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A composite image showing particle tracks on the left and a colorful cosmic nebula on the right, with the text 'Sonder les infinis : des particules au cosmos' overlaid in the center.

Sonder les infinis : des particules au cosmos

European Open Science Cloud: Opportunities and risks for your work



**EUROPEAN OPEN
SCIENCE CLOUD**

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EOSC discussion: Outline

- What is the objective of the EOSC and what are the challenges to reach its goals?
- How far are we in Europe in implementing the EOSC vision?
- What are the next funding opportunities?
- How can you, as a researcher or engineer, benefit from the EOSC, and how can you participate?
- If you haven't yet come across the EOSC, why should you bother?

Europe: the data and infrastructure challenge

Motivation:

- How to maximise the incentives for sharing data and to increase the capacity to exploit them?
- How to ensure that data can be used as widely as possible, across scientific disciplines and between the public and the private sector?
- How better to interconnect the existing and the new data infrastructures across Europe?
- How best to coordinate the support available to European data infrastructures as they move towards exascale computing?



Challenges:

- Data coming from publicly funded research is not always open
- Lack of interoperability
- Fragmentation of infrastructures hampers data-driven science
- Lack of world-class High Performance Computing (HPC) infrastructure
- Systems to re-use scientific data

« [European Cloud Initiative](#) », EC, April 2016

EOSC Political drivers



*"We must create **infrastructure**. Europe's final transition must be one from fragmented datasets to an **integrated European Open Science Cloud**. By 2020, we want all European researchers to be able to deposit, access and analyse European scientific data through a **European Open Science Cloud**"*

Commissioner Carlos Moedas, Amsterdam, 4 April 2016



Key activities: Europe

- [GoFair](#) (Europe)
- [European Cloud Initiative](#) (ECI):
 - *European Data Initiative (EDI)*
 - [European Open Science Cloud \(EOSC\)](#)
 - [HPC Computing](#) (EuroHPC)
 - [Horizon 2020](#)/Europe : 2 billion Euros for the ECI





European Open Science Cloud (EOSC)

- Access to scientific data, e-infrastructures and services for all European researchers
- Rely on *existing* infrastructures and services



Challenges :

- *Business and governance model*
- Different communities, interfaces, formats → interoperability
- Social and cultural barriers





- Large European program: need to explore ways to put EOSC in place

[EOSCpilot](#) (2017-2019; 70 partners, 10 M€):

- How could the EOSC function?
- What governance structure?
- How to share data and infrastructures: interoperability?
- Results: <https://eoscpiilot.eu/news/eoscpiilot-rounds-key-contributions-eosc>

[EOSC-hub](#) (2018-2020, >100 partners , 30 M€):

- First set of services offered in the [EOSC portal](#)





Access through the [EOSC portal](#)

FitSM

PRODUCTION 

Learn how to manage IT services with a pragmatic and lightweight standard.

Service provided by the [EGI Foundation](#).


ACCESS SERVICE

***FitSM** is the name for a family of standards for lightweight IT service management

EOSC Examples



Access through the [EOSC portal](#)




EUROPEAN OPEN SCIENCE CLOUD

All services 🔍

My EOSC Mar

Services > Training & Support > EGI FitSM Training



EGI FitSM Training

Learn how to manage IT services with a pragmatic and lightweight standard

Provided by: [EGI Federation](#)

Research area: [Interdisciplinary](#)

Dedicated for: [Research organisations](#), [Business](#), [Providers](#), [Research group](#), [Researchers](#)

☆☆☆☆☆ (0.0 /5) 0 reviews

Order

Want to ask a question about this service?

ABOUT

REVIEWS (0)

With FitSM Training you will learn the fundamentals of IT service management and how to implement FitSM in your organisation through a combination of lessons and examples.


FitSM is a lightweight standard for IT service management. It brings order and traceability with simple, practical support and provides a common conceptual and process model setting out realistic requirements.

***FitSM** is the name for a family of standards for lightweight IT service management

EOSC Examples



Access through the [EOSC portal](#)




EUROPEAN OPEN SCIENCE CLOUD

All services 🔍

My EOSC Mar

🏠 > Services > Storage > B2SAFE



B2SAFE

Distribute and store large volumes of data based on data policies

Provided by: EUDAT, all generic CDI Level 1 providers

Research area: Interdisciplinary

Dedicated for: Researchers, Research organisations

☆☆☆☆☆ (0.0 /5) 0 reviews

ABOUT REVIEWS (0)

Order

Want to ask a question about this service?

B2SAFE is a robust, safe and highly available service which allows community and departmental repositories to implement data management policies on their research data across multiple administrative domains in a trustworthy manner. The service provides an abstraction layer of large scale, heterogeneous data storages and guards against data loss in long-term archiving. It allows to optimize access for users (e.g. from different regions) and brings data closer to facilities for compute-intensive analysis.



Access through the [EOSC portal](#)

EGI Cloud Compute

PRODUCTION

Run virtual machines on-demand with complete control over computing resources.

Provided by: the EGI Federated Cloud sites

ACCESS SERVICE

EGI Cloud Container Compute

PRODUCTION

Run Docker containers in a lightweight virtualised environment.

Provided by: the EGI Federated Cloud sites

ACCESS SERVICE

EOSC Evolution



- [Launch of EOSC](#) 23 November 2018 (Vienna)
- Opening of the EOSC portal:
- <https://www.eosc-portal.eu/>
- 2019 – 2020: EOSC development phase
- After 2020: EOSC fully (?) functional



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- Core funding for EOSC from EU
- Inclusiveness of all stakeholders
- Core follows subsidiarity principle
- Providers with a shared purpose
- Countries have different structures
- Self-inclusivity as much as possible
- Hardware agnostic infrastructure
- Focus on FAIR data and services
- **EOSC free of charge at point of user**



Jean-Claude Burgelman (DG-RTD):

Phase 1, until end of 2020:

- Commission will invest **EUR 300 million to support the core functions** of the EOSC as per milestones
- Member States would flag the **national initiatives that they want to federate into the EOSC** (e.g. the work of the Helmholtz Data Alliance); and the **resources they are willing to provide in kind**
- Research funders would start making **costs eligible for FAIR* data only**



Phase 2, after 2020:

- To explore a mix of funding including possibly deposit fees from national funders
- Based on a full cost estimate for the running of the EOSC, conducted by the EOSC governance framework in Phase 1

(presentation at the [EOSCpilot Stakeholder Forum](#), Vienna, November 21, 2018)

*FAIR: Findable, Accessible, Interoperable, Reusable

News about the EOSC



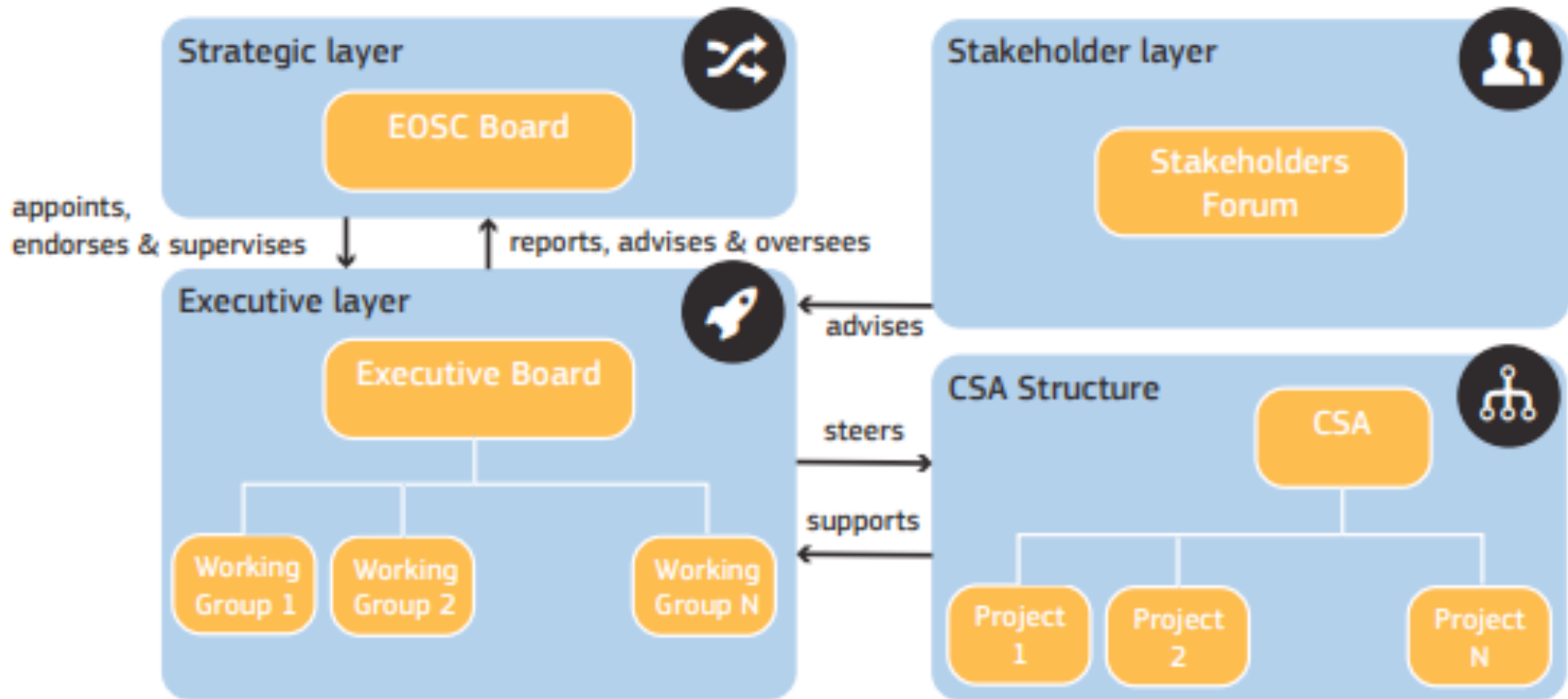
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Should appear soon here: [EC Documents](#)
See also « [EOSC Strategic Implementation Plan](#) »

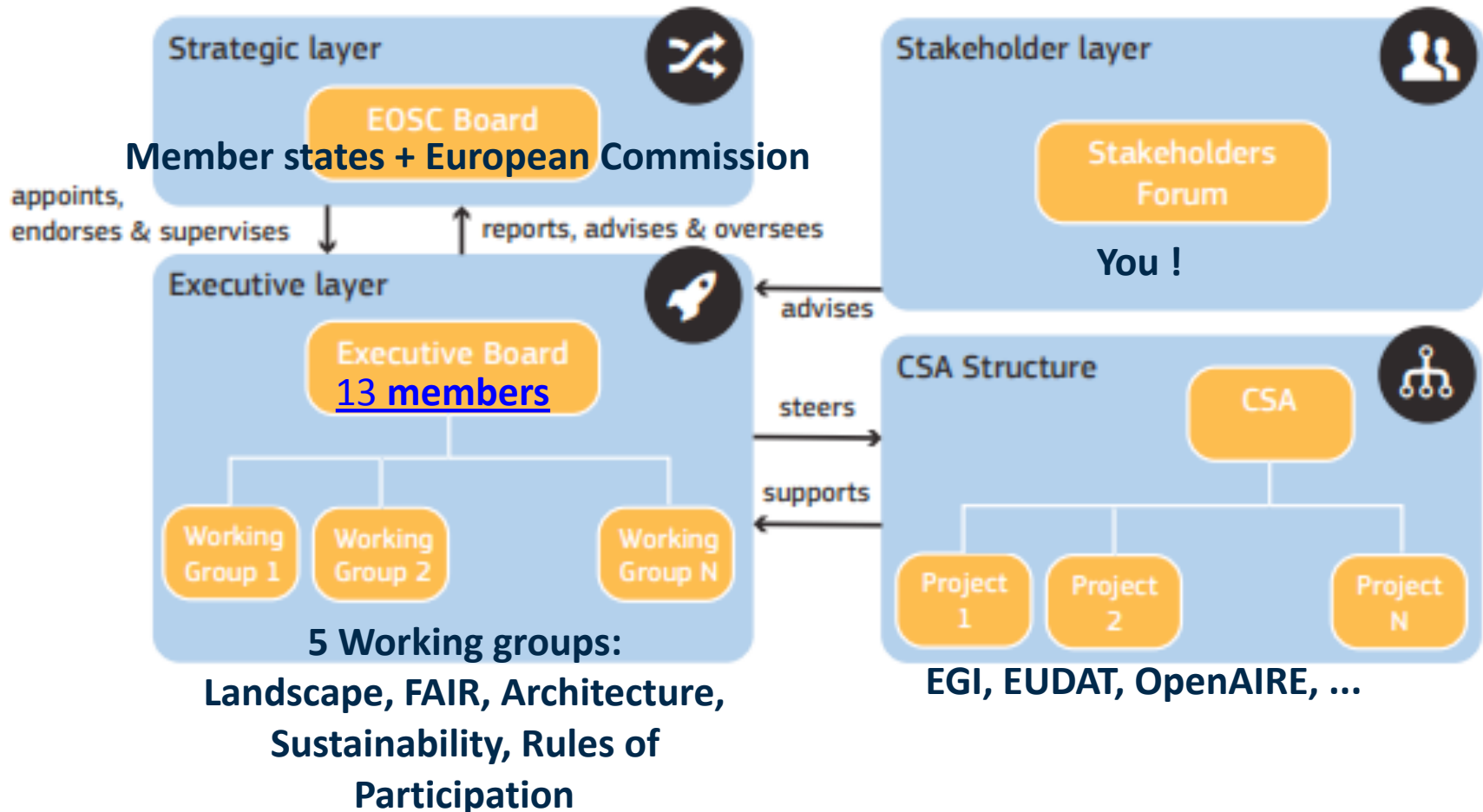
News about the EOSC

EOSC secretariat: <https://www.eoscsecretariat.eu>



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EOSC Executive Board:

- Chair [Karel Luyben](#) (representative of [CESAER](#))
- Vice Chair: [Cathrin Stöver](#) (GEANT)

Representatives of organisations:

- [CESAER](#) (Karel Luyben) [Universities of Science & Technology in Europe]
- [CESSDA](#) ERIC (Ronald Dekker) [European Social Science Data Archives]
- [EMBL](#) (Rupert Lück) [European Molecular Biology Laboratory]
- [ESS](#) ERIC (John Womersley) [European Spallation Source]
- [GEANT](#) (Cathrin Stöver) [European network]
- [RDA](#) ([Juan Bicarregui](#)) [Research Data Alliance]
- [Science Europe](#) (Stephan Kuster)

Individual Experts:

- [Sarah Jones](#)
- [Jean-François Abramatic](#)
- [Jan Hrusak](#)



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Karel Luyben

EOSC Working groups

EOSC secretariat: <https://www.eoscsecretariat.eu>

EOSC Working Groups

<https://www.eosc-portal.eu/eosc-working-groups>

- [Landscape](#): mapping of existing infrastructure for future EOSC. Lead: Jan Hrusak, France: Volker, Italy: Gianluca Polenta (ASI)
- [FAIR](#): requirements for the development. Lead: Sarah Jones, France: Françoise Genova (INSU, RDA), Italy: Sefano Cozzini (CNR/IOM)
- [Architecture](#): technical framework required for the EOSC. Lead: Jean-François Abramatic, France: Jerome Pansanel (IN2P3)
- [Rules of participation](#): define the rights, obligations governing EOSC transactions between EOSC users, providers and operators. Lead: Juan Bicarregui, France: Odile Hologne (INRA)
- [Sustainability](#): implementation of an operational, scalable and sustainable EOSC federation after 2020. Lead: Rupert Lück & Lidia Borrell-Damián, France: Jean-Yves Berthou (INRIA), Italy: Federico Ruggieri (GARR)

EOSC Landscape Working Group

Landscape:

- Mapping of the existing research infrastructures in Europe which are candidates to be part of the EOSC federation
- Survey of the existing infrastructures / initiatives Q3/2019
- Final document: early 2020
- Input: group members (no time for wide survey activities)
- Q3 2020: presentation of the results to the [EOSC Executive Board](#)
- long term: coordinate with survey results of INFRAEOSC-5b projects



Jan Hrusak

EOSC-Pillar, INFRAEOSC-5B

<https://www.eosc-pillar.eu/>

- *Leveraging national initiatives of EU member states to build an Open Science and FAIR data-based EOSC*
- Launched: July 2019
- Duration: 3 ans
- France, Italy, Germany, Austria, Belgium
- University Vienna, University Gand, DKRZ, Fraunhofer, GFZ, KIT, CINECA, CMCC, CNR, INFN, Trust IT
- CNRS, CINES, IFREMER, INRA, INRIA, INSERM



First step: landscape survey

- Who is already involved in EOSC? Financing mechanisms, coordination, expectations, perspectives
- Target: 2000 *stakeholders* (France, Italy, Germany, Austria, Belgium)
- *Funding bodies, universities, research infrastructures, e-infrastructures*
- Questions adapted, contact points identified, duration of survey: ~20 minutes
- Launched in October 2019
- First results: end of 2019
- First analysis ready: February 2020

Similar surveys by other INFRAEOSC-5B projects

Coordination of results -> EOSC Secretariat -> EOSC WG Landscape

Next steps: FAIR data, use cases, implementation

- WP5: establishing FAIR data services. Lead: Fraunhofer
- WP6: use cases and community driven pilots. Lead: Frédéric Huynh (Système Terre)
- WP7: infrastructure layer (what works, what's needed, how to fill the gaps). Lead: Volker / Jos van Wezel (KIT)

INFRAEOSC Funding Opportunities

Opening: 19.11.2019, Deadline: 22.4.2020

[INFRAEOSC-03-2020](#) (RIA*): Integration and consolidation of the existing pan-European access mechanism to public research infrastructures and commercial services through the EOSC Portal

1 proposal, *EUR 40.9 million* [[Technopolis?](#)]

[INFRAEOSC-07-2020](#) (RIA): Increasing the service offer of the EOSC Portal, 6 service areas, at least one funded project per area

(a1) Distributed and cloud computing resources, *EUR 8 million* [[EGI](#)]

(a2) Data services, *EUR 7 million* [[EUDAT](#)]

(a3) Services supporting scholarly communication and open access, *EUR 4 million* [[OpenAire](#)]

(a4) Above the net services, *EUR 2 million*

(a5) Services and resources from non-research public sector data providers, *EUR 1 million*

(a6) Additional research enabling services, *EUR 2 million*

*RIA: [Research and Innovation Action](#)

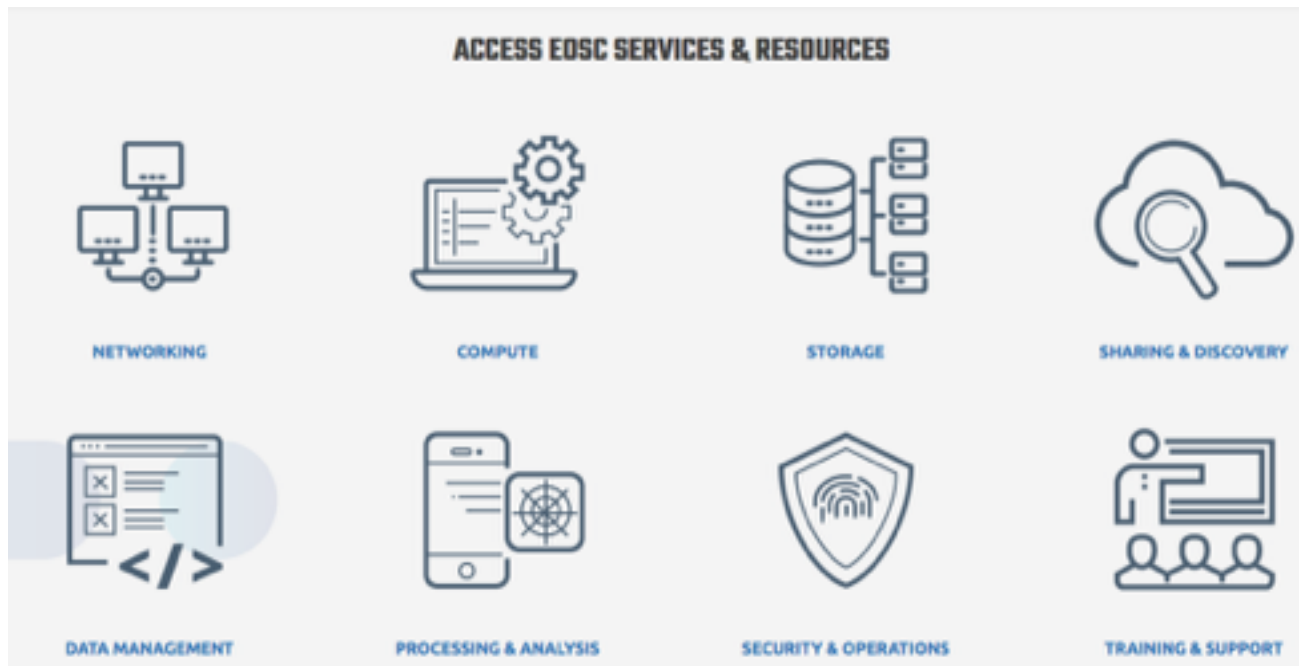
Consolidate and scale up the [EOSC Portal](#) and its underlying service platform in order to:

1. Strengthen the [EOSC Portal](#) so that it continues to provide an increasing portfolio of high quality standard compliant and interoperable services of proven user interest and scientific relevance from a wide range of national, regional and institutional public research infrastructures in Europe as well as from commercial service providers in its catalogue
2. Reinforce the role of the marketplace as the access channel to integrated, composable and reliable services
3. Attract more users, within the research community and beyond, by enhancing the user experience and seamlessly accommodating their needs
4. Ensure its long-term sustainability taking into account all the relevant governance and business frameworks

Leveraging developments of [EOSC-hub](#) and other EU funded projects: [INFRAEOSC-06-2019](#) (a), INFRAEOSC-05-2018 (a), INFRAEOSC-04-2018 and other relevant EU funded projects and initiatives

INFRAEOSC-03 Scope

- (A) Operation, maintenance and enhancement of the [EOSC Portal](#) (the website, the catalogue of services and the marketplace)
- (B) Fostering and enabling secure service composability
- (C) User enhanced experience using Artificial Intelligence (AI) techniques
- (D) Widening the EOSC user base
- (E) Widening the service offer with commercial services
- (F) Support Activities





GET ENGAGED



Use EOSC services

EOSC offers a growing catalogue of resources and services for open science.



Become a provider

Contact us to become an EOSC service/resource provider.



Contribute to the EOSC Stakeholders Forum

Have your say on EOSC, demo your services or present your use case.



Submit your EOSC in practice story

Concrete examples of how EOSC services are supporting your work.



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<https://www.eosc-portal.eu>

Why should you bother?

- EOSC Vision: scientific community moving forward
- New opportunities for research
- Financing more and more linked to aspects of Open Science (science / data / access).
- Research: we need to work together on common platforms
- Private-public: need to lower barriers for collaboration



Conclusion

- EOSC vision: Access to scientific data, e-infrastructures and services for all European researchers
- Challenge: business model

Key points:

- FAIR data, services, e-infrastructures
- Incentives
- Sustainability
- Common effort: scientific communities, funding agencies, ministries, European commission





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The background of the slide features a composite image. On the left, there are several glowing particle tracks, represented by thin lines of yellow, orange, and red, with small blue dots at their endpoints, suggesting particle interactions or decays. On the right, there is a colorful, ethereal image of a cosmic nebula or galaxy, with swirling clouds of gas in shades of purple, pink, and blue, set against a dark, star-filled space.

Sonder les infinis : des particules au cosmos

Merci de votre attention !

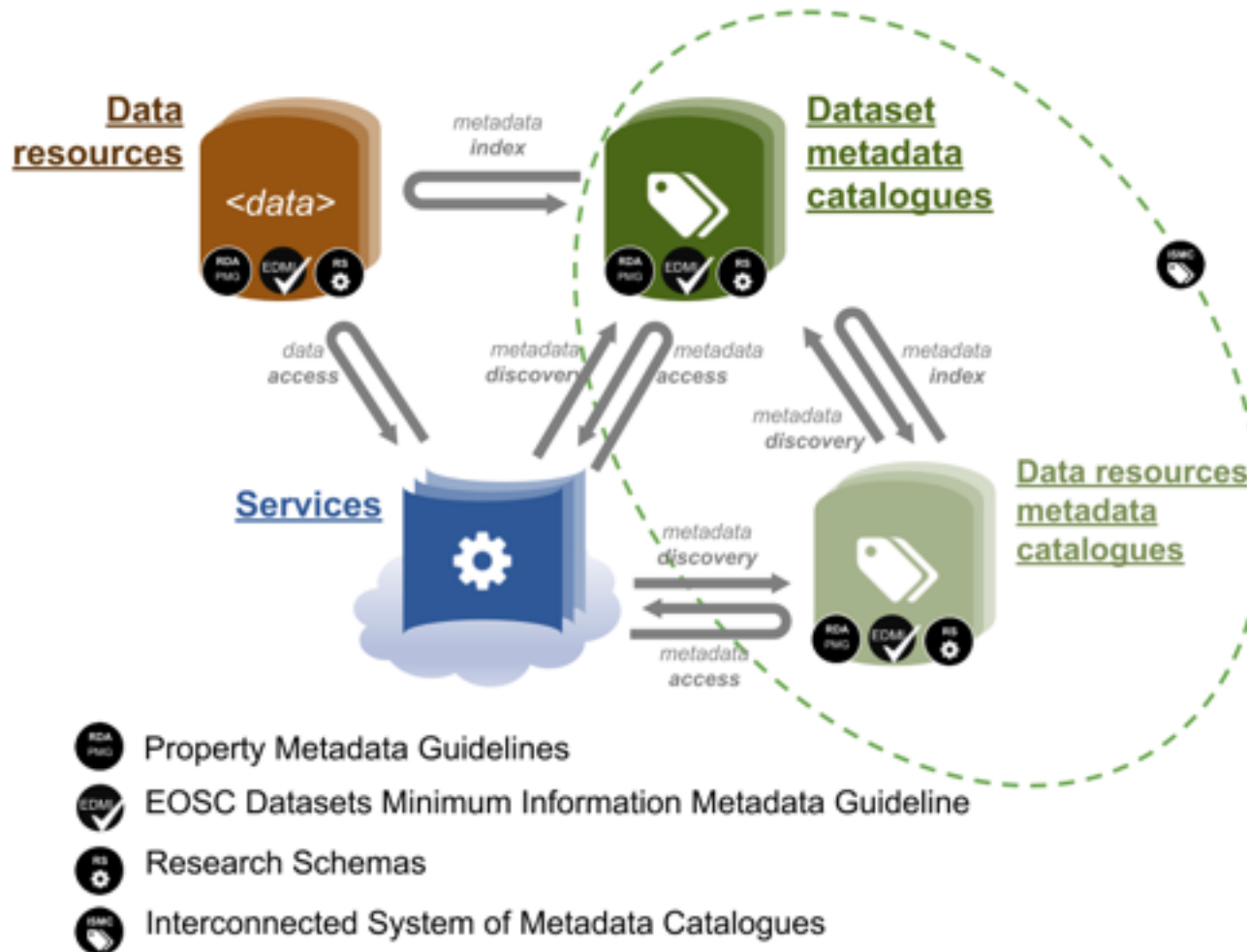
EOSCpilot, recommendations



From: [« Final EOSC Architecture »](#)

*AAI : authentication and authorization infrastructure

EOSCpilot, recommendations



From: [Report on Data Interoperability](#)

EOSC projects time line

		2017	2018	2019	2020	2021	2022		
EOSCpilot									
EOSC-Hub									
Openaire									
RDA/FREYA/etc									
INFRAEOSC-01									
INFRAEOSC-04									
INFRAEOSC-05 (Gov and Fair)									
INFRAEOSC-02									
INFRAEOSC-05 (RIA)									
INFRAEOSC-06									

Also Thematic Clouds

Lots of opportunities to join the EOSC!



Pyramide Open Science



Open Science
=
Open Data +
Open Access +
Open Infrastructures

