POSITION PAPER

The role of the GÉANT Association in the European Open Science Cloud

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This position paper outlines where members of the GÉANT Association can collectively contribute to the development of the European Open Science Cloud (EOSC).

'GÉANT Association' is the collaboration of European National Research and Education Networks (NRENs) and includes the central coordinating body, the GÉANT Organisation. Where the term 'GÉANT Organisation' is explicitly used, this refers only to that body.

EOSC is the data space for research and innovation and by contributing to EOSC, it is considered that the GÉANT Association is also de facto contributing to the development of data spaces as a whole.

The GÉANT Association acknowledges the goals and value of EOSC, and this paper provides a consolidated view on EOSC and supports the positioning of NRENs in EOSC. The paper builds on the 2023 GÉANT/NREN position paper on EOSC nodes.

The current role of the GÉANT Association in EOSC

The EC's Data Strategy – of which EOSC is part – combines processing data: Cloud, High Throughput Computing (HTC) and High-Performance Computing (HPC infrastructures), storing data (data infrastructure) and moving data (network infrastructure). The GÉANT Association provides the high-speed, secure pan-European internet backbone as well as the federated identity infrastructure essential for research. These services are key for realising the EC's vision for Open Science and also support users of HPC and Big Data in Europe.

The GÉANT Association has substantially contributed to EOSC since its inception. The GÉANT Organisation was one of the four founding members of the EOSC Association together with the Italian NREN, GARR. The GÉANT Association's expertise in building and operating federated infrastructures is one of the main contributions provided so far to the development of EOSC, alongside expertise in providing compliant access to commercial services.

The GÉANT Organisation participates in the EOSC EU NODE procurement to operate the EOSC AAI which enables federated access to EOSC Exchange Services. Some NRENs are also key providers to the EOSC EU Node offering different types of services across the three 'Lots' that compose the EOSC EU Node. Furthermore, experts from NRENs and the GÉANT Organisation are contributing to shape EOSC by participating in the EOSC Association Task Forces, the EOSC Association Board of Directors and representing their ministries in the EOSC Steering Board advising the EC and the Tripartite Governance.

Opportunities

The GÉANT Organisation is collaborating with other European e-Infrastructures to develop a common approach towards EOSC, and is a signatory to the joint e-Infrastructures statement that

details eight elements for the success of EOSC: that it be open, publicly funded and governed, research-centric, comprehensive, diverse and distributed, interoperable, service-oriented and social.

The GÉANT Association can contribute to this vision in several ways:

- **The GÉANT Association as the Communication Commons for EOSC**
  Under the 2021 seven-year [EC Horizon Europe Framework Partnership Agreement with the GÉANT consortium of European NRENs (GN5-FPA)](#), the GÉANT Association agrees to **"evolve the European Communications Commons to provide secure, cost-effective, highly available and reliable services for very high-speed connectivity, identity inter-federation, mobility, security and trust services and solutions; increasing creativity and efficiency of research and ensuring the digital continuum of services to R&E users anywhere in the EU, bridging the divide between developed and less-developed regions. The connectivity and associated services provided are indispensable for seamless, unimpeded access to relevant data, as well as exploitation and management of data generated by European researchers in almost all large research infrastructures."**

  The GÉANT Association should naturally thereby become the communication commons for EOSC, contributing secure seamless high-speed multi-domain networking and wide peering together with federated identity services delivering appropriate access to cloud services, data, research infrastructures and the many other components and resources of EOSC. In addition, the GÉANT Association can have a role in a coordinated data management framework where the network, compute and storage are all working together to serve the needs of researchers. Furthermore, the GÉANT Association can contribute to end-to-end performance optimisation and user support services including data planning consultancy, troubleshooting, training and service marketing.

- **NRENs as EOSC Nodes**
  The concept of an EOSC node continues to evolve, with the EOSC EU NODE being the first implementation of such an infrastructure. While the ways to connect the various EOSC Nodes are also being discussed under the EOSC Federation banner, different NRENs are likely to take up different roles in the EOSC Federation – some will become national nodes, others will provide services and infrastructure to EOSC Nodes or provide access to third party services for cross-domain service sharing. A national node of EOSC could also simply be an NREN distribution mechanism/platform for resources focused on the local/national research community. However, NRENs could also provide national resources, contribute to thematic, regional and institutional nodes and participate in a consortium for a national node.

- **New services and infrastructures**
  EOSC will unite millions of researchers from thousands of organisations and many countries in one coherent market, with common policies, technical standards and governance. This opens up new opportunities for the GÉANT Association to continue its innovation on a pan-European level, exploiting large economies of scale, and thereby making it much easier for researchers to collaborate irrespective of decisions made at institutional or national level. Examples in development are a large-scale object-storage service and a joint research compute environment middleware.

- **Technology & policy harmonisation**
  The GÉANT Association contributes to the standardisation and convergence of technologies and policies and has long-standing expertise and solutions to contributing to the implementation of the EOSC Federation. The GÉANT Association can effectively contribute to advancing many of the challenges of EOSC to date such as trust at scale, harmonisation of Open Access and Open Science initiatives in accordance with the EU strategy, interoperability and the skills gap between users and e-Infrastructure services on both pan-European and national levels through NRENs and R&E communities.
  On the road to a trusted, seamless, integrated environment for research, not only do the network and identity infrastructures play a fundamental role, but so do the organisational strength, services and expertise of the GÉANT Organisation and the member NRENs – all have a key contribution to make towards the successful realisation of EOSC.
  A key aspect that needs further analysis is where the GÉANT Association can contribute to the persistent challenge of paying for services across national borders. The proposed GÉANT Trusted Digital Research Environment (DRE) is a potential example of the above, enabling trusted connections to trusted resources such as EUDAT, EGI, EuroHPC and other trusted services as they arise.

- **Facilitating access to third-party services**
  The EOSC vision includes the notion of cross-domain service usage, simplified to allow users in one country to access and pay for services made available in another country. This is a longstanding point that the GÉANT Organisation and the member NRENs are in a good position to tackle due to their legal ties to almost every institution in the EOSC community and their position as national organisations. There is a good opportunity for some NRENs to act as a service access broker to facilitate access to third-party services, as indicated in the document Requirements for EOSC nodes.

- **Facilitating access to commercial services**
  The GÉANT Association has built up a strong capability for conducting joint procurement on behalf of the entire European R&E community in order to meet the needs of our community that cannot be provided in-house. Currently this capability is being applied to facilitate compliance with the EU Procurement Directive which provides access to good agreements with infrastructure-cloud providers, such as the US hyper-scalers and their European competitors. The EOSC community will likely require access to multiple types of commercial services over time. The GÉANT Association is well positioned to undertake the work required to create and maintain such a joint EOSC portfolio of compliant agreements with research-relevant services.

Goals

The GÉANT Association will work to achieve the following aims:

- **Gain commitment from the EOSC Tripartite to use the key infrastructure and federated services provided by the GÉANT Association.** GÉANT and the NRENs are in a unique position to provide network, AAI and other services from their existing portfolios thanks to many years of substantial investment at national and European level, with a strong Member State mandate, to deliver a portfolio of innovative services developed specifically for demanding

user communities. Meanwhile, procurements are more frequently being implemented by the EC where contractors are only 'encouraged' to integrate with GÉANT Association services. So, whereas there is no obligation for EOSC to use key infrastructure and federated services provided by the GÉANT Association, there are clear benefits in utilising such established infrastructure, and indeed the demanding use cases of EOSC are seen as a welcome further driver to continued innovation in the service portfolios. The obligation to use MyAccessID for the EuroHPC Federation Platform serves as an example of how this commitment can be beneficial to all, and how it can be implemented.

- **Establish the GÉANT Association as a trusted EOSC partner for security-related matters.** The G7 emphasises the increasing importance of research security and integrity in international collaborations. As focus on digital sovereignty intensifies and security and access standards evolve (SIMPL, EIDAS2, EU digital identity wallet), the GÉANT Association should take a leadership role as a trusted partner for EOSC in terms of steering security-related developments.

- **Support the EOSC community to leverage the experience of the GÉANT Association's capability to create federations and manage cross-border services**. The GÉANT Association is able to ensure that, for example, researchers in Finland have the same capabilities and see almost the same services that researchers in Italy can, and that they can share their data. This is a marked difference between the GÉANT Association and commercial providers and this strength should be leveraged. GÉANT's capability for joint procurement should be used to benefit EOSC.

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