Federation of computing and storage resource for a data-driven future

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TLP: WHITE Public

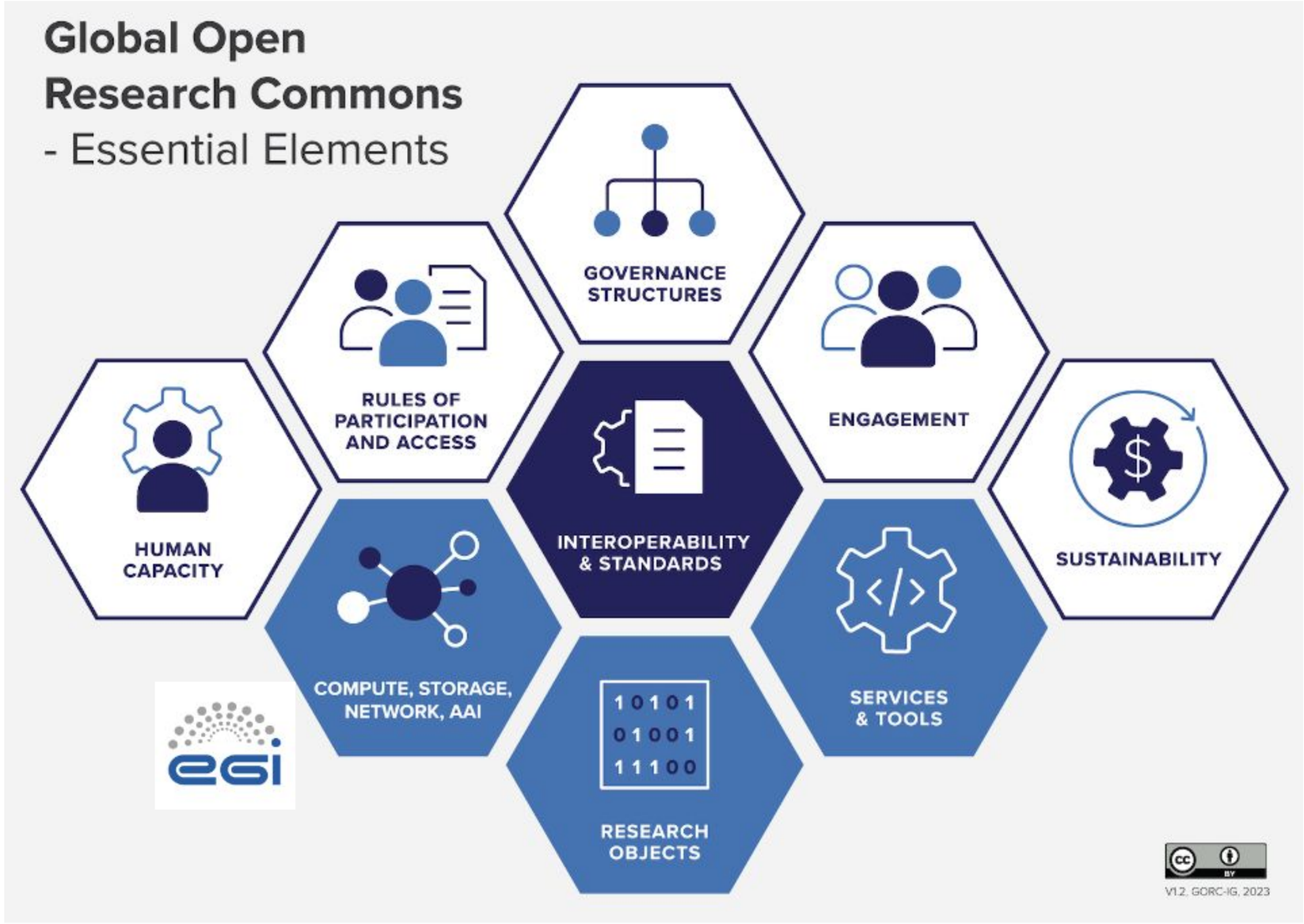
European digital infrastructures for research

› European coordinated efforts federating national digital assets (data, services, human networks) to support research at pan-European and international level

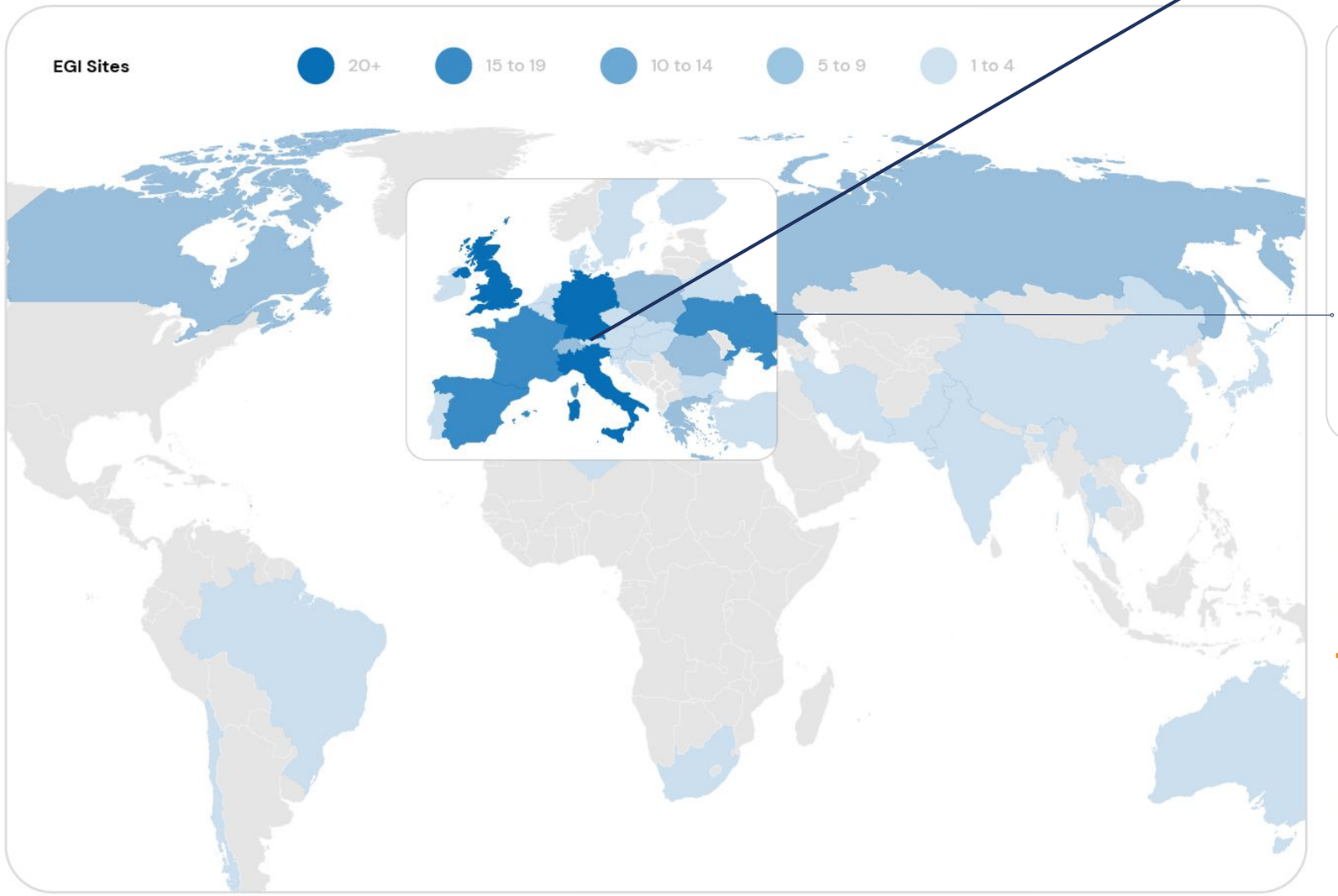
European digital infrastructures for research

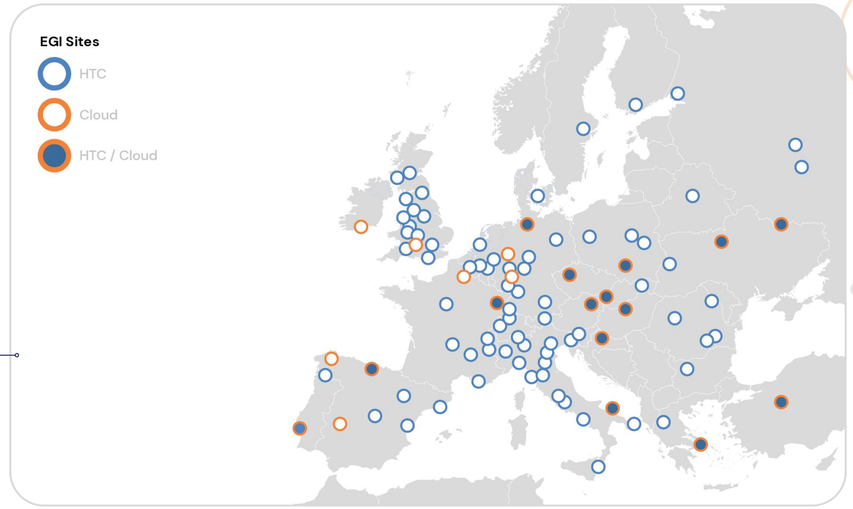
› National digital sovreignty
Invest nationally, access globally for European excellence in science

The digital infrastructure conceptual model according to RDA



EGI global infrastructure

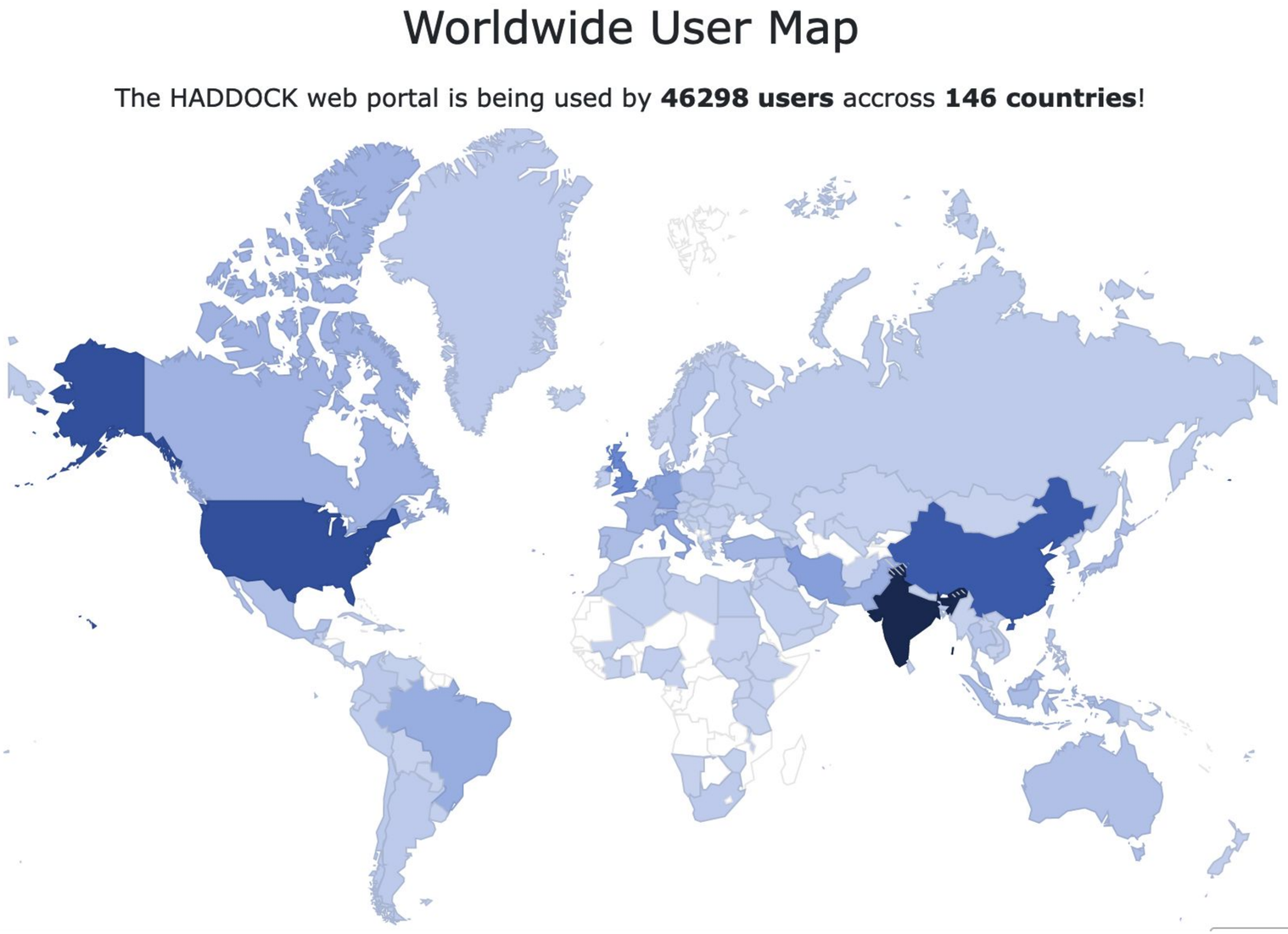


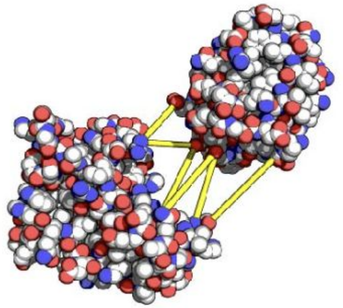


EGI federates research data centres to bring computing next to (distributed) research data

EGI Federated Cloud

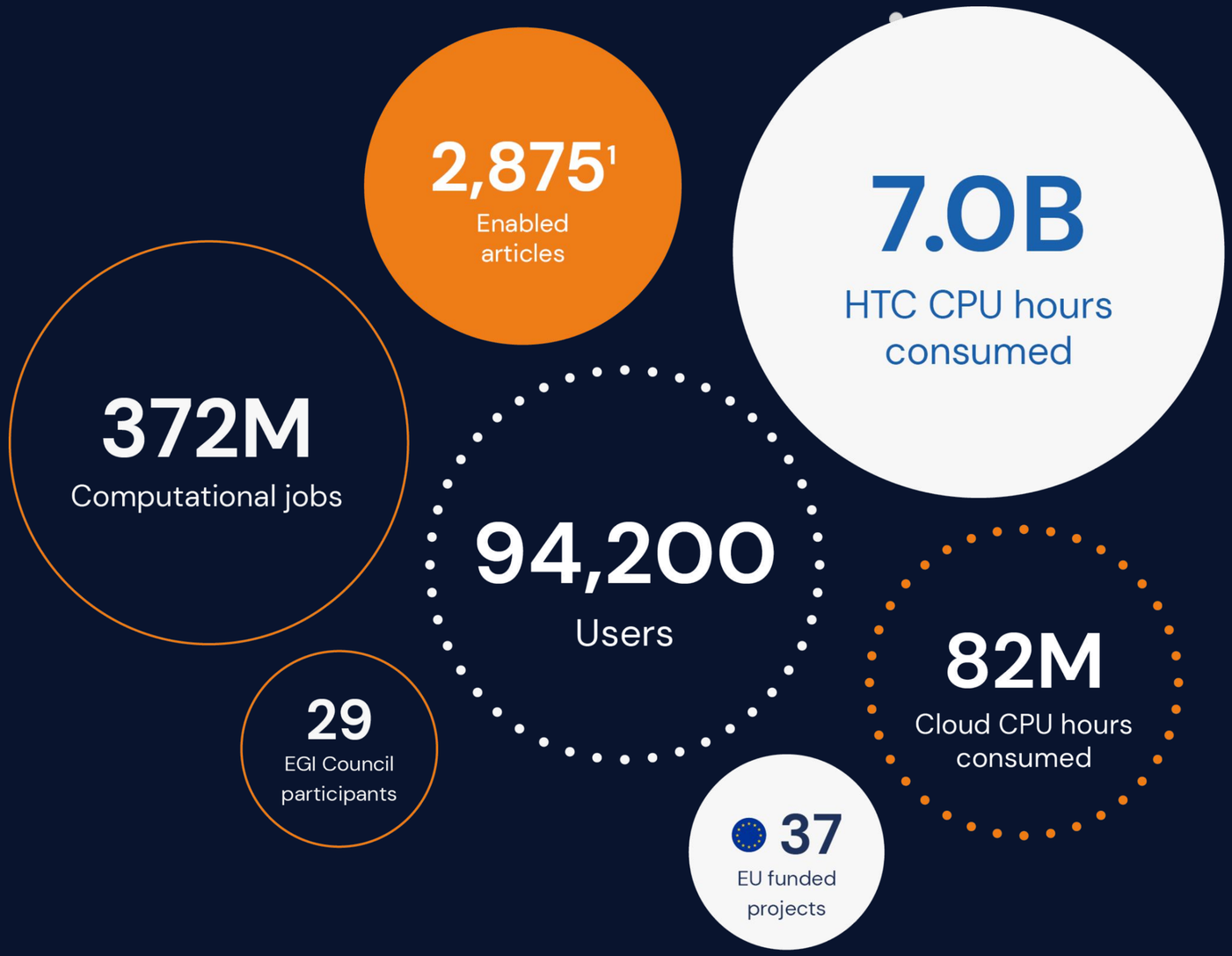
The structural biology use case - Opening tools for molecular docking simulations addressing the COVID-19 pandemic





A joint effort of WeNMR, EGI Federation (Europe), Open Science Grid (USA) and many other international partners

EGI in Numbers (annual statistics 2023)



Key Numbers

95,000
Total number of users

+10.200
New users in 2023

Top 5 Cloud Communities

WeNMR	NBIS	Biomed	BioISI	ENVRI
41K	21K	1.5K	1K	967

By number of registered users

Top HTC Communities

Atlas, CMS, ALICE, LHCb, Belle II, Virgo

Essential Partners and the Largest Adopters

Research infrastructures (RI) and research communities

13
new scientific communities

23
RIs from the ESFRI roadmap

49
RIs of pan-European scope using our services

1
new RIs engaged in 2023

However… we are still far from the full realisation of the research data value chain

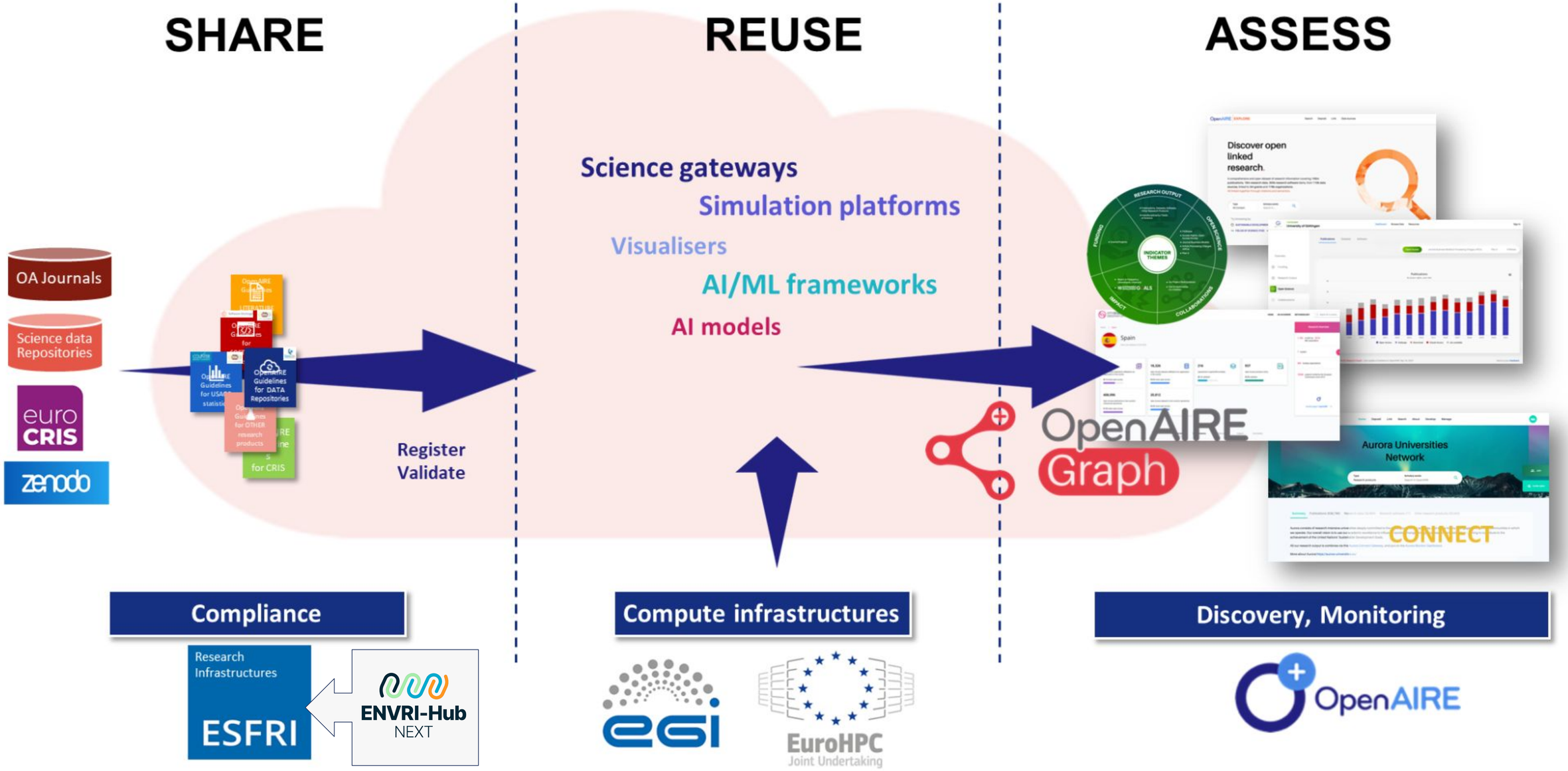
We need long-term national and EUropean investments

› For Data, compute and storage integration and R&I

› For alignment of European and national actors

› For national research infrastructures open for trans-national access

Supporting the entire open science cycle



The ENVRI-hub NEXT project

- **Harnessing the Potential of Data**
  - By facilitating easy access and interoperability across subdomains, we will empower researchers to address complex questions and develop groundbreaking solutions.
- **Guiding Light - Essential Climate Variables**
  - The project is guided by the science-based framework of ECVs, a set of critical measurements essential for monitoring climate change and its impacts. This focus allows us to deliver targeted insights and evidence-based solutions.
- **Integration is Key**
  - ENVRI-Hub NEXT champions the integration of ENVRI RIs. By fostering collaboration and synergies, we will provide researchers with a unified platform, enabling them to conduct cross-disciplinary research.

Unified Access

Interoperability

ECV-Focused

Open & Transparent

Cloud-based

ENVRI-Hub NEXT

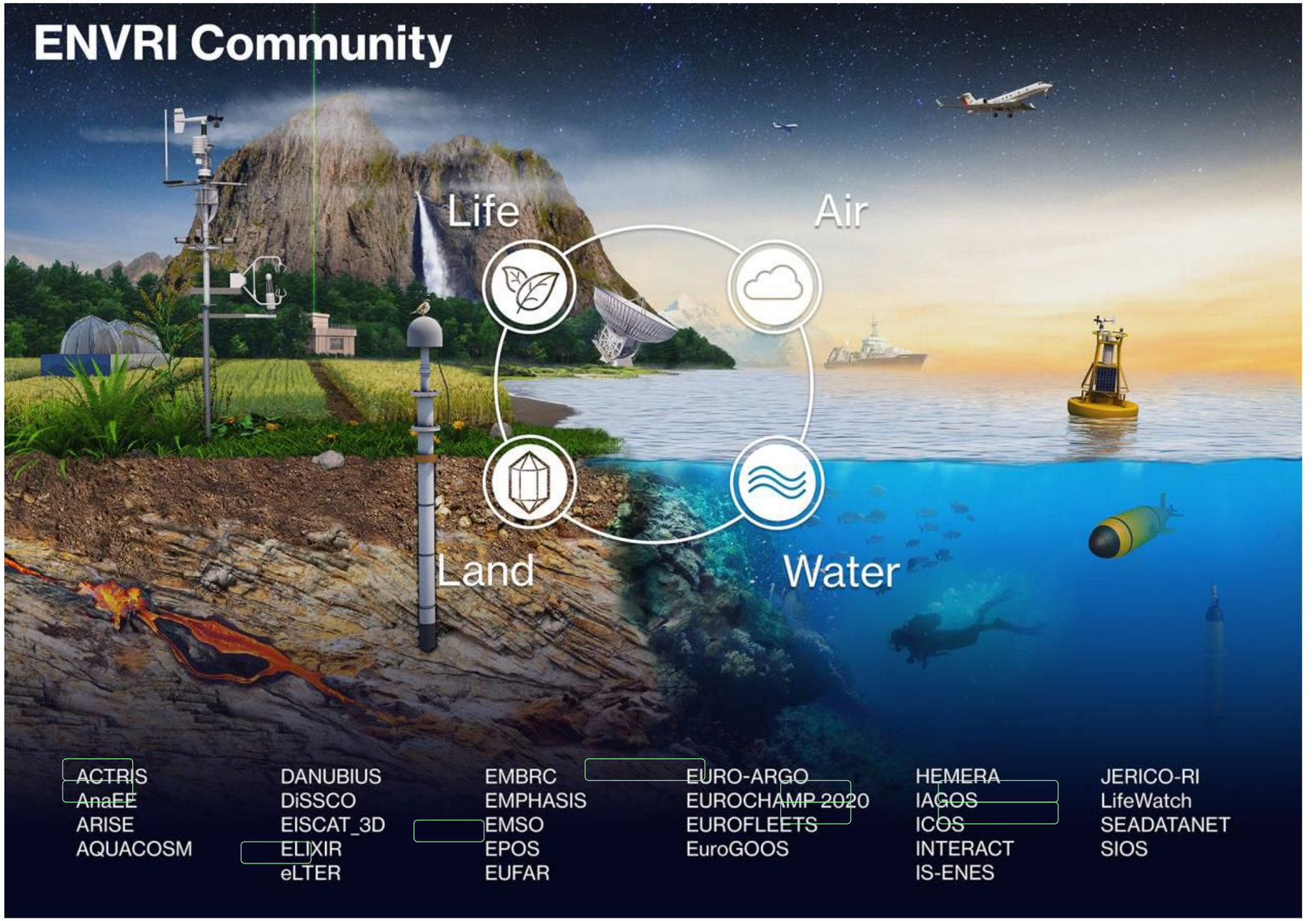
1 **ENVRI Community**

(Supported by the EU-funded cluster projects ENVRI, ENVRIplus, ENVRI-FAIR, and currently, by the ENVRI-Hub NEXT)

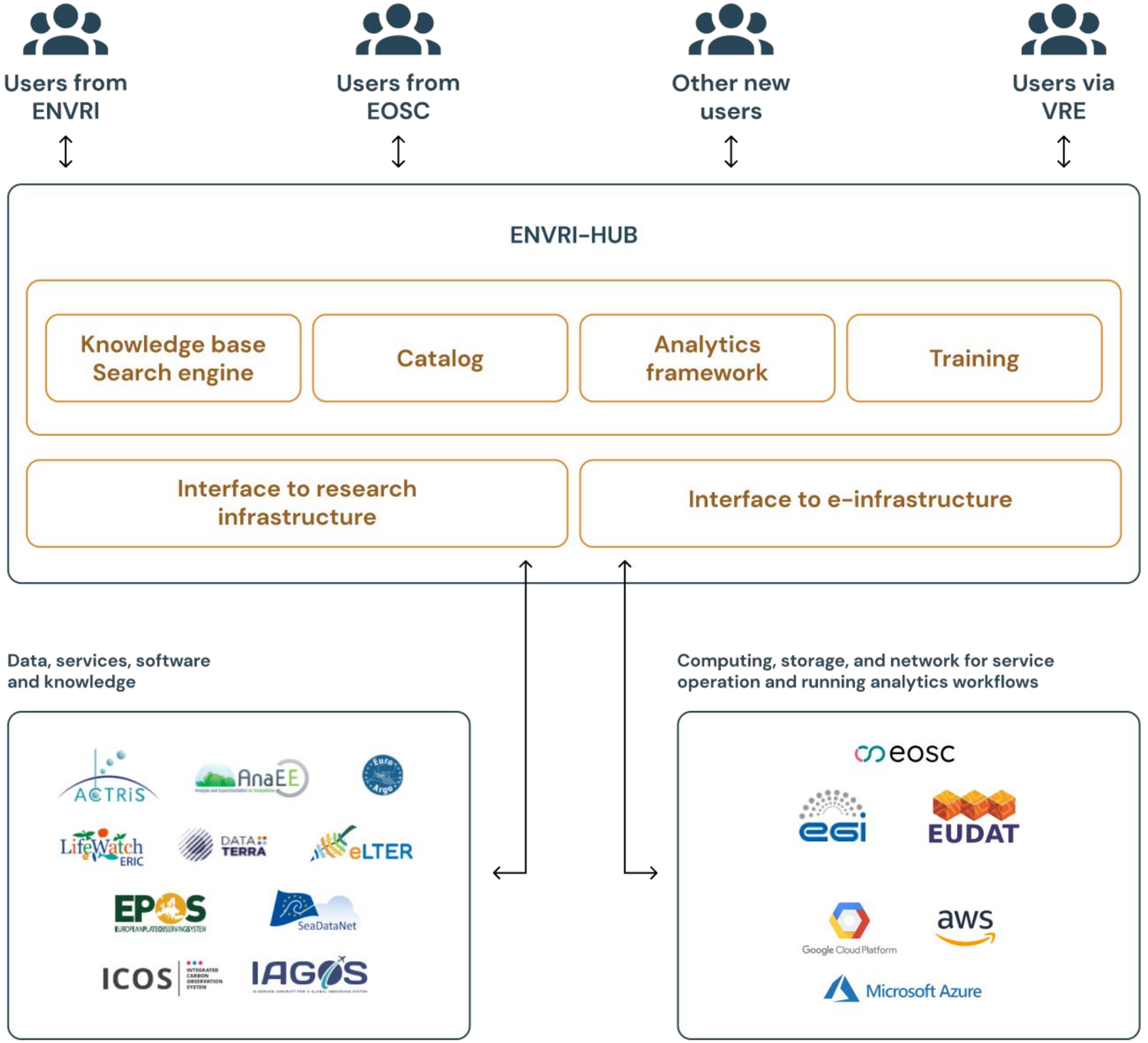
4 **Environmental domains**

27 **Research Infrastructures**

ENVRI Community



ENVRI-Hub NEXT



Project details

interTwin co-designs and implements the prototype of an interdisciplinary Digital Twin Engine (DTE) – an open source platform based on open standards that offers the capability to integrate with application-specific Digital Twins (DTs). Its functional specifications and implementation are based on a co-designed interoperability framework and conceptual model of a DT for research – the DTE blueprint architecture. The ambition of interTwin is to create consensus on a common approach to the implementation of DTs that is applicable across the whole spectrum of scientific disciplines that will facilitate developments and interoperability across different DTs.

The future role of Europen digital infrastructures

- **Democratisation of AI and research data empowers European researchers without specialised AI and technical knowledge, with open-source datasets, integrated computing infrastructure and tools so that they can build innovative research software**
- **Europe has the potential of addressing this need by integrating national capabilities and by sustaining advanced computing, datasets, models, software, training and user support to European researchers**
- **We strongly advocate for continuous funding from national and European funding agencies to support this vision!**

Contact us

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Let's talk. Or
meet in person

Get in touch with us

www.egi.eu

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