

Building the EOSC Federation: requirements for EOSC Nodes

[draft v 24/5]

Disclaimer: This document is primarily addressing entities interested in enrolling as EOSC Nodes. The requirements will evolve during the uptake of the EOSC Federation and are planned to be specified in the EOSC Federation Handbook. The document is not about the onboarding of service providers to EOSC Nodes, and it does not elaborate on the steps to be taken for the uptake of the EOSC Federation.

The European Open Science Cloud (EOSC), the Common European Data Space for R&I¹, is the EU's flagship initiative for the digital transformation of research.

The vision for EOSC is to put in place a system for researchers in Europe to store, share, process, analyse and reuse, within and across disciplines and borders, FAIR research outputs, such as research data, publications and software.

It is rooted in open science and deployed as a network between data repositories and services of research infrastructures and other scientific service providers to develop a trusted federation of research data and services for R&I in Europe. The development of the building blocks of the EOSC Federation will count on the latest community know-how, adopting and building on well-established and well-functioning existing structures and frameworks.

EOSC is transitioning to a fully operational mode: the EC-procured 'Managed Services for the EOSC Platform' are currently being developed and gradually put in operation under the branding of the EOSC EU Node², making it the first node of the EOSC Federation.

At the same time, partly through investments by the EU, its Member States and Horizon Europe associated countries, several thematic communities and national initiatives are maturing their infrastructures and services for EOSC readiness.

The EOSC Nodes will be the entry points for end users to the entire EOSC Federation, with each node offering its own services (including data reposing and accessing services) and possibly services of other providers ('third-party' services onboarded to the EOSC Node), in compliance with the EOSC Federation's common rules and requirements as well as the own policies of the EOSC Node. An organisation may therefore enrol its activities as an EOSC Node in the EOSC Federation or onboard its services on an existing EOSC Node as a provider.

¹ <https://digital-strategy.ec.europa.eu/en/library/second-staff-working-document-data-spaces>

² <https://open-science-cloud.ec.europa.eu/>

These nodes will thus offer (scientific) services and/or data that adhere to the FAIR principles, including curated research outputs (such as publications, datasets, software, etc.), specialised knowledge, applications, tools, infrastructure and/or platform services, and/or data processing and storage capabilities.

Organisations that enrol their activities in the EOSC Federation as nodes will benefit from:

- **Broader outreach and connectivity:** By enrolling in the EOSC Federation as nodes, organisations will gain access to a wider pool of users, within and especially beyond their specific thematic area and/or geographical focus, enabling innovative use and exploitation of their data and services, and potentially expanding beyond research to industry and the public sector as EOSC will progressively connect to the other currently deployed Common European Data Spaces. The end users will profit from a much broader access to FAIR data and interoperable services through the EOSC Federation, enriching their own research, as well as a widened recognition of their own contributions to the EOSC Federation.
- **Economies of scale:** EOSC Nodes may take advantage of commonly pooled resources and capabilities across the federation such as AAI, resource catalogues and registry services, monitoring, accounting, helpdesk etc, reducing duplication of research and development costs by each node and strengthening their business models.
- **Europe-wide standards and policies:** Organisations enrolling nodes in the EOSC Federation will take part in shaping and adopting the latest European standards for research output management and service provision and will seamlessly comply with EU research and digital policies as embodied in the EOSC Federation rules and policies.

Below we set out the requirements for organisations to enrol as EOSC Nodes or to be considered a ‘candidate node’ already in the early uptake of the EOSC Federation.

Requirements for EOSC Nodes

Organisations responsible for EOSC Nodes shall ensure the quality of services offered by and to the EOSC Federation, which translates into specific responsibilities towards other EOSC Nodes, towards third-party service providers and towards their end users.

The requirements for an organisation that is responsible for an EOSC Node aim to ensure that it will have the operational, administrative and legal capacity to take up this responsibility and to be able to contribute to the continuous development of EOSC according to its long-term vision. These requirements notably include:

- **Legal status:** the organisation responsible for the EOSC Node must be a public-benefit legal entity (for now located in an EU Member State or an associated country) with legal personality and full legal capacity recognised in all Member States and associated countries, or an intergovernmental research organisation of European interest. The organisation must be able to conclude possible agreements with other partners participating in the activities of the node itself (e.g. providers making their data or services available to EOSC through the node), with other nodes and/or with a potential future organisation representing the EOSC Federation.

- **Large-scale, quality service provision:** EOSC Nodes shall be able to provide services at scale that are commonly used and endorsed by the research communities, operating in a compliant, sovereign, and secure environment.
- **Capacity to onboard third-party services:** beyond offering its own services, an EOSC Node may have the capacity to onboard third-party services on it and to ensure that these services comply with the common quality standards, rules, and policies of the federation, including those related to security, sovereignty, transparency, and trustworthiness of these services.
- **Capacity to contribute to EOSC core capabilities:** EOSC Nodes shall have the capacity to utilise and contribute to specified core capabilities to be offered across the federation such as Authentication and Authorization Infrastructure, resource catalogues and registry services, monitoring, accounting and helpdesk.
- **Compliance with EOSC federation rules and standards:** organisations that are responsible for EOSC Nodes retain autonomy to select which services they offer or share within the EOSC Federation and to set specific policies for access and use of these services, including pricing-related policies for cost-intensive services. EOSC Nodes shall provide access to their services under documented policies and be able to comply or to provide action plan to achieve such compliance with possible federation-wide agreed policies, protocols, standards and participation and access rules, including the EOSC interoperability framework, security (incl. cybersecurity) and sovereignty standards.
- **Effective monitoring:** EOSC Nodes shall be able to monitor and report the activity of the services they provide within the EOSC Federation (e.g. monitoring usage of data, services and other relevant activities) to ensure the quality of the provided services, including the onboarded services provided by third parties, and the compliance with the Federation’s rules and standards.
- **Community engagement:** EOSC Nodes will strive to contribute to community engagement activities of the EOSC Federation, such as training activities, consultations, usability testing, communication, etc.
- **Sustainability:** EOSC Nodes shall be able to confirm continued operations compliant to the EOSC Federation’s requirements for ideally 5 years or more to ensure that they are reliable members of the EOSC Federation, and they shall be transparent about their measures to guarantee the necessary lifetime.

The above requirements set the framework and will be refined and elaborated in the months to come, based also on initial experiences with candidate nodes. Estimates about costs and benefits will be collected from the ‘candidate EOSC Nodes’.

Minimal requirements for ‘candidate EOSC Nodes’

It is foreseen to start with an initial critical mass of prospective EOSC Nodes, possibly including national nodes (nodes related to a certain country / nation), thematic nodes, (single sited and/or distributed) research infrastructure nodes, or e-infrastructure nodes, and then to progressively expand the federation according to the readiness of more prospective nodes and to evolve the

requirements accordingly, based on the experience gained by the initial operation of the EOSC Federation.

The minimum requirements for candidate EOSC Nodes are a subset of the requirements for EOSC Nodes, in particular regarding the legal status, sustainability, core capabilities/service provision as well as rules and standards:

- The legal entity representing the candidate EOSC Node must have the **authority to establish agreements**.
- The legal entity responsible for the candidate EOSC Node should commit to providing **sufficient resources** to ensure its operation for at least 24 months, ideally for 5 years or more.
- The candidate EOSC Node must have **sufficient capacity and expertise** to be able to ensure that the data and services it includes can be operated at a sufficiently high Technology and Readiness Level ensuring robust, reliable and secure performance.
- **Data and Services** must be at least findable and accessible to registered EOSC users and fulfil the FAIR principles in general, while services such as compute and storage capacity should be available in sufficient quantities to multiple user groups.