



A HUN–REN Cloud szerepe határokon átívelő kutatási infrastruktúrákban

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EGI Foundation

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HUN–REN Cloud találkozó 2025

Landscape of Digital Infrastructures

EGI

Infrastructure – with HUN–REN Cloud

**Innovation community – With SZTAKI,
SLICES**

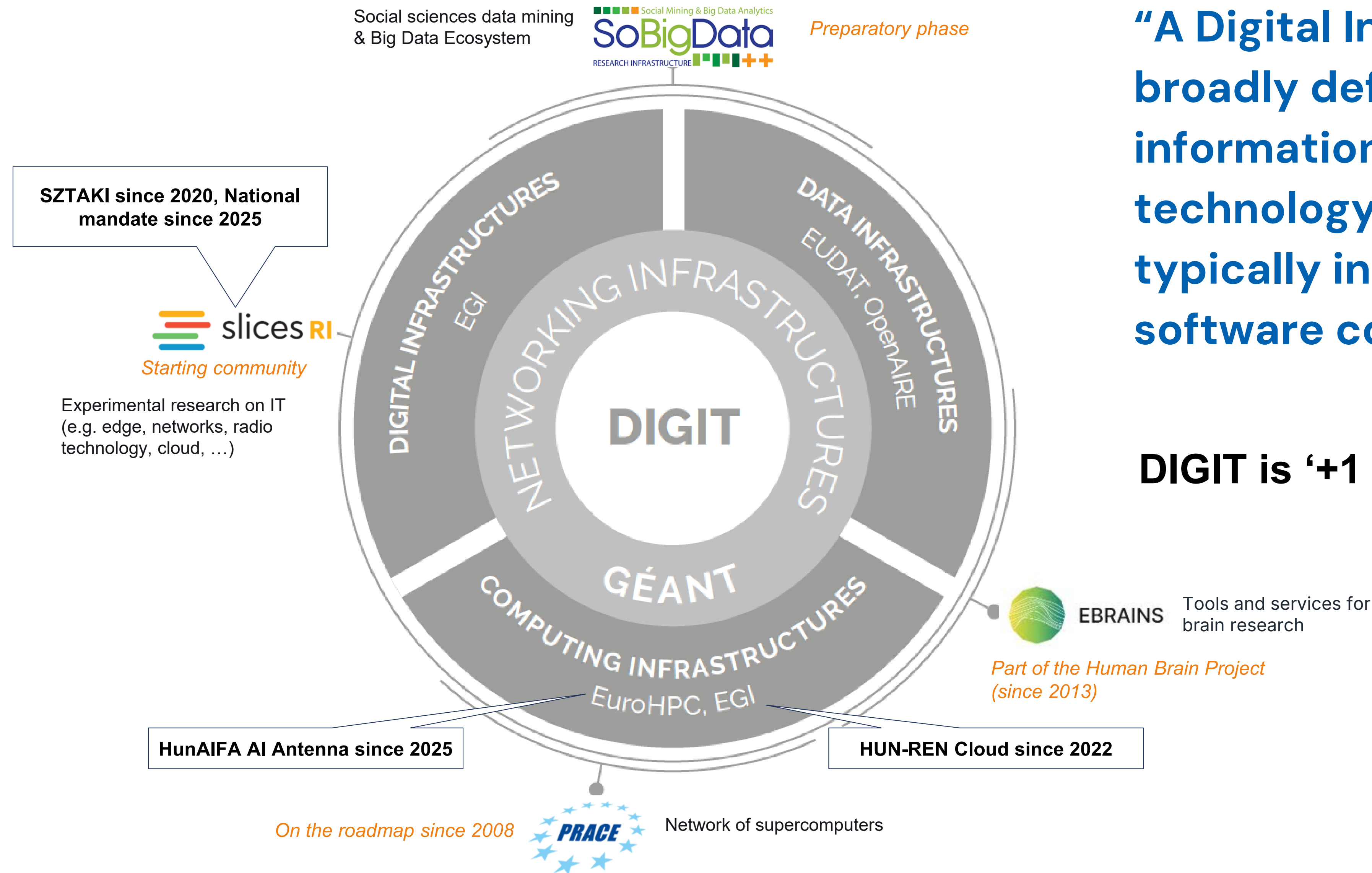
Objectives and HUN–REN Cloud

**Vision for the future: Integrated infrastructures for international science
4 TODOs**

DIGIT category in ESFRI Roadmap 2024

“A Digital Infrastructure (DI) is broadly defined as a set of information and communication technology components that typically include physical parts and software components”

DIGIT is ‘+1 instrument’ for thematic RIs





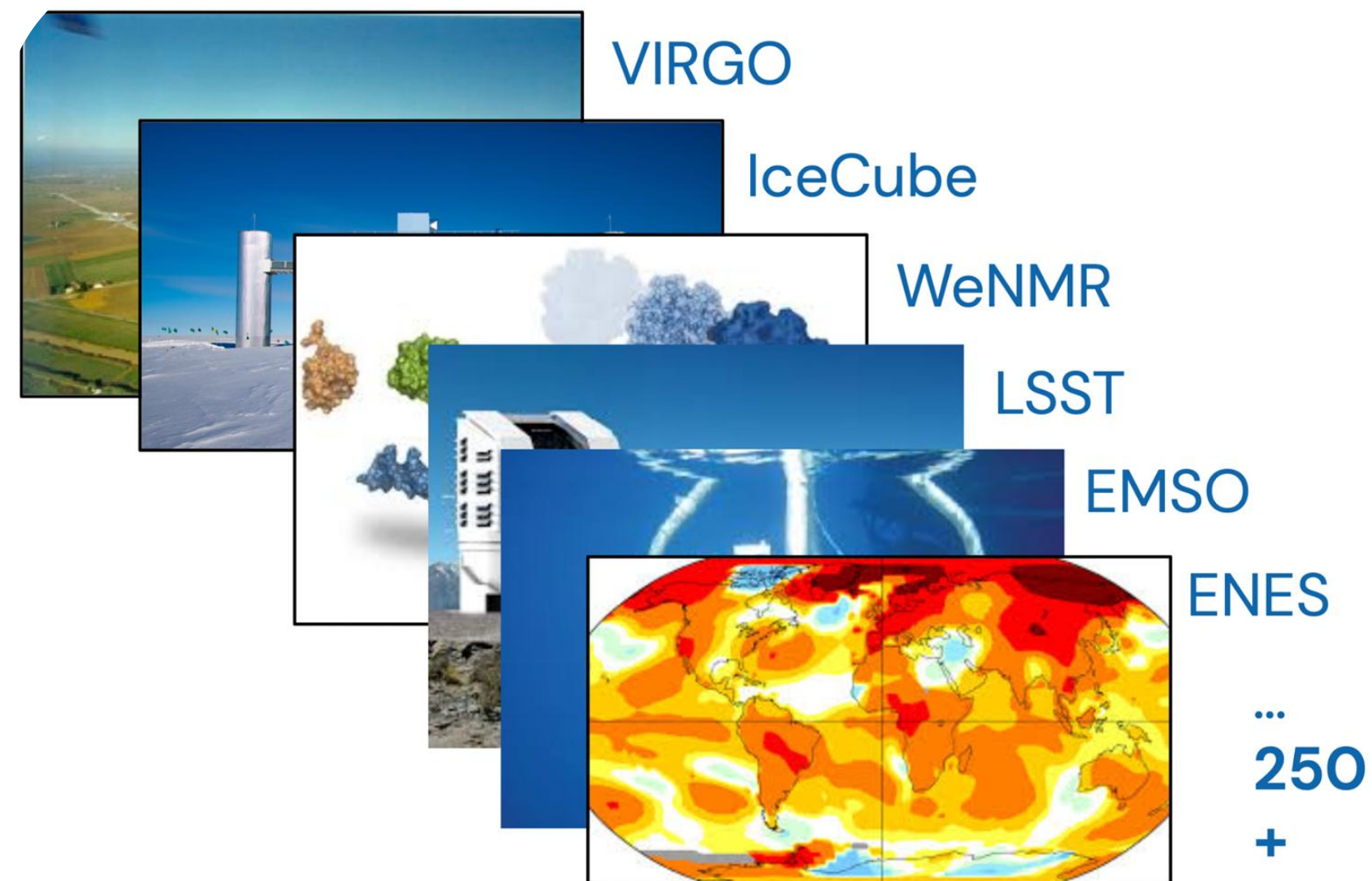
EGI

The EGI Federation is an international e-infrastructure

We provide advanced computing and data analytics services for research and innovation



2010 (used to be called **European Grid Infrastructure**)
From the Large Hadron Collider compute grid...



2025 (Now called simply "EGI")

...to a multidisciplinary, multi-technology
infrastructure and **innovation community**

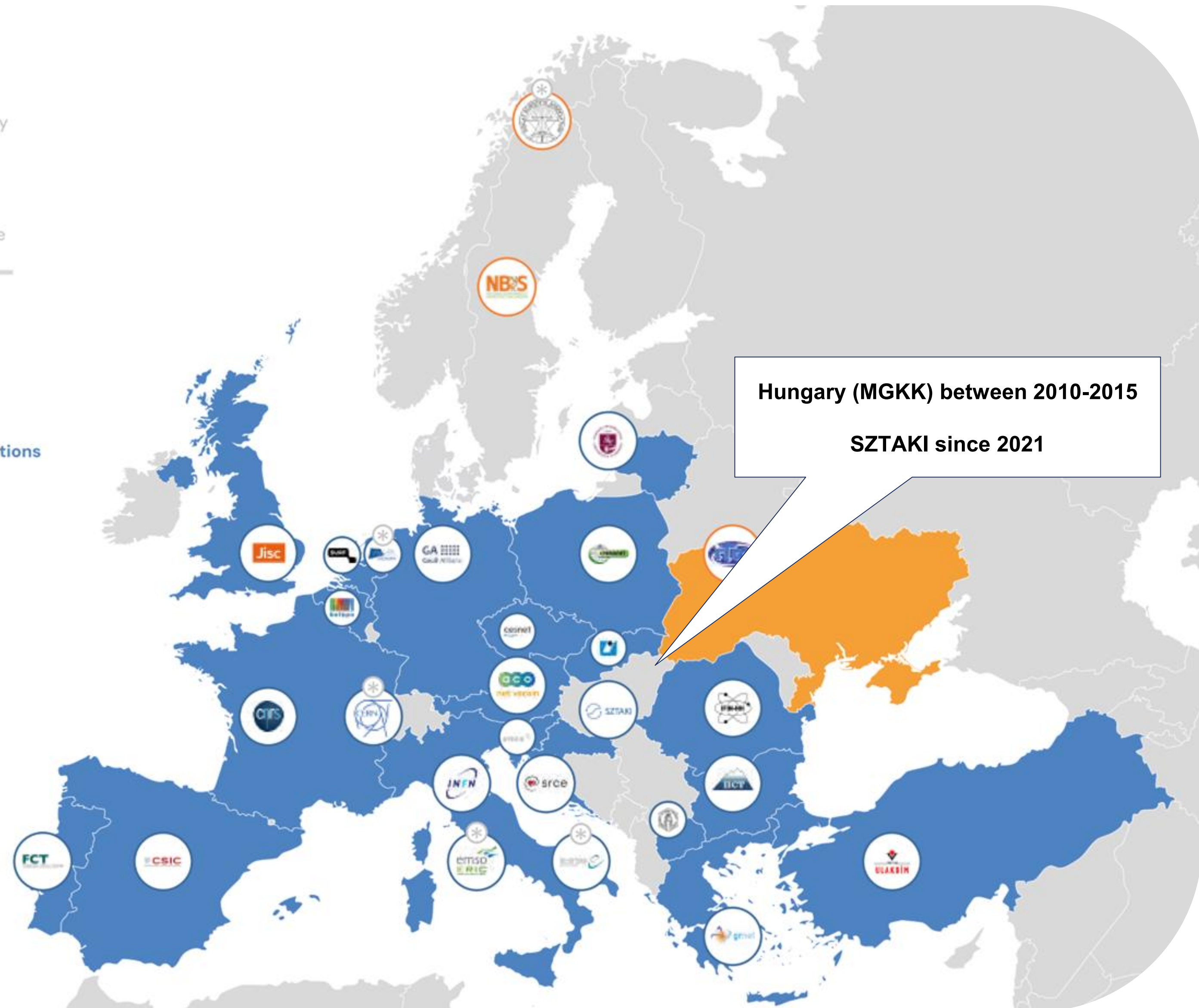


EGI Council Participants:



Why a federation?

- Support at international scale
- Invest nationally, access globally
- Data to compute, Compute to data
- Sovereign, yet integrated





EGI as an **infrastructure** community



EGI Services for research

VALUE ADDED

Applications



Notebooks

Create interactive documents with live code, visualisations and text



Replay

Reproduce and share research on a notebooks-based platform

Training



FitSM Training

Learn how to manage IT services with a pragmatic and lightweight standard



ISO 27001 Training

Learn how to manage and secure information assets



Training Infrastructure

Dedicated computing and storage for training and education

FEDERATED ACCESS

Compute Orchestration



Workload Manager

Manage computing workloads in an efficient way



Infrastructure Manager

Use cloud orchestrator to deploy and configure complex virtual infrastructures

Security & Identity



Check-in

Login with your own credentials



Secrets Store

Easily retrieve, manage, and rotate credentials, API keys, and other secrets through their lifecycle

INFRASTRUCTURE

Compute



High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets



Cloud Compute

Run virtual machines on demand with complete control over computing resources



Cloud Container Compute

Run Docker containers in a lightweight virtualised environment



Software Distribution

Publish and access software efficiently across multiple sites

Storage & Data



Online Storage

Store, share and access your files and their metadata on a global scale



Data Transfer

Transfer large sets of data from one place to another



Datahub

Access key scientific datasets in a scalable way

From infrastructure complexity to a compute continuum

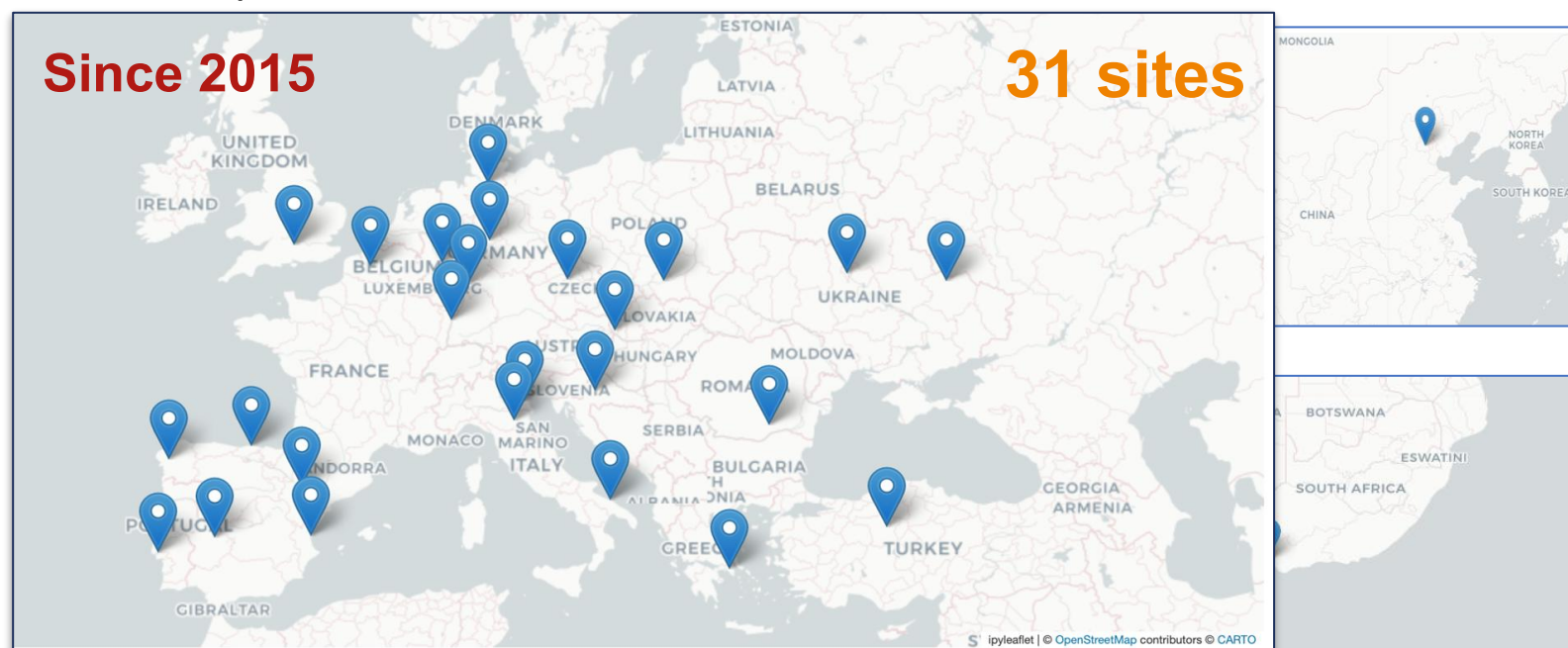
High Throughput Compute



Wigner Research
Centre for Physics
(ALICE and CMS)

200+ sites

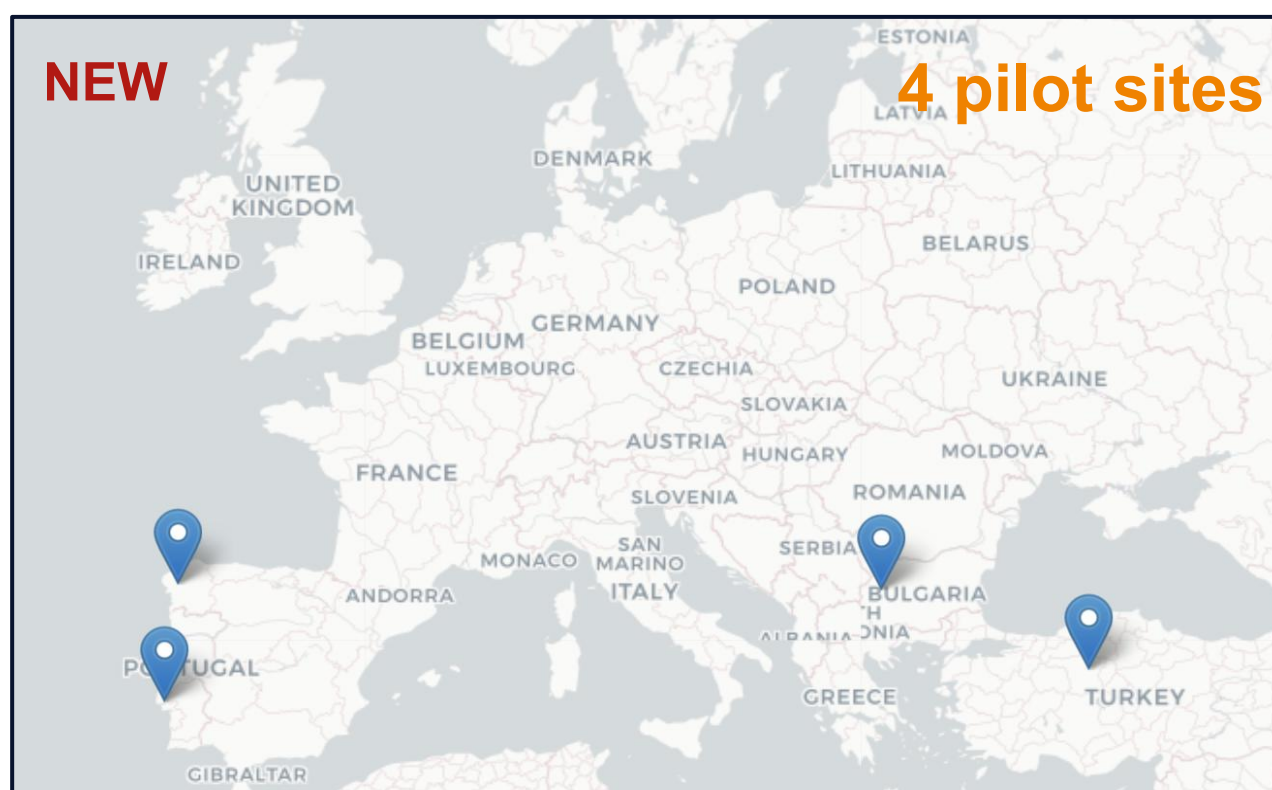
Cloud compute



Since 2015

31 sites

High Performance Compute



NEW

4 pilot sites

Benefiting
providers

Integrated management capabilities
Availability–reliability monitoring, User enabling,
Resource allocation, Security oversight, etc.



Benefiting
users

Harmonised behaviour and access
Workload and data management, Containers,
IP addresses, etc.

HPC federation Working Group:

<https://confluence.egi.eu/display/EGIBG/Working+Group%3A+HPC+federation>

EGI capacity brokering to scientific communities

Sustainability comes from institutional commitments.
Projects and pay-for-use for bootstrapping and customisation

Type, number, size,
cost, availability, etc.



Community'
representative

Instance
requirements

Negotiator



Conditions



Storage
provider



Applic.
provider



HTC
provider



Cloud
provider



Training



Support

HUN-REN Cloud to
support projects and
RIs

Federation
members

Service
Level
Agreement

Operation
Level
Agreement

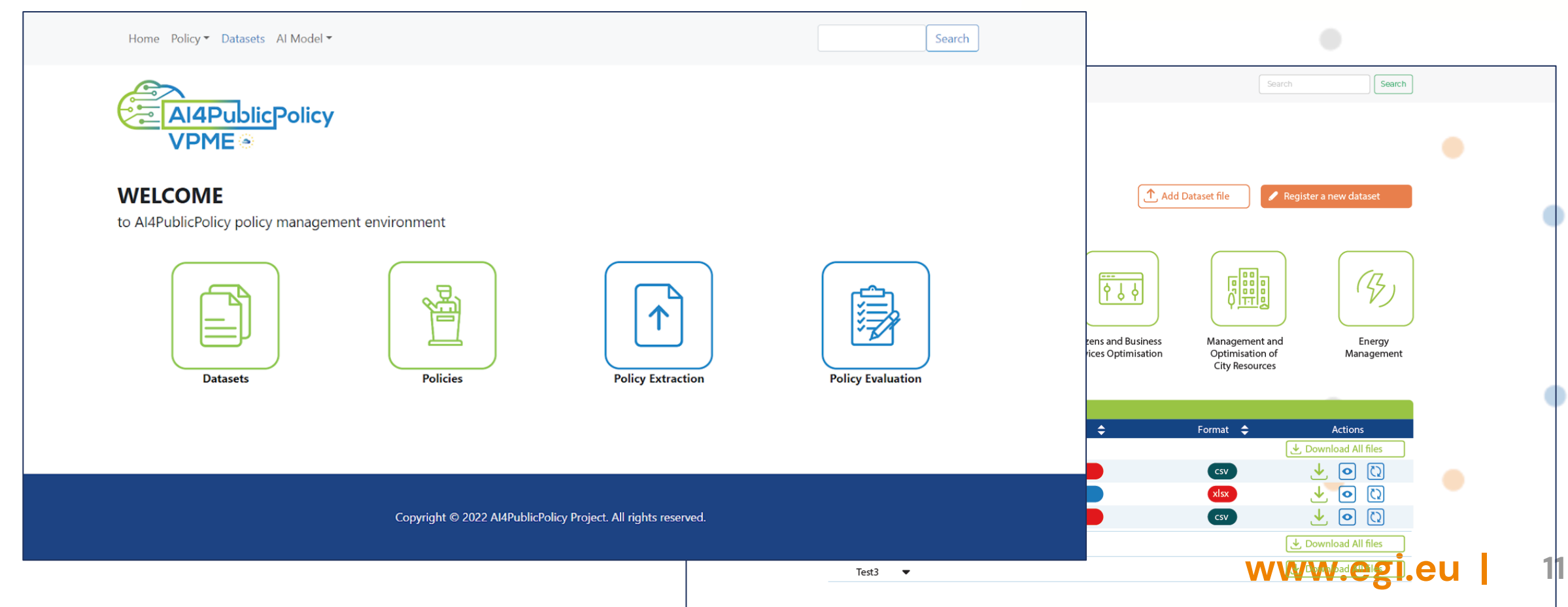
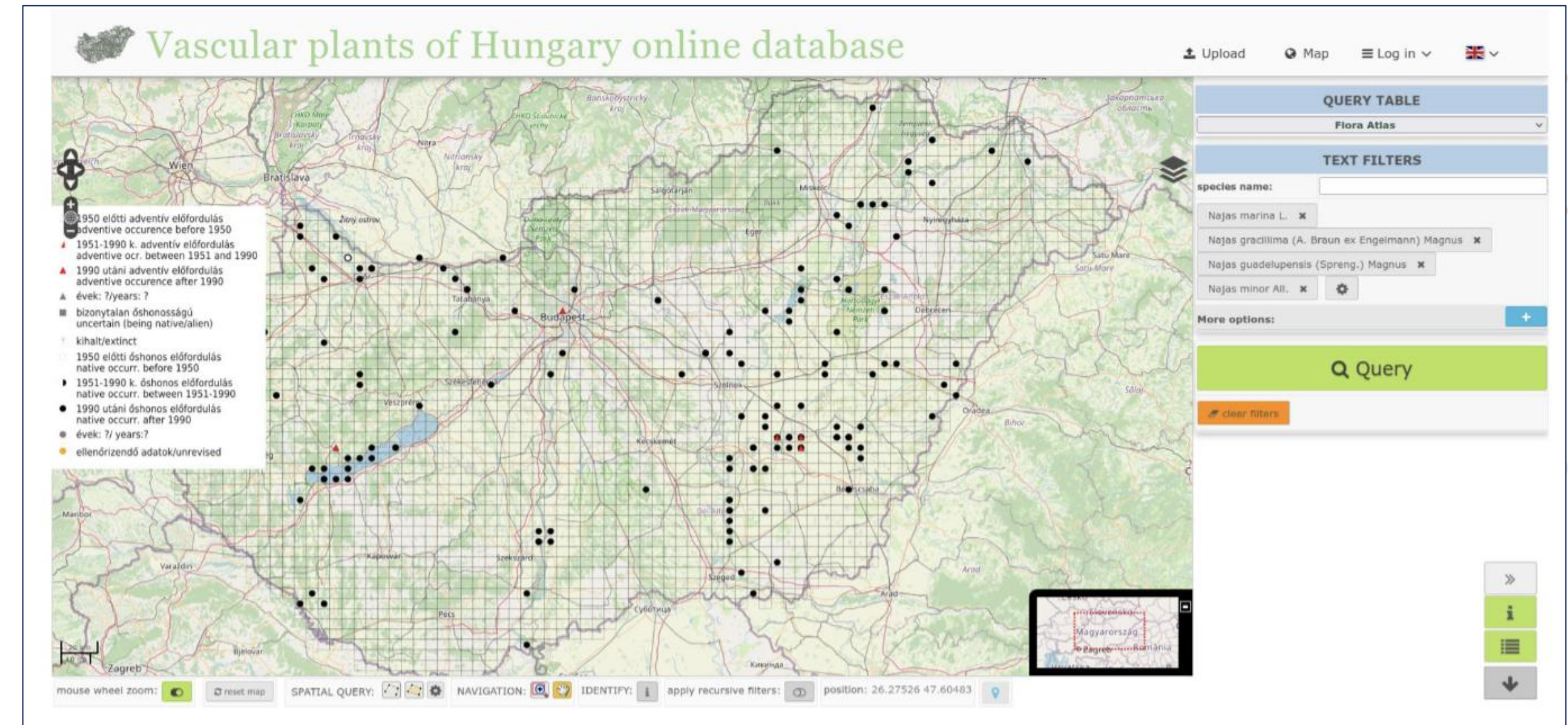
Ensure satisfaction,
capture
achievements,
record feedback

Regular satisfaction
interviews

Ensuring that agreed
targets are met

Regular service
delivery reports

- **Contributes to EGI Cloud since May 2022 with CPU and GPU resources**
- **Supports international science communities and projects**
 - Sponsored access for HUN-REN researchers
 - Pay-for-use access
- **User examples:**
 - OpenBioMaps (Biodiversity conservation) from July 2023 until June 2026 – sponsored
 - AI4PublicPolicy (Policymaking) – from June 2022 to Sep. 2024 – pay for use





From infrastructure to impact

Overall EGI annual statistics 2024

+116K

Users

2,8K

Enabled Open Access
Articles



37

EU Funded Projects
Contributing to Co-Design,
Innovation and User Support

25

Research
Infrastructures
Supported

249

Communities
Supported

7,4B

HTC CPU Hours
Consumed

62,7M

Cloud CPU hours

402M

HTC Computational Jobs



EGi as an **innovation** community

EGI Coordinated Projects



ENVRI-Hub NEXT

ENVRI-Hub NEXT consolidates and advances the robust conceptual and technical structure established by the ENVRI-Hub.



EOSC Beyond

Advancing innovation and collaboration for research



EOSC Data Commons

Building a Collaborative Future for Research Data



RI-SCALE

RI-SCALE empowers Research Infrastructures by providing scalable computational platforms for AI-driven data analysis, improving data

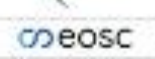


SPECTRUM

SPECTRUM brings together leading European science organisations and e-Infrastructure providers to formulate a Strategic Research

Bringing over 8.7M to the EGI Community in 2025

EGI Community Participated Projects

Logo	Name	Start Date	End Date	Website
	SoBigData++	01 Jan 2020	31 Dec 2024	project.sobigdata.eu
	Eureka3D	01 Jan 2023	31 Dec 2024	eureka3d.eu
	LABPLAS	01 Jun 2021	31 May 2025	labplas.eu
	PITHIA-NRF	01 Apr 2021	31 May 2025	pithia-nrf.eu
	LETHE	01 Jan 2021	31 May 2025	www.lethe-project.eu
	TANGO	01 Sep 2022	31 Aug 2025	tango-project.eu
	EuroScienceGateway	01 Sep 2022	31 Aug 2025	galaxyproject.org/projects/esg
	SoBigData RI	01 Oct 2022	30 Sep 2025	www.sobigdata.eu
	AI4Europe	01 Jul 2022	31 Dec 2025	www.ai4europe.eu
	GraspOS	01 Jan 2023	31 Dec 2025	graspos.eu
	DATAMITE	01 Jan 2023	31 Dec 2025	datamite-horizon.eu
	CRAFT-OA	01 Jan 2023	31 Dec 2025	www.craft-oa.eu
	AARC Tree	01 Mar 2024	28 Feb 2026	aarc-project.eu
	Blue-Cloud 2026	01 Jan 2023	30 Jun 2026	blue-cloud.org
	EUCAIM	01 Jan 2023	31 Dec 2026	cancerimage.eu
	ANERIS	01 Jan 2023	31 Dec 2026	aneris.eu
	GreenDIGIT	01 Mar 2024	28 Feb 2027	egi.eu/article/greendigit-project-kicks-off
	PHENET	01 Jan 2023	31 Dec 2027	www.phenet.eu/en
	EOSC-Focus	01 Jun 2022	31 May 2025	eosc.eu/eosc-focus-project
	DSSC	01 Oct 2022	30 Sep 2026	dssc.eu
	IRISCC	01 Apr 2024	01 Oct 2028	www.iriscc.eu
	ECHOES	01 Jun 2024	31 May 2029	www.URLHERE.eu
	SAGE	01 Mar 2025	29 Feb 2028	www.URLHERE.eu
	UNCAN- Connect	01 Sep 2025	31 Aug 2030	https://uncan.eu/
	Eureka3D-XR	01 Feb 2025	31 Jul 2026	eureka3d.eu

Hungarian involvement in R&D in EGI Projects and Grants

2021–2024



2021–2023 Service delivery through EOSC
HUN–REN Cloud integration and delivery



2024–2026 Greening DIGIT Infrastructures
(EGI, SLICES, SoBigData, EBRAINS)
Automated energy management for HUN–REN Cloud



2024–2026 AARC AAI Technical Revision to Enhance
Effectiveness for RIs



2024–2027 Advancing Innovation and Collaboration
for Research



2024–2029 European Cloud for Heritage OpEn Science



2024–2028 Integrated Research Infrastructures Bridging
the Gap Between Climate Risks and Action



2020–2024 Social Mining & Big Data Ecosystem

Közép–Európai Egyetem

SLICES in a nutshell



- Launched in 2017, **SLICES** is a **RI** to support the **academic and industrial research community** that will design, develop and deploy the **Next Generation of Digital Infrastructures**:
 - **SLICES-RI** is a **distributed RI** providing several **specialized instruments** on challenging research areas of Digital Infrastructures, by **aggregating** networking, computing and storage **resources** across countries, nodes and sites.
 - **Scientific domains**: networking protocols, radio technologies, services, data collection, parallel and distributed computing and **in particular cloud and edge-based computing architectures and services**.

what we offer



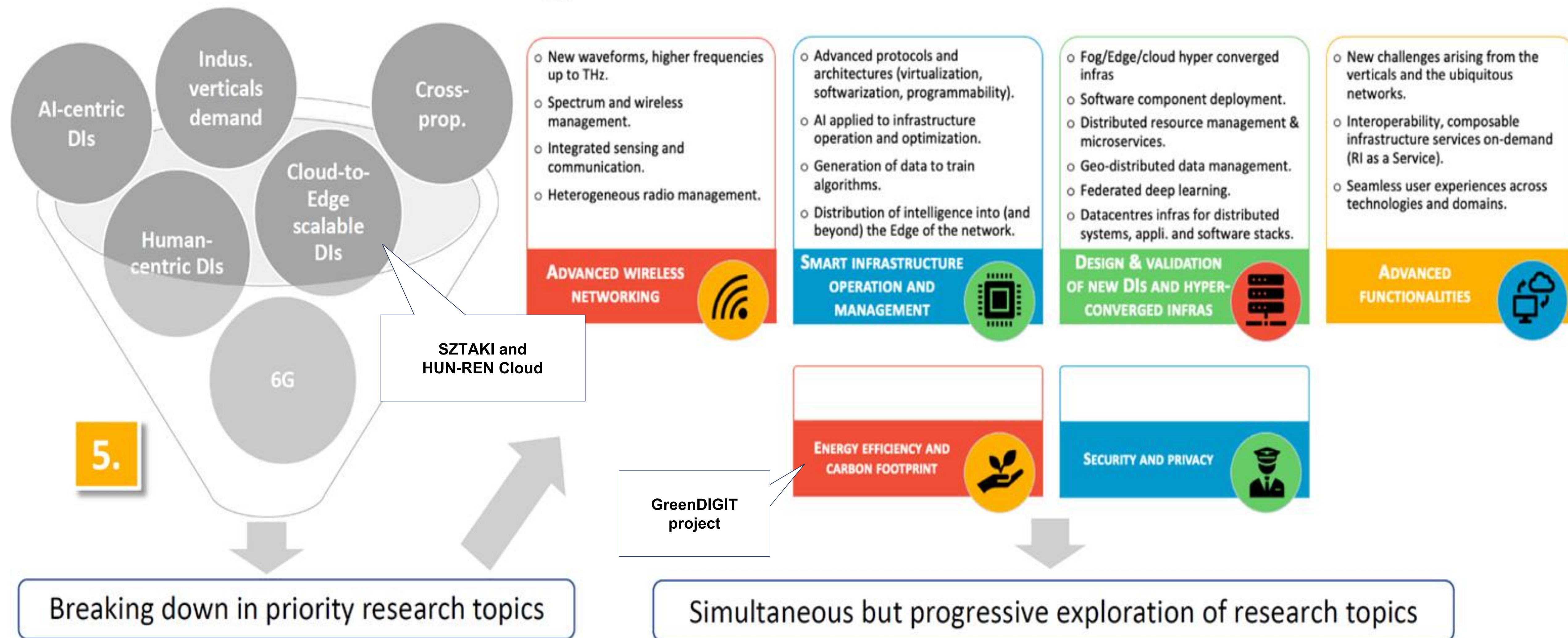
www.slices-ri.eu



slices **RI**

SLICES – An ESFRI DIGIT RI for R&D in IT

NKFIH által támogatott magyar részvétel – nemzetközi KI, 2026-tól ERIC



slices **RI**



What's next? EGI vision for the future

A European 'compute-data continuum' that serves international science

International research infrastructures and projects



According to Research Infrastructure roadmaps (nation/international)

Resource allocation and user support
Distributed Competence Centres

Service Level Agreement



Technical federation enables
Identity portability + Data portability + Application portability

Supply federation technologies/services

Operation Level Agreement



Nationally and internationally funded DIGIT infrastructures

1. **Data as a Strategic Asset** → Bringing 'data as a service' into the EGI infrastructure
2. **AI in science** → Distinguished AI offering
3. **Multiple delivery channels** → Contribute to EOSC and Data Spaces
4. **Comparable offerings** → Partnerships with EuroHPC, AI factories, DIGIT RIs, etc.

1. Bringing 'data as a service' into the EGI infrastructure

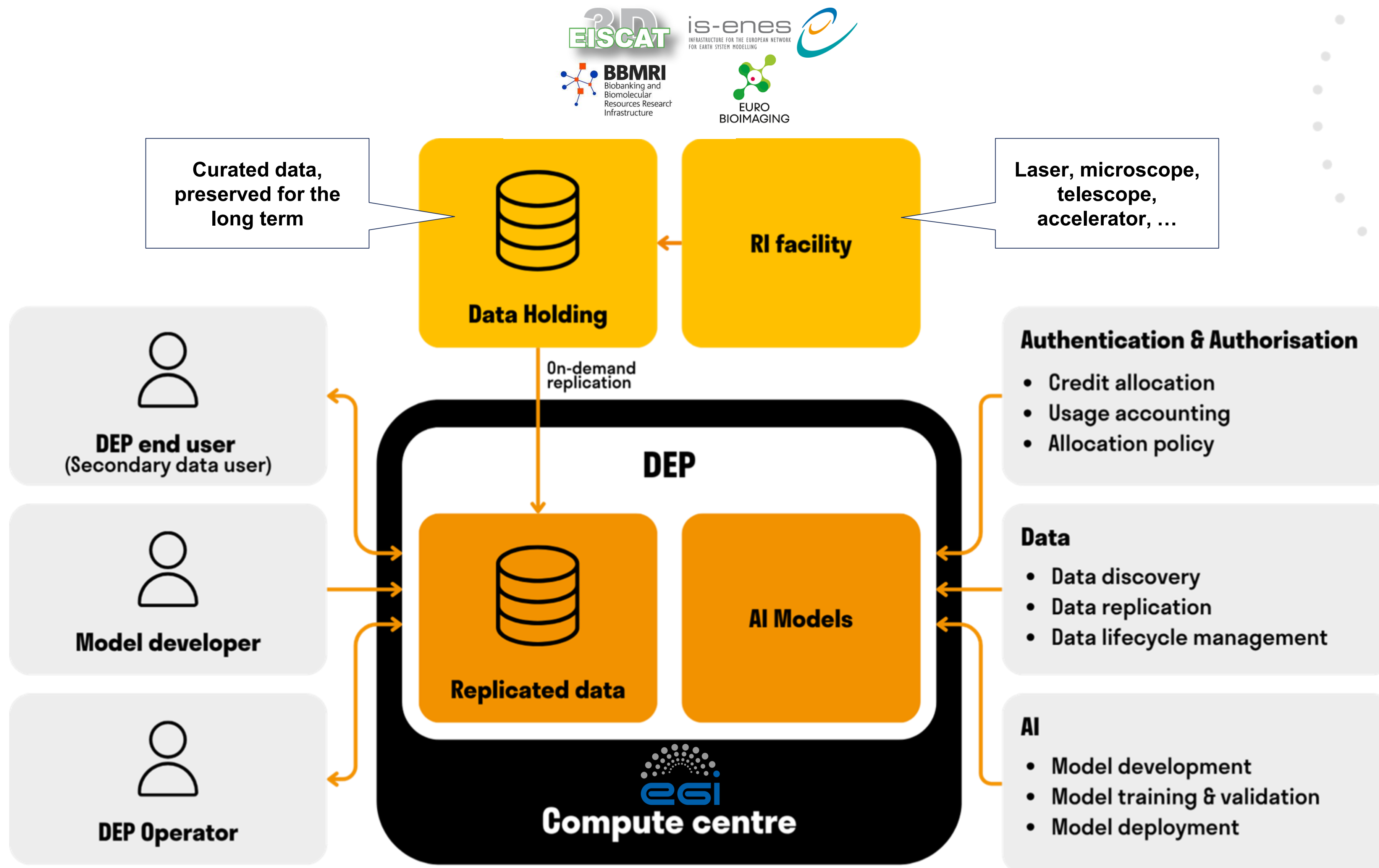
RI-SCALE TECH-01 project (2025-2027)

RI-SCALE

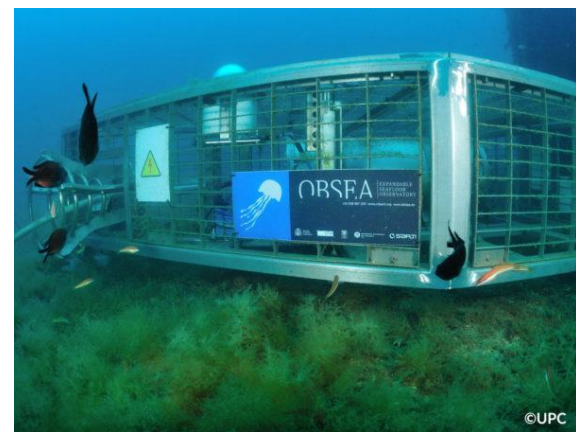
<https://riscale.eu>

Piloting and validating

- Technology
- Governance policies
- Business model



In Europe, we spent circa **1.4 Billion Euro a year** in marine data acquisition (in-situ and remote sensing data)



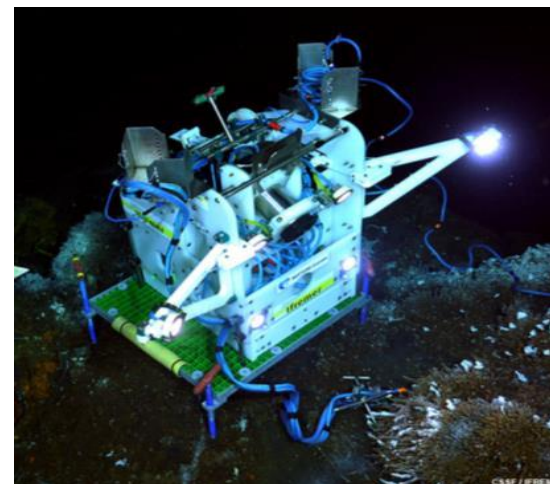
Underwater cameras



Microscopes



CCTV cameras



Seafloor observatories



Satellites



Drones

ACQUISITION



EMODnet

European Marine Observation and Data Network



SeaDataNet



...

MANAGEMENT

AI/ML

From DATA to KNOWLEDGE



iImagine

VALORISATION

Fish monitoring and classification

Marine litter detection

Oil spill prediction, ...

Chromis chromis 0.93

005EA_1PC668_E364

Diplodus sargus 0.96

Diplodus sargus 0.95

Diplodus sargus 0.94

Diplodus sargus 0.95

Chromis chromis 0.92
Chromis chromis 0.92

Chromis chromis 0.25

Chromis chromis 0.81

Chromis chromis 0.62

Chromis chromis 0.92

Chromis chromis 0.92

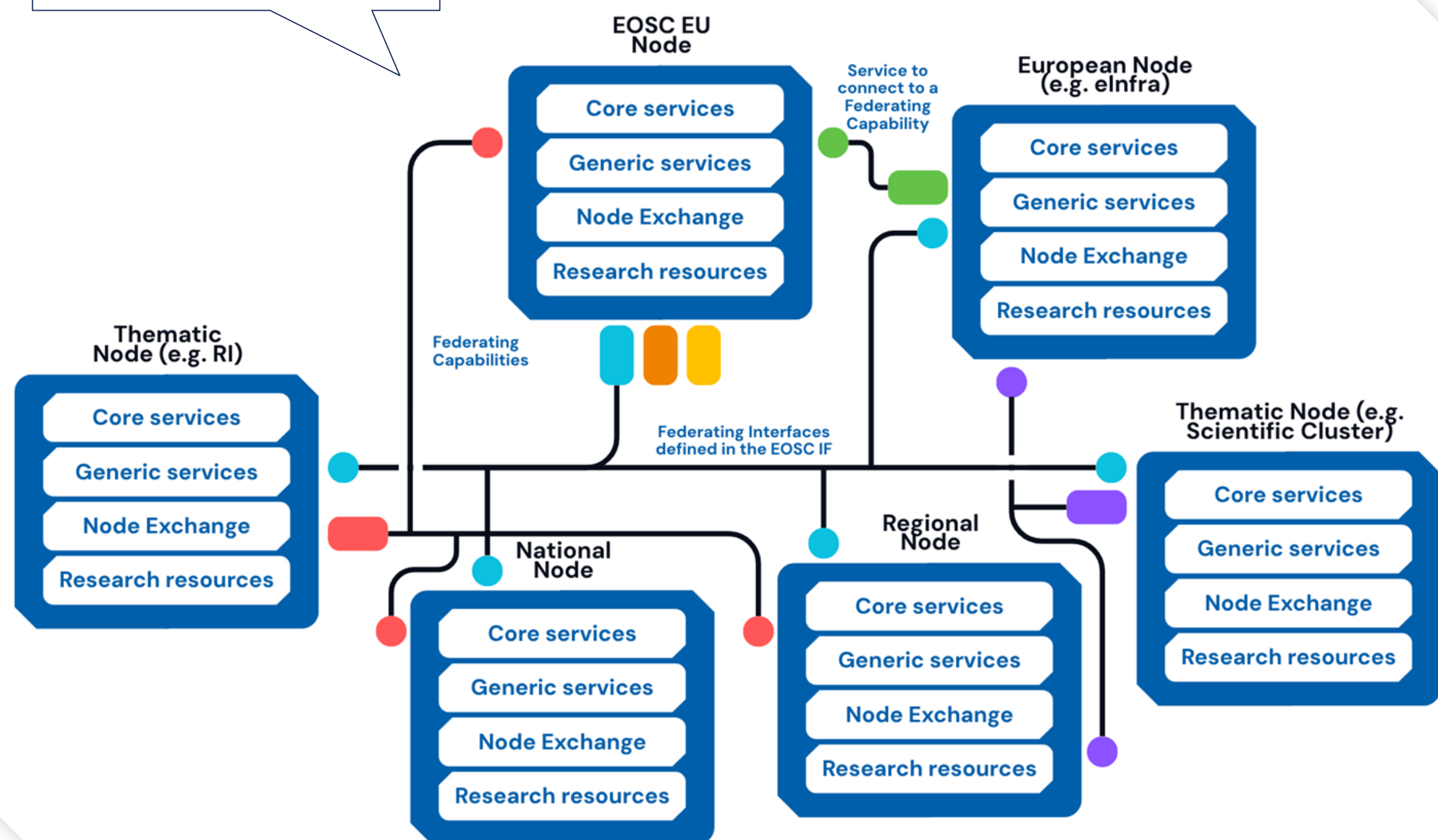
Chromis chromis 0.86

Chromis chromis 0.84

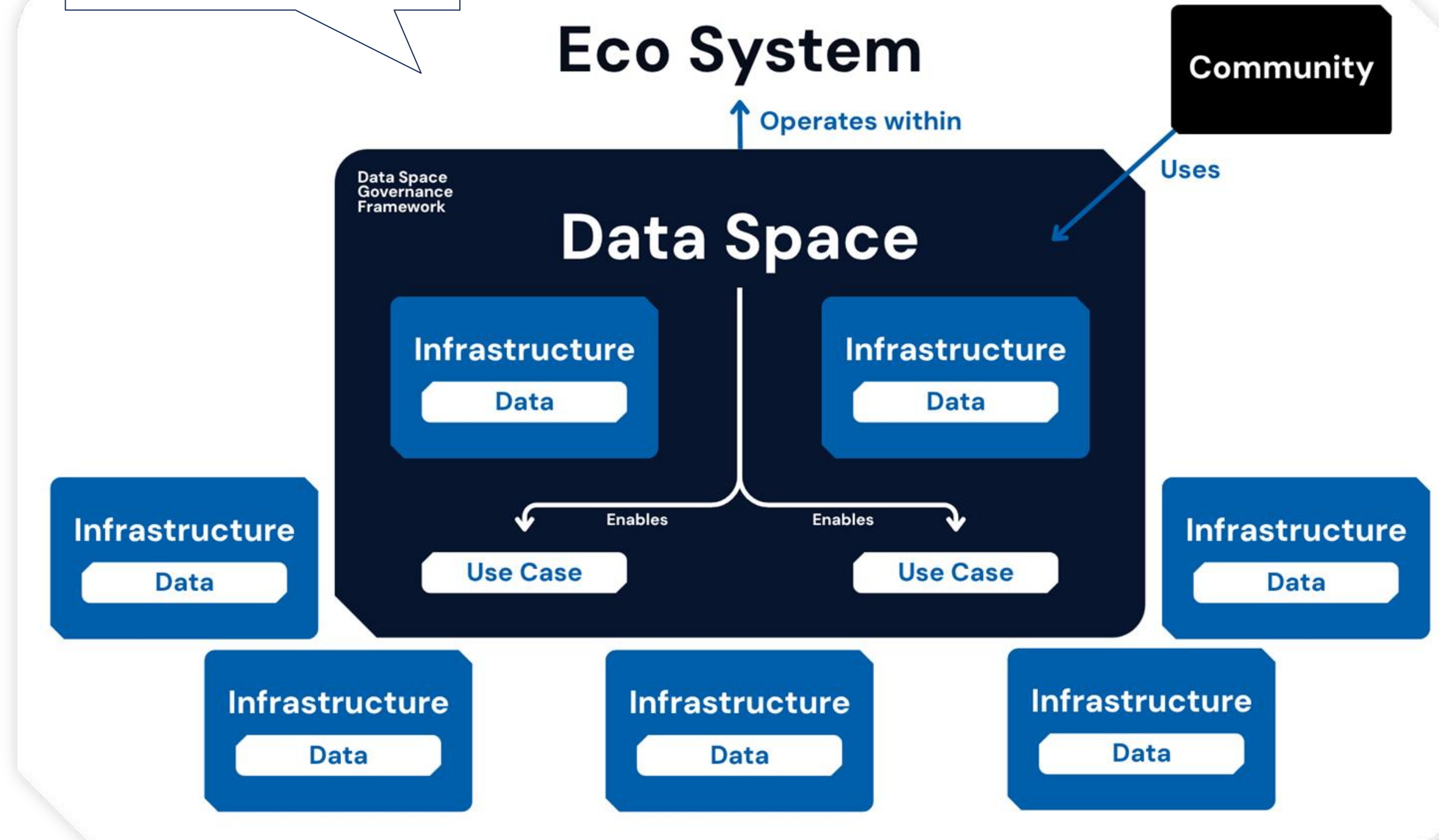
3. Contribute to EOSC and Data Spaces

Opening new delivery channels

EGI contributing with services, technologies, compute infrastructures, support



EGI contributing with services, technologies, compute infrastructures, support



Source: EOSC Association. (2025).
EOSC Federation Handbook. Zenodo. <https://doi.org/10.5281/zenodo.14999577>

EOSC

Source: GREAT project; D4.2 Final Governance Requirements and Endorsed Governance Scheme;
<https://www.greatproject.eu/great-project-resources/public-deliverables/>

European Data Spaces

4. Partnerships with other infrastructures



MoU signed October 3, 2024, at the EGI Conference in Lecce

The e-Infrastructure assembly as example:

- Exploit and align existing e-Infrastructures capabilities
- Enable integration and federation for European data competence
- Supporting national expert human networks

Common partners as facilitators:

Example: **HunAIFA AI Antenna** with **SZTAKI**



- SZTAKI and HUN-REN Cloud in EGI with institutional mandate since 2021
- SZTAKI and HUN-REN Cloud in SLICES ESFRI RI with NFKIH support from 2026
- Hungarian HunAIFA AI Antenna in EuroHPC from 2025
- **EGI serves as an infrastructure and as an innovation platform**
 - Strategy to growing in data, AI, internetworking, collaborations → New opportunities for HUN-REN Cloud
 - Potential to upgrade to national membership



Thank you!

Get in touch

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