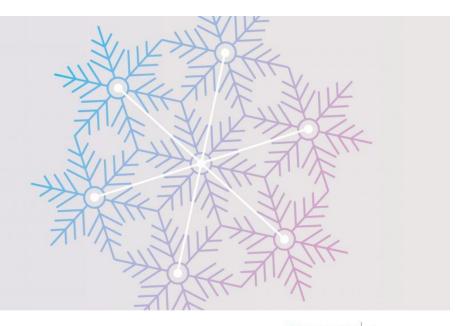


# Winter School 2025

20 - 23 January 2025 / Seville, Spain



Focus

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Strategic Pillar 3: Ensuring research security and sovereignty
Strategic Pillar 4: Linking with other common European Data Spaces and beyond



Ulf Jakobsson OA1/TF4:



#### Contribution to SP3/SP4 Priorities

- Which specific SP priorities or topics have been discussed?
  - 4 sessions: "The role of PIDs and associated technologies for LTDR", "Beyond FAIR Integrating CARE & TRUST
    principles into the data re-appraisal workflow to keep data FAIR over time", "LTDR & PIDs implementation across
    European Data Spaces", "Cross-communication of OA1 outputs for EOSC Task Forces"
  - Scene: What input can OA1 give to TF4 on PID policies.
  - Main results:
    - We have taught the researchers to publish assets (e.g. data), now we have to teach them to use the right services.
    - PIDs Providers are not responsible for assessing CARE & TRUST principles
    - Self-assessment is the only feasible/ most pragmatic way to certify an organization and then have reviewers to check the provided evidence.
    - Quick overview on Dataspaces:
      - EOSC-involved Dataspaces tend to have PID technology usage and policy, maybe not LTDR policy, but there is awareness - Still small sample analysed.
      - Other DS don't seem to pay much attention to PIDs or LTDR
- How do the OAEG & TF contribute to advancing these priorities? (specific actions, initiatives, or outputs)
  - Continue to communicate and share knowledge/results
  - Promote discussed principles, as well as requirements/recommendations connected to these principles
     the European Union



## Challenges, Gaps, Recommendations and Next Steps

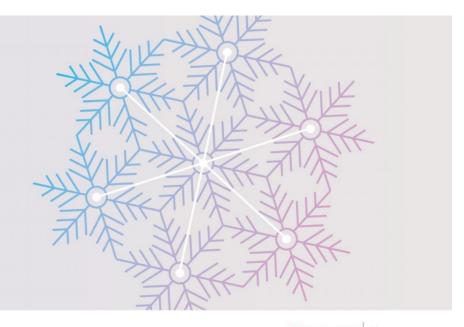
- Technical challenges and alignment
  - Communication in between the EU Data Spaces around PIDs and LTDR
- Recommendations
  - Harmonize "Vocabulary" of LTDR & "Glossary" of the PID Policy (⇒ and others, e.g. "EOSC Glossary" ⇒ an other governance role?)
    - FC4E/ CAT Vocabularies
  - Re-appraisal workflow should point to PID policy and recommendations about how to manage PIDs for data that are deleted/ transferred/ updated
- Next steps
  - Use existing mailing list to share information/results for comments/inputs



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Strategic Pillar 3: Ensuring research security and sovereignty Strategic Pillar 4: Linking with other common European Data Spaces and beyond

Agnes Jasinska (DCC-UEDIN)
OA2/TF1+TF3: Interoperability





## Session Topics & Objectives

Session 1: EOSC, European **Data Spaces** and beyond: Tracking emerging interfaces, core entities and connectors

- Recommendations for a Registry of Data Spaces
- Use cases to explore the integration of Data Spaces in EOSC Federation (EOSC Node)
   Concepts of NODES and SYSTEM OF SYSTEMS come from data spaces!

Session 2: Translating **governance** and operational aspects to metadata, ontologies and interoperability challenges

- Creation of a catalogue of semantic artefacts needed for legal interoperability (Service Level Agreements [SLA], Memoranda of Understanding [MoU], etc.)
- Recommendations of legal frameworks for EOSC Node





## Contribution to SP3/ SP4 Priorities

#### SP3: Ensuring research security and sovereignty

 C. Define a harmonised operational (including cybersecurity aspects) and legal framework to facilitate the secure sharing and governance of, and access to, data (including sensitive data) and services.

#### SP4. Linking with other Common European Data Spaces (CEDS) and beyond

- A. Engage and bridge with other Common European Data Spaces and relevant initiatives, including the EU Missions, EuroHPC and other relevant European Partnerships.
- B. Support and incentivize the use, maintenance, and adoption of open standards and APIs to enable resource composability and to increase the interoperability between the research and other communities, including in the public administration and the private sector.
- G. Ensure that researchers are aware of and can reference existing and domain-specific semantic artefact catalogues and other data services, including repositories and registries developed and used in EU initiatives.





## Alignment with WS 2024 objectives

#### Mid-term objectives

- To frame inter-project collaboration that allows seamless onboarding of future projects
- Contribute to shaping the vision of SRIA 2.0

#### Long-term objectives

- Increase the potential of the HE EOSC-related projects to deliver sustainable results that benefit the ESOC deployment and thereby maximise project impact
- The significance of this event is underscored by its potential to bring together a diverse range of perspectives, offering a rich blend of insights and experiences.





## Session 1: Challenges and Gaps

- Defining interoperability in the context of Common European Data Spaces (CEDS).
- Integrating and harmonizing across borders but also across sectors. (EOSC is not only for researchers; data spaces are not only for industry.)
- Key standards and frameworks to prioritize? Common ground?
- How to achieve interoperability between CEDS while maintaining strong data privacy and security protocols? How to balance ease of data exchange with strict compliance to privacy laws, such as GDPR?
- How to validate or certify the interoperability between different CEDS? Are there any
  existing frameworks or initiatives for testing the interoperability of data spaces?

Bottom line: Not easy to implement interoperability between Data Spaces because of their different maturity levels - interoperability is a moving target.





## Session 1: Recommendations and Next Steps

- The definitions and implementations of both EOSC and data spaces are evolving rapidly and fairly independently.
- The lack of fully formalised definitions = an opportunity to build interoperability solutions and demonstrators.
- Engagement between EOSC and data spaces is needed before bridging approaches and definition/selection of open standards and APIs can proceed efficiently.
- Use frameworks such as Cross-Domain Interoperability Framework (CDIF) to break down the interoperability challenge into more manageable components and document the choices made.
- EOSC is not only for researchers, and data spaces (DSs) are not only for industry.
   We need to integrate and find common ground and shared standards.





## Session 1: Recommendations and Next Steps - cont'd

- Role for brokers as middlemen (e.g., if providers cannot be persuaded to adopt specific standards, brokers and middleware come in and fill the gap).
- SIMPL software architecture for data spaces (middleware) could serve as a protocol to connect data spaces/ as the common ground.
- Different data spaces may represent different communities and projects;
   already trying to establish and harmonize their own standards.
- Role for OAs and TFs: collect the voices/ needs of these different communities?
- Motivation for linking up data spaces to EOSC: incubate and scale up the innovative research solutions.





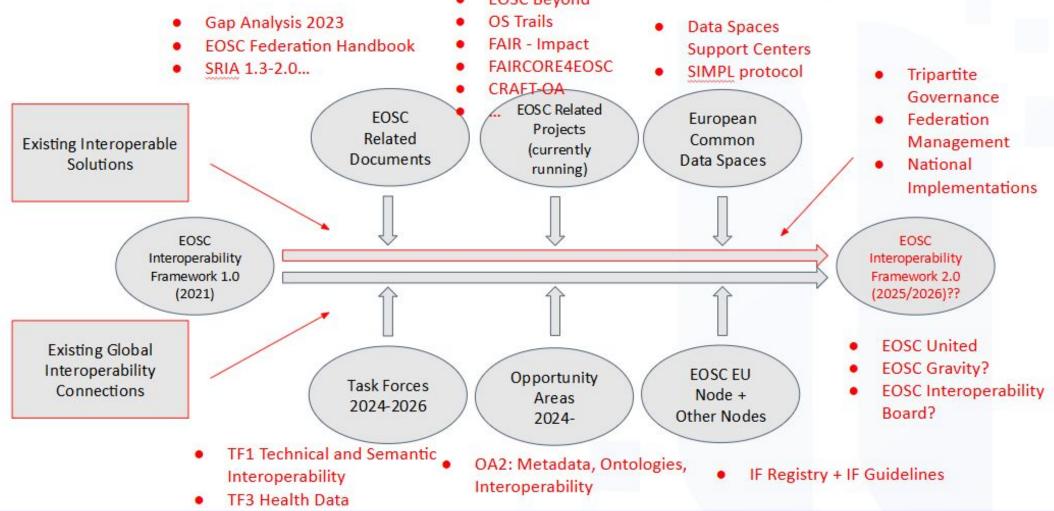
## Session 2: Recommendations and Next Steps

- Interoperability solutions need to be curated and maintained
  - Requires planning: the "yellow pages" created in the WS session (142 entries) is already a considerable curation/assessment challenge
- Lightweight governance to drive adoption and convergence
  - The number of actors and complexity of the landscape requires flexibility and dynamism
  - Important to provide tools, standards, support, incentives
- Specific opportunity: cross-linking the EOSC Federation handbook and public SIMPL specification (a common appendix describing alignment, synergies and actors?)





# Towards EOSC Interoperability Framework Governance/Convergence Gan Analysis 2023 OS Trails Data Spaces





## EOSC Interoperability projects currently running

EOSC Beyond, OS Trails, FAIR2ADAPT, CLIMATE-ADAPT4EOSC...

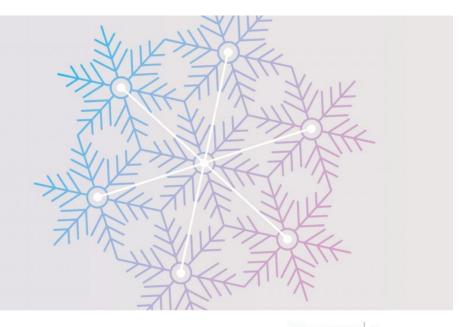
```
The European Open Science Cloud (EOSC) ☐,
Skills4EOSC (2), EOSC Focus (2), FAIR-IMPACT (2), RDA TIGER (2)
, FAIRCORE4EOSC ☑, AI4EOSC ☑, EuroScienceGateway ☑,
FAIR-EASE , RAISE , SciLake , EOSC4Cancer , GraspOS
, CRAFT-OA 位, AquaINFRA 位, Blue-Cloud 2026 位, OSCARS 位
, EVERSE ☑, OSTrails, EOSC Beyond ☑, EOSC-ENTRUST ☑
, SIESTA, TITAN
```





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Strategic Pillar 3: Ensuring research security and sovereignty Strategic Pillar 4: Linking with other Common European Data Spaces and beyond

Hervé L'Hours OA3/TF2/TF4



Wednesday, 22 Jan 2025 PM



#### Contribution to SP3/SP4 Priorities

Which specific SP priorities or topics have been discussed?

- Strategic Pillar 4: Linking with other Common European Data Spaces and beyond
- SP4: Sovereignty and Security as extensions of rights & access cf:European Health Data Space Roadmap. Spaces approach to FAIRness inclusive of special category data.
- Data Spaces as aggregators of metadata, selectors of digital objects for relevance (inc FAIRness),
   generators of derived digital objects within the data space (how FAIR?)

How do these topics align with the mid-term and long-term objectives defined during the WS 2024

- Increased common reference points and consistency of outcomes across FAIR assess tools
- Evolution of data spaces to align with transparent FAIR assessment for a (rapidly approaching) world of domain-specific and object-specific testing.

In what ways does the Opportunity Area Expert Group (OAEG) & Task Force (TF) contribute to advancing these priorities? (Highlight specific actions, initiatives, or outputs)

- [OSTrails] Modelling and specification of FAIR overall metrics and community specific benchmarks
- [Task Forces 2 & 4 & OA3] Exposure of relevant metadata at object and repository level to enable assessment with associated guidance and assistance for corrective actions





## Challenges, Gaps, Recommendations and Next Steps

Technical challenges and alignment

- Common model for metrics, tests and associated benchmarks across FAIR tools
- Defining authority for selecting metrics and defining community benchmarks
- Interoperability: Common approach to FAIR across Spaces where possible, transparency of local/specific FAIR criteria where necessary
- Quality control/certification of tests vs reliance on transparency
- Sharing digital object FAIR assessment outcomes: fulfilling the FAIR contract.

Recommendations & Next Steps

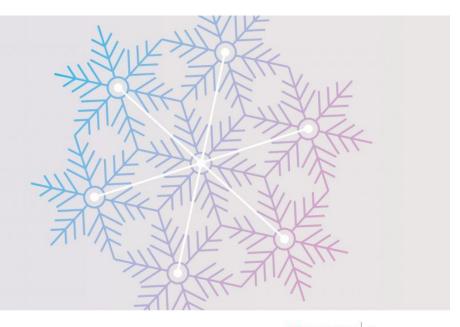
- Align with FAIRSkills4EOSC WP, Medical Informatics Initiative (DE) including FAIR metrics design, European Health Data Space (legal framework)
- Phases of FAIR Spaces: Internal engagement decisions on validation and authority for relevant metrics and benchmarks > adoption and implementation in production > more public outcomes of FAIR Assessment





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Strategic Pillar 3: Ensuring research security and sovereignty
Strategic Pillar 4: Linking with other common European Data Spaces and beyond

Álvaro López García, Kaori Otsu OA4





#### Contribution to SP3 Priorities

- Priority C) Define a harmonised operational and legal framework to facilitate the secure sharing and governance of, and access to, data and services
  - LLM services and models, research sovereignty, data security, technological dependency
  - TRE relationships (ENTRUST, TITAN, SIESTA) and policy harmonization
  - Data sensitivity levels as a dynamic concept, to be defined in a machine-actionable way (from data to policy)
  - Data anonymization tools for the data owner/rightholder
- How do these topics align with the mid-term and long-term objectives
  - Interoperability as a key asset for sustainability
  - Curated and quality metadata is key for interoperability
- In what ways does the Opportunity Area Expert Group (OAEG) contribute to advancing these priorities?
  - Collaboration between TRE projects
  - LLM services available as a preview for the EOSC





## Challenges, Gaps, Recommendations and Next Steps

- Technical challenges and alignment
  - Lack of harmonized metadata (e.g. in AI models) -> crosswalks
  - Responsibility and liability for sensitive data disclosure, even if anonymized
- Recommendations / Questions
  - Define clear channels for providing feedback and recommendations related with the EOSC Nodes services
- Next steps
  - Clarify with the EU Node and EOSC Beyond the technical and non technical issues when integrating or leverating EOSC Nodes assets (e.g. APIs)
    - e.g. lack of functionality, interoperability, access policy (i.e. credits), acceptable use
  - Explore additional interoperability opportunities between INFRAEOSC projects (sp. on Al assets, but not only)





#### Contribution to SP4 Priorities

- A) Engage and bridge with other Common European Data Spaces, Green Deal, including the EU Missions (Ocean, Climate Adaption)
- How do these topics align with the mid-term and long-term objectives
  - Increase use of AAI features (e.g. MyAccessID, EGI Check-in)
  - Improve integration of data discovery across EOSC projects through collaborations (e.g. SLA, MoU)
- In what ways does the Opportunity Area 4 contribute to advancing these priorities?
  - Blue-Cloud and FAIR-EASE lead on federating VREs services and data infrastructures as the candidate EOSC Thematic Node in support of the Green Deal Data Space





## Challenges, Gaps, Recommendations and Next Steps

- Technical challenges and alignment
  - VREs are often domain-specific, in alignment with EOSC Thematic Nodes
  - Connectors (e.g. SIMPL) overarching Data Spaces between EOSC, Health (TF) and Green Deal (SAGE) with a use case on air quality
- Recommendations and next steps
  - Explore the usability of the EU Node to connect other Common Data
     Spaces with a user story starting from VREs in INFRAEOSC projects
  - Integrate tools with Galaxy platform using existing standards such as OGC API Processes (e.g. AquaINFRA and Blue-Cloud)





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# Strategic Pillar 3: Ensuring research security and sovereignty

Strategic Pillar 4: Linking with other Common European Data Spaces and beyond

Helen Clare OA5EG

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#### copeose SP3 Actions for OA5, for Priority E (national level)

E. Encourage national policymakers to review and adjust national policies, funding, and regulations and develop training programs that enable services and data to be used in cross-border and cross-domain contexts, preserving data sovereignty and ensuring broader interoperability and accessibility (Objectives 2 and 3).

#### Role of OA / questions/ challenges

- No *lead* role of OA5 in shaping activity on a national level in research security and sovereignty
- OA5 has expertise to contribute activities, a.o. by supporting EOSC Focus

  - via the mandated organisations via Tripartite events (e.g. put Skills & Engagement on the agenda) connect to organisations like EARMA (European Association of Research Managers and Administrators), who are already working on this; avoiding duplication

#### Next steps

- Ongoing liaison with EOSC Focus / EOSC Gravity about this
- Liaison with future projects or other initiatives that may produce training

#### copeose SP3 Actions for OA5, for Priority G-J (institutional level)

- G-H (offer training, professional development, install procedures to select and curate data, software and other research outputs)
  - OA5 can support the institutes
  - advocate and help disseminate information and resources to the countries and institutes
  - establish state-of-the art, create overview, support discussions towards harmonizing efforts
  - identify demonstrators/implementation examples/use case

- I-J (related to information security management and data risk management)
  - No lead role for OA5, happy to support activities in that area

#### copiese SP4 Actions for OA5: Common Data Spaces...

- E. Leverage existing national Competence Centres and strengthen their participation in coordination networks at the European level (Objectives 1 and 3).
- What is a national Competence Center?
- Clarity needed before clear actions can be planned OA5 can help align this discussion with other discussions about competence centres within EOSC
  - Convene discussion around relationship between Competence Centres and Nodes



#### copiese SP4 Actions for OA5: Common Data Spaces...

H. Promote participation in initiatives like Data Spaces, EU missions, and European Partnerships at national and European levels (Objective 1).

Data Spaces are emerging;

- There are examples of ongoing OA5-related activities, e.g. CLARIN Language Data Space, BY-COVID project with EHDS, INRAE with standards in Agridataspaces It is rather early days to define OA5 role OA5 will stay on top of things and act when & where relevant; OA5 can also play a role in engagement



mTeSS-X: Scaling training portal federation for RIs through Multitenanting and Exchange



## speose OA5EG Take home messages

- Engagement of EOSC stakeholders is crucial to achieve adoption of EOSC
- Related to **skills**: There is a lack of digital skills for FAIR & OS
  - Many actions and recommendations have been formulated
- EOSC is entering implementation phase skills, engagement, reward, recognition are vital for adoption (name change?)
- OA5EG experts are in excellent position to offer support

  - >60 experts from institutes, all domains, and/or with national roles advocate and help disseminate information and resources to the countries and institutes
  - establish state-of-the art, create overview, support discussions towards harmonizing efforts identify demonstrators/implementation examples/use case
- An important role for the competence centers is foreseen
  - Lead discussions to clarify issues around competence centres, striving for harmonisation; convene relevant parties



Report "Digital skills for FAIR and open science" published February 2021

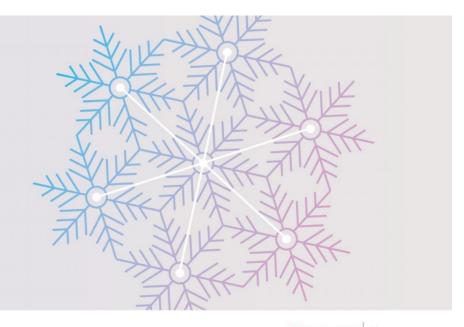
### speose Overarching next steps for OA5EG

- Refine and prioritise ideas and suggestions from Winter School
  - Optimise text in the EOSC Federation Handbook to include recommendations on skills, training and engagement.
  - Expand network to accelerate engagement and adoption (e.g. EARMA, European University Alliance, research communities, ..)
  - Update the OA5 web page with relevant reports which can be further disseminated
  - Take forward competence centre discussions
  - Take forward training catalogue activities
- Thanks to all OA5 members for their contributions!



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Strategic Pillar 3: Ensuring research security and sovereignty Strategic Pillar 4: Linking with other Common European Data Spaces and beyond

> Elli Papadopoulou, Margo Bargheer OA6/TF1, TF2



Wednesday, 22 Jan 2025



#### Contribution to SP3 & SP4 Priorities

- Which specific SP3 & SP4 priorities or topics have been discussed?
  - Ensuring Security and Governance (S + G)

	Data	Services	FAIR
Management	<ul> <li>Public funder requirement</li> <li>DMPs cour data gover</li> <li>DMPs cont sensitive disconvergence?</li> </ul> Q1: Regulated vs non-regulated research <ul> <li>Q2: FAIR data vs public data</li> <li>(convergence?)</li> </ul>		<ul> <li>Services that do not enable FAIRness to be restricted and alternatives to be provided by design (eg Google!)</li> </ul>
Assessment  ** Funded by  the European U	Peer review	<ul> <li>Chicken and the egg)</li> <li>DMP evaluation service</li> <li>Usability testing</li> </ul>	<ul> <li>FAIR assessment         governance like the         BioFAIR in the UK</li> <li>We have enough DMP         and FAIR assessment         tools!</li> </ul>



#### Contribution to SP3 Priorities

- SP3 "Ensuring research security and sovereignty" C. Define a harmonised operational (including cybersecurity aspects) and legal framework to facilitate the secure sharing and governance of, and access to, data (including sensitive data) and services. (Objectives 2 and 3)
  - Agreement that gatekeepers, perculationg trust and tokens for quality are required for research security and sovereignty and its upscaling (can't be done 1:1)
  - breaking down values such as quality, quality control (such as peer review), trust, security into descriptors and transparent ways of assessing them enables uptakes across disciplines and bridge the gap between data spheres and publishings spheres – which in fact widely overlap
  - Interoperability and FAIRification enable gatekeeping "what is gated by whom, how and why" which in OSC enables research security and clarity on sovereignty, trust can percolate along the stream of interoperability, FAIR spelled out can serve as an a priori setting of security
  - while discipline specifics are important, several best practices can be ported across disciplines. Data flows and data governance, regulations as in ELIXIR can be adapted for and adopted in other





# How do these topics align with the mid-term and long-term objectives defined during the WS 2024

"The role of machine actionability of the digital objects in open scholarly communication (what are our observable data points?)" -> understanding and agreeing on agnostic descriptors of values enables machine actionability and AI readiness

# In what ways does the OAEG 6 & TF 1, TF 2 contribute to advancing these priorities?

Sharing use cases, application profiles, identify shared characteristics of research output types (f.e.data sets, supplement data sets, publications), identify interoperable schemata esp around metadata -> essential for OSC and data spheres as they are all research outputs





## Challenges, Gaps, Recommendations and Next Steps

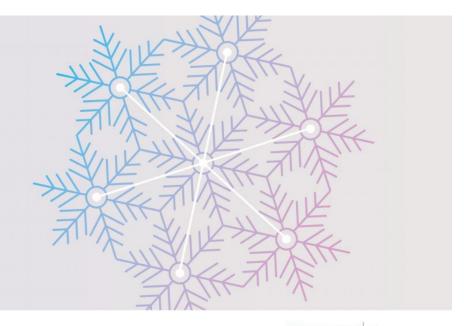
- Technical challenges and alignment: how to transfer approved practices from one domain to the other (f.e. what is granularity, what are relations)
- Recommendations: tough love (like in interdisciplinary research get people agree on concepts of security or sharing at the start, insist on practical levels of standardisation)
- Next steps: include these aspects in curricula for data stewards AND OSC professionals; broaden the idea of Data Management Plan to Object Management Plan; after the winter school is before the winter school, so identify reasons to meet and keep on working together





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## Across all 4 Strategic Pillars

## Research Software (OA7) Fotis Psomopoulos, Morane Gruenpeter

Wednesday, 22 Jan 2025 PM



## OA7: Research Software

Objective and aims



Formally started Nov 6th 2024, currently numbering 35 members

#### Primary objective:

to address the **challenges** and **opportunities** around **research software** in the context of the EOSC framework.

#### Aims:

- > to **promote all aspects of research software**, including metadata, quality, preservation, registries, reproducibility and recognition.
- > to tackle the different facets of fostering Open Science culture for **research software** to promote it to a **first-class citizen in science**, building on prior work within EOSC (such as <u>EOSC Infrastructures for Quality Research Software Task Force</u> and the <u>EOSC Scholarly Infrastructures for Research Software</u> report under the Architecture WG)



#### concept end of the content of the co

#### OA7: Research Software

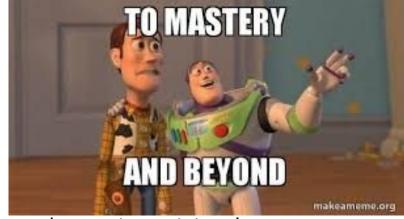
#### So far

- 1. First kick-off virtual meeting on January 15th at 14:00-16:00 CET
  - a. 25 people attended
  - b. Dynamic <u>slidedeck</u> of self-introductions (minutes <u>doc</u>, <u>slides</u>)
  - c. Activity: Where are we now on the Research Software journey?

#### 2. Plan

- Map-out areas of interest for cross-collaboration
- Initiate workstreams across identified topics where there is critical mass in interest
- c. Bi-monthly coordination calls







#### OA7 at the Winter School

- 1. Session in the Winter school
  - a. Minutes <u>gdoc</u> and <u>slides</u>
  - b. 9 participants (incl 4 remote)
  - c. outputs in next slides:)







#### Contribution to EOSC SPx Priorities

- Which specific SP priorities or topics have been discussed?
- How do these topics align with the mid-term and long-term objectives defined during the WS 2024
- In what ways does the Opportunity Area Expert Group (OAEG) & Task Force (TF)
  contribute to advancing these priorities? (Highlight specific actions, initiatives, or outputs)





## Contribution to EOSC SPx Priorities (1/2)

- We discussed all SP priorities, assessing them in the context of OA7 scope
- Updated the alignment across the 4 pillars

#### OA7 mapping across Pillars

	Pillar #1	Pillar #2	Pillar #3	Pillar #4
OA7	Sustaining and enhancing the EOSC Federation	Contributing to the web of FAIR data and the uptake of AI	Ensuring research security and sovereignty	Linking with common European data spaces
European level	B (3), E (2,3)	A (2, 3), C (2)	-	В
National level	G (2, 3)	F (2), G (1, 2), H (1), J (1)	F	Е
Institutional level	H (1), J (3)	-	G, H	-





## Contribution to EOSC SPx Priorities (2/2)

Created a template to capture software-related outputs and activities across EOSC



#### Name

XXX (codemeta)

#### Identity (citation/doi/ref):

XXX (https://codemeta.github.io/)

#### Any relevant projects/(previous) Task Force/initiative/RI this material is connected to

XXXX (Scicodes consortium)

#### Type (e.g.

training/recommendations/standard/tool/service/etc)

XXXX (standard)

#### Level

- Global/European/National-Regional/Institutional
- (global)

#### Audience

 Policy makers / Funders / RSE / Researchers / Infrastructures / Support staff / Trainers / Librarians / Software stewards / citizen / Publishers / Other

#### Primary domain:

XXX (domain-agnostic)

#### How do you see this element beneficial for OA7

- .
- •

#### Highlight 3 key takeaways / points of this element

- 1.
- 2.
- 3.

Connection to other alternative efforts (ideally to be added also in the slidedeck or URL instead):

XXX (bioschemas)



#### concept entry entr

## Challenges, Gaps, Recommendations and Next Steps

- Technical challenges and alignment
- Recommendations
- Next steps

MAR priorities for Strategic Pillar 2: Contributing to the web of FAIR data and the uptake of AI -> change data to something better :)





## Challenges and Gaps

hopefully, along the way, update also the SRIA terminology on page 16 (SRIA 1.3)

- EOSC-A Board liaison with OA7
- "Data" term is currently used interchangeably to "software" in the SRIA text.
- Specific funding calls to support software recognition in Academia
- Software steward as a role in the EOSC ecosystem
- Lack of a consensus on the definition of impact in research software
- Sustainability of infrastructures and tools that are created during all EOSC efforts (TF, projects, etc)
- Reproducibility is not mentioned in the MAR
- Transparency is only mentioned related to the AI objective





## Recommendations and Next Steps

- Make sure that software is not neglected with SRIA/MAR
- > Updating the actor ecosystem figure to reflect the software aspects
- Continue the mapping exercise, producing also a Zotero library and a processable version of the data
- Go through all EOSC-project activities and highlight the extent to which research software is currently overlooked

