



**FAIR-IMPACT**

Expanding FAIR solutions across EOSC

# FAIR-IMPACT Synchronisation Force workshop 2022

Concluding session, 12 December 2022

Ingrid Dillo, Sara Pittonet, Joy Davidson,  
Marjan Grootveld

# Welcome message, thank you and recap

Marjan Grootveld, DANS



# Synchronisation Force

ONLINE WORKSHOP

## 2022 Edition

8 November - 12 December

 eosoc

FAIR-IMPACT

Expanding FAIR solutions across EOSC

## Plan for today

- Recap of the goal of the Synchronisation Force workshop 2022
- Key findings from the workshop, for discussion

# Recap

The workshop aims to discuss common challenges and priorities related to turning the FAIR principles into practice.

**Four online collaborative sessions between the 21st and 24th of November 2022** assessed the implementation of **selected recommendations** and ambitions from the [Turning FAIR into Reality Report \(2018\)](#), [the FAIRsFAIR White Paper \(2021\)](#), [the SRIA \(version June 2021\)](#) and [EOSC Multi-Annual Roadmap \(2023-2024\)](#).

In today's **discussion session** we present a summary of the findings from the four topical sessions.

[10.5281/zenodo.6378823](https://doi.org/10.5281/zenodo.6378823)



# Synchronisation Force workshop: goal and intended output

## 2022 Workshop

8 November - 12 December

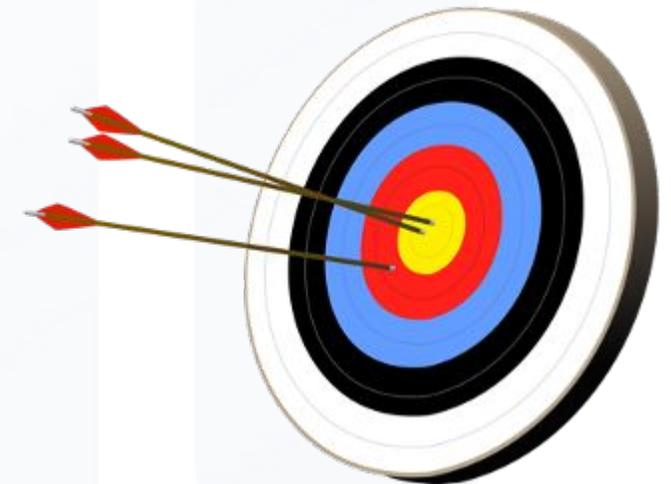
- Goal: chart developments in four areas from the represented projects and initiatives.
- Output of this workshop:
  - Spreadsheet with your input
  - Concise workshop report, to be finalised by February 2023
- Output of the *three* workshops: White Paper with recommendations for how to encourage impact, alignment and synchronisation around FAIR and EOSC

## 2023 Workshop

I want to stay tuned!

## 2024 Workshop

I want to stay tuned!



## EOSC Partnership



### EOSC Tripartite collaboration

(European Commission, the EOSC Association, and the Member States and Associated Countries)

- PID policy and implementation
- Researcher engagement and adoption
- FAIR metrics and data quality
- Semantic interoperability
- Technical interoperability of data & services
- Long-term data preservation

## Open Science initiatives



November 2022

## Building an EOSC in practice - engaging with solution providers

### HORIZON-INFRA-2021-EOSC-01 Projects



WorldFAIR Skills4EOSC EOSC4Cancer  
EuroScienceGateway RAISE AI4EOSC

### ESFRI Cluster Projects



### EOSC Technical Core



### EOSC Providers



More than 120 registered participants!

## Topics of the workshop 2022

Date	Session Topic	Chair & Rapporteur
21st November 16.00-17.30 CET	Metrics and assessing FAIRness	Chair: Mike Priddy, DANS Rapporteur: Maaïke Verburg, DANS
22nd November 11.00-12.30 CET	Persistent Identifiers	Chair: Jessica Parland-von Essen, CSC Rapporteur: Liisa Marjamaa-Mankinen, CSC
22nd November 13.00-14.30 CET	Trustworthy and FAIR-enabling repositories	Chair: Maaïke Verburg, DANS Rapporteur: Ryan O'Connor, DCC
24th November 14.00-15.30 CET	Metadata, semantics and interoperability	Chair: Clément Jonquet, INRAE Rapporteur: Oscar Corcho, UPM
12th December 13.00-14.30 CET	Plenary discussion session	

<https://fair-impact.eu/synchronisation-force>: all slides, collaborative notes, collaborative spreadsheet.

Thank you for all your input!

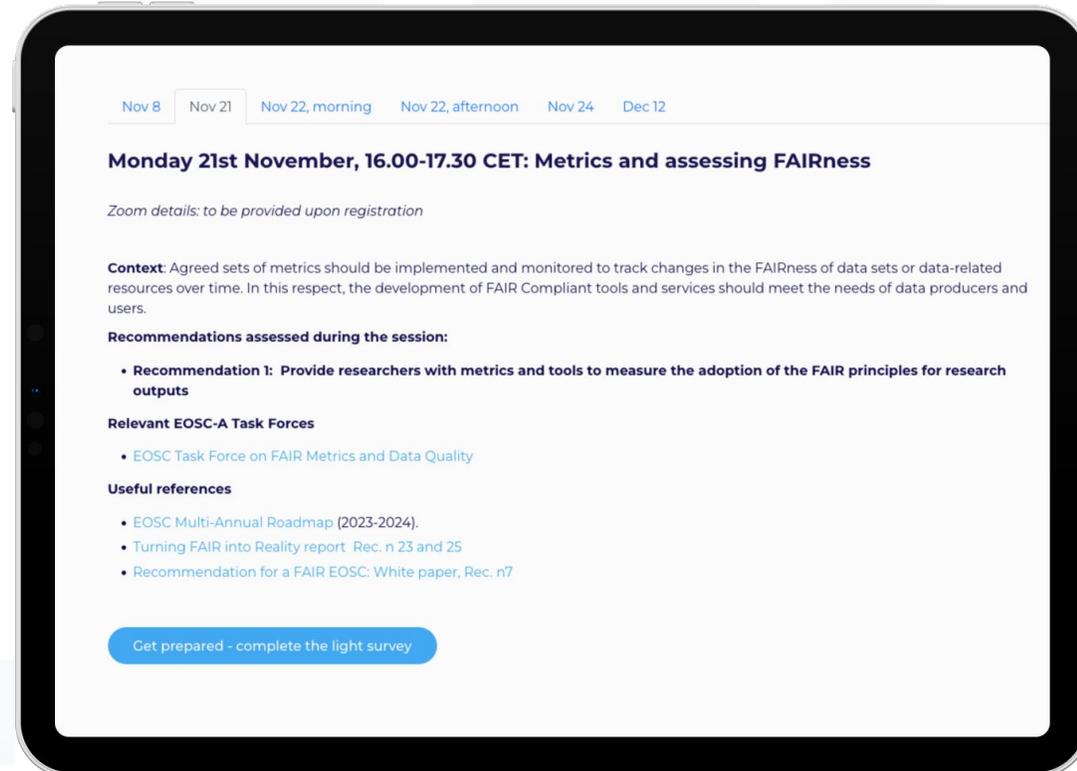
# Metrics and assessing FAIRness

Key questions, to be answered in the survey:

1. What does your project or initiative do to implement metrics?
2. If your project, initiative, community or institution uses tools to assess the FAIRness of **datasets**: which do you use?
3. Are you aware of tools and metrics that are used to assess **software** FAIRness and are you utilising them in your project or initiative? Which tool(s) and metrics?
4. Are you aware of tools and metrics that are used to assess **semantic artefacts** FAIRness and are you utilising them in your project or initiative? Which tool(s) and metrics?

Chair: Mike Priddy (DANS)

Rapporteur: Maaïke Verburg (DANS)



Nov 8 Nov 21 Nov 22, morning Nov 22, afternoon Nov 24 Dec 12

**Monday 21st November, 16.00-17.30 CET: Metrics and assessing FAIRness**

Zoom details: to be provided upon registration

**Context:** Agreed sets of metrics should be implemented and monitored to track changes in the FAIRness of data sets or data-related resources over time. In this respect, the development of FAIR Compliant tools and services should meet the needs of data producers and users.

**Recommendations assessed during the session:**

- **Recommendation 1: Provide researchers with metrics and tools to measure the adoption of the FAIR principles for research outputs**

**Relevant EOSC-A Task Forces**

- [EOSC Task Force on FAIR Metrics and Data Quality](#)

**Useful references**

- [EOSC Multi-Annual Roadmap \(2023-2024\)](#).
- [Turning FAIR into Reality report Rec. n 23 and 25](#)
- [Recommendation for a FAIR EOSC: White paper, Rec. n7](#)

[Get prepared - complete the light survey](#)

# Recommendations TFiR and MAR

## Rec. 12: Develop metrics for FAIR Digital Objects

A set of metrics for FAIR Digital Objects should be developed and implemented, starting from the basic common core of descriptive metadata, PIDs and access. The design of these metrics needs to be guided by research community practices, and they should be regularly reviewed and updated.

- A [mix of automated and manual assessments](#) will be needed to cover all criteria, at least in the short-term, as these assessments are incredibly varied in their definition. Focus should be placed on the baseline criteria that can be assessed automatically now, and on applying the others as resources develop;
- It is important that the assessment frameworks for FAIR data suit [differences in disciplinary practice](#);
- Assessments on the FAIRness of data sets should be run by repositories and [made public](#) alongside metadata records.

## Recommendation MAR 006:

Provide the metrics and tools to measure the adoption of the FAIR principles for research outputs and provide frameworks to help in certifying that repository services enable FAIR.

## Highlights

- ~40 participants in the room from a large variety of projects, initiatives, as well as the EOSC-A TFs creating a lively conversation, also in the chat;
- ~40 entries with a lot of detailed information, including useful links, in the spreadsheet;
- importance of making research outputs FAIR seems to be broadly on the radar;
- area in which quite some progress was made over the last years;
- there is an abundance of different outputs and results.

## What is missing or could be improved

- plethora of assessment tools; different metrics, different methods and tests, different weighing factors; too complex for the end user;
- assessment tools are mainly generic; outcome less meaningful if domain specificity is missed;
- assessment tools mainly focus on (meta)data;
- caution is needed not to use assessment results as hard absolute numbers to judge upon.

<https://fairassist.org/#/>

## Recommendations

- we need further convergence of metrics and tools; this requires further discussion, synchronisation and alignment;
- we need more domain sensitive assessment methods, in order to incorporate maturity, good practices and requirements;
- we need assessment tools for other research outputs, like software, semantic artifacts, etc.
- FAIR assessment and scoring should be the starting point for assistance and improvement.

# EOSC TF FAIR Metrics output



FAIR Metrics and Data Quality  
Task Force

## Community-driven Governance of FAIRness Assessment: An Open Issue, an Open Discussion

### Authorship Community:

Mark D. Wilkinson<sup>1,3</sup>  
Susanna-Assunta Sansone<sup>2,4</sup>  
Eva Méndez<sup>5</sup>  
Romain David<sup>2,6</sup>  
Richard Dennis<sup>2,7</sup>  
David Hecker<sup>2,8</sup>  
Mari Kleemola<sup>2,9</sup>  
Carlo Lacagnina<sup>1,10</sup>  
Anastasija Nikiforova<sup>2,11</sup>  
Leyla Jael Castro<sup>12</sup>

[https://www.eosc.eu/sites/default/files/2022-12/Community-driven%20Governance%20of%20FAIRness%20Assessment.pdf?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=20221206\\_december](https://www.eosc.eu/sites/default/files/2022-12/Community-driven%20Governance%20of%20FAIRness%20Assessment.pdf?utm_source=newsletter&utm_medium=email&utm_campaign=20221206_december)

“FAIRness is "stuck" between an increasingly common research and publishing requirement yet still an unmeasurable set of ideals.”

“lack of a FAIRness assessment governance body”

### FAIRness governance model: key objectives and indicators of success

How will we know when we have identified an effective governance model for the FAIR assessment? We think it will have the following features:

1. FAIRness will be objectively examined transparently and consistently:  
The results of different tools and services that assist and evaluate levels of FAIRness are compatible and cohesive within each domain/community and, as much as possible, between communities.
2. FAIRness needs to be universally understood and trusted:
  - Both producers and users of digital research objects have confidence in the results of these tools, processes, and services;
  - Producers are assisted in their attempts to improve their level of FAIRness.
3. FAIRness needs to be tuned to all domain-specific needs and adapted to a diverse range of digital objects:
  - Communities have a process in place to collect requirements from their members;
  - All stakeholders ensure transparency, consistency, understandability, broad acceptance, and trust.

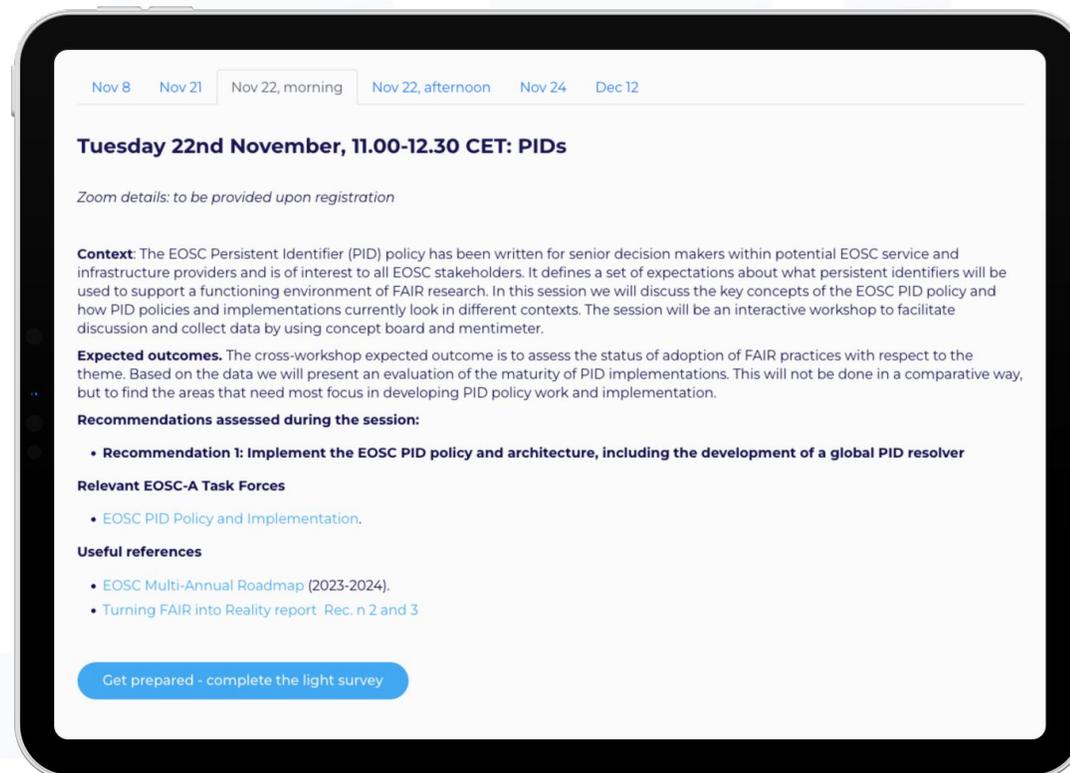
# Persistent Identifiers

Key questions, to be answered in the survey:

1. What does your project or initiative do to implement PIDs? Please provide any relevant links.
2. Do you use persistent identifiers in your project / community?
3. Which are the roles and responsibilities in your organisation regarding PID management?
4. Do you have a PID policy in your organisation?

Chair: Jessica Parland-von Essen (CSC)

Rapporteur: Liisa Marjamaa-Mankinen (CSC)



Nov 8 Nov 21 Nov 22, morning Nov 22, afternoon Nov 24 Dec 12

### Tuesday 22nd November, 11.00-12.30 CET: PIDs

*Zoom details: to be provided upon registration*

**Context:** The EOSC Persistent Identifier (PID) policy has been written for senior decision makers within potential EOSC service and infrastructure providers and is of interest to all EOSC stakeholders. It defines a set of expectations about what persistent identifiers will be used to support a functioning environment of FAIR research. In this session we will discuss the key concepts of the EOSC PID policy and how PID policies and implementations currently look in different contexts. The session will be an interactive workshop to facilitate discussion and collect data by using concept board and mentimeter.

**Expected outcomes.** The cross-workshop expected outcome is to assess the status of adoption of FAIR practices with respect to the theme. Based on the data we will present an evaluation of the maturity of PID implementations. This will not be done in a comparative way, but to find the areas that need most focus in developing PID policy work and implementation.

**Recommendations assessed during the session:**

- **Recommendation 1: Implement the EOSC PID policy and architecture, including the development of a global PID resolver**

**Relevant EOSC-A Task Forces**

- [EOSC PID Policy and Implementation.](#)

**Useful references**

- [EOSC Multi-Annual Roadmap \(2023-2024\).](#)
- [Turning FAIR into Reality report. Rec. n 2 and 3](#)

[Get prepared - complete the light survey](#)

## Recommendation 0011 from MAR23-24

“Implement the EOSC PID policy and architecture, including the development of a global PID resolver”

## Highlights

- 40+ participants in the room from various stakeholders; many service providers.
- Though the EOSC PID policy was conceived to be clear, implementation for specific communities is not necessarily straightforward.
- EOSC PID policy roles *PID authority* and *PID service provider* often seem to be performed by the same actor, but not always. Likewise *PID manager* and *PID owner*.
- This shows that it's worthwhile adapting the EOSC PID policy role definitions to ensure comprehensive description of the responsibilities, even if they might seem abstract.

## What is missing or could be improved

- Explicit and documented PID Policies should be developed by all stakeholders. These can be separate documents or part of other policies.
- There is a wide range of identifiers in use, not all of these necessarily qualify as PIDs according to the EOSC PID Policy definition.
- There is a need to analyse and discuss these to find which of these are or should be considered emerging PIDs.

Which PIDs are in active use in your community



## Recommendations

- Continued discussion and development is needed around PID policies.
- Communities should make recommendations on PID use and describe their use cases.
- Especially organisational PID policies should be developed and communicated.
- The EOSC PID Policy implementation should be further discussed among PID managers, PID service providers and PID owners. Contracts and documentation should be aligned with the EOSC definitions of the roles.
- Good examples, support for governance, as well as coordination for each type of object and PID should be provided.

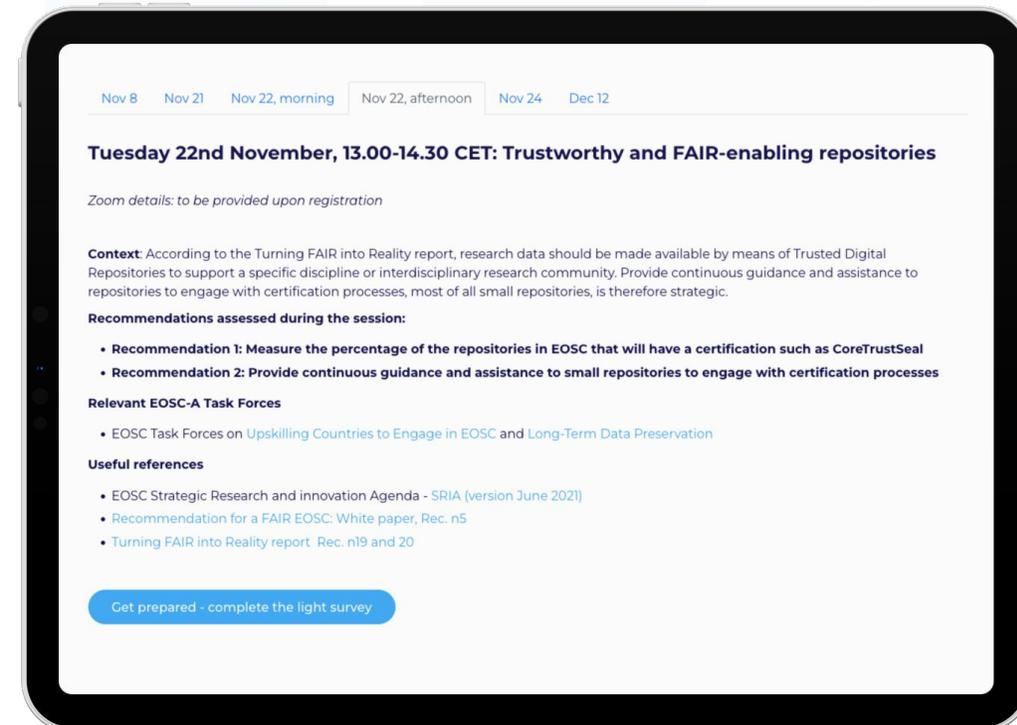
# Trustworthy and FAIR-enabling repositories

Key discussion points:

1. What is your project or initiative doing to increase the number of trustworthy, FAIR-enabling and/or certified repositories?
2. What guidance and assistance is needed to enable repositories to engage with certification processes or to become more FAIR-enabling?
3. What challenges do Trustworthy Digital Repositories face in maintaining certification and becoming more FAIR-enabling?

Chair: Maaike Verburg (DANS)

Rapporteur: Ryan O'Connor (DCC)



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**Tuesday 22nd November, 13.00-14.30 CET: Trustworthy and FAIR-enabling repositories**

*Zoom details: to be provided upon registration*

**Context:** According to the Turning FAIR into Reality report, research data should be made available by means of Trusted Digital Repositories to support a specific discipline or interdisciplinary research community. Provide continuous guidance and assistance to repositories to engage with certification processes, most of all small repositories, is therefore strategic.

**Recommendations assessed during the session:**

- Recommendation 1: Measure the percentage of the repositories in EOSC that will have a certification such as CoreTrustSeal
- Recommendation 2: Provide continuous guidance and assistance to small repositories to engage with certification processes

**Relevant EOSC-A Task Forces**

- EOSC Task Forces on [Upskilling Countries to Engage in EOSC](#) and [Long-Term Data Preservation](#)

**Useful references**

- EOSC Strategic Research and innovation Agenda - SRIA (version June 2021)
- [Recommendation for a FAIR EOSC: White paper, Rec. n5](#)
- [Turning FAIR into Reality report. Rec. n19 and 20](#)

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## Recommendations from SRIA and FAIRsFAIR

“Percentage of the repositories in EOSC that will have a certification such as CoreTrustSeal” - SRIA/Federated infrastructure

“Provide continuous guidance and assistance to small repositories to engage with certification processes.” - [FAIRsFAIR White Paper](#) (2021)

**Rec 5. Provide continuous guidance and assistance to small repositories to engage with certification processes.**

There has been substantial and laudable progress in the extension of certification and good practices for data repositories, particularly through the use of the CoreTrustSeal<sup>17</sup>. Nevertheless, ‘meeting the CoreTrustSeal requirements remains a challenging task for smaller repositories and for institutional repositories’<sup>18</sup>. If the federated data layer is to include small repositories, which are important in a substantial range of domains and geographies, guidance, support and capacity building for these repositories is also required.

## Highlights

- 60+ participants in this session from a wide range of stakeholders
- Lots of activity to support engagement with certification processes
- Focus of discussion on several key issues:
  - Certification is not always the end goal - process itself valuable
  - Role for certified repositories to help guide those seeking certification and to share experiences
  - Several certification processes exist and may be best not to force repositories to go for just one option (e.g., CTS)
  - Transparency instead is key! Work to enable informed decision making about choice of repository.



## What is missing or could be improved

- Need clarity on which repositories need to be certified and why - especially in the context of EOSC
- Need to make clear what is meant by ‘large’ and ‘small’ repositories
- Availability of support is crucial
- Mappings between CoreTrustSeal and domain specific certification processes may help
- Legitimacy of certification bodies is an issue
- Enabling FAIR over time (long term)
- Global cooperation on this is needed - not just in Europe



## Recommendations

- Work together to build a picture of trustworthiness using a number of transparent indicators (e.g., badges)
- Cooperate to establish and sustain a network of inclusive TDRs across Europe and beyond
- Must provide beginner level support and help for those repositories with less resource
- Provide incremental support towards becoming trustworthy and FAIR-enabling and also address how to keep data holdings FAIR over time
- Work together to progress toward more sustainable financial support and guidance for repositories to become FAIR-enabling, trustworthy and/or certified

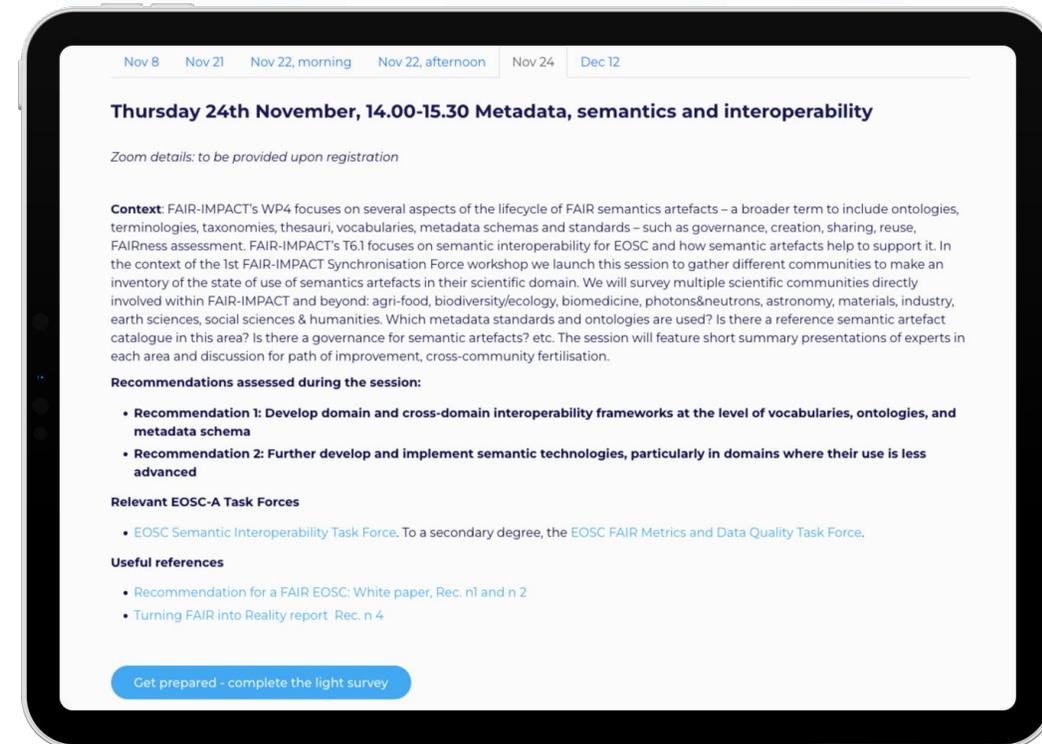
# Metadata, semantics and interoperability

Key questions, to be answered in the survey:

1. Which are the semantic artefacts that you develop or use in your scientific domain and how are they governed (developed and maintained)?
2. What limitations do you see in your scientific domain with respect to the use of semantic artefacts to describe and/or search/find research datasets?
3. Is there any type of semantic artefact catalogue (vocabulary or terminology service, ontology library or repositories, etc.) in your scientific domain, where some (or all) of these semantic artefacts are catalogued?
4. Is there a strategy to deal with crosswalk and mappings between semantic artefacts in your scientific domain?

Chair: Clément Jonquet (INRAE)

Rapporteur: Oscar Corcho (UPM)



Nov 8 Nov 21 Nov 22, morning Nov 22, afternoon Nov 24 Dec 12

**Thursday 24th November, 14.00-15.30 Metadata, semantics and interoperability**

*Zoom details: to be provided upon registration*

**Context:** FAIR-IMPACT's WP4 focuses on several aspects of the lifecycle of FAIR semantics artefacts – a broader term to include ontologies, terminologies, taxonomies, thesauri, vocabularies, metadata schemas and standards – such as governance, creation, sharing, reuse, FAIRness assessment. FAIR-IMPACT's T6.1 focuses on semantic interoperability for EOSC and how semantic artefacts help to support it. In the context of the 1st FAIR-IMPACT Synchronisation Force workshop we launch this session to gather different communities to make an inventory of the state of use of semantics artefacts in their scientific domain. We will survey multiple scientific communities directly involved within FAIR-IMPACT and beyond: agri-food, biodiversity/ecology, biomedicine, photons&neutrons, astronomy, materials, industry, earth sciences, social sciences & humanities. Which metadata standards and ontologies are used? Is there a reference semantic artefact catalogue in this area? Is there a governance for semantic artefacts? etc. The session will feature short summary presentations of experts in each area and discussion for path of improvement, cross-community fertilisation.

**Recommendations assessed during the session:**

- **Recommendation 1: Develop domain and cross-domain interoperability frameworks at the level of vocabularies, ontologies, and metadata schema**
- **Recommendation 2: Further develop and implement semantic technologies, particularly in domains where their use is less advanced**

**Relevant EOSC-A Task Forces**

- [EOSC Semantic Interoperability Task Force](#). To a secondary degree, the [EOSC FAIR Metrics and Data Quality Task Force](#).

**Useful references**

- [Recommendation for a FAIR EOSC: White paper, Rec. n1 and n 2](#)
- [Turning FAIR into Reality report Rec. n 4](#)

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## Recommendations 1 & 2 from FAIRsFAIR white paper

“Develop domain and cross-domain interoperability frameworks at the level of vocabularies, ontologies, and metadata schema.”

*Note: we now use the expression "semantic artefact"*

“Further develop and implement semantic technologies, particularly in domains where their use is less advanced”

[FAIRsFAIR White Paper](#) (2021)

## Highlights

- 57 people in the room
- Started with a couple of **definitions** - there is not yet consensus on the definition of Semantic Artefacts, Semantic Artefacts catalogues, Mappings and Crosswalks

**Semantic artefacts:** a broader term to include ontologies, terminologies, taxonomies, thesauri, vocabularies, metadata schemas and standards.

*Legacy of FAIRsFAIR and adopted in the EOSC Interoperability Framework*

**Semantic artefact catalogues:** encompass any existing ontology repositories, registries, vocabulary/terminology services and metadata schemas catalogues.

**(Semantic) Crosswalks and mappings:** formal links between the content of these semantic artefacts.

## Session featured panelists from 7 domains

1. **Biomedicine** (Nicolas Matenzoglu & Pier Luigi Buttigieg)
2. **Ecology/biodiversity** (Naouel Karam & Ilaria Rosati)
3. **Agri-food** (Clement Jonquet)
4. **Social sciences & humanities** (Arnaud Gingold)
5. **Industry** (Hedi Karray)
6. **Astronomy** (Baptiste Cecconi)
7. **Earth Sciences** (J-C Desconnets, V. Agazzi, C. Pierkot)

# What could be improved

## Development, use and governance of semantic artefacts

Every disciplinary community has its own semantic artefacts - thesauri, ontologies - which all look very discipline oriented. There are overlapping ontologies while some domains lack ontologies and some domains are so big that different ontologies are applied within the same group (SSH). In general there are a lot of differences in data types, data collection, theories, methods per domain.

In different cases they are managed by international alliances but there is no global governance or coordination

## Limitations

Limitations look still really a lot and spread across disciplines and cases. They span from quality and curation of the artefacts; lack of governance & strategy and indication for which ones to use and long term availability and maintenance.

Multilingualism is also an issue.

## Catalogues

They are a lot! Ecology/biodiversity (BioPortal, Agroportal, OBO Foundry, GFbio Terminology Service, Research Vocabularies Australia, NERC Vocabulary Server, FAIRSharing) and the Agri-food (AgroPortal, Ontoport) communities look those with a stronger awareness about the catalogues of reference, while communities such as Astronomy, Earth Science and SSH cope with different levels of maturity of catalogues

## Crosswalks & Mappings: those unknown!

Some tools emerging, some mappings available (Astronomy: schema.org -> SPASE, EPNcore - SOLARNET, EPNcore - SPASE, EPNcore - PDS4, or the SSSOM initiative); quite a few best practices and use cases to look at to build reference crosswalks

## Recommendations

- **Too many** semantic artefacts with the same terms/concepts without alignment - hopefully FAIR-IMPACT synchronisation will help!
- Let's introduce the element of **long-term sustainability, maintenance and governance** of semantic artefacts already from the start
- Need for the FAIR-at-large community to **describe better what mappings are**
- Start working on **governance model** and a list of recommended practices

## Next steps



FAIR-IMPACT will update this report about the workshop output (to be published February 2023; participant list included).

Next year we organise the next Synchronisation Force workshop.

In the meantime: best wishes for your journey towards more FAIRness!

## One last question - answers in the chat, please

Listening to all these perspectives from different domains is super cool for me.. Now I wish we had a bid more time!

Was participating in this workshop useful for you?

1. Yes, for networking
2. Yes, for learning about developments in other domains
3. Yes, and I will share information with others
4. Yes, and I look forward to next year's workshop

Thank you!



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