

3RD ESFRI-EOSC WORKSHOP ON RIs AND EOSC

What does EOSC bring to RI users?

[#ESFRIshapesEOSC](#)

25-26 January 2022

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Introduction

The Exchange of Experience workshop on connecting ESFRI and other world-class Research Infrastructures (RIs) to the European Open Science Cloud (EOSC) took place on the 25th and 26th January 2022. It was the third in a series of events with the aim of bringing together ESFRI RIs and EOSC stakeholders in order to showcase and better comprehend the concepts behind EOSC, including the Open Science and “FAIR” policy agenda, the vision for the future, the **EOSC value proposition for its users**, and the aim to ensure the optimal federation of Science Clusters and RIs with EOSC. The conclusions from the previous two workshops can be found on the ESFRI website.^{1,2}

The workshop was organised by the ESFRI Task Force on EOSC and the StR-ESFRI2 Project, in close collaboration with ESFRI and the EC, and with participation from the EOSC Science Cluster projects, the EOSC Association Board of Directors, and the EOSC Future project. The workshop took place in the form of an interactive webinar spread over 1.5 days. Around 600 participants registered for the event, with *388 unique participants on day 1 and 226 on day 2*. Workshop materials can be found on the ESFRI website: <https://www.esfri.eu/esfri-events/3rd-esfri-ris-eosc-workshop>

Objectives

The main objective of the 3rd workshop was to establish **how the RI communities and researchers can use and benefit from the EOSC in getting added value**. Besides the general benefits of EOSC towards open science and “FAIRification” of data and services, it is anticipated that the daily use of the EOSC Exchange and other concrete tools by RI users (for intra- and inter-disciplinary research) will also provide benefit to the EOSC in return – by providing their input and feedback this will enable the EOSC to improve in usefulness and efficacy, thus contributing towards its long-term sustainability.

There are two main roles connecting RIs to the EOSC: i) **RIs as data producers/service providers** (offering data/services to the wider research community via the EOSC) and ii) **RIs as users** of EOSC services (consuming additional services from the EOSC Core and EOSC Exchange as currently developed by the EOSC Future project). Both of these roles were addressed in the workshop, with more emphasis on the latter (“RIs as users of EOSC services”, in an effort to shift attention towards the (required) added value of EOSC for the RI communities and end users – that is, what does EOSC bring to (users of) RIs.

EOSC is ultimately about serving users across borders and disciplines, supporting open science, and enabling multi-disciplinary research. Even if the EOSC services are still under development (e.g. as part of the EOSC Future project) and require another few years before entering the fully-operational phase, having a **clear vision for targeting the users** is a prerequisite for engaging them. The EOSC needs to be

¹ [ESFRI RIs and EOSC Workshop | www.esfri.eu](https://www.esfri.eu)

² [2nd ESFRI RIs-EOSC Workshop "Research Infrastructures shaping EOSC" goes digital | www.esfri.eu](#)

co-designed with the users, so that the EOSC working environment, including its services, data, and other artefacts, are useful for a broad range of end users and can be easily adopted by them.

A key objective of the workshop was to get feedback from potential EOSC users as well as from providers. The workshop therefore included two feedback sessions, with one for users (day 1) and one for providers (day 2). A set of questions was developed to pose to both sets of users, and open-ended feedback from the participants could be given via on-line tools (Slido and in the Zoom webinar).

Summary of key messages

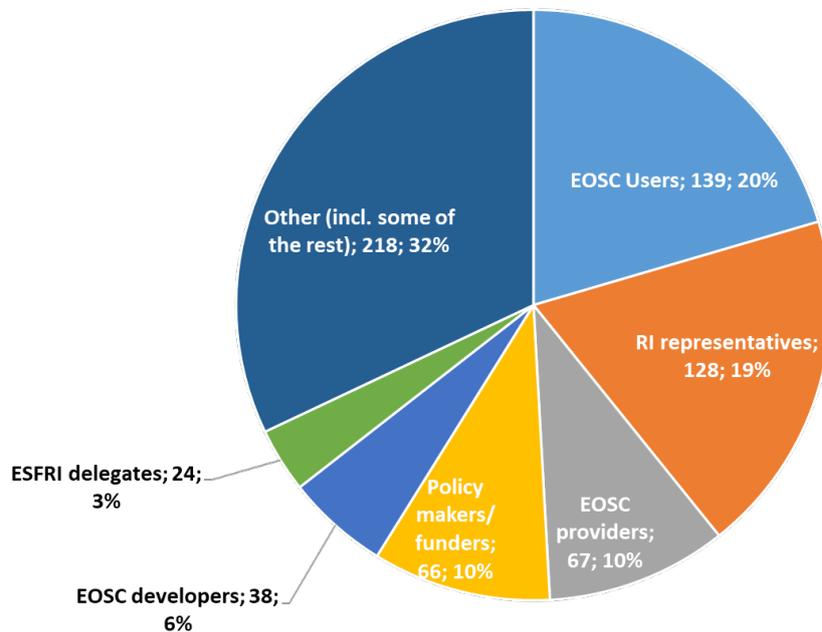
*The overarching take-away message from the workshop was that further progress towards a fully operational EOSC is still needed for thematic communities and researchers - especially for RIs and their end users - to fully benefit from the EOSC added value. A particularly clear call for the development of a user-friendly and comprehensive catalogue of available EOSC services was made, as well as corresponding use cases, success stories, and demos, that clearly highlight the EOSC benefits and potential impacts towards a culture of **Open Science**. The role of ESFRI and of other thematic RIs working together with EOSC Core developers and operators is also crucial to speed up Open Science, FAIR data management, and to promote cross-disciplinary research. Providing a **clearer vision of the EOSC services which will become available for the users**, including the EOSC marketplace, is key for the users to understand what they should expect and why they should actively connect and engage with EOSC. There are also **different needs and levels of uptake of FAIR and Open Science practices by different thematic communities**. This needs to be understood and treated appropriately by the EOSC providers and operators. There is also a trade-off to be considered between young researchers who want to **move away from the traditional thematic environments** and adopt modern, targeted tools for each researcher, and the older generations who may want to retain the existing well-known tools and more traditional working environments. Thus, EOSC providers should ideally be able to cope with both types of demands, which may be challenging. The role of the **national constituents** - both as National Open Science Clouds and national thematic components of pan-European/international RIs/ERICs in the EOSC building process - and the role of the thematic clusters (EOSC Science Clusters) were highlighted specifically as key elements of the diversified EOSC landscape. Finally, **training and guidance on the use of the EOSC services and the provision of an EOSC helpdesk as part of the EOSC platform** were considered to be critical for supporting user uptake and engagement.*

*In conclusion, while acknowledging the fact that the EOSC concept is still a work in progress is being developed in a complex environment with European, national, and regional constituents, and involves both generic (disciplinary agnostic) and thematic (disciplinary) components with different levels of maturity and priorities, **EOSC should intensify and prioritise its efforts for providing clearer added-value for end users**. Ongoing efforts to build a user-driven EOSC must continue, complemented by concrete use cases of its value proposition for researchers. The crucial role of ESFRI and the thematic RIs in this process has been re-emphasised, based on the wide experience they have gained to engage with researchers. It was proposed that another,*

related workshop could focus further on use cases and success stories with demos, similar to the example presented in Session 3 of this workshop.

Registration and participation statistics

Approximately 600 people registered for the workshop. It is important to note that **the largest group of registrants was “EOSC users”, totalling 139³ people of the 600**. There were also 128 representatives of “Research Infrastructures” (ESFRI or other), 67 who self-declared as generic “EOSC providers”, 66 “Policy makers/funders”, 38 “EOSC developers” and 24 “ESFRI delegates”. There were another 218 persons who selected the “Other” category, however the answers given in the open response field show that a number of these registrants should have been included in the other categories, thus increasing the estimated number of actual users. The high number of EOSC end-users is considered an important achievement, as this meant that very good levels of input were achieved in the related feedback session. There were several factors contributing to this achievement. First, users as well as related added value were highlighted as a focus of the event. Second, there was close cooperation with the EOSC Association Board of Directors and the relevant Task Force on Researcher Engagement and Adoption. Finally, a call for participation was made to the “EOSC Future User Group” which was created in 2021 inviting end users to join⁴ which resulted in more than 300 existing or potential EOSC users signing up. A profiling survey⁵ from EOSC Future project provided insights about these individual users. The EOSC Future representative in the workshop programme committee (Sara Gravelli) identified a subset of users who were also members of RIs; this group was likely to be particularly interested in attending this workshop, and so were invited to participate.



Participation during the two days was very good, with 416 unique participants, and a maximum of 270 participants at any one time. There were 388 unique participants on day 1 that focused on EOSC users

³ Around 100 EOSC “end users” finally participated in the event
⁴ [Apply for the EOSC Future User Group by - CSC Company Site](#)
⁵ [EOSC Future User Group profiling survey | EOSC Portal \(eosc-portal.eu\)](#)

and 226 on day 2 that focused on EOSC providers. On the two interactive feedback sessions (on EOSC users and EOSC providers accordingly) around 200 users joined, with 161 actively contributing, each providing more than 10 answers with an “engagement score” of 1773 (11 per user). There were around 50 feedback items per day (questions or comments) and around 200 likes or upvotes per day.

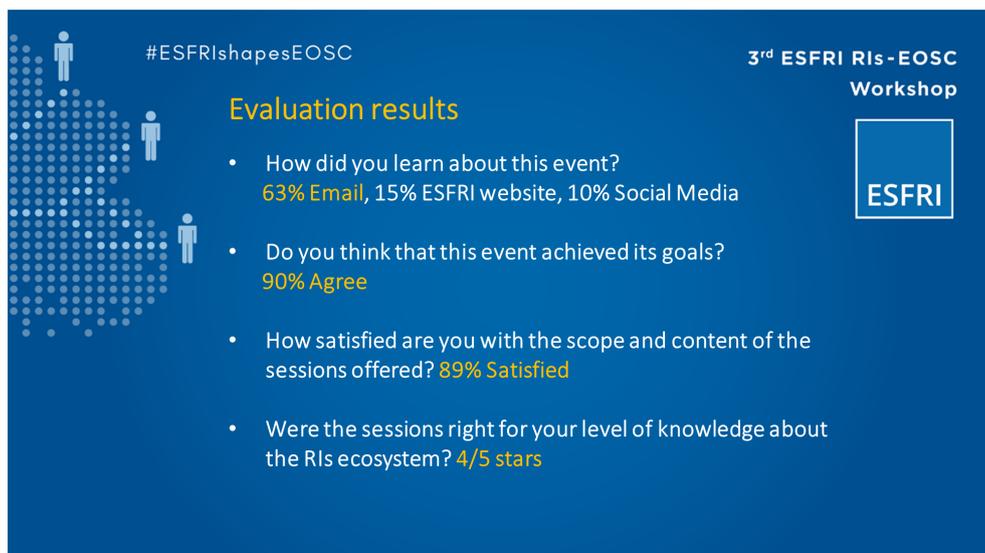
Most liked comment (17 likes)

“Help navigating the myriad of services by providing helpers to answer the question “is this service available/appropriate for me?” as quickly as possible.”

There were also 13 polls created, with 98 votes per poll, resulting in a total of 1278 poll votes. More information about the participation and feedback received can be found in the annexes at the end of this document.

Evaluation summary

At the end of each day, an evaluation questionnaire was presented which gathered feedback on the workshop from attendees. Overall, from 72 responses to the questionnaire, the workshop was evaluated very positively with **90% of respondents stating that the workshop achieved its goals** and 89% stating that they were satisfied with the scope and content of the sessions. 99% responded that the online event was **efficiently organised**, while 85% were also satisfied with the feedback sessions and the **opportunities for interaction**. 97% of the respondents gave 3 or more out of 5 on whether the sessions were right for their level of knowledge of the RI ecosystem, with 70% giving a score of 4 or 5. 58% of respondents declared the interactive sections with Q&A and Slido as one of the best aspects of the workshop, with the plenary sessions and conclusions in second and third with 46% and 39% respectively.



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3rd ESFRI RIS-EOSC
Workshop

Evaluation results (2)

- How well-organized was the online event?
99% Efficiently
- How satisfied are you with the feedback sessions and the opportunities for interaction and participation?
85% Satisfied
- What was your favorite aspect of the event?
58% Interaction via Q&A/slido, 46% Speakers
39% Content/conclusions, 3% other :
 - Discussion among panellists.
 - It was great to see a live demo, and not only slides promoting particular projects

ESFRI

Workshop program structure

In brief, the workshop program consisted of 3 sections, with an introductory session and the two main sessions on users and providers. The user-oriented session included two plenary talks and time for providing feedback, while the provider-oriented session had one plenary talk as well as time for feedback.

- Introduction, setting the scene from both ESFRI and EOSC
 - Session 1: Scope, EOSC current state and the EOSC Association
- User-oriented sessions
 - Session 2: EOSC: Researcher Engagement and Adoption
 - Session 3: The EOSC added value for the thematic communities; How can RI end users benefit from EOSC
 - Session 4: Feedback panel for users (Sessions 2-3): EOSC Added value for end users. Views on how the RI community can benefit from EOSC: EOSC developers, policy makers and funders face the users
- Provider-oriented sessions
 - Session 5: How generic and thematic EOSC services can add value to the RI community
 - Session 6: Feedback panel for providers (session 5): EOSC added value for thematic providers - Cross-fertilisation between thematic and generic providers

Session summaries

Session 1

Session 1 - Scope, EOSC current state and the EOSC Association, Chair: *Jana Kolar*, ESFRI
Chair [Watch the recording](#)

- ESFRI and the EOSC in the renewed ERA, *Anna Panagopoulou*, DG RTD, European Commission

- Introduction- Scope, *Mirjam van Daalen*, Paul Scherrer Institute & ESFRI Task Force (TF) on EOSC Chair [Download the presentation](#)
- The EOSC Association and its Working Groups and Task Forces, *Ute Gunsenheimer*, EOSC-Association (EOSC-A) Secretary General [Download the presentation](#)
- Q&A

The session 1 Chair and speakers set the scene for the workshop, providing the policy background, the concrete objectives of the workshop, and the related activities of the EOSC Association, which is playing a key role in the EOSC tri-partite partnership. The new ESFRI Chair **Jana Kolar** referred to the European Research Area (ERA) aspiring to create a single borderless market for research, innovation, and technology across the EU. One of the ERA actions of the ERA policy agenda is dedicated to EOSC which is the next step to open sharing, seamless access, and reliable re-use of research outputs. ESFRI will continue to support the development of EOSC, which may be perceived as a top-down initiative. However, EOSC should not be just top-down, but also modelled and co-created by RIs and users. **Kostas Glinos**, speaking in place of Anna Panagopoulou, highlighted the need for close ESFRI-EOSC synergies that can enable a cultural shift in the way European researchers do science. ESFRI RIs can act as mediators between end users and EOSC by fostering the adoption of Open Science practices. The “New ERA” plans to combine the strengths of co-creation, mobilisation, and synergies at EU and Member State level, together with open science, skills and world-class, interconnected RIs. The success of EOSC will largely depend on a change of culture among the researchers towards openness. **Mirjam van Daalen** stressed that ESFRI is a strategic partner in EOSC and that its Task Force on EOSC is working at several levels, including policy and strategy, the science clusters and thematic RIs and the horizontal service providers. The TF established a liaison with EOSC Association and follows its EOSC Association Advisory Groups/Task Forces, with emphasis on the one on Researcher Engagement & Adoption (REA). Although the TF will conclude its work at the end of March 2022, it is expected that a new ESFRI structure will take over the TF work in June 2022. Thus, ESFRI will continue to organise targeted meetings/workshops, follow-up EOSC developments, provide inputs to the EOSC activities and promote the RI community needs and their role to the EOSC co-design (together with stakeholders), uptake and sustainability. **Ute Gunsenheimer** presented the EOSC-Association (EOSC-A) status, as part of the EOSC tripartite partnership. EOSC-A has 234 participating organisations, 161 members and 73 observers. 17 ESFRI Projects or Landmarks (P&L) are EOSC-A members. EOSC-A has also 5 Advisory groups and 13 Task Forces, while also working in close collaboration with the ESFRI Science Clusters. The EOSC-A proposes a closer collaboration with ESFRI to plan the stages of the EOSC Multi-Annual Roadmap (MAR), the second stage of which is for years 2023-2024, with a corresponding consultation in March 2022. An active ESFRI (P&L) participation in the upcoming MAR consultation would be useful. A dedicated channel is proposed along with further collaboration with ESFRI for the organisation of EOSC partner days.

For more information see the [session 1 summary presentation at the closing session](#) and related presentations.

Session 2

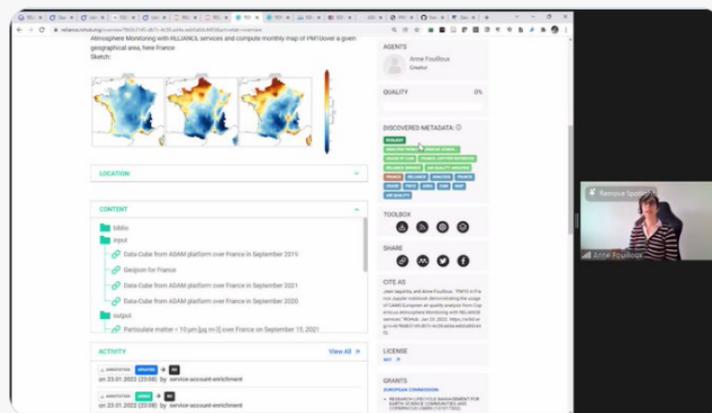
Session 2 - EOSC: Researcher Engagement and Adoption, Chair: *Suzanne Dumouchel*, French National Centre for Scientific Research (CNRS) & EOSC-A Director [Watch the recording](#)

- The EOSC-A Task Force on Researcher Engagement and Adoption, *Sverker Holmgren*, Chalmers University of Technology, TF Chair [Download the presentation](#)
- The role of Young Researchers in Open Science, FAIR and the adoption of EOSC, *Zoe Cournia*, Biomedical Research Foundation, Academy of Athens [Download the presentation](#)
- Young Researchers' achievements on Open Science, FAIR and EOSC adoption
 - Achievement on Open Science/FAIR, Anne Fouilloux, University of Oslo [Watch the RELIANCE demo](#) | [Related resources](#)
 - Achievement on Open Science/FAIR, Petr Čermák, Materials Growth and Measurement Laboratory (MGML), Czech Charles University [Download the presentation](#)
 - Training for users' onboarding, Francesca Di Donato, Italian National Research Council (CNR) & TRIPLE project *Did not present*

The session chair **Suzanne Dumouchel** introduced the work of the EOSC-A in the area of researcher engagement with, and adoption of, EOSC. It was acknowledged that now is the time to put more coordinated efforts towards such researchers' engagement. The related effort is led by the corresponding Task Force (REA) that was presented by one of its co-chairs, **Sverker Holmgren**. A quote from EOSC SRIA Guiding Principles was reminded saying that *"The overarching principle for developing EOSC is that research has to be at the centre of the EOSC initiative. Thus, engagement with research communities is fundamental to understand their requirements and ensure that the way in which EOSC operates and the services are offered is of use and value to the researchers"*. Hence, the overall aim of the TF REA is to engage a diverse set of communities at both (inter-)disciplinary and national levels, in order to increase their participation in EOSC. Researchers can be both users of EOSC services and providers of EOSC digital objects. The TF will work towards the goal that EOSC services will be of actual use to the researchers. This will be done if researchers can take ownership and an active role in shaping and furthering EOSC. Key TF activities include the collection of **success stories**, the promotion of related **training** events at different levels, and the overall consultation with the communities to onboard their requirements. **Zoe Cournia** then presented the role of young/Early Career Researchers (ECR) in the adoption of Open Science, the FAIR principles and of EOSC overall. The ECRs role was acknowledged, as they usually take up the responsibility of implementing Open Science, FAIR and related data management tasks, while more advanced researchers may be "doing the research". It may also be worth considering partitioning the Open Science/FAIR practices from actual research. So, the EOSC toolset can be of great value to ECRs and thus it is crucial that they are made aware of the EOSC environment. It is also important that such tools are within their "comfort zone", so that they can use the EOSC services to a great extent. This requires that ECRs are well engaged in the EOSC process to be able to shape the tools so that they are usable and valuable.

Two use cases were presented. The first was presented by **Anne Fouilloux** via a relevant [demo](#) -well received by the audience - showing EOSC in practice. Open Science and the FAIR principles were demonstrated by using both thematic and generic EOSC services (the latter from generic service providers such as EGI and OpenAIRE), effectively opening science and citing data and outputs. In the feedback received via the interactive tools, especially from EOSC end users (a big part coming from the newly established EOSC Future User Group), it was made clear that such types of demonstrations should be promoted in future workshops.

Amazing demonstration by Anne Fouilloux [#UniversityofOslo](#) on [#EOSC](#) use in practice, [#FAIR](#) sharing and [#OpenScience](#) using thematic EOSC services and generic services from [@EGI_infra](#) [@OpenAIRE_eu](#) [#Rohub](#) towards their science opening and citing data and outputs!
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The second use case was presented by **Petr Čermák**, who stressed the importance of opening (i.e. publishing) usually non-public grant applications. The role of using scripts in the open science and research data lifecycle was valued (“scripts are the best metadata”), which can automate and speed up several processes. Finally, the role of provisioning of trustworthy data from the RIs and a possible certification of RIs inside EOSC (or via RDA), along with related RI user education on such provisioning of trustworthy data were highlighted. The key role and importance of use cases in EOSC, e.g. to facilitate research workflows, was identified and agreed by both panellists and the audience.

In the session outline, Suzanne Dumouchel brought up the “active reader” concept developed by Umberto Eco (1979), which could be built upon and applied in the EOSC context. The “active reader” has to build, contribute, create, and be engaged in the piece of work at the same level as the author but on the other side – they build the meaning and create the interpretation based on their context, knowledge, experience, and needs”. An EOSC researcher must be an “active user”, that is, they should be both receiving and producing knowledge, or data (“prosumer” = producer and consumer). To be an active user implies that you have both a delimited perimeter as well as freedom to adapt and play with different tools and services – this flexibility is very important in the development of EOSC.

Finally, the classification of the different EOSC actors/practitioners was discussed. These roles range from those with a time-limited interest, to experts doing/using open science (e.g. “EOSC promoter”, “Open Data enthusiast”, “Research mediator”). Furthermore, how do we divide responsibility between individuals and Research Infrastructures? For instance, with the example of “trustworthy data”, could RIs be certified in this regard? An EOSC practitioner could be an individual or an organisation.

For more information see the [session 2 summary presentation at the closing session](#) and related presentations.

Session 3

Session 3 - The EOSC added value for the thematic communities - How can RI end users benefit from EOSC - Chair: *Sara Garavelli*, CSC-IT Center for Science & EOSC-A Director [Watch the recording](#)

- EOSC services for the users: A vision for the future, co-designed between providers and users, *Yannis Ioannidis*, University of Athens & Athena Research Centre, EOSC Future coordinator – (interconnecting all the pieces/interfaces at EU/ thematic/ regional levels for the benefit of users) [Download the presentation](#)
- The current state of EOSC implementation facing users - how to reach the vision, *Sara Jones*, GEANT & EOSC-A director – (starting simple from data search, data catalogues, data management and transfer tools, common identification and access to resources (AAI), and developing further) [Download the presentation](#)
- The EOSC Science Clusters perspective: Clusters contributions to EOSC, *Ari Asmi*, University of Helsinki & ENVRI Science Cluster [Download the presentation](#)
- Concrete use cases
 - Use case 1: EOSC added value for RIs: The Covid-19 platform and BY-COVID project: Data interoperability across multiple disciplines, *Niklas Blomberg*, ELIXIR [Download the presentation](#)
 - Use case 2: EOSC added value from a regional project– EOSC NI4OS community tools, *Eleni Toli*, ATHENA Research Centre [Download the presentation](#)
 - Use case 3: EOSC added value for a thematic application – The FNS Cloud catalogue, *Karl Presser*, Premotec-FNS Cloud [Download the presentation](#)

Sara Garavelli set the scene of the session, explaining that its scope was first to portray the overall EOSC vision towards end users, along with its current state of implementation. Following this, the aim was to present concrete use cases, good practices, and approaches to the EOSC concept from world-class RIs and clusters, with emphasis on the added value for its users, via federating thematic resources (into EOSC) around 4 main areas: i) Thematic Clusters/RI data and tools, ii) Federated e-Infrastructure resources uptake iii) Open Science and FAIR data sharing within and across domains, iv) Policies towards a cultural change and work on skills. The main topics discussed in the session were the EOSC implementation vision and status, the role of the clusters for EOSC and the added value of EOSC for thematic communities, RIs and regions. According to **Yannis Ioannidis** the ultimate vision for EOSC towards users is that users

Subscribing with Yannis on the user-centric #EOSC vision for a modern, personalised and intelligent dashboard integrating all services and data from whatever source, thematic, EU, national...We need to care for the user [@EOSCFuture](#) [#ESFRIshapesEOSC](#)

EOSC Vision

1. Users have a **personalised dashboard** integrating **ALL services and data** necessary for their work
 - a. **Thematic (vertical)** - European, regional, national
 - b. **Generic (horizontal)** - European, regional, national
2. Users log in with their credential (**AAI**-Authentication and Authorization Infrastructure) and see the personalised environment
3. Users look for new services/datasets and the system is intelligent to recommend relevant services/datasets available (**Artificial Intelligence**)
4. The *system* includes various metrics, #downloads, ratings and comments, as in modern marketplaces
5. *Not a single portal for everybody*

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have a personalised dashboard integrating all services and data necessary for their work, either thematic (vertical) or generic (horizontal) at European, regional, and national levels. And EOSC should provide services and data that will make the work of researchers easier and more efficient. These different types of services and data are coming from existing e-Infrastructures and RIs, and the EOSC catalogue plans to be as inclusive as possible. EOSC will act as the “glue” making sure that these services and data are accessible and discoverable in a seamless way and thus re-useable by different users. Important to note that there won’t be a unique point of access – the EOSC portal is a key component but is only one of the access points. EOSC is a “system of systems”. Sara Jones then presented the current state of the EOSC portal and the related work of the EOSC Future project. Key points presented were the multiple authentication options, searching, selecting, and ordering services, along with finding research data. A new feature will be the provision of Artificial Intelligence-based recommendations to users for relevant to their work projects, data, publications, training materials or potential collaborators (people or communities). Ari Asmi stated that the ESFRI science clusters are acting as intermediaries between EOSC and the RIs with the aim of making the RI services re-useable in EOSC by other RIs. Clusters are also enabling platforms for the development of new thematic services, strengthening the alignment within ESFRI domains – this feature seems to be considered as added value by researchers. Clusters also have a key role in being a reference point for those building new RIs to understand the EOSC ready-to-use features (e.g. AAI, metadata etc.) that can be reused to avoid duplication of efforts. They have a key role as they have a good understanding of the existing landscape and can be key contacts for new RIs just starting out. EOSC brings to the clusters the potential for true interdisciplinarity by enabling more interdisciplinary data access and discovery and by providing more interoperable and ideally less expensive services.

Two thematic use cases were also showcased: the COVID-19 data platform & BY-COVID project by **Niklas Blomberg** and the FNS-Cloud use case (focus on food nutrition security) by **Karl Presser**. Both highlighted the value which EOSC can bring as follows:

- Identifying, referencing, and combining different data types has scientific value but also societal value
- RIs have developed solutions for domain specific needs that can be reused in other contexts, and combined with EOSC, can provide added value for the researchers
- EOSC can provide key building blocks for ESFRI RIs as well as national infrastructures/centres to strengthen their scientific services

An additional use case on the added value of EOSC on a region was also presented by **Eleni Toli**, the NI4OS Europe use case with a focus on South-Eastern Europe. Different regions have different needs, and different levels of maturity (including on policy, infrastructures, adoption, etc.) Tailored efforts are therefore needed to best support the region with EOSC adoption. Different requirements for EOSC can come from different regions: EOSC needs to be inclusive, embracing regional requirements and needs.

For more information see the [session 3 summary presentation at the closing session of the workshop and related presentations.](#)

Session 4

Session 4 - Feedback panel for users (Sessions 2-3): EOSC Added value for end users - Views on how the RI community can benefit from EOSC: EOSC developers, policy makers and funders face the users, Chair: *Kostas Glinos*, DG RTD, European Commission [Watch the recording](#)

Format: Plenary with panel discussion and interactive tools for feedback.

Panel: *Suzanne Dumouchel, Sverker Holmgren, Yannis Ioannidis, Sara Jones, Ari Asmi, Petr Čermák, Anne Fouilloux*

Feedback from the users on how to best ensure that the RI community and the actual end users can benefit from EOSC

- Introduction of the session by Kostas Glinos
- Feedback via on-line tools: a set of **pre-defined questions** are submitted via on-line tools to both the audience and the panel.
- Open discussion session: Users pose questions directly to panelists
- Summary of key points, Kostas Glinos and panelists

The discussion was centred around the following points:

- There is good knowledge of EOSC, but what became clear is that it is necessary to reach a wider collective knowledge on how to use and benefit from its services
 - The audience showed good overall knowledge of the EOSC ecosystem (even if biased by the context). However, there was a disparity with the level of knowledge about access and implementation of EOSC. 50% of people surveyed neither agreed nor disagreed that it is easy to understand the implementation of EOSC.
 - The panel responded to say that this was a fair comment – there are several steps with the development, and at first the EOSC providers and developers need to work on the invisible architecture to create interoperability between tools and collaboration between infrastructures. It was proposed that everyone sees the next stage as a new phase – informing the EOSC communities about the processes and services.
- Using the services does not necessarily mean that you need to know how they are implemented
 - It is intended that EOSC will be known through the services it provides – e.g. eduroam, world wide web.
 - If you are using these services, you don't necessarily need to know about EOSC specifics. Users just need to know what services they can use for doing what, with easy access, and use of those services.
- Rewarding researchers
 - Not only by tracking DOI citations. Open to all research outputs that are created (software, API, data, publications, scripts, etc)
 - But this is not enough – quality of research output should also be taken into account
- Clarity, simplicity, less technical wording
 - Evolving from the technical approach (still necessary) to a more scientific approach will be needed for the uptake of EOSC by RIs and end users.

Summary of conclusions:

- Improve visibility of EOSC through services and their efficiency
- Importance of rewarding data sharing: quality, and not only data, peer review, and not just publications (for research products/outputs)
- Outreach of EOSC: to be done directly through the users but also targeting intermediaries: e.g. libraries
- Significant improvements required on the EOSC platform – only 20% of people surveyed thought it was attractive. Also need to simplify access and improve understanding of the services
- Skills for researchers – linked to rewarding

For more information see the Annex of this document with the summary of the feedback received.

Session 5

Session 5 - How generic and thematic EOSC services can add value to the RI community,

Chair: *Per Oster*, CSC IT Center for Science [Watch the recording](#)

Present the latest developments and outputs on European, regional, thematic and transversal approaches from e-Infrastructure/EOSC thematic providers:

- The EOSC platform– current status and future plans for an ecosystem of EOSC portals at EU, regional, thematic, personal levels – *Klaas Wierenga*, GÉANT & EOSC Future [Download the presentation](#)
- Regional project: *Isabel Campos*, Spanish National Research Council (CSIC) & EOSC Synergy [Download the presentation](#)
- The ELIXIR authentication and authorisation tool– *Jonathan Tedds*, ELIXIR Europe [Download the presentation](#)
- A thematic marketplace: The SSH open marketplace, *Franciska de Jong*, CLARIN ERIC and SSHOC [Download the presentation](#)
- Quality of metadata: The FAIRsFAIR FUJ-I tool, *Robert Huber*, University of Bremen & FAIRsFAIR [Download the presentation](#)

The second day was focused on EOSC provider views and corresponding feedback. In this session there were 5 presentations from generic or thematic providers and a discussion following on from these. The first talk was on the EOSC platform by **Klaas Wierenga** related to the EOSC Future integrated project work and how the different generic and thematic pieces of the EOSC system of systems are being developed, adapted, interfaced and/or integrated. **Isabel Campos** presented the view from a regional project, EOSC Synergy, fostering EOSC uptake through a quality-based approach, integrating data, services, and software along with the required transversal quality and providing this service/software quality assurance as a service (Software/Service Quality Assurance “as a Service” - SQAaaS). A key requirement for this approach is to provide incentives to providers/developers to improve software, services, and data quality, so that users can recognize the quality and adopt (use) the EOSC corresponding components. A set of tools and services were presented, both generic and

thematic. **Jonathan Tedds** presented the ELIXIR Authentication and Authorisation Infrastructure (AAI) tool. Although the majority of life science services are openly accessible, in several cases sensitive data and licensed resources of course require strong security for access. The ELIXIR AAI enables researchers to use their home organisation credentials (or other) to sign in and access data and services they need, while also allowing service providers to control and manage the access rights of their users and create different access levels for research groups or international projects. The AAI tool has now been generalised to “Life Science Login” for the whole life science community / ESFRI science cluster through the EOSC Life project. **Franciska de Jong** then gave a talk on a marketplace in social science and humanities, and how such thematic marketplaces can provide services and added value for specific RI/user communities. This could be done by easing the work of the community with a set of tools and services around the marketplace, along with stimulating its usage and guiding the users, including the provision of training. The role of science cluster projects in RIs is crucial, contributing to the maturing of EOSC and the visibility of thematic services. Finally, **Robert Huber** presented a talk on the FAIRsFAIR F-UJI tool which automates assessment of the “FAIR” principles implementation and thus improves the “FAIRness” of research data. Key messages and lessons learnt from this effort were that automatised FAIR assessment of research data objects is possible. The FAIRsFAIR project is supporting a very large and diverse community with 5 pilots plus CESSDA, EOSC-NORDIC and DataverseNL, where a lot of feedback has been received and there is an iterative process with mutual improvements on both sides. It appears that the best use formula is to combine the automated F-UJI FAIR assessment tool with f2f consulting on the FAIR principles.

The most important conclusion from this session was that thematic research infrastructures and services are of definite value for their researchers, and for the broader community. If involved in RI, then it is natural that you are using the tools and should find them easy to use; the ambitions of RIs, especially those which are distributed, are to broaden the communities which benefit from their services. Generic e-infrastructure are of value for RIs when they are building their tools and practices. One point to bear in mind is that generic e-Infrastructures and RIs (especially distributed ones) build on national/regional/thematic labs around Europe. This is where there is more understanding and local knowledge of users, and closeness to users of these tools. There is engagement there, much greater than it may seem, when one thinks of EOSC as a top-down initiative. There is engagement with this which everyone in the workshop has demonstrated: how to take benefit from, make use of, enhance, and provide, services, and how to disseminate open science practices and FAIR principles to the research community.

Session 6

Session 6 - Feedback panel for providers (session 5): EOSC added value for thematic providers - Cross-fertilisation between thematic and generic providers, Chair: *Ignacio Blanquer*, Polytechnic University of Valencia & EOSC - A director [Watch the recording](#)

Format: Plenary with panel discussion and interactive tools for feedback

Panel: Klaas Wierenga, Isabel Campos, Jonathan Tedds, Franciska de Jong, Robert Huber

Feedback from providers from both thematic and generic infrastructures on:

- The connection of RIs (ESFRI and other world-class RIs) to EOSC and the added value of EOSC for the RI communities. I.e., what does EOSC bring to users of international RIs? (providers' perspective) (past-present)

- Bringing international RIs up to speed on Open Science and the FAIR policy agenda (past-present-future). (providers' perspective)

- Is the co-creation between providers and users of the EOSC vision presented by EOSC Future clear and well known? (present-future) (providers' perspective)

- Introduction of the session by *Ignacio Blanquer*
- Feedback via on-line tools: a set of **pre-defined questions**** (*see at the bottom of the page*) is posed via on-line tools to both the audience and the panel in parallel
- Open discussion session: Users pose questions directly to panelists
- Summary of key points – Ignacio Blanquer and panelists

This session had an active panel discussing and obtaining feedback on the previous session related to RI services from thematic (disciplinary) providers and from generic (horizontal) providers, and how their federation in the EOSC ecosystem can provide added value. Feedback was also sought on the efforts of both types of providers in the stimulation of Open Science practices and the implementation of the FAIR principles as part of main European, regional, or thematic projects.

The main topics were as follows:

- The added value of EOSC for the thematic providers, international RIs and science clusters
- Cooperation between thematic providers and generic providers in the context of EOSC
- The contribution of ESFRI and other world-class RIs as driving the federation of thematic e-Infrastructure services
- The role of national/regional initiatives/projects in the EOSC development

The main take away points from the discussions - mainly via contributions from the audience - comprised:

- The added value of EOSC was not yet clearly perceived by a significant part of the audience
- From the panel it was clear that EOSC will provide the backbone - core services, good practices, standards, interoperability guidelines and tools – needed to break the silos among disciplines and to avoid recurrently tackling the same problems
- It is key for (EOSC) success to explain that EOSC is not a competitor, but a way to improve access and collaboration
- Cooperation between generic and thematic providers is necessary. Although this is underway, it may not always be perceived by the user communities. This is a complex concept for the audience – this cooperation might not be transparent/clear for many of the participants (including end users).
- Creation of win-win situations among the different stakeholders and clearly defining the areas of required expertise across their interaction interfaces will foster collaboration and reduce competition that could prevent sharing resources and knowledge. Sometimes you have strong competition for points where it reduces cooperation.
- The role of the Science Clusters and RIs towards federation was clearly seen as effective in the EOSC ecosystem, smoothing such interaction interfaces.
- Federation of thematic providers in EOSC will bring highest-level researchers on board at the different disciplines for the benefit of EOSC.

- A good combination of bottom-up (driven by users) and top-down (driven by policy makers/funders) was deemed necessary and important, as the top-down approach sometimes has limited impact and does not reach a sufficiently deep level. On the other hand, top-down is needed to create the foundations for the federation to materialise.
- The role of ESFRI, which combines both the top-down (ESFRI Forum with national representatives) and the bottom-up (with RIs and their communities) was highlighted. ESFRI can bring together all the actors for the benefit of the end users.
- The role of national and regional initiatives was perceived as very relevant. However, national efforts may be bound by national policies, in some cases orthogonal to European-wide initiatives creating a sophisticated and demanding landscape requiring time to align efforts. And in some cases, this causes national initiatives to replicate efforts.
- EOSC and its governance should play a major role defining the technical and policy interfacing across stakeholders and services, including interoperability, in order to foster the convergence into the EOSC federation and for the whole ecosystem to work out well and bring added value to the end users.

For more information see the Annex of this document with the summary of the feedback received.

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1. Workshop Programme Committee:

- Mirjam van Daalen, Paul Scherrer Institute & ESFRI Task Force (TF) on EOSC Chair
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- Suzanne Dumouchel, French National Centre for Scientific Research (CNRS) & EOSC-A Director
- Sara Garavelli, CSC-IT Center for Science & EOSC-A Director
- Sverker Holmgren, Chalmers University of Technology, ESFRI Expert and chair of EOSC Association TF on Researcher Engagement and Adoption
- Fotis Karayannis, UKRI/STFC and StR-ESFRI2 support project

2. ESFRI Task Force on EOSC

NAME	ROLE	EOSC LINK
Mirjam van Daalen	TF chair, ESFRI CH delegate	exEOSC Sust WG, ExPaNDs/PANOSC
Jan Hrusak	ESFRI chair	ex-EOSC EB and EOSC Landscape WG
Yannis Ioannidis	ESFRI vice-chair/GR delegate	EOSC SB, e-IRG liaison, OpenAIRE coordinator
Inmaculada Figueroa	ESFRI vice-chair/ES delegate	EOSC SB
Ana Proykova	ESFRI EB/BG delegate	DIGIT Chair, EOSC Association, e-IRG delegate
Gelsomina Pappalardo	ESFRI EB/IT delegate	
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Eva Pastorkova	StR-ESFRI, ESFRI chair team	

3. All speakers who contributed to the workshop

4. All participants who participated and also contributed to the feedback sessions with valuable inputs.

Annexes (Annex 1-3 are separate files)

- 1. Annex 1 - Poll results from Slido feedback tool***
- 2. Annex 2 - Evaluation summary, attendance, and comms statistics***
- 3. Annex 3 - Zoom Webinar-Questions & Answers Report***
- 4. Annex 4 – More detailed summary of Session 1***

Annex 4

Session 1: More detailed summary

Jana Kolar, Session Chair

- The European Research Area (ERA) has the ambition to create a single borderless market for research, innovation, and technology across the EU.
- ERA action 1 dedicated to EOSC is the next step to open sharing, seamless access, and reliable re-use of research outputs
- It is important that we should be aligned with the ESFRI White Paper actions:
 - ESFRI will continue to support the development of EOSC
 - Europe should continue to support such developments
 - There is a vital need for data professionals and investment in their education
- ESFRI's Task Force on EOSC 3rd workshop: "What does EOSC bring to RI users?"
 - EOSC is often perceived as a top-down initiative. But it should not be just top-down, but also modelled and co-created by RIs and users!
 - EOSC cluster projects are key initiatives to bring users closer to the EOSC, through its development and implementation, but also through their use cases

Kostas Glinos: ESFRI and the EOSC in the renewed ERA

- The ESFRI-EOSC synergy works to everybody's advantage, for making best use of the huge amount of expertise in these two initiatives, and in taking all digital opportunities to enable a cultural shift in the way European researchers do science.
- **ESFRI RIs can act as mediators between end users and EOSC** by fostering the adoption of Open Science practices.
- The "New ERA" plans to combine the strengths of co-creation, mobilisation, programmatic alignment, and synergies at European and Member State level, together with open science, skills, and world-class, interconnected Research Infrastructures.
- **EOSC and RIs** are two key actions in the **ERA Policy Agenda**:
 - Action 1: Enable the open sharing of knowledge and the re-use of research outputs, including through the development of the EOSC
 - Action 8: Strengthen sustainability, accessibility, and resilience of Research Infrastructures in the ERA
- The success of EOSC will largely depend on a **change of culture** among the researchers towards openness

Mirjam van Daalen: Introduction and workshop scope

- **ESFRI is a strategic partner in EOSC**
- The ESFRI Task Force on EOSC is working at several levels:
 - Policy level, strategic level
 - Science clusters and thematic RIs
 - Horizontal service providers
 - TF strategic **liaison with EOSC Association**
 - EOSC Association Advisory Groups/Task Forces
 - Organises targeted meetings/workshops
- ESFRI Task Force on EOSC will continue to:

- Follow-up EOSC developments and build relationships with EOSC structures
- Coordinate ESFRI inputs to the EOSC activities
- Promote the RI community needs and their role to the EOSC co-design (together with stakeholders), uptake and sustainability
- Organise workshops in close cooperation with the ESFRI/EOSC cluster projects and the EOSC Association

Ute Gunsenheimer: The EOSC Association (EOSC-A) and its Working Groups and Task Forces

- EOSC-A has 234 member organisations, 161 members and 73 observers
 - 17 ESFRI Projects or Landmarks (P&L) are members
- EOSC-A has 5 Advisory groups and 13 task forces
- Close collaboration with Cluster projects
- EOSC-A proposes closer collaboration with ESFRI to plan stages of EOSC
 - Stage 2 of Multi-Annual Roadmap (MAR): 2023-2024
 - Establishment of dedicated format/channel
 - Active ESFRI (P+L) participation in upcoming MAR consultation
 - Collaboration with ESFRI for organisation of EOSC partner days