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FAIR assesement and certification in the EOSC region

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Abstract

On Thursday 26th of November the InfraEOSC-5 FAIR data and infrastructure Task Force, set-up by the projects in the INFRAEOSC-05-2018-2019 call: EOSC-synergy, EOSC-Pillar, EOSC-Nordic, NI4OS-Europe, ExPaNDS, FAIRsFAIR, and EOSCsecretariat.eu, organised a special edition of its usual monthly meeting to present to the European Commission the key work being carried out on the topic of FAIR data assessment and certification by the InfraEOSC-5 call funded initiatives. The event was co-organised by the EOSCsecretariat.eu and the FAIRsFAIR initiative and engaged all the InfraEOSC-5 call projects actively involved in the FAIR Task Force with the aim to provide an overview on the tools, challenges, lessons learned and recommendations towards FAIR Assessment and certification of digital objects and data repositories. The meeting also gave a deep-dive into practical use cases that demonstrate the impact of applying the current tools to different communities across Europe and the priorities for the stakeholders involved.

FAIR, FAIRsFAIR, EOSC

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**EUROPEAN OPEN
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FAIR Assessment
and Certification
in the EOSC region

Different tools, studies and processes are being implemented by research projects in the EOSC framework to assess and certify the FAIRness of digital objects and data repositories.

A meeting on November 26th with the European Commission DG RTD presented the current status.

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Disclaimer

The information and views set out in this report are those of the authors and do not necessarily reflect the official opinion of the European Commission, which cannot be held responsible for the use which may be made of the information contained therein.

December 2020
Rapporteur: Sara Pittonet Gaiarin, Trust-IT

About the Workshop

Upon request from the European Commission, on Thursday 26th of November the [InfraEOSC-5 FAIR data and infrastructure Task Force](#), set-up by the projects in the **INFRAEOSC-05-2018-2019** call: EOSC-synergy, EOSC-Pillar, EOSC-Nordic, NI4OS-Europe, ExPaNDS, FAIRsFAIR, and EOSCsecretariat.eu, organised a special edition of its usual monthly meeting to present to the European Commission **the key work being carried out on the topic of FAIR data assessment and certification by the InfraEOSC-5 call funded initiatives.**

The event was co-organised by the [EOSCsecretariat.eu](#) and the [FAIRsFAIR initiative](#) and engaged all the InfraEOSC-5 call projects actively involved in the FAIR Task Force with the aim to provide an overview on the tools, challenges, lessons learned and recommendations towards FAIR Assessment and certification of digital objects and data repositories. The meeting also gave a deep-dive into practical use cases that demonstrate the impact of applying the current tools to different communities across Europe and the priorities for the stakeholders involved.

Agenda

13.30-13.40	Welcome and introduction of the FAIR Task Force Marjan Grootveld, DANS and EOSC FAIR Task Force chair
13.40-14.10	FAIR data assessment and certification: challenges, lessons learned and recommendations from the INFRAEOSC Call 5 projects Lightning talks
	FAIRsFAIR Mustapha Mokrane, DANS
	EOSC Nordic Andreas Jaunsen, NeIC
	EOSC-Pillar Jos van Wezel, KIT
	EOSC Synergy Gerard Coen, DANS
	ExPaNDS Sophie Servan (Desy)
	NI4OS-Europe Elli Papadopoulou (ATHENA Research Centre)
14.15-14.25	Q&A
14.25-14.30	Short break
14.30-15.00	Diving into tools and use cases
	F-UJI: an Automated FAIR assessment tool Robert Huber (Bremen University)
	DIGITAL.CSIC FAIR evaluator Fernando Aguilar (CSIC)
	FAIR evaluation tool (FDStool) Andreas Jaunse (NeIC)
15.00-15.20	Q&A

Setting the scene: outcomes on assessment and certification from the FAIRsFAIR Synchronisation Force report

The session was opened and moderated by the EOSC FAIR TF Chair Marjan Grootveld, DANS and FAIRsFAIR project with an introduction about the [FAIRsFAIR Synchronisation Force](#), a body set up to maintain a dialogue across the EOSC and FAIR ecosystems and promote adherence to the [Turning FAIR into Reality](#) (TFiR) action plan produced by the European Commission expert group on FAIR data. Between 29 April and 11 June 2020 the Synchronisation Force held its second workshop to measure progress towards implementing the recommendations outlined in the Turning FAIR into Reality report.

All InfraEOSC-5 projects engaged in the workshop, together with EOSC FAIR Working Group representatives, ESFRI cluster projects, and members of the [FAIRsFAIR European Group of FAIR Champions](#). In the context of the Task Force Session TFiR recommendations 12 and 13 stand out as they deal with FAIR assessment and certification. Many activities are happening under TFiR recommendation n.12 “Develop metrics for FAIR Digital Objects”, while some others provide support to recommendation n.13 “Develop metrics to certify FAIR services”.

FAIR data assessment and certification: challenges, lessons learned and recommendations from the InfraEOSC-5 projects

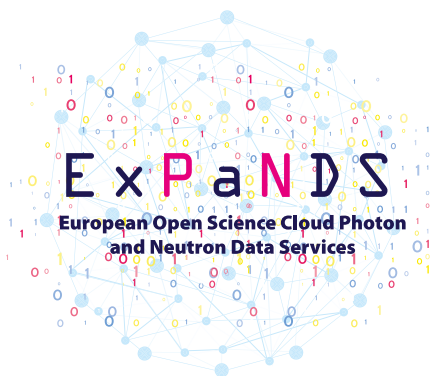


Mustapha Mokrane, DANS and [FAIRSF AIR](#) coordinator, opened the session with an overview of **FAIRSF AIR activities on FAIR certification and assessment**. The project is working with a network of data repositories to develop, at the same time, tools to help identify FAIR-enabling and trustworthy repositories and services to assess the FAIRness of datasets. This is done via two initiatives, a **repository certification support** programme engaging with 10 data repositories to guide them towards the achievement of the **CoreTrustSeal certification**, and a **data object assessment via the F-UJI tool**, tested by another group of 5 repositories.

The challenges experienced in the process so far relate to the various practices at repository level and different community practices, as well as the need to take into account the data context. This confirms that human interaction during assessment is still fundamental and cannot be totally substituted by machine-actionable assessment tools. Time is also an important element to consider in the process, both in terms of data preservation in the long-term, and of the need for a continuous iterative consultation process to incorporate user feedback and adapt guidance and practical implementations.



Andreas Jaunsen, NordForsk/NeiC and [EOSC-Nordic](#), introduced the outcomes of the FAIR assessment undergone with 100 repositories, testing also the FAIRSF AIR F-UJI tool. According to the results, 25% of the engaged repositories don't use identifiers and 30% do not support machine-actionable FAIR processes. The evaluations show that very few repositories support FAIR data (based on machine-actionable content that can be tested).



On another hand, [EOOSC-Pillar](#) is also working towards enhancing FAIRness. **Jos van Wezel, KIT**, presented the three activities where the project is currently active, namely the integration of (existing) tools for FAIR research data providers into the [Federated FAIR Data Space \(F2DS\)](#), a data repository compliant service where metadata of different data sets is ingested and aligned for the benefit of researchers and data managers. The project is also working on a study on common metadata and ontologies, and offers a helpdesk service providing also training and documentation on FAIR tools and FAIR data.

The [EOOSC-Synergy initiative](#) is active on three levels of FAIR assessment: services, repositories and digital objects (including technical aspects). **Gerard Coen, DANS**, presented the challenges experienced, which encompass again the maturity level that varies according to repositories, where **technical readiness** also needs to be taken into consideration when starting the FAIR assessment process, as well as the domain specificity. Incentives are needed to engage with this work and further activities with repositories, since the simple benefit of FAIRness is not enough.

FAIR assessment in ExPaNDS focuses on data produced at the project PaN - proton and neutron - facilities. **Sophie Servan (DESY)** introduced the project services that will be candidates for FAIR assessment tools developed by EOOSC-Synergy and FAIRsFAIR projects: the PaN ontology, the (meta) data catalogues and the data analysis pipelines. ExPaNDS has defined **a roadmap for photon and neutron RIs** to FAIRify their data catalogues and evaluated progress towards different aspects relevant for the photon and neutron community while including EOOSC integration. The EOOSC Interoperability framework recommendations were also applied. The project FAIR assessment is preliminary and manual, but thanks to the self-assessment approach, the PaN facilities are engaged in the process and the culture shift towards FAIR can be deeper.

The [NI4OS-Europe project](#) activity on FAIR works across three pillars, introduced by **Elli Papadopoulou, ATHENA Research Centre**. Pillar 1 is on Tools, leveraging on resources already available and in particular developing tools focusing on legal aspects of FAIRness; pillar 2 is on training on existing resources (FAIR DMM, F-UJI, etc...) translating materials and building a "network of trainers"; pillar 3 is dedicated to onboarding adopters via the practical implementation of the principles leveraging on the **NOSCI**s, the National Open Science initiatives ongoing in South-Eastern Europe. Among the lessons learnt so far, Communities of practices are essential, and EOOSC promoters at country level revealed to be a useful channel for implementation.

Diving into tools and use cases

The session concluded with an overview of the current tools and services available for FAIR assessment, and examples of their adoption in the [Infra-EOSC-5b](#) research projects.

F-UJI: an Automated FAIR assessment tool.



A total of 8 data assessment scenarios were identified. For 2 scenarios FAIRsFAIR developed assessment tools: FAIRaware to raise awareness and assess the FAIRness of data before depositing them, and F-UJI to test FAIRness of archived data, in particular the re-usability of data. In addition, [17 metrics](#) have been designed for the systematic assessment of FAIR data objects.

<https://seprojects.marum.de/fuji/api/v1/ui/>

DIGITAL.CSIC FAIR evaluator



DIGITAL.CSIC is the institutional multidisciplinary repository of the Spanish National Research Council. DIGITAL.CSIC organizes, preserves and provides open access to CSIC research outputs. In the framework of this repository a **FAIR evaluator** is being developed, an OS software to check FAIRness of Digital Object, so far available at the EOSC-SYNERGY GitHub. The idea is to develop plugins to let the system communicate with different repositories and leveraging PID, licence, metadata, relationships.

https://github.com/EOSC-synergy/FAIR_eva

FAIR evaluation tool (FDStool)



The project has run evaluations for more than 1000 datasets with the help of FDS-tTool and F-UJI tool and using some Google scripts and multiple workers (VMs) for streamlining. Both tools use machine-actionable indicators based on metrics developed by [Wilkinson et al. 2019](#) and [Devaraju et al. 2020](#) for FDS Evaluator and F-UJI, respectively (latter developed in the context of the RDA) and FAIRsFAIR Certification schema extended to CoreTrustSeal requirements.



Conclusions

The session was opened and moderated by the EOSC FAIR TF. According to the EC, the alignment with FAIR principles will become mandatory in the upcoming Horizon Europe Research programme. The EC intends to build on open access to publications to move to open science in the broad sense and publications need to be immediately open and deposited in trusted repositories.

Attention will focus on open access licensing with e.g. CC-BY to allow reuse of data and guarantee that the beneficiaries retain enough rights. Trusted repositories will be mandatory, although some work programmes may require specific OS practices including the use of EOSC federated infrastructures. The governing principle for research data will be similar: trusted repositories and a CC-BY licence or CC0 waiver, unless justified otherwise in the data management plan. Being compliant to Horizon Europe can be considered an incentive for more repository certification.

A better and more structured collaboration among the Infra-EOSC-5b projects to evolve and make joint usage of these tools is envisaged, and could take place under the umbrella of the FAIRsFAIR initiative. Timing might be an issue, since not all the projects are running at the same pace, as well as domain specificities. But synergies can be found in the medium term, and consensus on testing should be reached, too.



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