



# EGI, EOSC and EUreka3D

## Definitions and Opportunities

Renato Santana

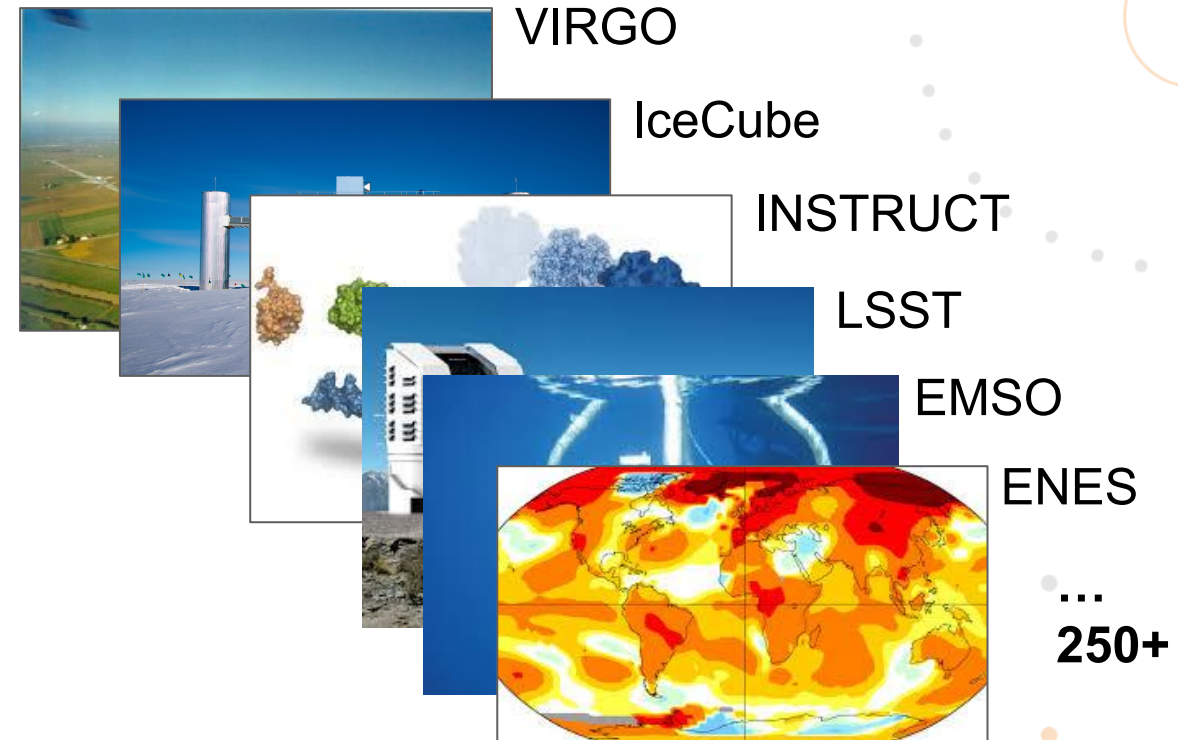
Service Delivery Information Security Manager at the EGI Foundation  
EOSC Future ISRM and PM Manager  
Eureka3D T2.2 and T3.4



Plenary meeting 14th.  
December 2023  
Brussels

1. What is EGI?
2. EGI History and Services.
3. EGI and communities. Examples.
4. Collaboration opportunities.

# An international e-infrastructure for research and innovation



From the high-energy physics compute grid  
(WLCG @ CERN)

To a multi-disciplinary, multi-technology  
infrastructure

## Vision

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

### Mission of the EGI Foundation

**Enable the EGI Federation to serve international research and innovation together**

### Mission of the EGI Federation

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

# A federation for compute and data intensive sciences



## Compute

- Cloud Compute
- Cloud Container Compute
- High-throughput Compute
- Software distribution



## Compute Orchestration

- Workload Manager
- Infrastructure Manager



## Storage & Data

- Datahub
- Data Transfer
- Online Storage



## Security & Identity

- Check-in



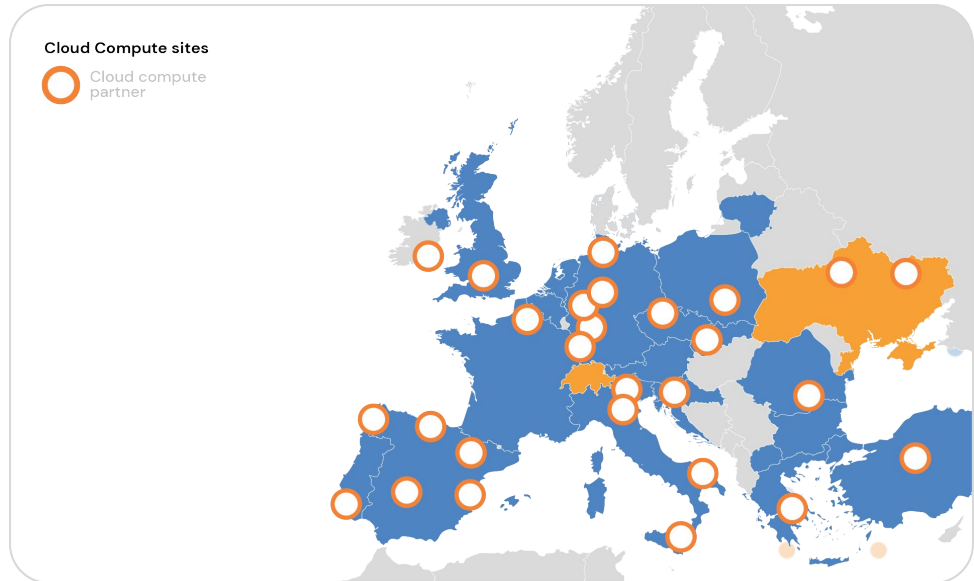
## Training

- FitSM Training
- ISO 27001 Training
- Training Infrastructure

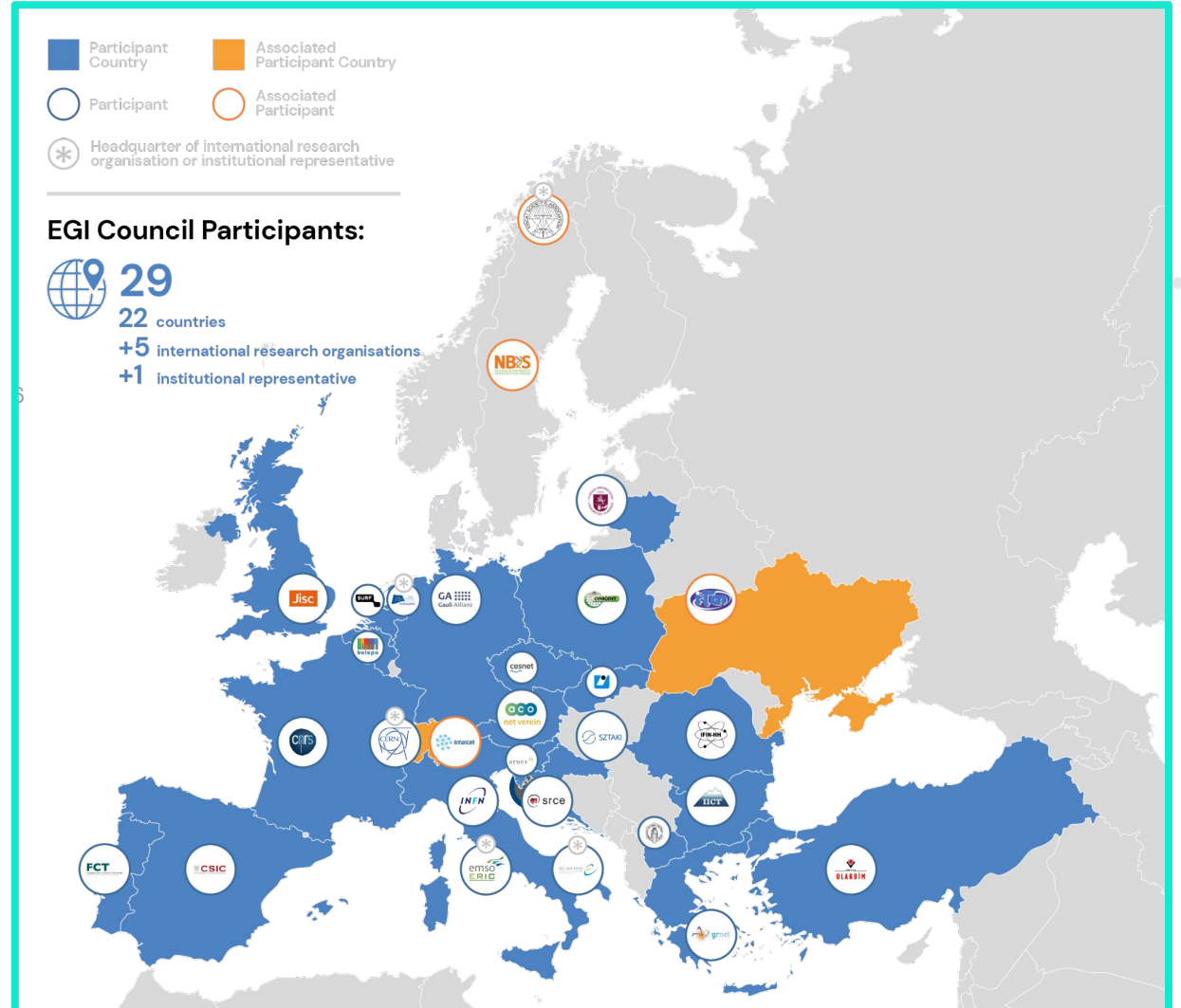


## Applications

- Notebooks
- Replay



# Some numbers and the EGI Council





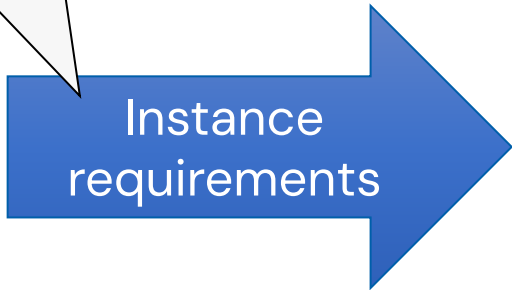
# Resource allocation in the EGI federation

Sustainability comes from institutional commitments complemented by project funds and pay-for-use

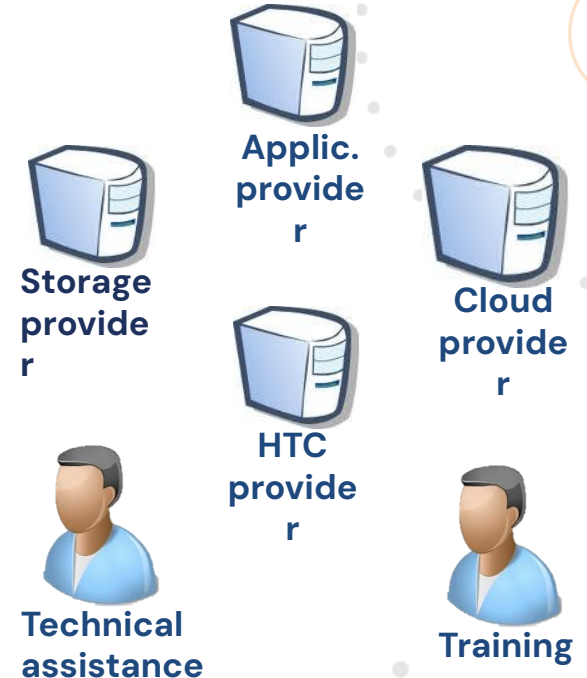
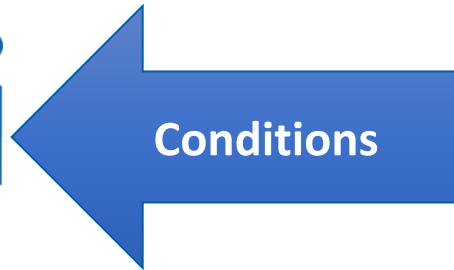
Type, number, size, cost, availability, etc.



Scientific community representative



Negotiator



Federation members

Regular satisfaction interviews

Ensure satisfaction, capture achievements, record feedback



Ensuring that agreed performance targets are met

Regular service delivery reports



Standards for lightweight IT service management



# EGI services → Community-specific platforms

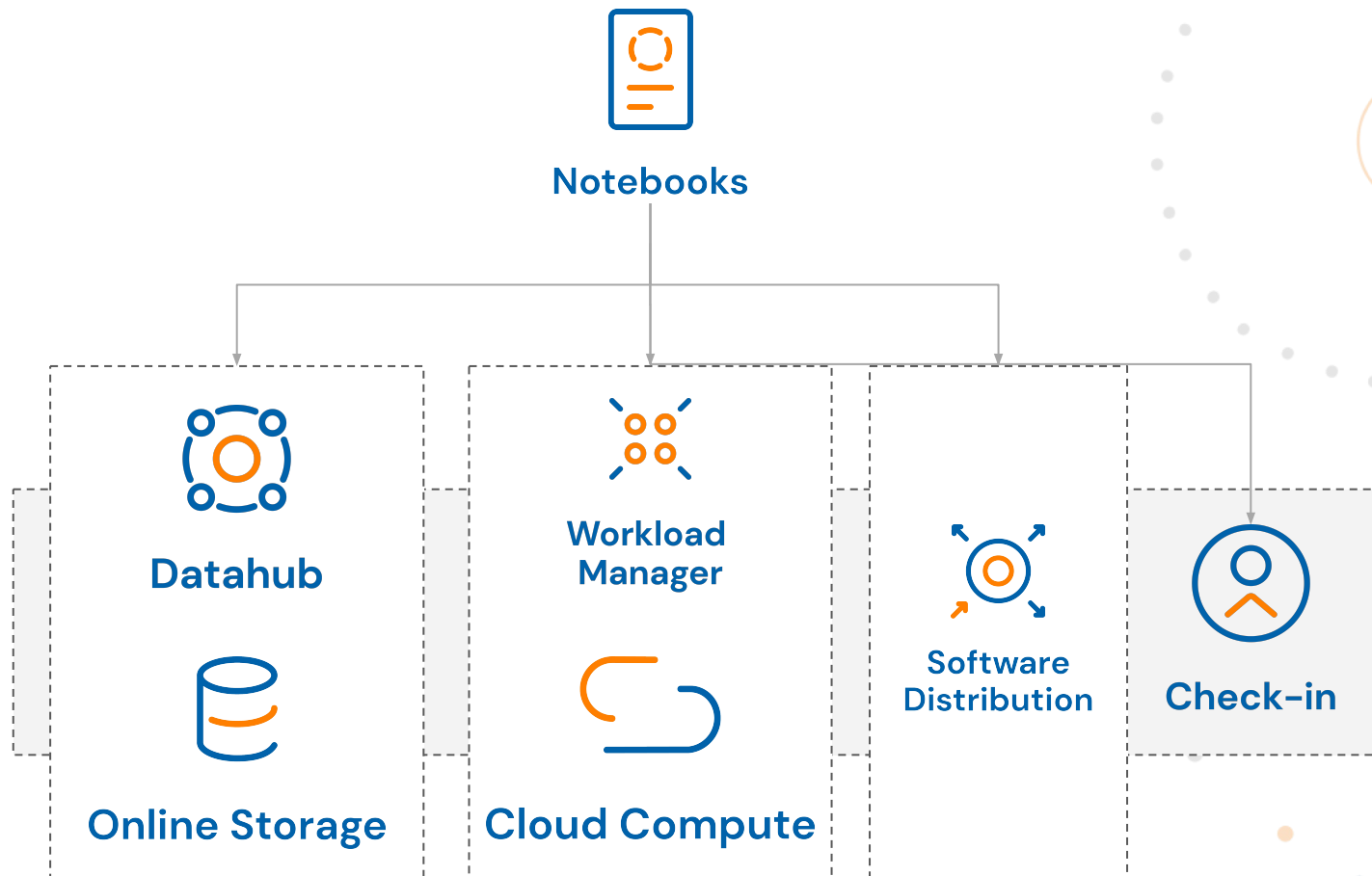
**Common AAI:** use same account across **all services** and providers with homogeneous authorisation

**Composable:** use services from different layers together to build new solutions

**API driven:** allow users to create complex workflows and support new scenarios

**Customisable:** Custom configurations, skins, community datasets, AAI, etc.

**Interoperable with EOSC,** : EGI core services (Accounting, Monitoring, Helpdesk) ready to interoperate with EOSC counterparts



**We are building partnerships, not only IT platforms**

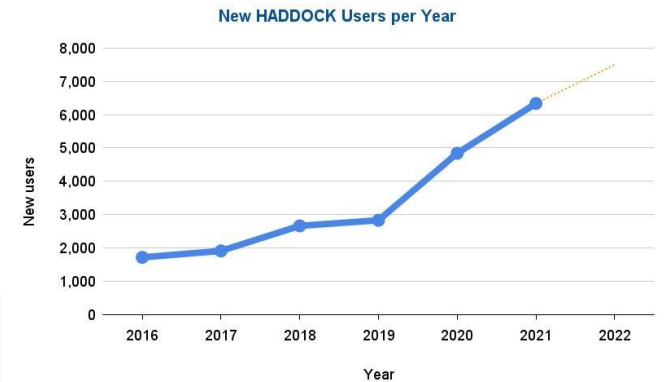
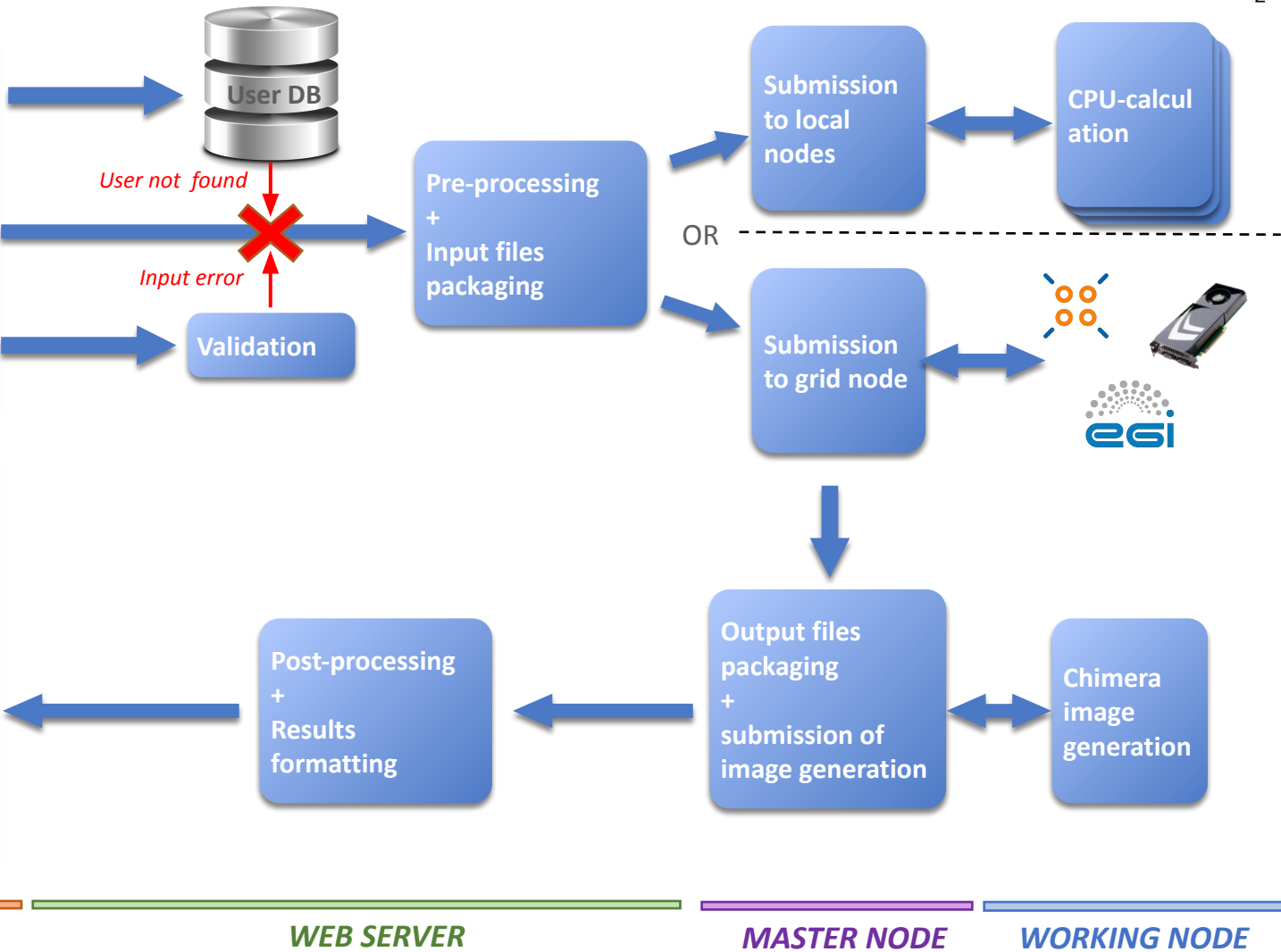




7 applications portal

# Example 1: WeNMR portals for structural biology

wenmr.science.uu.nl



- EGI Services used:**
- High Throughput Compute
  - Cloud compute
  - Software Distribution
  - Workload Manager
  - Check-in (AAI)



WEB CLIENT

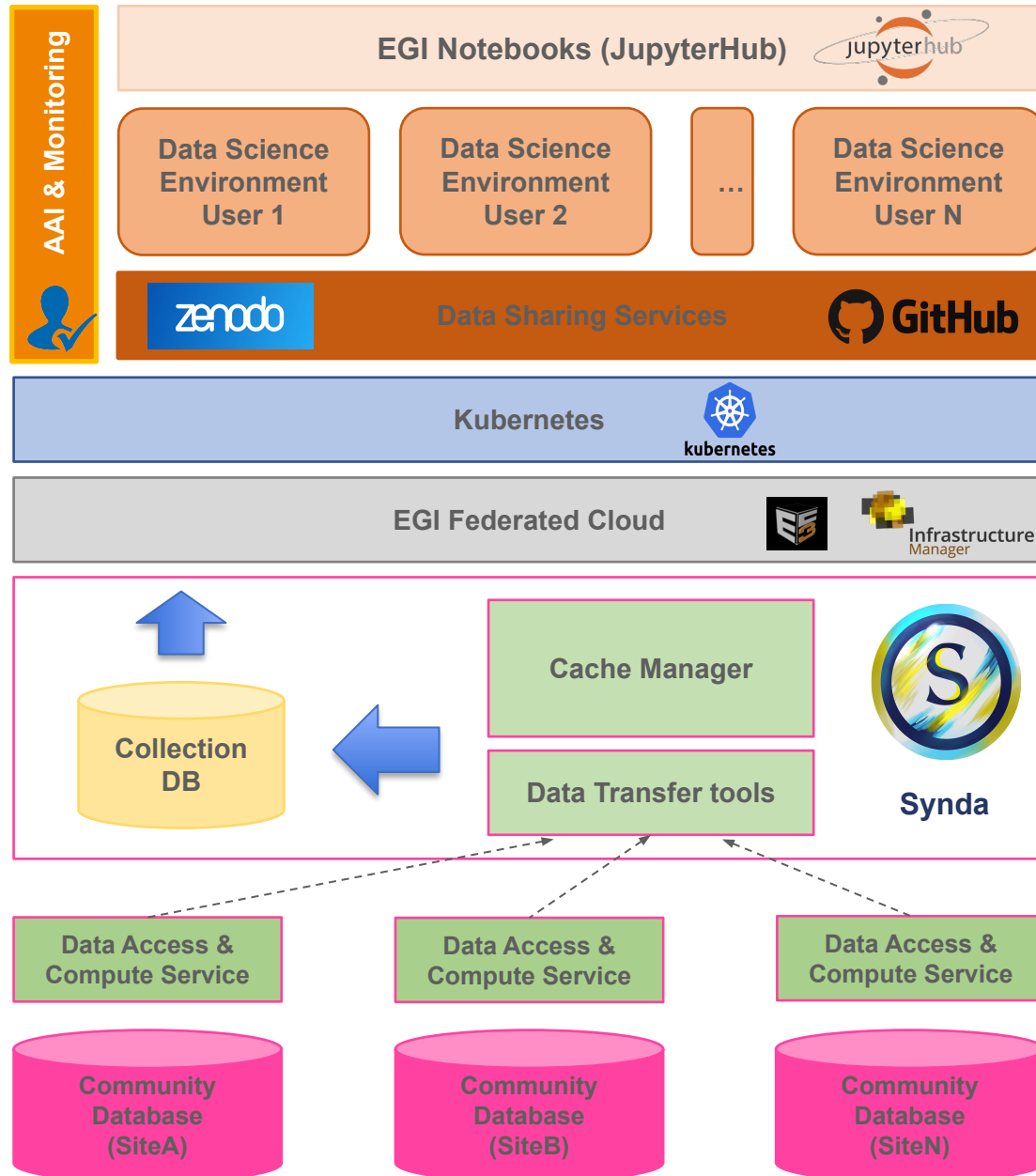
WEB SERVER

MASTER NODE

WORKING NODE

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

# Example 2: ENES Data exploitation platform for climate research



EOSC compute services & interfaces

EOSC data sharing services & interfaces

Infrastructure as a Service (IaaS) Cloud

Data collector and Cache Service

Community (legacy) Infrastructure Community-specific data access services & interfaces

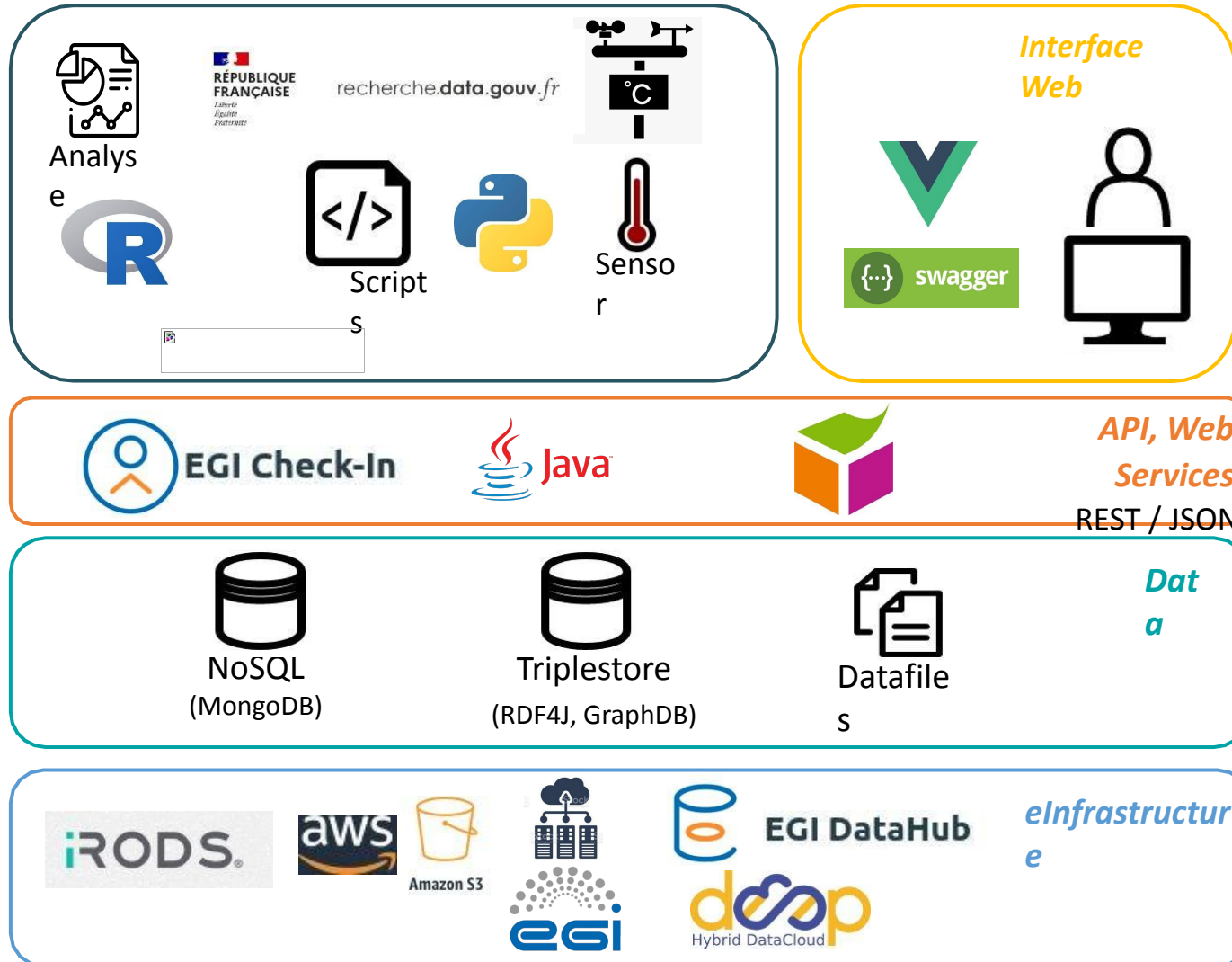
Applications

Application scaling

Data serving

Data (20PB)

# Example 3: Data federation for plant phenotyping by EMPHASIS



## EGI Services used

### Data analysis

- AI4EOSC platform hosts our DL models

### Authentication

- EGI Check-in service has been integrate as the authentication system

### Cloud Computing

- Host our information system (CESNET-MCC provider)
- Dynamic DNS service provides a unified, federation-wide Dynamic DNS support

### Storage

- Connected with the online storage service provided by IN2P3-IRES and the FranceGrilles (FG-iRODS).
- Connected with S3 storage
- DataHub, based on OneData technology

Supported by the PHENET project:

<https://emphasis.plant-phenotyping.eu/infrastructures/cluster-projects/phenet>



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'

What

## EOSC is the European web of **FAIR data and related services** for research

Research data that is easy to find, access, interoperate and reuse (FAIR)  
Trusted and sustainable research outputs are available within and across scientific disciplines

Why

## Unlock the full potential of research data to accelerate discoveries and innovation

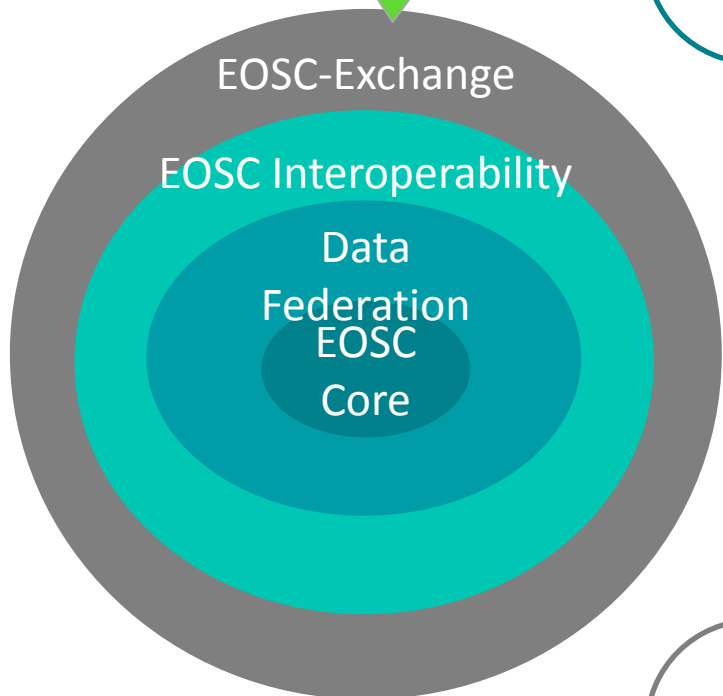
How

- Enable the definition of standards, and the development of tools and services, to allow researchers to find, access, reuse and combine results
- Establish a sustainable and federated infrastructure enabling open sharing of scientific results
- Ensure that Open Science practices and skills are rewarded and taught, becoming the 'new normal'



The MVE shall deliver on the core SRIA objectives and provide functional support for Open Science in Europe. The MVE is composed by four components:

Horizontal services (e.g. compute)  
Thematic services



**EOSC-Core**  
The prerequisite **service component enabling** the large-scale brokering of research data and services between the participants in the **EOSC Federation**

**Data Federation**  
**FAIR Data need to be federated** in such a way that **metadata on research outputs is harvested into a cross-search to enable** greater discovery and reuse of data residing in multiple institutional, domain-specific and national repositories across Europe

**EOSC Interoperability Framework**  
**Set of standards and guidelines to support interoperability and composability of resources across borders and disciplines** while respecting privacy and security

**EOSC-Exchange**  
The Exchange is the **pan-European marketplace for the EOSC federated resources**. It enables the **brokering of community services between federation participants and gives access to procurement contracts**.

The building elements of the MVE are progressively delivered through the EC funded projects. From September

# EGI and the European Open Science Cloud

EUreka3D

- **EGI is an EOSC provider** → Using services from EGI means using EOSC services.
- **EGI provides core services in EOSC, such as AAI** → Using EGI Check-in makes AAI compatible with the broader EOSC landscape.
- **EGI will support Eureka3D services to be available in EOSC**, making them visible and accessible for users outside the consortium.

# Access to EOSC: Marketplace

About EOSC

[Browse Marketplace](#)

Providers Hub

Monitoring

Status

Contact us



EUROPEAN OPEN  
SCIENCE CLOUD

## Browse EOSC Marketplace Resources

Browse through over 3 millions of research and innovation tools and services, thousands of datasets from a wide scale of research domains from renowned European service providers.

Find resource...



Discover by

All catalogs

Software

Services

Publications

Data

Data Sources

Service Bundles

Training Materials

Interoperability Guidelines

<https://eosc-portal.eu/>



# Access to an Open Resource (1 of 2)

The screenshot displays the EOSC Marketplace Resources interface. At the top, the European Open Science Cloud logo is visible. Below it, the text 'Browse EOSC Marketplace Resources' is centered. A search bar contains the text 'Search in catalogs' and 'Software'. A navigation menu includes icons for PUBLICATIONS, DATA, SOFTWARE (highlighted), SERVICES, DATA SOURCES, TRAININGS, INTEROPERABILITY GUIDELINES (marked [BETA]), BUNDLES (marked [BETA]), and OTHER. The search results section shows '169578 search results Software' and a 'Sort By' dropdown set to 'Default'. The first result is 'Keio 3D K-OMEGA-SST', which is categorized as 'Software' and 'Open Access' (highlighted in pink). The author names are 'Minh Doan' and 'Shinnosuke Obi', and the provider is 'CFD MHK'. The description is 'OpenFOAM case of Keio MHK turbine with k-omega-SST model in 3D'.

- **NOTE:**
- Resources are provided by Institutes (not projects!)
- Terms of use, Documentation, Helpdesk must exist.
- 'Access' option is up to the provider (open, authenticated, ordering required)
- Access condition is up to the provider ('as open as possible, as closed as necessary')
- Interoperability through 'Interoperability guidelines'
  - AAI
  - Data transfer

# Access to an Open Resource (2 of 2)



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[← Go to Search](#)



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Research Software . Software . 2019

## Keio 3D K-OMEGA-SST

Minh Doan; Shinnosuke Obi;

OPEN ACCESS

ENGLISH

Published: 31 Jan 2019

Publisher: Zenodo

**Summary** [Related research \(1\)](#)

Abstract

OpenFOAM case of Keio MHK turbine with k-omega-SST model in 3D

Subjects

CFD MHK

Download from

[View less >](#)



Software . 2019

License: <http://creativecommons.org/licenses/by/4.0/>

Data sources: ZENODO



Software . 2019

License: <http://creativecommons.org/licenses/by/4.0/>

Data sources: ZENODO

# Access to a Resource requiring an order (1 of 3)

## Browse EOSC Marketplace Resources

Search in catalogs All catalogs

- ALL CATALOGS
- PUBLICATIONS
- DATA
- SOFTWARE
- SERVICES
- DATA SOURCES
- TRAININGS
- INTEROPERABILITY GUIDELINES [BETA]
- BUNDLES [BETA]
- OTHER

### Filters

4648277 search results All catalogs Sort By Default

**Research step**

- Discover Research Outputs (4647889)
- Process and Analyse (82)
- Manage Research Data (48)
- Access Training Material (32)
- Access Computing and Storage Resources (28)
- Access Research Infrastructures (24)
- Publish Research Outputs (20)
- Find Bundles (1)
- Find Instruments & Equipment (1)

Service **Order Required** English

### EGI Cloud Compute

Order required 22 November 2018 Type: service

**Scientific domain:** Generic>Generic Generic  
**Organisation:** EGI Foundation

[pre-configured virtual appliances](#) [virtual machines on-demand](#)

Cloud Compute gives you the ability to deploy and scale virtual machines on-demand. It offers guaranteed computational resources in a secure and isolated environment with standard API access without the overhead of managing physical servers. Cloud Comp...

Show more

# Access to EOSC: Order a Resource (2 of 3)

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## EGI Cloud Compute

EGI Cloud Compute

Run virtual machines on-demand with complete control over computing resources

Organisation: EGI Foundation

Provided by: 100 Percent IT, CESNET, Institute of Physics of Cantabria (IFCA), Deutsches Elektronen-Synchrotron, Fraunhofer SCAI, Institute of Information and Communication Technologies, Fundacion Centro Tecnologico de Supercomputacion de Galicia, Italian National Institute of Nuclear Physics, The SCIGNE Platform, Institute of Informatics - Slovak Academy of Sciences, Institute of Accelerating Systems and Applications, Portuguese National Distributed Computing Infrastructure (INCD), GSI Helmholtzzentrum für Schwerionenforschung GmbH, Turkish Academic Network and Information Center



☆☆☆☆☆ (0.0 /5) 0 reviews  Add to comparison  Add to favourites

[Access the service](#)

⚡ ORDER REQUIRED

[→ Webpage](#) [→ Helpdesk](#) [→ Helpdesk e-mail](#) [→ Manual](#)  
[→ Training information](#)

[Ask a question about this service?](#)

[ABOUT](#)[DETAILS](#)[GUIDELINES](#)[REVIEWS \(0\)](#)

# Access to EOSC: Order a Resource (3 of 3)



EUROPEAN OPEN  
SCIENCE CLOUD

CANCEL AND QUIT

Next

Offer selection

Access instructions

Configuration

Pin to a project

## Select an offer or service bundle

ORDER REQUIRED

### General purpose

Base performance instance type. Features: Accessible in opportunistic or reserved ways, CPU cores could be overcommitted. Ideal for: Web services, Micro-services, Development...

Show more

#### TECHNICAL PARAMETERS

Number of CPU Cores	1 - 8
Amount of RAM per CPU core	1 - 4 GB
Local disk	10 - 40 GB
Number of VM instances	1 - 50

Show more

Select an offer

ORDER REQUIRED

### High-memory

Optimised instances for tasks that require more memory relative to virtual CPUs. Features: High amount of RAM per CPU core, Up to 240 GB of RAM in total, Reserved instances. Ideal for: Running...

Show more

#### TECHNICAL PARAMETERS

Number of CPU Cores	2 - 16
Amount of RAM per CPU core	16 - 120 GB
Local disk	10 - 40 GB
Number of VM instances	1 - 50

Show more

Selected offer ✓

ORDER REQUIRED

### GPU

GPU-enabled instances. Features: 1 or 2 GPU cores, 9 CPU cores for each GPU core, large memory. Ideal for: Graphics and general purpose GPU compute applications.

#### TECHNICAL PARAMETERS

Number of GPU cores	1 - 2
Number of CPU Cores	8
Amount of RAM	24 - 50 GB
Local disk	280

Show more

Select an offer

# Access to EOSC: Support

## Contact the EOSC Portal Support

<https://eosc-portal.eu/contact-us>

## Information

- [EOSC Portal](#) Main source of information about EOSC
- [EOSC Marketplace](#) Provides access to resources
- [EOSC Future Public wiki](#) Helps to understand integration possibilities

# Question: what's next?

- EGI works as a negotiator/broker between communities and resources available.
- From EUreka3D project requirements, an infrastructure can be defined and structured, for the future usage.
- Several types of resources can be allocated, from EGI Federation, for instance: AAI, meta and para Data storage, softwares, etc.
- EUreka3D is the project for 3D digitization, a pilot/initial basis for next steps, which are...

# Thank you for your attention!

## Questions?!

Learn more at <https://eosc-portal.eu/>

[renato.santana@egi.eu](mailto:renato.santana@egi.eu)

[ignacio.lamata@egi.eu](mailto:ignacio.lamata@egi.eu)