

Digital skills for FAIR and open science

Iryna Kuchma

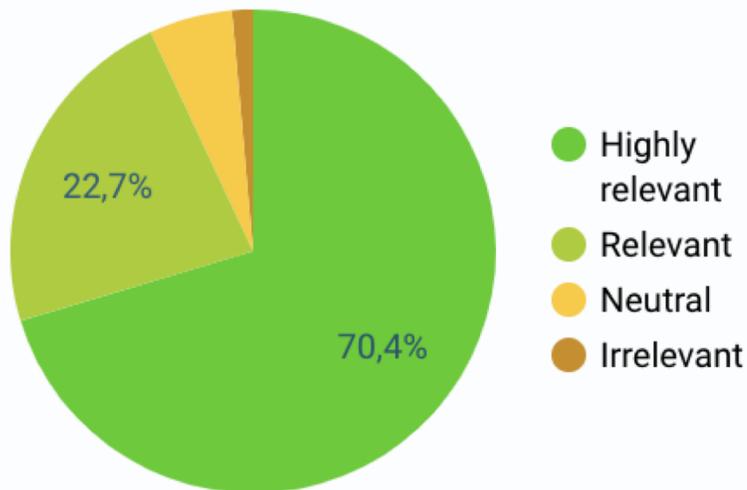


EUROPEAN OPEN
SCIENCE CLOUD

Skills and training a key factor for success of EOOSC

September 2020 SRIA consultation
feedback

AA11 - Skills and Training



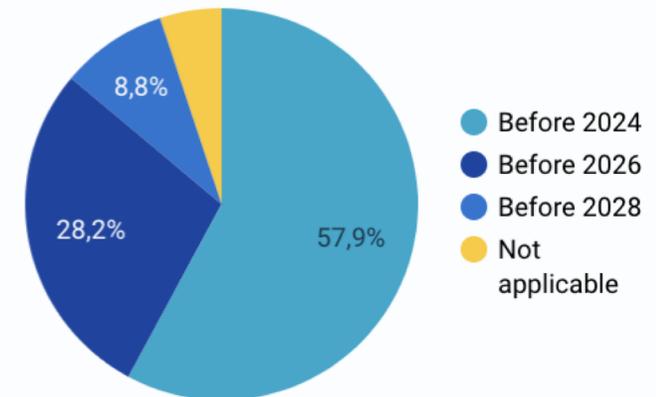
P17: Develop Open Science training and professionalise associated roles.

Relevance

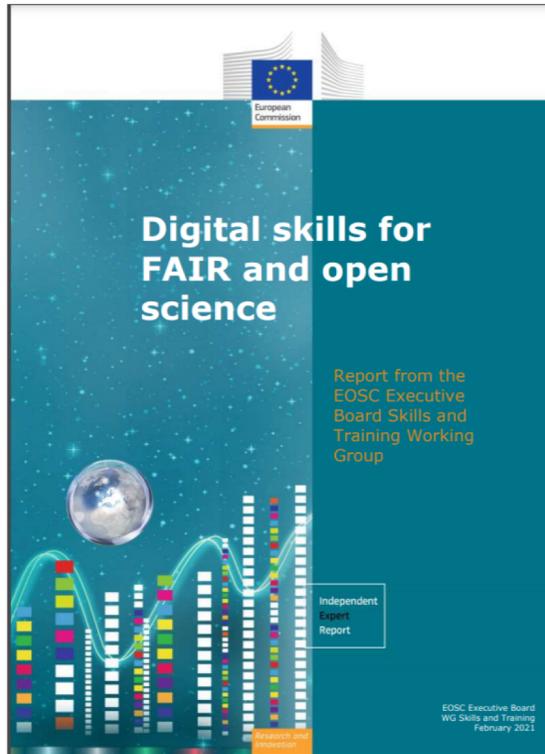
	P17 - How re...	Record Count
1.	Highly relevant	140
2.	Relevant	55
3.	Neutral	12
4.	Irrelevant	7
5.	Highly irrelevant	2

1 - 5 / 5 < >

Urgency



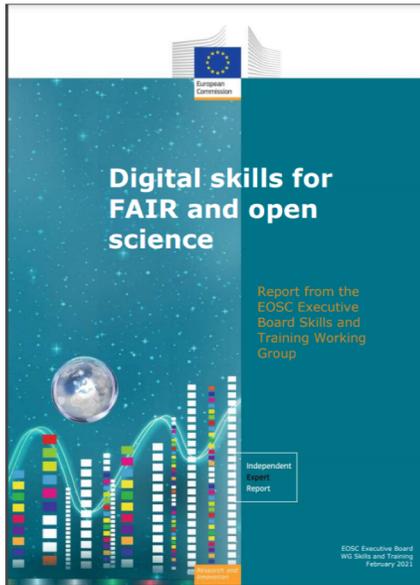
The EOSC Training & Skills Working Group



- In 2020, the [Working Group Skills & Training](#) acted as Advisory Group to EOSC Executive Board
- 42 members from MS/AC, EC and EC related projects with different type of expertise
- Co-chairs Natalia Manola (OpenAIRE) & Vinciane Gaillard (EUA)
- Rapporteur: Iryna Kuchma (EIFL)
- Report “[Digital skills for FAIR and open science](#)” published February 2021

4 Priority Areas

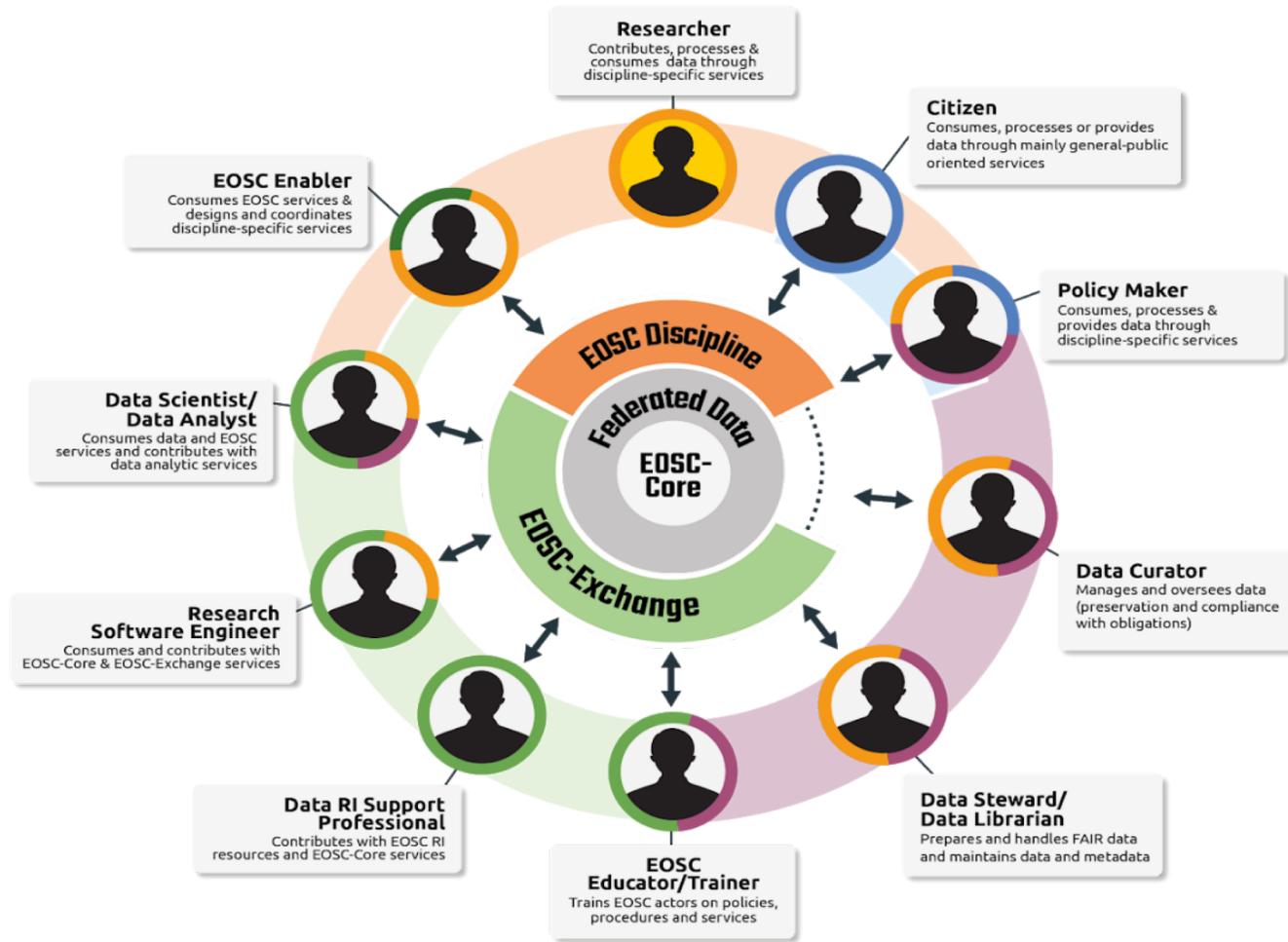
- **Developing the next generation of FAIR and open science professionals**
 - The framework of all the EOSC actors (roles) and their interactions
- **Collaborating to enhance digital skills for FAIR and open science in Europe**
 - The concept of competence centres
- **Building a trusted and long-lasting and knowledge hub of learning and training resources and related tools**
 - Specifications for the EOSC federated training catalogue
- **Influencing national open science policy for skills by supporting strategic leaders.**
 - Recommendations for Member States and Associated Countries on how to support EOSC in national skills policies and strategies.



[Report](#) (February 2021)

Framework of Actors in the EOSC Ecosystem

Also in the [Strategic Research and Innovation Agenda](#) (SRIA) of the European Open Science Cloud (EOSC) and the [EOSC Glossary](#), Dec 2020



ICT-Specific
Developing Software

Library & Information Science
Understanding Data

Discipline Specific
Conducting Research

General Public

Description of 10 roles within the EOSC ecosystem, one situational example for each role and a list of required skills

	Researcher
Overview	The researcher is the main target of the EOSC ecosystem and interacts with it to obtain, process, produce, deposit and share research data, using mainly high-level services provided by the ecosystem.
Examples	A researcher would browse and identify data related to different genetic variants of the flu available in a FAIR data repository and perform a phylogenetic study on samples through a service from the EOSC marketplace, creating a graphical representation as a phylogenetic tree to include in an article, referencing the data sources and processing pipelines.
Required skills	<ul style="list-style-type: none"> General knowledge on the EOSC ecosystem, covering the EOSC-Core and EOSC-Exchange interdisciplinary services for data access, sharing, reuse and processing, and relevant discipline-specific services. Knowledge of the added value that EOSC services provide to research and publication workflows. Understanding of how to assess the FAIRness of services when searching for and producing research data. Skills to apply EOSC services wherever they support the research and innovation lifecycle and contribute to their development. Training and communication skills to teach and educate other researchers and students on how to conduct research in the frame provided by EOSC.
	Data Steward/Data Librarian
Overview	A Data Steward is an expert on the preparation and treatment of data including data selection, storage, preservation, annotation provenance and other metadata maintenance, and dissemination. Data librarians are professional library staff who are experts on RDM, using research data as a resource or supporting researchers dealing with data (description, archiving and dissemination). Other closely related roles will also be considered under this category.
Examples	A Data Steward could be an expert who validates, recodes, trims or applies any other action on each source dataset of genomic samples related to influenza to guarantee that they can be properly used and integrated according to domain-specific standard formats.
Required skills	<ul style="list-style-type: none"> Deep understanding of FAIR principles to ensure that research data from various domains is aligned with FAIR and CARE (Collective benefit, Authority to control, Responsibility, Ethics) principles. Ability to use EOSC-Core and EOSC-Exchange services for data publication and preservation and to facilitate the continued development of an infrastructure and library services to support data discovery, curation, preservation and sharing according to those principles. Ability to validate the fulfilment of open science principles in EOSC-Core and EOSC-Exchange services related to data. Ability to advise faculty and students on RDM according to the FAIR and CARE principles, including the discovery and reuse of existing datasets, through the EOSC services and ecosystem.



Data Research Infrastructure Support Professional

Overview

A Data Research Infrastructure Support Professional is an ICT expert who manages and operates research infrastructures and the necessary services for the storage, preservation and processing of research data.

Examples

A Data Research Infrastructure Support Professional could be the administrator of a cloud or storage federated infrastructure in the EOSC ecosystem that is used to store or process the data from the previous roles.

Required skills

- Knowledge of the EOSC ecosystem principles and concepts.
- Technical skills to securely deploy and maintain EOSC-Core and EOSC-Exchange services related to processing and storage, or to data resources such as repositories and databases.
- Training and communication skills to teach and educate any other actor on how to use research infrastructures.
- Facility management skills to understand the services and resources needed to sustain research activity in the research infrastructures of scientific communities supported in the context of the EOSC ecosystem.

Role	Research performing organisation	Research funding organisation	Service providing organisation	Governmental organisation	Companies & Business	Other
 Researcher	4,81	4,31	4,06	3,13	3,56	2,92
 EOSC Enabler	4,13	3,75	4,44	3,69	3,56	3,69
 Data scientist/analyst	4,63	3,25	3,88	3,50	4,56	3,00
 Research Software Eng.	4,19	2,88	3,94	3,06	4,06	2,54
 Data RI Support Pro.	4,31	3,44	4,31	3,31	3,94	2,92
 EOSC Educator	4,06	3,56	4,06	3,38	2,94	3,62
 Data curator	4,13	3,06	3,75	3,69	3,63	3,23
 Data steward/librarian	4,06	3,06	3,47	3,47	3,34	3,04
 Citizen	2,75	2,69	2,56	4,25	3,38	3,85
 Policy maker	3,19	4,31	3,13	4,69	2,75	4,17

1. Utilise the Framework of Actors in the EOSC Ecosystem in the development of initiatives, skills, training, reward and recognition frameworks and career paths necessary to support further development and mainstreaming of FAIR and open science.

2. Coordinate and align relevant skills curricula and training frameworks by generating a consensus on a core European higher education curriculum to deliver FAIR and open science skills at university level.

3. Encourage and support the competence centres approach as a framework for increasing coordinated provision of aligned training to support FAIR and open science.

4. Facilitate increased integration of FAIR and open science courses with university qualifications.

5. Build a learning and training catalogue utilising the specifications for development recommended by this WG to maximise interoperability.

6. Include learning and training resources in the EOSC Interoperability Framework (EIF).

7. Develop an EOSC Skills and Training Leadership Programme to:

- **Increase coordination of European and national policies, programmes and networks supporting the skills elements of FAIR and open science.**
- **Develop and promote an EOSC Skills and Training Ambassadors programme to advise national decision-makers.**
- **Advocate for the inclusion of skills and training of FAIR and open science into major European and national funding instruments.**

Questions

Is there a rewarding career process for researchers who are practicing open science?

Are digital skills profiles standardized? Is there any legislation on digital skills?

Are there modules on FAIR and open science in the universities curricula or other university training systems?

Is there any academic education on data science/engineering?

Is there any accreditation system for data scientists, especially for public employees?

By LDK Consultants

Questions (2)

Are any digital skills initiatives included in national policies on FAIR and open science, AI and cybersecurity? Is there a formal policy on digital skills and training? Is there a coordination or central governance mechanism?

Is there any cross-sector (research-industry-public sector) cooperation to enable employee mobility and employability?

Is there any cooperation for digital upskilling with the private sector, the public sector and the research?

By LDK Consultants

Recommendations for implementing EOSC skills agenda

Coordinate and align relevant skills curricula and training frameworks by generating a consensus on a core European higher education curriculum to deliver digital skills for FAIR and open science at university level

Develop reward and recognition frameworks that are integrated with new career paths to incentivize FAIR and open science practices for all research sectors staff across MS and AC.

[EOSC within National Strategies for Digital Skills: Recommendations Report](#)

[EOSC within National Strategies for Digital Skills: Gap Analysis Study](#)

[EOSC within National Strategies for Digital Skills: Landscape Report](#)

[EOSC within National Strategies for Digital Skills: Consultation and Focus Group Report](#)

By LDK Consultants

Acknowledgements

All members of the EOSC WG Skills & Training

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Angus Whyte	Digital Curation Centre (DCC)

EOSC Association Task Force FAQ

What are the Advisory Groups and Task Forces?

There are five Advisory Groups focusing on overarching themes that are important for the realisation of EOSC which consist of Task Forces with members working on specific topics related to each of the Advisory Groups:

- AG Implementation of EOSC
 - [TF PID Policy and Implementation](#)
 - [TF Researcher Engagement and Adoption](#)
 - [TF Rules of Participation Compliance Monitoring](#)
- AG Metadata and Data Quality
 - [TF FAIR Metrics and Data Quality](#)
 - [TF Semantic Interoperability](#)
- AG Research Careers and Curricula
 - [TF Data Stewardship Curricula and Career Paths](#)
 - [TF Research Careers, Recognition, and Credit](#)
 - [TF Upskilling Countries to Engage in EOSC](#)
- AG Sustaining EOSC
 - [TF Defining Funding Models for EOSC](#)
 - [TF Long-Term Data Preservation](#)
- AG Technical Challenges on EOSC
 - [TF AAI Architecture](#)
 - [TF Infrastructure for Quality Research Software](#)
 - [TF Technical Interoperability of Data and Services](#)



Task Force charter

Data stewardship curricula and career paths

Task: Definition of a minimal data stewardship curricula. M1-24

Milestone: Recommendations for Data Steward curricula version 1 - M12

Define Data Stewards roles, their core activities, possible specializations or extension activities, and the context in which these roles operate

Develop a competency profile for data stewardship core activities

Define levels of training needed by the different Data Steward roles

Produce guidelines for a Data Stewardship curricula, which could include university curricula as well as short training.

Milestone: Recommendations for Data Steward curricula version 2 - M24

Refined version of the competency profile and curricula with input from the implementation use cases

Task Force charter

Data stewardship curricula and career paths (2)

Task: Career paths for Data Stewards and associated roles. M1-24

Milestone: Report on how Data Steward roles map in an international, disciplinary and institutional context - M09

In alignment with Upskilling countries to engage in EOSC Task Force, and other international initiatives

Develop Data Steward career paths;

Milestone Recommendations for Data Steward career paths version 1 - M15

- **Recommendations for individuals on the career paths available**
- **Recommendations for research performing institutions and organizations on how to establish career paths for Data Stewards**
- **Recommendations for the recognition and rewards for data stewardship activities (e.g. credits, incentives);**
 - Aligned with the Research careers, recognition and credit Task Force.

Milestone: Recommendations for Data Steward career paths version 2 - M24

- Refined version with input from implementation use cases

Task Force charter

Data stewardship curricula and career paths (3)

Task: Implementation examples using use cases; M6-M24

Milestone: Identify use cases and potential settings to implement the version 1 of recommendations for data stewardship curricula and career paths - M12

Use cases will contribute to version 2 of recommendations for data stewardship curricula and career paths

When selecting potential use cases the following should be taken into account:

Discipline-specific support (Data Steward with relevant domain background) as well as generic data steward support

Policy-development with Data Steward

Various institutional environments in which data stewards will intervene

University degree versus short training setting

Thank you!

Questions?

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