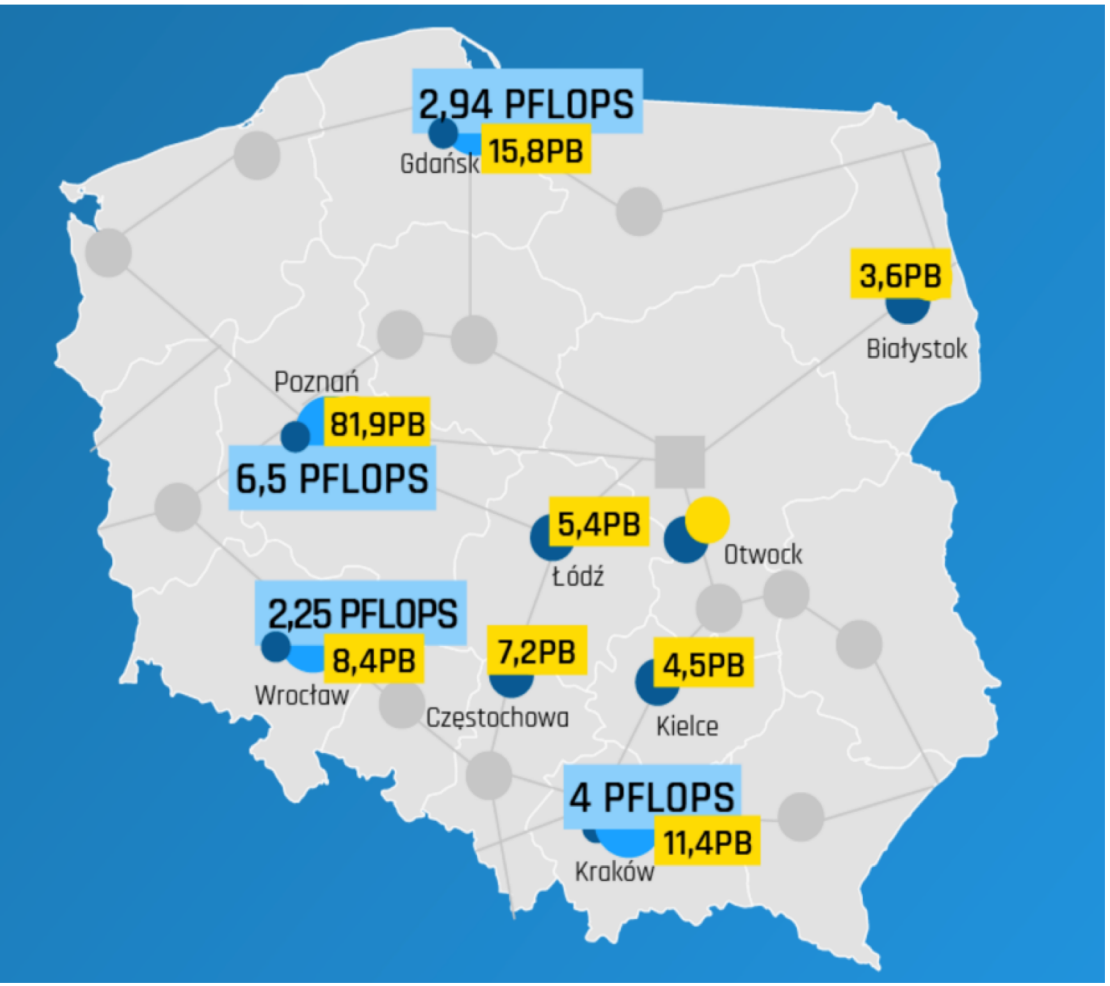
https://pionier.net.pl/uslugi/

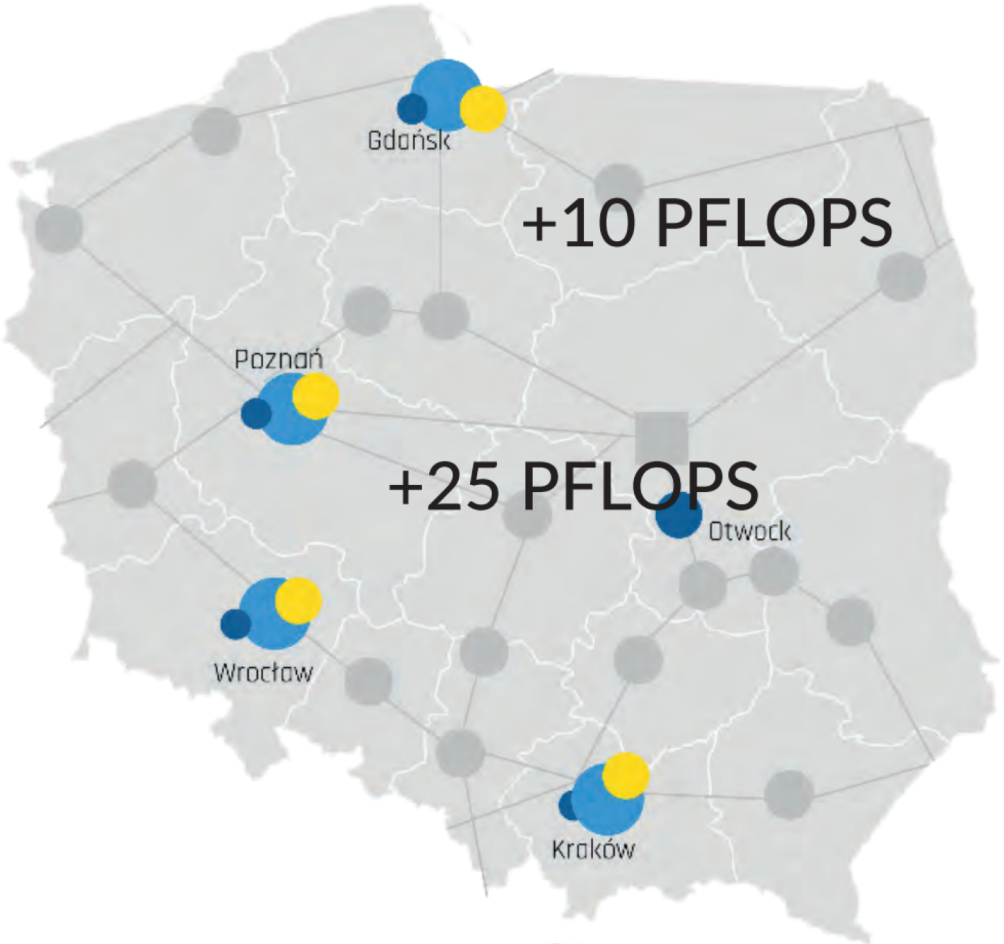
Computing: PRACE-LAB I/II + EuroHPC PL

eosc COMPATIBLE

PRACE-LAB pracelab

Cooperation on Advanced Computing in Europe





PRACE-LAB2 pracelab 2

Cooperation on Advanced Computing in Europe

Storage: National Data Storage

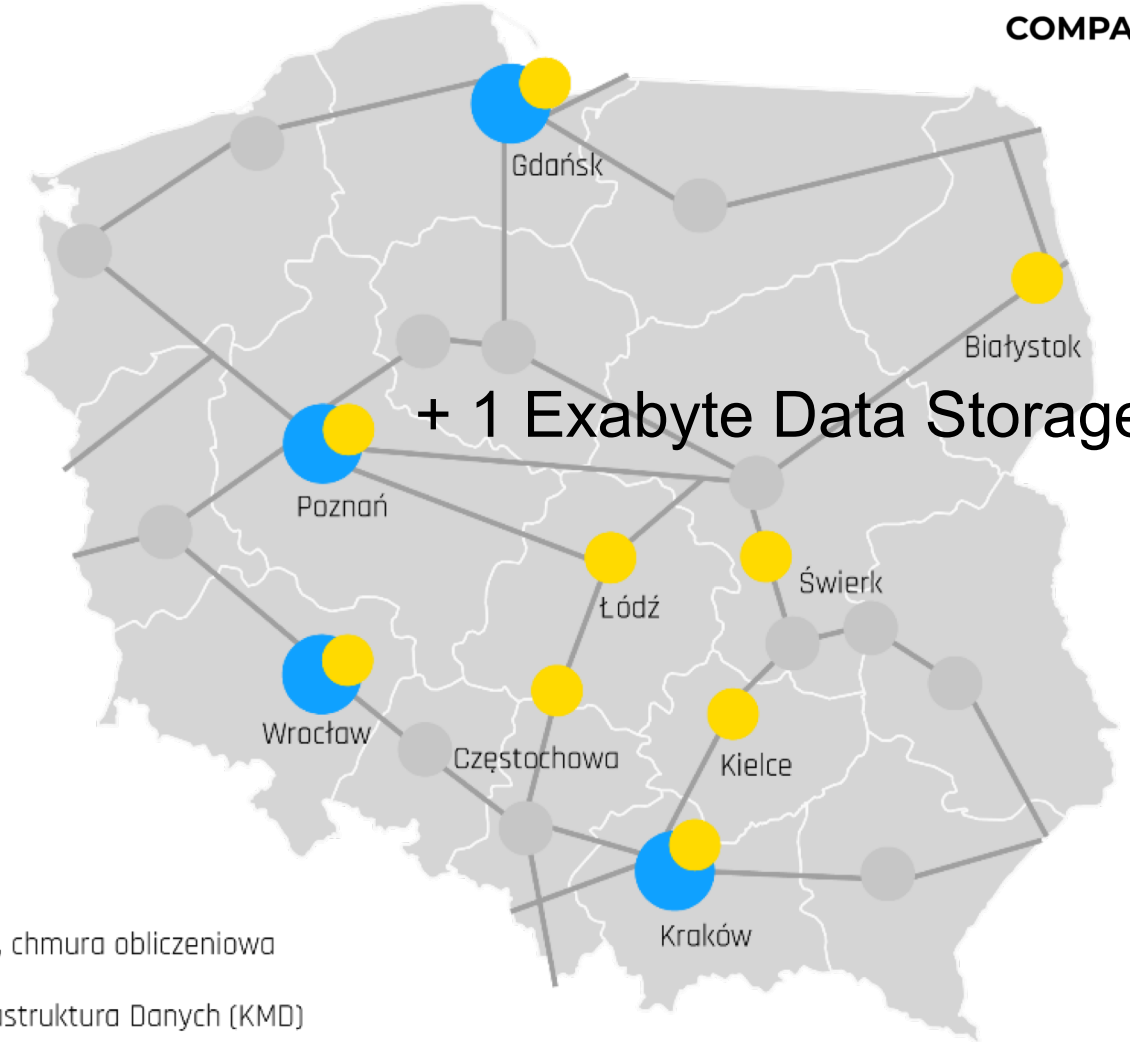
INFRASTRUCTURE LAB

EMBEDDED SERVICES LAB

FRONT-END SERVICES LAB

REPOSITORIES LAB

EDGE COMPUTING LAB



BIOLOGY USE-CASE

- LARGE-SCALE DIGITISATION
  OF SPECIMENs: PLANTS, ANIMALS, FUNGHI
- PARTNER: ADAM MICKIEWICZ UNIVERSITY
  FACULTY OF BIOLOGY
- RESEARCHERS NEED:
  - Collaboration, ease of use, document editing
  - Dropbox-like experience
  - Persistent data storage
    in a multi-tenant repository
    with indexing and search
- DATASET:
  - 100+ TB,
  - 100000s of objects

RADIO-ASTRONOMY USE-CASE

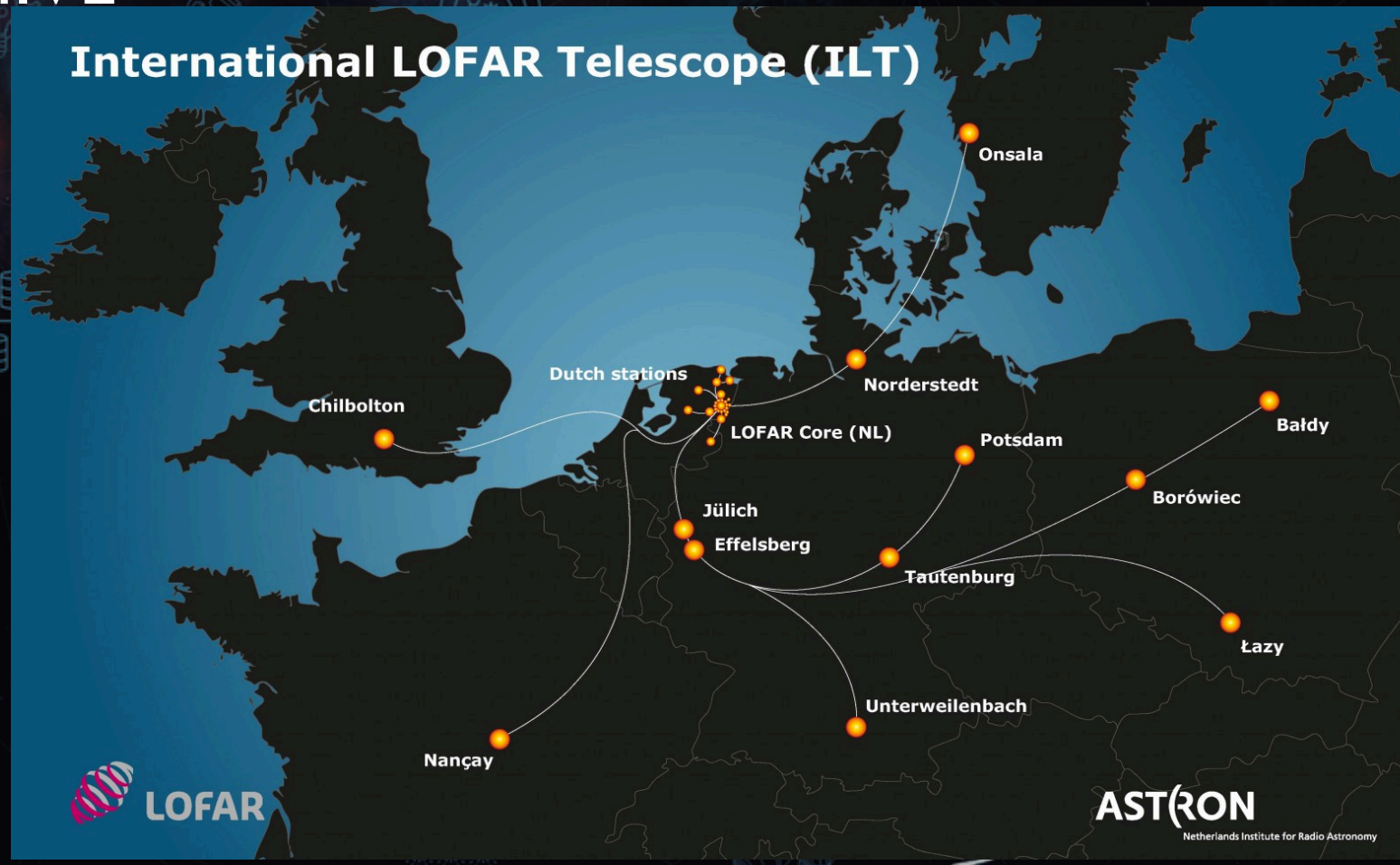
LOFAR LONG-TERM ARCHIVE

Acquisition, analysis, processing

- Distributed data sources
- Centralised correlation,
- Distributed storage
- Processing in HPC centres
- Data access to project members

LTA (Long-Term Archive) in PSNC:

- Constant data stream: **10 Gb/s**
- Since 2015, now **20PB+** of data
- Tape storage + disk cache



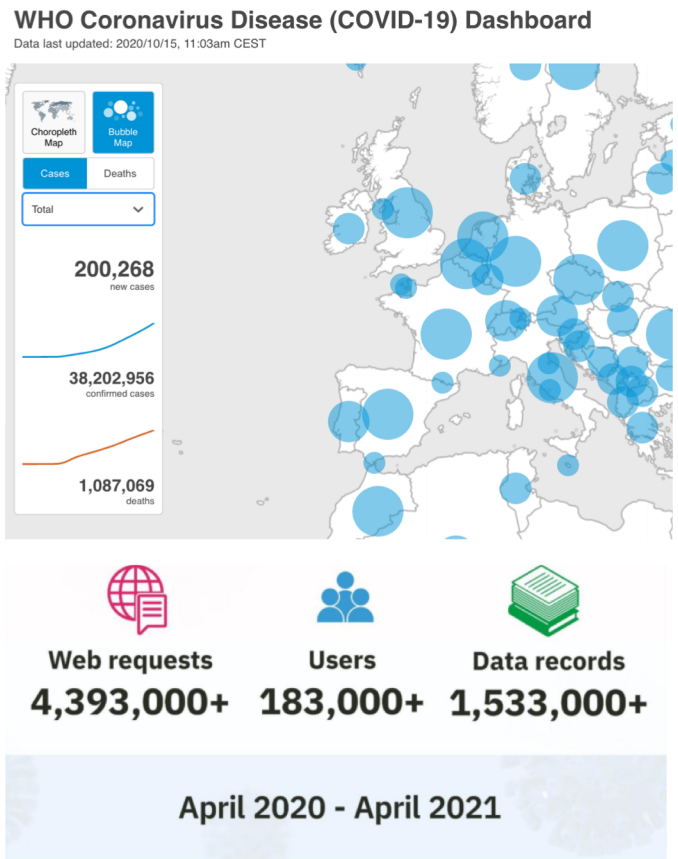
Covid-19 USE-CASE

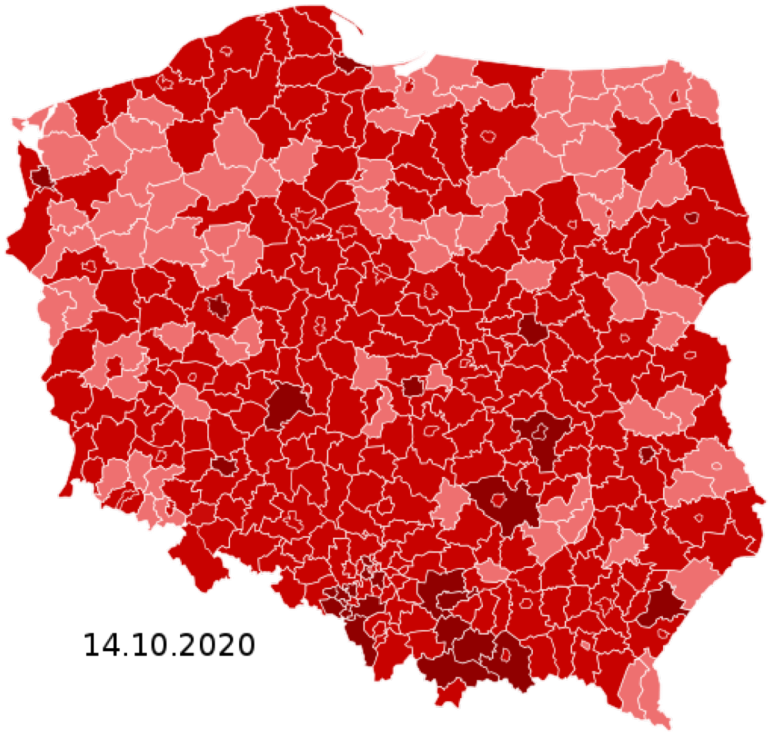
COVID-19 Data Portal

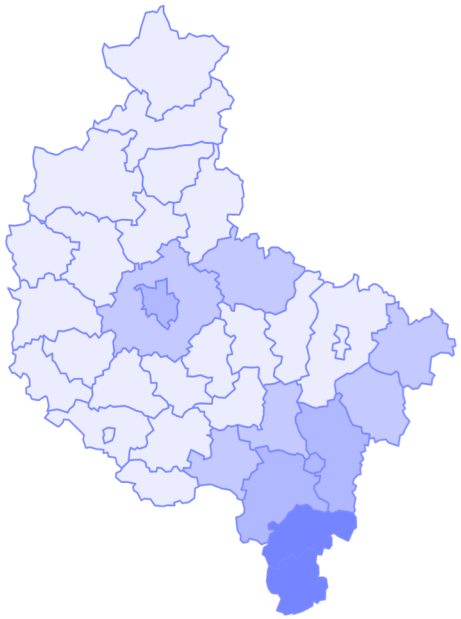
COVID-19 Data Portal POLAND

REGIONAL COVID-HUB Wielkopolska

eosc COMPATIBLE

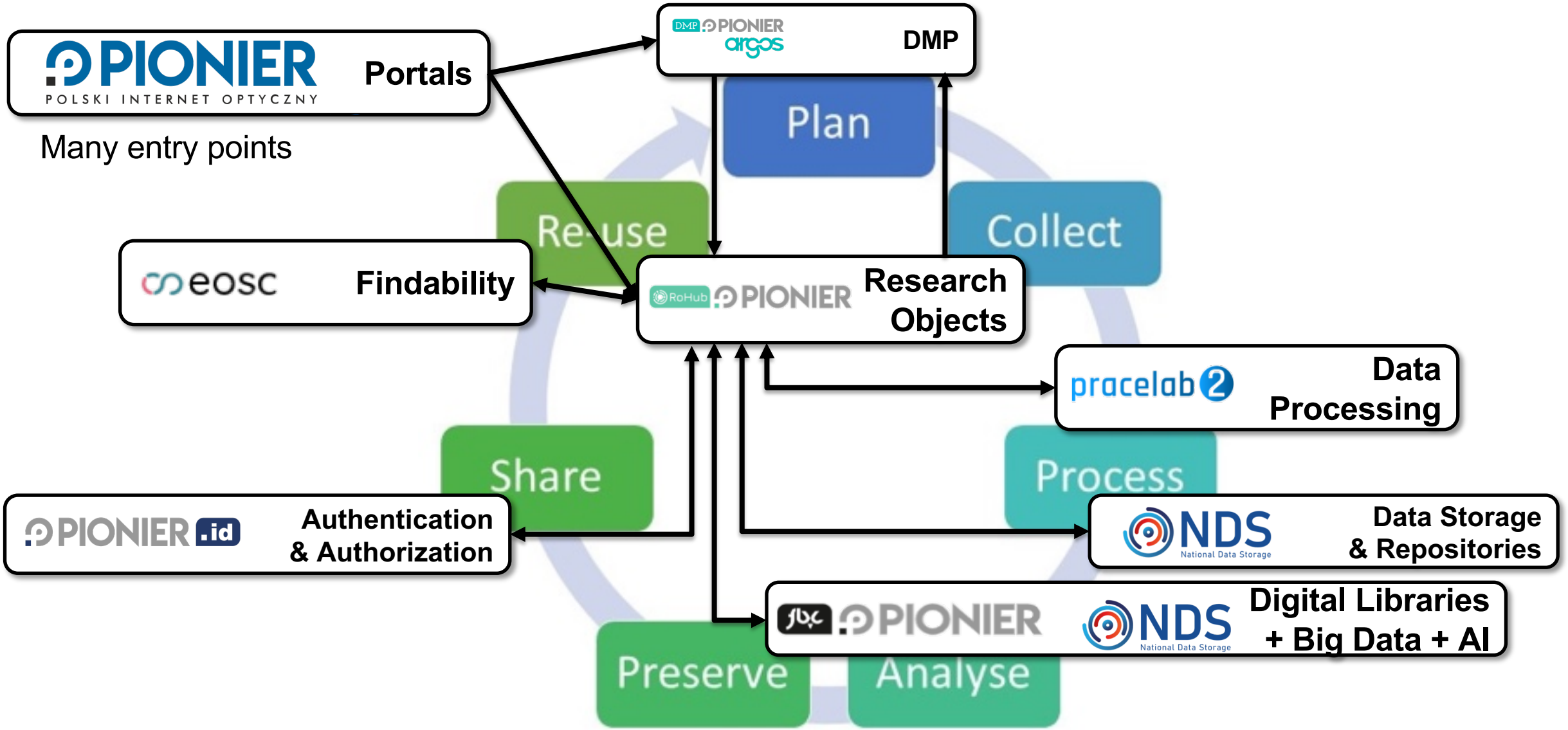






Digital Response to COVID-19

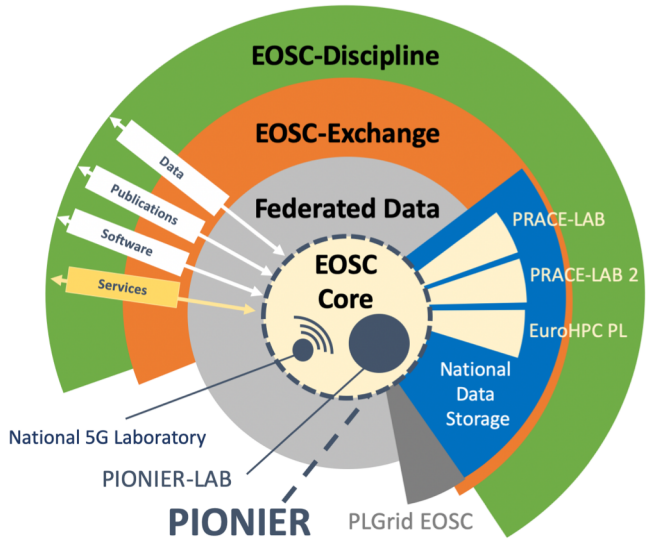
PoC: Federated PIONIER Ecosystem

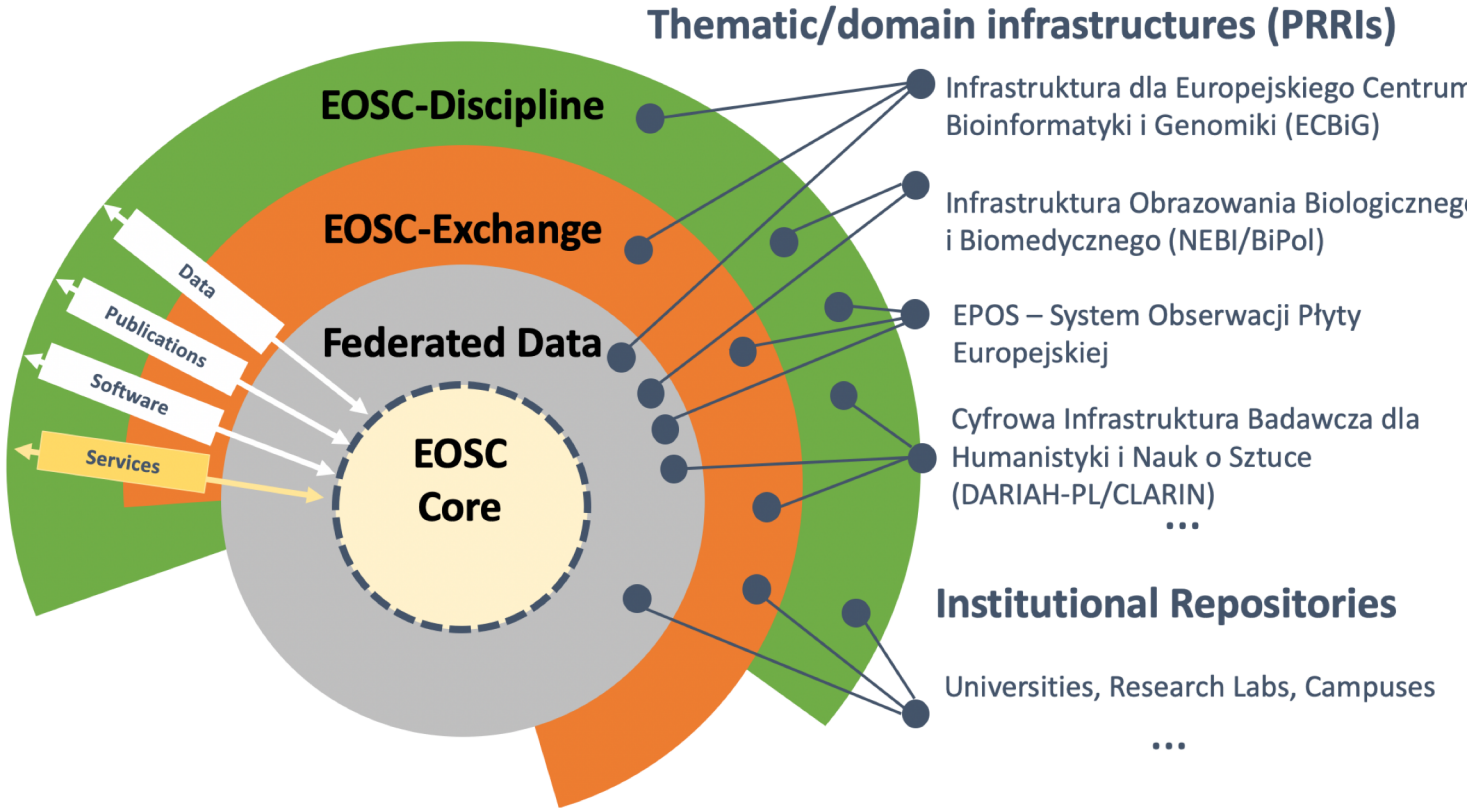


Source: https://www.reading.ac.uk/research-services/research-data-management/about-research-data-management/the-research-data-lifecycle

What's next?

EOSC COMPATIBLE





“*As open as possible, as closed as necessary*”

Reuse as much as possible, reinvent as little as necessary

Thank you!