



Report D1.11  
"Ontology-based  
European Data Infrastructure v2"

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# Report D1.11

## "Ontology-based European Data Infrastructure v2"

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## Glossary of terms

Item	Description
EOSC	European Open Science Cloud
FAIR	Findable, Accessible, Interoperable, Reusable
KExS	Knowledge Exchange Space
RDA	Research Data Alliance
SRIA	EOSC Strategic Research and Innovation Agenda

## Keywords

EOSC; Data Infrastructure; Collaboration

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# Executive Summary

One of OntoCommons' primary objectives is to foster collaboration with relevant initiatives and organizations, aiming to create synergies and promote integration. Key partners include the European Open Science Cloud (EOSC), EU projects, the Research Data Alliance (RDA), and the FAIR communities. Integration of ontologies with infrastructures is vital to facilitate actionable and valuable resources.

Data infrastructures have evolved into essential services for researchers and data professionals, necessitating adaptations not only in technical aspects but also in organizational structures. (Millerand & Baker, 2020).

To engage effectively with the EOSC, EU projects, RDA, and FAIR communities, OntoCommons has established a Knowledge Exchange Space for Data Management and Documentation (KExS). This space hosts a series of workshops and meetings attended by OntoCommons members and representatives from various related projects and initiatives. The document offers insights into the work undertaken in Task 1.4, which aims to foster close cooperation with infrastructures via EOSC and related initiatives. The EOSC landscape is dynamic, with numerous organizations and research teams striving to define and develop services and policies that meet the needs of research communities and industries. Through KExS events, participation in relevant gatherings, interactions with stakeholders, and engagement with OntoCommons' own stakeholders, strong and enduring connections within this network have been established.

In this deliverable, we report the activities of the task during the reporting period, namely the continuation of our networking activities within the KExS, the organisation of workshops and Jour Fixe to raise the awareness within and outside the project. We provide insights into additional relevant projects and a short update of the Strategic Research and Innovation Agenda (SRIA) in the context of European Data Infrastructures, and explain the European Data Spaces efforts and how they relate to OntoCommons. The document also provides a glimpse of future developments concerning EOSC Nodes.

All these players are to contribute to the building an infrastructure of services for data provisioning and creation. The material modelling domain will profit from these developments, given that contact with communities working on the data infrastructure components has been established during the OntoCommons project's life.

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# 1. Introduction

This document predominantly comprises contributions from Task 1.4, titled "Integration of OntoCommons within the EOSC landscape." Recognizing the substantial overlap in stakeholder groups engaged with both this task and Task 1.3, "OntoCommons for FAIR initiatives," we have included elements of the work conducted in Task 1.3 within this report. Our aim has been to streamline the engagement process for stakeholders who voluntarily participate in OntoCommons events and meetings, ensuring that they are not overwhelmed with multiple requests for input and collaboration.

In addition to the aforementioned tasks, this document contains a section focused on Gaia-X. Within this section, we look at what constitutes Gaia-X, emphasize its European dimension and explore its ontology-based infrastructures, giving an overview of the Joint Research Centre (JRC) of the European Commission work on European Data Spaces. After that, we give some insights into the Knowledge Exchange Space (KExS) collaboration platform, where various stakeholder groups convene regularly. The purpose of these KExS meetings is to maintain awareness of pertinent OntoCommons activities and existing infrastructures, express needs for data infrastructures in domains ranging from material modelling to other fields and facilitate the exchange of experiences and knowledge regarding data infrastructure usage and tools. We outline the key discussion points that have emerged during these meetings.

To conclude this document, we outline the work of Task 1.4, highlighting the efforts to seamlessly integrate OntoCommons within the landscape of the European Open Science Cloud (EOSC), and our commitment to fostering collaboration and knowledge exchange among diverse stakeholder groups.

## 2. Ontology-based European Data Infrastructures

This deliverable complements the previous report (D1.10). The state of matters addressed herein remains aligned with the one stated in the previous report. The aim of task 1.4 is building bridges between OntoCommons and relevant stakeholders, projects, and initiatives in the realms of EOSC, and RDA. Our role in this endeavour was to stay closely informed about related projects and communicate to the OntoCommons community of the relevant developments. While we maintained proximity to these projects, our involvement remained strategic and observatory, allowing us to gather valuable insights and establish meaningful connections without direct participation. This approach ensured a comprehensive understanding of the ongoing initiatives, enabling us to make informed decisions and foster collaborative relationships with stakeholders, thereby enhancing OntoCommons' impact in the evolving landscape of EOSC. Furthermore, we maintained regular updates to the Knowledge Exchange Space (KExS) community about the progress and activities of the EOSC Task Forces, ensuring transparent and effective communication with our stakeholders.

In the European landscape, discussions surrounding data management, data infrastructures, and open data have continued to gain momentum since our previous update. Thematic European Research Infrastructure Consortia, established since 2009, have played a pivotal role in shaping these discussions. The European Strategy Forum on Research Infrastructures (ESFRI) has taken concrete steps towards the development of thematic Europe-wide infrastructures, involving both European and non-European contributors and stakeholders as project partners. Initiating the European Open Science Cloud (EOSC) is a significant step towards a federated research and innovation data infrastructure. Various ongoing and completed projects have actively contributed to different facets of these overarching efforts, and OntoCommons has maintained an extensive list of such projects as part of Task 1.1. Task 1.4 has taken the initiative to engage with a selected set of these projects (see Section 3.1 of D1.10), initiating discussions regarding the development of an infrastructure tailored to the needs of OntoCommons stakeholders.

During our interactions with EOSC, RDA, and FAIR-related initiatives and projects (the latter through the collaboration with T1.3 and taking into account that the FAIR principles are an integral part of any European based data infrastructure), it became evident that platforms for interoperable ontology sharing and ontology-based data repositories and infrastructures were notably absent. Historically, ontologies have often been employed in isolation, serving as specialized tools for specific tasks. However, we have observed a growing recognition of the importance of ontologies and services for data infrastructures, exemplified in the EOSC Interoperability Framework Report from the EOSC Executive Board Working Group (WG) FAIR and Architecture, published in February 2021 (Corcho et al., 2021). This report underscores the need for ontology-driven solutions and provides a proposal for the design and implementation of the EOSC Interoperability Framework, aligning with the evolving landscape of data management and interoperability in Europe.

## 2.1 Knowledge Exchange Space (KExS)

To realize OntoCommons' aims, it is essential to draw on already existing networks of (European) bodies, projects, and initiatives. The main objective of this task was to build the basis for further cooperation between OntoCommons and projects related to EOSC infrastructure and data management good practices (Research Data Alliance), and to the implementation of the FAIR principles (in collaboration with T1.3). Our goal in OntoCommons is to leverage existing work in these areas and exchange knowledge by bringing together OntoCommons, Industry, the EOSC landscape, and the FAIR initiatives.

We synchronised our activities with Task 1.3 as we observed a large overlap between the stakeholder group active in projects and initiatives related to FAIR principles and those active in EOSC or RDA related projects and communities. To create a knowledge exchange space with projects in the European landscape, we collaborated with Task 1.1 and Task 1.3 to identify a list of relevant projects (see Section 3 of D1.10). Afterwards, we established contact to the different stakeholders and invited them to participate in our workshops and meetings (on-line).

Together with Task 1.3, we established an information exchange platform to encourage interactions with and between relevant stakeholders from the OntoCommons, FAIR, EOSC, and RDA communities.

The platform, the “Knowledge Exchange Space” (KExS), is driven by the need to stay informed about ongoing activities of these stakeholder communities.

Two key workshops were conducted as part of this effort in 2021 (see Section 3 of D1.10). The first workshop, held in July, brought together representatives from various projects, including DOME 4.0, EOSC Nordic, GOFAIR, FAIRsFAIR, and more. The workshop provided a platform for introductions, discussions, and brainstorming on potential collaboration opportunities, planning for further KExS meetings, participation in key events like the EOSC Symposium, RDA plenaries, etc. The second KExS workshop, held in October 2021, aimed to solidify the foundation for cooperation between OntoCommons and projects focused on FAIR implementation, EOSC infrastructure, and data management best practices. This workshop involved representatives from projects such as Cos4Cloud, EERAdata, and NI4OS-Europe, reinforcing the commitment to collaboration.

Additionally, the OntoCommons project shared its approach during a dedicated session titled “Establishing a Knowledge Exchange Space” at the OntoCommons Horizontal workshop. This session, co-organized with Task 1.3, featured discussions on building a sustainable collaborative environment with stakeholders and its potential to support OntoCommons.

To streamline communication, common channels such as a mailing list and a Slack channel were established, facilitating asynchronous discussions and information sharing. Initially held monthly, KExS meetings transitioned to a bi-monthly schedule, to maintain the dialogue with EOSC-related projects and initiatives, particularly those funded under the INFRAEOSC call.

Through these regular interactions, OntoCommons has identified valuable efforts in EOSC-related projects that align with its goals. This has enabled the organization of joint workshops on FAIR principles, including a special session during Open Science FAIR. Furthermore, ongoing discussions have revealed promising outcomes in projects like NI4OS and EOSC Pillar, particularly regarding data FAIRification services that hold relevance for OntoCommons stakeholders. These collaborations underscore OntoCommons' commitment to creating a more connected and informed research data landscape.

The regular KExS Jour Fixe meetings, lately scheduled every two months, did experience a decline in attendance, which we attribute to various factors, including the changing priorities and commitments of the participants, ongoing projects reaching their end with persons moving to other tasks. Nevertheless, we are confident the knowledge and connections established during these Jour Fixe sessions will continue to contribute to the ongoing success and impact of OntoCommons in the broader research data landscape.

In total, we organized four KExS workshops and nine KExS Jour Fixe which are summarized in the table below.



*Table 1 - List of the KExS events*

Scheduled Date	Format	Agenda / Content
4 July 2023	Jour Fixe	OntoCommons 2nd Global Workshop Webinar: EOSC and Data Spaces Webinar: Data Spaces Support Centre
14 June 2023	Workshop	Presentation at the 2nd Global Workshop of OntoCommons on how TU Wien ISE trains the new generation of computer scientists to understand the challenges and tasks of industrial domains and apply data science knowledge (including semantic methods and ontologies for representing data) to other domains like chemistry, geoinformation, water management, or non-technical domains like social sciences.
4 May 2023	Jour Fixe	Focus is on projects in the EOSC universe that are or were working on making data available (interoperable, findable, etc.), and providing infrastructure for it.  Update on projects: all participants present their status quo and next plans and what they might need from KExS (tour the table)  Discussions, Conclusions, AOB
7 March 2023	Jour Fixe	Update on projects: all participants present their status quo and next plans and what they might need from KExS (tour the table)  Discussions, Conclusions, AOB
9 Sept. 2022	Jour Fixe	Collaboration on Workshop - NI4OS & OntoCommons/ KExS Presentation - FAIRsharing
5 July 2022	Jour Fixe	FAIRCORE4EOSC - General presentation FAIR Impact - General presentation FAIR Impact: Metadata and Ontologies – General presentation
10 May 2022	Jour Fixe	Update on projects: all participants present their status quo and next plans and what they might need from KExS (tour the table)
8 March 2022	Jour Fixe	Survey: EOSC TF "FAIR Metrics and Data Quality" and Q&A NI4OS Webinar and Q&A Discussion on Roadmap (Infrastructures)
8 Feb. 2022	Jour Fixe	EOSC TF "FAIR Metrics and Data Quality" FAIR principles - Yann Le Franc Discussion on OntoCommons Roadmap
11 Jan. 2022	Jour Fixe	Intro of OntoCommons

		Discussion on EOSC related services (existing and planned) Discussion on 2022 planning
3 Nov. 2021	Workshop	In context of the OntoCommons Horizontal workshop, a dedicated session entitled: "Establishing a Knowledge Exchange Space": Based on impulse talks from GOFAIR, the EOSC association and RDA, discussion how to build a sustainable collaborative environment with the different stakeholders and how it can support OntoCommons.
22 Oct. 2021	Workshop	The 2nd KExS workshop took place to establish contact with relevant stakeholders in the FAIR, EOSC, and RDA communities, with a first round of brainstorming on possibilities and avenues of collaboration.
1 July 2021	Workshop	The 1st KExS workshop included a short introduction of the OntoCommons Work Packages relevant for collaboration with the mentioned communities, followed by brief introductions of the projects and initiatives of the invitees. A dedicated session for discussions to identify and assess potential and future collaboration opportunities followed.

## 2.2 Additional Relevant Projects, Infrastructures and Initiatives

In the domain of material modelling, we have been exploring existing resources and repositories to enhance our understanding and gather valuable data sources. Additionally, we have been monitoring projects that offer insights and lessons applicable to OntoCommons. Such a project is Elixir<sup>1</sup>, which made significant contributions to providing a research environment for life sciences. Elixir's approach to data management, integration, and interoperability, as well as planning and execution of research experiments, is of relevance to other domains like OntoCommons.

Similarly, Envri-Hub<sup>2</sup> is an initiative focused on environmental research infrastructures, providing a portal and catalogue of registering environmental data and services.

Established in 2018 as a Non-Profit Partnership, OpenAire<sup>3</sup> is an infrastructure for open scholarly communication, an infrastructure that has a set of services ranging from publishing data transparently and following interoperability guidelines, to metadata validation and research result discovery. OntoCommons community has, through OpenAire, a channel to monitor and publish research outputs relevant to the material modelling domain.

<sup>1</sup> <https://elixir-europe.org/>

<sup>2</sup> <https://hubtest.envri-fair.eu/>

<sup>3</sup> <https://www.openaire.eu/>

*Table 2 - List of EOSC, RDA, and FAIR related projects*

Project/Initiative	Website	Type	Status
AquaINFRA	<a href="https://cordis.europa.eu/project/id/101094434">https://cordis.europa.eu/project/id/101094434</a>	H2020 project	Active
ARCHIVER	<a href="https://www.archiver-project.eu/">https://www.archiver-project.eu/</a>	H2020 project	Ended 30/06/2022
Blue-Cloud 2026	<a href="https://blue-cloud.org/blue-cloud-2026">https://blue-cloud.org/blue-cloud-2026</a>	H2020 project	Active
CINECA	<a href="https://www.cineca-project.eu/">https://www.cineca-project.eu/</a>	non-profit consortium	Active
Chemistry Research Data Interest Group	<a href="https://www.rd-alliance.org/groups/chemistry-research-data-interest-group.html">https://www.rd-alliance.org/groups/chemistry-research-data-interest-group.html</a>	International initiative	Active
DOME 4.0	<a href="https://dome40.eu/">https://dome40.eu/</a>	H2020 project	Active
Cos4cloud	<a href="https://cos4cloud-eosc.eu/">https://cos4cloud-eosc.eu/</a>	H2020 project	Ended 28/2/2023
ENVRI-FAIR	<a href="http://envri.eu/envri-fair/">http://envri.eu/envri-fair/</a>	H2020 project	Ended 30/06/2023
EOSC Association TF - FAIR Metrics and Data Quality	<a href="https://www.eosc.eu/advisory-groups/fair-metrics-and-data-quality">https://www.eosc.eu/advisory-groups/fair-metrics-and-data-quality</a>	European Working Group	Active
EOSC Nordic	<a href="https://eosc-nordic.eu/">https://eosc-nordic.eu/</a>	H2020 project	Ended 30/11/2022
EOSC Pillar	<a href="https://www.eosc-pillar.eu/">https://www.eosc-pillar.eu/</a>	H2020 project	Ended 31/12/2022
EOSC Synergy	<a href="https://www.eosc-synergy.eu/">https://www.eosc-synergy.eu/</a>	H2020 project	Ended 31/10/2022
FAIR DO	<a href="https://fairdo.org/">https://fairdo.org/</a>	International initiative	Active
FAIR4Health	<a href="https://www.fair4health.eu/">https://www.fair4health.eu/</a>	H2020 project	Ended 30/11/2021
FAIRPlus	<a href="https://fairplus-project.eu/">https://fairplus-project.eu/</a>	H2020 project	Ended 31/12/2022

FAIRsFAIR	<a href="https://www.fairsfair.eu/">https://www.fairsfair.eu/</a>	H2020 project	Ended 28/02/2022
FAIRSharing	<a href="https://fairsharing.org/">https://fairsharing.org/</a>	Standard database	Active
GOFAIR	<a href="https://www.go-fair.org/">https://www.go-fair.org/</a>	International Foundation	Active
Ni4OS	<a href="https://ni4os.eu/">https://ni4os.eu/</a>	H2020 project	Ended 28/02/2023
RDA Materials Data, Infrastructure and Interoperability Interest Group	<a href="https://www.rd-alliance.org/groups/rdacodata-materials-data-infrastructure-interoperability-ig.html">https://www.rd-alliance.org/groups/rdacodata-materials-data-infrastructure-interoperability-ig.html</a>	International initiative	Active
RDA Vocabulary and Semantic Service Interest Group	<a href="https://www.rd-alliance.org/groups/vocabulary-services-interest-group.html">https://www.rd-alliance.org/groups/vocabulary-services-interest-group.html</a>	International initiative	Active

Opposed to the research-driven infrastructures (as described above), we find industry-driven infrastructures with a research-influenced components in their development, like GAIA-X and International Data Spaces (IDS), a secure, sovereign system of data sharing, enabling business processes across companies and industries. GAIA-X<sup>4</sup> is aiming to establish a federated and secure data infrastructure, based on European values, with the ultimate goal of developing digital governance. Within the Gaia-X initiative there are a number of *lighthouse projects* with particular significance for the broader landscape of data infrastructures:

- The European Production Gigant (EuProGigant)<sup>5</sup> “is an Austrian-German lighthouse research project “for calamity avoiding self-orchestration of value chain and learning ecosystems” working on central questions related to the smart and sovereign use of data in manufacturing. The project aims to deliver on machine connection and machine-oriented data processing using Gaia-X architecture, thus creating resilience in the value creation ecosystem.”
- Catena-X<sup>6</sup> is one of the first industrial lighthouse projects connected to Gaia-X. In the domain of the automotive industry, creates a secure and standardised data-based ecosystem for businesses ranging from OEMs, 1st Tier and to small & medium enterprises. The data contained and exchanged, here, uses an Eclipse Dataspace Connector (EDC), a custom data exchange standard based on the IDSA standard<sup>7</sup>.

Another repository example, SpringerMaterials<sup>8</sup> is a comprehensive for-profit database that serves as a valuable resource for identifying material properties. With a comprehensive database that spans

<sup>4</sup> <https://gaia-x.eu/>

<sup>5</sup> <https://euprogigant.com/en/>

<sup>6</sup> <https://catena-x.net/en/>

<sup>7</sup> <https://tinyurl.com/IDSA-standard> (last verified, October 2023)

<sup>8</sup> <https://materials.springer.com>

various material classes, property types, and applications, it offers fast and reliable insights for researchers in fields such as materials science, physics, chemistry, and engineering. Its advanced data visualization capabilities are allowing users to interactively explore crystal structures, data tables, and phase diagrams. Moreover, the platform boasts search functions specially optimized for materials science, enabling quick access to material property data based on elemental composition or chemical structure. Notably, SpringerMaterials prides itself on being a trusted and curated resource, with a team of materials science experts ensuring the highest data quality standards.

At a policy level, the European Commission is actively working on defining requirements and guidelines for common European Data Spaces. These are defined as “data spaces as “bringing together relevant data infrastructures and governance frameworks in order to facilitate data pooling and sharing”. The high-level requirements that are formulated (see for example in [4]) will be the basis for the concrete design and implementation of data spaces. These high-level requirements are domain agnostic, with the expectation that they will be instantiated to the various research and industrial like the topic of OntoCommons. From this point of view, the efforts listed above (e.g. Gaia-X, EUProGigant) contribute towards this goal. Notably, the official portal for European data aims to be “a central point of access to European open data from international, European Union, national, regional, local and geodata portals. It consolidates the former EU Open Data Portal and the European Data Portal.” The portal’s data motel, DCAT-AP, is based on W3C’ data catalogue vocabulary for describing public data sets. Any further use of domain specific vocabularies and/or ontologies to apply to dataset is the task of the domain experts and is expected to be instantiated for the future domain-specific data spaces.

Finally, the Research Data Alliance offers a unique platform to collaboratively work on specific problem for data management and cross disciplinary data integration. As a joint activity with T1.3, we followed several Interest Groups (IG) and Working groups (WG), relevant to OntoCommons. In particular, we directly contributed to the activities of the Vocabulary and Semantic Service IG and we actively participated in the activities of the Material Science IG and the emergence of a novel Material Science WG. In parallel, we monitored the activities of groups such the Metadata IG or Scientific Knowledge Graph- Interoperability Framework WG. These contributions were made either by attending the RDA plenary meetings or by shaping session agenda of the groups to present OntoCommons outputs. During the reporting period, T1.3 and T1.4 contributed directly the International Data Week in 2022 and 2023 as well the RDA Plenary P20 in Göteborg (2023). The International Data Week is a joint event organised by Codata<sup>9</sup> and RDA.

## 2.3 Strategic Research and Innovation Agenda (SRIA)

Taking note on the critical importance of service and data semantic interoperability, on the role of ontologies in advancing these goals, we were aligning our efforts with the Strategic Research and Innovation Agenda (SRIA) outlined in the EOSC framework.

EOSC Task Force members were invited and participated in the KExS meetings, shaping and advancing discussions on critical topics related to ontologies and the SRIA. In particular, the FAIR

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<sup>9</sup> <https://codata.org>

Metrics and Data Quality Task Force and the Semantic Interoperability Task Force have been instrumental in providing valuable input and insights to the OntoCommons community, with the latter commenting on the work on the Task Forces, when relevant to their field of work.

The FAIR Metrics and Data Quality Task Force has been a driving force behind discussions and initiatives on the assessment and enhancement of data quality with respect to the FAIR principles. By addressing key issues related to data quality and metrics, this Task Force has enabled OntoCommons to contribute to the continuous improvement of SRIA updates.

Similarly, the Semantic Interoperability Task Force has played a vital role in fostering discussions and actions related to semantic interoperability. Their work has been essential in ensuring that OntoCommons' outputs and expertise are integrated into the evolving SRIA through the direct contribution of e-SDF partner in the Task Force. During the last EOSC Symposium, OntoCommons output was actually presented in the context of the Semantic Interoperability Task Force session, highlighting the contribution of OntoCommons work in the EOSC Semantic Interoperability Framework. By focusing on the critical aspect of semantic interoperability, this Task Force has allowed OntoCommons to provide valuable input and guidance for the SRIA updates, particularly in the domain of ontologies and their role in enabling interoperability.

Overall, the collaborative efforts of these Task Forces within the KExS meetings have facilitated a strong synergy between OntoCommons and the broader EOSC community. Their contributions have ensured that OntoCommons' work is not only aligned with but also actively informs and enriches the continuous updates of the SRIA. This collaborative approach underscores the importance of multidisciplinary engagement and knowledge exchange in advancing the field of ontologies and data management within the EOSC framework.

## 2.4 EOSC Symposium

The EOSC Symposium in Prague in November 2022 provided a unique opportunity to engage a wide spectrum of stakeholders and have an update on the latest EOSC developments. Our task team present at the symposium collected relevant input for the OntoCommons project and brought OntoCommons related issues (e.g. semantics and ontologies, or required services) to the attention of the symposium participants, both in related sessions as well as in a series of side meetings. During the EOSC Symposium in Madrid (September 2023), T1.3 and T1.4 were jointly represented by the participation of eSDF partner and the short presentation of the T3.2 outputs during the session organised by the EOSC Association Semantic Interoperability Task Force.

## 2.5 Outlook on EOSC Nodes

During the OntoCommons project's life, EOSC has closed the activities of Working Groups (whose outputs we assessed for their applicability to the material domain). The established Task Forces of the newly establish EOSC association was further focusing on distilling requirements and making recommendations on the necessary EOSC infrastructure. We ensured the uptake of the findings of the OntoCommons project through constant communication and observed the creation of EOSC Nodes, which, at the time of writing this document, are still in planning, as the decision of the EOSC procurement call is delayed.

GÉANT Association has lately released a position paper outlining its stance on EOSC Nodes<sup>10</sup>. It emphasizes the importance of EOSC as a research community-centred initiative, where EOSC Nodes prioritize research and researchers. While GÉANT endorses the creation of EOSC Nodes, they underscore the significance of considering pre-existing efforts, particularly the community's history in constructing a scalable and federated environment that seamlessly serves users. It is stated, that the primary mission of an EOSC Node is to offer researchers a trusted and secure environment, enabling them to work in a FAIR, open, and secure manner. While a national EOSC Node primarily offers resources at the national level, it may also provide access to internationally relevant thematic resources, meeting the needs of national funders. Key elements of EOSC Nodes, regardless of their scope (thematic, national, regional, etc.), should include a defined baseline to ensure a minimum set of features and policy support.

This baseline is essential for enabling the federation of existing and planned research infrastructures. Governance is another crucial aspect, involving representatives from all nodes. This governance should manage the baseline collaboratively and establish processes for adding or removing EOSC Nodes. Compliance with protocols and standards is vital, with flexibility in how each node implements them. This approach ensures seamless federation while accommodating specific requirements and preferences.

Following discussions at the "unconference session on the EOSC Nodes" during the EOSC Symposium in September 2023, the EOSC-A Board of Directors has developed a draft position paper, with the input of the EOSC-A Mandated Organisations, the ESFRI Research Infrastructures, several EOSC-A Task Forces, and GÉANT. This paper provides a high-level view that attempts to summarize the node concept, identifying points of agreement as well as the diversity among different stakeholder groups. The EOSC-A wrote in an email to the Symposium participants that in this first draft there are details missing, but it should advance the discussion on the role of nodes in the EOSC Federation. Additionally, EOSC-A is requesting feedback on their concept, so there is ongoing work to define these nodes, and this process is community-driven rather than top-down.

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<sup>10</sup> <https://eosc.eu/news/2023/09/geant-publishes-eosc-nodes-position-paper-on-behalf-of-nren-community>

## 3. Conclusion

The EOSC landscape is currently very fluid, with a large number of organization and research teams working to define and develop services and policies that are desired both by the research communities and industry branches. The European Data Spaces efforts led by the Joint Research Centre of the European Commission sets the scene for further coordinated efforts for domain specific digital space. Through the sequence of KExS meetings and workshops, participation to EOSC, FAIR, RDA related events, interactions with their stakeholders as well as with OntoCommons stakeholders, we believe we realized durable connections in this network.

## 4. References

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