



**EUROPEAN OPEN
SCIENCE CLOUD**

The EOSC Portal

**Accelerating the transition to
open science & open innovation**





Over recent years, the vision of Open Science has emerged as a new paradigm of transparent, data-driven science capable of accelerating competitiveness and innovation.

The embodiment of this vision in Europe is the European Open Science Cloud (EOSC), first proposed in April 2016 as part of the Communication on the 'European Cloud Initiative', one of the pillars of the Digital Single Market Strategy.

The EOSC Portal is a key element of the European Open Science Cloud.

The portal is a universal entry point to effective and efficient services, data and resources that researchers working in science and technology need to perform their science in a collaborative, open and cost-efficient way for the benefit of society and the public.

The EOSC Portal aims to gather and provide access to the existing vehicles and tools that make up our strong scientific base and investments in infrastructures in Europe, to drive a new, open science cloud forward available in the one place, across borders and scientific disciplines.

This can only succeed if it is both shared and inclusive by all of the stakeholders involved. The EOSC portal provides access to all researchers from all domains allowing for transparency and lowering barriers to entry.

The EOSC Portal puts into practice the European vision for Open Innovation, Open Science and Open to the World by bringing together services and resources such as computing, storage, data, publications and software from national and international research infrastructures organisations, collaborations and projects. It is open to scientific users and service providers.

Researchers can:

- Discover and compare multiple resources and services such as scientific outputs, applications, research data exploitation platforms, research data discovery platforms, data management, compute services and thematic services;
- Access services and resources via a smooth authentication/authorisation process with no need to create new credentials for authentication;
- Find information on access policies, maturity level, and compliance to standards;
- Obtain the latest information about the European Open Science Cloud: from governance models to Rules of Participation; from the latest policies to funding opportunities;
- Pick up on best practices and practical examples featuring research communities making the most of EOSC;
- Provide feedback about services and information to contribute to building the EOSC service portfolio.

Service providers can:

- Publish, share and advertise services and resources to a wider user base;
- Get statistics about access requests and customer feedback;
- Get a free online platform where providers can manage service requests, interact with users and provide support to them, and agree the most suitable service levels;
- Allow users to authenticate with existing credentials to access services and resources and get support to enable this;
- Contribute to the definition and maintenance of EOSC service provisioning policies and the portfolio roadmap;
- Join the group of providers that meet EOSC quality standards.

How is the portal going to make a difference?

CLARIN: Language resources for research

CLARIN is a European Research Infrastructure set up to provide access to language resources and tools for researchers that work with language data in the form of text, speech and mixed modalities.

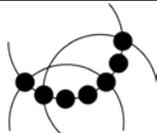
To be able to use language data, researchers need the support of a service platform that can turn linguistic content into a directly usable data source, via language-specific tools such as dictionaries or grammars, as well as generic services.

The EOSC Portal will support CLARIN's communities of use by enabling easy access to the distributed resources available as FAIR data, by further stimulating the interoperability of data and tools, and by fostering the potential for data reuse and multidisciplinary work, both within and beyond the various subfields of the Social Sciences and Humanities, aimed at linguistic topics such as language disorders and language learning, and topics for which language can be used as a lens, such as migration patterns, cultural dynamics, ageing and political trends.

CLARIN will contribute to the EOSC Portal with the integration of the thematic services that will become available through EOSC-hub, including the Virtual Language Observatory that enables the discovery of relevant data and the Switchboard that works as a matchmaker for data and processing tools.

Franciska de Jong, CLARIN ERIC Executive Director

CLARIN



WeNMR: Life Sciences

The international team behind WeNMR develops data analytic tools for life scientists by integrating structural biology software, compute and data. Our online services are used by thousands of researchers studying molecular forces and biomolecular interactions to guide drug design, treatments and diagnostics. To give an example, HADDOCK has over 11500 registered users worldwide and in 2017-2018 was acknowledged in 350 papers.

Our mission is to provide sustainable, user-friendly services to our users. This means that on one hand we need to hide the complexity of the computing resources used to power the services, and on the other, we want to ensure sufficient resources to operate those.

The EOSC Portal brings many advantages to us. Thanks to the portal, our online services will be available to more researchers through a user-friendly, easy-to-use marketplace. More researchers means more science done with the support of our services. And more science means more knowledge, more innovation and more impact for our work.

*Alexandre Bonvin, Professor of Computational Structural Biology
at Utrecht University and coordinator of the WeNMR team*



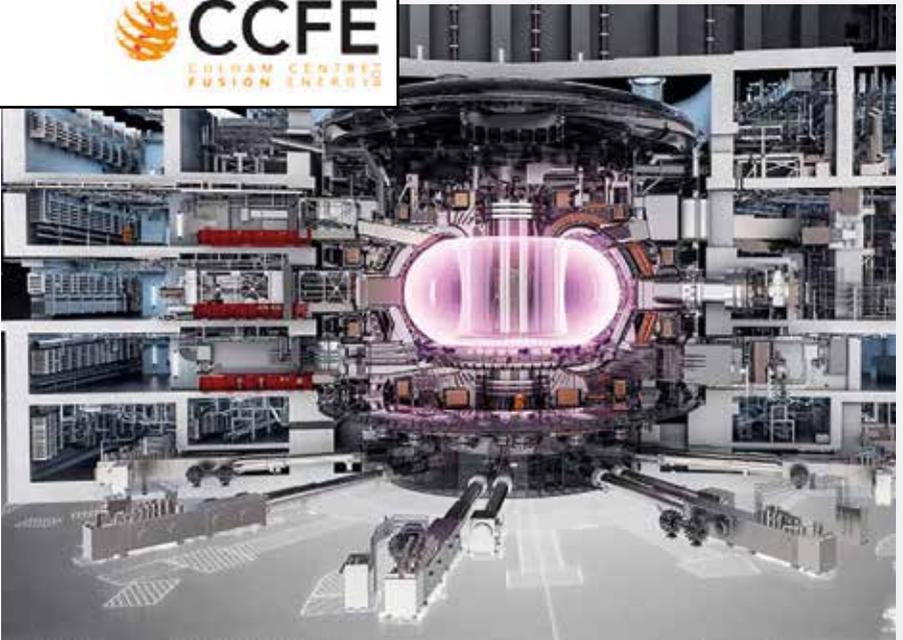
CCFE: Fusion research

Our community is dedicated to Fusion Research and our aim is to develop nuclear fusion technologies as a clean and limitless source of energy for the future of all mankind. This is a cross-cutting research domain including, for example, plasma physics, materials science and several engineering disciplines, that comes with huge computational and data management challenges.

The EOSC Portal will allow us to access resources beyond those that exist at local data centres; to seek advice from experts in the fields of distributed computing and data management; and to support the dissemination of fusion related data to a wider audience.

We are currently discussing the best means of opening our data to a wider audience, and we believe that the services published through the EOSC Portal services will be useful to support this goal.

Shaun de Witt, Head of High Performance Data Analytics (UKEAE)



TextCrowd: Digital cultural heritage

Archaeologists investigate the past. Besides fieldwork, they rely on the documentation provided by other scholars, which very often consists of text in various forms. TextCrowd is a framework to support the enrichment of the metadata of texts used in Digital Humanities and Cultural Heritage research. Better metadata means that researchers have a better chance of finding and reusing the data they need for their work.

The EOSC Portal will make it easier for archaeologists to access TextCrowd and other metadata services. For this to happen, ease of use is of primary importance.

The European archaeological community is committed to creating its own data cloud as a component of the EOSC within the ARIADNEplus project. This will be accompanied by a set of services, including an advanced multilingual version of TextCrowd.

Making such services available through the EOSC Portal will extend their scope, guarantee their compatibility and interoperability with other services, for example, designed for other scientific domains, and ultimately foster cross-disciplinary approaches to research.

Franco Niccolucci, Coordinator of ARIADNEplus



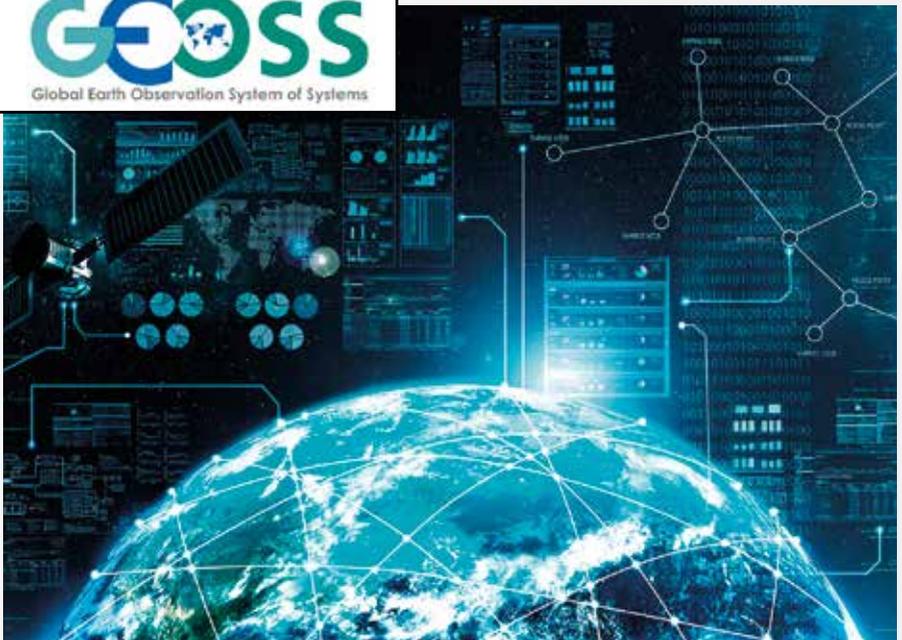
EuroGEOSS: Sustainable environment

The European GEOSS community, in the framework of the EuroGEOSS initiative, aims at demonstrating the benefit of Earth Observation for the society. In other words, we want to use Earth Observation data to create the new knowledge we need to support informed decision-making for sustainable development and policy making. For example, our ECOPotential use case shows how a scientific model is able to generate the ecosystem indicators necessary for an appropriate management of the Doñana Natural Park in Spain.

For us, the EOSC will be instrumental in providing the large computation and storage capabilities we need to run scientific models at local, national, regional and potentially global scale. The EOSC Portal in particular will give our scientists the possibility to access and run analytic models in a transparent way, without the need of a local infrastructure hosting data and computing facilities.

We also look forward to give our contribution to the EOSC vision. Our goal is to use the portal to share the GEOSS mediation and harmonisation services for accessing information and knowledge from in-situ and Earth Observation data, and to provide wide access to models for the generation of indicators.

Paolo Mazzetti, Coordinator of the GEOSS Pillar in EOSC-hub



EPOS: Solid earth science

The European Plate Observing System (EPOS) was set up to foster multidisciplinary research through the access to data and services for a better understanding of the physical and chemical processes causing earthquakes, volcanic eruptions and other features of our dynamic Earth.

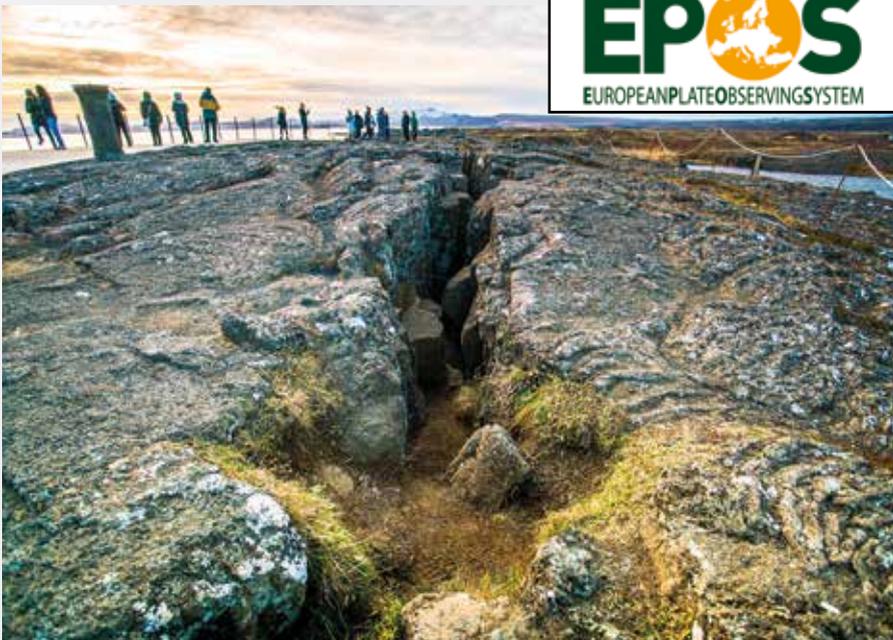
EPOS will strive to make its Integrated and Thematic Core Services interoperable with the EOSC, and its data and scientific products accessible in order to:

- allow researchers from other disciplines discover the suite of EPOS services,
- access cloud computing infrastructures to process and store data and scientific products.

EPOS foresees an implementation of the EOSC service catalogue coherent with ongoing efforts by Research Infrastructures to implement and operate services.

If EPOS succeeds in being interoperable with the EOSC Portal and if user community has access to the EOSC cloud computing resources, EPOS can act as a solid Earth Science hub in the EOSC galaxy. This will allow establishing EOSC interactions with the scientific communities in synergy with the community building sustained by RIs in the different domains.

Massimo Cocco, EPOS IP project coordinator, INGV



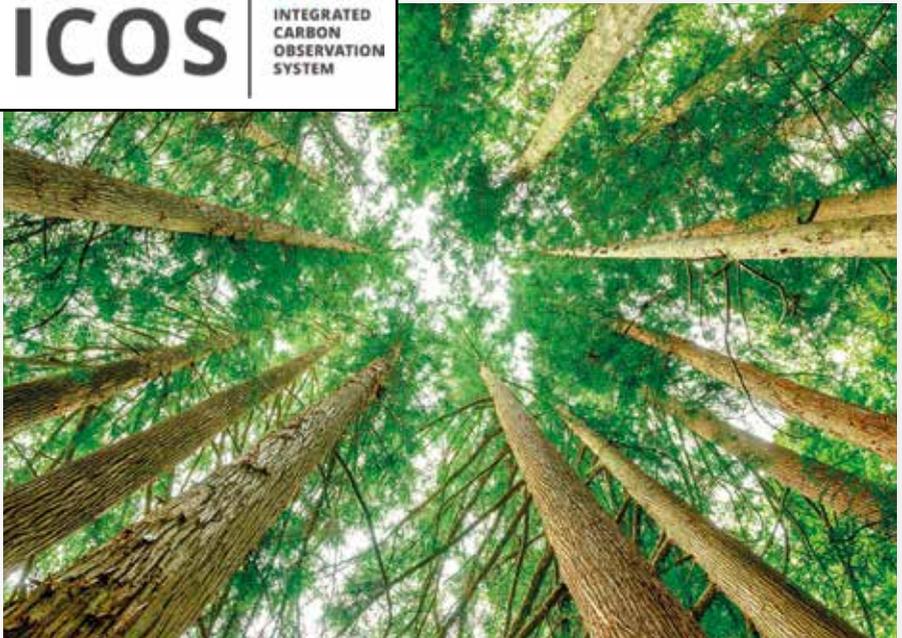
ICOS: Observing the carbon cycle

The Integrated Carbon Observation System (ICOS) is a distributed Europe-wide research infrastructure dedicated to producing observations that enable us to understand greenhouse gas budgets of the atmosphere, land ecosystems and oceans. ICOS provides observations as open data from over 130 measurement stations across 12 European countries. This data is critical to support science-based decision making in the area of climate change mitigation.

The EOSC Portal will help us to expose ICOS data and services to researchers interested in climate change and the carbon cycle. Starting from the portal, these researchers will be referred to ICOS' Carbon Portal where data can be visualised and accessed. ICOS is also developing community-based services, including on-demand computations of station footprints and dedicated Virtual Research Environments that will allow scientists to interact with ICOS data products.

We also hope that the EOSC Portal will enable researchers in the ICOS community to enrich their work with data and other resources made available by our peer research communities in the same EOSC Portal.

Alex Vermeulen, Director ICOS Carbon Portal



DARIAH: Arts and humanities

Arts and humanities research dives into all aspects of human culture, using diverse sources. The result is a necessarily ambiguous and challenging data landscape, but our long tradition of extracting knowledge from such records is a legacy of our disciplines.

As a research infrastructure for arts and humanities research, DARIAH's ambition would be to contribute to the EOSC Portal that makes our data, the tools we develop to work with it and the distributed knowledge we have about it, accessible and reusable to a wide range of user communities more efficiently than is currently possible.

We bring the world of cultural data with us. We look forward to the EOSC to become a major driver towards opening up the usage of cultural heritage; the different data landscape in the arts and humanities, in fact, could add value to European research.

Jennifer Edmond, Director, DARIAH ERIC



PaN: Molecular imaging with photons and neutrons

Photon and Neutron (PaN) facilities are opening new avenues of research with groundbreaking technologies. For example, using the X-ray flashes of the European XFEL, scientists will be able to map the structures of viruses, proteins and other molecules with atomic precision.

The goal of our research community is to host open PaN data together with related publications and workflows on an integrated platform. This will enable scientists to analyse the data directly on our cloud resources at DESY (the German accelerator facility), which we are going to federate within the EOSC.

The PaN community supports multi-disciplinary research teams from a wide range of scientific fields. We see the EOSC Portal as a boost to the interoperability between methods and data from different frameworks and tools.

We hope to see the EOSC Portal develop as a platform for collaborative research and development, able to reduce the burden and interoperability challenges of infrastructure and platform implementation. So scientists can focus on science.

Volker Gülzow, head of the IT group at DESY

The logo for 'pandata' is displayed in a white box. The 'p' is yellow, 'an' is blue, and 'data' is grey.

LOFAR: Radio astronomy

LOFAR is the world-leading low frequency radio telescope which observes the Universe far beyond the spectrum visible to the human eye. With its high sensitivity, long baselines and enormous data rate, LOFAR pushes the boundaries of our knowledge of the Universe. It allows us to discover and study new types of galaxies, pulsars and other extra-terrestrial sources of radio emission.

The EOSC Portal will help us to establish LOFAR services as an integral part of the European wide open science infrastructure. LOFAR, being a data-intensive scientific instrument, already utilises scalable storage and compute infrastructure as envisaged by the EOSC.

We expect the portal to trigger new collaborations as well as to open opportunities for us to access science-enabling resources offered through the EOSC. For example, providing storage and registration for the data-products that have been created from LOFAR data to the astronomical community will stimulate application of FAIR data principles at all stages of research up to publication.

Another benefit of the EOSC Portal will be the increased visibility of LOFAR services and data to other communities wishing to explore cross-domain applications of LOFAR capabilities, for example in space weather research.

Hanno Holties, System Engineer at ASTRON



CESSDA: Social sciences

The social sciences cover multiple disciplines and many communities, studying human behaviour and decision-making, interactions in societies and organisations, and everything else from development of countries to governance and politics. Social Sciences is 'about us' and the people are our data.

CESSDA works on tools & services for social science researchers – either as data producers or as data users. We also coordinate on standards for metadata and provide a technology platform together with other research infrastructures. We want to be known for our training on data management and discovery and our work on quality and trust within the ecosystem.

The EOSC Portal will help us making our data more findable and facilitate the access to it; it will induce interoperability and encourage reuse by fostering research communities. It will also enable us to connect with adjacent disciplines thus improving collaborative research.

Ron Dekker, CEO, CESSDA



National Innovation Agency, Portugal

As a National Contact Point, I try to plug the national research infrastructures into the European Research Area networks, as well as to advertise the services – access, training, databases – provided by European research infrastructures and projects to the research and innovation community users from Portugal.

The EOSC vision is one of democratic use of the outputs of research. It will be a structuring pillar of the European Research Area, by providing the framework for the production, handling and sharing of research data. The EOSC Portal will be a powerful tool, especially for the users from “the long tail of science”, who will be able to access all the power of EU e-infrastructures and to use, combine, re-purpose and deposit their data without having to think much about the back office.

Looking further into the future, the EOSC offers the tantalizing view of a diffuse and plastic ground from which new “research infrastructure” will spring up, through the combination of different sets of connected instruments, sensors, databases and code, fit-for-purpose to answer specific and timely challenges.

José Antão, Horizon 2020 National Contact Point, National Innovation Agency, Portugal



University of Ljubljana, Slovenia

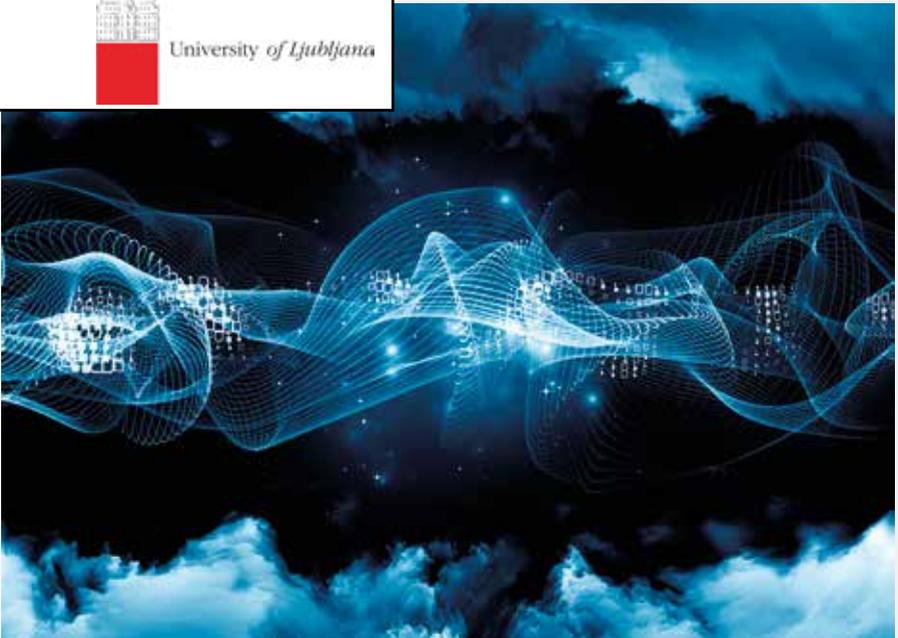
The Slovenian research community would immensely benefit from the EOSC Portal: it provides information on services for Open Science which can be used across disciplines, on the available FAIR research data, and most importantly, Open Science services will be available without intermediaries.

The EOSC Portal will support researchers in the EU Member States in using the EOSC, as well as enhance the inclusion and visibility of national e-Infrastructures and research infrastructures.

Slovenia currently doesn't have a FAIR research data e-Infrastructure. The EOSC Portal will assist our researchers in providing information on available data centres and their services for certain domains, in addition to advice/support on the management of the long tail of research data.

Prominent and a transparent display of the processes when determining what services, data, access, rules, and governance model are going to affect the EOSC is what we expect from the EOSC Portal. The EOSC rules would also stimulate national Open Science policies and their implementation, to be evenly developed across the European Research Area.

Mojca Kotar, University of Ljubljana, OpenAIRE NOAD Slovenia



Kaunas University of Technology, Lithuania

The challenge for Open Science at the national level in Lithuania is the scarcity of national/institutional structures to support research and, in some cases, the lack of perspectives for further development. On the other hand, it is clear that researchers need easy to use research infrastructures to support their research lifecycle.

The EOSC Portal will support our researchers in all the steps of research. They will benefit from the EOSC Portal as a single-entry access point to services and resources for different disciplines or research domains. This complements the OpenAIRE monitor tools of the research output both on the level of a single researcher and institutions.

We are ready to contribute by raising awareness around the portal on the national and institutional level, providing updated information on the national developments and improving the compatibility of the national and institutional infrastructures with the EOSC Portal through OpenAIRE guidelines.

Gintarė Tautkevičienė, Kaunas University of Technology, OpenAIRE NOAD Lithuania



FWF: The Austrian research funding agency

FWF is Austria's funder for basic research. The normative claim of science and scholarship is to constantly improve the comprehensibility of research results. For this, a modern digital infrastructure like the EOSC is an essential instrument.

The EOSC should define high standards for an interoperable, interconnected and user-friendly digital research data infrastructure, able to support researchers in all steps of their research routine.

In addition to this, the EOSC must contribute both to increase the reproducibility of research results and develop new scientific questions by enforcing the re-use of research data.

The Austrian Science Fund will introduce a Data Management Plan and a new Open Data Policy next year. Through the EOSC Portal, we expect that the research data obtained from FWF projects will become more widely disseminated, both for users in research and for those in society.

Falk Reckling, Head of Department Strategy – Policy, Evaluation, Analysis, FWF

FWF

Der Wissenschaftsfonds.



Acknowledgements

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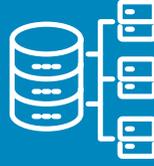




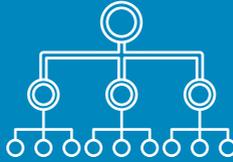
SERVICES



RESOURCES



GOVERNANCE



EOSC IN PRACTICE



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RULES OF PARTICIPATION



POLICY



FUNDING OPPORTUNITIES



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