



Giuseppe La Rocca Community Support Team Lead giuseppe.larocca@egi.eu

TLP: GREEN Limited disclosure



About me



Community Support Team Lead. @ EGI Foundation

Member of the EGI Foundation team since Dec. 2015

MSc in Computer Science Engineering from the University of Catania (Italy).

Based on Catania, Italy

giuseppe.larocca@egi.eu

ORCID: <u>0000-0002-8011-1450</u>



- Who we are, What we do, and Who do we support
- The role of the EGI Federation in the implementation of the EOSC



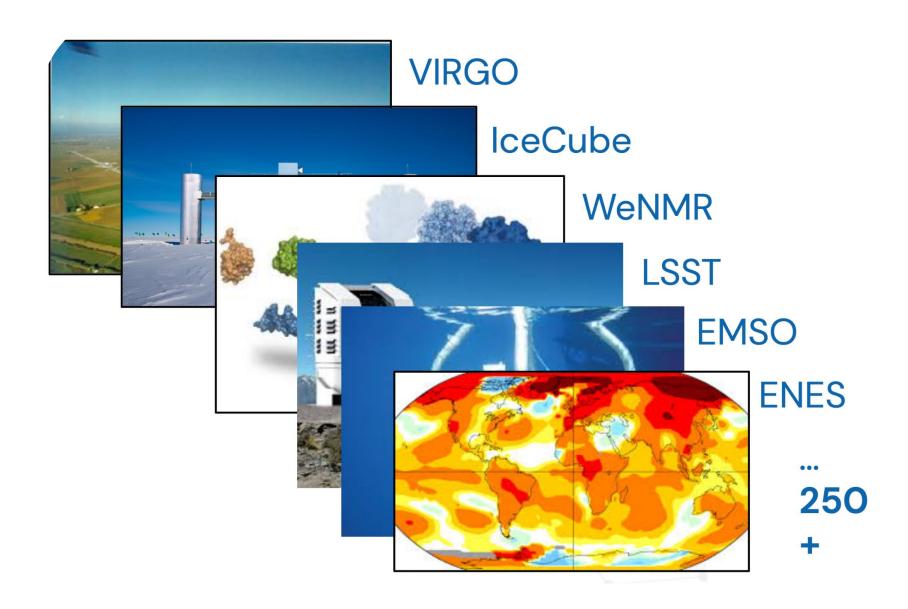
The EGI Federation is an international e-infrastructure

We provide advanced computing and data analytics for research and innovation



2010

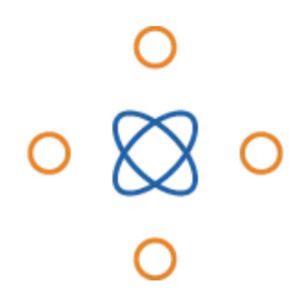
From the high-energy physics compute grid (WLCG)



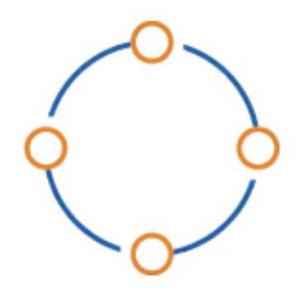
2024

To a multi-disciplinary, multi-technology infrastructure









EGI Federation

EGI is a federation of computing and storage resource providers united by a mission of delivering advanced computing and data analytics services for research and innovation.

EGI Foundation

EGI Foundation is a not-forprofit organisation created to coordinate and develop the EGI infrastructure and engage diverse users of our broad service portfolio.

EGI community

The EGI community is a community of researchers, developers, funders, technologists, dreamers and do-ers: anyone with a stake in advanced computing for research.



Vision

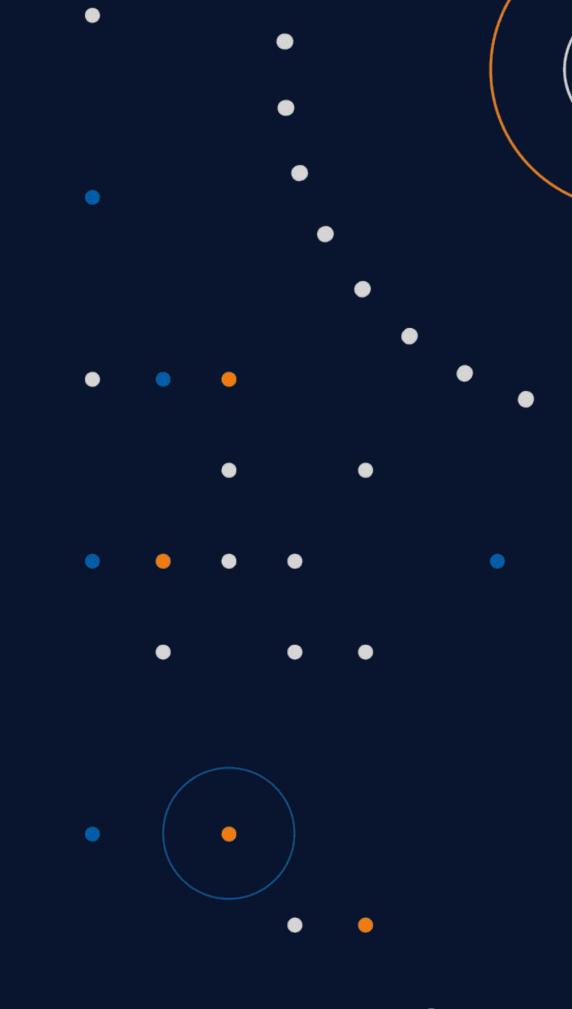
All researchers have seamless access to services, resources and expertise to collaborate and conduct world-class research and innovation

Mission of the EGI Federation

Deliver open solutions for advanced computing and data analytics in research and innovation

Mission of the EGI Foundation

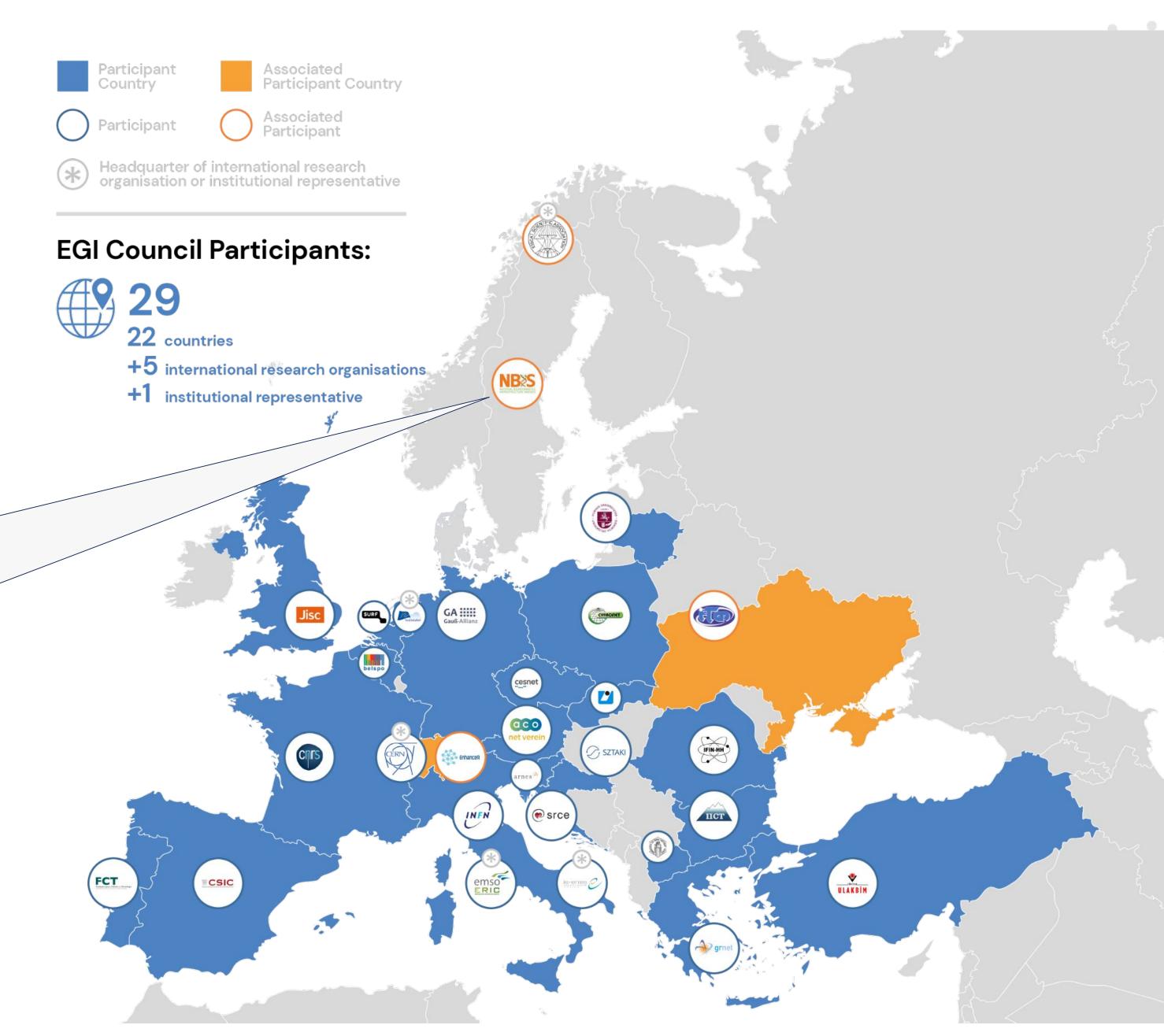
Enable the EGI Federation to serve international research and innovation together





EGI Council Participants

Plenary: A view from the bridge: a look at innovative practices in our community – Wed 02, 09:00 CEST





International Partnerships



Session: Global perspectives on advancing Open Science with computational infrastructures - Wed 02, 11:00 CEST



How does EGI engage with communities?

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

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











Instance requirements



Conditions







Training Federation members

Community' representative

> Ensure satisfaction, capture achievements, record feedback

> > Regular satisfaction interviews

Service Level Agreement

Operation Level Agreement

Ensuring that agreed targets are met

Storage

provider

Regular service delivery reports



https://www.egi.eu/egi-access-call/

Goal

The EGI Access Call offers access to:

- EGI services, resources and
- related user support and training.

Resources and services offered via the EGI Access Call are:

- Sponsored by various national funding agencies, and
- free to access for the use cases selected through the call.

Submit your application now

Read success stories here





Users can freely access scientific data and digital services provided by EGI resource providers

Example:

- EGI Notebooks open instance
- EGI Cloud pool for application piloting

Policy-based

Users are granted access based on policies defined by the EGI resource providers or by the EGI Foundation

Example:

- Biomed HTC pool for life sciences
- INFN-Bari (IT), IN2P3-IRES (FR), ULAKBIM (TR) provide Clouds for the National Bioinformatics Infrastructure of Sweden

Market-driven

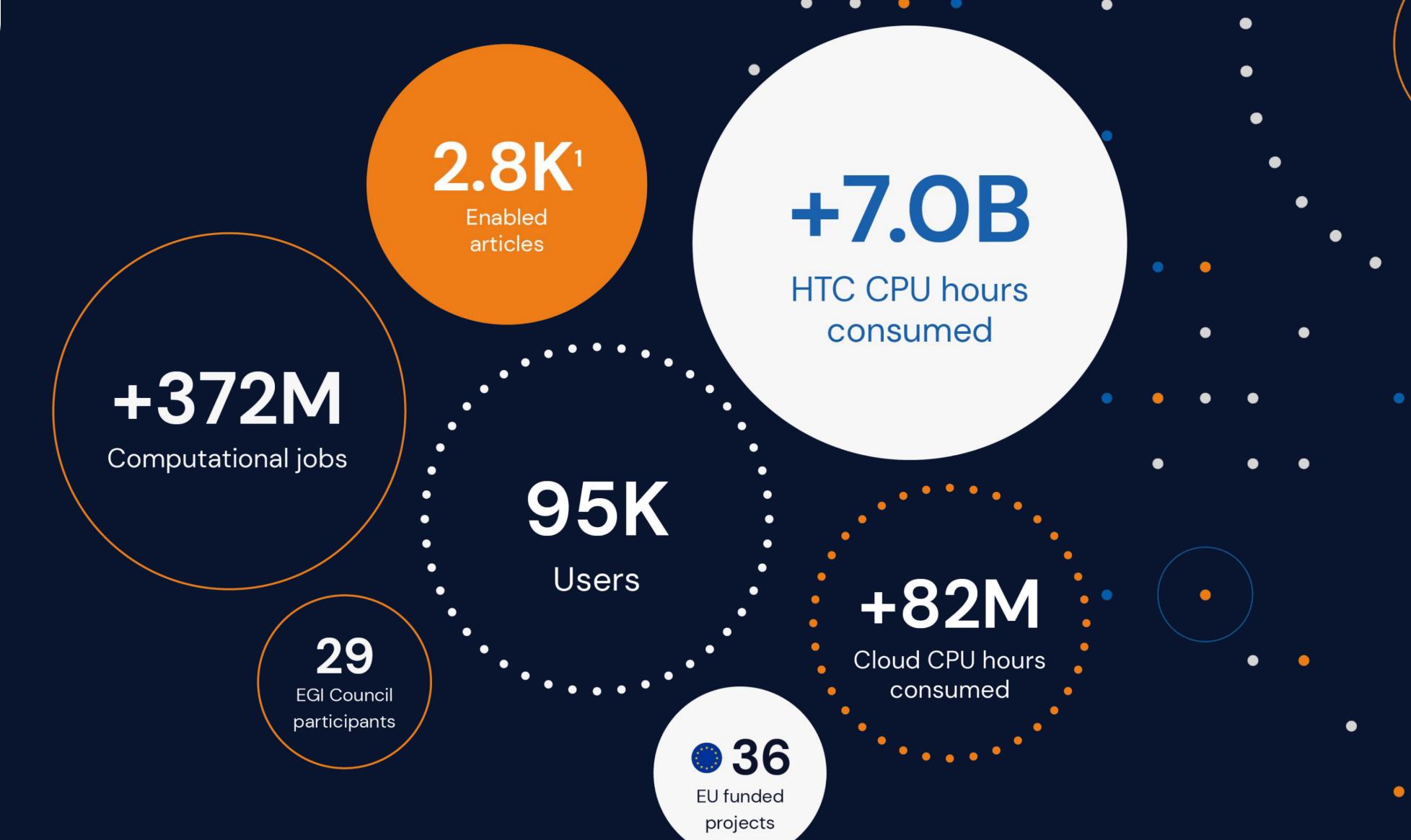
Users can negotiate a fee to access services either directly with EGI resource providers or indirectly with the EGI Foundation

Example:

- FitSM training by EGI Foundation
- 4 EGI Cloud providers deliver to Exprivia



EGI in Numbers (annual statistics 2024)





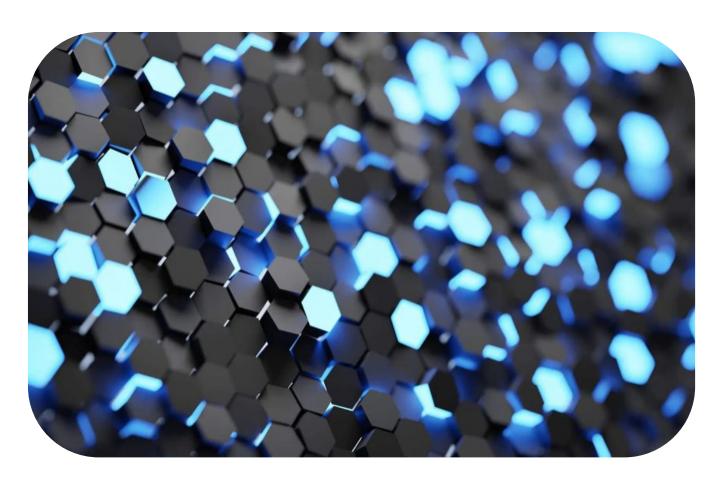
Our services

https://www.egi.eu/services/research/



Services for Research

Our large-scale computing and data analytics services are helping scientists to accelerate their research.



Services for Federation

Our internal services provide tools for coordination of the EGI Federation, improving how we work together.



Services for Business

We help companies to exploit and provide services and resources for compute- and data-intensive research and innovation.





Services for Research

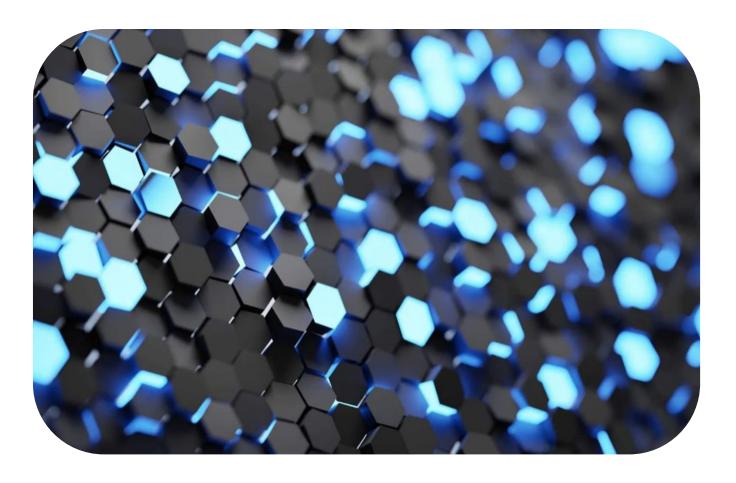


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The EGI Services for Research Portfolio

https://www.egi.eu/services/research/

Compute



Cloud Compute

Run virtual machines on demand with complete control over computing resources



Cloud Container Compute

Run Docker containers in a lightweight virtualised environment



High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets



Software Distribution

Publish and access software efficiently across multiple sites

Compute Orchestration



Workload Manager

Manage computing workloads in an efficient way



Infrastructure Manager

Use cloud orchestrator to deploy and configure complex virtual infrastructures

Applications



Notebooks

Create interactive documents with live code, visualisations and text

Training



Replay

Reproduce and share research on a notebooks-based platform

Storage & Data



Datahub

Access key scientific datasets in a scalable way



Data Transfer

Transfer large sets of data from one place to another



Online Storage

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

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



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

User documentation: https://docs.egi.eu



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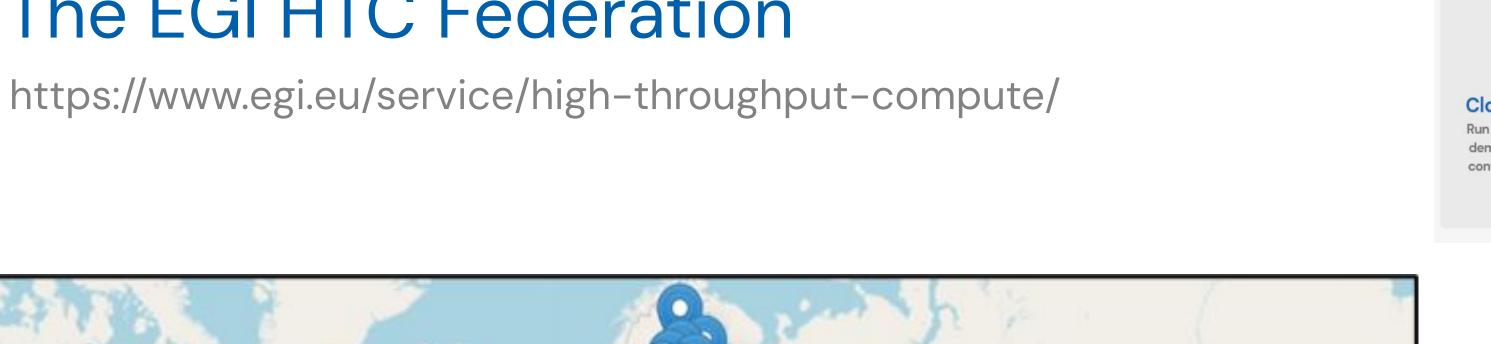
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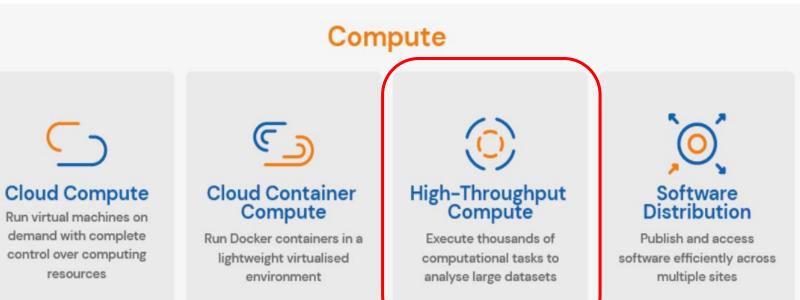


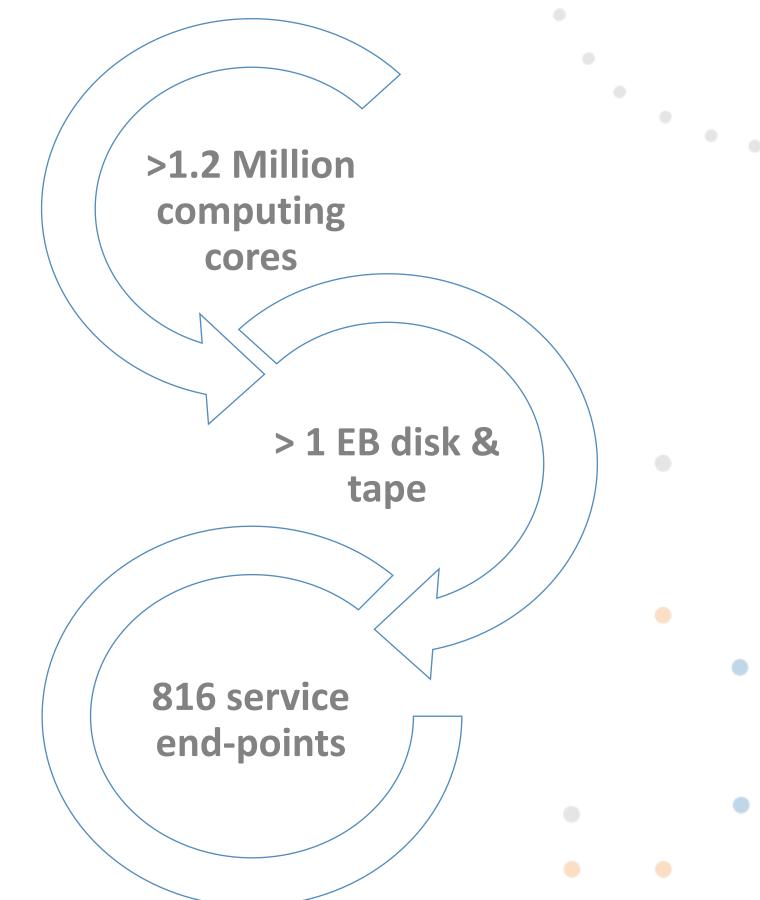
The EGI HTC Federation





200+ High Throughput Compute sites (ARC-CE, HTCondorCE)







Scaling out WeNMR portals for structural biology

wenmr.science.uu.nl

WeNMR is a worldwide e-infrastructure for Nuclear Magnetic Resonance (NMR) and Structural Biology

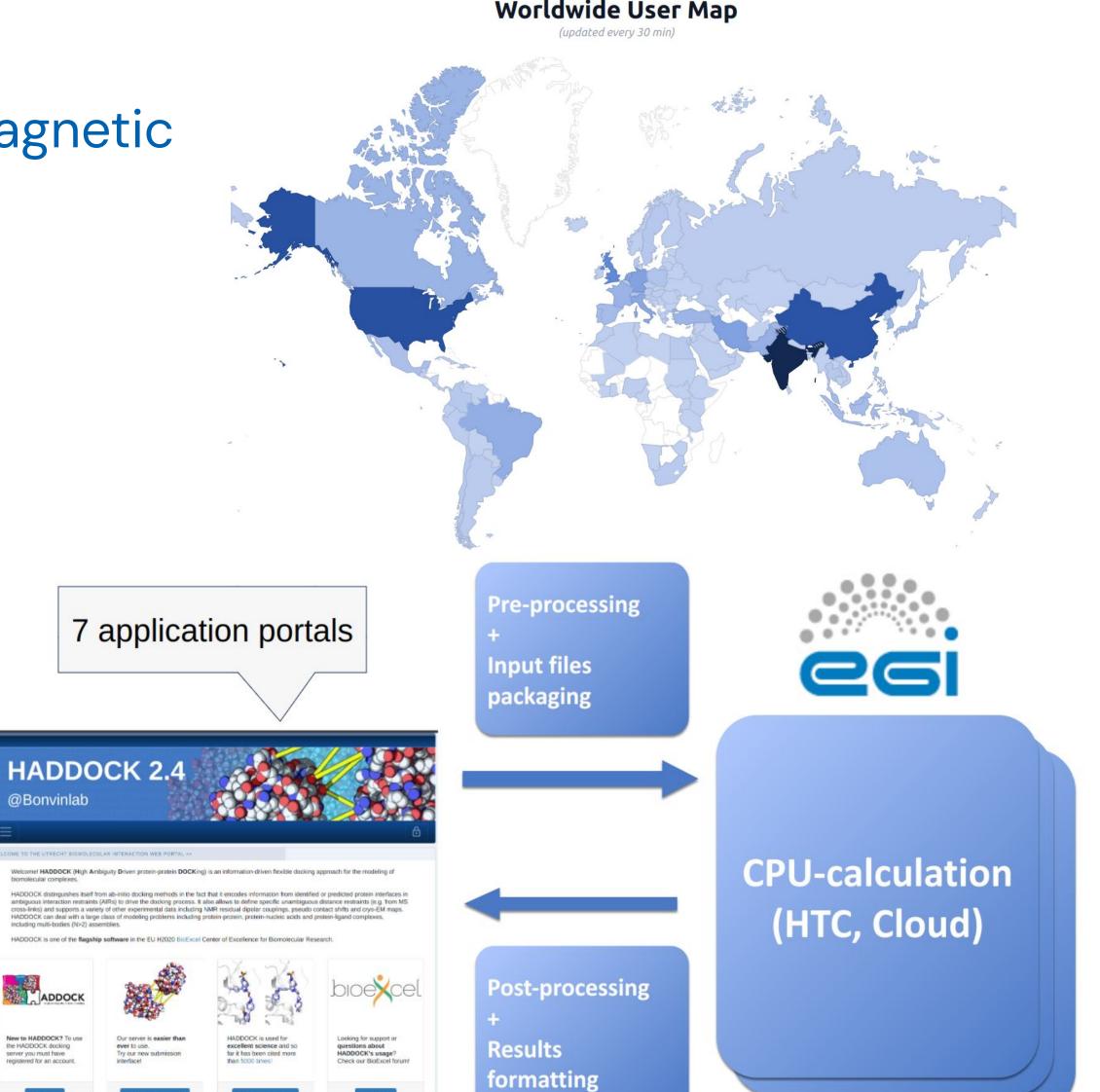
Mission:

- Understand life at molecular level
- Engineer better molecules for material, health of food applications
- Obtain starting point for drug design to combat diseases

Statistics

- The HADDOCK web portal is being used by 49,727 users
- 60,942,919 HTC CPU/h consumed since 2010

Read the full story here





Federating HPC resources

- Pilot service offer that brings EuroCC HPC providers into the EGI federation
- Access to cloud laaS infrastructures and HPC
 - Hosting long-running services as cloud VM, data transfer using cloud storage, spawning jobs to HPC as needed
 - Access HPC with Check-in identities
- 4 initial providers:
 - LIP/INCD (PT),
 - CESGA (ES),
 - TUBITAK (TR),
 - IICT-BAS (BG)



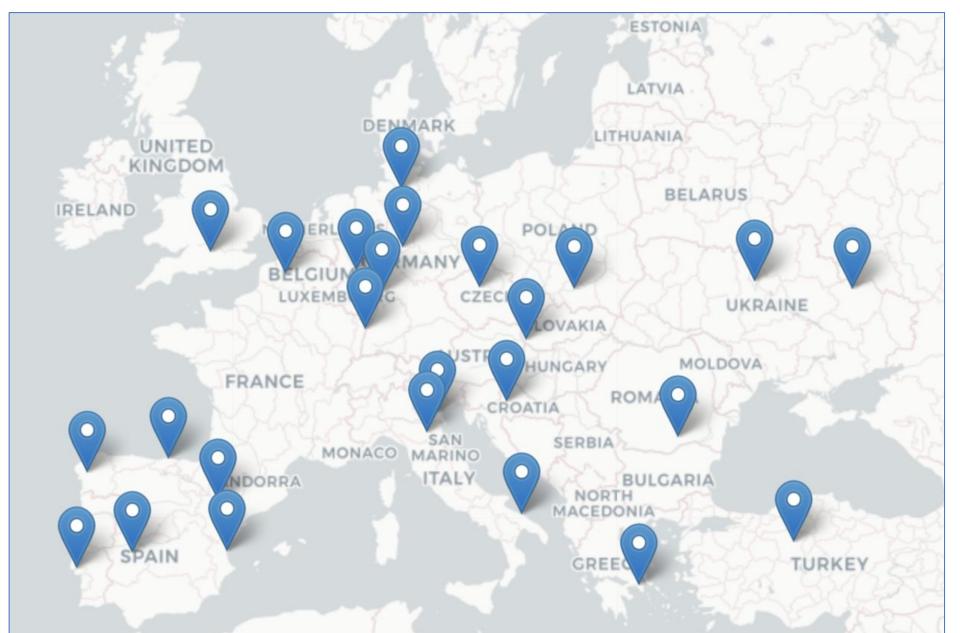


SESSIONs:

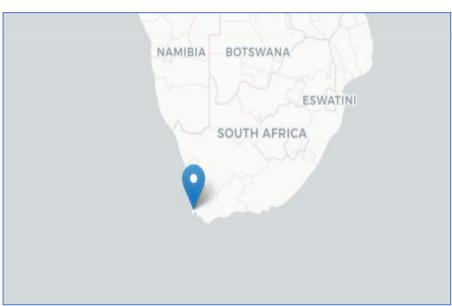
Bridging the Gap: Integrating the HPC Ecosystem - Tue 01, 16:45 CEST Open meeting: EGI Federated Cloud community working meeting - Wed 02, 15:15 CEST



The EGI Cloud Federation







Compute



Cloud Compute Cloud Container Compute

demand with complete Run Docker containers in a control over computing lightweight virtualised





Execute thousands of computational tasks to



- Operational since 2013
- 26 Cloud Providers (OpenStack)
- Providing different functionalities and more dynamic platforms for scientists
- 41,379,959 Cloud CPU/h consumed in 2024
- 228 Virtual Organisations supported (Virtual Organisation = Resource pool)
- Access via GUI, CLI, OpenStack native and libcloud APIs, Terraform

Session: Open Meeting: EGI Federated Cloud community - Thu O3, 15:15 CEST



Neurodesk



Facilitate reproducible Neuroimaging research

Mission

- Reproducibility of neuroimaging research is often an hot topic as it involves the execution of complex analysis pipelines that rely on specific software version

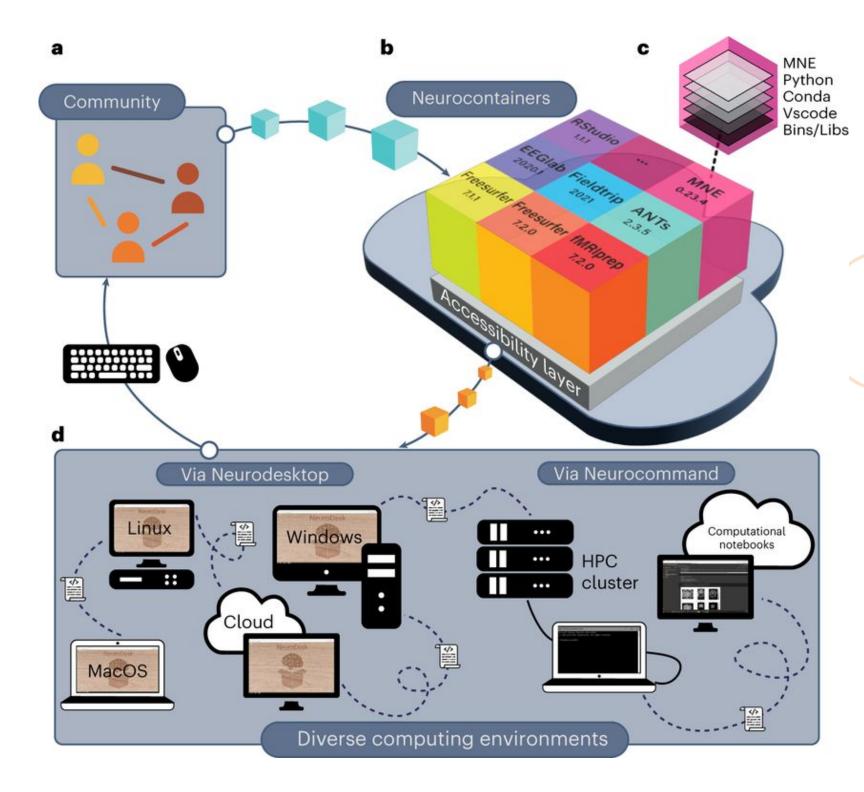
Solution

- Neurodesk provides a containerised data analysis environment.

Statistics

- The Neurodesk platform currently serves around 1,000 European users per month
- 300 TB of datasets replicated in EGI Infrastructure
- Deployed 1 Play server in EGI (CESNET)

Read the full story <u>here</u>



EGI provides:

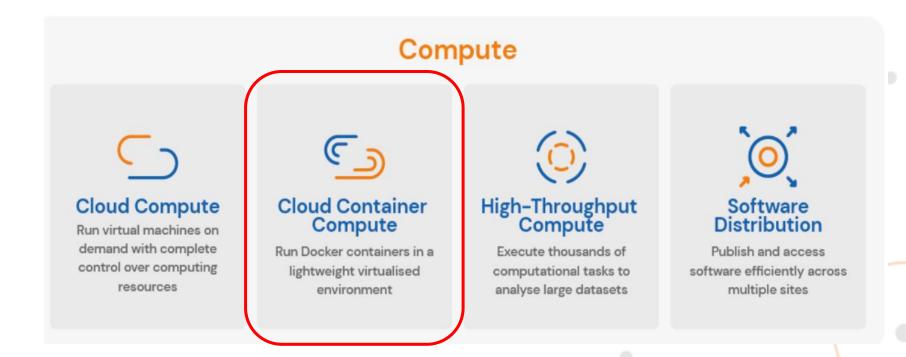
- Check-in
- Notebook
- Cloud Compute
- Online Storage
- Software Distribution







Kubernetes (Containers) in the EGI Cloud



Self-deployed by users

 Spin up some VMs and deploy Kubernetes (works with existing tooling targeting OpenStack)

Automated deployment with Infrastructure Manager (IM)

Select site, size of VMs and go

Rancher-based access to managed clusters (under development)

- Rancher integrated with EGI Check-in
- Access to pre-configured clusters managed by expert operators

DEMO and POSTER: Rancher: the EGI container execution platform - Wed 02, 14:30 CEST





A community for open, reproducible, scalable geoscience.

Mission

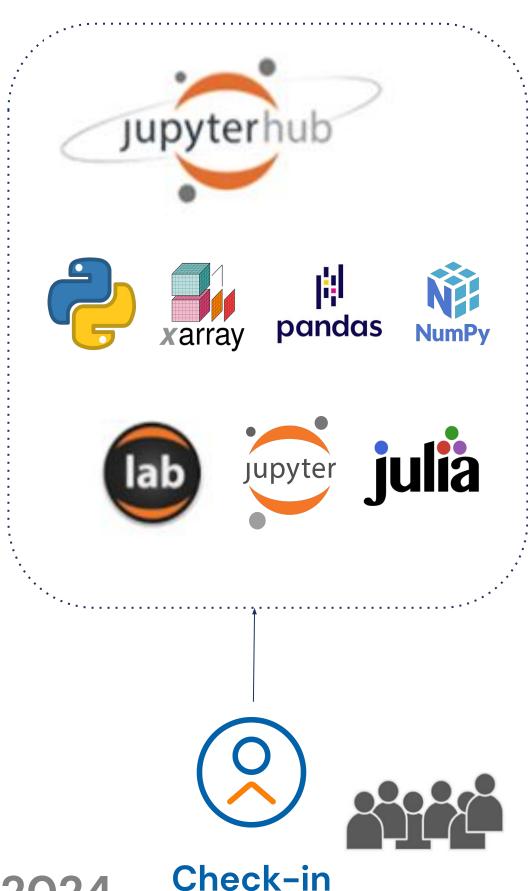
- Pangeo is a community promoting open, reproducible, and scalable science.

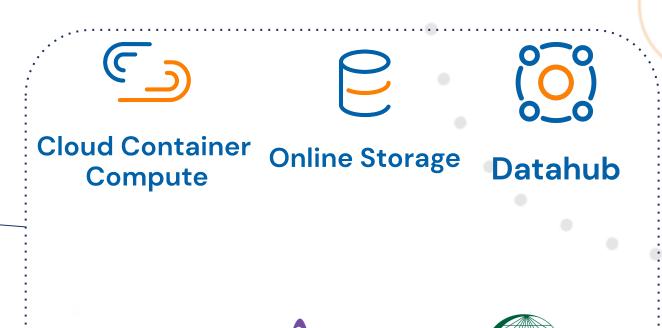
Solution

- Work on a deployment of the Pangeo software stack in Europe (EGI), and
- Foster collaboration around best practices for open, reproducible, and open science

Statistics

- 100+ researchers trained until today
- 6M+ CPUh consumed in March 2022 September 2024





Deployed dask/JupyterHub in a virtual K8s cluster on top of OpenStack with Rancher



cesnet



Read the full story <u>here</u>



The EGI Services for Research Portfolio

https://www.egi.eu/services/research/

Compute



Cloud Compute

Run virtual machines on demand with complete control over computing resources



Cloud Container Compute

Run Docker containers in a lightweight virtualised environment



High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets



Software Distribution

Publish and access software efficiently across multiple sites

Compute Orchestration



Workload Manager

Manage computing workloads in an efficient way



Infrastructure Manager

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Applications



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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



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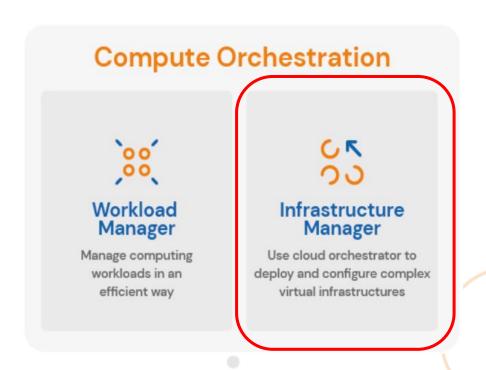


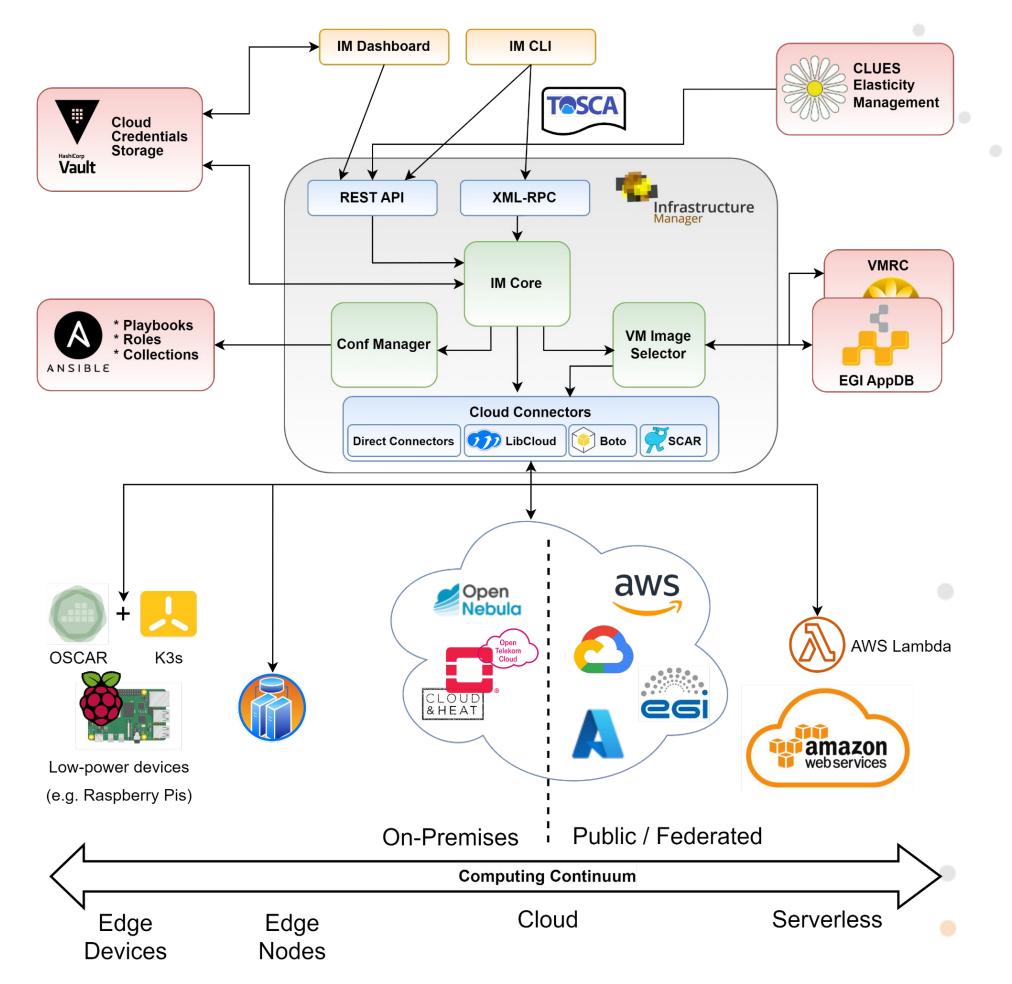
Infrastructure Manager

https://www.egi.eu/service/infrastructure-manager/

IM deploys virtual infrastructures on the Cloud

- Automates the deployment, configuration, software installation, monitoring and update of virtual infrastructures
- Infrastructure as Code (IaC) using
 RADL/TOSCA for infrastructure description
 & Ansible for contextualization
- Automated elasticity with <u>CLUES</u>
- Wide variety of back-ends from edge to serverless, making applications Cloud agnostic



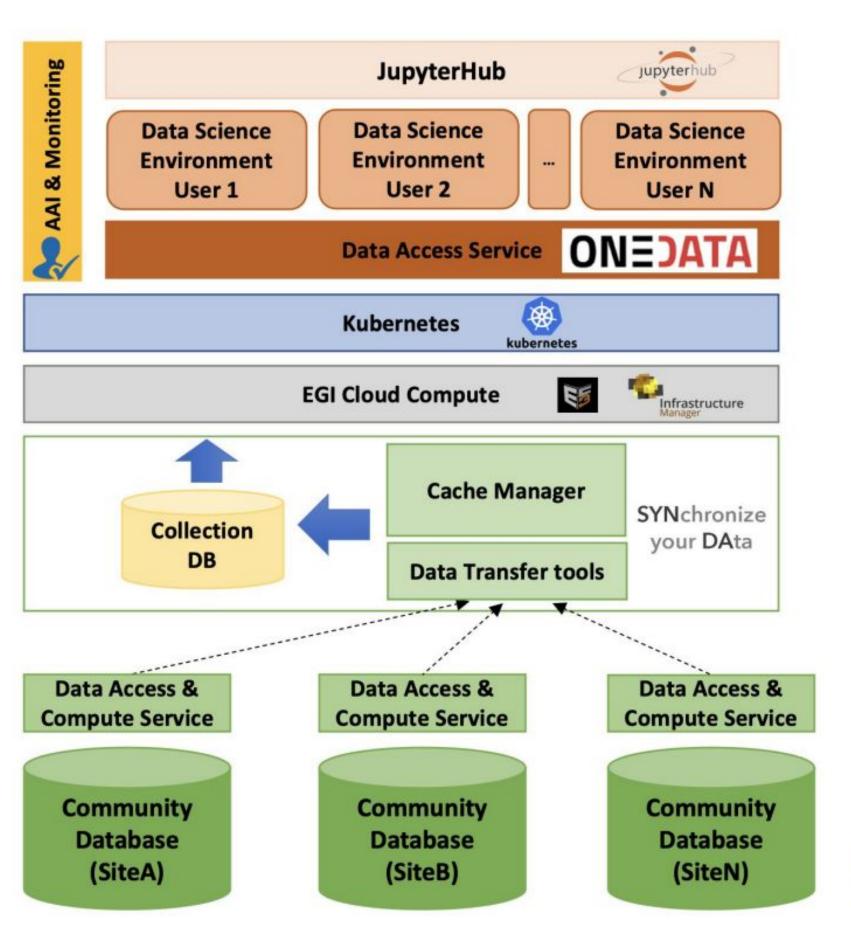




European Network for Earth System Modelling

https://enesdataspace.vm.fedcloud.eu/

Open, scalable and cloud-enabled data space for climate data analysis



Applications

Application scaling

> Data serving

EGI provides:





- DataHub
- Cloud Compute
- Online Storage
- HPC (pilot)
- Infrastructure Manager











Data

Read the full story here

TALK: ENES Data Space: an EOSC Beyond thematic node for the climate community – Wed 02, 15:00 CEST Session: Empowering Open Science: EGI Community's Impact on EOSC



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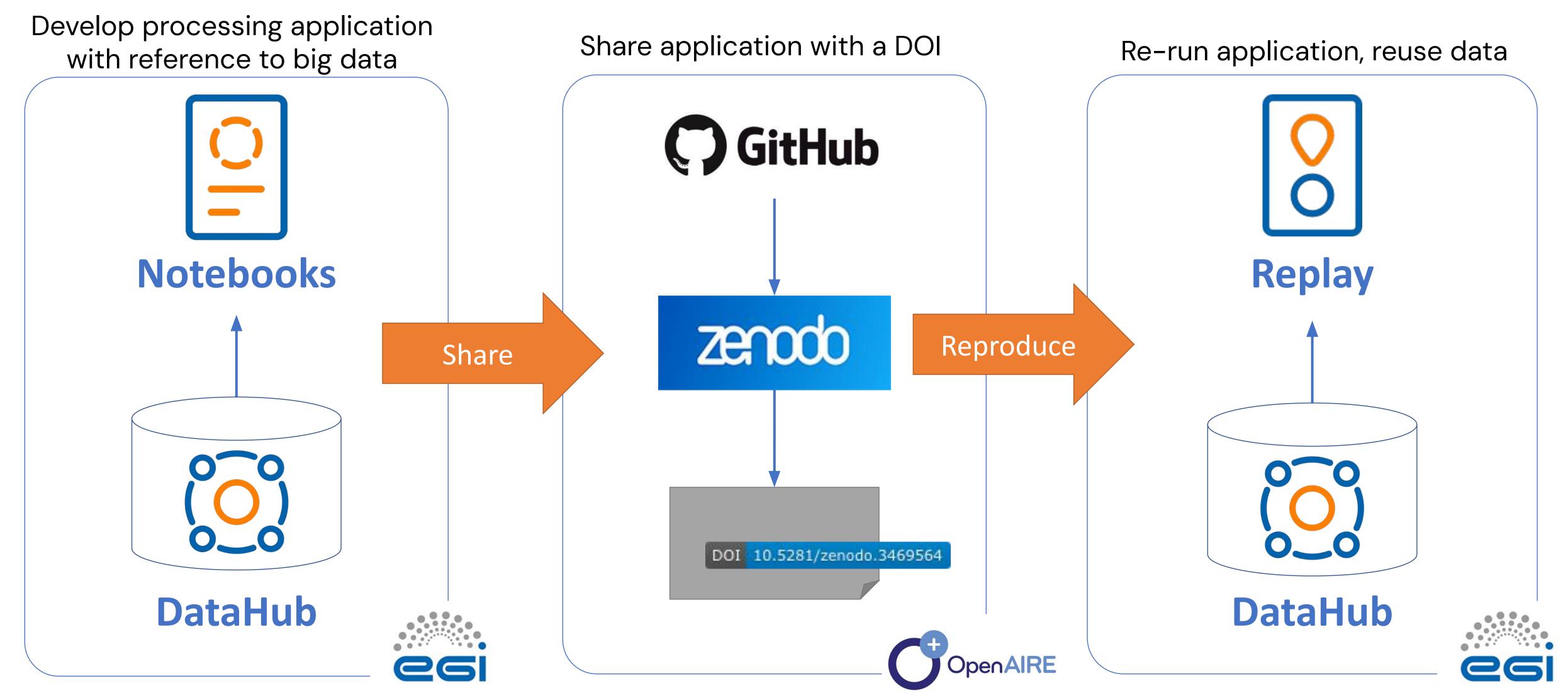
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Scientific reproducibility with EGI Notebooks and Replay services



Federated cloud and storage

Federated cloud and storage



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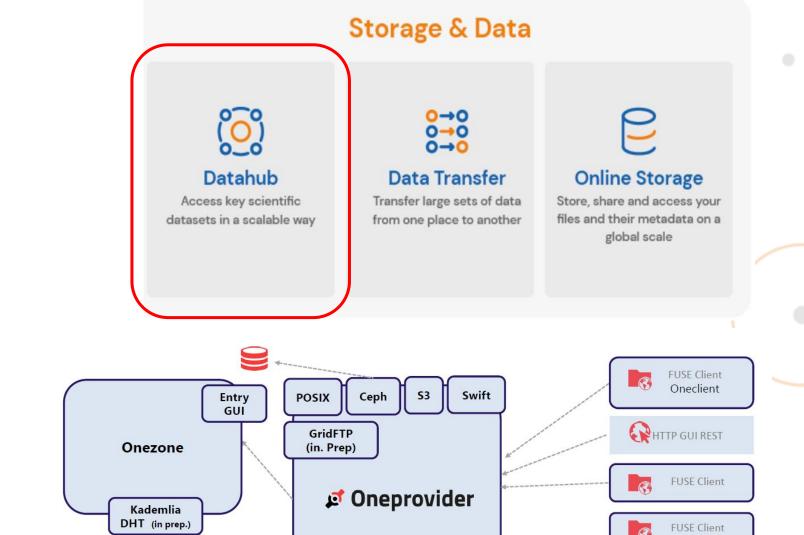


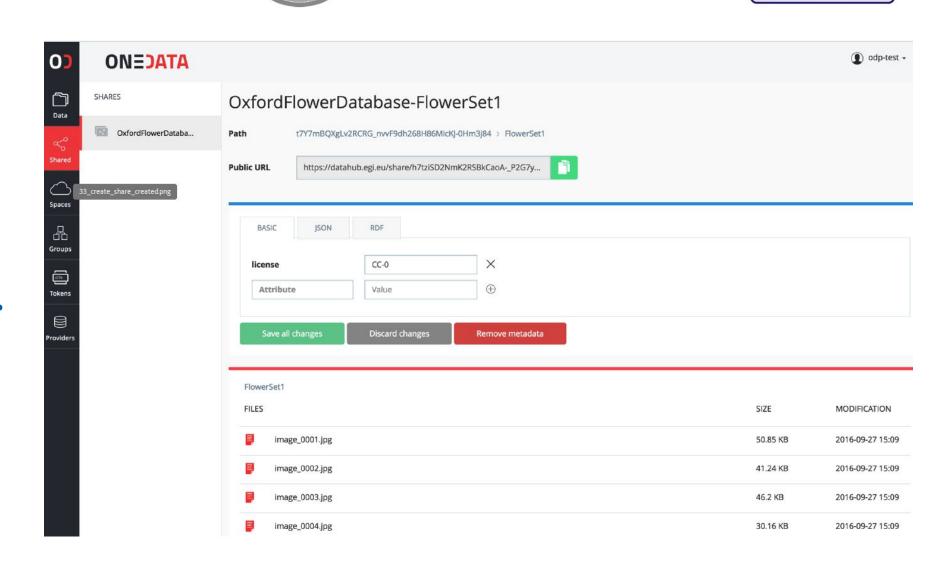
EGI DataHub

https://www.egi.eu/service/datahub/

DataHub is a data management service that supports efficient data exploitation, data publishing and data sharing

- Based on OneData.
- Datasets can be stored in **distributed nodes** transparently for the user.
- Different types of storage virtualised (S3, POSIX, Ceph, OpenStack Swift...).
- Metadata management for files and directories.
- GUI and API to query files by metadata, time, owner etc.
- Automatic retrieval of PIDs for open data.
- Data access permissions based on ACL and others.





WORLD

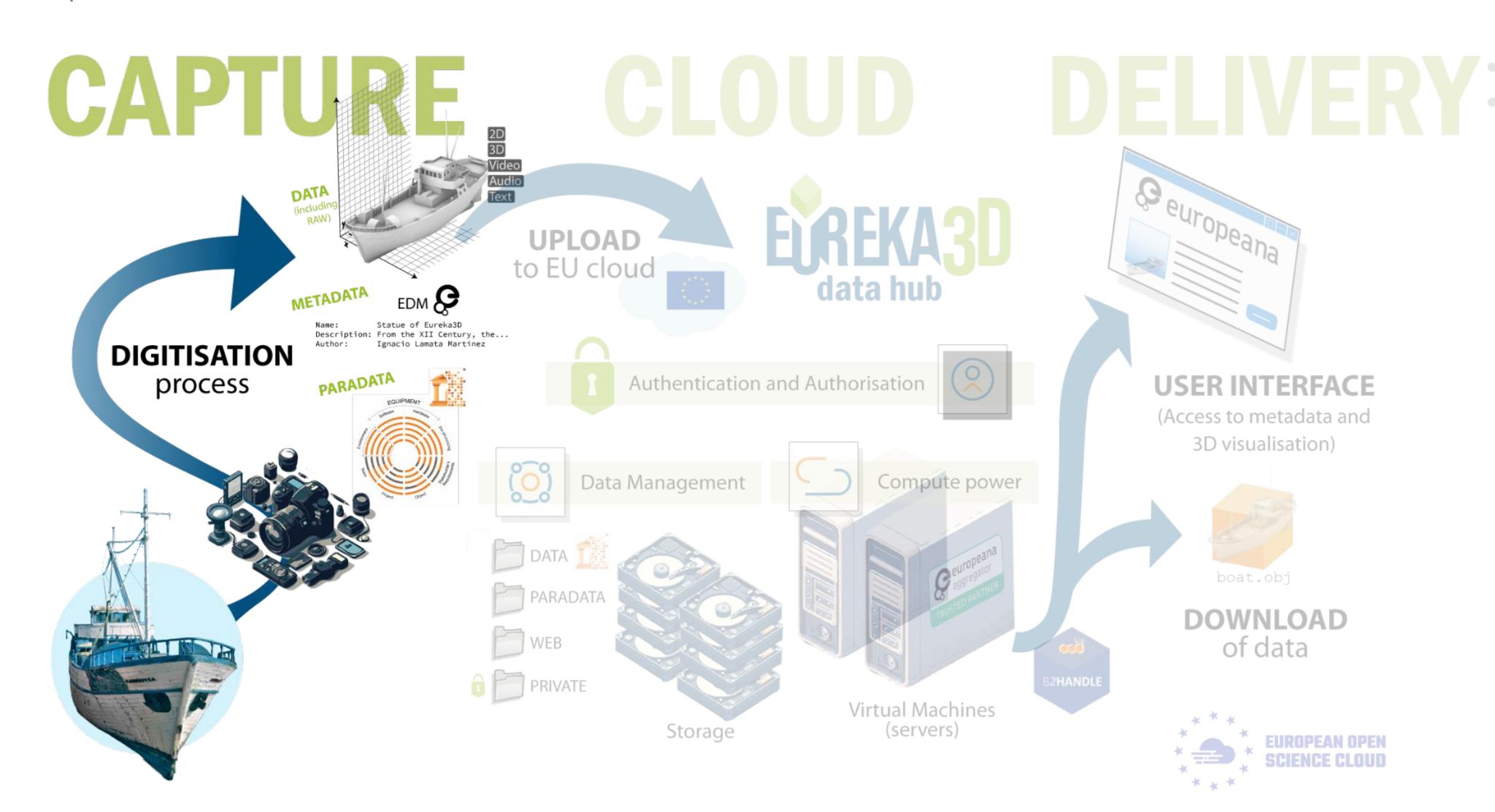
DEMO and Poster: Running Multi-Cloud Workloads on Distributed Datasets with Onedata - Wed 02, 14:30 CEST

FUSE Client



The EUreka3D's respond to the digital transformation of CHIs

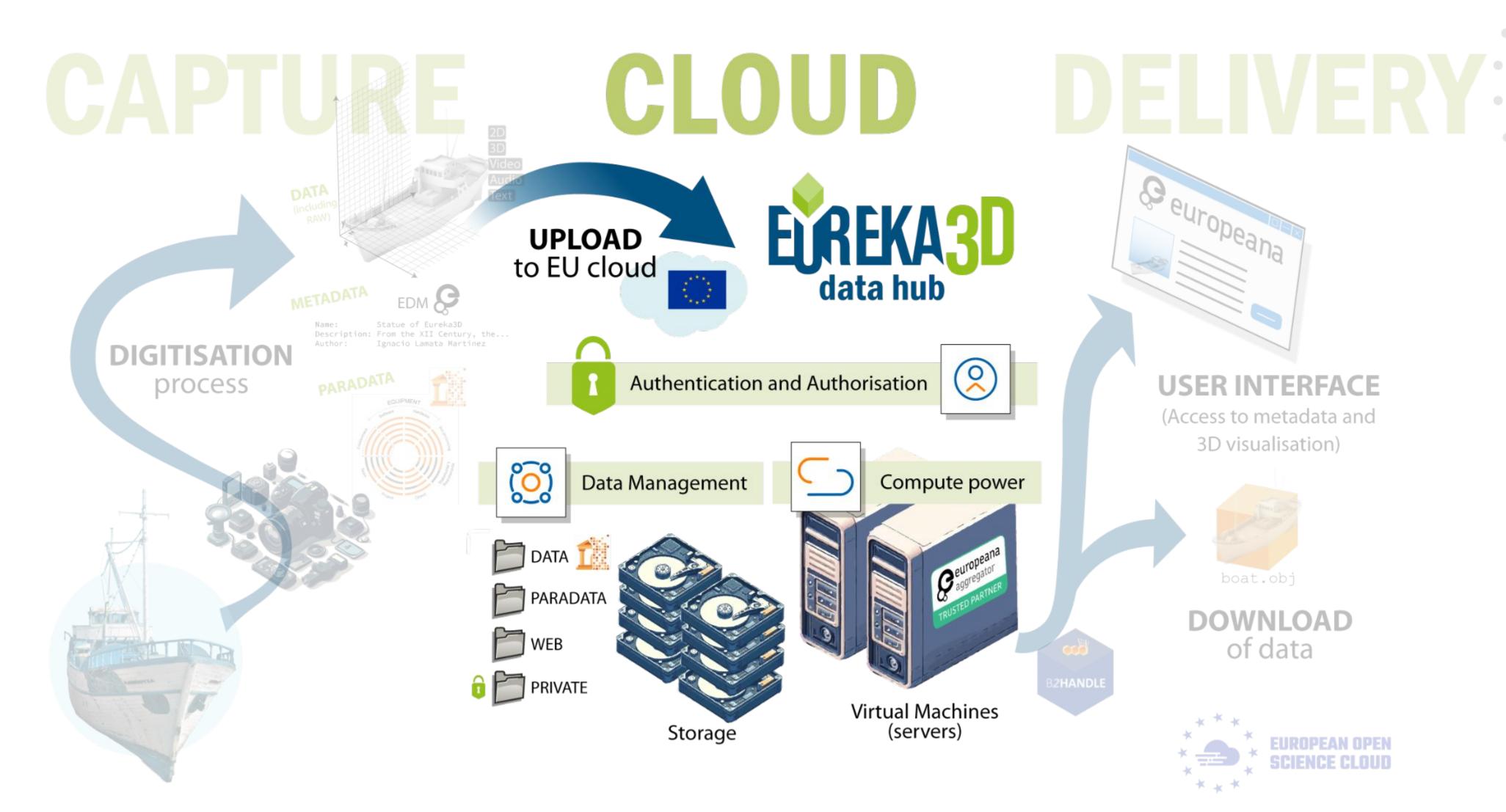
https://eureka3d.eu/





The EUreka3D's respond to the digital transformation of CHIs

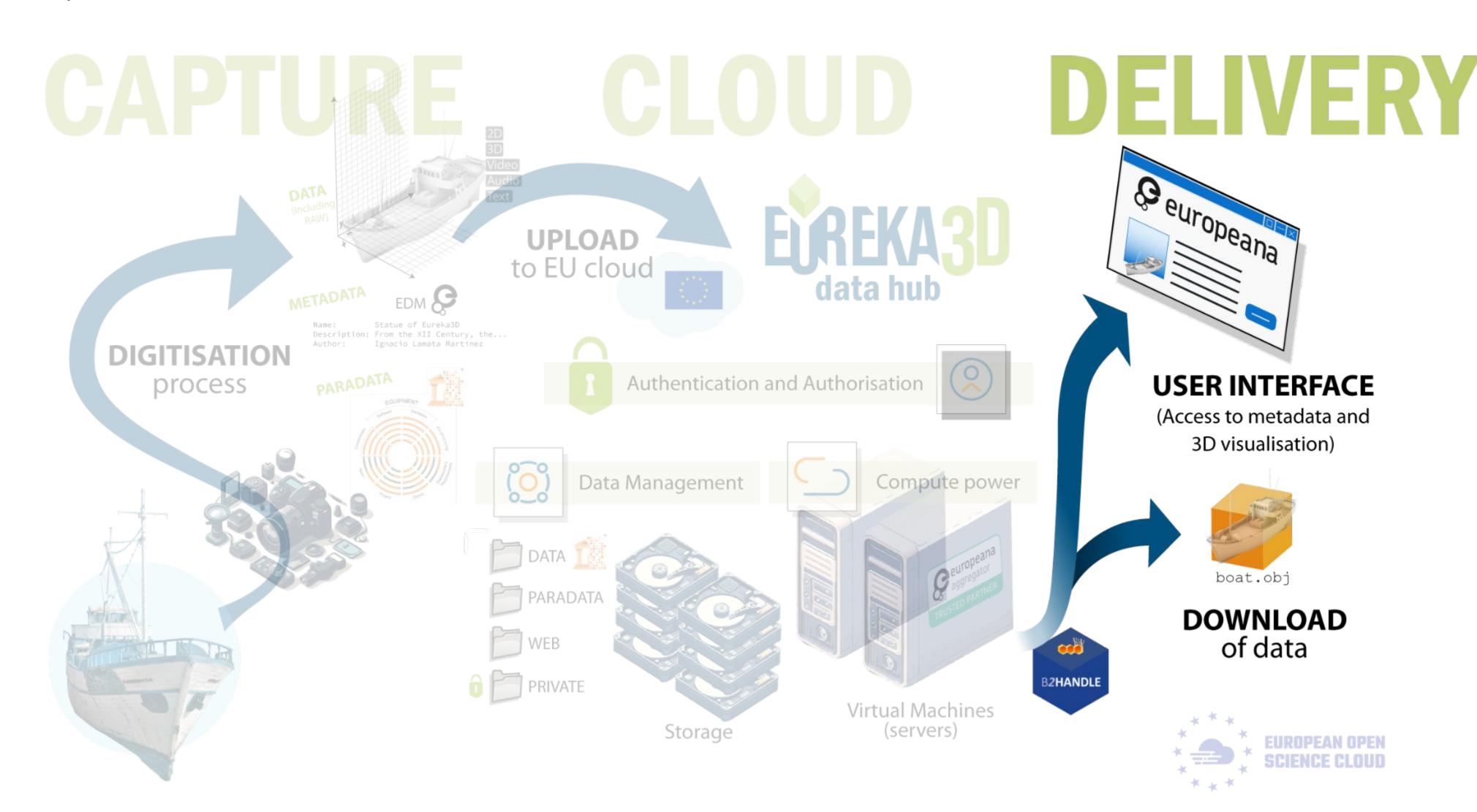
https://eureka3d.eu/





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https://eureka3d.eu/





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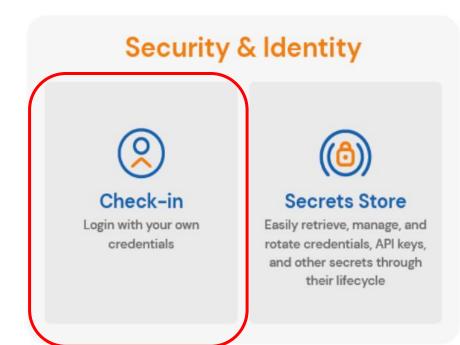
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https://www.egi.eu/service/check-in/



An identity and access management system that deals with Authentication and Authorisation of users.

- Supports OAuth 2.0 / OIDC, SAML, X.509 Certificates
- User authentication through a variety of Identity Providers Research institutions in eduGAIN, Google, ORCID, LinkedIn
- User authorisation based on Virtual Organisations (VO) to organise communities, through groups and roles
- Management of different user identities (accounts).
- Unified user attributes

Session: Trust and Security - Thu 03, 09:00 CEST



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https://www.egi.eu/service/fitsm-training/



- <u>FitSM</u> is a <u>lightweight standard</u> for IT Service Management
- With FitSM Training you will learn the fundamentals of IT Service Management and how to implement FitSM in your organisation
- By implementing FitSM, you can improve your organisation's IT Service Management processes and increase efficiency
- EGI offers in-house training for organisations needing several members of staff to be trained
- Three different levels of training:
 - Foundation (1 day),
 - Advanced (2 days), and
 - Expert (2 days)

Training: FitSM Training: Mastering IT Service Management (registration required) - Mon 30, 14:00 CEST





Services for Federation

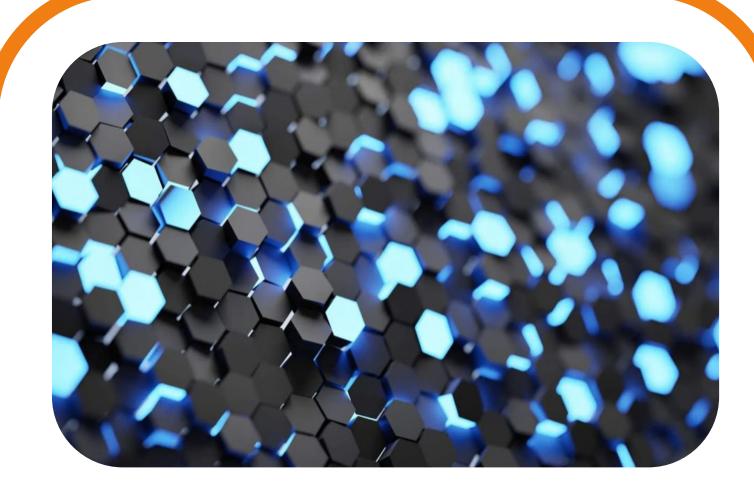


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Tools and Services for the Federation

Offered by the EGI Foundation to the members of the EGI Council

COORDINATION SERVICES

Operations Coordination and Support

Community Coordination

ITSM Coordination

Technical Coordination

Project Management and Planning

Security Coordination

Strategy and Policy Development

Communications

Industry Engagement

TECHNICAL TOOLS











Operational Tools











SECURITY AND IDENTITY





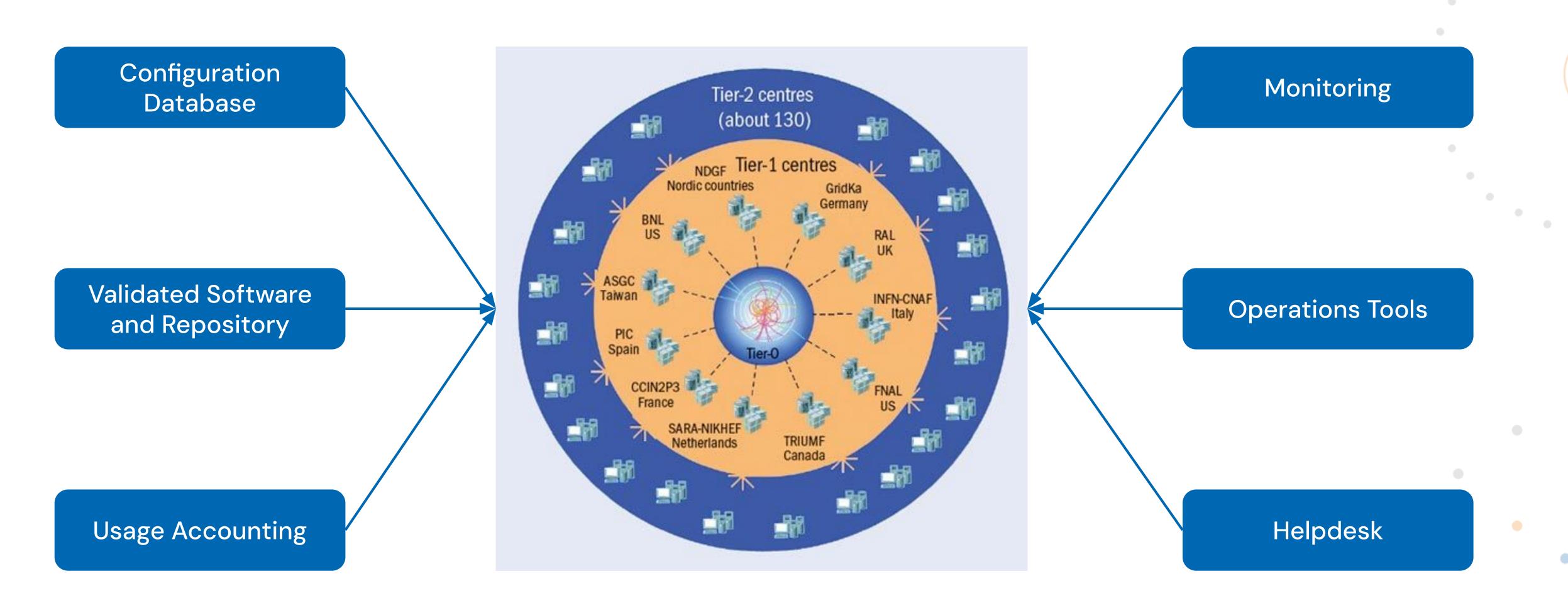








WLCG - The Worldwide LHC Compute Grid





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TECHNICAL TOOLS



























SECURITY AND IDENTITY













Project Management and Planning

Projects help us to:

- Evolve the EGI
 Internal/External services
 → Dev. projects
- Engage and support specific scientific communities/Rls
 → Co-design and delivery projects

Projects submitted **Projects submitted** 5 Projects Projects approved Projects approved Running Projects unsuccessful Projects unsuccesful

2023



EGI Flagship and participating projects

https://www.egi.eu/projects/

Coordinated Projects













Participating Projects



















































Services for Business

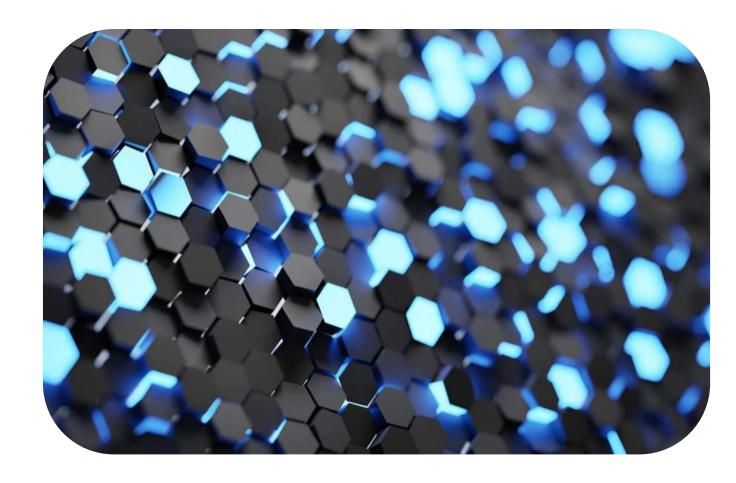


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Services for Business

We help companies to exploit and provide services and resources for compute- and data-intensive research and innovation.



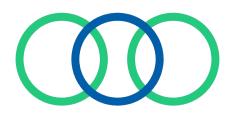
Services for business

https://www.egi.eu/egi-dih/



Test before you invest

Technical facilities to support companies and SMEs test before investing or to validate services or solutions.



Networking and community

Bring SMEs and communities together with the EGI community and facilitate the interaction and open new market opportunities.



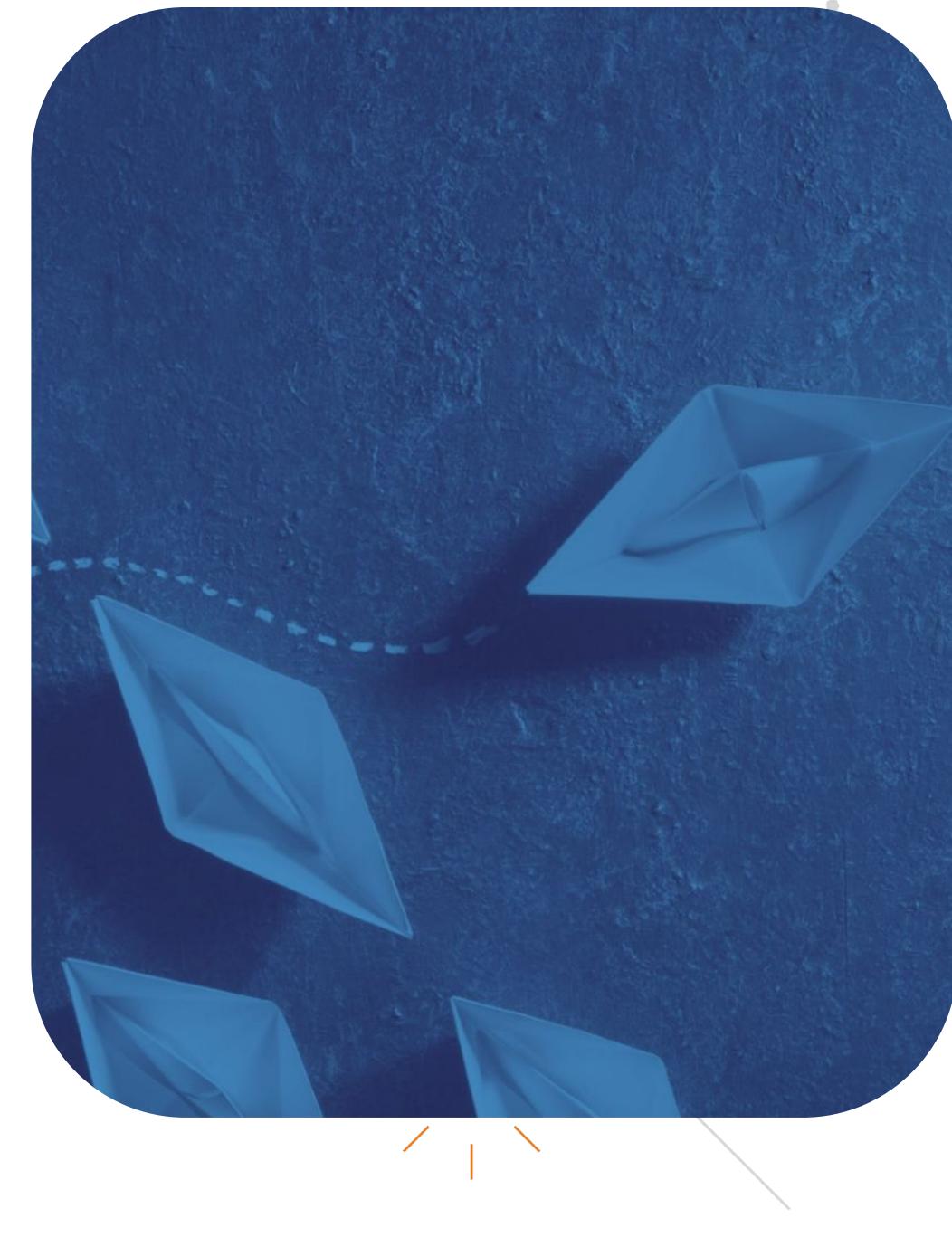
Skills and training

Provide knowledge on the technical offer through webinars or consultancy services.



Funding and market opportunities

Facilitate the access to funding opportunities and investment mechanisms to sustainable support the innovation.





As a customers

- Get access to compute, data, tools and applications with technical support and consultancy (under requirements and availability).
- Access to funding opportunities and networking

Mainly oriented to: SMEs and Startups

As a providers

- Co-develop with researchers and become part of the EGI service offer
- Increase market opportunities, participate in the procurement framework
- Participate in funded projects and increase visibility on a global scale

Mainly oriented to:

Companies



Business partnerships



- Cloud computing services
- Networking with the EGI community



Networking with the EGI community



(Trial period)

- Integration of Cloud infrastructure
- Testing the EGI Check-in





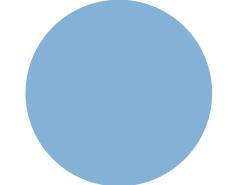
EGI and the European Open Science Cloud





Since 2018

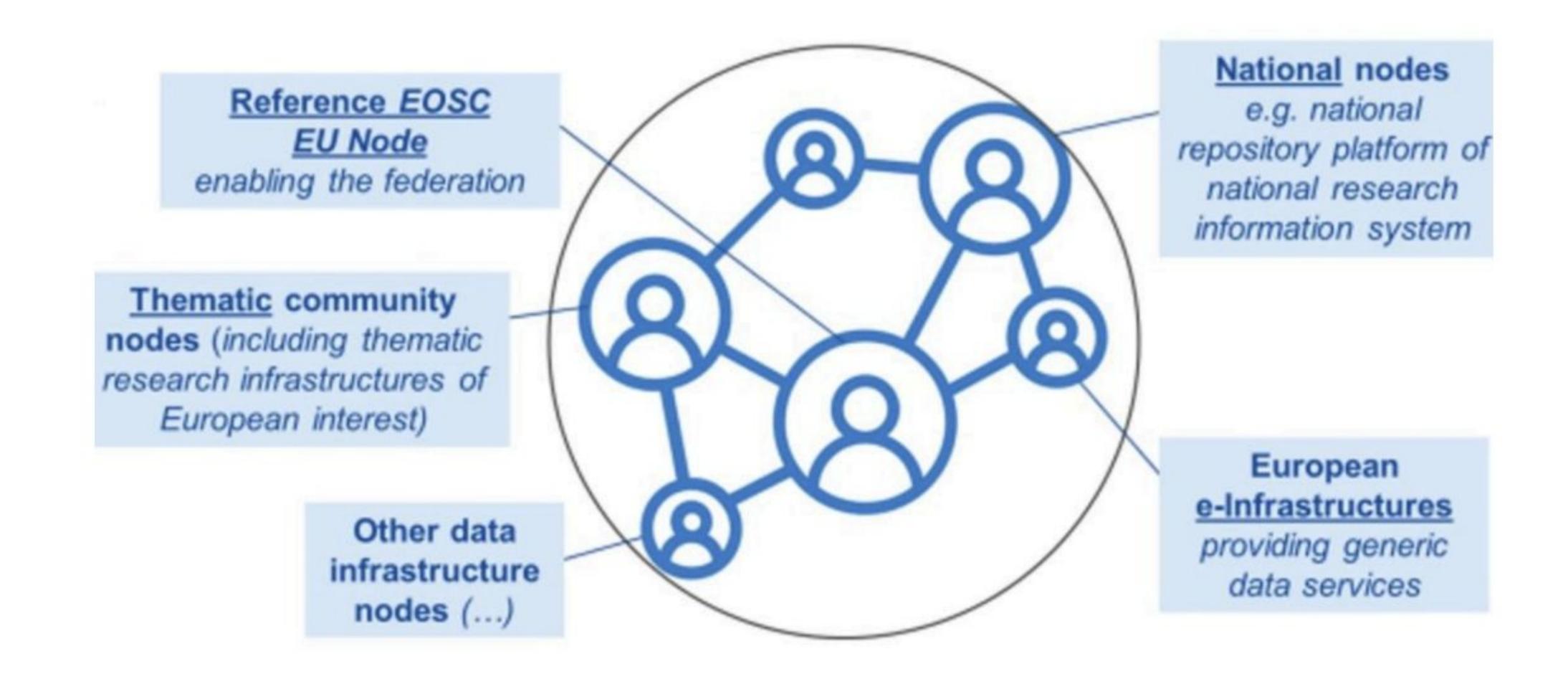
A multi-disciplinary environment where researchers can publish, find and re-use data, tools and services, enabling them to better conduct their work



- > Builds on existing infrastructures and services supported by the European Commission, Member States and research communities.
- > Brings these together in a federated 'system of systems'



EOSC, evolution to a system of systems



Contribution of the EGI Federation to EOSC

Federator in the EU Node (EOSC Procurement contract - Lot1)

Contributor to user-facing services (EOSC Procurement contract - Lot3) LAUNCH AT THE EOSC SYMPOSIUM (21-23 October)

Reference EOSC **EU Node** enabling the federation

Thematic community nodes (including thematic research infrastructures of European interest)

> Other data infrastructure nodes (...)

EGI position paper: https://zenodo.org/records/11128540

> National nodes e.g. national repository platform of national research information system

European e-Infrastructures providing generic data services

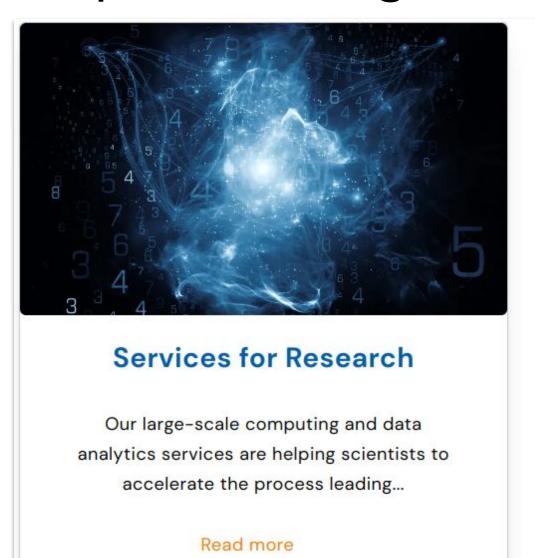
Contributor as an EGI Node (B2C, B2B)

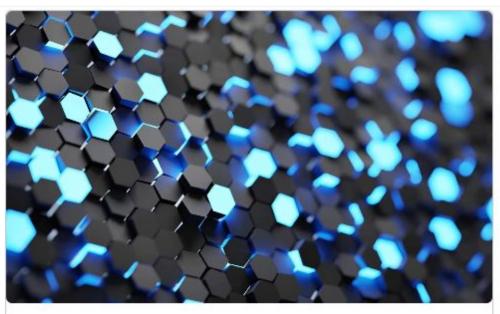
- Scalable compute-storage
- Generic platforms
- Thematic data and services
- Ability to take over federation functions



Learn more about EGI

https://www.egi.eu/services/





Services for Federation

Our internal services provide tools for coordination of the EGI Federation, improving how we work...

Read more



https://www.egi.eu/publications/











https://docs.egi.eu/



https://www.egi.eu/trainings-and-webinars/

Trainings & Webinars

Looking for interactive training, best practices and trends related to EGI and partner projects, services and solutions?

Our webinar programme covers a wide range of topics. Register and participate, or discover our webinar archive.

Looking for online and in-person training? Have a look at our catalogue and ondemand offer.

Annual Reports





Thank you!

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