

EGI: Advanced Computing for Research

 www.egi.eu

 @EGI_eInfra

Compute services for Open Science

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Outline

- EGI-ACE objectives and architecture
- Services for the long tail of science
- Services for communities
- Uptake and impact



EGI-ACE mission

Implement the **Compute Platform of the European Open Science Cloud** and contribute to the **EOSC Data Commons** by delivering integrated computing, platforms, data spaces and tools as an integrated solution that is **aligned with major European cloud federation projects and HPC initiatives.**

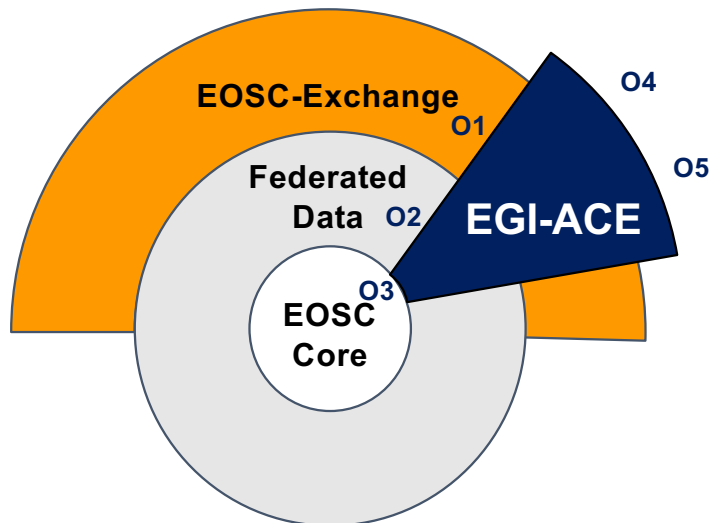
Start: January 2021

Duration: 30 months

Consortium: 33 participating partners, 23 third-parties

Budget: 12 Million EUR (8 Million EC)

Objectives for EOSC Exchange capacity/capability building



EOSC Architecture:
[Solutions for a sustainable EOSC](#)
(report from the EOSC Sustainability WG)

Objective 1: **Deliver the European Open Science Cloud Compute Platform and expand the supply-side**

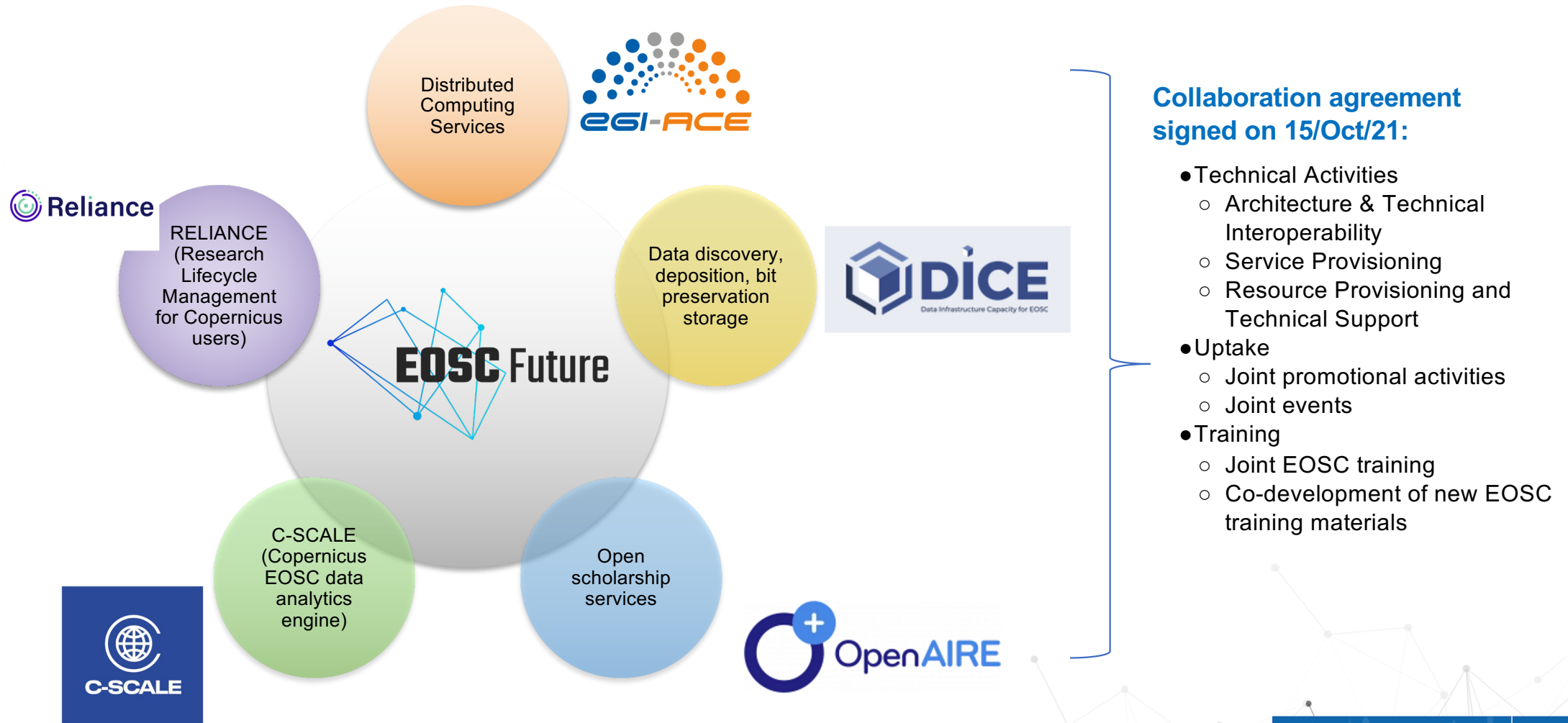
Objective 2: **Contribute to the implementation of the EU Data Strategy and the EOSC Data Commons to support the Green Deal, Health and Fundamental Research**

Objective 3: **Integrate the EOSC Compute Platform with the EOSC Portal and the EOSC Core**

Objective 4: **Contribute to the realization of a global Open Science Cloud**

Objective 5: **Expand the demand-side of EOSC across sectors and disciplines**

EOSC Exchange Capacity Building



Integrated tiered service architecture

Data Spaces and Analytics

Data and thematic data analytics and processing tools

Platforms

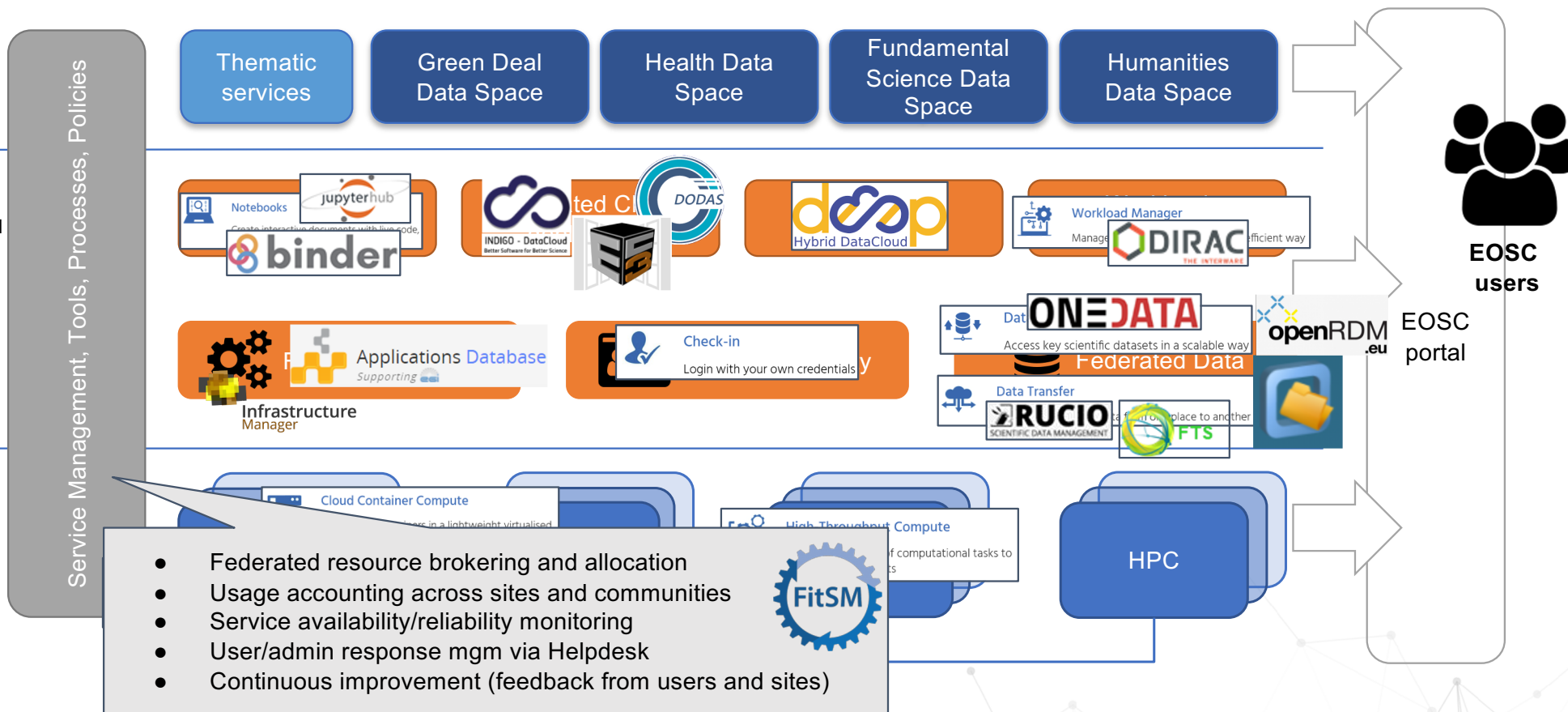
generic added-value platform level services

Federated Access

Federation-wide management of data and computing

Federated Resources

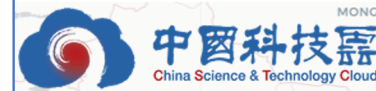
Compute and storage facilities





Towards a Global Open Science Cloud

New in 2021:



27 cloud providers



New in 2022

Cloud integration programme



Check-in – single sign on across services and providers



DataHub – replication of scientific data to national clouds



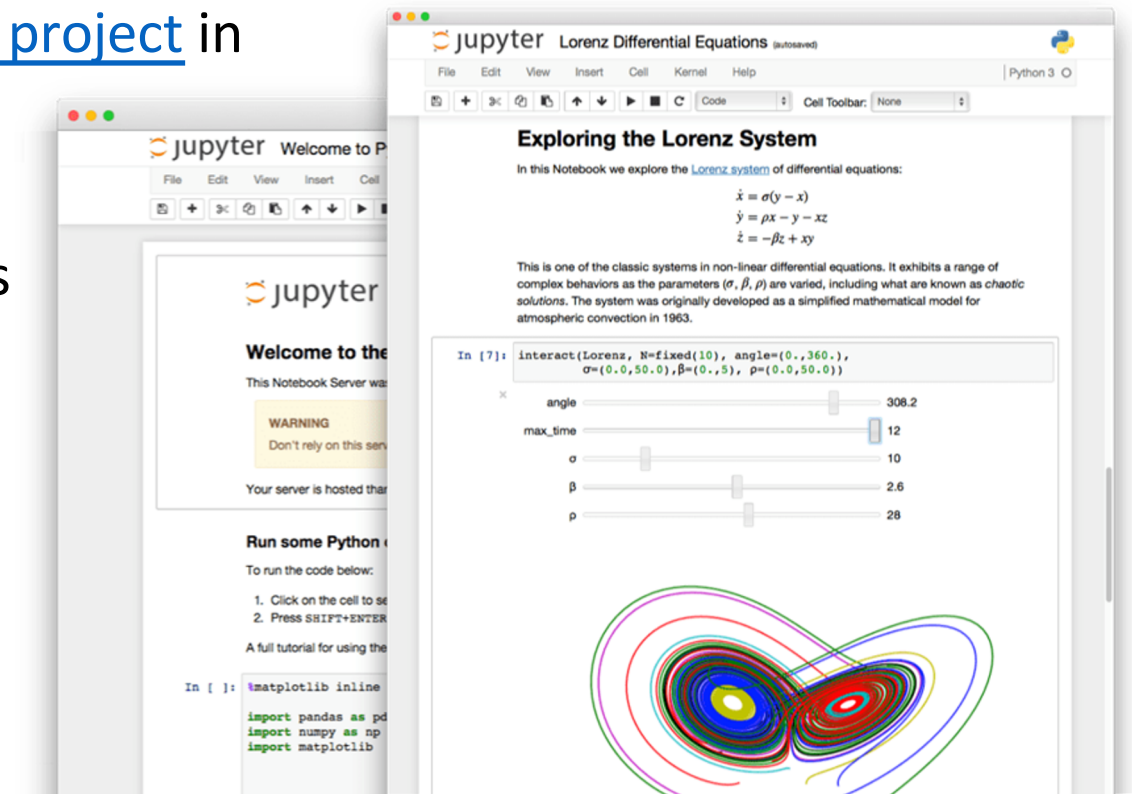
AppDB – distribution of applications & services to national clouds



EGI-ACE services for the 'long tail of science'

Jupyter notebook in a nutshell

- Non-profit, open-source, interactive platform for Data Science born out of the [iPython project](#) in 2014
- Released under the [BSD license](#)
- Notebooks can be shared with others using email, Dropbox, GitHub
- Interactive [widgets](#)





EGI Notebooks & Binder: reproducible open science



DataHub integration for transparent access to distributed data

Create documents with code, visualisation and text that run on cloud providers

```
geo_json = GeoJSON(
    data=data,
    style={
        'opacity': 1, 'dashArray': '9', 'fillOpacity': 0.1, 'weight': 1
    },
    hover_style={
        'color': 'white', 'dashArray': '0', 'fillOpacity': 0.5
    },
)

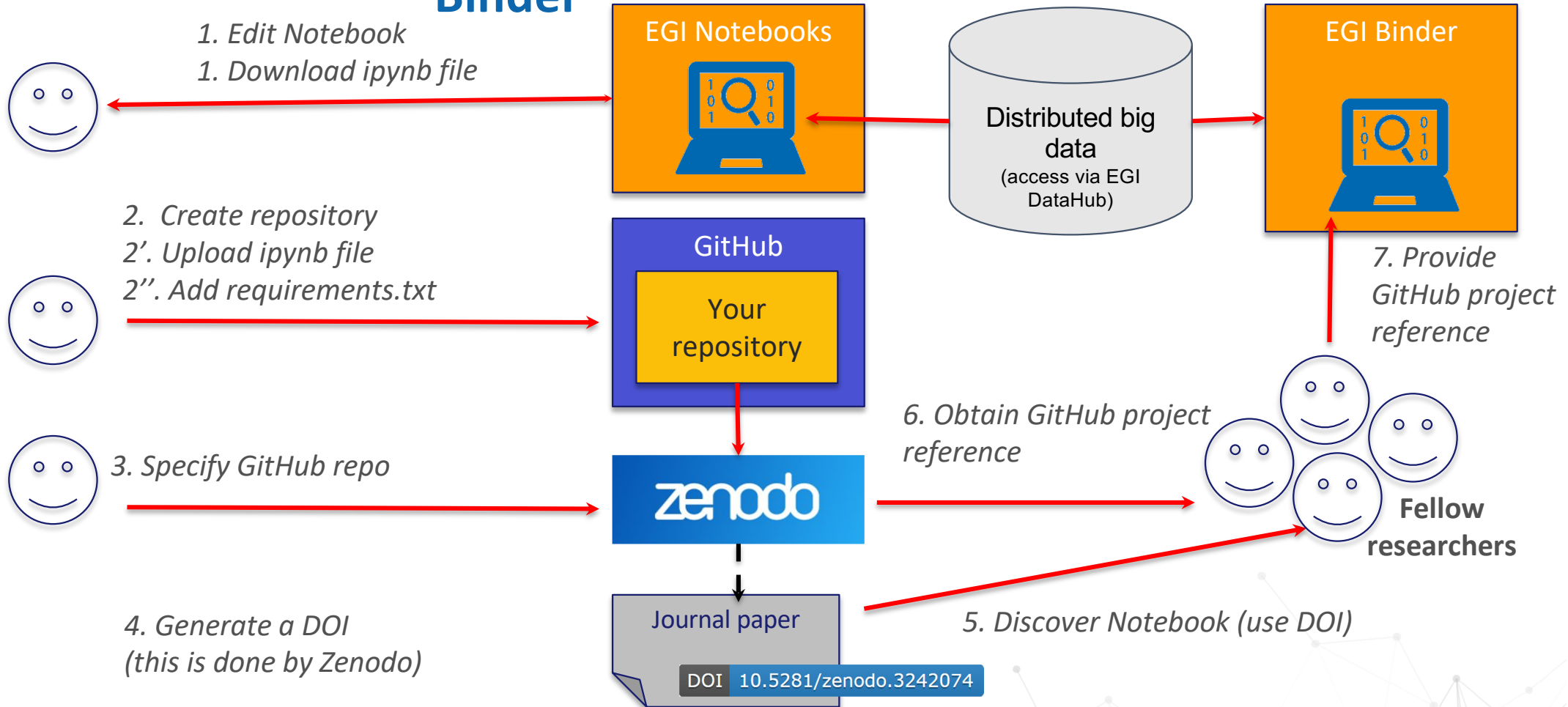
[10]: m.add_layer(geo_json)

m
```

Share notebooks with just a link, reproduce with binder

Access EGI Federation and national infrastructure from your web browser

Open science cycle with EGI Notebooks and Binder





Combining services & resources: EGI-ACE Notebooks and OpenAIRE

<https://marketplace.eosc-portal.eu/services/egi-notebooks?q=EGI+Notebook>

EGI Notebook

Create interactive documents with live code, visualisations and text

Organisation: EGI Foundation
Provided by: CESNET

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

Access the resource

ORDER REQUIRED

Webpage Helpdesk e-mail Manual Ask a question about this resource?

Training Information

ABOUT DETAILS REVIEWS (0)

Notebooks is a browser-based tool for interactive analysis of data using EGI storage and compute services. Notebooks are based on JupyterHub technology. This service can combine text, mathematics, computations and their rich media output using Jupyter technology, and can scale to multiple servers and users with the Cloud Compute service. Notebooks for Researchers: After a lightweight approval, users login, write and play notebooks using storage and compute capacity. Notebooks for Communities EGI offers consultancy and technology to set up a community-specific JupyterHub on top of a community VO. Comes together with EGI-enabled compute and storage resources and with community-specific storage. For individual users: Reproducible research with notebooks (notebooks can be re-played by the same user, shared and re-played by different users), easy to hook into other big-data environments (e.g. Spark, Hadoop) or services (e.g. Cloud Compute) provided by or hosted by EGI. For groups: establish a JupyterHub for your community on top of EGI and community-specific compute and storage resources. "For individual users: Reproducible research with notebooks (notebooks can be re-played by the same user, shared and re-played by different users), easy to hook into other big-data environments (e.g. Spark, Hadoop) or services (e.g. Cloud Compute) provided by or hosted by EGI. For groups: establish a JupyterHub for your community on top of EGI and community-specific compute and storage resources."

SCIENTIFIC CATEGORISATION

Generic

CATEGORISATION

Generic

Generic

CATEGORY

Software

Other research products

Year range

e.g. 1800 e.g. 2032

THIS YEAR | LAST 5 YEARS | LAST 10 YEARS

Type (1)

Software (1)

Content Provider (1)

B2FIND (1)

Target Users

Businesses Researchers

Report a technical problem

Resource offers

OpenAIRE EXPLORE

SEARCH DEPOSIT LINK CONTENT PROVIDERS SIGN IN

ADD RULE

SEARCH

Filters

Results per page: 10 Sort by: Relevance Download Results

Access Mode (1)

Open Access (1)

2 RESEARCH OUTCOMES, PAGE 1 OF 1

Result Types (4)

Publications Research data Software Other research products

Year range

THIS YEAR | LAST 5 YEARS | LAST 10 YEARS

Type (1)

Software (1)

Content Provider (1)

B2FIND (1)

Other Research Product - 2021

Plot scripts for HCG-16 Project

Authors: Jones, Michael G.; Luna-Valero, Sebastián;

Publisher: EUDAT

These are the notebooks to generate the final data plots of the paper Jones et al. 2019 submitted to Astronomy & Astrophysics. They can be used in a notebooks environment (like <https://notebooks.egi.eu/>) with the proper libraries installed. A mybinder (<https://mybinder.o...>)

Software - 2021

Using CAMS European air quality analysis from Copernicus Atmosphere Monitoring with RELIANCE services

OPEN ACCESS

Authors: Mantovani, Simone;

Persistent Identifiers

DOI: 10.5281/zenodo.5554786 10.5281/zenodo.5554785

Publisher: Zenodo

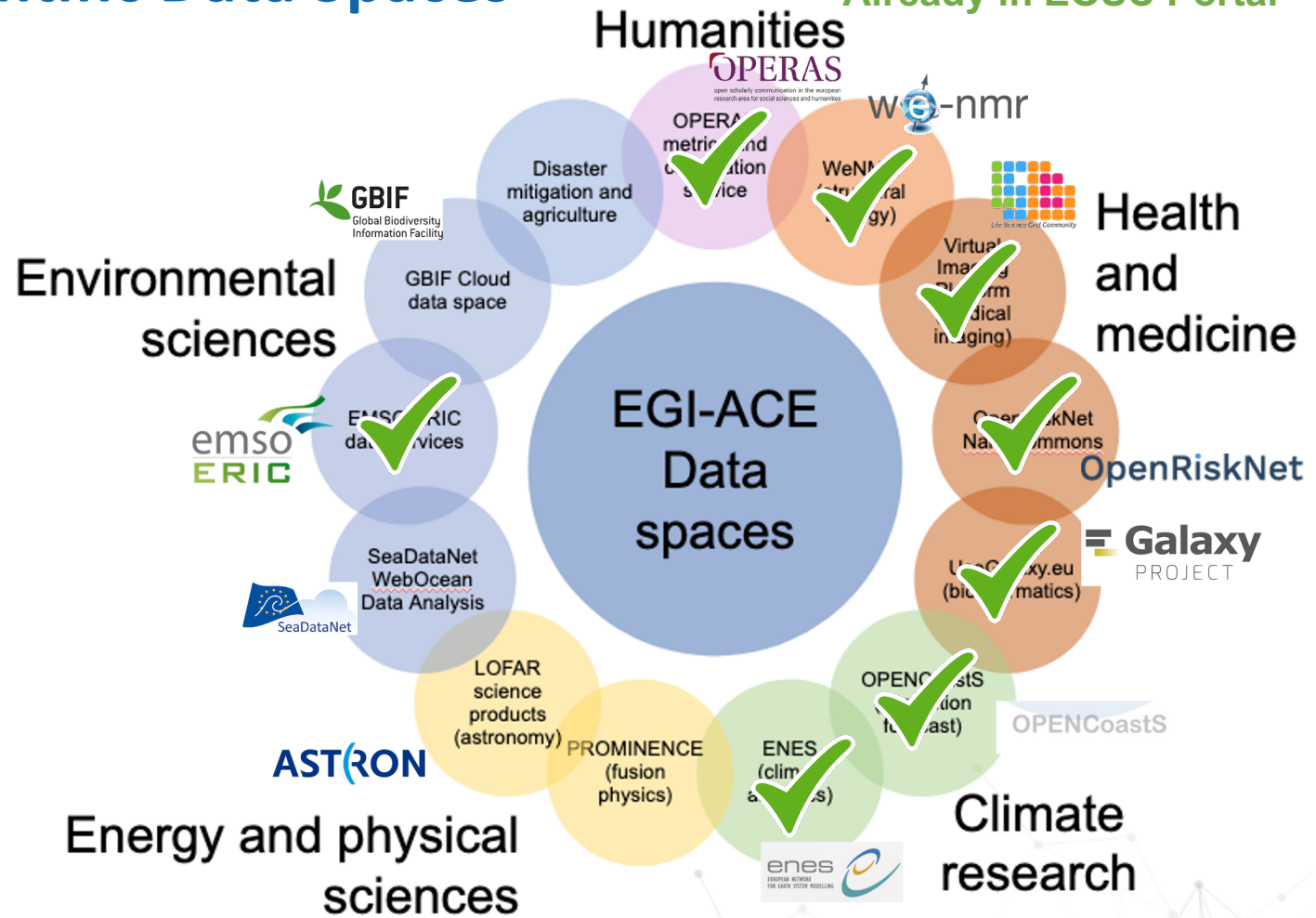
This notebook shows how to discover and access the Copernicus Atmosphere Monitoring products available in the

Thematic Services from EGI-ACE: Scientific Data Spaces

Already in EOSC Portal



Supported by federated resources, access and platform services with SLAs

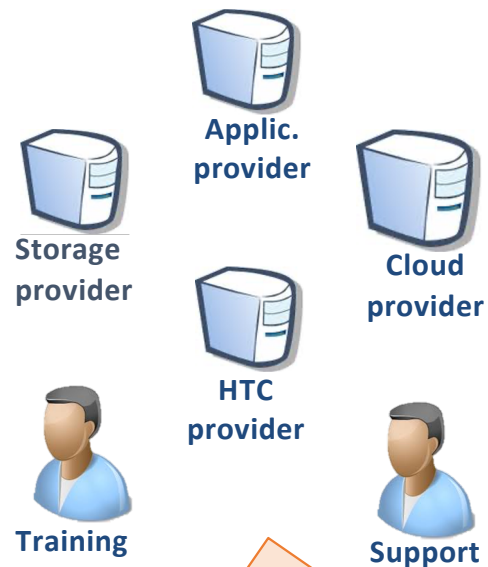
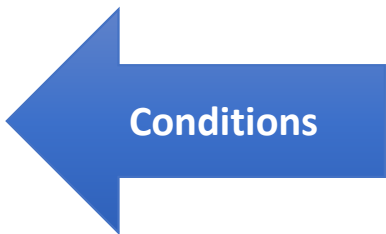
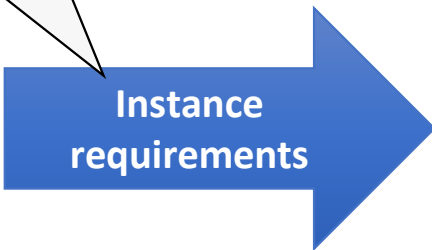


EGI-ACE services for communities

Allocating resources for user communities

- Negotiate access to resources
- Taking into consideration user requirements (type, number, size, cost, availability, ++)
- Match user demand and provider priorities

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



Project/Community representative



Ensuring that agreed targets are met

Regular satisfaction interviews

Specify what's delivered

Regular service delivery reports

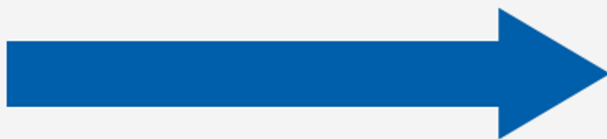


The EGI-ACE project delivers the EOSC Compute Platform and contributes to the implementation of the EOSC Data Commons.

80,000,000 
CPU HOURS

250,000 
GPU HOURS

20 
PB STORAGE



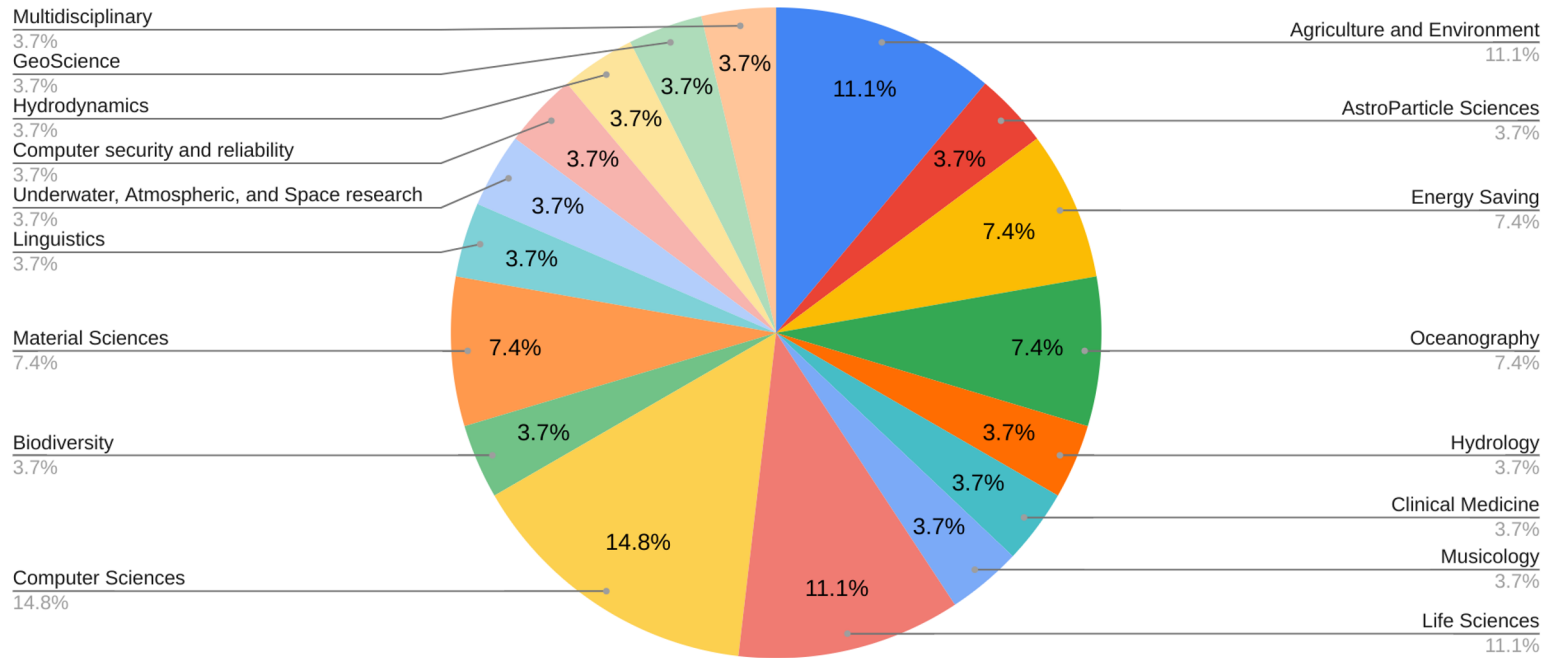
SUBMIT YOUR USE CASE NOW
WWW.EGI.EU/EGI-ACE/CALL-FOR-USE-CASES



Cut off every 2 months, next: 15/April/2022

EGI-ACE Open Call: Statistics

EGI-ACE Applications distribution per scientific domains



5 cut-off dates
(since March 2021)

28
Applications

21
Supported with
Virtual Access

2
supported by NGIs
(national funds)

5
in discussion



How EGI-ACE supports the selected communities

Assignments in the Customer DB:

<https://confluence.egi.eu/display/EGIACE/Customers+DB>

Use case
shepherds
(lead experts)

Training
Programme

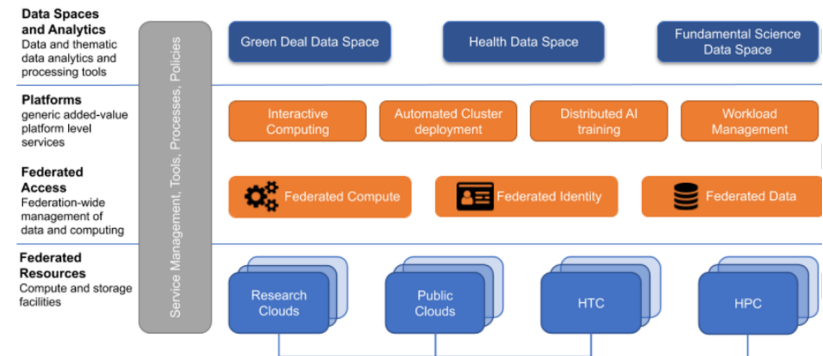
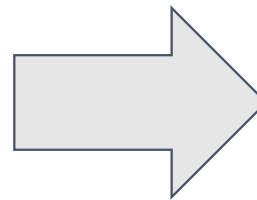
14 webinars, 436 attendees,
804 Youtube views
2 more in the pipeline



Users docs

Provider
specific
support

<https://docs.egi.eu>



Delivery channels for EOSC

Single users, small groups (Long tail)
Experimental users

EOSC USERS

International projects
Multi-national communities
RIs

Business-to-User

Business-to-Business

EOSC Portal

- Ready-to-use resources/services
- Self-service configuration
- Short term engagement

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

EGI-ACE Open Call

- High capacity demand
- Custom configurations
- Long term engagement

<https://www.egi.eu/projects/egi-ace/call-for-use-cases>

Continuously open, Cut-off dates every 2 months

Serving with the use of...

80million CPUh
250,000 GPUh
20 PB storage

**EC funds
(VA, projects)**

**Local funds
(institutional/national
investments)**

Uptake and impact



**31 services
from EGI-ACE
in EOSC so far**

Contact us Portal Home Catalogue & Marketplace Providers Dashboard Providers Documentation Login

Find resource... All resour... Q My EOSC Marketplace

EUROPEAN OPEN SCIENCE CLOUD

Resources

All Resources 30 Resources

CATEGORIES

Access physical & infrastructures 14

Aggregators & Integrators 2

Active filters

Related Infrastructures and platforms: EGI-ACE X Clear all filters X



Service Order Metrics

Boundaries : 2018-11-01 / 2021-10-15

LIST **STATS PER MONTH** CHART

Selection : All EGI ACE Services

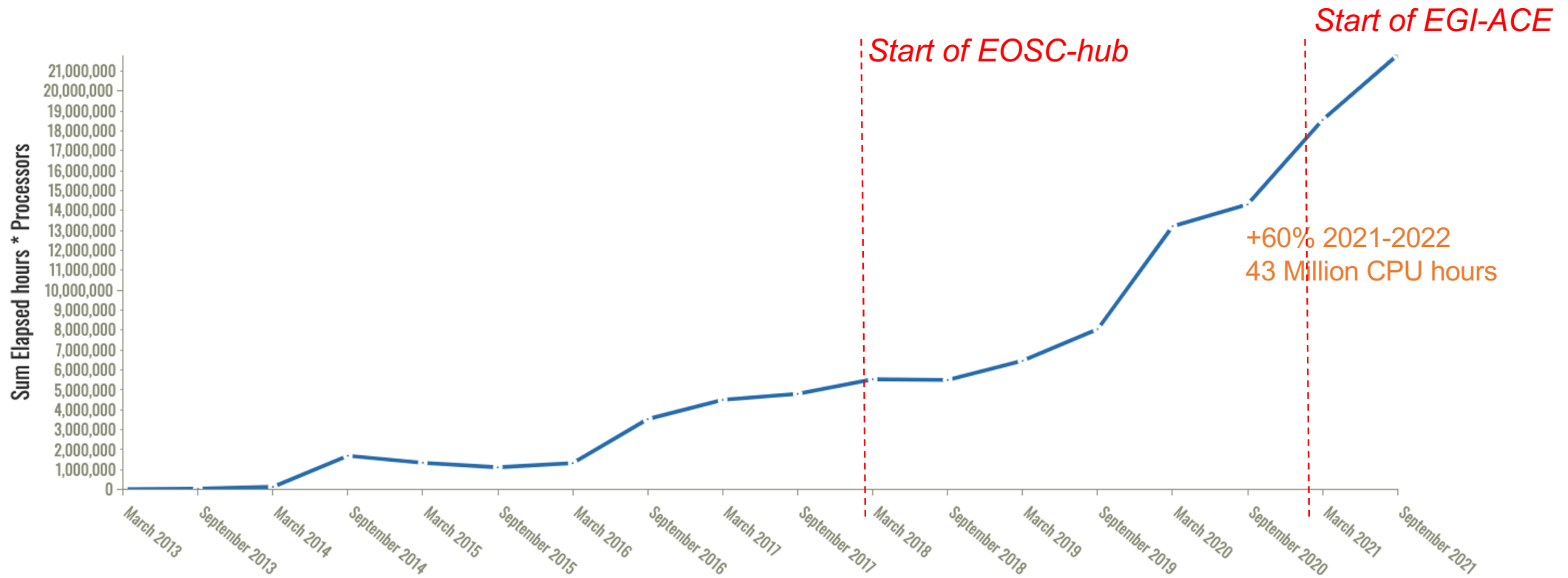
Search:

CSV Excel

Service	2021												Total					
	06	07	08	09	10	11	12	01	02	03	04	05		06	07	08	09	10
EGI CLOUD COMPUTE	2	2	1		1			1	1	1	2	1	2	10			2	70
DEEPAAS TRAINING FACILITY	1	4	1	1		1												21
EGI NOTEBOOKS	1	2	2															21
B2DROP		2							2	1	1		1					19
EGI ONLINE STORAGE					1											1	3	15
B2HANDLE	1	1											1			1		14
ELASTIC CLOUD COMPUTE CLUSTER ...	1								1					1			1	13
B2SAFE																	2	13
EGI CHECK-IN	1	3										1					1	12

**9 EGI-ACE service
among the top10
'most ordered'
EOSC service
since 2018**

Cloud capacity consumption trends



Thank you

<https://www.egi.eu/projects/egi-ace/>

EGI-ACE outcomes in Zenodo: <https://zenodo.org/communities/egi-ace>