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Direction Générale de la Recherche et de l'Innovation (DGRI)
Service de la Stratégie de la Recherche et de l'Innovation (SSRI)
Département Services et Infrastructures Numériques (A7)

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eosc

EUROPEAN OPEN SCIENCE CLOUD

Volker Beckmann

reponsible for implementation of EOSC in France

French Ministry for Higher Education and Research

CC BY SA

EOSC : European Open Science Cloud

What's EOSC?

- ***Web of FAIR* research data and services***
- Access to FAIR research data, services and e-infrastructures for all European researchers.
- Reuse and link existing FAIR data, services and e-infrastructures
- Think of the EOSC as an **interface**
- *Free at point of use*
- EOSC will respond to **your needs** for services and FAIR data

"The EOSC is fully aligned with the French strategies on digital transition and on Open Science. EOSC is part of our Open Science strategy, the French National Plan for Open Science, as expressed in 2018 and 2021, which explicitly encourages the structuration of the French research landscape along with the EOSC. We also underline the importance of the EOSC infrastructure to support Open Science in the context of our national strategy on data, algorithms and source codes. Open Science needs services and infrastructures it can be build upon, it needs skills and knowledge to facilitate the whole research data lifecycle, it needs capacity to host services and data."

Cyril Moulin, Adjoint à la Directrice Générale de la Recherche et de l'Innovation au MESR, at the EOSC Symposium in Prague, November 2022

*FAIR : Findable, Accessible, Interoperable, Reusable

EOSC Vision : requirements

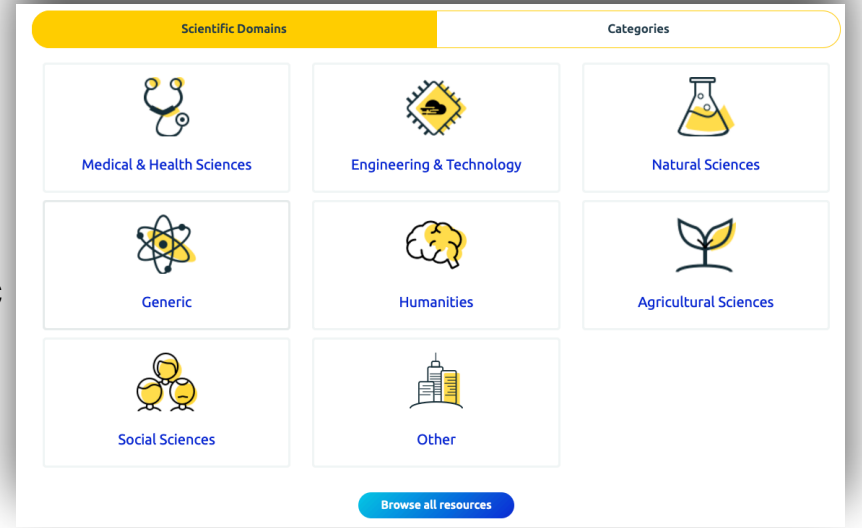
1. Trusted repositories
2. FAIRisation of data, *Data Management Plans* (DMPs)
3. Uptake and consolidation of services
4. Workflows across different e-infrastructures (HPC, HTC, …)

Main interests in EOSC topics expressed per CNRS institute, see « CNRS Institutes and the EOSC – status and vision »

Using EOSC services

Have a look at the EOSC marketplace :
https://marketplace.eosc-portal.eu/

You don't find what you look for?
Describe your use case and receive advice and help from the EOSC experts:
https://marketplace.eosc-portal.eu/projects



Providing EOSC services

> 360 services in the portal

https://providers.eosc-portal.eu/becomeAProvider

Think of EOSC as an **interface**

EOSC is a community

- Colleagues from all domains and all EU countries
- interdisciplinary
- find and share solutions
- Form powerful consortia (for example for Horizon Europe, ANR, …)

EOSCpilot, May 2018

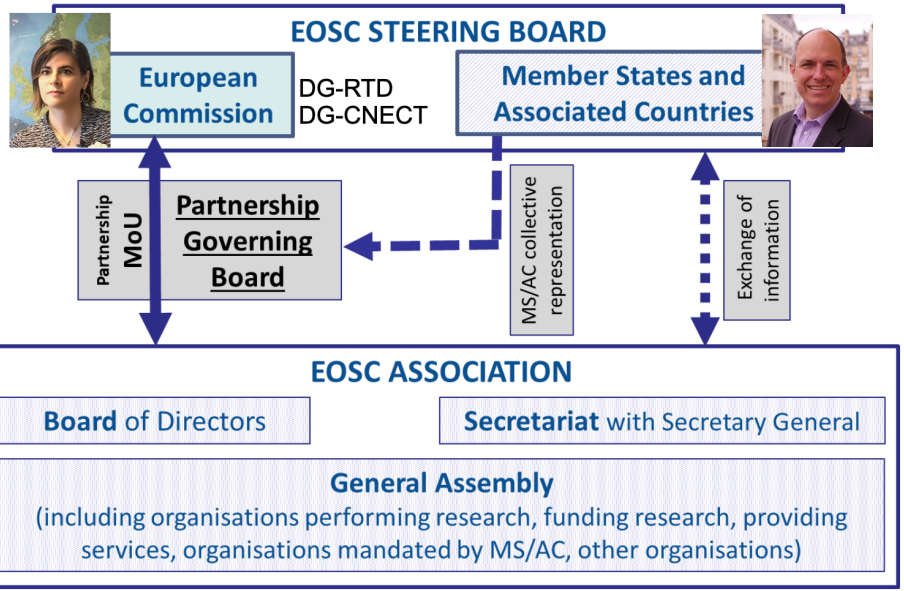
EOSC Association general assembly, May 2022

EOSC is a partnership

- One of 12 co-programmed partnerships under *Horizon Europe*
- 3 partners: European Commission, Member States, EOSC Association

Commitment by partners :

- European Commission : ~490 M€ in Horizon Europe (2021-2027) for EOSC
- EOSC Association : provide services (in-kind contribution) at a level ≥ of the EU financing.
- Member states : support the EOSC through policy development*, through financing of infrastructures and organisations important for the EOSC, and help in the coordination of EOSC at European level.



* for example : Plan national pour la science ouverte 2021 - 2024 : vers une généralisation de la science ouverte en France

EOSC Steering Board Statement

We, the EOSC Steering Board collectively:

- **Recognise** EOSC as the overarching transverse European Data Space for research. EOSC shall be implemented as orthogonal and supplementary to the thematic European Data Spaces, which in turn should capitalise on expertise and solutions developed in the context of EOSC.

- **Recognise** EOSC to be an accelerator of the digital transition, comprising FAIR digital objects as well as people with data science and management competences.

- **Reaffirm** the importance of the sovereignty of the research sector as FAIR data provider in EOSC.

- **Invite** to open EOSC to the public sector at large and to partners from the commercial sector that are dedicated to Open Science, considering them as providers and users of the EOSC ecosystem, which is developed to be a public good.

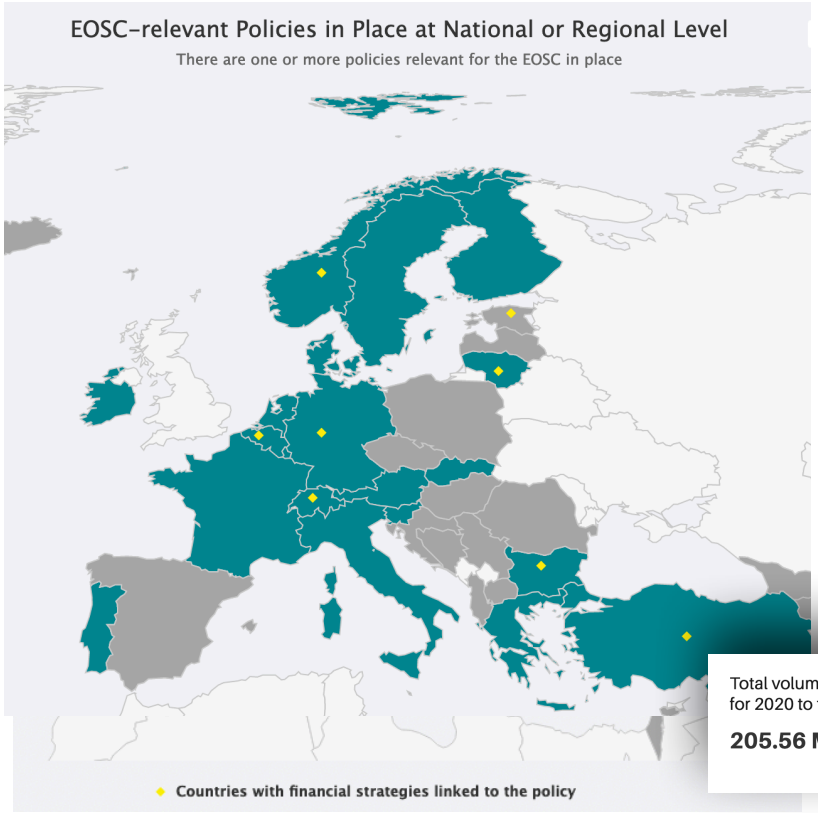
- **Call** all research and innovation stakeholders to commit to making Open Science the new normal, and to achieve this goal develop and deploy the necessary science policies and supplementary financial investments.

- **Commit** to support the progress towards Open Science and the advancement of EOSC implementation by facilitating monitoring, exchanging practices, and promoting mutual learning across countries and communities.

European Commission

EOSC-SB Survey 2021: results

EUROPEAN OPEN SCIENCE CLOUD | EOSC Observatory



Total volume of financial contributions for 2020 to the EOSC

205.56 M

Check out the EOSC Observatory with the EOSC-SB results on policies and actions: https://eoscobservatory.eosc-portal.eu/home

European Commission

HORIZON-INFRA-EOSC 2023/2024

- Work programme for 2023/2024 (budget for EOSC 2023/2024: 130 M€)
- Open for proposals starting **6 December 2022** (deadline: 09/03/2023)

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Horizon Europe EOSC Work Program 2023

Opening: **06/12**/2022; Date limite: **9 mars** 2023

Topic HORIZON-INFRA-2023-…	**Titre**	**Type**	**Budget total [M€]**	**#projets**
EOSC-01-01	Build on the science cluster approach to ensure the uptake of EOSC by research infrastructures and research communities	RIA	**25**	1
EOSC-01-02	Development of community-based approaches for ensuring and improving the quality of scientific software and code	RIA	**8**	1
EOSC-01-03	Planning, tracking, and assessing scientific knowledge production	RIA	**8**	1
EOSC-01-04	Next generation services for operational and sustainable EOSC Core Infrastructure	RIA	10	1
EOSC-01-05	EOSC Architecture and Interoperability Framework	CSA	3	1
EOSC-01-06	Trusted environments for sensitive data management in EOSC (expansion to resources provided by public authorities, including national agencies, in highly sensitive areas, like the health sector, governmental statistics or geo-spatial applications)	RIA	15	3
2023-EOSC-01			69	8

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Deadline: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-01 RIA **25 M€** 1 project foreseen	Build on the science cluster approach *(*EOSC-Life, ENVRI-FAIR, ESCAPE, SSHOC, PaNOSC*)*, to ensure the uptake of EOSC by research infrastructures and research communities Third party financing: **at least 18 M€**, with **100 - 250 k€** per third party grant (duration **12-24** months) Expected outcome: • Support all researcher communities across Europe to contribute to and benefit from a user-oriented EOSC; • Populate EOSC Exchange with FAIR data, horizontal services and thematic services of relevance to users in several scientific domains and beyond; • Develop and demonstrate through cascading grants concrete scientific benefits of open science and FAIR practices through cross-disciplinary use cases; • Increased alignment of operation of ESFRI and international RIs at the subdomain, domain and interdisciplinary levels in function of the progressive deployment of the EOSC Core, EOSC Exchange and EOSC sustainability models; • Provide feedback and requirements for the evolution of the EOSC ecosystem.

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Deadline: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-01 RIA **25 M€** 1 project foreseen	Build on the science cluster approach *(*EOSC-Life, ENVRI-FAIR, ESCAPE, SSHOC, PaNOSC*)*, to ensure the uptake of EOSC by research infrastructures and research communities Third party financing: **at least 18 M€**, with **100 - 250 k€** per third party grant (duration **12-24** months) Expected • Supp … user-oriented EOS… • Popu … relevance to users… • Deve … science and FAIR… • Increa … domain and interc … Core, EOSC Excha… • Provi…

"The open calls under this activity should respect the conditions laid out in Section B of the General Annexes, including transparency, equal treatment, conflict of interest and confidentiality.
Research infrastructures which are beneficiaries/ affiliated entities of the consortium awarded may exceptionally also be recipients of financial support to third parties.
Proposals must explain how they will ensure that such beneficiaries/affiliated entities are not involved in the selection procedure of the calls, in order to avoid conflicts of interest and maintain confidentiality."

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Date limite: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-02 RIA 8 M€ 1 project foreseen	Development of community-based approaches for ensuring and improving the quality of scientific software and code Outcomes: • A framework of community curation is established and promoted that ensures quality of software and code across the different disciplines. • Infrastructure, tools and services are deployed that allow researchers to properly develop, describe with proper metadata, version, archive, share and reuse research software. • The notion of software quality is defined in the context of EOSC and builds upon established practices by the FAIR and other communities. • Baseline quality indicators along the notion of "minimum quality" are defined for the different types of digital objects targeted (software, code, etc), taking into account the concept of "fit for purpose". • The quality of research software, both from the technical and organizational point of view for research software is improved, both in general (e.g. software for data analysis) and in particular for software used in the services offered through EOSC. • Software is developed in a sustainable way and its reuse is maximised.

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Date limite: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-03 RIA 8 M€ 1 projects foreseen	Planning, tracking, and assessing scientific knowledge production Proposals should address all the following activities, aimed at improving (list not complete!) : • Contribute to the standardisation and homogenisation of domain-agnostic elements in Data Management Plans (DMP) • Ensure the pervasive and comprehensive use of PIDs for preprints, publications, open peer-reviews, data, software, workflows, etc., and their interconnection with DMP standards; • Develop use cases and proof of concept instances of machine-actionability of DMPs, in alignment with developments of Scientific Knowledge Graphs (SKGs) • Automate the evaluation of DMPs (assessing their completeness and adequacy) through, e.g., semantic web technologies, building on new and existing DMP evaluation metrics (e.g., Science Europe evaluation rubric); • Develop and implement comprehensive interoperable SKGs and enhance the interoperability across SKG • Extend FAIR metrics guidance, tools, and models • Define a trusted governance to measure successful compliance with metrics/tests • Define minimum levels of FAIRness for a wide spectrum of digital objects

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Date limite: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-04 RIA 10 M€ 1 project foreseen	Next generation services for operational and sustainable EOSC Core Infrastructure • Improve the EOSC Core execution framework by enhanced composability and interoperability of cross-domain data, services, tools and other research objects and resources • Design and develop components of a comprehensive EOSC Integration Service suite as part of the next-generation EOSC Core • Provide open Application Programming Interface (API) registry, management, development and testing workflow, platform and tools for EOSC Core service users. • Support custom-made front-end portal development environment for various scientific communities, utilizing the EOSC Core portal back-end functions via integration services. • Facilitate an independent EOSC service incubator and technology development environment that can serve as an open experimentation "testbed" for the EOSC • Ensure financial sustainability assurance and readiness assessment processes, tools, workflows and services applied for the next-generation of EOSC Core

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Deadline: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-05 RIA 3 M€ 1 project foreseen	EOSC Architecture and Interoperability Framework • Provide structure to manage, update, circulate and promote the EOSC Interoperability Framework and guidelines to support and enable interoperability within EOSC. • Coordinate the establishment of IFs and the making of existing IFs available through a library/repository, support the dialogue on establishing IFs. • Support communities in making their IFs available through EOSC IF library • Provide organizational framework for establishing an independent, multi-stakeholder Architecture Board that can collect feedback and recommendations from the stakeholders, oversee and advice the EOSC MVE deployment and operation. • Define processes and guidelines to enable EOSC Core delivery and to ensure openness of EOSC so that it can adapt with the evolving requirements of the EOSC stakeholders

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Horizon Europe EOSC Work Program 2023

Opening: 06/12/2022; Date limite: 9 mars 2023

Topic **HORIZON-INFRA-2023-…**	**Some elements (not complete)**
EOSC-01-06 RIA 15 M€ 3 projects foreseen	Trusted environments for sensitive data management in EOSC (expansion to resources provided by public authorities, including national agencies, in highly sensitive areas, like the health sector, governmental statistics or geo-spatial applications). Link with HORIZON-HLTH-2022-IND-13-02 ("Scaling up multi-party computation, data anonymisation techniques, and synthetic data generation.") The proposed work should include: • exploring possible solutions to move all or parts of a workflow on sensitive data to a secure data storage and to allow users to receive only aggregated and desensitised results; • support for publishing anonymised data into repositories that are compliant with the EOSC Interoperability Framework; • exploration and demonstration of possible solutions and approaches for data anonymization; • exploration and demonstration of possible solutions and approaches, such as blockchain, for access control management and maintenance of a secure and decentralized record of transactions of trusted and non-trusted parties; • data processing workflows that keep sensitive data encrypted on disk and memory, including assessment of the cost of the encryption; • investigation on data protection legislations on national and European level on the impact of using sensitive data in cloud hosted workflows across computer centres in different countries/regions; • explore and demonstrate compliance with federated architecture solutions.

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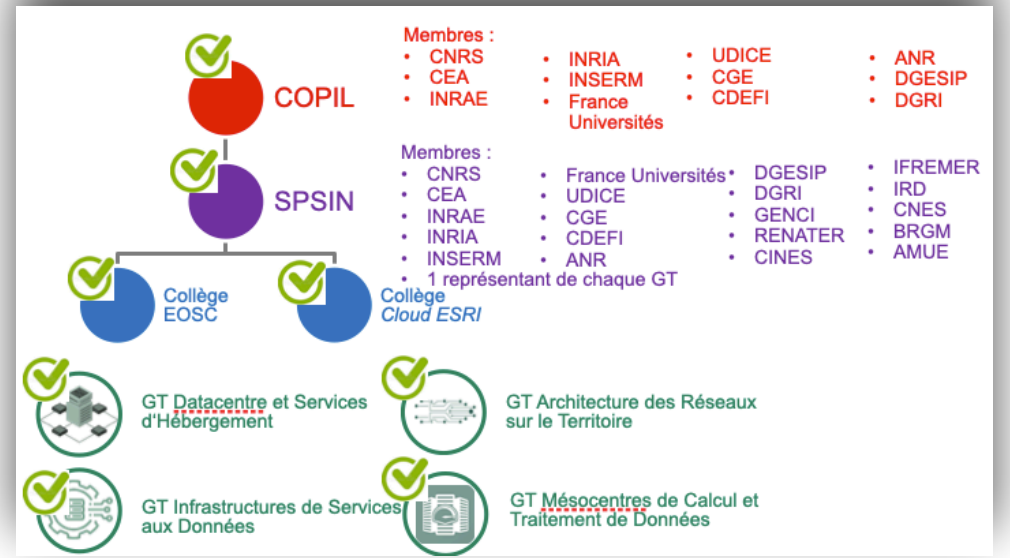
Horizon Europe EOSC Work Program 2024

Opening: 06/12/2023; Deadline: 12 March 2024

Topic HORIZON-INFRA-2024-…	Title	Type	Budget total [M€]	#projets
EOSC-01-01	FAIR and open data sharing in support of the mission **adaptation to climate change**	RIA	16	2
EOSC-01-02	Supporting the **EOSC Partnership** in further consolidating the coordination and sustainability of the EOSC ecosystem	CSA	4	1
EOSC-01-03	Enabling a network of EOSC **federated and trustworthy repositories** and enhancing the framework of generic and discipline specific services for data and other research digital objects	CSA	5	1
EOSC-01-04	Long-term access and preservation infrastructure development for EOSC, including data quality aspects	RIA	8	1
EOSC-01-05	Innovative and customizable services for **EOSC Exchange**	RIA	28	4
2024-EOSC-01			61	9

EOSC in France

- EOSC : a pillar of the digital transition
- coordinated by the Collège EOSC-France (since 02/2022) : representatives of the member/observer organisations that are part of the EOSC-Association + ministry
- Collège EOSC-France provides advices and proposes actions to the *Comité Pilotage Services et Infrastructures Numérique* (CoPil-SIN)
- Strong link between providers, users and deciders



Comitologie Services et Infrastructures Numériques (CoSIN)

*Members of the Collège EOSC-France: CEA, CINES, CNRS, France Universités, GENCI, IFREMER, ILL, INRAE, INRIA, INSERM, Observatoire Paris, RENATER, Soleil, Université de Bordeaux, Université de Montpellier, Université Paris Cité, Université Paris-Saclay, Université Strasbourg, CGE, Couperin, ANR, IRD, Sorbonne Université, Udice, Université de Univ. Lorraine, Nantes Université, Université Grenoble Alpes, Université Paris 1 Panthéon-Sorbonne, MESR/DGRI

The way forward

- Push for rapid development of Open Science policies and actions in our countries
- Aim at tangible results by **2025 : institutional, national, EU level**
- Tackle additional policy issues
- Work closely together: EOSC-Association, EC, EOSC Steering Board and other partners (e.g. ESFRI, e-IRG, EuroHPC)
- Increased reproducibility of scientific results
- Increased trust in science
- Increased effectiveness in policy making and in research processes

EOSC is here to stay — there's no turning back!

European Commission

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European Open Science Cloud

Web of FAIR* research data and services

- EOSC is part of the digital transition in Europe and in France
- EOSC is a vision, a portal, a community, and a European partnership
- Financing of development through the Horizon Europe Work Programme (HORIZON-INFRA-EOSC)

- Qu'est-ce que l'European Open Science Cloud / What is the EOSC (2 pages)
- https://eosc-portal.eu

Plus d'informations? Inscrivez-vous sous
https://groupes.renater.fr/sympa/info/eosc_france_info

volker.beckmann@recherche.gouv.fr

Contact me (and/or the bureau d'Horizon Europe au MESR) if you want to discuss ideas for specific projects

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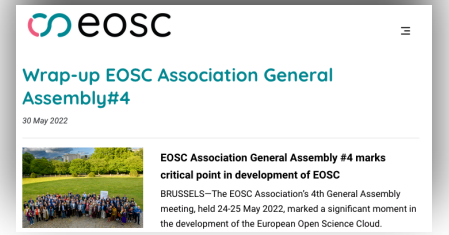
Annexe

Calendrier EOSC 2022

Date	Evénement
14-17/11	EOSC-Symposium (Prague and online)
30/11	Journée Science Ouverte CNRS
06/12	Horizon Europe INFRA-2023/2024 Info Day (en ligne)
06/12	date prévue pour l'ouverture des appels HORIZON-INFRA-2023-EOSC-01 (date limite: 09/03/2023)
8/12	Blue-Cloud Final Conference (Bruxelles)
9/12	Collège EOSC France (MESR, Paris)
12-13/12	e-IRG workshop (Prague et en ligne)

Documents clés d'EOSC

- Qu'est-ce que l'European Open Science Cloud / What is the EOSC
- EOSC en 7 questions
- EOSC Executive Board final progress report
- Results of the EOSC Working Groups (2019 / 2020)
- EOSC Strategic Research and Innovation Agenda (SRIA)
- EOSC Association Statutes
- Scholarly Infrastructures for Research Software
- ESFRI Science Clusters Position Statement on Open Science
- Horizon Europe Work Program for Research Infrastructures / EOSC

EOSC: Liens importants

- EOSC Portal
- EOSC Association
- EOSC Association Advisory Groups
- Journées EOSC-France, 4+5 avril 2022
- MESRI Horizon Europe web page
- European Commission EOSC page
- EOSC-Pillar
- EOSC-Future
- EOSC Symposium 2022