

Investment in FAIR: Investment, Sustainability, and Governance - Pillar 6

DEPRECATED: EDITS HAVE MOVED TO

<https://docs.google.com/document/d/1JyEkLFDmcpe3JNBbMe5rRntg4Rsk5-APNHpd6dYfX-w/edit#heading=h.laolh437sduj>

Session date: 21st of May 2021

Chair: Vanessa Proudman

Rapporteur: Hervé L'Hours

Event Host: Sara Pittonet, Serenella Muradore (Trust-it)

Overall spreadsheet: <https://bit.ly/FsF-SF-outputs-sheet>

All recommendations and action plan on pp. 59-75 in [Turning FAIR into Reality](#)

Meeting Attendance:

	Name	Organization and project
1	Vanessa Proudman	SPARC Europe, FAIRsFAIR
2	Hervé L'Hours	UK Data Service, FAIRsFAIR
3	Marjan Grootveld	DANS, FAIRsFAIR
4	Gerard Coen	DANS, EOSC Synergy, FAIRsFAIR
5	Mari Kleemola	FSD/TAU, EOSC Nordic
6	Sophie Servan	DESY, ExPaNDS
7	Richard Dennis	KB / Copenhagen University Library
8	Olivier Rouchon	CINES, EOSC-pillar
9	Andreas O Jaunsen	Nordforsk, EOSC-Nordic
10	Timea Biro	DRI/ NORF
11	Hugh Shanahan	Royal Holloway, University of London, FAIRsFAIR
12	Barbara Magagna	Umweltbundesamt GmbH, Vienna
13	Christian Cuciniello	European Commission
14	Maria Johnsson	Lund University, ENVRI-FAIR, ICOS ERIC
15	Mustapha Mokrane	DANS, FAIRsFAIR
16	Patricia Clarke	HRB-IE, FAIRsFAIR HLAC
17	Serenella Muradore Gallas	Trust-IT Services, FAIRsFAIR

18	Sara Pittonet	Trust-IT Services, FAIRsFAIR
19	Elli Papadopoulou	ATHENA RC / OpenAIRE and NI4OS-Europe
20	Dave Carr	Wellcome trust
21	Mustapha Mokrane	DANS/FAIRsFAIR
22	Simon Hodson	CODATA, FAIRsFAIR
23	Federica Garbuglia	EUA, FAIRsFAIR
24	Katrin Seemeyer	Forschungszentrum Juelich, ENVRI-FAIR
25	Ornela de Giacomo	CERIC, PaNOSC

This session is about recommendations 14, 15 (priority), and 27. There are two questions per recommendation, followed by two questions about the pillar.

Rec. 14: provide strategic and coordinated funding

[HL'H: VP refers to comments by Vanessa including items read from the spreadsheet. As attendees can add to the minutes until the close of play on Monday I'm adding a 'rapporteur' synopsis with relevant links (deliverables etc) extracted from the spreadsheet. Feel free to add to the direct notes of what you said of the rapporteur notes if you'd like to clarify. A / after a project name indicates that nobody was available to speak to the item]

14.1 In place

*What have the projects **already done** that address this recommendation? This should build on the information in the [spreadsheet](#). Please check that there is a link to the concrete deliverable.*

14.2 Planned

*What are the projects represented **developing or planning** to do? Again, this should build on the information in the [spreadsheet](#): information about a scheduled deliverable, i.e., title, due date, short description*

[VP: Community needs, community standards, avoiding vendor lock-in]

FAIRsFAIR, Mustapha. Policy: Enabling indirectly strategic/coordinated funding, mainly directed at funders but implications for other stakeholders. Policy enhancements and re. Includes some things that have already been picked up by some funders. Funder policy should enable data sharing and increase the push towards FAIR data management and FAIR data Production. Coordination of TDR, processes undertaking the process will include the funding, income streams and business models that repositories use that contributes to their sustainability. Not directly linked to funding but provides insight and foundation. The project is by design addressing the increased FAIRness of data management. All activities

promote standards, open standards and avoid vendor lockin. We are also working on our sustainability plan to look at how project outputs can be made sustainable. Providing the tools and instruments that will inform funders in making policies and funding decisions to improve FAIR data.

Rapporteur: This recommendation is mainly directed at funders but there are implications for other stakeholders. The FAIRsFAIR project addresses increased FAIRness of data management by design. All activities build on existing standards, promote open standards and avoid vendor lockin which aligns with the Rec 14 goal to enable and support coordinated and strategic funding. FAIRsFAIR work indirectly addressed strategic/coordinated funding in work on policy enhancements and recommendations, some of which have already been picked up by funders (WP5 and work with stakeholders across work packages). Funder policy should enable data sharing and increase the push towards FAIR data management and FAIR data Production. A Coordination plan for a sustainable network of FAIR Trusted Digital Repositories (Sept 2021) supports evidence around the funding, income streams and business models of repositories that contribute to their sustainability. This is not directly linked to funding but provides insight and a foundation for funding strategy. FAIRsFAIR is providing the tools and instruments that will inform funders in developing policies through Policy enhancement recommendations (D3.3 <https://doi.org/10.5281/zenodo.3558173>) and making funding decisions that will improve FAIR data through Changes in data policy and practice - an updated analysis (D3.8 March 2022).

EOSC-Nordic Andreas Jaunsen. N/A. Indirectly we are supporting communities with certification guidance and FAIRification, but this is not funding as such.

[VP: Certification guidance remains relevant, this complies with funder guidance to build on standards.]

Rapporteur: The project does not provide direct funding but EOSC Nordic is supporting communities with certification and FAIR support and guidance. This will result in better practices and enable the research community and repositories to fulfil and align with funders' requirements. The goal is also to help repositories and other data services to become more sustainable by improving their practices. Certification guidance is relevant to this tier as it complies with funder requirements to build upon standards.

EOSC-Pillar (Olivier Rouchon). WP6/T6.10 Open call began in January, open for two months. Objective to bring new services onboard and to assist them in adding their services to the EOSC Pillar portfolio and ultimately into the EOSC catalogue. A budget is available to support these eight use cases to be compliant with the EOSC rules for participation. Hackathon will be held in June just before the EOSC Symposium to help them in providing the relevant evidences required for onboarding which includes FAIR elements.

Rapporteur: A two month open call in January 2021 (WP6/T6.10) was made with the objective of assisting new services to initially join the EOSC Pillar portfolio and ultimately the EOSC catalogue. The project budget will invest in the eight selected use cases in compliance with the EOSC Rules of Participation. A Hackathon will be held before the EOSC Symposium in June and will work on how to onboard, including FAIRness required for onboarding.

NI4OS-Europe (Elli Papadopoulou): Nothing new to update. No ongoing open calls.
[Links to deliverables will be added]

Rapporteur: Strategic and coordinated funding will be addressed. A Business Model for

Recommendations will be delivered (T2.4, D2.5) in October 2021. Final results related to innovation management and sustainability" (T7.4) will be presented in a Sustainability Report (D7.7) in August 2022.

ExPaNDs (Sophie Servan): we don't provide funding as such but we have the chance to be close to the facilities so we can indirectly influence how they use their funding. The focus in the spreadsheet is focussed on standards for which we have a sustainability plan for each WP defining which standards we will build on to ensure our work is sustainable. e.g. OAI-PMH, Nexus format. Project data management plan includes a chapter on the allocation of resources, but more project timeframe focussed, use of Zenodo etc.

From spreadsheet: Completed: D1.7 Sustainability policy report (Mar 2020) Available at: <https://doi.org/10.5281/zenodo.3715279> detailing, for each ExPaNDS output, what existing standard / initiatives / services we should build on.

Completed: D1.10 Project Data Management Plan (Feb 2020) available at: <https://doi.org/10.5281/zenodo.3672926> with a short chapter on the allocation of resources.

Rapporteur: The ExPaNDs projects' closeness to the facilities provide an indirect opportunity to influence how they use their funding. A sustainability plan (D1.7 Sustainability policy report, Mar 2020, <https://doi.org/10.5281/zenodo.3715279>) exists for each work package focussing on which existing standards (e.g. OAI-PMH, Nexus format), initiatives and services should be built upon. The project's data management plan (Feb 2020 Feb 2020) available at: <https://doi.org/10.5281/zenodo.3672926>) focuses more on the project timeframe but references the allocation of resources and longer term access to outputs (Zenodo etc).

EOSC Synergy (Gerard Coen): goal is to expand capacity capability by working with thematic service providers (list). Not direct project funding as they are consortium partners, but the project design builds in implementation and adoption use cases. Link to repositories engaged on the project ()

Spreadsheet: There is no strategic funding provided from the project but the consortium has been constructed to include disciplines which were until now not well integrated in the EOSC. This is part of the expanding capacity and capabilities objective of the project and there are a number of service providers from the Environment, Earth Observation, Astrophysics and Biomedicine. Here is a list of the repositories of the services which are engaged in the federation work: <https://github.com/EOSC-synergy>

Rapporteur: The goal is to increase capacity and capability by working with thematic service providers. There is no strategic funding provided by the project, but consortium partners were selected to include disciplines that were previously less integrated into the EOSC. These include Environment, Earth Observation, Astrophysics and Biomedicine. A number of services have repositories that are engaged in the federation work: <https://github.com/EOSC-synergy>.

ENVRI-FAIR (Maria Johnsson): working intensively on the sheet today and Monday. Similar to ExPaNDs and Synergy. Not directly funding but interested in the services we develop throughout our clusters. This will be part of our sustainability plan.

Rapporteur: ENVRI-FAIR is similar to ExPaNDs and EOSC Synergy in this area. No direct funding is provided to others but rather it influences the services being developed through the clusters. These will form part of the project sustainability plan.

EOSC-Life/

Rapporteur:

ESCAPE/

VP: (read the content of spreadsheet)

Spreadsheet: ESCAPE has a connection to the disciplinary networks of Astronomy and particle physics via their participation on the external advisory board. (ASTRONET, APPEC, NuPPEC, ECFA). ASTRONET for example is a consortium of the largest funding agencies for astronomy in Europe.

Rapporteur:

PaNOSC

(Sophie Servan): PaNOSC is close to ExPaNDs. They are collecting costs for FAIR at their facilities.

Rapporteur: The PaNOSC and ExPaNDs projects are closely related. They are charting the costs for making data FAIR at their facilities.

SSHOC/ They will fill in some information.

Rapporteur: A SSHOC exploitation plan is under development (WP1, WP2, T8.1).

ARCHIVER/

via Sara Pittonet: this is the only project funded in the EOSC addressing long term digital preservation. They have started an initiative with EOSC Future to integrate this.

Spreadsheet: Model proposed by ARCHIVER to the EOSC Future project with a sustainable model to procure the ARCHIVER resulting services and to address concerns raised by the EC by delivering sustainable, production quality long-term data preservation services for user communities that fill a gap in the existing EOSC portfolio, extending the scope to accommodate diverse use-cases, including small-scale deployments requiring TB range preservation capacity.

Rapporteur: The model proposed by ARCHIVER to the EOSC Future project is a sustainable approach to procure the ARCHIVER services and to address concerns raised by the EC around delivering sustainable, production quality long-term data preservation services for user communities. This will fill a gap in the existing EOSC portfolio, covering diverse use cases, including small-scale deployments requiring terabyte-range preservation capacity. This work sits alongside extensive EOSC support for repositories offering long-term preservation as certified via the CoreTrustSeal.

DICE/

EGI/

EUDAT CDI/

GEANT/

OPENAIRE AMKE (Elli). Some open calls for the enhancement of services and the development of new services. Development of new tools (to be added to the spreadsheet/notes)]

FAIR champions (Isabel Bernal)

VP: ref content of spreadsheet

FAIR champions (Maria Johnsson) Where I'm based in Sweden Data Management and FAIR at the national levels universities are cooperating as a consortium. Will add to the spreadsheet.

spreadsheet cell updated since meeting: Sweden has since 2018 invested in giving resources to a national consortium for research data, called Swedish National Data Service (SND), see: <https://snd.gu.se/> in which most educational institutions in Sweden are participating. The SND consortium is working intensively with a common data repository, the SND catalogue, see: <https://snd.gu.se/en/catalogue> as well as with different competence development actions in research data for researchers and research support staff. Both these action areas are important parts of the strategic work in Sweden to make research output FAIR and to create research data management that is sustainable.

Rapporteur: Since 2018 Sweden has been addressing sustainable research data management and making research data outputs FAIR at the national level with universities cooperating as a consortium through the Swedish National Data Service (SND <https://snd.gu.se/>). The SND works with a common data repository and catalogue (<https://snd.gu.se/en/catalogue>) with competence centre activities for researchers and research support staff.

Go FAIR Barbara Magagna. Issuing certifications. trying to establish a policy rule of 5 percent of FAIR data stewardship in each project they work with so they're sustainable vocabularies, resources etc (link to Barend Mons paper)[additional content over the weekend.]

Spreadsheet cell updated since meeting: <https://arxiv.org/abs/1902.11162>

Rapporteur: Go FAIR is issuing certifications and trying to establish a policy-driven five percent of project funding dedicated to FAIR data stewardship: sustainable, vocabularies, resources etc. Go FAIR also has a FAIR Funder pilot programme to make it easy for funders to require and for grantees to produce FAIR Data (<https://arxiv.org/abs/1902.11162>)

Rec. 15: provide sustainable funding

15.1 In place

*What have the projects **already done** that address this recommendation? This should build on the information in the [spreadsheet](#). Please check that there is a link to the concrete deliverable.*

15.2 Planned

*What are the projects represented **developing or planning** to do? Again, this should build on the information in the [spreadsheet](#): information about a scheduled deliverable, i.e., title, due date, short description*

FAIRsFAIR (Mustapha Mokrane) in addition to previous comments, repository and service certifications are relevant as they address business models and long term activity sustainability. Providing direct funding for repositories selected through an open call. Sustainability plan includes examination of post project continuation, network of TDR to ensure sustainability. Relevant deliverables are listed in the spreadsheet.

Spreadsheet: WP2 and 4 activities cover FAIR certification of data services including repositories and FAIR data assessment in trustworthy data repositories. The requirements and assessments defined and tested in the project can inform funders to sustain a FAIR data ecosystem. Relevant deliverables: D2.7 Framework for assessing FAIR services (Aug 2021) D4.5 : Report on testbed of FAIR metrics and data assessment badging scheme (Aug 2021), D4.6 : Report on a maturity model towards FAIR data in FAIR repositories (Feb 2022)

Rapporteur: Repository and service certifications on FAIRsFAIR (WP4, WP2) are relevant to this recommendation as they address business models and long-term sustainability of activities and outputs which can inform funders seeking to sustain a FAIR data ecosystem. FAIRsFAIR is providing direct funding for repositories selected through an open call. This aspect of the FAIRsFAIR sustainability plan (D1.6 Feb 2022) includes an examination of post project continuation and a possible network of Trustworthy Digital Repositories to ensure sustainability. Relevant deliverables looking forwards include a Framework for assessing FAIR services (D2.7 Aug 2021) a Report on testbed of FAIR metrics and data assessment badging scheme (D4.5 Aug 2021), and a Report on a maturity model towards FAIR data in FAIR repositories (D4.6 Feb 2022).

EOSC-Nordic Mari Kleemola: following FAIRsFAIR footsteps providing support without funding, increasing awareness of data stewardship, identifying a lack in this area.

VP: How to roll out or fund

MK: will touch on this at the end of the project but not specific to the project plan

Rapporteur: EOSC Nordic provides support, though in this case without a financial incentive. The activities cover support for FAIRness and certification of repositories that can enhance the FAIR data ecosystem and its sustainability. The webinars and training events are increasing awareness of data stewardship skills and needs which have been identified as lacking. Funding or extending these activities are not specified in the project plan but will be addressed towards the end of the project. Outputs include An assessment of FAIR-

uptake among regional digital repositories: (D4.1 <https://doi.org/10.5281/zenodo.4045402> Aug 2020) and a Report on Nordic repositories and their uptake of FAIR (D4.3 Feb 2022).

EOSC-Pillar (Olivier Rouchon): No sustainable funding as part of the project but WP4.5 is looking at sustainable business models and recommendations. The study started with an analysis of the funding section of a survey conveyed by WP3 in 2020 (2K institutions, universities, research infrastructures, funding bodies, etc.) and interviews with a dozen service providers (partners or scientific use cases from WP6/WP7) back in December. The effort will lead to a deliverable (D4.5: Business model and sustainability study) due by M36 (June 2022) which will report findings and make recommendations with a particular focus on sustainability.

Rapporteur: There is no sustainable funding as part of the project but EOSC-Pillar but is looking at sustainable business models and recommendations (WP4.5) beginning with its analysis of the funding section of a survey covering institutions, universities, research infrastructures, funding bodies and others in 2020 (WP3) and interviews with a dozen service providers including project partners and other scientific use cases (WP6/WP7) in December 2020. This will produce a business model and sustainability study (D4.5 June 2022) which will report findings and make recommendations with a particular focus on sustainability.

NI4OS-Europe (Elli Papadopoulou): We have a deliverable on different business models that could be followed due Oct 21. Cost-benefit analysis (cf Action 15.2) in the context of the national open science clouds of partners, some partners are working on these with their ministries. Done at national rather than project level.

Rapporteur: NI4OS-Europe will provide information on possible business models (October 2021). A Cost-Benefit Analysis (cf: Action 15.2) is being undertaken at the national rather than the project level with some partners working with their ministries in the context of national open science clouds. Work on Innovation management and sustainability (T7.4) provide a Marketing, dissemination and sustainability plan (D7.2 <https://zenodo.org/record/3736165#.XrR7bKgZy2x> November 2019) and a D7.7 Sustainability Report (D7.7 M36)

ExPaNDs (Sophie Servan): work on facilities data policies. Once FAIR is integrated into policies then funding follows. Proposals will include development of DMPs and then applying these. Deliverable on data policy framework. Data stewards based at facilities. Indirect funding that we hope to achieve.

Rapporteur: ExPaNDs is working on framework facilities' data policies including the development and application of Data Management Plans (DMP) and locally based data stewards. Once FAIR is integrated into the policies, these issues become a focus for funding. Completed outcomes of the project include a Sustainability policy report (D1.7 Mar 2020 <https://doi.org/10.5281/zenodo.3715279>) explaining how we want to make ExPaNDS outputs indispensable to our facilities (and their sustainable funding) and a draft extended data policy framework for Photon and Neutron RIs (D2.1 Sep 2020

<https://doi.org/10.5281/zenodo.4014811>) that enables indirect strategic funding for FAIR to be included in the facilities data policy.

EOSC Synergy (Gerard Coen): n/a

ENVRI-FAIR (Maria Johnsson): it's coming, but inspired by today's conversation:)

VP: we didn't all promise to deliver these elements but as we mature the question of what next becomes more important.

Rapporteur: ENVRI-FAIR noted that planning for sustainable funding (WP1) is just beginning on the project. The Chair noted that even those projects that did not promise to deliver these elements can see their importance as they mature. In the subdomains (atmosphere, marine, solid earth, ecosystems) ENVRI-FAIR is working on sustainable data management

for the contribution to the EOSC through an Atmospheric subdomain development strategy, (D8.12 August 2022) a Marine subdomain white paper for sustainable data management, (D9.10 December 2022) a Final report on EPOS policies and governance for FAIR and EOSC, (D10.7 December 2022) and a Biodiversity and Ecosystem subdomain long term development and management plan, (D11.4 October 2022)

**EOSC-Life/
ESCAPE/**

PaNOSC/

(Sophie Servan): A future piece of work will collect the costs of data management at 6 ESFRI facilities to include in business models and see what is feasible.

Defined figures as costs. [Will cross-check before adding to the spreadsheet]

Rapporteur: A future piece of work will aggregate the costs of data management at 6 ESFRI facilities to be included in business models and see what is feasible (T7.2 currently refining cost collection, completion by mid-June). This will highlight costs due to FAIR DM and the additional costs of linking with the EOSC e.g. costs associated with providing access to data and services to anyone, outside the embargo period. PaNOSC (ESFRI and ERICS) is examining business models to sustain developments beyond the project are being studied (T7.3 progress during June) working with ExPaNDS (national facilities) due to their similar photon and neutron facilities coverage. Business models will be validated by project work package leaders and facilities' directors. Possible governance structures are being studied (T7.4) where the sustainability plan will cover governance, funding streams and the long-term operation of the PaN (Photon and neutron) EOSC. Assessing the maintenance needs for the current federated services is completed. Work to study the feasibility of different funding streams, including in-kind contributions is ongoing. Then a long term strategy for the PaN facilities will be developed.

SSHOC

Rapporteur: work on the governance and sustainability of the SSH part of the EOSC (T8.1) will result in a Roadmap in December 2021 (D81).

ARCHIVER/

Sara Pittonet: clear breakdown of responsibilities between service providers (buyers) and data stewards. Using FAIRsFAIR F-UJI tool for testing services in the pilot phase. Engagement across Europe with the clusters to align needs for LTDP in different research sectors to understand how the requirements meet their needs. Early adopters programme to test archival solutions use cases. Legacy: the model for procurement of sustainable services.

Spreadsheet: Help Improving FUJI-tool findings (eliminating false positives and adapt it to use cases such as the CERN Open Data Portal JSONs, taking in consideration for example custom metadata from scientific datasets (e.g Physics) at a certain scale (8k records per dataset) and apply F-UJI scores to TDR assessments.

Investigate the use BagIt, BDBag, or RO-Crate as alternative input sources for F-UJI to start the analysis from, instead of always starting from landing pages.

Rapporteur: ARCHIVER sees a clear breakdown of responsibilities between service providers (buyers) and data stewards. The project is using the FAIRsFAIR F-UJI tool for testing services in the pilot phase and engaging across Europe with the clusters to identify and meet the needs for long term digital preservation in different research sectors. Archival use cases¹ are in place and these will be tested through an 'early adopters' programme². Part of the project legacy will be a model for the procurement of sustainable services.

EOSC

VP: ref content of spreadsheet

FAIR champions (Mark Allen)

VP: ref content of spreadsheet

Rec. 27: open EOSC to all providers but ensure services are FAIR

27.1 In place

*What have the projects **already done** that address this recommendation? This should build on the information in the [spreadsheet](#). Please check that there is a link to the concrete deliverable.*

27.2 Planned

*What are the projects represented **developing or planning** to do? Again, this should build on the information in the [spreadsheet](#): information about a scheduled deliverable, i.e., title, due date, short description*

¹ <https://archiver-project.eu/early-adopters-use-cases>

² <https://archiver-project.eu/early-adopters-programme>

Whole-Pillar.1 What's missing in the recommendations and actions in this pillar?

What do projects do - related to implementing FAIR in the context of the EOSC - the original recommendations do not cover that? Should it be included in an updated action plan and revised set of recommendations? Please focus on this pillar.

VP: What should we as a community be focussing, what are you developing, what do you rely upon infra, networks etc. What are your concerns. What activities do we need to think about so that what we're developing today is there tomorrow and for the long term?

Rapporteur: Attendees were asked to reflect on where we as a community should be focussing, what is under development and which infrastructures and networks they rely upon. They were asked to share any concerns and to outline what activities we need to think about so that what we're developing today is still there tomorrow and for the long term.

ENVRI-FAIR Maria Johansson: all the different projects we're involved in as infrastructures or service providers we're also dependent on national guidelines, legislation and developments. What is going on in the different countries? The Swedish government is beginning to design activities around FAIR.

VP: policy? funding?

MJ: Governments are restructuring authorities around this.

VP: funding models and organisation going forwards

Rapporteur: All of the projects we are involved in as service providers or infrastructures are also dependent on national guidelines, legislation and local developments. In Sweden the government has started to redesign which authorities should manage FAIR going forward, whilst also looking at funding models and activities around the FAIR Principles.

EOSC-Nordic Mari Kleemola: seconds that. This is a big issue at national and university level. Finland has well developed approaches, but Universities take their own course and then along with the European level it can be hard to see who's coordinating. This can lead to less beneficial types of competition. Roles of repositories and researchers seeking a safe place for their data need to be clear. EOSC Nordic has demonstrated diversity of practice even within their partners.

VP: what type of repository, disc, local, national

MK: any time, my national repository is hosted by a university, also a national service provider for CESSDA ERIC. Remaining open questions on roles and responsibilities that are reflected in funding models

VP: competition for funding?

MK: it all comes down to money, but also extends to many local varied approaches to issues like metadata where we have attempts and willingness but the funding or mandate can lead to conflicting political interests that reduce cooperation.

Rapporteur: The ENVRI-FAIR reflections were seconded by EOSC Nordic. This is a big issue at national and university level. EOSC Nordic has demonstrated diversity of practice even in the Nordic region. The Finnish Social Science Data Archive (FSD) is a national repository, hosted by a University and also acting as a national service provider to CESSDA (Consortium of European Social Science Data Archives). Finland has well developed plans and numerous national activities and although it is heavily engaged on a European level and with EOSC, the universities seem to be taking their own course which, alongside activities at the European level, can be challenging for coordination. This can lead to the less beneficial aspects of competition between universities, countries and disciplines where stakeholders develop their own solutions, e.g. for metadata, and do not collaborate where it is necessary and compete for limited funding. We have a willingness and active attempts to coordinate by varying mandates and funding calls can lead to conflicting political interests that reduce cooperation. The roles of repositories must be made clear, especially for researchers seeking a safe place for their data.

PANOSC: Ornella De Giacomo.

VP: work on costs related to data management? Business models? Building on community needs and standards?

OdG: collecting the costs of facilities. Some with long term cost knowledge but others in development with higher initial costs to make them FAIR by design. Costs vary depending on initial state of FAIRness (some started before FAIR existed). Trying to define main cost drivers but many technical solutions influence the costs. Analysing now so that others can reuse this knowledge in a meaningful way. Working to keep development alive post project, involves maintenance and constant updates. We have common problems and need to seek common solutions. How can we test feasible models for the future, how can we separate what is and isn't EOSC related. What counts as 'additional costs' vs what should come from the ordinary budget. Hard if you haven't got a mandate that explicitly requires FAIR data. Also maintaining federated parts of the service (search, catalogues etc) which involves all partners to ensure inclusion

VP: We have development rather than operational funds from the EC. How do we design and develop income streams to support this going forwards.

Rapporteur: PANOSC are tracking the costs of FAIR in their facilities. They are concerned about how they develop new things going forward: how will they be maintained and how will they be updated? It is working with EXPANDs on such common issues. Some facilities can provide long term cost knowledge that predates the FAIR Principles. Others are in development and have higher initial costs to make them FAIR by design. Costs vary depending on the initial state of FAIRness. Attempts are being made to define the main cost drivers and to analyse these so that knowledge can be reused in a meaningful way, but these can vary across technical solutions. Working to keep development alive post projects, involves maintenance and constant updates. Challenges include identifying costs that are and aren't EOSC/FAIR related. This influences what should be covered by standard budgets and what counts as 'additional costs' which is complicated without an organisational mandate that explicitly requires FAIR data. Inclusive, federated services (search, catalogues etc) must also be maintained and depend on relationships with all partners. These factors

must all be considered so that we can test feasible models for the future. They pointed out that they need to see how to fund the operations of some of their FAIR activities going forward.

Whole-Pillar.2 Any recommendations not addressed?

Are the recommendations being covered enough by these activities? If not: what should be done? And by whom?

To serve research communities, are there additional recommendations that are not covered in the current report? **Please add things to the notes document!**

Though there may be a lack of specific calls to action in the responses, there is an overall awareness of challenges for sustainability in later stages of projects and a need for post project operational sustainability. Interpreting from the feedback, there are existing challenges in coordination between projects, national and local initiatives, incl. universities and EOSC. Alongside existing synchronisation work there is an increased need to identify and align with the critical local context (national, local, legislative, policy) for strategic collaboration. Collaboration on all these levels is critical for alignment, and to avoid competition for resources and duplication of effort. This reflects the overall challenge of moving from project-driven funding and implementation, towards integrated and coordinated sustainable EOSC services. , there are existing challenges in coordination between projects, national and local initiatives, incl. universities and EOSC. Alongside existing synchronisation work there is an increased need to identify and align with the critical local context (national, local, legislative, policy) for strategic collaboration. Collaboration on all these levels is critical for alignment, and to avoid competition for resources and duplication of effort. This reflects the overall challenge of moving from project-driven funding and implementation, towards integrated and coordinated sustainable EOSC services.

Simon: Issue of semantic services, we're using F-UJI, we're building a FAIR test. Not real semantic services. Automation of FAIR assessment is more of a focus than facilitating machine-assisted analysis.

Rapporteur: We're seeing the development of FAIR tests and the deployment of tools like F-UJI. But these focus on the automation of FAIR assessment rather than being semantic services that focus on facilitating machine-assisted analysis.