The Semantic Interoperability Task Force of the EOSC Association

Experiences and ongoing activities

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EOSC Association and Task Forces?

The European Open Science Cloud (EOSC)

European federation of infrastructures for seamless access to research objects and value-added services for the whole research data cycle

EOSC Association (EOSC-A)

The research community's voice in the governance of EOSC, defining a Strategic Research and Innovation Agenda (SRIA) and Multi-Annual Roadmap (MAR)

Advisory Groups (AG) and Task Forces (TF)

Structure to help steer the implementation of EOSC, AGs work as "umbrellas" for related Task Forces that in turn address key areas of EOSC implementation

Semantic Interoperability TF

Part of the Metadata and data quality AG, develop and implement the semantic interoperability recommendations from the EOSC Interoperability Framework

- Implementation of EOSC
  - PID policy and implementation
  - Researcher engagement and adoption
  - Rules of Participation (RoP) compliance monitoring
- Metadata and data quality
  - FAIR metrics and data quality
  - **Semantic interoperability**
- Research careers and curricula
  - Data stewardship curricula and career paths
  - Research careers, recognition and credit
  - Upskilling countries to engage in EOSC
- Technical challenges on EOSC
  - AAI Architecture
  - Infrastructures for quality research software
  - Technical interoperability of data and services
- Sustaining EOSC
  - Financial Sustainability
  - Long-term data preservation

Towards a web of FAIR data & services

Addressing interoperability challenges
EOSC Interoperability Framework report and beyond

Vocabularies and crosswalks
Encoding and exchanging research information as data understood by tools, workflows and infrastructures

Catalogues for vocabularies
Promoting FAIR—findable, accessible, interoperable and reusable—vocabularies within and across domains

Pragmatic interoperability
Working at the intersection of theoretical frameworks and practical applications in research

EOSC Interoperability Framework

Recommendations

R1: definitions of concepts, metadata and data schemes
R2: creating semantic artefacts with open licenses
R3: associated documentation for semantic artifacts
R4: repositories of semantic artefacts
R5: minimum metadata model and cross walks discovery
R6: extensible options for disciplinary metadata
R7: apply a broad definition of data (datasets, workflows, lab protocols, software, methods, hardware design, etc.)
R8: clear protocols and building blocks for catalogues

Synergies across actors and initiatives

Thematic explorations (Objective 1)
Depart from the task force charter, EOSC projects and interoperability initiatives around the Task Force members

Strategic knowledge exchange (Objective 2)
Organise workshops and collaborative problem-solving activities, accumulating literature, examples of solutions and feedback.

Converging on recommendations (Objective 3)
Produce a set of recommendations on Semantic Interoperability to support the wider EOSC community

Expected core deliverables
Scientific articles and/or conference presentations, events organised with stakeholders, and reports and/or guidelines on semantic interoperability, etc.

O1.1: Recommend common metadata standards for a broad range of data

O1.2: Catalogues for metadata standards

O1.3: Evolve syntactic interoperability for metadata schemas and services

O1.4: Implementation and actualization of crosswalks; alignment of semantic artefacts at multiple levels

O1.5: Characterization of technical components for semantic interoperability

O1.6: Long-term preservation of semantic artefacts

Representing the EOSC community

Task force members as liaisons

40+ members working to identify and address gaps

(Meta)data standards (Theme 1)

A landscape of semantic interoperability and the application of metadata standards

Semantic artefact catalogues (Theme 2)

A survey of characteristics and recommendations on semantic artefact catalogues

Use cases (Theme 3)

A collection of use cases based on real-world interoperability case studies from the EOSC community

Departs from EOSC projects and interoperability initiatives around the Task Force members

(Meta)data standards (Theme 1)

Semantic interoperability landscape

What aspects are covered by the Task Force?
What does semantic interoperability mean in practice?
What is missing between covered aspects and practices?

Coordination

Kurt Baumann <kurt.baumann@switch.ch>
Milan Ojsteršek <milan.ojstersek@um.si>
20+ members engaged

Activities

Minimum (meta)data set and interoperability indicators

Crosswalks, services, methods and formal languages

Recommendations for governance and processes for preservation and maintenance of semantic artefacts

Vision

"A foundation of FAIR digital objects based on minimal metadata sets, which allow crosswalks into various schemas/ontologies with a clear view reflecting metadata quality to interoperability."

Semantic artefact catalogues (Theme 2)

Towards a maturity model

What is a catalogue of semantic artefacts?
Which dimensions can be used to assess maturity?

Coordination

Yann Le Franc <ylefranc@esciencefactory.com>
Oscar Corcho <oscar.corcho@upm.es>
Silvio Peroni <silvio.peroni@unibo.it>
10+ members engaged

Activities

Literature study in progress, 14+ documents selected

Inclusive definition of a semantic artefact catalogue that also covers web pages with metadata in human-readable form…

12 dimensions that indicate maturity have been identified for measuring the maturity of catalogues for semantic artefacts

Availability of metadata (7 refs)

Openness (8 refs)

Quality of semantic artefacts (4 refs)

Availability (7 refs)

Statistics on artefacts and usage (1 ref)

PIDs for semantic artefacts (5 refs)

Governance mechanisms (8 refs)

Community/stakeholders involved (5 refs)

Sustainability of the catalogue (6 refs)

Technology/Tools used (6 refs)

…

Use cases (Theme 3)

Semantic interoperability use cases

Draw on communities to share success stories and define use cases for existing and potential EOSC services

Coordination

Wolmar Nyberg Åkerström <wolmar.n.akerstrom@uu.se>
20+ members engaged

Activities

Capturing case studies and use cases and encourage the wider community to contribute interesting and representative examples

Compare and consolidate across stakeholders, tasks, goals and component of the EOSC IF

Identify and fill gaps in the types of organisations, domains and goals captured by the task force
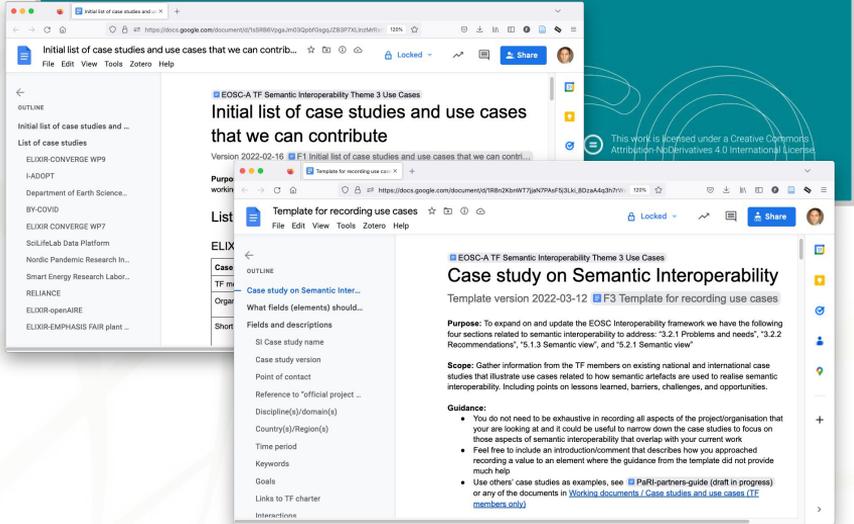
A perspective on what works well

Journeys come in many shapes

Use cases and case studies can demonstrate value and engage stakeholders in requirements gathering

Use cases and communities

ELIXIR draws on communities to share success stories and define use cases for its services

Semantic interoperability use cases

Provide 1) input to the initiatives that are shaping EOSC and 2) examples and lessons learned to stakeholders

https://elixir-europe.org/how-we-work
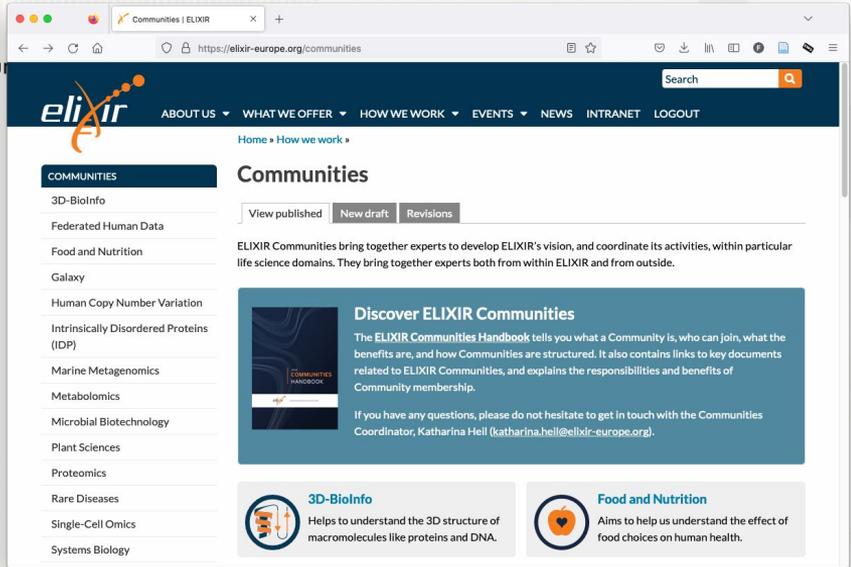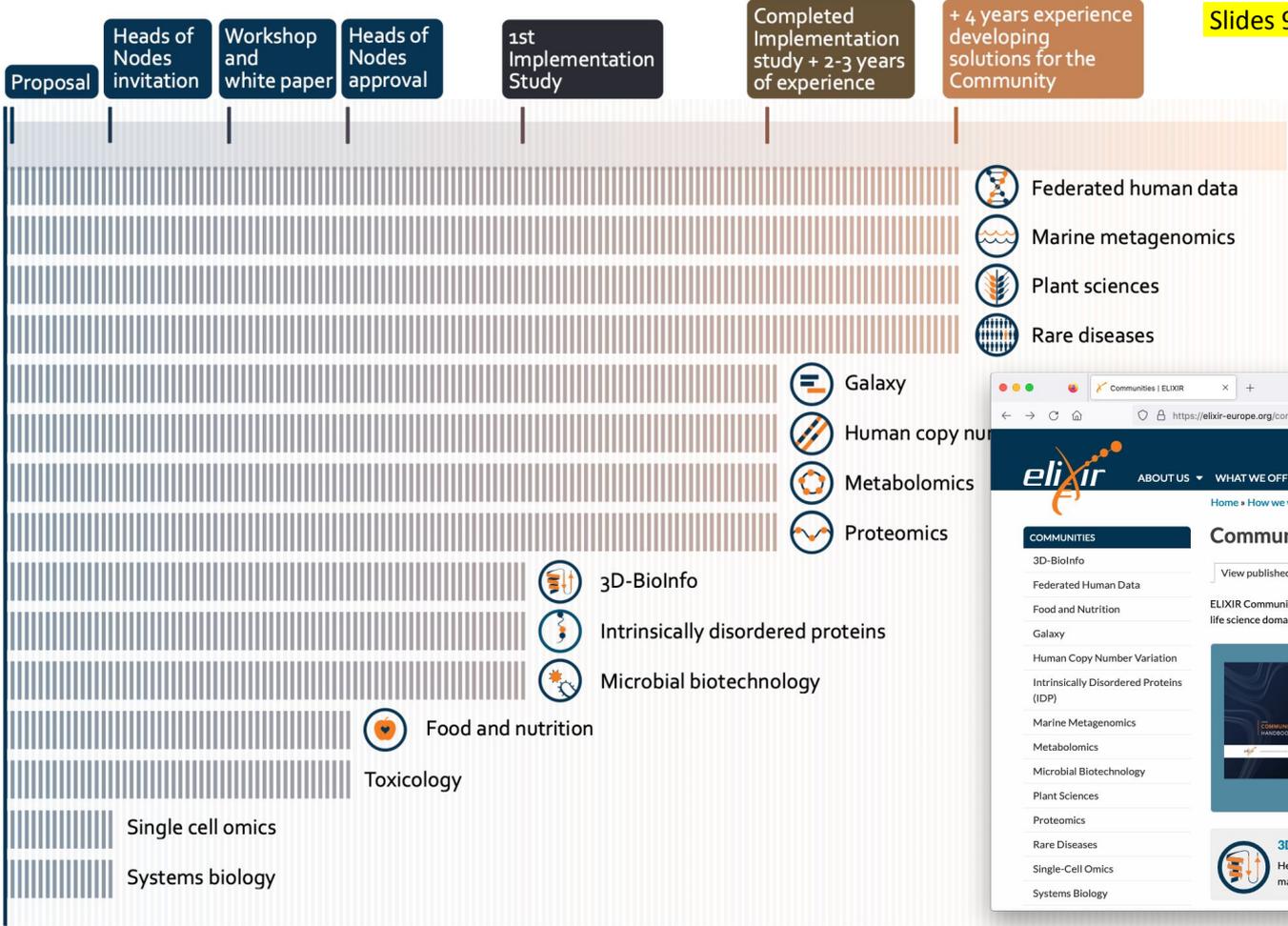
A shared vision of the journey

Use cases demonstrate value

Prevalent in contexts ranging from product sales,
to EOSC projects, and healthcare governance

Adopters recognise themselves

Used in requirements gathering and communication

Builders can see the full picture

Used in development and validation of services

Policy can ensure representation

Mapping the landscape of stakeholders and how they are served by
different use cases

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Community Use Cases

Home » Use Cases » Community Use Cases

This page provides examples of "EOSC in practice" use cases or success stories that highlight how EOSC services and resources can support the daily work of researchers and innovators. Please scroll down to make the use cases appear.

If you wish to share your EOSC use case, please fill out the webform.

Run4science.org - Measuring environmental and biodiversity data... while running!

We want citizens to measure their environment by using smartphones. Most of the citizen science initiatives are focused on one topic: it can be air quality, biodiversity.

Kampal Artificial Intelligence for rare disease diagnosis

In the context of the EOSC-hub project, Kampal Data Solutions is benefitting from storing the healthy and ill patients' registries to a database on EOSC infrastructure.

Guardomic› bot mitigation engine

Web services owners struggle daily to protect their websites from bot traffic and their users from fraudulent digital ads or cryptocurrency web mining.

ELIXIR and the life sciences community

ELIXIR and the life sciences community
Go to Website ⧉

Engineering & Technology

Natural Sciences

Societal challenges

ELIXIR is an organisation aiming to coordinate, integrate and sustain bioinformatics resources – such as databases, computational services, applications – across its member states and enables users in academia and industry to access what is vital for their research.

The challenge is to unite Europe's leading life science organisations in managing the increasing volume of data generated by publicly-funded research.

Technical challenges

ELIXIR wants to establish a federation of cloud sites, each providing storage and compute capacity for researchers. An established Competence Centre in EOSC-hub is supporting this activity. The CC team has been supporting ELIXIR to set up a compute platform that allows ELIXIR cloud and data providers to share cloud compute and storage capacity to replicate and share reference datasets with each other and with their users.

How EOSC can help and add value

The ELIXIR Compute Platform aims to enable researchers to combine technical components of the platform services into a seamless ecosystem, creating a science-ready interface to the key resources and technological capabilities that are available for life sciences.

The ELIXIR Compute Platform has been leveraging the EOSC Service Catalogue, especially in the area of aligning ELIXIR with the EOSC AAI.

Share this:

https://eosc-portal.eu/eosc-in-practice/use-cases

Capturing journeys at different levels

Case studies are real-world scenarios

Actual people and organisations adopting a solution in a specific context and outcomes of their efforts

Use cases can be business focused

How a stakeholder group can approach adopting a solution to achieve broader goals and outcomes

Use cases can be task focused

How a user interacts with different services and resources to complete a task

Conceptual models tie them together

Actors, components and resources involved and how they relate to more general categories
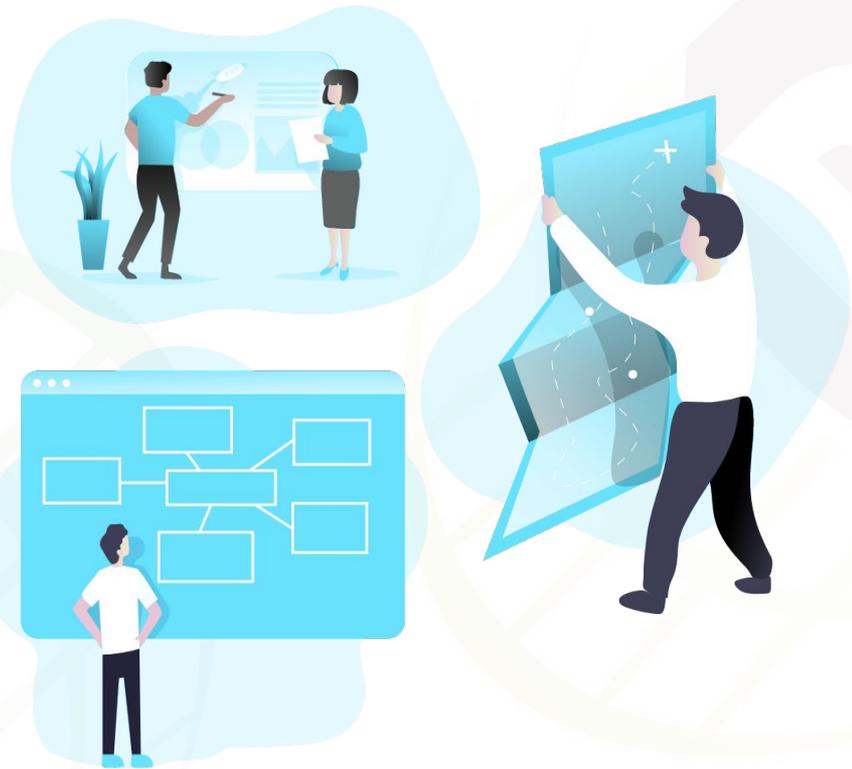
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Semantic interoperability journeys

Capturing case studies and use cases
Encourage the wider EOSC stakeholder community to contribute interesting and representative examples

Indexing for adopters and builders
Compare and consolidate across stakeholders, tasks, goals and component of the EOSC IF

Representing the EOSC community
Identify and fill gaps in the types of organisations, domains and goals captured by the task force
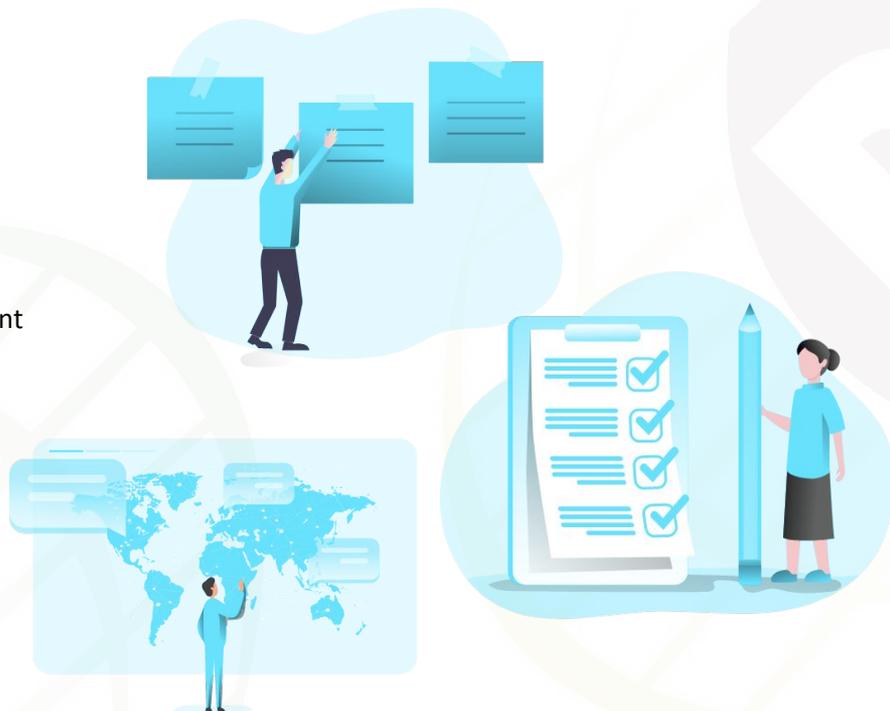
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Task Force Charter
Semantic Interoperability

Introduction
- EOSC and semantic interoperability
- Challenges to semantic interoperability

Main aims
- Objectives
  - O1: Explorations into Semantic Interoperability
  - O2: Knowledge exchange around Semantic Interoperability
  - O3: Recommendations

Core activities of the Task Force

Planned duration of the Task Force

**Working methodology**
- Explorations/Case Studies
- Methods
- Output

Dependencies

Membership

References

APPENDIX
Case studies (examples)

https://www.eosc.eu/advisory-groups/semantic-interoperability
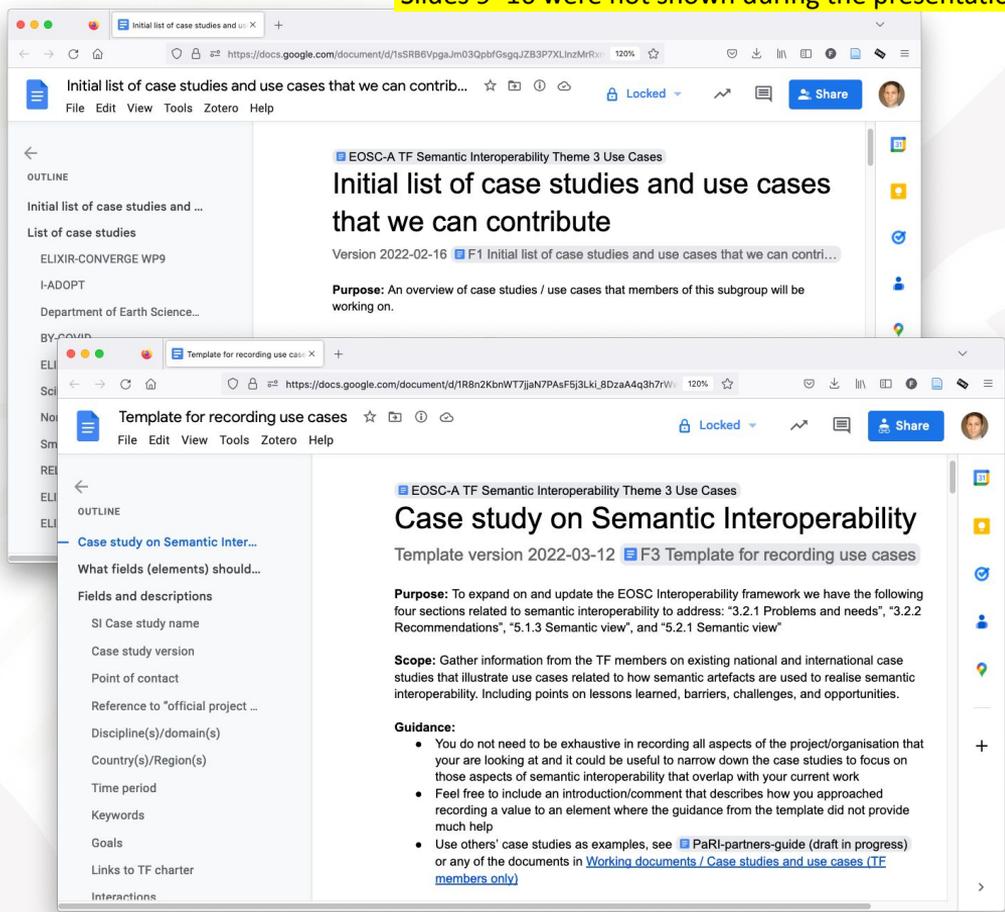
Shared practices for EOSC Association

Guide initiatives through journeys

Coordination and steering through the TFs could be better with a shared vision and comprehensive picture

Host a shared task force catalogue

Keeping accumulated case studies in one place could increase their visibility and avoid redundant efforts

Promote best practices and resources

Pooling experiences, procedures and skills will help TF members focus on content over process

Liaise between EOSC projects and TFs

Creating opportunities to communicate can foster further collaboration and synergies

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Semantic Interoperability Task Force

Task Force Charter

Focus ≈ Good practices for encoding research information for a web of FAIR data and services—ensuring that the precise meaning of the information is preserved and can be understood by tools, workflows and data infrastructures.

Thematic explorations (Objective 1)

Depart from the task force charter, EOSC projects and interoperability initiatives around the Task Force members

Strategic knowledge exchange (Objective 2)

Organise workshops and collaborative problem-solving activities, accumulating literature, examples of solutions and feedback.

Converging on recommendations (Objective 3)

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Outputs

Scientific articles and/or conference presentations, events organised with stakeholders, and reports and/or guidelines on semantic interoperability, etc.

Work streams update

Highlight = Started in 2023

(Meta)data standards (Theme 1)

Survey the landscape of semantic interoperability around EOSC
Propose a minimum set of (meta)data, indicators and crosswalks

Semantic artefact catalogues (Theme 2)

Converge on a definition and the dimensions of a maturity model
Analyse catalogues using the model and suggest a path forward

Use cases (Theme 3)

Capturing interoperability case studies from EOSC stakeholders
Indexing and presenting use cases to adopters and builders

Road to completion

EOSC Association endorsed deliverables

Consolidate outputs across themes and align with EOSC projects
Converge on recommendations for EOSC going forward
Sort outputs into core deliverables and supporting outputs