

Open Science Activities in Greece

Implementing FAIR principles: Tools, Infrastructure and Guidelines and the Greek Horizon

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Agenda

- Hellenic Open Science Initiative
- GRNET's Contribution
- Projects

Hellenic Open Science Initiative



Hellenic Open Science Initiative

The National Initiative for Open Science - HOSI was founded on February 28, 2022 by **13** leading Greek research, technology and innovation organizations, in order to support the coordinated and collaborative implementation of the Open Science policies in Greece and to take care of the official national contribution and representation in the European Open Science Cloud (EOSC).

The Memorandum of Understanding (MoU) signed by these organizations **outlines the conditions and operating procedures** of HOSI and is a collective contribution and product of intensive discussions of the working group for the for Open Science.

Since 2019, this group has collaborated in an exceptional climate to develop a proposal for a **National Plan for the Government of Greece**, part of which has already been incorporated into the country's Digital Transformation Bible 2020 - 2025. (<https://digitalstrategy.gov.gr/en/>)



National Plan for Open Science



The collective achievement of HOSI that describes the main axes of policy and means of implementation for Open Science in the country and is addressed to the political leadership, research funding organisations, as well as all of the Research, Technological Development and Innovation (RTDI) organisations of the country.

<https://www.hellenicopenscience.gr/el/national-os-plan>



Hellenic Open Science Initiative - Next Steps

Update the National Plan for Open Science



Creating Training Material



Organise the 3rd Symposium for Open Science 10-11/12/2024

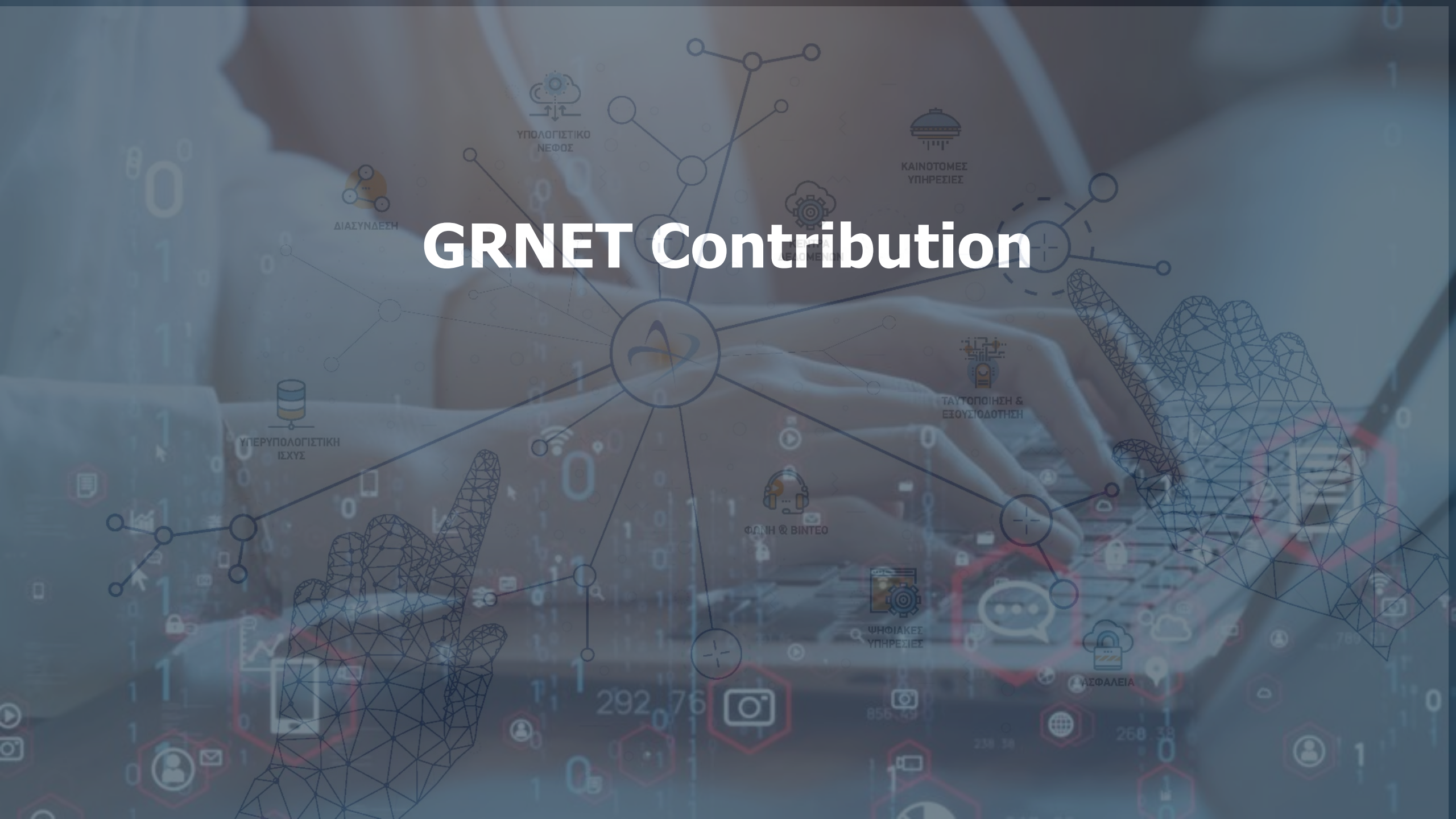
3^ο Συμπόσιο
Ανοικτής
Επιστήμης

Ενίσχυση της Συνεργασίας
της Καινοτομίας Πολιτικής
και των Βέλτιστων Πρακτικών
στην Έρευνα.

10 - 11 . ΔΕΚ . 2024

<https://www.hellenicopenscience.gr/el/events/3rd-greek-oss>

GRNET Contribution



ΥΠΟΛΟΓΙΣΤΙΚΟ
ΝΕΦΟΣ



ΔΙΑΣΥΝΔΕΣΗ



ΚΑΙΝΟΤΟΜΕΣ
ΥΠΗΡΕΣΙΕΣ



ΕΞΥΜΝΟΠΟΙΗΜΕΝΑ
ΠΕΡΙΒΑΛΛΟΝΤΑ



ΤΑΥΤΟΠΟΙΗΣΗ &
ΕΞΟΥΣΙΟΔΟΤΗΣΗ



ΥΠΕΡΥΠΟΛΟΓΙΣΤΙΚΗ
ΙΣΧΥΣ



ΦΩΝΗ & ΒΙΝΤΕΟ



ΨΗΦΙΑΚΕΣ
ΥΠΗΡΕΣΙΕΣ



ΑΣΦΑΛΕΙΑ

Users

Serving daily users in the sectors of:

Public Administration, Education, Research, Health, Culture



grnet@government



grnet@education



grnet@research



grnet@health



grnet@culture



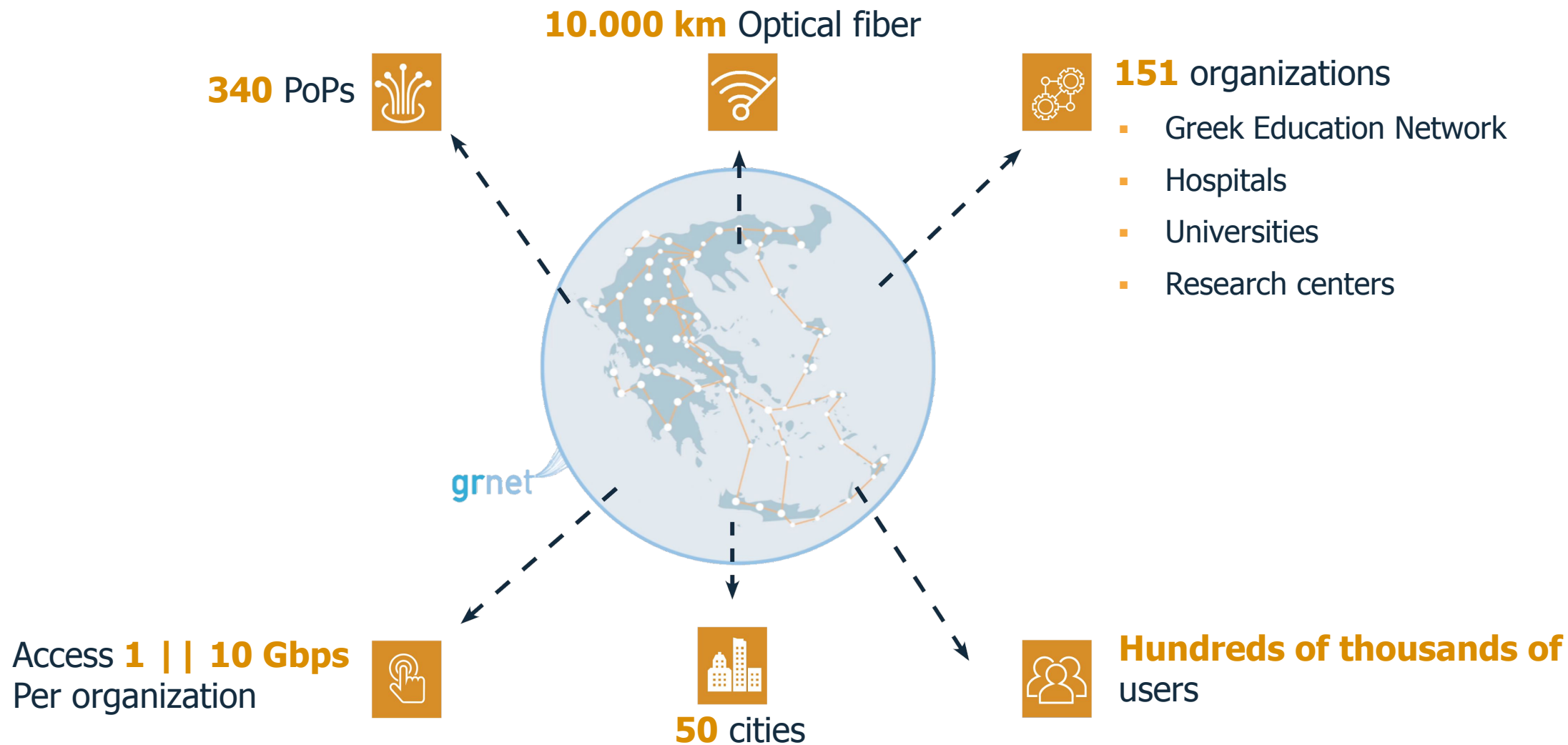
Organizations and Institutions

- Universities
- Research Centers
- Large Research Infrastructures
- Hellenic School Network
- Public Libraries
- Culture Centers
- Content Providers
- Public Administration sector
- Public Health Sector (Hospitals, Blood Donation/Transfusion Services)

Users

- **Academic and Research Community users (Students, Professors, Researchers, Academic and Administration Management, Network Operations Centers (NOC), Technical Staff)**
- **Health Sector users**
- **Hospital: Doctors, Administration, Management, NOC, Technical**
- **Blood Donor Volunteers**
- **Public Administration Officers**
- **Citizens**

Network Connectivity



e-Infrastructures & Services

National optical fiber network

GRNET backbone infrastructure

Connection to GRNET Network



HPC (High-Performance Computing)

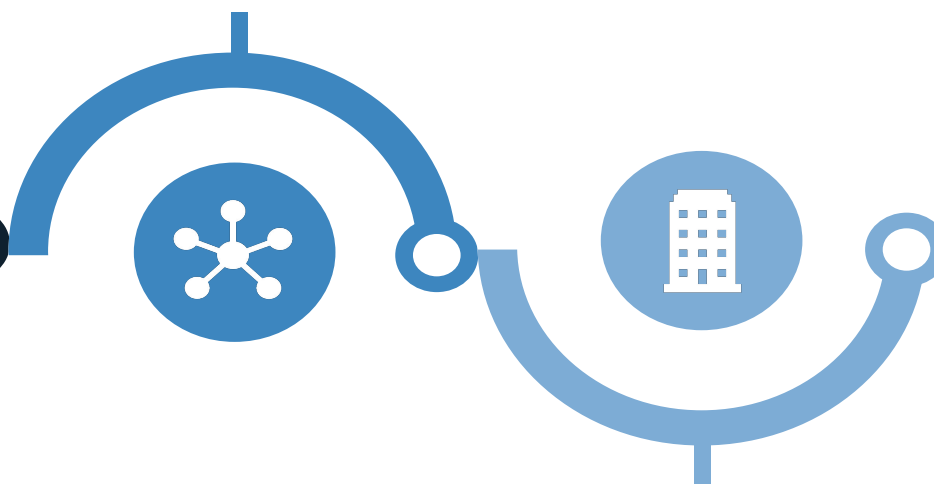
HPC services to the Greek R&E community

- National Supercomputer Infrastructure HPC - ARIS
- National Competence Center EuroCC@Greece HPC Hub
- Prace Training Center

GR-IX: National infrastructure

Interconnecting internet companies in Greece:

Providers of Internet services, content, cloud services



e-Infrastructures GRNET

Electronic Infrastructures of high reliability for the Research & Academic community with advanced and environmentally friendly data centers

Computing Infrastructures

- **33.101** ~okeanos cloud users
- **6** data centers in 3 geographic locations
- **2.000** servers
- **11.500** active VMs
- **5.200** datacenter network ports in total
- **10.000** active cloud users
- An optical network of a maximum capacity of **1 Tbps** for the datacenters



Heraklion, Crete



Ministry of Education, Marousi



National HPC Infrastructure

ARIS - HPC

- **5** computational islands, **535** compute nodes
- **2 PB** of storage space
- **535 TFlops** HPC Tier - 1 centre
- **1.100** HPC projects
- **58.200** core Years (510 million core Hours) during the last **7** years



New National Supercomputer

DAEDALUS

- **2025/26** installation at the Lavrion Technological and Cultural Park
- **33M euros** Build Cost (30% EuroHPC, 70% «Greece 2.0»)
- **30** Petaflops power
- Low energy cost of operation (powered by renewable energy sources and cooled by environmental friendly technology)
- Support of scientific research and innovative SMEs/industry with high computational capacity



Services for European e-Infrastructures

GRNET's contribution to European Open Science Cloud (EOSC)

Services for EUROPEAN INFRASTRUCTURES



ARGO Monitoring is a lightweight service for Service Level Monitoring designed for medium and large sized e-Infrastructures.



A real-time messaging service that allows the user to send and receive messages between independent applications.

Accounting Service

The ARGO Accounting Service is responsible for collecting, aggregating, and exchanging the Virtual Access metric.

Services for EUROPEAN INFRASTRUCTURES



Persistent Identifiers Service.
Mint and Manage Persistent
Identifiers for your resources.

e-Sealing digital signature service

E-signature Rest API. Signing,
timestamping and validation
of PDF documents.



RCIAM

Identity Access Management
for Research Communities -
Authentication and
authorization for members of
interdisciplinary scientific
communities.

Services for EUROPEAN INFRASTRUCTURES under development



CAT
EOSC Compliance
Assessment Toolkit

The Compliance Assessment Toolkit will support the EOSC PID policy with services to encode, record, and query compliance with the policy.



PIDMR
EOSC PID
Meta Resolver

The EOSC PID Metaresolver a generalized resolver for mapping items into records. It will improve machine based data processing and will allow getting digital object information.



SWHM
EOSC Software
Heritage Mirror

The EOSC Software Heritage Mirror (SWHM) is a copy of the Software Heritage universal source code archive,

What's Next

01

Continue to further Develop our Service Portfolio to cater for the needs of our User Communities

02

Continue to seek Opportunities to offer our service portfolio to new User Communities

03

Investigate and follow the changes in the Ecosystem around us (EOSC Nodes, SIMPL, Dataspaces) in order to seek new opportunities.

04

Continue work to provide a unified and simplified access to all our Services and Resources (Cloud, HPC, Services, Data)

The background is a deep blue gradient. In the center, there is a large, faint wireframe sphere composed of many small triangles. Surrounding this sphere are numerous small, bright blue dots and short, curved lines, giving the impression of a dynamic, data-driven environment or a network of connections.

European Projects

Projects we participate



EUROPEAN & INTERNATIONAL PROJECTS



Skills4EOSC

www.grnet.gr/en/skills4eosc/

The Skills4EOSC project aims to create a pan-European network of Competence Centers (CC) in order to accelerate the upskilling of European researchers and harmonise the training of new professionals for managing scientific data.



EOSC Beyond

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

EOSC Beyond overall objective is to advance Open Science and innovation in research in the context of the European Open Science Cloud (EOSC) by providing new EOSC Core capabilities allowing scientific applications to find, compose and access multiple Open Science resources and offer them as integrated capabilities to researchers.



FAIRCORE4EOSC

<https://faircore4eosc.eu/>

The FAIRCORE4EOSC project focuses on the development and realisation of core components for the European Open Science Cloud (EOSC). Supporting a FAIR EOSC and addressing gaps identified in the Strategic Research and Innovation Agenda (SRIA). Leveraging existing technologies and services, the project components aimed to improve the discoverability and interoperability of an increased amount of research outputs.

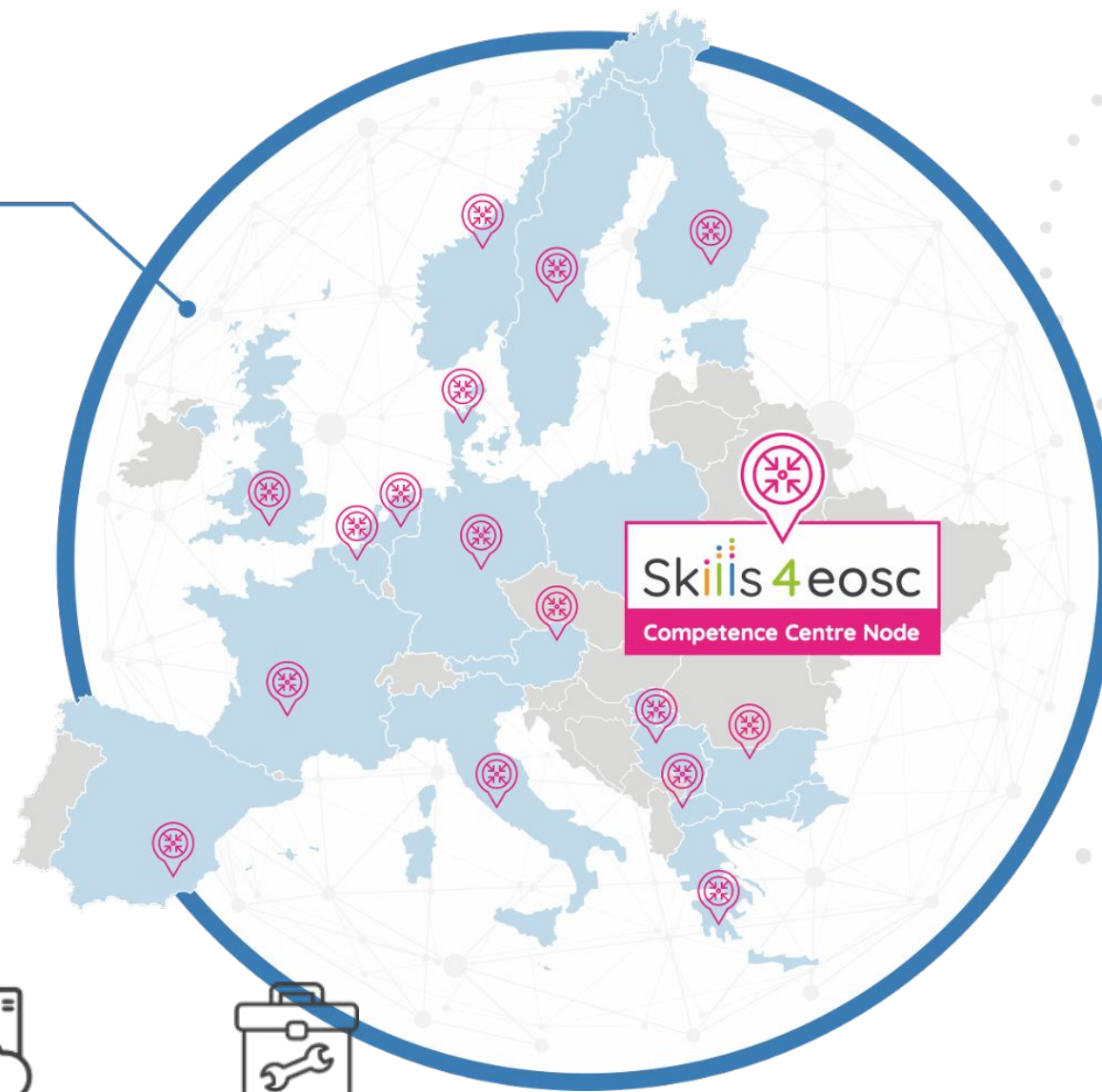
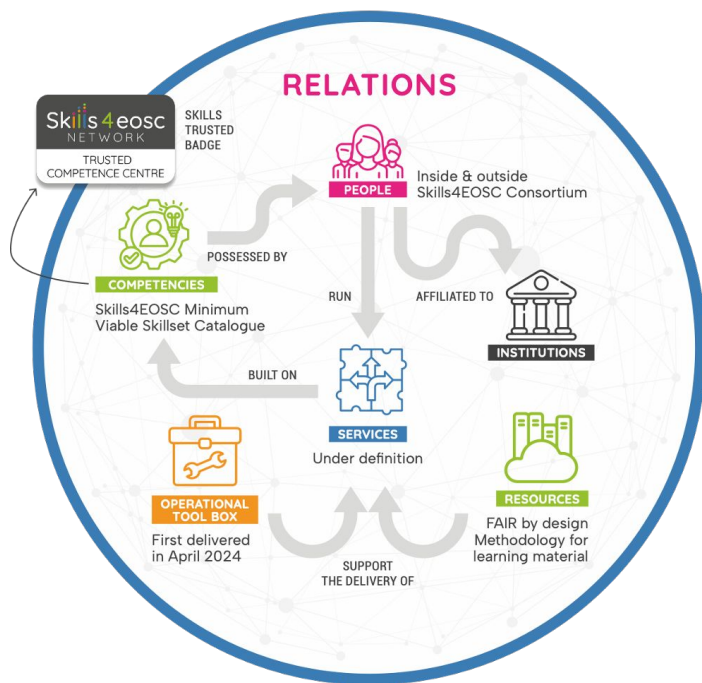
Skills4EOSC

Advance Open Science skills by unifying the current training landscape into a common and trusted pan-European ecosystem, closing the three gaps identified in the EOSC Strategic Research and Innovation Agenda 2021 in relation to Open Science competences:

- lack of Open Science and data expertise,
- lack of a clear definition of data professional profiles and corresponding career paths, and
- fragmentation in training resources.

Skills4eosc

Competence Centre Network



Competencies



People & Institutions



Services



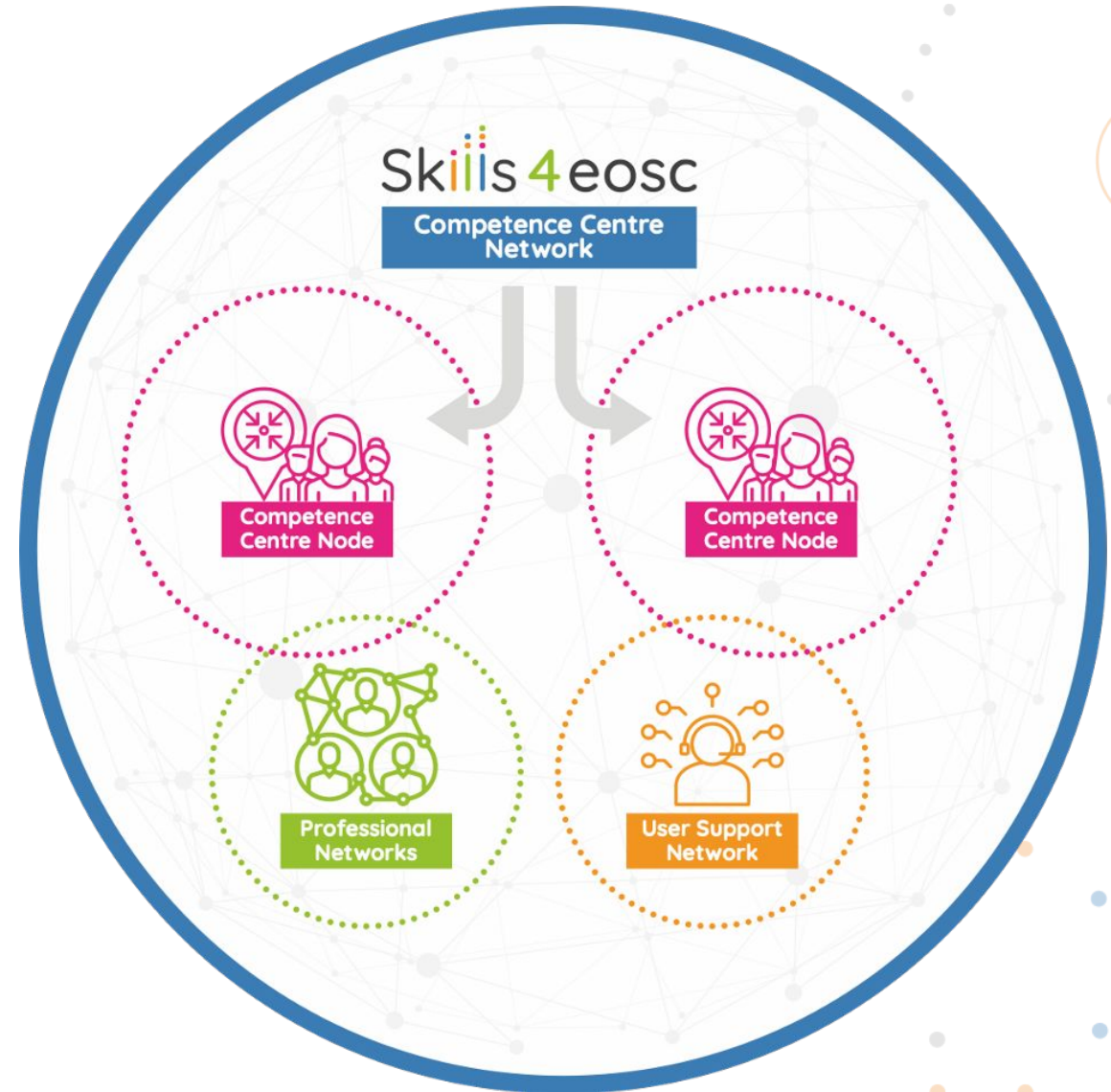
Resources



Tool Box

Link with Local Network

- GRNET is in **close collaboration** with the academic and research community, providing **services, infrastructures, user support** and **skills**.
- Similar to HPC/AI CC which functions within GRNET, as well as the **National Digital Skills Academy**, the Open Science Cloud CC aims to **engage** the Greek OS community to be closely involved in the CC activities, according to the needs for specific competencies and their availability.



GR Competence Center

- Advisory: Consulting/ strategic guidance
- Data repository
- Training & courses on OS skills
- SW/Tools
- Standards & Best Practices
- Alignment with EOSC-A
- Catalogues of tools
- Catalogues of policies
- Generic Services
- Thematic Services
- Workshops & Seminars



- Networking & Collaboration
- Competencies that are not currently on board are complemented by the pool of experts within the HOSI members and other R&E institutions.

Current trainings for master trainers in GR CC

- Science 4 Policy course series related to professional profiles of Policy maker, Civil servant and Knowledge broker
 - seven different courses both self-paced & live sessions
 - limited spaces per country in the first round of trainings,
 - new call will be open beginning of 2025.
- FAIR-by-Design Methodology course available to local community (self-paced course)
- All the material available in Skills4EOSC learning platform:
<https://learning.skills4eosc.eu/>

The screenshot displays the Skills4EOSC learning platform interface. The top navigation bar includes the email 'E-mail: learning-support@skills4eosc.eu' and the 'Skills4EOSC' logo, which is supported by EOSC and the European Union. The main content area features a sidebar with a course list and a central panel showing details for 'Training Course 1: Open Science is the New Norm'. The course details include a table with the following information:

Training Course 1: Open Science is the New Norm	
Aim of the course	This course introduces the paradigm shift towards open science, exploring its fundamental principles and impact on society. It delves into the concepts of accountability, transparency, and contrasts open science practices with traditional closed science models. Participants will gain a foundational understanding of how open science promotes collaboration and innovation, as well as comprehend the basic concepts and societal implications of open science.
Location	self-paced
Duration	estimate 2-3 hours
Number of Attendees	unlimited
Expertise Level / Skill Level	Beginner
Primary Language	English
Target Audience	Policy Makers, Civil Servants, Honest Brokers
Access Cost	No

Below the table, there is a section for 'FAIR-by-Design Methodology' with a search bar. The 'Essential Information' section provides a detailed overview of the methodology, including a flowchart of the 'FAIR-by-design Methodology' process. The flowchart consists of six steps: Prepare, Discover, Design, Produce, Publish, and Verify, leading to a final 'Deliver' stage. Each step is accompanied by a brief description of the activities involved.

FAIR-by-Design Methodology

Essential Information

FAIR-by-design Methodology

Table of contents

- Current Version: 1.5
- Version Date: 27-06-2024
- Quick start
- Related materials
- How to contribute
- Copyright Notice
- Cite as

Project Overall Objective

Advance Open Science and innovation in research by providing **new EOSC Core capabilities** that allow scientific applications to integrate and compose multiple **EOSC Resources** from national, regional and thematic **EOSC Nodes**

Next Generation Core services to support the setup and the Federation of EOSC Nodes

AAI, Resource Catalogues,
Monitoring
Accounting, Helpdesk, etc.



**Improved existing EOSC
Core services and
framework**



Advanced IF registry
Machine composability
AWM

**The EOSC
Execution
Framework**



SW Libraries implementing
interface described in the
EOSC IF Guidelines

**The EOSC
Integration Suite**

EOSC Core Innovation Sandbox



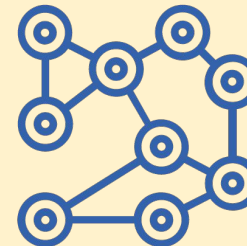
Enhanced EOSC Platform Blueprint

National/Regional:

Germany (NFDI)
Czech Republic (e-Infra CZ),
NI4OS Southeast Europe (GRNET, IPB, UKIM)

e-Infrastructures:

EGI Federation

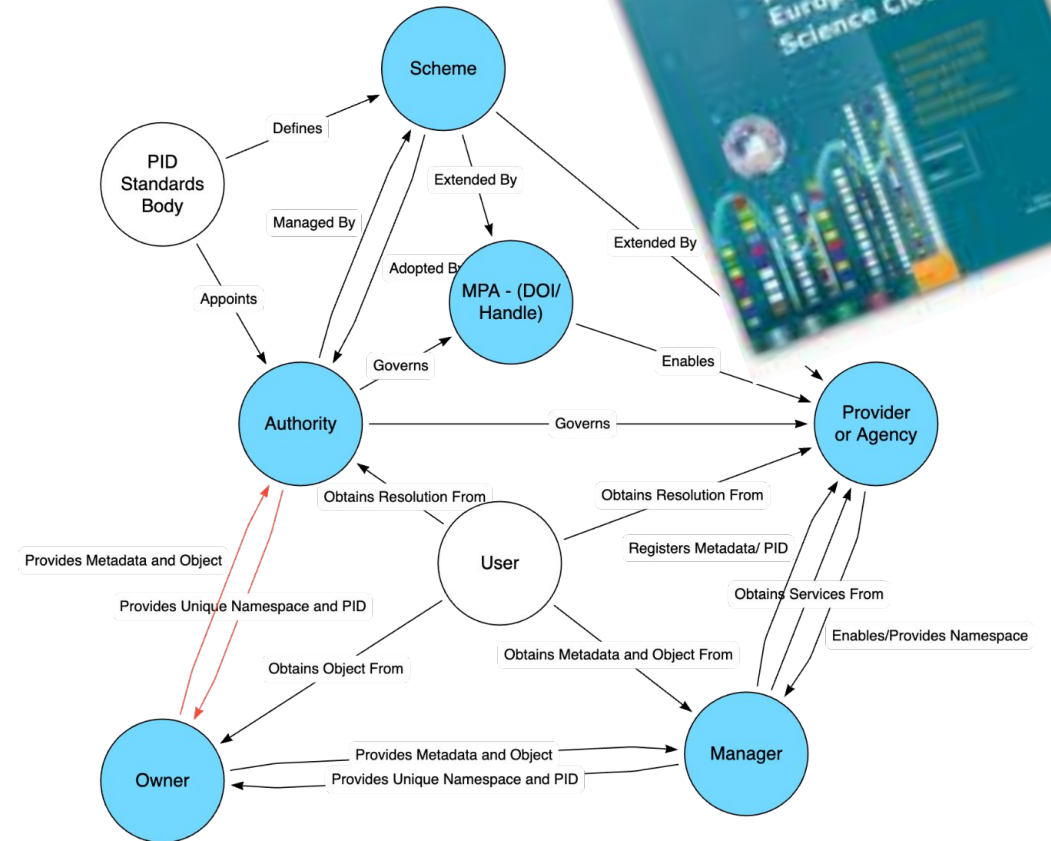
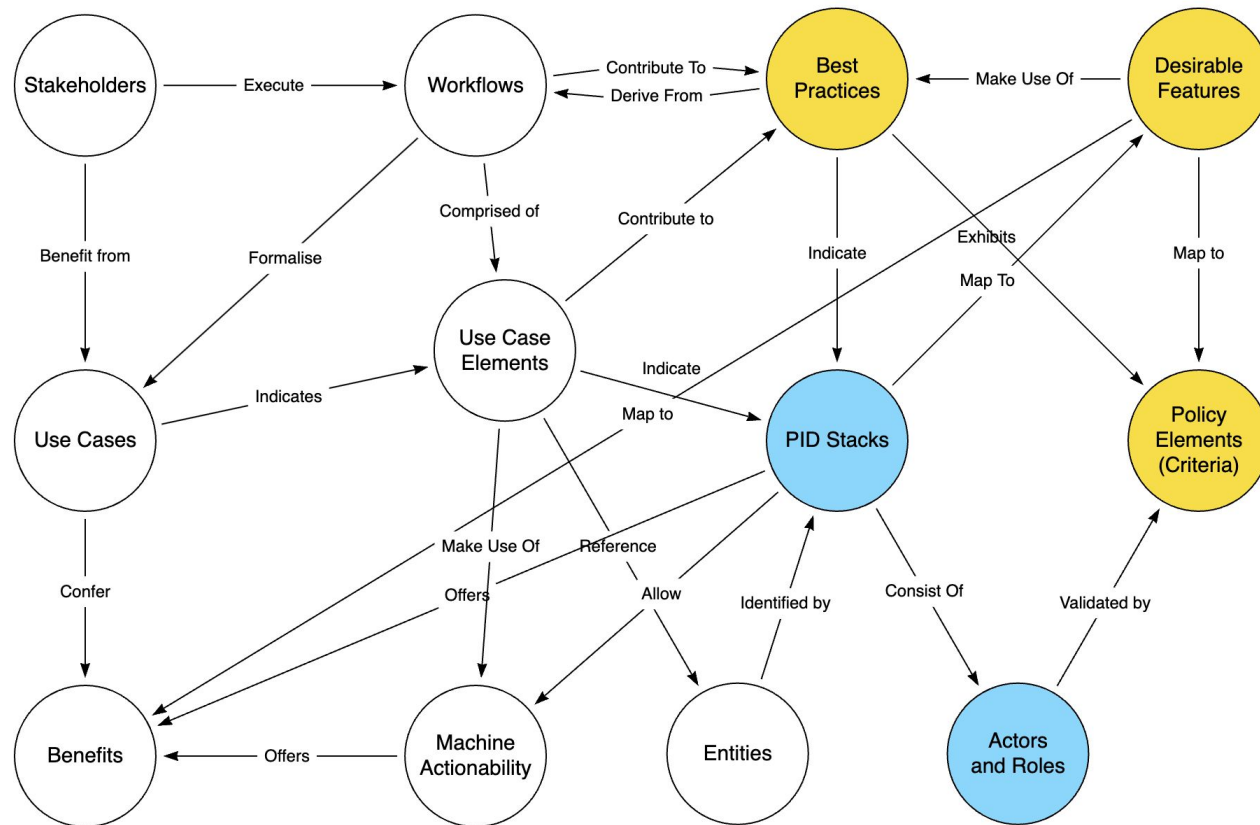


Network of EOSC Pilot Nodes

Thematic:

Environmental (LifeWatch)
Health and Food (METROFood-RI)
Structural Biology (Instruct-ERIC)
Climate Science (ENES)

Landscape / PID Ecosystem



Compliance Assessment Toolkit

An easy to use Toolkit to measure compliance (ex. with PID Policy - 1st version)
based on the results of Conceptual Model (definitions, relationships)

design

based on the landscape of
compliance assessment and
recent development of a
compliance ecosystem for
TRUST and FAIR



develop

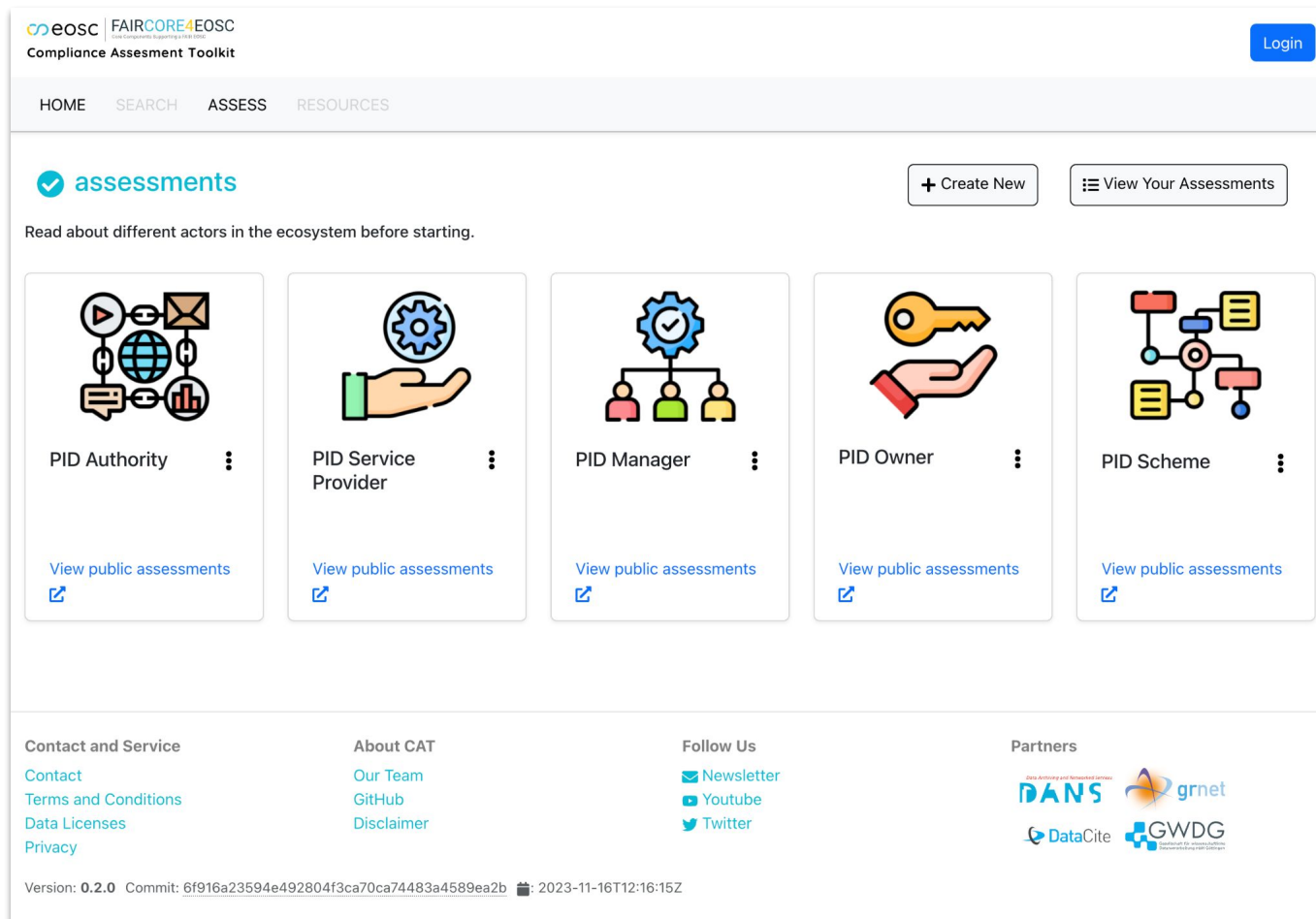
based on a set of
definitions for the
concepts involved
and the
relationships
between them

The CAT for PID Policy

For Authorities and Providers: It is important to back up public claims of EOSC Policy Compliance and of performance/ features with publicly available information

For Managers: Optional disclosure of policy compliance for purposes of trust and community acceptance

For Owners and Users: Matching PID services with use cases and expected benefits

A screenshot of the CAT EOSC Compliance Assessment Toolkit web application. The interface is clean and modern, with a light blue and white color scheme. At the top, there's a header with the "eosc" and "FAIRCORE4EOSC" logos, the text "Compliance Assessment Toolkit", and a "Login" button. Below the header is a navigation bar with links for "HOME", "SEARCH", "ASSESS", and "RESOURCES". The main content area is titled "assessments" with a checkmark icon. It includes a "+ Create New" button and a "View Your Assessments" button. A sub-header reads "Read about different actors in the ecosystem before starting." Below this, there are five cards representing different roles: "PID Authority", "PID Service Provider", "PID Manager", "PID Owner", and "PID Scheme". Each card has an icon, a title, a vertical ellipsis menu, and a "View public assessments" link with an external link icon. The footer contains four sections: "Contact and Service" (with links for Contact, Terms and Conditions, Data Licenses, and Privacy), "About CAT" (with links for Our Team, GitHub, and Disclaimer), "Follow Us" (with links for Newsletter, Youtube, and Twitter), and "Partners" (with logos for DANS, grnet, DataCite, and GWDG). At the very bottom, there's a version and commit hash string: "Version: 0.2.0 Commit: 6f916a23594e492804f3ca70ca74483a4589ea2b" and a timestamp: "2023-11-16T12:16:15Z".

Competence Centers

The background is a dark blue gradient. In the center, there is a faint, glowing wireframe globe. Surrounding the globe and scattered across the background are numerous small, bright blue and white particles, some of which appear to be moving or streaming outwards, creating a sense of dynamic energy and global connectivity.

Our Competence Centers



Greece's HPC Competence Center

Enhancing innovation capacity in Business, Industry and Science by utilizing advanced High Performance Computing services



SKills4EOSC Competence Center

Creating a Training Ecosystem for Open and FAIR Science

National Infrastructures for Research and Technology

GRNET S.A.

Implementing FAIR principles: Tools, Infrastructure
and Guidelines and the Greek Horizon

Open Science Activities in Greece

STAY INFORMED

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