

“The eInfra How-to-Guide”

A guide for users of eInfraCentral

eInfraCentral received funding from the European Union’s Horizon 2020 research and innovation programme (grant agreement No 731049). The project – delivered by a consortium of nine organisations across Europe – ran from January 2017 until June 2019.

eInfraCentral goals

The mission of eInfraCentral is to ensure that, by 2020, a broader and more varied set of users, from research to industry, can discover and access Europe’s growing e-infrastructure capacity. End-users – researchers, innovators, industry actors – are often unaware of the e-infrastructure services available in Europe that could help them in their work. Similarly, service providers and data producers sometimes have difficulty reaching potential users because of the lack of coordination and harmonisation across the e-infrastructure organisations. Even if users can discover the existence of a certain service, it can be difficult to gather further information, or compare it with other existing services. Service providers also lack user feedback on ways they could improve their offerings. Taken together, this leads to fragmented or overlapping efforts as well as slower rates of open innovation. eInfraCentral was designed to address this challenge of fragmentation and help research community to discover services and resources for research.

eInfraCentral achievements

In design, eInfraCentral predates the European Open Science Cloud (EOSC) and the portfolio of EOSC-related projects. As the EOSC scene evolved, so did the project, in particular turning [eInfraCentral’s all-inclusive catalogue of e-services and resources](#) into the heart of the EOSC Portal. The European Commission described eInfraCentral in the Implementation Roadmap for the European Open Science Cloud as one of the key building blocks of the EOSC Portal (alongside other H2020 funded projects EOSC-hub and OpenAIRE-Advance). The focus of the other three major outcomes of eInfraCentral – a harmonised service description template, a catalogue of services and a set of APIs – stayed unchanged.

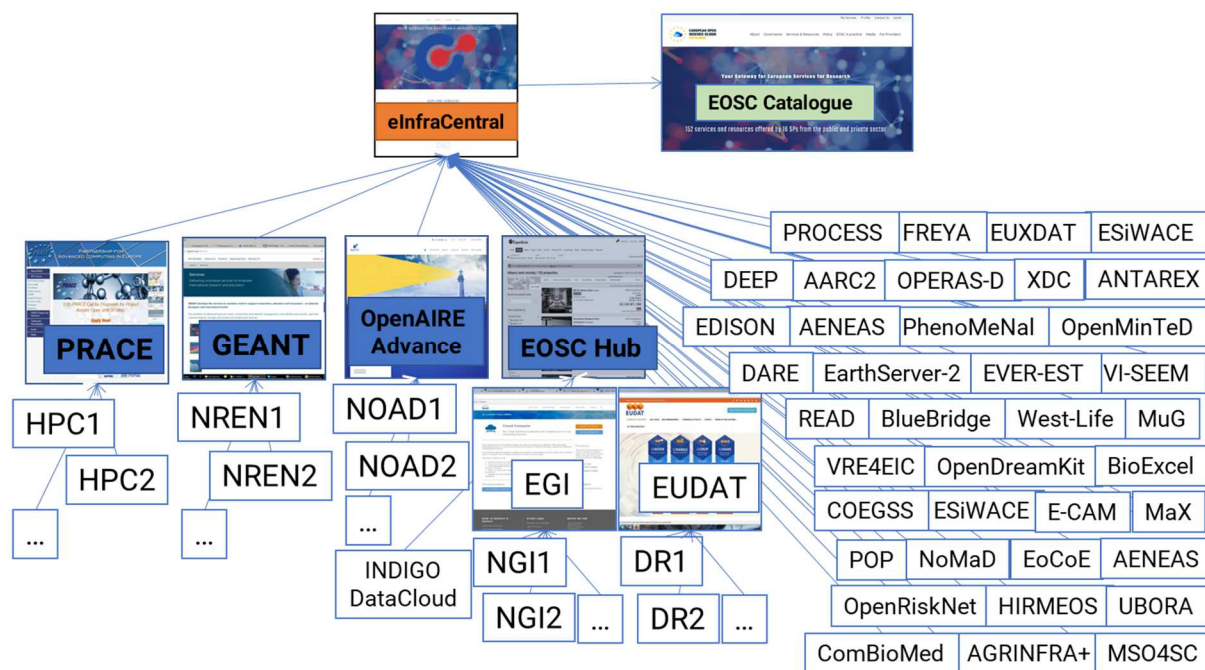
Who should use this document?

This e-publication is aimed at three target groups of eInfraCentral: end users (researchers), service providers and funders/policy-makers.

A harmonised service catalogue for EOSC: A joint effort between five major e-infrastructures

One of the major challenges that EOSC aims to address is the historical lack of a single online service catalogue that potential users could explore across Europe. Some e-Infrastructure organisations have had their own public catalogues for a number of years; many others were at very early stages of developing their service catalogue; all were following different standards and approaches. Some described their services with varying level of detail and complexity, while others had no discoverable or accessible paths to their service offerings.

In partnership with five key e-infrastructures, GÉANT, OPENAIRE, PRACE, EGI and EUDAT, eInfraCentral has worked on harmonising this landscape. *Our approach to the EOSC Catalogue has been to promote and extend the best practices already followed by some of the e-Infrastructures, and to enable the harmonisation of service descriptions in a single, common catalogue.* The targeted ecosystem for the EOSC Catalogue included the main e-infrastructures alongside the rich diversity of other research infrastructures and projects. More than 20 service providers offering more than 300 resources and services are now part of the common Catalogue, which continues its efforts in reaching out to and engaging a wider community, including clusters and thematic services offered by research infrastructures.



A common Service Description Template: Why? What? How?

The e-Infrastructure community now recognises that **a common approach to both describing and exchanging service-related information is the way forward** to improve discoverability and hence potential uptake. The eInfraCentral *Service Description Template* (SDT) addressed this goal, leading to its adoption as the standard scheme for representing service-related information in the EOSC Catalogue. The SDT is based on existing modelling efforts and is now the EOSC Catalogue baseline for:

- a common service management scheme applicable to different service providers from the public and private sector; and,
- a common representation format for the exchange of service-related information between different service catalogues.

The SDT organises service-related information into blocks to allow service providers to conceptualise the service management processes and move progressively from basic to more complex functions:

- **Basic Service Information:** basic information about a service such as the unique service identifier in the catalogue, the name, the provider, the description and links to the provider's page for accessing the service.
- **Service Classification Information:** information about the classification of the service in the EOSC Catalogue, such as thematic categories and subcategories, the Technology Readiness level and the lifecycle status.
- **Service Support Information:** support information for users to access a service, such as links to the providers' site to order the service or gain access to training material and helpdesk support.
- **Service Contractual Information:** information about the contractual parts of a service, such as pricing schemes, service level agreements (SLAs) and terms of use.
- **Service Performance Information:** performance indicators relevant to the service, as reported by the provider, including its availability (e.g. uptime), usage (e.g. number of users) or delivery time.

The SDT provides definitions of the services' features and attributes, example values and their specific format, as well as notes on whether the attribute is mandatory or optional for the implementation of a number of features in the EOSC Catalogue.

The current version of the SDT, endorsed by the flagship e-Infrastructures, is available online at <https://github.com/eInfraCentral/docs>. It is an evolving standard, which will incorporate new features from incoming e-infrastructures and research infrastructures in the EOSC ecosystem as they emerge.

How to use the EOSC Catalogue

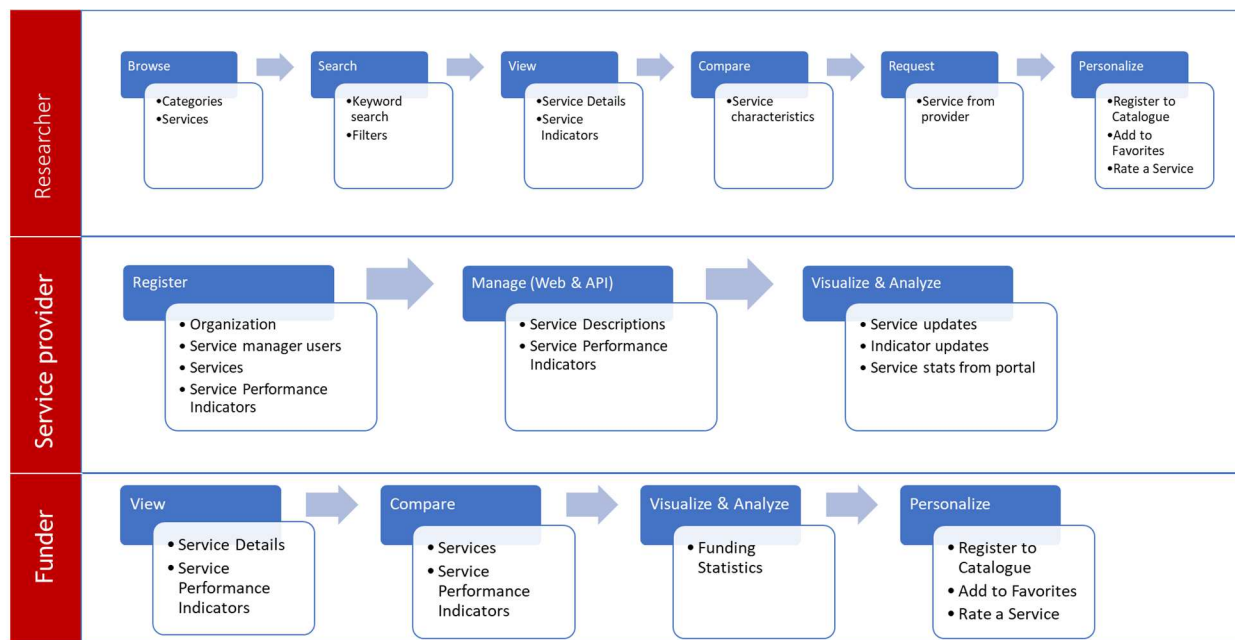
As part of the EOSC Portal, the EOSC Catalogue aims to accommodate a range of stakeholders, including users of e-services, from research and industry, e-infrastructure providers and other groups like policy makers and funding bodies.

Researchers and **Research Managers** are the main target group of the Catalogue: stakeholders with different interests that need access to e-services for their work or research. They can *browse* and *search* the Catalogue for services related to their needs and select specific ones to *view details* about their characteristics. They can also *compare* services with similar ones of the same category and finally *access the service* at the provider's site.

Registration at the EOSC Portal gives users access to additional functionality, notably profiling, personalisation and rating. Registered users can access personalised content by selecting services or service categories of interest, adding them to *favourite lists* or *rating* them along multiple quality characteristics.

Service providers can access the same advanced functionality as registered users. In addition, they can *register* their organization and *add* its services to the catalogue. They can also manage all service information in the Catalogue, either manually (via the Web) or automatically (via APIs), assign edit privileges to other users and view and visualise rich usage statistics for their services.

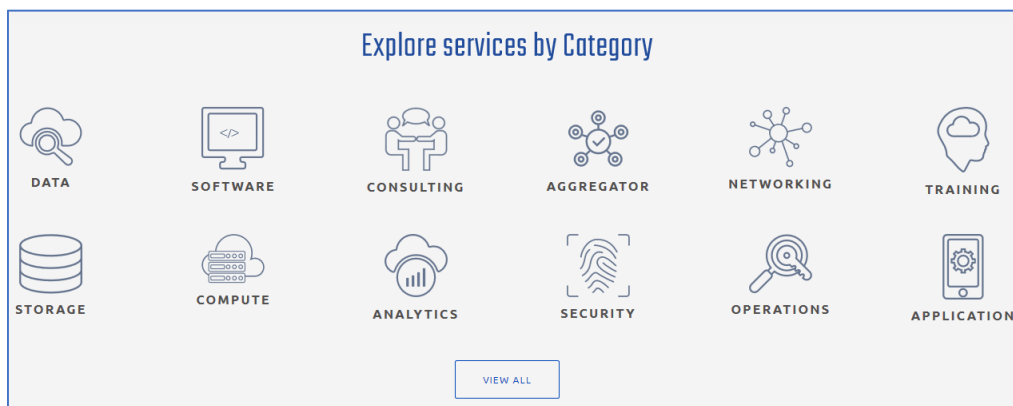
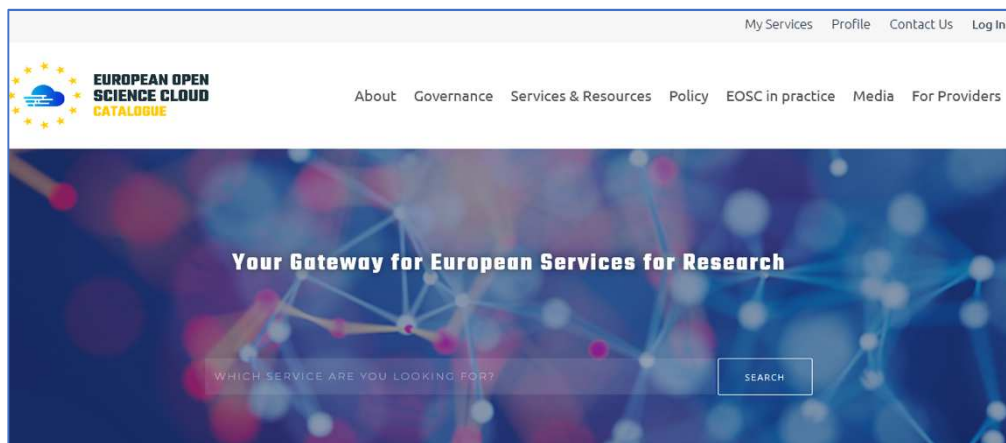
Funders can evaluate the status of the EOSC service landscape and make specific decisions on policy and funding. They can *view* and *access* service-related information, *compare* services, *get insights* about funding-related information and *personalise* their experience by registering with the EOSC Portal.



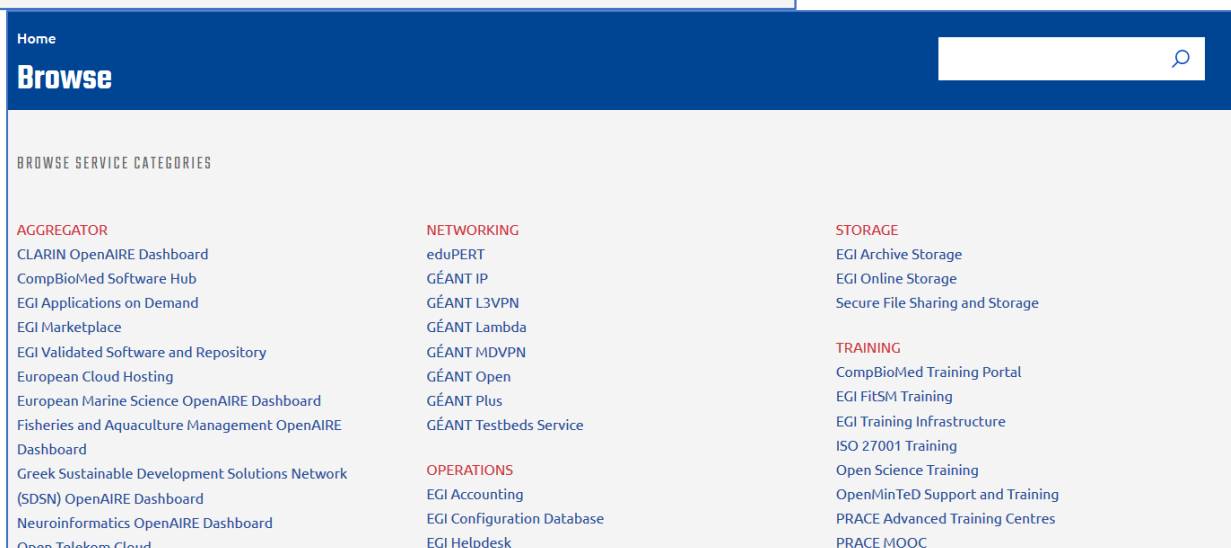
How to find and access services in the EOSC Catalogue

The EOSC Catalogue landing page offers intuitive ways to the users to access and start browsing the service catalogue.

1. A free text search box is available for the users to *quickly start browsing* the catalogue.

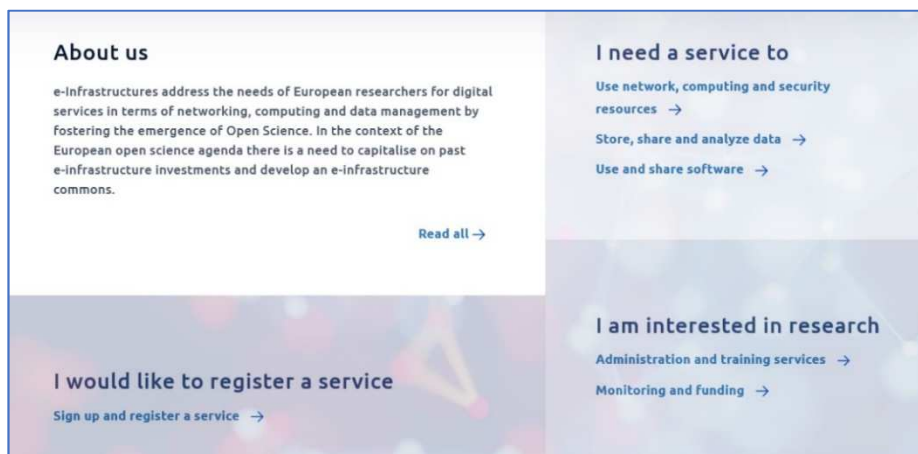


2. The Catalogue *groups all services into high level categories*, so users can *easily browse services* belonging to a specific category of their interest. .

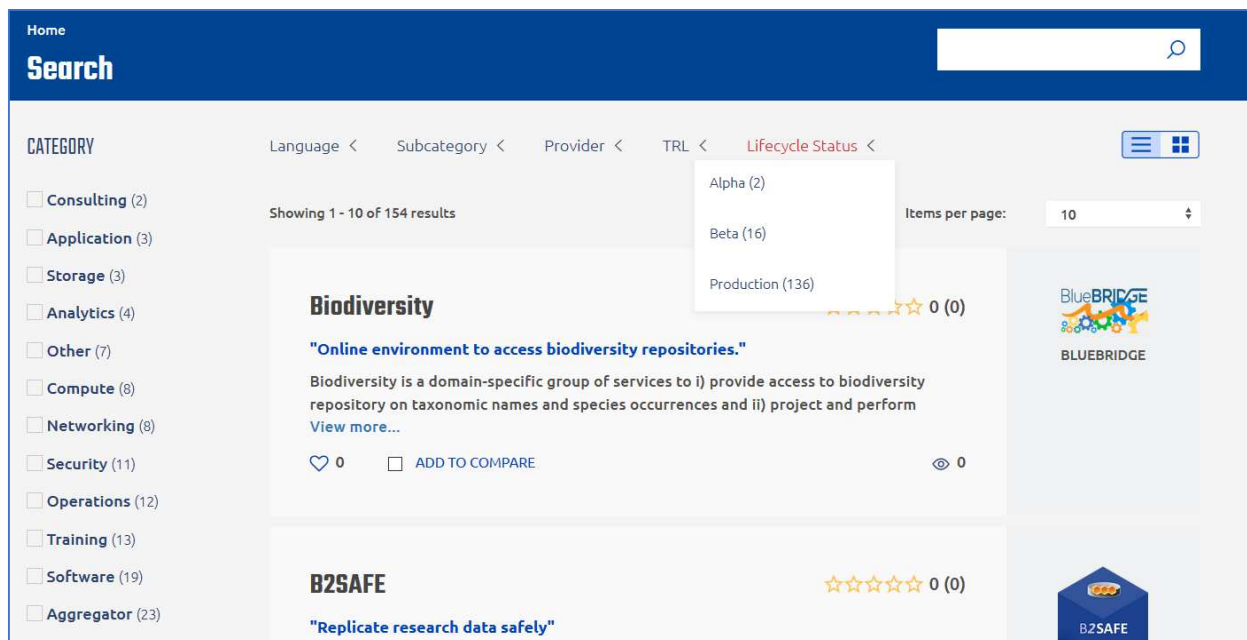


3. Users can *select their role and navigate* to the services and functionality available for each role.

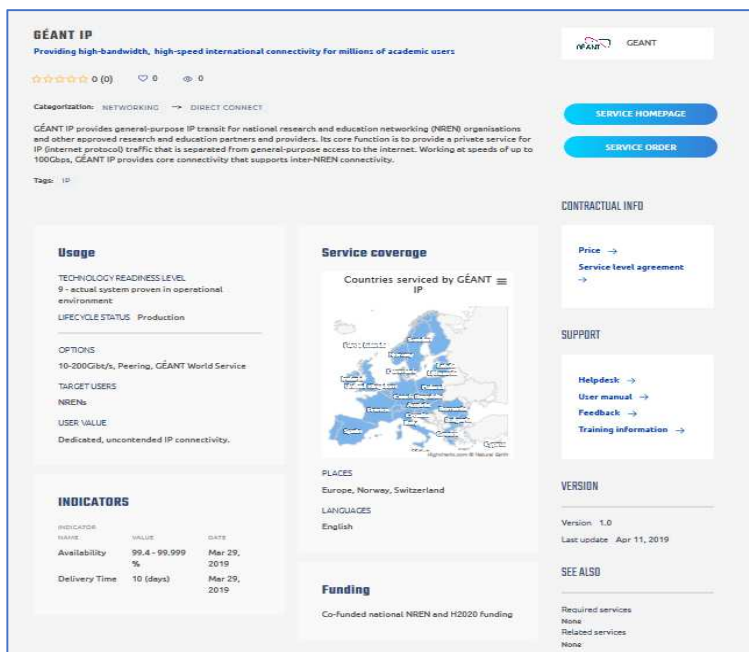
The resulting page lists service overviews and shows the main interface for service filtering and search.



Users can enter search criteria in the form of free text in the *search area*. The results are presented in the main panel in the form of service overviews, from where the user can apply filters on the Category, Language, Provider, TRL and the Lifecycle status of a service. The user can also set the presentation of the service overviews in either list or tile form by clicking the corresponding buttons on the right.



When the user clicks on a service they see a *detailed description of that service*, including all the information included in the SDT about the usage of a service, its coverage, contractual and support info, etc., organised in thematic areas. Access to the provider's service page and ordering information for the service are highlighted as links next to the service description. Other information such as training material and user manuals, or contractual information for the price of the service or its SLAs are also clickable links that take users to the provider's site.



GEANT IP
Providing high-bandwidth, high-speed international connectivity for millions of academic users

☆ ☆ ☆ ☆ ☆ 0 (0) 0 0

Category: NETWORKING → DIRECT CONNECT

GEANT IP provides general-purpose IP transit for national research and education networking (NREN) organisations and other approved research and education partners and providers. Its core function is to provide a private service for IP (Internet protocol) traffic that is separated from general-purpose access to the Internet. Working at speeds of up to 100Gbps, GEANT IP provides core connectivity that supports inter-NREN connectivity.

Tags: IP

Usage

TECHNOLOGY READINESS LEVEL
9 - actual system proven in operational environment

LIFECYCLE STATUS Production

OPTIONS
10-200Gbps, Peering, GEANT World Service

TARGET USERS
NRENs

USER VALUE
Dedicated, uncontended IP connectivity.

Service coverage

Countries serviced by GEANT IP

PLACES
Europe, Norway, Switzerland

LANGUAGES
English

INDICATORS

INDICATOR	NAME	VALUE	DATE
Availability	99.4 - 99.999 %	Mar 29, 2019	
Delivery Time	10 (days)	Mar 29, 2019	

Funding
Co-funded national NREN and H2020 funding

CONTRACTUAL INFO

Price →
Service level agreement →

SUPPORT







Helpdesk →
User manual →
Feedback →
Training information →

VERSION

Version: 1.0
Last update: Apr 11, 2019

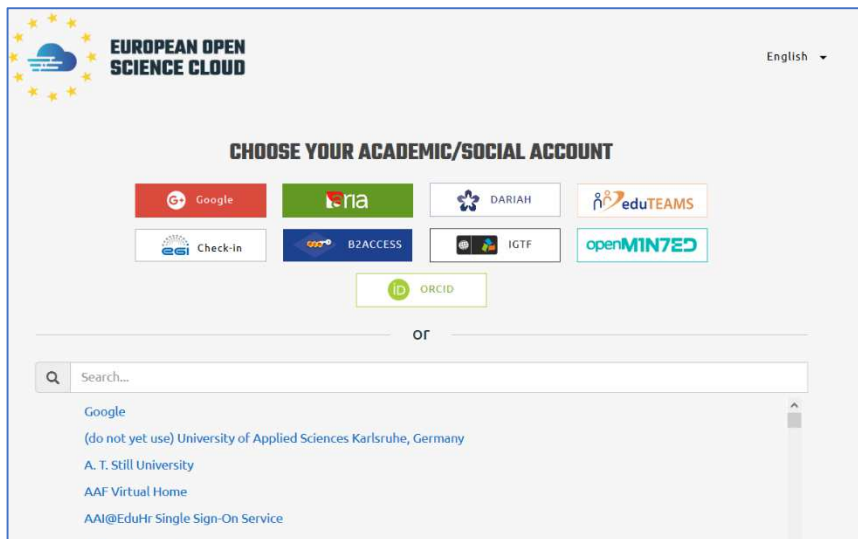
SEE ALSO

Required services: None
Related services: None

	 Remove  EGI Validated Software and Repository "Benefit from a repository of high-quality software validated for the EGI infrastructure" ☆ ☆ ☆ ☆ ☆ 0 (0) 0	 Remove  PRACE Code Vault "The open repository for high performance computing code samples" ☆ ☆ ☆ ☆ ☆ 3 (1) 0	 Remove  Zenodo "A catch-all repository" ☆ ☆ ☆ ☆ ☆ 0 (0) 0
OPTIONS	/	/	/
TARGET USERS	Countries and organisations represented in the EGI Council	Scientists and researchers	Researchers, research communities, project coordinators/principal investigators
USER VALUE	Great visibility of the software published and integrated with EGI, reduced overall time needed in package management.	/	Enables everyone to participate in Open Science.
USER BASE	/	/	Used by researchers and communities all over the world.
FUNDING	Development: EC H2020 projects (primarily) and national projects/open source projects. Operations: EGI participant fees + in-kind contribution from service providers	EC and PRACE members	EC funding, CERN own funds
VERSION	1.0	1.0	2.0

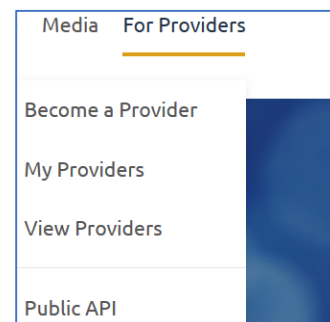
Also from the service results page users can *select one or more services and compare their characteristics*. The service comparison page presents selected services in a table, with each comparable attribute in a row. The user can scroll down to see more details on the comparable attributes.

Authenticated users can click on the stars to *rate a service* or to the heart icon to add a service in their favourite list. Authentication for the EOSC Catalogue is performed by logging in to the EOSC Portal, where a user can select either an academic or a social login.



How to register and manage services in the EOSC Catalogue


Service providers *log in to the EOSC Catalogue* and follow the onboarding process for registering their organisation and its services in the Catalogue by clicking the “For providers” menu and selecting the option “Become a Provider”.



The onboarding process has two steps:

1. The user first *applies for their organisation to become a service provider in the EOSC Catalogue* by filling in a list of questions regarding the catalogue of services they offer.

NAME OF YOUR SERVICE PROVIDER (*)


[About](#)
[Governance](#)
[Services & Resources](#)
[Policy](#)
[EOSC in practice](#)
[Media](#)
[For Providers](#)

e.g. openaire, epi etc (a short id without spaces).

LOGO URL

note. Include 'https://' to the url.

CONTACT INFORMATION (PHONE NUMBER)

THE WEBSITE OF YOUR ORGANISATION (*)

note. Include 'http://' or 'https://' to the url.

DO YOU HAVE A PUBLIC CATALOGUE OF RESOURCES (SERVICES, DATA, APPS, SOFTWARE, ETC.) YOU ARE PROVIDING/OFFERING? IF YES, WHAT IS ITS PUBLIC URL? IF NOT PUBLICLY AVAILABLE, CAN YOU SEND US A LINK TO THE CATALOGUE IN ANY FORM?

DO YOU MAINTAIN PUBLICLY A DETAILED DESCRIPTION OF RESOURCES (SERVICES, DATA, APPS, SOFTWARE, ETC.) YOU ARE PROVIDING/OFFERING? IF YES, WHAT IS ITS PUBLIC URL? IF NOT PUBLICLY AVAILABLE, CAN YOU SEND US A LINK TO A DESCRIPTION OF A SERVICE OR RESOURCE IN ANY FORM?

WOULD YOU LIKE TO PROVIDE US WITH ANY ADDITIONAL INFORMATION ABOUT YOUR ORGANISATION OR THE SERVICES/RESOURCES YOU PROVIDE/OFFER? (*)

SUBMIT

2. If the offered service catalogue is relevant to the EOSC Catalogue, *the provider is asked to complete a copy of the EOSC Catalogue service description template*. The EOSC Catalogue team assesses and validates the relevance and maturity of service and proceeds with the registration of the provider.

Edit a service

BASIC INFORMATION

URL (*)
Link to a url providing information about the service. This url is usually hosted and maintained by the service providers. It contains fresh and additional information, such as what APIs are supported or links to the documentation

NAME (*)
Brief marketing name of service as assigned by the service providers. Should be descriptive from a customer point of view, and should be quite simple, such that someone non-technical is able to understand what the service is about

TAGLINE
Catchline or slogan of service for marketing/advertising purposes.

DESCRIPTION (*)

Helpdesk provides you with the information and support you need to troubleshoot your product and service problems. You can report incidents, bugs or change requests.

EGI provides support to users and operators through a distributed helpdesk with central coordinating. The central helpdesk provides a single interface for support. The support activities are grouped in first and second level support.

Main characteristics:

- Central point of contact for support
- Repository of information and solutions

High-level description of what the service does in terms of functionality it provides and the resources it enables access to. Should be similar to the name described above, and should cover the value provided by the service, in fairly non-technical terms. These descriptions may seem obvious but help everyone within the organization understand the service, and also will be needed for the Service Catalogue, which will be shown to users and customers. It may provide also information related to the offered capacity, number of installations, undelivered data, etc. in offered.

At each step the Catalogue will email the user, notifying them about progress with registration.

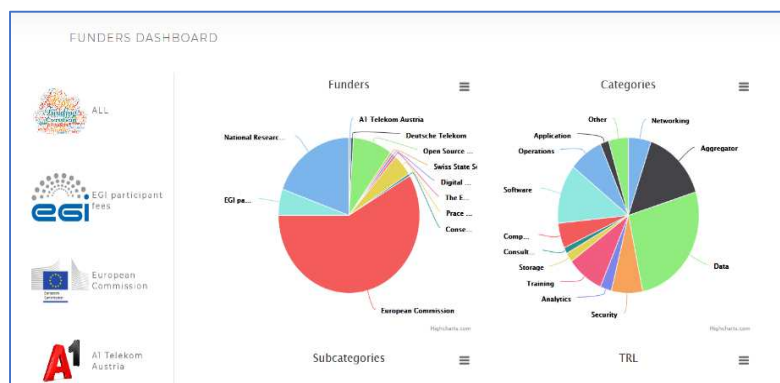
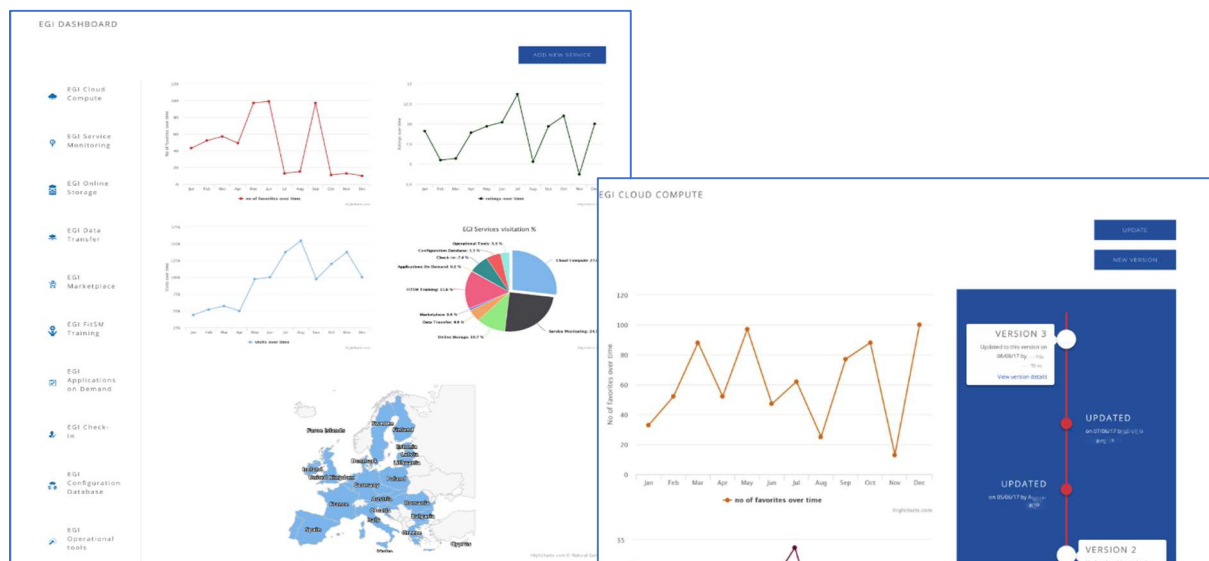
After validation of the service description, the provider can go on to add more services, either through the Web or the APIs offered by the Catalogue. Each new service added in the Catalogue is validated against quality characteristics related to the service description and a quality report is prepared for the provider.

How to gain insights about the EOSC service landscape?

The EOSC Catalogue offers analysis services to service providers and funders so they can *analyse and gain insights into the service landscape*. Service-related information gathered by service providers, along with usage statistics from user interaction, are available to advanced users through rich statistics and visualisations.

For service providers **the providers' dashboard** offers users from a provider organisation to:

- view the list of services offered by a service provider;
- create a new or update an existing service;
- visualise and analyse service statistics, such as
 - How many times a service details page has been visited;
 - How many times a service page at the provider's site has been accessed;
 - How many users have added a service in their favourite list;
 - What is the service coverage in the EU;
- view the versions and the history of actions applied on a service (updates, etc.).

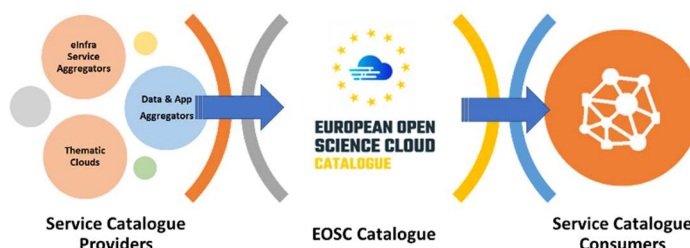


For funders, the EOSC Catalogue offers **the funders' dashboard** which displays summaries and KPIs for the service landscape related to the funding organization of each service. It organizes services by funding bodies, and for each presents valuable insights, such as what are the most funded thematic categories, etc.

How to automate working with the EOSC Catalogue

The EOSC Catalogue offers a rich set of REST API methods for the exchange of information between service providers and the Catalogue itself, as well as its provisioning to third party applications. Through the API, authorised users can add and update services

programmatically, as well as read, search and retrieve the contents of the Catalogue, such as services, service providers, service performance indicators, usage statistics collected, and terms and vocabularies used for service classification.



Below is *a step-by-step guide for a service provider* to start using the API for adding and updating service information in the EOSC Catalogue.

The APIs are available at <https://catalogue.eosc-portal.eu/openapi>

Using the API to add a new Service

- Step 1. Start from the documentation, i.e. <https://www.einfracentral.eu/developers> and <https://catalogue.eosc-portal.eu/openapi>.
- Step 2. Register your organisation in the Catalogue:
 - sign up as a new service provider and receive login credentials, following the registration process.
- Step 3. Export one or more services to JSON using the Service Description Template.
 - a reference JSON example and documentation for the SDT is available at <https://github.com/eInfraCentral/docs>.
- Step 4. Obtain an API Key from the EOSC Portal AAI <https://www.einfracentral.eu/developers>.
 - the obtained token can be used in a bearer authorization for using all API methods.
- Step 5. Validate the service description:
 - validate that the service is well formed by calling the **POST/service/validate** method.
- Step 6. Make a POST/service call to add the new service in the catalogue:
 - upon success you get a new service ID.
- Step 7. The new service is registered and visible in the Catalogue. You may validate the addition by calling the **GET/service/{id}** and providing the service id.

Using the API to update a Service

- Repeat Steps 1-5.
- Step 6. Make a **PUT/Service** call to update the service in the Catalogue:
 - upon success you get the service ID
- Step 7. The service is updated and visible in the Catalogue. You may validate the update by calling the **GET/service/{id}** and providing the service id.

Using the API to Get Service Information

- No authentication is required.
- <https://catalogue.eosc-portal.eu/api/service/{serviceID}/> gets the service with a Service ID as {ProviderId.serviceTitle}, e.g. https://catalogue.eosc-portal.eu/api/service/geant.geant_l3vpn retrieves the Service titled "GÉANT L3VPN" by GÉANT Provider.



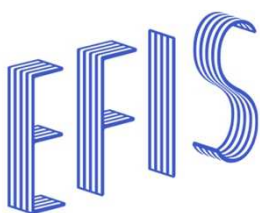
The image compares two methods of retrieving service information from the GEANT L3VPN service:

- Web:** A screenshot of the service page on the catalogue.eosc-portal.eu website. It shows the service title "GÉANT L3VPN", a description, and various service details like "SERVICE HOME" and "SERVICE ORIGIN".
- API:** A screenshot of the JSON response from the API endpoint https://catalogue.eosc-portal.eu/api/service/geant.geant_l3vpn. The JSON object contains fields such as "id", "url", "name", "tagline", "description", "options", "targetUsers", "userBase", "symbol", "multimediaURL", "providers", "version", "lastupdate", and "channel".

Each *service description* can be easily *retrieved either through the Web or the API in the form of JSON*.

Acknowledgements

The project was delivered by a Consortium of nine organisations across Europe – EFIS Centre (Project Coordinator), JNP, University of Athens, University of Hannover and five leading e-infrastructures GÉANT, EGI, EUDAT, OpenAIRE and PRACE.



european future
innovation system
centre

European Future Innovation Systems (EFIS) Centre is a not for profit policy research lab and think tank. Our mission is to promote an enhanced understanding of the performance and future development perspectives of European, national and regional innovation systems, particularly in response to societal challenges (climate change, energy security, resource efficiency, ageing, etc.).

JNP is a technology and innovation management consulting company committed to delivering professional services in the area of Information Communication Technologies, Electronic Infrastructures and related disciplines. We offer a diverse, global perspective in scientific and innovation policies, as well as a highly-professional approach in dealing with complex, large-scale development initiatives and regional specialisation strategies.



HELLENIC REPUBLIC
**National and Kapodistrian
University of Athens**

The University of Athens (UoA) is one of the major higher degree public educational institutions in Greece. [The Department of Informatics and Telecommunications](#) belongs to the Faculty of Applied Sciences. The research and development activities within the Department cover a wide

spectrum of Information and Communication technologies. The faculty and the department is involved in a number of European funded projects (ERC Research Grants, ICT research and development projects, Horizon2020) as well as the Operational Program for Education and Initial Vocational Training funded by the Greek Ministry of Education. UoA is involved in Open Science by coordinating [OpenAIRE](#), the Open Access Infrastructure for Research in Europe.

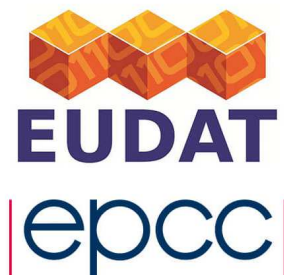
Leibniz University of Hannover (LUH) is one of the first science and technology institutes in Germany. They are members of T9, the association of the oldest and biggest technical higher education institutions in Germany, and CESAER, a consortium of the most dominant European engineering schools. The project is co-located at the L3S research Center (LUH), which is a joint research institute of several groups in Germany. LUH holds the chair of [e-IRG](#), a strategic body to facilitate integration in the area of European e-Infrastructures and connected services, within and between member states, at the European level and globally.





EGI Stichting is a federated e-Infrastructure set up to provide advanced computing services for research and innovation. The EGI e-infrastructure is publicly funded and comprises over 300 data centres and cloud providers spread across Europe and worldwide. The mission is to create and deliver open solutions for science and research infrastructures by federating digital capabilities, resources and expertise between communities and across national boundaries.

EUDAT, the European data infrastructure (<https://eudat.eu>), is building a Europe-wide Collaborative Data Infrastructure as part of the European Open Science Cloud. **EPCC**, the supercomputing centre at the University of Edinburgh, has an international reputation in the support of computational and data science and houses an exceptional range of novel computer and data systems. EPCC represented EUDAT in the eInfraCentral project.



GÉANT Association is a fundamental element of Europe's e-infrastructure, delivering the pan-European GÉANT network for scientific excellence, research, education and innovation. Through its integrated catalogue of connectivity, collaboration and identity services, GÉANT provides users with highly reliable, unconstrained access to computing, analysis, storage, applications and other

resources, to ensure that Europe remains at the forefront of research. GÉANT is a network of 38 National Research and Education Networks (NREN) connecting over 50 million users at 10,000 institutions across Europe and supporting all scientific disciplines.

CNR is the largest public research institution in Italy with a mission is to perform research in its own Institutes, to promote innovation and competitiveness of the national industrial system, to promote the internationalisation of the national research system, to provide technologies and solutions to emerging public and private needs, to advice Government and other public bodies, and to contribute to



the qualification of human resources.



PRACE (Partnership for Advanced Computing in Europe AISBL) is an international not-for-profit association in Brussels. It has 24 member countries whose representative organisations create a pan-European supercomputing infrastructure, providing access to computing and data management resources and services for large-scale scientific and engineering applications at the highest performance level.

Copyright © eInfraCentral consortium, 2019

This document contains material which is the copyright of certain eInfraCentral consortium members and the EC, and may not be reproduced or copied without permission, except as mandated by the European Commission under the grant agreement. The information contained in this document is provided by the copyright holders “as is” and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the members of the eInfraCentral collaboration, including the copyright holders, or the European Commission be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of the information contained in this document, even if advised of the possibility of such damage.

For more information about eInfraCentral please visit:

www.einfracentral.eu

[@eInfraCentral](https://twitter.com/eInfraCentral)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731049. The content of this website does not represent the opinion of the European Commission, and the European Commission is not responsible for any use that might be made of such content.

Contact Us

EFIS Centre ASBL
Avenue Maurice Maeterlinck, 12
1348, Louvain-la-Neuve, Belgium