**Project acronym: CS3MESH4EOSC**

Deliverable D5.4: Communication & Stakeholder Engagement report

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# Glossary

| Acronym | Name |
|---|---|
| **API** | Application Programming Interface |
| **COVID-19** | Coronavirus Disease 2019 |
| **DEM** | Direct Email Marketing |
| **EFSS** | Enterprise file sync and share |
| **EGI** | European Grid Infrastructure |
| **EOSC** | European Open Science Cloud |
| **EOSC AG** | EOSC Advisory Groups |
| **ESFRI** | European Strategy Forum on Research Infrastructures |
| **EU** | European Union |
| **FAIR** | Findable, Accessible, Interoperable, and Reusable |
| **HEP** | High-Energy Physics |
| **HRB** | Horizon Results Booster |
| **KER** | Key Exploitable Results |
| **KPI** | Key Performance Indicator |
| **OCM** | Open Cloud Mesh |
| **RDA** | Research Data Alliance Association |
| **RI** | Research Infrastructures |
| **SIS** | Storage Information Service |
| **SRIA** | EOSC Partnership's Strategic Research and Innovation Agenda |
| **TF** | Task Force |
| **WP** | Work Package |

# Executive Summary

The main goal of the Communication & Stakeholder Engagement activities carried out under CS3MESH4EOSC WP5 was to raise awareness of, disseminate, and facilitate early adoption of the ScienceMesh, among target stakeholder groups.

The CS3MESH4EOSC "D5.4 Communication & Stakeholders Engagement Report", reports on the activities and achievements of the project, with a special focus from M19 (July 2021) to M42 (June 2023).

The main focus of the project from M19 was to consolidate stakeholder engagement for each target group by disseminating the ScienceMesh towards promoting uptake and a solid wider exploitation as soon as the service is open to the public. Aside from the dissemination of technical results, this period was also dedicated to further promoting dialogue and engagement with key stakeholder communities from research infrastructures and the European Open Science Cloud (EOSC) to better shape the ScienceMesh developments and identify priorities to be taken into account after the conclusion of the project.

The document is divided in specific sections, listing the key activities and achievements:

- Section 1 provides an overview of the CS3MESH4EOSC community, along with the established synergies
- Section 2 gives an overview of targeted promotion activities versus specific target stakeholders and promotion specific components of the ScienceMesh
- Section 3 lists outreach and communication activities
- Section 4 provides an overview of events organised by CS3MESH4EOSC, as well as its presence at third-party events
- Section 5 lists a quick overview of the Key Performance Indicators achieved
- Section 6 summarises and offers an overall conclusion

# 1. Overview of CS3MESH4EOSC Community and achieved KPIs

Through the project lifetime, CS3MESH4EOSC created an engaged community, including representatives of the key stakeholder groups identified by the consortium, interested in knowing more about the ScienceMesh services and in learning how to exploit them for their activities. The CS3MESH4EOSC consortium effectively coordinated efforts and activities in support of the dissemination of the different ScienceMesh assets towards its community, leading to the achievement in terms of engaged stakeholders as presented in the table below.

| Type | Results by end project | KPI by end project |
|---|---|---|
| **COMMUNITY** | | |
| Social Media Community | 904 Social media followers (293 Twitter, 592 LinkedIn, 19 YouTube subscribers) | 2.000 |
| Newsletter subscribers | 94 | 200 |
| Contacts in the CS3MESH4EOSC database | 268 | 300 |
| Synergies Established | 18 + 5 Use cases | 30 |
| **WEBSITE** | | |
| Website Sessions | 77,855 | 60,000 |
| Website users | 62,612 | 5,000 |
| Website page views | 153,136 | 100,000 |
| **COMMUNICATION MATERIALS** | | |
| Flyers | 3 | 3 |
| Rollups | 3 | 1 |
| Videos produced | 11 | 3 |
| Publications in Journals | 4 | 3 |
| Publications in Articles and Magazines | 6 | 6 |
| N° Press Releases | 2 | 3 |
| N° videos on YouTube | 28 | 30 |
| N° Podcasts | 4 | 3 |
| N° Public reports on ZENODO | 29 | 10 |
| **EVENTS** | | |
| Webinar participants | 559 | 150 |
| Podcast Listeners | 223 | 100 |
| ScienceMesh workshops participants | 165 | 200 |

| Type | Results by end project | KPI by end project |
|---|---|---|
| Presence at third-party events | 34 | 30 |
| **SCIENCEMESH**[1] | | |
| ScienceMesh OpenSource Commit Authors[2] | 59 | - |
| ScienceMesh OpenSource Commits[3] | 1187 | - |
| ScienceMesh users | • 500-800 users of new integrated application in ScienceMesh sites in production<br>• 20 test users of federated sharing functionality in pre-production | 3,000 |

*Table 1: CS3MESH4EOSC Community & other KPIs*

Most of the contacts listed in the CS3MESH4EOSC community database are based in Europe. The project was also able to attract interest from other continents (Australia, Brazil, Canada, USA, India, Indonesia, Japan, Jordan, Mexico, Nepal, Philippines, South Korea, Uganda, amongst others) thanks to the presence at third-party events outside Europe and organisation of sessions at events with a worldwide scope (almost 16 % of the contacts are from non-EU countries).

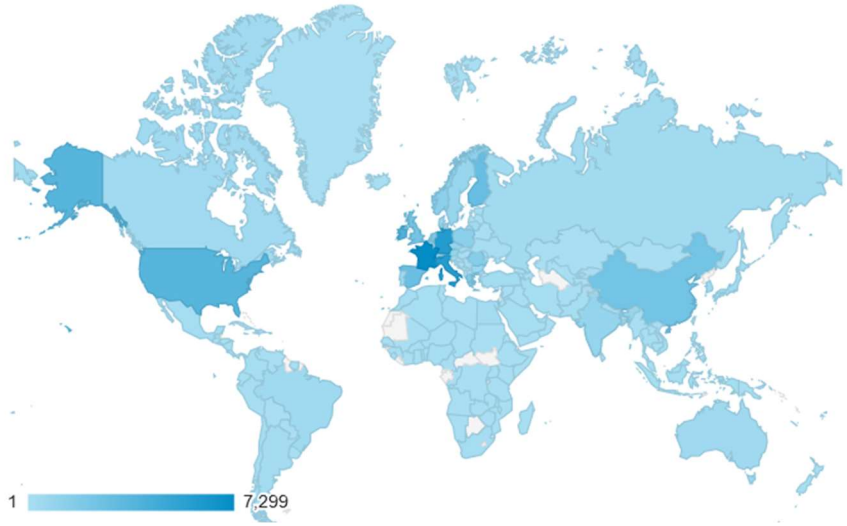


*Figure 1: Origin of CS3MESH4EOSC website visitors*

[1] Source: https://cauldron.io/project/7356?from_date=2019-07-05&to_date=2023-07-05&tab=overview

[2] Commit Authors: number of authors gives an idea of the size of the active community for a report. In this case, the number of different identities that authored at least one commit, or that submitted issues or reviews (pull or merge requests) to any repository.

[3] Commits: the most common measure of activity in a git repository. To compute it, we're considering all commits in all branches of all repositories in the report, excluding empty commits. Each commit represents a change to the source code, maybe touching several files.

More than half of the contacts in the CS3MESH4EOSC Community database are from Academia and Research (62 %), which is well aligned with the scope of the project, while the second largest sector is represented by commercial software developers, with about 10 %. Several audiences were involved through different CS3MESH4EOSC activities, such as the webinars, final event, sessions at third-party events, registrations on the website, reaching out to most of the intended primary stakeholders (see Figure 2).

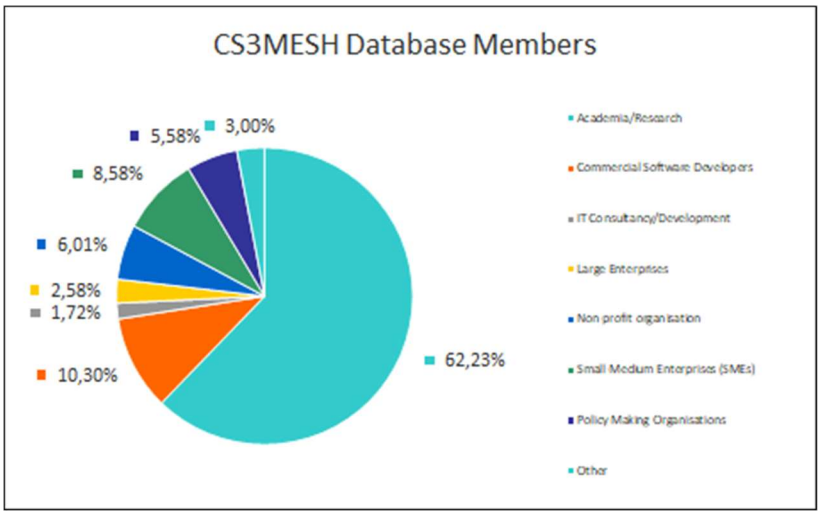


*Figure 2: Stakeholders Categories part of the ScienceMesh*

## 1.1 Synergies

During the course of the project, CS3MESH4EOSC focused on identifying relevant EU and international initiatives pertaining to data sharing and open science. The aim was to facilitate a structured dialogue that would foster alignment and clustering of common opportunities and goals. The established synergies, in conjunction with the existing collaboration within the context of use cases, as well as the cross-adoption of technologies, sought to enhance the scientific and economic potential and opportunities for exploitation of the CS3MESH4EOSC services.

At the 36-month mark, CS3MESH4EOSC has established partnerships with 18 projects (listed on the website[4]), initiatives, and organisations interested in collaborating (+ 5 use-cases[5]). The table below provides a list of the current synergies that have been formed. These

[4] https://cs3mesh4eosc.eu/synergies
[5] https://cs3mesh4eosc.eu/use-cases

synergies involve the integration of technologies into the ScienceMesh and encompass collaborations with both commercial and non-commercial entities. While the initiatives mentioned below primarily focus on technology integration, the synergies process can also be viewed more broadly, incorporating **technologies and use cases.**

| Organisation/Initiative | Description |
|---|---|
| Describo<br>UTS | The Describo technology has been integrated in the ScienceMesh, under "Open Data Systems" category of service. Describo is a tool to help researchers turn their folders of content into Research Object Crates suitable for sharing, reuse, and long-term preservation in archival systems. Describo is open-source software. |
| eduGAIN and the Open Cloud Mesh<br>GÉANT Networks • Services • People | eduGain and OCM are joint international initiatives under the umbrella of the GÉANT.<br>• eduGAIN's worldwide reach and the fact that all the founding mesh nodes are already on it make it a perfect fit for gateway to ScienceMesh.<br>• OCM is a fundamental technology for CS3MESH4EOSC and the ScienceMesh, as it provides the individual nodes with a fundamental mechanism that can be used to exchange data. Various use cases and workflows to be part of the project in further extensions to OCM. |
| EGI-ACE and CS3MESH4EOSC integration<br>EGI-ACE | EGI-ACE and CS3MESH4EOSC collaborated for the integration EGI Jupyter notebooks computing cloud with CS3MESH4EOSC storage cloud, in a seamless manner (without extra login). |
| eLabFTW, NRW.FDM, ULB and CS3MESH4EOSC Joint Undertaking<br>ULB | The CS3MESH4EOSC partner University of Münster (WWU) is linked to several eScience projects run in the state of North-Rhine Westphalia (NRW), such as the SCIEBO platform and the NRW research data management project. The Université Libre de Bruxelles, a respected observer of the CS3MESH4EOSC project, fosters a closer integration of eLabFTW with the ScienceMesh. |
| Enabling ScienceMesh activities into the ESCAPE DIOS<br>ESCAPE | The ESCAPE ESAP Work package aims to develop the ESFRI Science Analysis Platform (SAP) by building it upon existing EOSC services. These services are largely provided by the CS3 community in Europe. This aligns perfectly with the CS3MESH4EOSC project, which focuses on creating storage sharing by ensuring interoperability among existing storage services. Both projects share a common goal in developing the ESCAPE ESAP. |

| Organisation/Initiative | Description |
|---|---|
| FAIMS3 and CS3MESH4EOSC joint bid for the NeIC open call | FAIMS3 aims to create a digital data collection platform for geology, archaeology, and crop science, usable offline and in the field. Key features include data synchronization to a secure store when online and scheduling compute jobs on field data. CS3MESH4EOSC provides the required platforms. Both projects jointly bid for NeIC funding to integrate FAIMS3 with CS3MESH4EOSC. |
| FAIRsFAIR | The project was interviewed within FAIRsFAIR task 2.4, five semi-structured interviews with FAIR-enabling services. This work has been used as input for the basic framework on the FAIRness of services. |
| InvenioRDM | The aim of this synergy was the integration of publishing capabilities within the ScienceMesh, to allow the movement of data towards institutional and pan-European digital repositories; it involved the creation of plugins and modules which facilitate the integration between ScienceMesh applications and InvenioRDM-powered repositories. |
| Joint code development with Rclone | The CS3MESH4OSC Project funded the implementation of Rclone features needed to the advancement of the ScienceMesh. |
| Joint development work between HIFIS, CS3MESH4EOSC and GÉANT | Joint development work between HIFIS, CS3MESH4EOSC and GÉANT has been pursued with the aim of implementing group-aware sharing functionality and integration with REVA interoperability layer. |
| LOFAR | The aim was the creation of a tool that makes it easy for astronomers to get the data they need from the telescope to their processing and visualisation infrastructures. |
| Observatoire du Sahara et du Sahel | The support to the Observatoire du Sahara et du Sahel was meant for sharing and processing algorithms directly inside the environments and thus limit the possibility of collaboration between users. |
| PIONIER Classroom cloud services | Pionier is involved in one of the ScienceMesh use cases. |

| Organisation/Initiative | Description |
|---|---|
| Simplifying online collaboration for RISE_SMA | RISE_SMA uses ScienceMesh to support its research workflow, from collaborative editing to publishing of results (T4.2 and T4.3). |
| SSHOC | Collaboration with CS3MESH4EOSC regarding joint dissemination & communication activities. The aim was to promote the Open Data Systems service (one of the 4 categories of services in the ScienceMesh) to repositories in Social Sciences and Humanities. |
| SUNET | The aim of the synergy was to integrate SUNET drive as a node in the ScienceMesh as well as deploy a working setup of T4.2 (Open Data Systems) in Sunet's own premises. |
| The RO-Crate Open Data System | RO-Crate is a technology integrated into the ScienceMesh under the "Open Data Systems" (T4.2) category of service. The aim of the synergy was to deliver a "best practice" in formal metadata description accessible and practical for use in a wide variety of situations. |
| *ENVRI FAIR* | The tentative synergy with ENVRI-FAIR was meant to be a technology integration, but from a technical point of view, the synergy has not been finalised because of incompatibility of both projects workplans. From a communication point of view, the CS3MESH4EOSC project hosted one of their panellists in our event. |

*Table 2: List of Synergies from CS3MESH4EOSC*

Although not all of those synergies resulted in a final product, they all represented net contributions to the Project, be it through working deliverables, use case insight, outreach or networking opportunities. The consortium plans to preserve these synergies in potential future collaboration activities.

# 2. Targeted promotion of CS3MESH4EOSC versus target stakeholders

During the second half of the project, the main communication and dissemination focus was to promote the latest developments and functionalities of the ScienceMesh, to demonstrate the value proposition of the Project and increase the number of potential leads.

In the following paragraphs we have highlighted some of the target activities organised with the aim of specifically promoting and stimulating outreach and uptake of the ScienceMesh. They have been complemented with other outreach and communication activities, with a broader scope and audience, which are further detailed in chapters 3 and 4.

## 2.1 Visibility towards EOSC Community

EOSC is a crucial aspect within the scope CS3MESH4EOSC, being present even in the Project's own name. Special effort was dedicated in this second reporting period to ensure visibility for ScienceMesh towards the EOSC community. The alignment and cooperation with existing organisations, long-term projects, and other initiatives which support building the EOSC was fundamental to increase ScienceMesh success.

**EOSC dedicated webpage in CS3MESH4EOSC website**

The value proposition of ScienceMesh in the context of the EOSC was clarified in a **dedicated webpage**[6], easily available from the main menu of the project website. The reader can easily understand how ScienceMesh should be considered within the EOSC landscape.

[6] https://cs3mesh4eosc.eu/cs3mesh4eosc-eosc

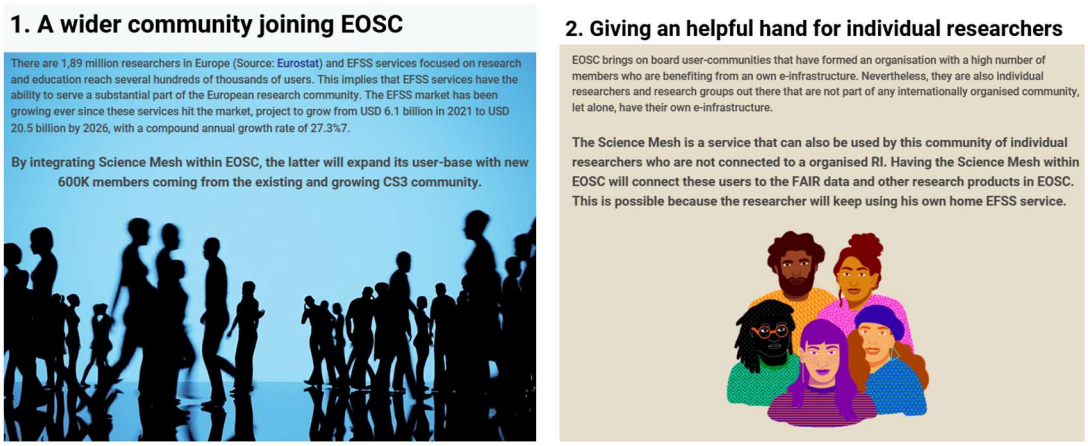


*Figure 3: Snapshots of the "Contribution to EOSC" webpage*

**Delivering for EOSC: CS3MESH4EOSC featured in the "Key Exploitable Results of the Horizon 2020 EOSC-related projects Report"**

Over the course of 2022, the EOSC Association produced a brochure-style document describing the Key Exploitable Results (KERs) of the Horizon 2020 EOSC-related projects still active as of the spring of 2022. The information was provided by the projects through a survey questionnaire that was developed in collaboration between the EOSC Association and the Research Data Alliance Association (RDA). The survey collected responses from 22 projects, which reported a total of 119 KERs, covering mainly technical and policy harmonisation efforts, virtual research environments, discovery/access platforms, training resources, knowledge centres and validation tools. The KERs identified in this survey of Horizon 2020 EOSC-related projects show strong correlations to the EOSC Advisory Groups (AG) topics, with maximum relevance for "Technical challenges in EOSC" and "Implementation of EOSC"; high relevance for "Metadata and data quality"; and satisfactory relevance for the AG topics "Research careers and curricula" and "Sustaining the EOSC".

CS3MESH4EOSC contributed to this effort and completed the survey, and a sample of the ScienceMesh and related KERs were featured in the report which was distributed and promoted at several key events by the EOSC Association, starting from the EOSC Symposium

held in September 2022 in Prague. The report was released as a full report[7] as well as a short summary report[8].

*Figure 4: Delivering for EOSC: Key Exploitable Results of the Horizon 2020 EOSC-related projects (Summary report), CS3MESH4EOSC KERs*

**"Exemplary Digital Services Enabling Open Science": CS3MESH4EOSC listed a contributor to the development and implementation of the EOSC**

In April 2023, CS3MESH4EOSC was mentioned as a H2020 project that is contributing to the development and implementation of the EOSC. CS3MESH4EOSC joined the projects Cos4Cloud and TRIPLE under the EU Horizon Results Booster[9] (HRB), an initiative that enables these projects to achieve a higher societal impact. These three projects are mentioned in the "Exemplary Digital Services Enabling Open Science" report[10]. This report was distributed and

[7] https://doi.org/10.5281/zenodo.7401539
[8] https://doi.org/10.5281/zenodo.7404164
[9] https://www.horizonresultsbooster.eu/
[10] https://zenodo.org/record/7886755#.ZFThBM5By5c

promoted not only on CS3MESH4EOSC channels, but also by the other 2 projects part of the cluster.

*Figure 5: Exemplary Digital Services Enabling Open Science – snapshots of CS3MESH4EOSC content*

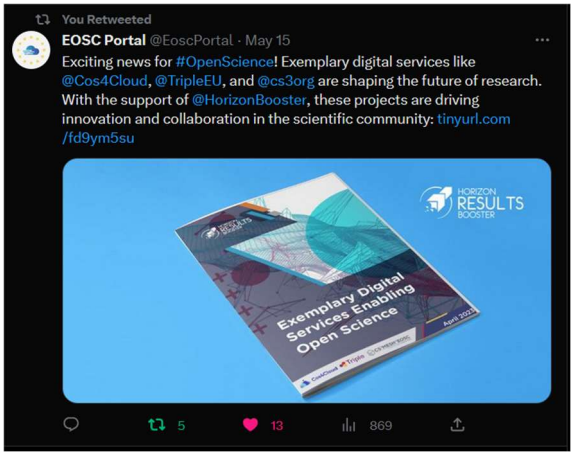


*Figure 6: EOSC Portal Twitter account promoting the HRB booklet*

By establishing this collaboration, Cos4Cloud, TRIPLE and CS3MESH4EOSC are working together to disseminate their practical results and showcase their potential impact on the uptake of Open Science practices across different communities.

CS3MESH4EOSC was also mentioned in a short-video pill[11], produced by HRB in February 2023, which is being used to promote this cluster of projects. At the time of writing of this report, this video has 105 views.

[11] https://www.youtube.com/watch?v=OO8Q1qNfWMA

**“EOSC in Practice Stories”: CS3MESH4EOSC within the “Bringing big science experiment data to the researchers’ fingertips” story**

The CS3MESH4EOSC collaboration with the ESCAPE project was listed as one of the EOSC Future[12] use-cases showing the value of the EOSC for research. The cases are named “EOSC in practice stories” and highlight how EOSC resources (i.e. tools or services) already existing or under development have provided practical support to researchers in their daily work. The stories also demonstrate the benefits of EOSC for a broad range of actors, often across multiple research domains.

The CS3MESH4EOSC and ESCAPE collaboration was presented as a practice story where researchers involved in large science projects (via the ESCAPE project) and citizen scientists or users interested in accessing big science experiment data for everyday research purposes (via the CS3MESH4EOSC project). This story is also publishedin the EOSC Portal website[13]. It is also available on ZENODO[14].

[12] https://eoscfuture.eu/

[13] https://eosc-portal.eu/news/eosc-practice-story-bringing-big-science-experiment-data-researchers%E2%80%99-fingertips

[14] https://zenodo.org/record/6463482

*Figure 7: CS3MESH4EOSC listed in the "EOSC in Practice Stories".*

### CS3MESH4EOSC visibility at EOSC community events

The consortium kick-started its presence at EOSC community events in November 2020, at the "Realising the European Open Science Cloud[15]" event. Since the project was still in its first phase, the consortium ensured the presence at the event through a virtual exhibition booth, where attendees could gather preliminary information about how CS3MESH4EOSC is creating an interoperable federation of data and higher-level services to enable friction-free collaboration between European researchers.

[15] https://cs3mesh4eosc.eu/news-events/events/realising-european-open-science-cloud

*Figure 8: "Building a FAIR research data landscape "event brand image (left) and CS3MESH4EOSC Virtual Stand (right)*

In June 2021, with the "first solid developments" of the ScienceMesh, CS3MESH4EOSC had an active role at the EOSC Symposium16 with 2 presentations, focused on how the ScienceMesh can help sustain EOSC, and how to make heterogeneous clouds talk to each other without muting the existing ones.

*Figure 9: EOSC Symposium 2021 branding (left) and snapshot of "Sustaining EOSC" presentation (right)*

During the EOSC Symposium in November 2022, ScienceMesh was referenced by EMBL-EBI during the "FAIR enabling practices" session. The presentation focused on how RO-Crate technology (part of the ScienceMesh Open Data System Services) may help users in adding rich metadata to existing data platforms and, therefore, supporting FAIR practices, which are crucial for a successful EOSC.

[16] https://cs3mesh4eosc.eu/news-events/events/eosc-symposium-2021

*Figure 10: EOSC Symposium 2022 branding (left) and snapshot of ScienceMesh visibility at the event (right)*

Dedicated event pages for each one of these events are available online, along with all related materials (e.g. event recordings, presentations, amongst others).

**CS3MESH4EOSC partners within the EOSC Task Forces**

The EOSC Association Task Forces (TFs) address key areas of the implementation of EOSC. They liaise with EOSC projects to offer feedback on developments, as well as identify strategic gaps and areas for investment to input to the SRIA, the EOSC Partnership's Strategic Research and Innovation Agenda.

CS3MESH4EOSC partners' members selected to shape the EOSC implementation through EOSC TF. A total of 6 CS3MESH4EOSC organisation partners were selected to join 7 different TFs and shape the EOSC development, from a fierce selection process which had over 540 applications. Thanks to this representation, CS3MESH4EOSC will support the next phase of shaping the EOSC, revolutionising how science is done.

A dedicated news piece was published to promote this achievement, along with social media promotion and newsletter.

| N | Task Force | CS3MESH4EOSC members |
|---|---|---|
| 1 | Researcher Engagement and Adoption | Sara Pittonet, Trust-IT Services<br>Silvia Kuipers, SURF<br>Angelo Romasanta, ESADE |
| 2 | Technical Interoperability of Data and Services | Jakub Moscicki, CERN<br>Mark van de Sanden, SURF |

| N | Task Force | CS3MESH4EOSC members |
|---|---|---|
| 3 | Long-term Data Preservation | David Antos, CESTNET<br>Gerardo Ganis, CERN<br>Maciej Brzezniak, PSNC |
| 4 | Financial Sustainability | Silvana Muscella, Trust-IT Services |
| 5 | Rules of Participation Compliance Monitoring | João Fernandes, CERN |
| 6 | Authentication and Authorization Infrastructure Architecture | Michiel Schok, SURF |
| 7 | Infrastructures for Quality Research Software | José Benito Gonzalez, CERN |

*Table 3: CS3MESH4EOSC partners within the EOSC Task Forces*[17]

**CS3MESH4EOSC & EOSC – Panels at ScienceMesh workshop & final event**

To better support the definition of a clear strategy and implementation plan to integrate ScienceMesh into EOSC, CS3MESH4EOSC engaged with representatives of the most important EOSC TFs considering the ScienceMesh scope.

During the ScienceMesh workshop in January 2022[18], the representatives of selected EOSC TFs, joined a panel session[19], along with a representative from the EOSC Association Board, to present the main priorities of their TFs and brainstorm how the work from the TFs and existing infrastructures and solutions developed by the CS3 Community can be brought together.

[17] Note: Some individuals listed here are members of CS3MESH4EOSC project partner organisations but are not directly involved in the CS3MESH4ESC activities.

[18] https://cs3mesh4eosc.eu/news-events/events/science-mesh-workshop-science-mesh-global-platform-scientific-collaboration

[19] https://youtu.be/Ibb6rWSDlAM?t=7072

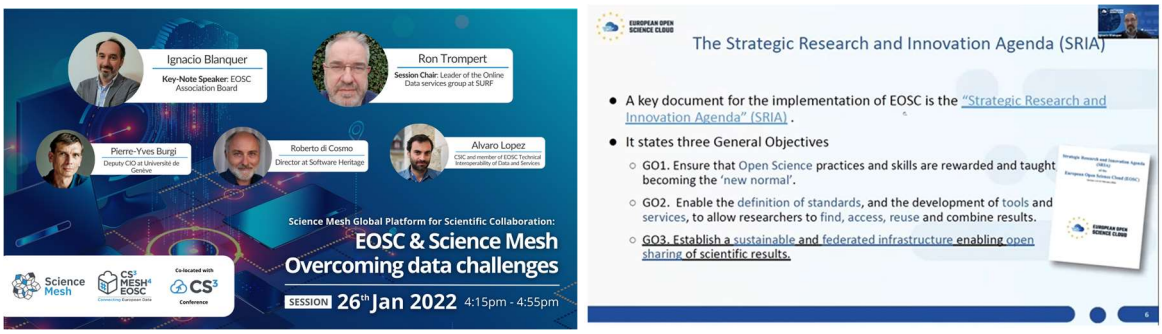


*Figure 11: Social Media Card promoting the "EOSC and ScienceMesh – Overcoming data challenges" session (left) and snapshot of Ignacio Blanquer presentation (right)*

| EOSC Membership | Representative |
|---|---|
| ***EOSC Association Board*** | Ignacio Blanquer, Universitat Politècnica de València |
| ***EOSC Long-Term Data Preservation Advisor TF*** | Pierre-Yves Burgi, *Université de Genève* |
| ***EOSC Infrastructure for Quality Research Software TF*** | Roberto di Cosmo, *Software Heritage* |
| ***EOSC Technical Interoperability of Data and Services TF*** | Alvaro Lopez, *CSIC* |

*Table 4: EOSC TFs represented in the ScienceMesh workshop 2022*

The scope of this session was more technical, since the ScienceMesh was still undergoing early technical development. The goal was to collect relevant information that should be considered for its next developments.

With a less technical scope, in June 2023, for the CS3MESH4EOSC final event[20], another panel discussion[21] was organised with not only the EOSC TF, but also experts involved in open science (from Europe and USA), to share their insights on how ScienceMesh could support the SRIA and brainstorm about the most pressing topics to be developed for a "borderless and seamless" open science in Europe and beyond.

[20] https://cs3mesh4eosc.eu/news-events/events/cs3mesh4eosc-final-event-science-mesh-unlocking-open-science-and-collaborative

[21] https://www.youtube.com/watch?v=UHAt1K8o70U&t=4805s

*Figure 12: Social Media Card promoting the "ScienceMesh Panel Discussion – ScienceMesh within the EOSC Strategic Research and Innovation Agenda (SRIA): recommendations, priorities and challenges" (left) and snapshot of life discussions during the event (right).*

| N | Speaker |
|---|---|
| 1 | Andrea Cristofori (EGI Foundation) |
| 2 | Kristi Holmes (Galter Health Sciences Library) |
| 3 | Jakub Moscicki (CERN) member of EOSC Technical Interoperability of Data and Services TF |
| 4 | David Antos (CESNET) member of EOSC Long-term Data Preservation TF |
| 5 | Gideon van den Berg (ESADE) member of Researcher Engagement and Adoption TF |

*Table 5: 1 Speakers that joined the panel, including the representatives of EOSC TFs*

The insights collected will support CS3MESH4EOSC consortium members to analyse future developments for the ScienceMesh, so its value proposition fits better with the today and future needs of stakeholders. Having an open science representative from the USA showed that there is potential for future collaboration scenarios and wider impact, outside European borders.

## 2.2 Visibility towards ESFRI clusters & new science communities

To better support the research user communities in their data sharing and synchronization challenges and to support the sustainability of ScienceMesh after the conclusion of the project, CS3MESH4EOSC targeted larger research communities.

This goal was kick-started firstly by engaging with the five members of the European Strategy Forum on Research Infrastructures (ESFRIs), which are also closely involved in EOSC

landscape. The purpose of the ESFRI clusters is to facilitate access to research data for incorporation into EOSC by developing shared data management methodologies, new services, and technical solutions in collaboration with European infrastructures and other EOSC-related projects. Each one of those 5 ESFRIs represents a different discipline and has strong links with research communities and projects, manages significant data volumes, and operates discipline-specific data analytics tools. ENVRI-FAIR is related to the environment, PANOSC with photon and neutron communities, ESCAPE with astronomy and particle physics, SSHOC with social sciences and humanities, while EOSC-Life relates to biological and medical communities.

*Figure 13: The 5 members of the ESFRI cluster projects*

Out of 5, a total of 4 of these projects (ENVRI-FAIR, PANOSC, ESCAPE and SSHOC) joined a panel discussion at the ScienceMesh 2022 workshop[22], entitled "Scientific disciplines embracing no border Research Environment thanks to ScienceMesh"[23]. The goal was to identify how the ScienceMesh, by teaming up with different research infrastructures, can support them in addressing their challenges related to data sync and sharing, while increasing the long-term sustainability of their services.

A representative from EUDAT, a cross-sectoral collaborative data infrastructure, which connects 25 research organisations and their data and computing centres, was also part of the panel.

[22] https://cs3mesh4eosc.eu/news-events/events/science-mesh-workshop-science-mesh-global-platform-scientific-collaboration
[23] https://youtu.be/Ibb6rWSDlAM?t=9237

*Figure 14: Social Media Card promoting the "Scientific disciplines embracing no border Research Environment thanks to ScienceMesh" session (left) and snapshot of PANOSC presentation (right)*

| Research Community | Representative |
|---|---|
| ENVRI FAIR | Zhiming Zhao, & University of Amsterdam |
| ESCAPE | Xavier Espinal, CERN |
| EUDAT | Mark van Sanden, SURF |
| panosc photon and neutron open science cloud | François-Perrin, The European Synchrotron |
| SSHOC | Mari Kleemola, University of Tampere |

*Table 6: Panelists part of "Scientific disciplines embracing no border Research Environment thanks to ScienceMesh"" during the ScienceMesh Workshop 2022*

During 2022, the CS3MESH4EOSC consortium liaised with each one of the ESFRIs clusters, to identify collaborations between both initiatives, namely how the ScienceMesh could support them in their research work. The timeframe of each project and their internal workplan were factors that had to be considered when analysing which joint-activities could be implemented. Table 7 recaps the results of these engagement activities.

| ESFRIs | Activities |
|---|---|
| | **Type of Collaboration:** Infrastructure or technical collaboration<br>• Exploring JupyterLab usage to integrate scientific calculations.<br>• Possibility for an ENVRI-FAIR developer to implement modifications in Data Science Environments services.<br>• Usage of ScienceMesh native inter-node data movement scheme being built to be used by ENVRI-FAIR as a data transfer benchmark. Possibility to do this work jointly with CS3MESH4EOSC partner SURF, also based in Amsterdam, which could work together with University of Amsterdam (ENVRI-FAIR partner).<br>**STATUS:** Did not proceed, due to incompatibility of CS3MESH4EOSC & ENVRI-FAIR work timelines. |
| | **Type of Collaboration:** Infrastructure or technical collaboration<br>• ESCAPE & CS3MESH4EOSC listed as an "EOSC in Practice Stories".<br>• Enabling the ScienceMesh activities into the ESCAPE DIOS, a scalable federated data infrastructure that allows an open access data service for the ESFRI projects within ESCAPE and concerned with Exabyte-scale data volumes.<br>• Exploring the integration of ScienceMesh within the ESAP (ESFRI Science Integration Platform), a science analysis platform built on top of existing services and elements in common with Science Mesh Data Science Environments. In the future, opportunity of sharing service nodes for operations across Europe.<br>**STATUS:** Done |
| | **Type of Collaboration:** Infrastructure or technical collaboration<br>• Inclusion of B2DROP, B2 STAGE and B2SHARE in the ScienceMesh catalogue of services<br>**STATUS:** Discussions in progress |
| | **STATUS:** Did not start the discussions due to lack of involvement of PANOSC consortium. |
| | **Type of Collaboration:** Joint dissemination & communications activities<br>• CS3MESH4EOSC was promoted at the SSHOC Final Conference "Advancing SSH Research with SSHOCingly good and sustainable resources[24]" by including the project Flyer in the delegate package given to over 90 participants.<br>• Promotion of the ScienceMesh at the SSHOC repositories internal meeting, organised in |

[24] https://sshopencloud.eu/events/sshoc-final-conference

| ESFRIs | Activities |
|---|---|
| | April 2022.<br>• Press Release[25] was distributed to almost 300 members of SSHOC Community, focused on Open Data Systems service.<br>The ScienceMesh was promoted to at least 300 individual members from the Social Science and Humanities who may become adopters of the ScienceMesh when the tool is available to the public.<br>**STATUS:** DONE |
| EOSC-Life | **Type of Collaboration:** Infrastructure or technical collaboration<br>• Usage of RO-Crate, a technology used as well within ScienceMesh, to better align plans on FAIR data/metadata.<br>**STATUS:** Discussions in progress |

*Table 7: Recap of discussions between CS3MESH4EOSC & ESFRIs*

During the CS3MESH4EOSC Final Event in Poznan (Poland)[26], a panel focused on trends & priorities for cross-border multi-disciplinary science collaboration was organised. The question was: how can Europe democratise access to both research tools and data across Europe and beyond, while maximising the impact of science? The panel brought together representatives of some of the ScienceMesh use-cases, as well as new communities and technical service providers which may be interested in joining the ScienceMesh.

By having these members together, the CS3MESH4EOSC consortium collected inputs concerning the most pressing needs and technical novelties required by these potential new user-communities, in order to better shape the ScienceMesh according to their needs.

[25] https://cs3mesh4eosc.eu/sites/default/files/2022-12/ScienceMesh%20Press%20Release%20-%20SSHOC%20April%202022.pdf
[26] https://cs3mesh4eosc.eu/news-events/events/cs3mesh4eosc-final-event-science-mesh-unlocking-open-science-and-collaborative

*Figure 15: Social Media Card promoting the "ScienceMesh Panel Discussion – Trends & Priorities for cross-border multi-disciplinary science collaboration & innovative technical partnerships" (left) and snapshot of life discussions during the event (right).*

| N | Speaker & science field |
|---|---|
| 1 | Xavier Espinal (CERN and ESCAPE) – Astronomy and Particle Physics |
| 2 | Andreas Klotz (HIFIS) – Interdisciplinary research IT infrastructure |
| 3 | Wojciech Stefaniak (PSNC) – Digital Education |
| 4 | Robert Schade (University of Paderborn and HPC.NRW) – High Performance Computing |

*Table 8: Panel's Speakers composed of representatives of EOSC TFs and new communities*

## 2.3 Promotion of ScienceMesh

Dedicated promotion activities to promote the ScienceMesh as a whole were put in place. Firstly, halfway through the CS3MESH4EOSC project, an illustrative image of the ScienceMesh (see Figure 16) was designed (with 2 iterations), to support engagement activities with stakeholders. It was designed in a way where the presenter can easily explain the ScienceMesh value proposition, regardless of if the audience being composed of researchers, service providers or software developers. The image was made available on the website, as well as on the communication materials produced since then.

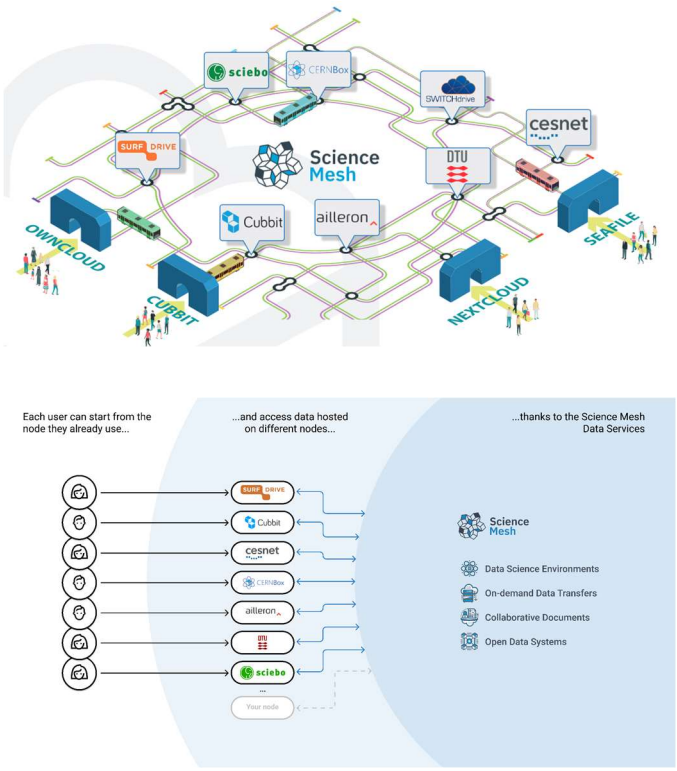


*Figure 16: Visual representation of the ScienceMesh (first iteration above and 2nd final iteration below)*

Two videos were designed, the first one[27] with an overview of the CS3MESH4EOSC and the ScienceMesh in the early stages of the project (December 2020). The second one[28], published in January 2023, focuses on the ScienceMesh and uses a compelling storyline, which describes the journey of a ScienceMesh user and how they can collaborate with colleagues from different organisations across borders.

*Figure 17: Snapshots of ScienceMesh first video (left) and second video (right).*

[27] https://www.youtube.com/watch?v=-gPZQm1PoCU
[28] https://www.youtube.com/watch?v=oZz2OQyXUxY

A video interview was done to CS3MESH4EOSC coordinators[29], when the project started its second phase (June 2022), to inform the audience about the main features of the ScienceMesh and give some highlights on the latest developments.

During the last months of the project, starting January 2023, 2 demo videos were produced that demonstrate how to join the ScienceMesh through the Enterprise File Sync and Share (EFSS) systems ownCloud and Nextcloud.

| N | Demo Video |
|---|---|
| 1 | Invitation Workflow with OwnCloud10 and NextCloud[30] |
| 2 | Data Sharing in OwnCloud oCIS & applications integration beyond local clouds with Open Cloud Mesh (OCM)[31] |

*Table 9: Demo videos for the ScienceMesh invitation workflows*

Posters and flyers were designed to promote the ScienceMesh at different key conferences, reaching different audiences. Table 10 provides an overview.

| N | Event |
|---|---|
| 1 | EGI Conference – October 2021[32] (poster) |
| 2 | TNC 2022 – June 2022[33] (poster) |
| 3 | CS3 Conference 2023[34] (flyer) |
| 4 | EGI Conference 2023[35] (flyer) |

*Table 10: Posters and Flyers promoting ScienceMesh at events*

## 2.4 Promotion of data services

Over the course of the second reporting period, the four ScienceMesh data services categories were promoted, not only with regards to their main features, but also the

[29] https://www.youtube.com/watch?v=N_C4RiefC7s
[30] https://www.youtube.com/watch?v=BZ4SPMbdxqQ
[31] https://www.youtube.com/watch?v=sXuMailUE9Y
[32] https://cs3mesh4eosc.eu/sites/default/files/2021-11/PosterA0_October2021_2%20%281%29.pdf
[33] https://cs3mesh4eosc.eu/sites/default/files/2022-06/CS3MESH4EOSC_Ultra_HD_Banner_May2022.pdf
[34] https://cs3mesh4eosc.eu/sites/default/files/2023-03/CS3MESH4EOSC%20Flyer_digital_compressed.pdf
[35] https://cs3mesh4eosc.eu/sites/default/files/2023-07/Science%20Mesh%20-%20Unlocking%20Open%20Science%20and%20Collaborative%20Research%20Landscape%20-%20Folded%20Flyer%20June%202023.pdf

individual technologies available within each one of them. A total of 4 podcasts episodes were organised, each one promoting a different use case (see chapter 4.1.3), as well 2 webinars where each one focused on two data services categories (see chapter 4.1.2).

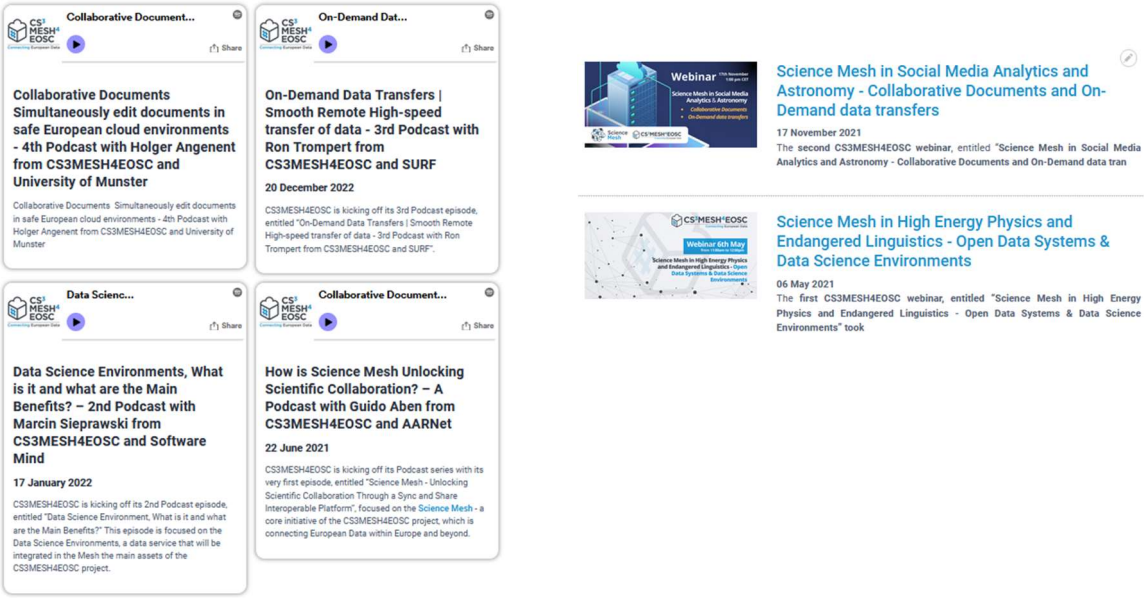


*Figure 18: Overview of CS3MESH4EOSC Podcasts and Webinars listed in the website*

A press release[36] was produced to promote the "Open Data Systems" data service to digital repositories in Social Sciences and Humanities, as a collaborative activity along with the SSHOC project. A poster[37] also focused on this data service was designed, to be showcased during the FAIR Digital Objects 2022 conference.

By 2023, 4 demo videos were prepared, demonstrating how to use the data services within the context of specific use-cases. These demo videos are valuable assets to support ScienceMesh users in understanding how to use the ScienceMesh features.

| ScienceMesh Data Service | Demo Video |
|---|---|
| Data Science Environments | • Earth Observation dashboards & web applications created with JupyterVoilà[38] |

[36] https://cs3mesh4eosc.eu/sites/default/files/2022-12/ScienceMesh%20Press%20Release%20-%20SSHOC%20April%202022.pdf
[37] https://cs3mesh4eosc.eu/sites/default/files/2022-11/Final_CS3MESH4EOSC_Poster_WEB_Oct2022%20%282%29.pdf
[38] https://www.youtube.com/watch?v=MBxAHRAW0nM

| | |
|---|---|
| | • JupyterLab sharing and collaborative editing[39] |
| Open Data Systems | • ScieboRDS Tutorial[40] |
| Collaborative Documents | • Connecting ScienceMesh and ESCAPE Data Lakes[41] |
| On-demand data transfers | • Connecting ScienceMesh and ESCAPE Data Lakes[42] |

*Table 11: Demo videos per each ScienceMesh data service*

Newspieces and social media messages were produced to promote the technologies within the ScienceMesh federation layer and the data services, as well as the EFSS part of the ScienceMesh.

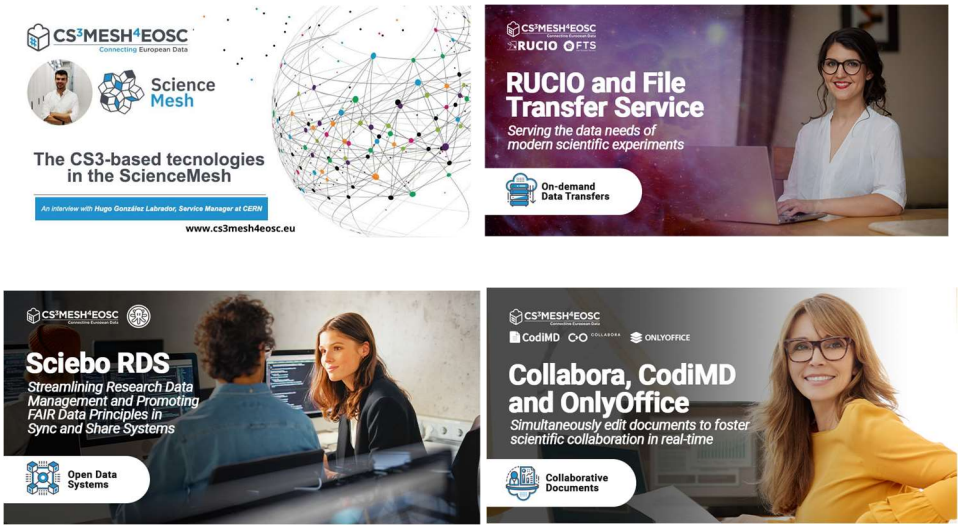


*Figure 19: Visual Cards to promote the ScienceMesh technologies*

[39] https://www.youtube.com/watch?v=z5ckKTVoPAk
[40] https://www.youtube.com/watch?v=ooFHIcC0mvs
[41] https://www.youtube.com/watch?v=Uh2nNJjfcOc
[42] https://www.youtube.com/watch?v=Uh2nNJjfcOc

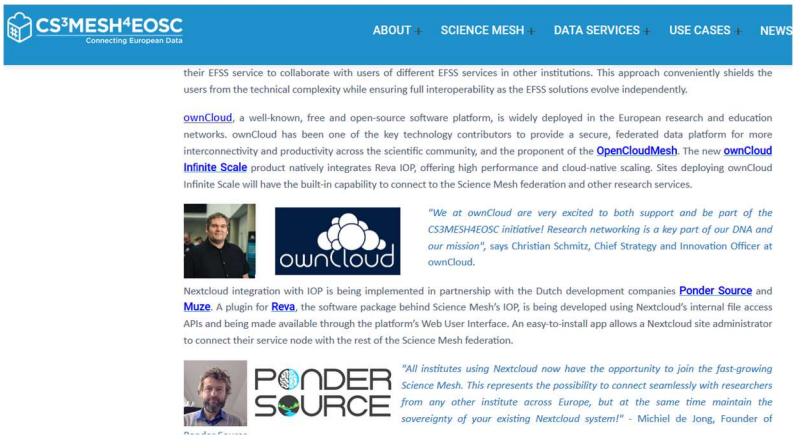


*Figure 20: Snapshot of the newspiece focused on EFSS technologies, with testimonials*

# 3. Outreach and Communication Activities

The objective of CS3MESH4EOSC is to prototype and interconnect data application services for research and establish an interoperable federation of data nodes, enabling seamless synchronisation, sharing, and deployment of applications and software. The development of these high-level services sets the foundation for a streamlined and barrier-free collaboration within the European Union. Furthermore, these services will be seamlessly integrated with the European Open Science Cloud, while upholding data-centric and FAIR (Findable, Accessible, Interoperable, and Reusable) data management principles. By leveraging the ScienceMesh, European research endeavours will benefit from increased efficiency, reliability, collaboration, and transparency.

The continuous communication strategy played a pivotal role in raising awareness about the project and its goals. It enabled effective dissemination of information, updates, and achievements related to the ScienceMesh services, ensuring that the wider audience remained well-informed and engaged.

The following chapters will detail the main communication and dissemination tools and channels which have been used for the promotion of CS3MESH4EOSC results:

- Project Website
- Social Media
- ZENODO Community
- Newsletter
- Press Coverage
- Communication Materials

## 3.1 CS3MESH4EOSC website

This section provides a comprehensive overview of the current characteristics of the CS3MESH4EOSC web site[43], which has been meticulously designed and developed taking into

[43] https://cs3mesh4eosc.eu/

account the evolution of the ScienceMesh. The initial redesign of the website took place during the Autumn of 2020 and has since undergone further enhancements.

Adhering to the CS3MESH4EOSC branding style, the website serves as a global map showcasing the project's development and implementation efforts, housing a wealth of information and content. Its primary objective is to serve as the main point of contact for stakeholders. Functioning as an integrated platform intended to provide its user community with informative and content-rich articles, as well as technical explanations of the ScienceMesh, the website has been designed with the notion of evolving alongside the project and catering to the community's needs.

To address the recommendations from the previous review and better inform the community, in October 2022, a significant restructuring of the website took place, **incorporating a new main menu and introducing new sections**. This revamp aimed to strategically highlight the different components of the ScienceMesh.

### 3.1.1 The Homepage

The Home page has been reconfigured to feature a more distinct and immediately captivating “Hero” section, effectively replacing the previous “carousel”. This alteration has allowed for more impactful delivery of the main message, complemented by an animated block adjacent to it, featuring a comprehensive video explaining the underlying principles of the platform (see Figure 21).

Immediately below the Hero[44] block, the ScienceMesh application groups are prominently featured, providing direct access to a comprehensive list of technologies. This facilitates easy identification and categorisation of these technologies using appropriate tags and descriptions.

[44] Hero block: the first thing people see when they visit a website. A hero section is the area that immediately shows up on the screen under your logo and menu.

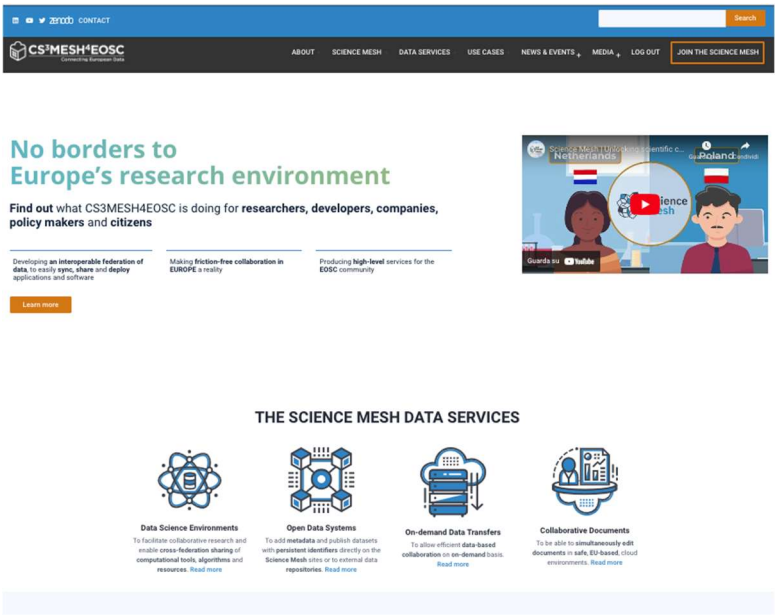


*Figure 21: CS3MESH4EOSC New Home page (top section)*

Following the main impact description and project mission, a user-friendly dynamic side menu is shown, facilitating easy navigation through various stakeholder categories. This menu enables users to scroll and explore the following stakeholder groups, while providing a comprehensive description of the benefits they can derive from the ScienceMesh platform:

- Service Providers
- Researchers
- Software Developers
- Policy Makers & Citizens
- System Administrators

*Figure 22: Stakeholders section in the homepage*

A new main menu was created, more intuitive and highly inspired by the different components of the ScienceMesh. Stakeholders can conveniently access information tailored to their specific roles and interests, gaining insight into how the ScienceMesh can positively impact their respective domains.

### 3.1.2 The New Menu

To provide a clearer and more comprehensive understanding of the ScienceMesh's structure, a newly reshaped menu has been introduced. This redesigned menu aims to outline the interconnected components and organisation of the ScienceMesh, ensuring an enhanced user experience and facilitating easy navigation through the platform's architecture.

The new menu on the project website details the taxonomy of the ScienceMesh key components and features. It engages and serves better each one of the individual stakeholder groups. Under the "ScienceMesh" menu, you will find dedicated sections for the following components:

- **Nodes:** The ScienceMesh is a federation of European cloud storage solutions that enables data interoperability and seamless collaboration among researchers. By connecting various cloud platforms (nodes) into a pan-European network, researchers can share data without relocating it. The geographically diverse nodes create a cohesive environment, simplifying policy and data management challenges, enhancing collaboration across Europe. Dedicated pages have been built for each node. The aim is to connect with ScienceMesh.io to become a service provider.
- **Technologies:** The ScienceMesh platform offers a wide array of integrated technologies. The revamped menu allows users to click on each of the four application groups' icons, providing detailed insights into the diverse technologies available. This empowers users to explore and understand the range of data services offered by the ScienceMesh.
- **Enterprise File Sync and Share (EFSS) Service:** EFSS is a service that enables users to store files in cloud or on-premises storage and access them seamlessly on various desktop and mobile devices. EFSS tools offer a secure means of sharing documents, photos, videos, and other content across multiple devices and among different

individuals. These tools utilise file synchronisation, which involves copying files to an authorised data repository, allowing employees to remotely access their files from different devices/stations that support the EFSS product. This fosters convenient and efficient collaboration, enabling users to work with their files wherever they are, on whichever device they prefer.

- **Federation Layer:** ScienceMesh achieves site and application interoperability using interoperable protocols and APIs. The federation layer incorporates existing technologies from various collaborators, enabling seamless connectivity between applications and the sync/share service.

The ScienceMesh features dedicated pages for each element contributing to its functioning. These pages provide in-depth information about the various components that come together to create a seamless and efficient research collaboration platform.

### 3.1.3 The ScienceMesh

The key asset of the project is the Federated Science Cloud Mesh ecosystem, prominently showcased on the dedicated website sciencemesh.io. To enhance understanding of the ScienceMesh, its functioning, nodes, and key technologies, a completely redesigned dynamic and interactive infographic has been introduced. This new design aims to provide a user-friendly and visually engaging representation of the ScienceMesh ecosystem, facilitating comprehension and exploration of its complexity.

This interactive drawing serves as a gateway to the dedicated website and provides users with direct access to the actual ScienceMesh platform (sciencemesh.io). By clicking on the image, users are seamlessly redirected to the website, where they can further explore and engage with the platform's features, resources, and community. This streamlined access ensures a smooth transition from the interactive image to the comprehensive functionalities of the ScienceMesh platform.

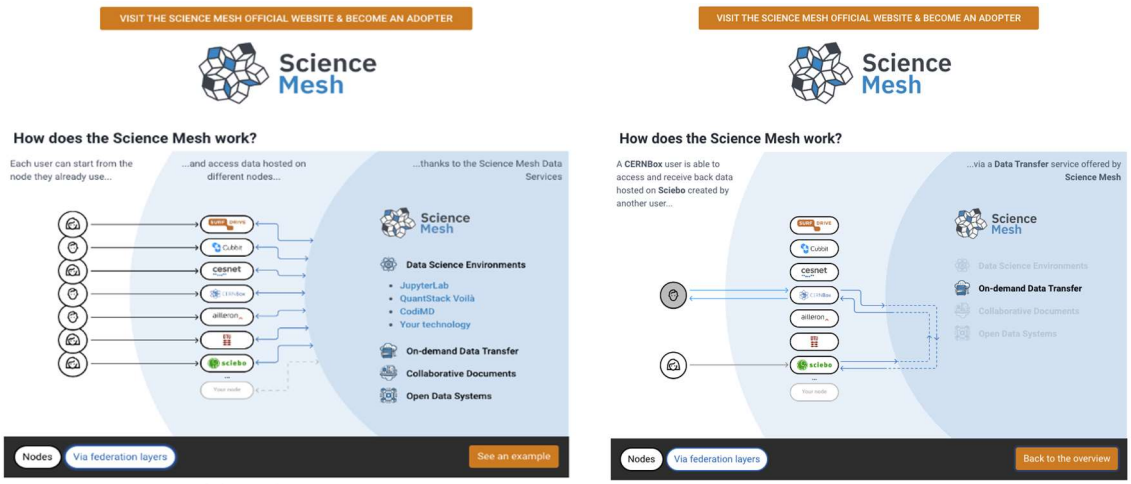


*Figure 23: The ScienceMesh interactive image in the CS3MESH4EOSC website*

### 3.1.4 Statistics

The figures concerning website visitors and sessions are documented in the table provided in paragraph 1. Upon analysing the traffic patterns during the last phase of the project, some observations can be made.

*Figure 24: CS3MESH4EOSC.eu website statistics (with "peak" analysis)*

During the EGI conference in Poland in June 2023 and the preceding conference in Barcelona in March 2023, a noteworthy peak was observed in the statistical data. This temporal correlation implies a substantial surge in website activity and user engagement during these specific events. The coincidence of the peak with the timing of these conferences indicates

a heightened interest and participation from the audience, due to the dissemination of relevant information, discussions, and interactions that took place during these gatherings. The statistical data reflects a pronounced upswing in user interaction, suggesting that the events played a pivotal role in attracting and captivating the attention of a larger audience, thereby resulting in increased website activity and engagement levels.

## 3.2 Social Media

Including social media communication in the overall communication activities of the project brought several significant benefits. Firstly, it allowed for a wider reach and increased visibility, as social media platforms have a vast user base, enabling the project to connect with a larger audience. Through social media, the project effectively engaged with stakeholders, including Service Providers, Researchers, Software Developers and Policy Makers, fostering a sense of community.

The table below indicates the results achieved so far on the project's social media channels.

| Social Media Channel | Result by M42 |
|---|---|
| Twitter[45] | 293 Followers |
| LinkedIn[46] | 592 Followers |
| YouTube[47] | 19 YouTube subscribers, 28 Videos, 1,400+ total views |

*Table 12: CS3MESH4EOSC Social Media Statistics*

Tailoring the content posted on social media to make it resonate with each stakeholder group has been another advantage. By understanding the specific interests, needs, and preferences of different stakeholders, the project targeted them with relevant content, using when relevant hashtags. This approach enhanced the impact of communication activities as stakeholders are more likely to engage and respond positively when the content speaks directly to their interests.

[45] https://twitter.com/cs3org
[46] https://www.linkedin.com/company/cs3mesh4eosc/
[47] https://www.youtube.com/channel/UCHKcZEkMqXjCvc3MLFjFxbw

Social media was used as a powerful tool to invite the community to join, interact, and be actively involved in activities of the project. Furthermore, social media allowed for the dissemination of project updates, achievements, and important information in a timely manner. Through regular posts, updates and announcements, the project kept stakeholders informed and engaged, ensuring that they were always up to date with the latest developments (e.g. events, interviews, newspieces, podcast, amongst others).

*Figure 25: LinkedIn posts promoting several types of project updates*

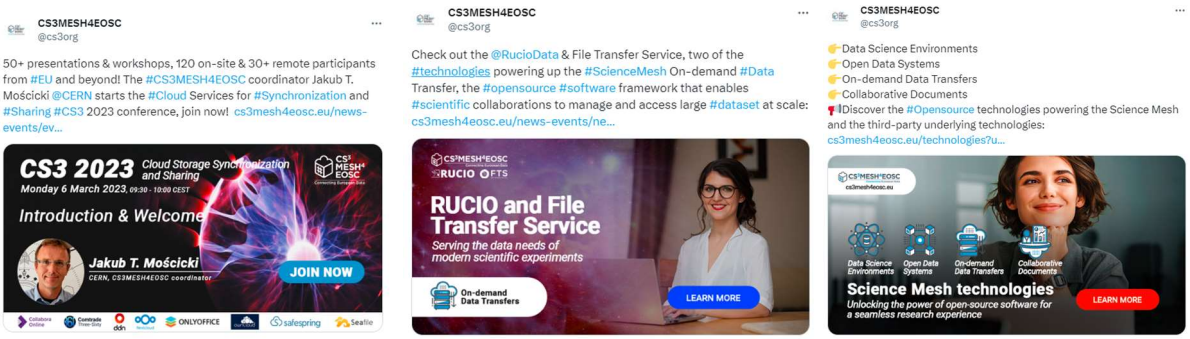


*Figure 26: Tweets with several types of project updates.*

### 3.2.1 LinkedIn

Including LinkedIn in the communication strategy proved to be beneficial, since it expanded CS3MESH4EOSC reach, fostered meaningful connections, and established a strong presence within the professional sphere.

Through consistent posting and engagement, a clear growth in CS3MESH4EOSC LinkedIn followers was achieved. Since July 2021, the followers have grown by over 168 %, from 350 to over 590+ LinkedIn followers as of July 2023. This result is due to the level of engagement achieved on this platform. Over the past year (July 2022 - July 2023), CS3MESH4EOSC content

on LinkedIn has achieved 7,600+ impressions, which is a clear indication that using LinkedIn has been a resounding success in amplifying the impact of project communication efforts.

In the figure below we present a visual overview of the job functions of the CS3MESH4EOSC LinkedIn page followers, over the last year. The audience mostly consisted of people from "Engineering" (18.2%), followed by "Information Technology" (9.8%), which is highly favourable data as it indicates the successful alignment of our activities on LinkedIn with our targeted stakeholders.

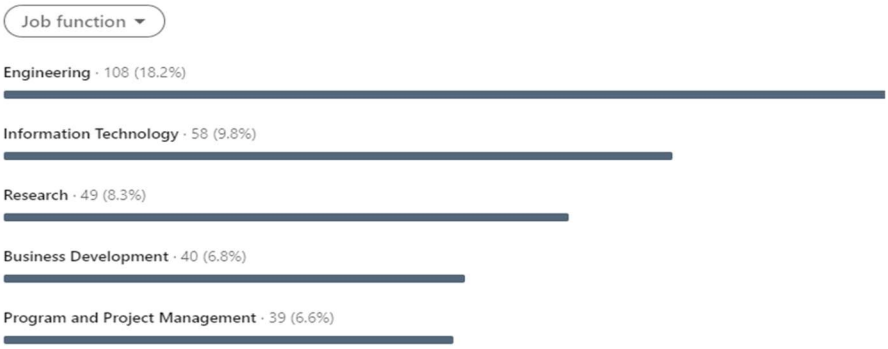


*Figure 27: Job Functions of the CS3MESH4EOSC LinkedIn page followers (July 2022 - July 2023)*

The overall communication strategy has proven to be a two-way avenue with our social media strategy. Examples of this virtuous effect are evident in the successful coverage of the project participation at the CS3 conference in March 2023. The LinkedIn posts related to this event generated a significant increase in impressions on our page, further enhancing the visibility and reach of the project.

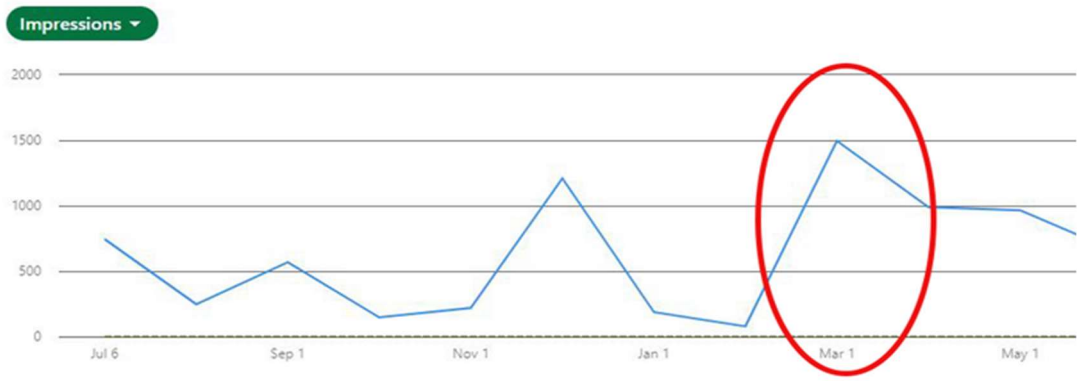


*Figure 28: LinkedIn impression in March 2023*

### 3.2.2 Twitter

Just as with LinkedIn, by consistently sharing content and updates on the project activities, events and results, CS3MESH4EOSC experienced noteworthy growth in its Twitter follower base. Since July 2021, followers have gone up by over 150 %, reaching a surge from 190 to over 290+ as of July 2023. This significant increase is a testament to the growing interest and recognition of our project within the research community on Twitter.

The project fully leveraged the concise and real-time nature of Twitter to provide live coverage updates of the CS3MESH4EOSC events. This strategic approach has yielded exceptional results in terms of impressions, allowing CS3MESH4EOSC to engage a wider audience and create a significant impact within the Twitter community.

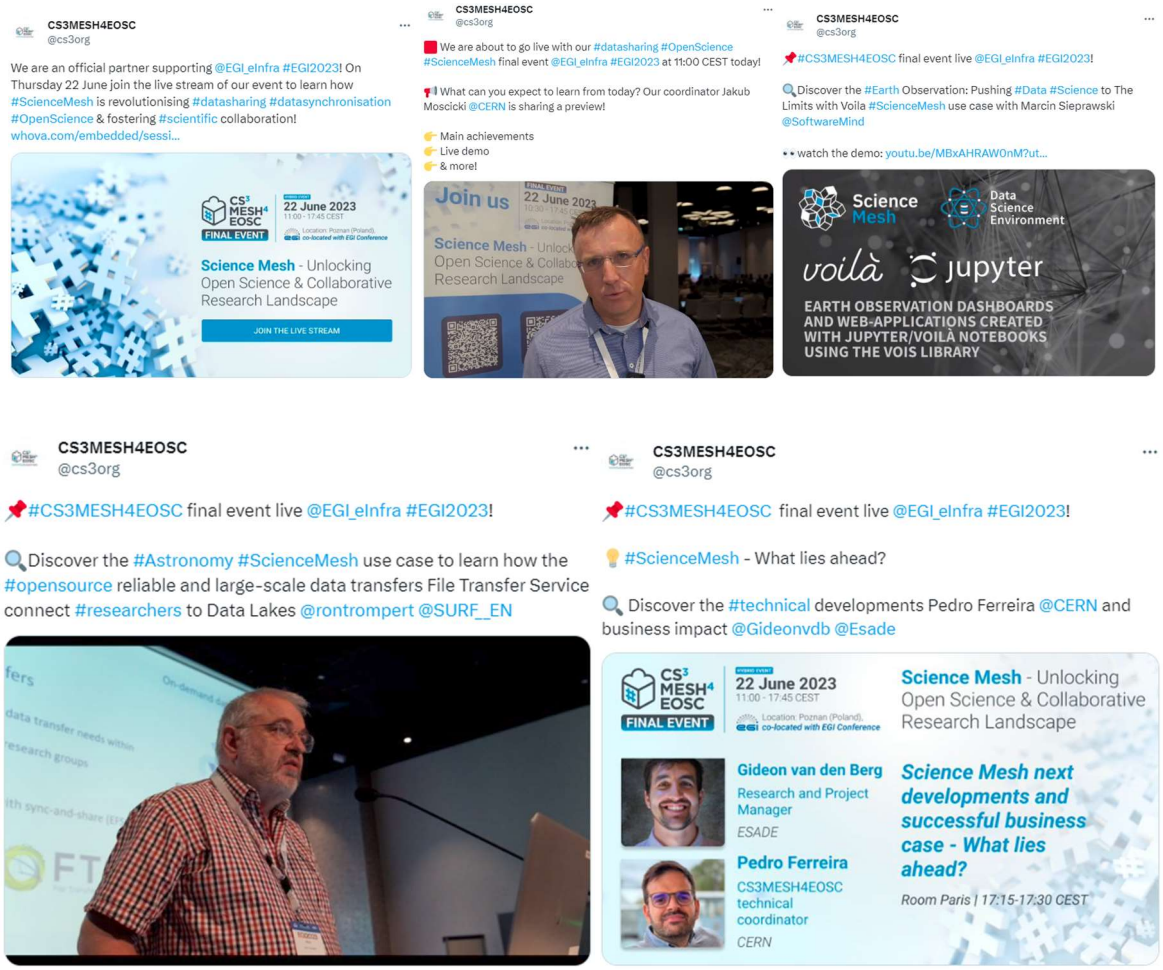


*Figure 29: Examples of different Twitter types of content during the project final event at EGI2023*

Throughout this year (July 2022 - July 2023), the Project's Twitter content achieved an astonishing number of 18,100+ impressions, highlighting the remarkable Twitter potential in maximising the reach and impact of CS3MESH4EOSC communication efforts. As an example, during the period of April-June 2023, the account reached an average 115 impressions per day, and on Thursday 22 June 2023 alone (the first day of the CS3MESH4EOSC final event), the result was higher, with 2,000+ impressions.

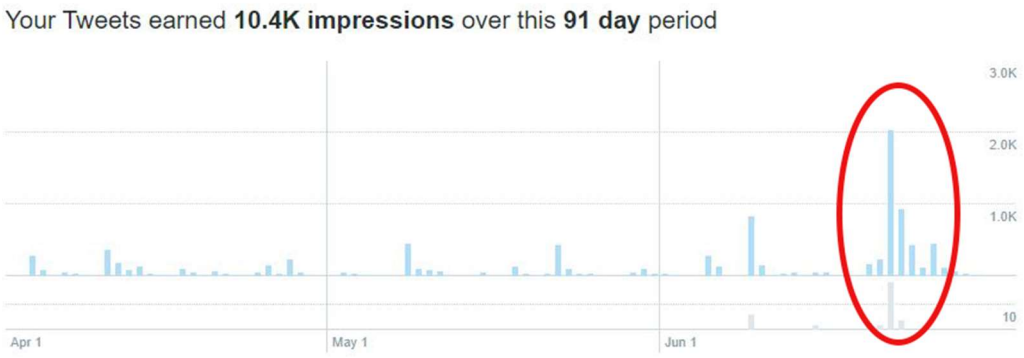


*Figure 30: CS3MESH4EOSC Twitter live-event coverage impact on impression*

Although the follower growth on Twitter may have been more modest compared to LinkedIn, the Twitter live-event coverage has proven a winning strategy as shown by the astounding number of impressions that the channel has achieved for the various events, as shown in the images below.

### 3.2.3 YouTube

CS3MESH4EOSC used YouTube as a vehicle to share research findings, educational content and scientific breakthroughs with a global audience. The platform's wide reach and accessibility make it an effective tool for raising awareness about the project and attracting interest from both the scientific community and the general public alike.

The visual nature of video allows for clear and engaging communication of complex scientific concepts, making it easier for viewers to understand and connect with the research.

By leveraging YouTube, the project managed to enhance its visibility, establish thought leadership and ultimately contribute to the advancement of scientific knowledge thanks to its 1,400+ total views from 28 published videos:

- Event recording: 15
- ScienceMesh demo video: 9
- CS3MESH4EOSC project introduction and results: 2
- CS3MESH4EOSC consortium meetings: 2

## 3.3 ZENODO Community

CS3MESH4EOSC has employed ZENODO as part of its communication strategy since the beginning. ZENODO provides a reliable and long-term repository for hosting and sharing research outputs, ensuring the project's work is accessible to the wider scientific community. Furthermore, ZENODO enables the project to assign persistent identifiers (DOIs) to its publications, enhancing their discoverability and facilitating proper citation in line with the FAIR principles.

The project is using ZENODO to effectively disseminate its findings and contribute to the open science movement. In fact, by the time of writing of this document, CS3MESH4EOSC has currently 41 active publications on ZENODO, encompassing various types such as:

- 15 Publications, of which:
    - 12 Deliverables
    - 1 Article
    - 1 Conference paper
    - 1 Report
- 14 Presentations
- 2 Posters
- 10 “Other materials” (e.g. ScienceMesh Glossary, ScienceMesh Service Operations Security Policy and more).

We expect the number of publications to increase as the consortium will keep uploading them after the submission of this document. The "ScienceMesh Policy Framework Constitution[48]"

[48] https://zenodo.org/record/5040152

(112 downloads) and the "ScienceMesh Glossary[49]" (92 downloads) are the most downloaded documents, indicating a strong interest in the Project's governance.

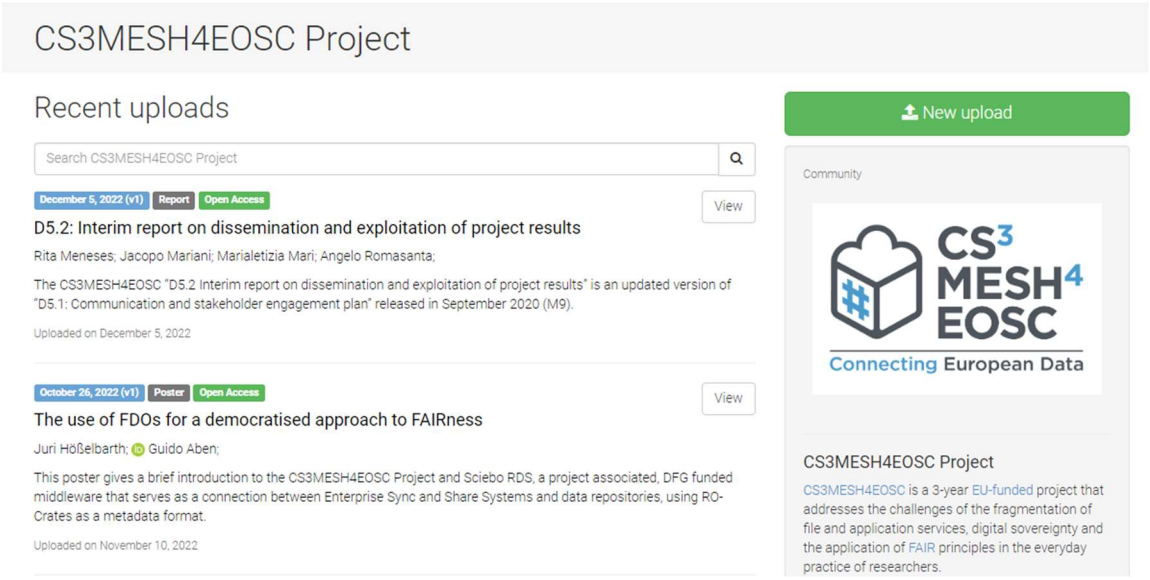


*Figure 31: CS3MESH4EOSC ZENODO community*

## 3.4 Newsletters

Despite the digital revolution brought about by social media platforms, newsletters remain a potent means of converting community members into active participants in our project's activities.

This is due to the fact that sending newsletters allows for one-to-one engagement with individuals who expressly demonstrate their interest in the subject matter. Unlike social media platforms, where content creators are at the mercy of opaque algorithms, newsletters ensure that nearly all of our subscribers receive our email updates.

With this, the project could deliver targeted and impactful messages to a receptive audience, fostering deeper connections and empowering our community to take an active role in shaping the project's success. This makes newsletters an invaluable tool for driving high

[49] https://zenodo.org/record/6078048

engagement and participation, particularly during important events such as the CS3MESH4EOSC participation in the TNC23[50] event and the project final event[51].

Through 10 newsletters[52], we have successfully delivered details about upcoming and past events, achievements and milestones of the work plan, articles published on the website and relevant messages about the project updates to a dedicated audience of almost 100 recipients. CS3MESH4EOSC newsletters have effectively increased the engagement of our community with the project activities and ensured that our project's progress and achievements are communicated with precision and impact.

| N° | Title | Date |
|---|---|---|
| 1 | The First CS3MESH4EOSC Newsletter is officially out![53] | January 2021 |
| 2 | CS3MESH4EOSC Newsletter April 2021: Webinar 6th May, Trust between users based on sites federated in the ScienceMesh, Interviews and much more[54] | April 2021 |
| 3 | CS3MESH4EOSC Newsletter October 2021[55] | October 2021 |
| 4 | CS3MESH4EOSC – TODAY Join us at "ScienceMesh – Unlock scientific collaboration through technology" session during the Virtual SciDataCon 2021 | October 2021 |
| 5 | CS3MESH4EOSC – Join us on the 17th of November at 1pm CET at the 2nd WEBINAR "ScienceMesh in Social Media Analytics and Astronomy" – Register now![56] | November 2021 |
| 6 | CS3MESH4EOSC Newsletter January[57] | January 2022 |
| 7 | CS3MESH4EOSC – Save the date! Join us on the 6-8 March 2023 in Barcelona for the CS3 Conference[58] | December 2022 |
| 8 | CS3MESH4EOSC – Save the date! Join us on the 6-8 March 2023 in Barcelona for the CS3 Conference[59] | January 2023 |

[50] https://mailchi.mp/60b4413f4d51/cs3mesh4eosc-newsletter-january-6041587?e=[UNIQID]
[51] https://mailchi.mp/34b294464f1a/cs3mesh4eosc-newsletter-january-6043928?e=[UNIQID]
[52] https://cs3mesh4eosc.eu/media/media-kit#:~:text=CS3MESH4EOSC%20Newsletters
[53] https://mailchi.mp/e18fdda2b9cb/december-2020-newsletter-3595654
[54] https://mailchi.mp/66a2f5669c50/cs3mesh4eosc-newsletter-april-2021-webinar-6th-may-trust-between-users-based-on-sites-federated-in-the-science-mesh-interviews-and-much-more
[55] https://mailchi.mp/50a34599f019/cs3mesh4eosc-newsletter-october-2021
[56] https://mailchi.mp/0eec9eb5d699/cs3mesh4eosc-today-join-us-at-science-mesh-unlock-scientific-collaboration-through-technology-session-during-the-virtual-scidatacon-2021
[57] https://mailchi.mp/6f704f603c83/cs3mesh4eosc-newsletter-january
[58] https://mailchi.mp/cd34df7acd7f/cs3mesh4eosc-newsletter-january-6010247?e=%5BUNIQID%5D
[59] https://mailchi.mp/1c43dfedfa22/cs3mesh4eosc-newsletter-january-6023207

| N° | Title | Date |
|---|---|---|
| 9 | CS3MESH4EOSC – Join us on 22/06/2023 for our Final Event at EGI2023 – REGISTER NOW![60] | May 2023 |
| 10 | REGISTER NOW! On-site registration closes today at 11:59 PM – CS3MESH4EOSC Final event 22 June 2023[61] | May 2023 |

*Table 13: CS3MESH4EOSC sent newsletters*

*Figure 32: Top section of a CS3MESH4EOSC newsletter*

## 3.5 Press Coverage

Publishing papers and articles, either in scientific journals or other international conference proceedings, was an important component of the CS3MESH4EOSC project's communication strategy, helping to enhance its visibility, credibility and impact. Publishing papers in reputable journals allowed the project to reach and promote the ScienceMesh to a wider audience of researchers and stakeholders in the field, increasing the dissemination of project findings and advancements. Additionally, it established CS3MESH4EOSC's contribution to the existing body of knowledge and enhanced the project's long-term impact, as they become a lasting reference for future studies. CS3MESH4EOSC has published:

- 2 Press releases

[60] https://mailchi.mp/60b4413f4d51/cs3mesh4eosc-newsletter-january-6041587?e=%5BUNIQID%5D

[61] https://mailchi.mp/34b294464f1a/cs3mesh4eosc-newsletter-january-6043928?e=%5BUNIQID%5D

- 7 Papers and articles (published in journals, external websites or as presentations at scientific international conferences)

| N | Title | Type | Website/Conference | Publication date |
|---|---|---|---|---|
| 1 | ScienceMesh: Unlocking novel modes of academia-industry collaborations | Paper | CACM Europe Workshop | - |
| 2 | From Potential to realised impacts: the bridging role of digital infrastructures in FAIR Data | Paper | European Conference on Information Systems 2022 | - |
| 3 | CS3MESH4EOSC: Supporting everyday practice of researchers in Europe and beyond | Article | Trust-IT Services website | December 2020 |
| 4 | CS3MESH4EOSC – Uniting European Data Services for Seamless Data driven Science through a Global Collaboration Platform | Press release | - | January 2021 |
| 5 | CS3MESH4EOSC – Uniting European Data Services for Seamless Data driven Science through a Global Collaboration Platform | Paper | CONNECT - The magazine from the GÉANT Community | March 2021 |
| 6 | FAIR Data through a federated clound infrastructure: Exploring the ScienceMesh | Paper | ECIS 2021 Research-in-Progress | June 2021 |
| 7 | Supporting Data Repositories to boost data FAIRification | Press release | - | April 2022 |
| 8 | ScienceMesh: European project for worldwide file sharing and more | Article | SURF website | August 2022 |
| 9 | Bringing HPC Clusters into the ScienceMesh (to be published) | Paper | EUNIS 2023 | March 2023 |
| 10 | Exemplary Digital Services Enabling Open Science: Cos4Cloud, TRIPLE and CS3MESH4EOSC | Paper | EOSC Portal website | May 2023 |

*Table 14: List of CS3MESH4EOSC papers & articles*

## 3.6 Dissemination Materials (online & offline)

Throughout the project, various branding materials such as flyers, posters, rollup banners, and press releases have been produced. Below there is a table with corresponding details and a link to the repository where these materials can be conveniently accessed and consulted. As a note, the videos listed here correspond only to those custom-made by CS3MESH4EOSC project, that is, it does not consider the event and webinar recordings which are available as well in the project's YouTube account.

| Material | Details | Links |
|---|---|---|
| **Branding** | CS3MESH4EOSC logo and brand manual | • Long version[62]<br>• Square version[63]<br>• Brand Manual[64] |
| **Flyers** | Promotion and results dissemination distribute at events | • 1st CS3MESH4EOSC flyer[65] - October 2020<br>• 2nd CS3MESH4EOSC flyer[66] - February 2023<br>• 3rd & CS3MESH4EOSC final event flyer[67] - May 2023 |
| **Posters** | Promotion and results dissemination at online events | • 1st CS3MESH4EOSC Poster[68] - April 2021<br>• 2nd CS3MESH4EOSC Poster[69] - October 2021<br>• 3rd CS3MESH4EOSC Poster[70] - March 2022<br>• 4th CS3MESH4EOSC Poster[71] - May 2022<br>• 5th CS3MESH4EOSC Poster[72] - October 2022 |
| **Rollup Banners** | Banners used for events and conferences | • 1st CS3MESH4EOSC Roll-up (stakeholders)[73] - June 2022<br>• 2nd CS3MESH4EOSC Roll-up (ScienceMesh)[74] - June 2022<br>• 3rd CS3MESH4EOSC Roll-up (Final Event)[75] - June 2023 |

[62] https://cs3mesh4eosc.eu/sites/default/files/2020-10/CS3MESH4EOSC_Logo_Ver_B.jpg
[63] https://cs3mesh4eosc.eu/sites/default/files/2020-10/CS3MESH4EOSC_Logo_Ver_B2.jpg
[64] https://cs3mesh4eosc.eu/sites/default/files/2020-10/CS3MESH4EOSC_Guide_Lines_updated_Sep2020_0.pdf
[65] https://docs.google.com/document/d/1yqb0pUl9V-vi0dwgcCfTpcN1HgQgcy6LYkcvbFKXt7c/edit
[66] https://cs3mesh4eosc.eu/sites/default/files/2023-03/CS3MESH4EOSC%20Flyer_digital_compressed.pdf
[67] https://cs3mesh4eosc.eu/sites/default/files/2023-07/Science%20Mesh%20-%20Unlocking%20Open%20Science%20and%20Collaborative%20Research%20Landscape%20-%20Folded%20Flyer%20June%202023.pdf
[68] https://cs3mesh4eosc.eu/sites/default/files/2021-05/OIS_Science-Mesh%20-%20April%202021%20-%20Poster.jpg
[69] https://cs3mesh4eosc.eu/sites/default/files/2021-11/PosterA0_October2021_2%20%281%29.pdf
[70] https://cs3mesh4eosc.eu/sites/default/files/2022-04/PosterA0_March2022_SSHOC%20Conference.pdf
[71] https://cs3mesh4eosc.eu/sites/default/files/2022-06/CS3MESH4EOSC_Ultra_HD_Banner_May2022.pdf
[72] https://cs3mesh4eosc.eu/sites/default/files/2022-11/Final_CS3MESH4EOSC_Poster_WEB_Oct2022%20%282%29.pdf
[73] https://cs3mesh4eosc.eu/sites/default/files/2022-09/CS3MESH4EOSC_Roll-up_1_Jun2022.pdf
[74] https://cs3mesh4eosc.eu/sites/default/files/2022-09/CS3MESH4EOSC_Roll-up_SCIENCEMeshJun2022.pdf
[75] https://cs3mesh4eosc.eu/sites/default/files/2023-07/Science%20Mesh%20-%20Unlocking%20Open%20Science%20and%20Collaborative%20Research%20Landscape%20-%20Roll%20up%20June%202023.pdf

| | | |
|---|---|---|
| **Press Releases** | Official press releases about the project | • CS3MESH4EOSC Press Release - January 2021[76]<br>• CS3MESH4EOSC Press Release - April 2022[77] |
| **Videos** | Custom-made videos, promoting the project, showcased during presentations and demonstrations at events. | • 1st CS3MESH4EOSC video[78] - December 2020<br>• 2nd CS3MESH4EOSC video[79] - July 2022<br>• 3rd CS3MESH4EOSC video (interviews)[80] - July 2022<br>• 4th CS3MESH4EOSC video[81] - January 2023<br>• 5th CS3MESH4EOSC final event video[82] - June 2023 |
| **Demo Videos** | Custom-made videos demonstration videos about the ScienceMesh usage. | Invitation Workflow demo videos<br>• Invitation Workflow with OwnCloud10 and NextCloud[83]<br>• Data Sharing in OwnCloud oCIS & applications integration beyond local clouds with Open Cloud Mesh (OCM)[84]<br>Data services demo videos<br>• Earth Observation dashboards & web applications created with JupyterVoilà[85]<br>• JupyterLab sharing and collaborative editing[86]<br>• ScieboRDS Tutorial[87]<br>• Connecting ScienceMesh and ESCAPE Data Lakes[88] |
| **Others** | Stickers for the final event | • 4 stickers for final event[89] |

*Table 15: List of CS3MESH4EOSC dissemination materials*

By accessing the provided links, stakeholders and interested parties can easily review and utilise the branding materials, flyers, posters, rollup banners, and press releases to support project dissemination and promotional activities.

[76] https://cs3mesh4eosc.eu/sites/default/files/2023-02/20210130%20PR%20ScienceMesh.pdf
[77] https://cs3mesh4eosc.eu/sites/default/files/2022-12/ScienceMesh%20Press%20Release%20-%20SSHOC%20April%202022.pdf
[78] https://www.youtube.com/watch?v=-gPZQm1PoCU
[79] https://www.youtube.com/watch?v=RblNWqiuQDY
[80] https://www.youtube.com/watch?v=N_C4RiefC7s
[81] https://www.youtube.com/watch?v=oZz2OQyXUxY
[82] https://www.youtube.com/watch?v=5Tesy9rtfSU&t=24s
[83] https://www.youtube.com/watch?v=BZ4SPMbdxqQ
[84] https://www.youtube.com/watch?v=sXuMailUE9Y
[85] https://www.youtube.com/watch?v=MBxAHRAW0nM
[86] https://www.youtube.com/watch?v=z5ckKTVoPAk
[87] https://www.youtube.com/watch?v=ooFHIcC0mvs
[88] https://www.youtube.com/watch?v=Uh2nNJjfcOc
[89] https://cs3mesh4eosc.eu/sites/default/files/2023-07/CS3MESH4EOSC%20Stickers%20June%202023.pdf

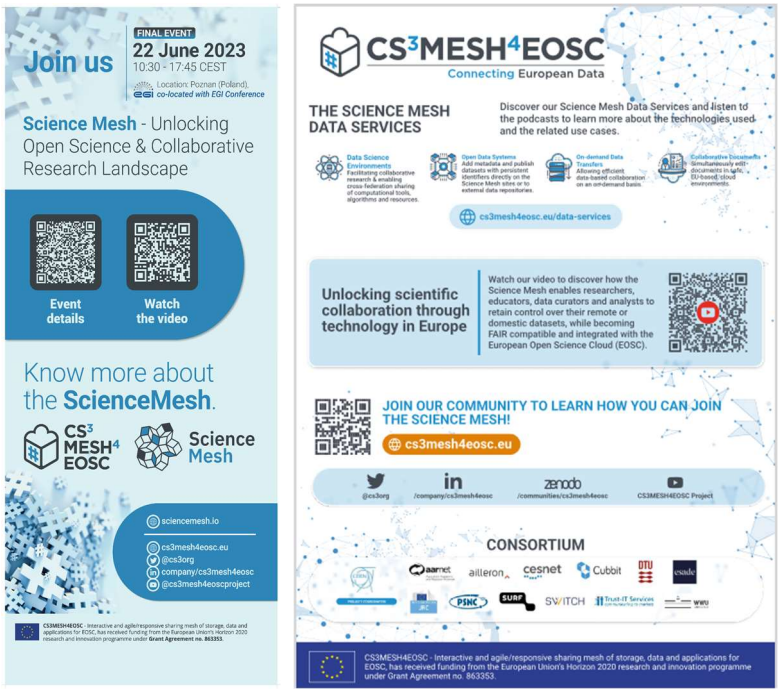


*Figure 33: Examples of dissemination materials: final event rollup (left) and flyer (right)*

# 4. Events

## 4.1 CS3MESH4EOSC events

CS3MESH4EOSC organised several events during the project, with clear objectives, stakeholder audience and expected outputs in mind. Each event organised had dedicated support *before* the event (agenda set-up, engagement of the speakers and event web pages including registration procedure) with its promotion across target stakeholders (e.g., social media visibility, direct email marketing), live support *during* the event including logistic support for both hybrid and virtual events and live social media posting. Support was also provided *after* the event, ensuring coordination of post-event activities (e.g., publication of recording and presentations).

Besides organising events, CS3MESH4EOSC also promoted the project's results in third-party events, not only based in Europe but also worldwide.

### 4.1.1 ScienceMesh Workshops

To timely promote the latest developments of the ScienceMesh and collect feedback from the community, 2 ScienceMesh online workshops were organised (due to the COVID-19 pandemic) in January 2021 and 2022, co-located with the CS3 Conference. The choice of co-location was due to the fact that the conference in question brings together the community of providers, developers and users of innovative storage and sync & share systems, the core target market of the ScienceMesh.

The ScienceMesh workshops provided the opportunity to engage with stakeholders, including researchers, data curators and analysts, software developers, service providers, National research and education networks and policy makers. At the workshops, CS3MESH4EOSC partners promoted both technical developments of ScienceMesh, as well as explored potential synergies with different organisations and initiatives to sustain the exploitation of the ScienceMesh after the conclusion of the project. Furthermore, these workshops also aimed to contribute to the bigger picture, by debating how the ScienceMesh can support the EOSC and the overall creation of a borderless Research Environment in Europe**.**

| Date | Title | Goal | Participants |
|---|---|---|---|
| January 2021 | ScienceMesh Workshop - Moving Towards the Adoption Phase for ScienceMesh | Initiate a collaborative dialogue with early adopters and potential vendors that will contribute to the final development, deployment and adoption of the ScienceMesh. | 95 |
| January 2022 | ScienceMesh – Global Platform for Scientific Collaboration | Dialogue with early adopters and potential vendors that will contribute to the final development, deployment and adoption of the ScienceMesh | 70 |

*Table 16: ScienceMesh workshops organised*

*Figure 34: Visuals for ScienceMesh workshops*

Both workshops included key presentations which highlighted the added value of the ScienceMesh for adopters as well as site administrators and vendors, including how they will be able to join the ScienceMesh. Both events allowed CS3MESH4EOSC to collect inputs to improve the ScienceMesh as a whole. Dedicated news articles for the first[90] and the second[91] workshops were published, summarizing the main discussion points and conclusions collected from speakers/panelists and participants.

It is important to highlight the organisation of two panel discussions during the 2022 edition. The first one, entitled "EOSC and ScienceMesh - Overcoming data challenges" aimed at understanding the main priorities of EOSC Association and Task Forces in developing/improving data sharing solutions to support open science and on which technical aspects the ScienceMesh should focus on. The second one, titled "Scientific disciplines embracing no border Research Environment thanks to ScienceMesh", where different RI

[90] https://cs3mesh4eosc.eu/news-events/news/science-mesh-workshop-showcasing-solid-foundation-ready-expand-data-daily
[91] https://cs3mesh4eosc.eu/news-events/news/science-mesh-global-platform-scientific-collaboration

science cluster were brought together to analyse how the ScienceMesh can support them in addressing their data challenges related to sync and sharing, while increasing the long-term sustainability of their services (see chapters 2.1 and 2.2 for more info on visibility with EOSC and ESFRIs communities, respectively).

*Figure 35: Social Media cards promoting the EOSC and the Scientific Disciplines sessions*

To support the networking activities between speakers and participants during "breaks", despite being in an online workshop, CS3MESH4EOSC consortium created for both events a virtual venue for social gathering on the Gather.town[92] platform. This "online coffee area" was used not only for ScienceMesh workshop delegates, but also by CS3 Conference participants. A dedicated user-guide was produced by CS3MESH4EOSC partners to ensure a smooth usage of the platform by both ScienceMesh and CS3 Congress participants (see Figure 36).

*Figure 36: Detail of the CS3 Congress Gather-Town User Manual*

[92] https://gather.town/

CS3MESH4EOSC used several communication channels to reach stakeholders (e.g. newsletters, social media and DEM messages), as well as many media and specialised channels catering to larger audiences.

### 4.1.2 Webinars

With a more user-focused scope in mind, CS3MESH4EOSC organised two webinars to promote the different use-cases and the four ScienceMesh categories of data services. They demonstrated the future added value of the ScienceMesh across a wide range of science fields and how it can help in dealing with societal challenges, from Earth Observation, Social Analytics and Astronomy to HEP.

The table below provides an overview of both webinars organised, which recruited a total of 100 attendees. All the communication materials, including the recording and presentations are available on their respective webinar pages. To promote both events, social media posts and newsletters were sent, along with invitations to community members.

| Date | Title | Participants | Page Views | YouTube views |
|---|---|---|---|---|
| May 2021 | ScienceMesh in High Energy Physics and Endangered Linguistics - Open Data Systems & Data Science Environments | 54 | 219 | 101 |
| November 2021 | ScienceMesh in Social Media Analytics and Astronomy - Collaborative Documents and On-Demand data transfers | 47 | 340 | 27 views |

*Table 17: Webinars statistics*

*Figure 37: Webinars promotional images*

### 4.1.3 Podcasts

To further promote each one of the use case groups, a total of 4 podcasts[93] episodes were launched in between June 2021 and March 2023, one for each of the former. Thanks to the Anchor.fm platform, all episodes are available on all important podcast streaming services such as Spotify[94] and Google Podcasts[95]. The main goal was, through an informal and friendly conversation, to provide more information about the ScienceMesh use cases and their value proposition compared to is available in the market. Each episode had as "guest" the leader of each corresponding Project Task.

| Date | Title | Views |
|---|---|---|
| June 2021 | How is ScienceMesh Unlocking Scientific Collaboration? | 75 |
| January 2022 | Data Science Environments, What is it and what are the Main Benefits? | 90 |
| December 2022 | On-Demand Data Transfers \| Smooth Remote High-speed transfer of data | 34 |
| March 2023 | Collaborative Documents Simultaneously edit documents in safe European cloud environments | 24 |

*Table 18: Podcasts Statistics*

We believe the decrease in the number of listeners is due to the end of COVID-19 pandemic, which saw people going back to face-to-face events after two years of "online fatigue".

Social media posts were launched to promote the podcasts, with extracts of the podcasts included in the social media card which could be listened to, to attract the wider audience for the full podcast episode.

[93] https://cs3mesh4eosc.eu/Podcast

[94] https://open.spotify.com/show/7rqJY8M65uZnaDlPo37bcV

[95] https://podcasts.google.com/feed/aHR0cHM6Ly9hbmNob3IuZm0vcy81N2I4ZmVhMC9wb2RjYXN0L3Jzcw

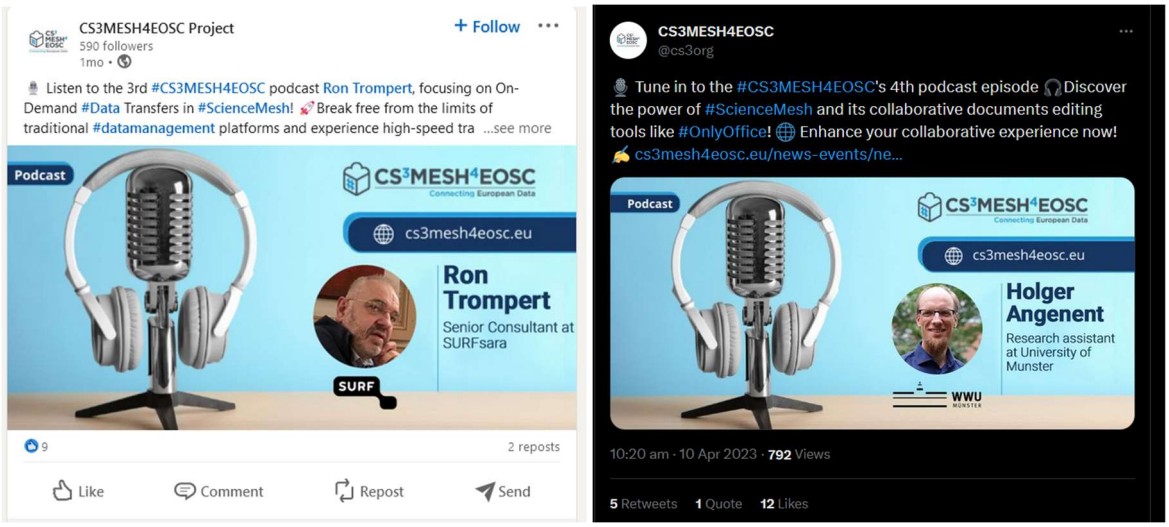


*Figure 38: Social Media Posts promoting the podcasts*

### 4.1.4 Sessions at third-party events

Along with the webinars, podcast episodes and presence at third-party events, CS3MESH4EOSC organised sessions within key-conferences in Europe. The organisation of these sessions allowed the consortium to reach wider audiences, to identify potential future ScienceMesh adopters, including researchers, service providers or software developers.

**SciDataCon 2021**

In October 2021, during the SciDataCon 2021, the ScienceMesh organised a 90 minute virtual session[96] which showcased real examples of how the ScienceMesh is supporting collaboration of distributed science teams across disciplines dealing with data. The SciDataCon is ***the*** international conference for scrutiny and discussion of the frontier issues of data in research. The scope of SciDataCon covers policy matters and the place of data in the scientific endeavor and scholarly communications; the opportunities of the data revolution for the global research enterprise; innovations in data science and data stewardship and the challenge of developing a sustainable data ecosystem.

The session had presentations from ScienceMesh developers and also representatives of each one of the use-cases, to be concluded with interactive discussions with the audience. The

[96] https://cs3mesh4eosc.eu/news-events/events/cs3mesh4eosc-virtual-scidatacon-2021

session brought together almost 70 participants from all around the world (e.g. India, Mexico, Brazil, USA, Canada, Benin, Korea, Singapore, amongst others). The CS3MESH4EOSC Consortium also believes that this session contributed to the increase in number of attendees during the 2nd webinar, organised one month later, in November 2021.

*Figure 39: Session Branding (left) and snapshot of the presentation (right)*

**CS3 Conference 2023**

In March 2023, once everyone was back to face-to-face events, with the "slow end of the pandemic", the CS3MESH4EOSC Project was one of the official supporters of CS3 Conference 2023[97] (Barcelona, Spain), the same conference where in 2021 and 2022 the project had organised its ScienceMesh workshops.

As official supporters, the project supported the costs of the catering and the design of communication materials. The project branding was included in all CS3 Conference promotional materials (rollups, badges, certificate of participation, brochures and lanyards) and had an exhibition booth in the coffee area, where over 120 delegates had their coffee breaks. Furthermore, the CS3 Conference event page had 815 unique views from November 2022 till April 2023, which expanded even further the visibility of the project. Besides the 125 participants that were in Barcelona, the event was also web-streamed, where online attendees could follow the event.

The booth's main role was to invite CS3 delegates to know more about the ScienceMesh by informing them the latest features and also, as a teaser, advance that a final presentation event was in its way, where they could have a complete and more detailed overview of the

[97] https://cs3mesh4eosc.eu/news-events/events/cs3-conference-0

tool. Potential leads were invited to follow us on social media and subscribe to the newsletter, to receive updates.

*Figure 40: CS3 Conference Rollup with CS3MESH4EOSC branding (left), CS3MESH4EOSC Exhibition stand in the coffee area (middle) and conference badge with CS3MESH4EOSC branding (left).*

Compared to the other two editions, CS3MESH4EOSC had a more prominent presence in the CS3 Conference agenda itself, having allocated a total of 90 minutes to present not only the ScienceMesh interoperable federation, but also the demonstration with the latest technical developments of the tool. These activities worked as a "beta rehearsal" of the final presentations the project aimed to have during its final event, which took place in June 2023 (see chapter 4.1.5). It was an important moment to collect input from the audience and to address some details during the following months before the final event.

The event recording and all presentations are available in the event webpage in CS3MESH4EOSC website.

*Figure 41: Social Media card promoting CS3MESH4EOSC speaker at CS3 Conference (left) and CS3MESH4EOSC presentation (right)*

**TNC 2023**

TNC 2023, organised by GEANT, took place in Tirana (Albania). TNC is the largest and most prestigious research and education networking conference, with an audience of

over 800 participants from more than 70 countries. The event had a web-stream connection so online registrants could follow online.

CS3MESH4EOSC organised a 2-hour session[98] to demonstrate the final functionality and technical innovation of the ScienceMesh. Some of the final live-demonstrations were presented to the audience, which could see how the already-integrated data services have been used to address challenges by real communities. The audience also got practical information on how to join the mesh. This session also worked as a teaser for the project final event, which took place 2 weeks later in Poland (see chapter 4.1.5).

Guido Aben (Senior International Strategy Officer at SUNET and involved in CS3MESH4EOSC project), who was in Tirana and one of the presenters, provided an overview of the outcomes of the session in a blogpost[99]. The event recording and all presentations are available in the event webpage in CS3MESH4EOSC website.

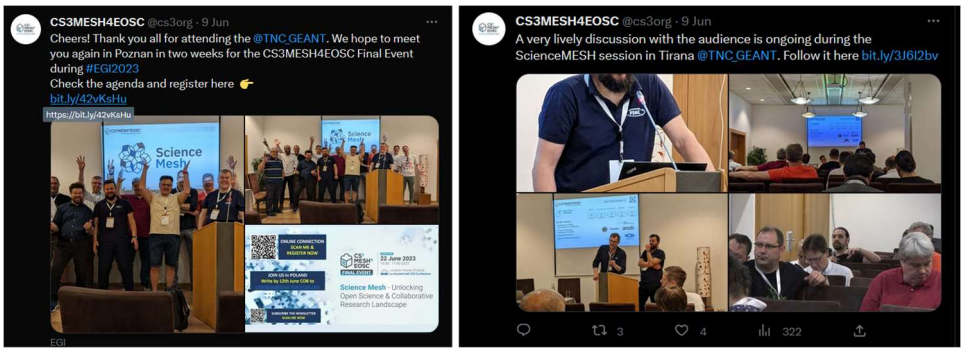


*Figure 42: Social Media cards promoting the session at TNC 2023*

### 4.1.5 Final Event

On 22nd June 2023, CS3MESH4EOSC had its final event in Poznan (Poland), co-located with the EGI2023 conference, following on an invitation by EGI, triggered thanks to the collaboration between the two initiatives mentioned above. The co-location of the CS3MESH4EOSC final event with EGI2023 provided the perfect opportunity to engage with

[98] https://cs3mesh4eosc.eu/news-events/events/tnc23
[99] https://cs3mesh4eosc.eu/news-events/news/blogpost-sciencemesh-tnc23

international scientific communities, computing and service providers, European projects, security experts, community managers, and policy makers.

The CS3MESH4EOSC consortium was able to recruit 45 attendees (both online and offline) before the event. During the EGI Conference, and due to the strategic decision to have the final event on the last day of EGI2023, some of the EGI23 delegates ended up joining the event.

The event proper took place at the EGI Plenary Room and was entitled "ScienceMesh - Unlocking Open Science and Collaborative Research Landscape[100]". It was divided into two main parts.

The **first one** included four live demonstrations, where each use case group of the ScienceMesh was presented from a user-perspective point of view. Event attendees got practical information on how they can join the ScienceMesh as a researcher, a software developer or a service provider. The event also brought together representatives of ScienceMesh use cases, who explained how ScienceMesh is making an impact their lives. A panel discussion with representatives of different sectors, from research to industry and education, discussed the most urgent trends & priorities for cross-border science collaboration between different sciences. **The second half of the event** was focused on the technical novelties within the Science technical foundation. Two demonstrations were presented, followed by a panel discussion, with representatives of CS3MESH4EOSC members that are part of the EOSC TF. This panel discussed how the ScienceMesh contributes to EOSC's success and the overall EOSC Strategic Research and Innovation Agenda (SRIA). The event closed with an overview of future ScienceMesh developments, as well as how the tool will become self-sustained after the project's conclusion.

[100] https://cs3mesh4eosc.eu/news-events/events/cs3mesh4eosc-final-event-science-mesh-unlocking-open-science-and-collaborative

*Figure 43: Final Event branding and Session Cards*

During the event, thanks to an on-the-spot communication team, live-tweeting was performed, which included the publication of short flash interviews where conference speakers would give some insights of the session that was about to start.

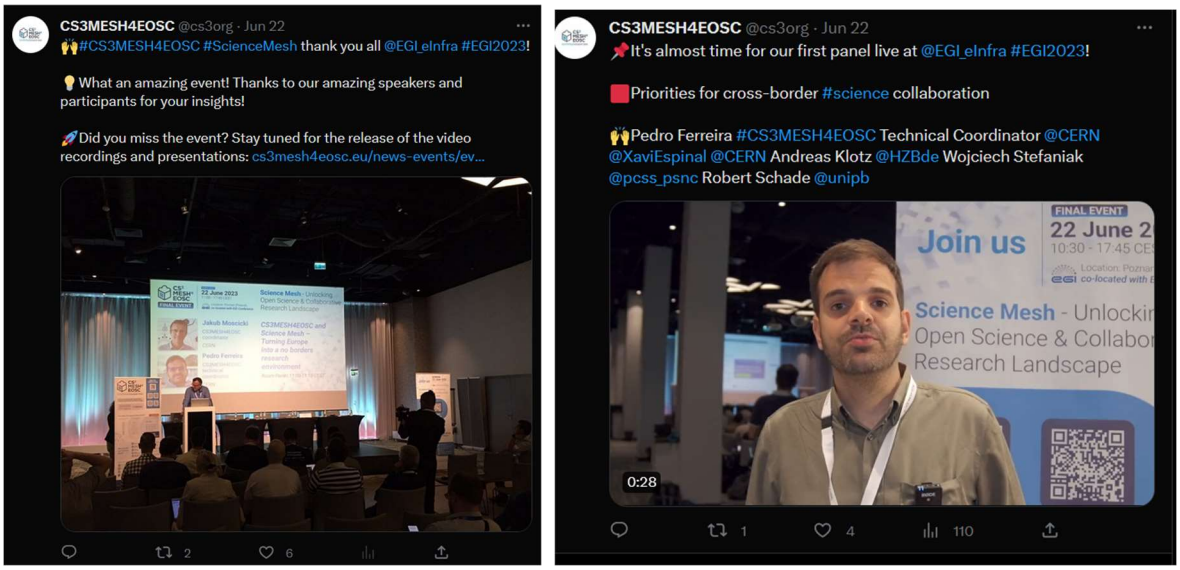


*Figure 44: Live tweeting during the event, including flash interviews (image on the right)*

Besides the final event on 22nd June, representatives of the Project gave on 20th June, a **lightning talk** (during the Opening Reception), where all the 350 EGI participants were present. The talk, which followed a "relaxing storytelling" approach, described the ScienceMesh in a humoristic way, and delivered practical information on how to attend the CS3MESH4EOSC final event on 22nd June.

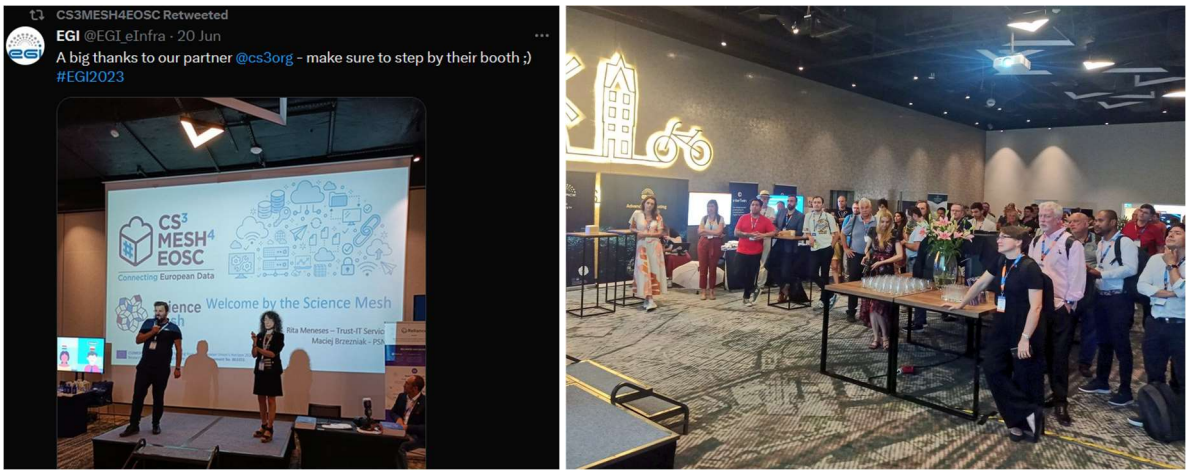


*Figure 45: CS3MESH4EOSC lightning talk at EGI2023*

On 21st of June, CS3MESH4EOSC had a **10-minute presentation** during the "Emerging Architectural Directions for Federated Digital Infrastructures" session, focused on how to share applications and data between institutions with OCM.

During the whole conference, the project had an **exhibition stand** in the coffee break area, right next to the entrance of the EGI Plenary conference rooms, which worked as an excellent channel to engage individually with all those interested by the Project. Some of the individuals engaged at the booth ended up attending the final event. A "**virtual exhibition stand**" was created as well within the official EGI2023 Conference mobile app.

*Figure 46: Tweet promoting the 10-min presentation (left) & CS3MESH4EOSC exhibition stand (right)*

A Newsletter was sent, as well as invitations to community members to both promote the event and invite them to attend. Communication materials were produced, namely a flyer

recapping the outcomes of the project[101], a rollup banner[102], bottles, a delegate bag and promotional stickers[103] (see Figure 48). The latter were also included in the EGI delegate bag and used as an "informal" way to publicize the CS3MESH4EOSC final event to EGI delegates.

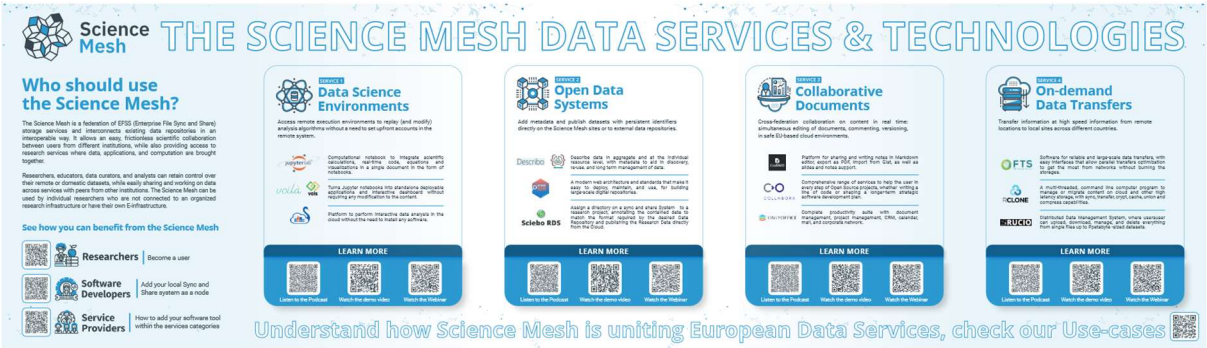


*Figure 47: Flyer for the Final Event (detail)*

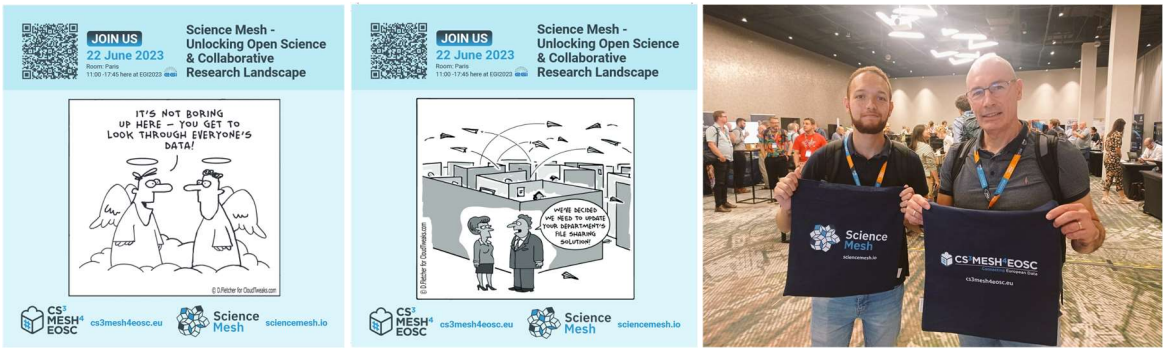


*Figure 48: Promotional Stickers (detail - left and centre) and delegate bag (right)*

After the event, a 2-minute video[104] with highlights from the conference was produced.

[101] https://cs3mesh4eosc.eu/sites/default/files/2023-07/Science%20Mesh%20-%20Unlocking%20Open%20Science%20and%20Collaborative%20Research%20Landscape%20-%20Folded%20Flyer%20June%202023.pdf

[102] https://cs3mesh4eosc.eu/sites/default/files/2023-07/Science%20Mesh%20-%20Unlocking%20Open%20Science%20and%20Collaborative%20Research%20Landscape%20-%20Roll%20up%20June%202023.pdf

[103] https://cs3mesh4eosc.eu/sites/default/files/2023-07/CS3MESH4EOSC%20Stickers%20June%202023.pdf

[104] https://www.youtube.com/watch?v=5Tesy9rtfSU&t=9s

*Figure 49: Snapshot of the Final Event 2-minute video.*

## 4.2 CS3MESH4EOSC at third-party events

A list of the events attended by CS3MESH4EOSC representatives, and scheduled during the project timeframe, is provided in Table 19. The project was promoted in as many as 34 events, surpassing the KPI of 20 established at the beginning of the project.

Due to the COVID-19 pandemic, the majority of CS3MESH4EOSC presence from March 2020 till Summer 2022 was online, which, despites the obvious drawbacks, allowed the project to reach a more global audience. From Summer 2022 the project started to go back to physical presence.

The main topic presented in these events was the ScienceMesh, with some presentations and paper submissions focused on specific technologies that are being deployed in the platform (e.g., JupyterLab and Voilà) or else highlighting the FAIR data approach being implemented in the ScienceMesh.

| Date | Event Title | Location | Stakeholder | Activity |
|---|---|---|---|---|
| January 2020 | CS3 Conference 2020 | Copenhagen (Denmark) | End-users, research communities, software developers | Presentation |
| October 2020 | JupyterCon Conference | Online | End-users, research communities, software developers | Presentation |
| October 2020 | HEPiX online workshop | Online | End-users, research communities & Institutional operators of services | Presentation |
| October 2020 | ONLYOFFICE Conference | Online | Institutional operators of services, software developers | Presentation |
| November 2020 | Realising the European Open Science Cloud | Online | Policy makers, citizens, end-users & research communities | Virtual exhibition booth |

| Date | Event Title | Location | Stakeholder | Activity |
|---|---|---|---|---|
| January 2021 | CS3 2021 Conference | Online | End-users & research communities, software developers | Presentation Co-located workshop |
| April 2021 | Open Innovation in Science Research Conference 2021 | Online | End-users & research communities | Paper presentation |
| April 2021 | RDA Virtual Plenary 17 | Online | End-users, research communities, policy makers and citizens | Presentation |
| June 2021 | European Conference on Information Systems | Online | End-users, research communities, policy makers, citizens, software developers | Paper presentation |
| June 2021 | EOSC Symposium | Online | Policy makers, citizens, end-users & research communities | 2 presentations |
| June 2021 | TNC21 | Online | End-users, research communities, institutional operators of services, software developers | Presentation |
| August 2021 | CACM Europe WOrkshop | Online | Researchers and professionals of computing machinery | Presentation |
| September 2021 | Open Science Fair | Online | Researchers, research institutions, funding agencies, service providers and infrastructures | Lightning talk |
| September 2021 | ownCloud Conference | Online | ownCloud users & developers | Lightning talk |
| September 2021 | 4th RUCIO Community Workshop | Online | High-energy physics researchers and developers | Presentation |
| October 2021 | SciDataConference | Online | Data scientists and stewards, researchers, industry, entrepreneurs, policy makers and informatics professionals | Workshop |
| October 2021 | EGI Conference 2021 | Online | Science and scientific computing professionals | Poster & presentation |
| October 2021 | RDA Plenary 18 | Online | Data scientists, librarians, computer scientists, and domain scientists | Panel & presentation |
| January 2022 | CS3 2022 Conference | Online | End-users, research communities and software developers | Presentation Co-located workshop |
| March 2022 | SIS Containers: Data Access, Movement and Management Workshop | Online | Data Management | 2 Presentations |
| June 2022 | TNC2022 | Trieste, Italy | End-users, research communities, institutional operators of services, software developers | Presentation & poster |
| June 2022 | CompBioMed AHM 2022 | Bologna, Italy | Academia, industry and clinical environments from biomedical community | Presentation |
| September 2022 | EUDAT 2022 Conference | Athens, Greece | Research data management services and network professionals | Presentation & exhibition stand |
| September 2022 | EGI Conference | Prague, Czechia | Science and scientific computing professionals | Presentation |

| Date | Event Title | Location | Stakeholder | Activity |
|---|---|---|---|---|
| October 2022 | JDD Conference | Krakow, Poland | Java software engineers, developers and team leaders | Presentation |
| October 2022 | FAIR Digital Objects | Leiden, The Netherlands | Technical, scientific, industry, and science-policy dealing with FAIR digital objects | Presentation & poster |
| November 2022 | EOSC Symposium | Prague, Czechia | Policy makers, citizens, end-users & research communities | Presentation |
| November 2022 | Data Science Summit 2022 | Warsaw, Poland | Data science professionals | Presentation |
| March 2023 | CS3 Conference 2023 | Barcelona, Spain | End-users, research communities and software developers | Series of Presentations Co-located workshop |
| March 2023 | DFN Company Conferences | Berlin, Germany | Data Managers | Presentation |
| May 2023 | International Conference on Computing in High Energy & Nuclear Physics | Norfolk, Virginia, USA | Computing experts across Particle and Nuclear Physics | Presentation |
| May 2023 | JupyterCon 2023 | Paris, France | End-users, research communities, software developers | Presentation |
| June 2023 | TNC 2023 | Tirana, Albania | End-users, research communities, institutional operators of services, software developers | Session |
| June 2023 | EGI Conference | Poznan, Poland | Science and scientific computing professionals | Co-located final event & exhibition stand |

*Table 19: CS3MESH4EOSC presence at third-party events*

# 5. Conclusion

This document summarises the main achievements of the CS3MESH4EOSC project in terms of communication and stakeholder engagement. The diverse range of activities presented in this deliverable contributed to expanding the community in terms of outreach as well as potential users of ScienceMesh platform, as soon as it is open to the wider public.

Thanks to consistent dialogue, creation of synergies, organisation/presence at key events, publication of updates on the website and social media activities, as well as the design of multimedia dissemination materials, CS3MESH4EOSC was able to reach worldwide visibility. Several project partners became involved in the EOSC TFs, which will contribute to even greater proximity between the two in the future. The feedback collected from researchers from different communities, thanks to cross-border and cross-discipline engagement efforts; the organisation of panel discussions at both ScienceMesh workshop and final event; as well the project presentations at third-party events, provided the consortium with precious insights for the follow-up activities. These inputs will help partners to generate new ideas for next developments of the ScienceMesh.

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