

## EOSCpilot WP7 - Towards a Stewardship Skills Framework for EOSC

### **How can EOSC support research training providers to contribute to international level training infrastructure?**

The EOSC should offer the infrastructure for 'as-a-service' approaches to offer training and other forms of skills development on a flexible basis, meeting requirements to enhance competences on-the-job and build relevant curricula for a new generation of data professionals. As in other areas of EOSC service provision, we should expect an open approach to training provision, and the means for users to find relevant provision.

EOSCpilot Skills and Capacity WP7 will outline a model for Training-as-a-Service in its forthcoming D7.2 report, along with a Stewardship Skills Framework to scope relevant content. There are many open questions about the nature of such a service, and the balance of roles and responsibilities between any central service and the existing initiatives of Research Infrastructures and other providers. We seek your input on questions such as the following:-

- Should EOSC harvest information into a central catalogue about training events and materials from its participating organisations?
- Should it collate materials across infrastructures into an EOSC wide portal?
- Should it perform quality assurance and/or certification of providers, and/or badging of content?
- Should it monitor what is being provided and attempt to fill gaps either in the content or mode of delivery?

### **How can EOSC assist research performing organisations to develop the competences and capabilities for open data science?**

Many useful examples, from MOOCs to skills exchanges, are answering the EOSC High Level Expert Group call to address data skills gaps. The EOSCpilot D7.1 report profiles a range of approaches from research performing organisations across Europe. Research Infrastructures also contribute specialist capacity, including through discipline-focused 'cluster projects'. Relevant education and training includes undergraduate and postgraduate curricula, and professional development of researchers and support professionals. This

includes data management skills for research outputs stewardship, in keeping with FAIR principles.

Researchers nevertheless lack available training, as indicated in the Open Science Policy Platform Skills Working Group report. This begs questions about the EOSC role:

- What are the biggest gaps in cross-disciplinary skills for data stewardship?
- How can EOSC assist institutions to plan the skills required to deliver their strategies and services for implementing FAIR principles, open science and data science?
- Should EOSC broker the supply and demand for disciplinary-focused training across institutions and research infrastructures?

EOSCpilot is developing a Stewardship Skills Framework, to help organisations plan skills development around the EOSC services they need. The competences span recent frameworks for data literacy, data science and data management. Gaps indicated so far include; data policy, legal and funder requirements; open research strategy opportunities; and awareness of relevant tools and standards.

Research performing organisations offer many routes to address such gaps. In addition to enrolled courses, centralised training can reach across the organisation, and departmental training can focus on tailored solutions. The University of Edinburgh, for example, has developed online, blended and face-to-face training routes, in addition to a diverse range of accredited data science courses that bring new data scientists into the field. This mix now extends to a MOOC on Research Data Management, giving the organisation broader training scale and impact, and drawing on specialist external provision to meet needs of postgraduate students, early career researchers, librarians and support staff. Online and blended offerings include MANTRA, an open educational resource designed for self-paced training in research data management. Coupled with small group discussion, online delivery has increased capacity to support researchers, e.g. in writing data management plans. MANTRA modules are available to download on Zenodo and can be imported into Moodle and other VLEs. Other institutions have adapted the openly licensed material and tailored it for their own audiences. The [MANTRA@jiscmail.ac.uk](mailto:MANTRA@jiscmail.ac.uk) forum includes about 150 people.

The University's Research Data Service also offers scheduled half-day training workshops, and bespoke training for research departments lasting from 10 minutes to 2 hours, with discipline-specific examples. The University also brings in expert training, e.g. through the

Data and Software Carpentry programme, EDINA, and the Digital Curation Centre. The Research Data Management and Sharing MOOC on the Coursera platform, developed by University of North Carolina with University of Edinburgh, offers an alternative that has appealed broadly to librarians, with students and other adult learners joining 5-weekly cohorts. Optional certification offers proof of successful completion.

Many organisations are similarly advanced, others just beginning. The EOSC should provide support for those wishing to train their staff and students, perhaps through small funds to bring in experts, or 'train the trainers'. It should also invest in cloud-scale training like MANTRA and the RDMS MOOC to achieve its goals in training the next generation of scientists and scholars in good practice in open research.

### **How can EOSC coordinate national-level policies, strategies and reward mechanisms to stimulate open research data practices?**

EOSC can play a fundamental role in coordinating the move towards FAIR Open Data practices across Europe through its contributing projects and partner associations. A recent survey conducted at the European Commission on Open Science skills [1] revealed that most researchers are unaware of what Open Science actually is, are not following guidelines or getting training on Open Science, do not receive institutional support for Open Science, and are unaware and/or are not using metadata and Data Management Plans.

EOSC has the potential to address these issues and promote change on a European and national level as well as at institutional level. An awareness campaign on what FAIR Open Data is and the benefits of FAIR Open Data would be a welcome first step. A call for action to develop and implement national/disciplinary guidelines for FAIR Open Data is also a necessary step. The development of tailored courses on research data management and FAIR Open Data as well as the implementation of institutional support including a helpdesk, and the obligatory use of Data Management Plans in projects.

EOSC can further lead in developing courses for the new 'data stewards' who will act as gatekeepers to support the new generation of data scientists in FAIR Open Data. EOSC should aim to employ the first wave of data stewards and embark on a train-the-trainer campaign to stimulate this new profession. Naturally, researchers must see the need to become data stewards and also to actually commit to FAIR Open Data practices. EOSC should thus support recommendations from the European Commission on developing a new

reward system for Open Science [2] and implement such reward practices within EOSC projects and partner associations.

Developing the capacity for data stewardship will also require recognition of the key roles of Librarians, IT and Research Support staff in providing and managing relevant services. Researchers in large teams working in data-intensive domains may have a data steward on the team, but for less data-intensive domains and smaller teams the relevant support may be at departmental or faculty level. Central institutional services also have enabling, advisory and governance roles for data stewardship.

Researchers and support staff at all levels will therefore need awareness of the EOSC, and skills to integrate its services into local-level provision, if they are to collectively produce FAIR outputs that meet users' specific needs. And if applying FAIR principles to research outputs can enhance their economic value and impact, then perhaps the same may hold for FAIR training outputs.

There are implications for EOSC's provision of information and advice about skills development activities across Europe. EOSC should offer stakeholders information to inform common policies, strategies and reward mechanisms.

- What information could EOSC collect and publish to inform national-level skills development policies, strategies and mechanisms?
- What can EOSC do to encourage and amplify efforts of funding bodies, institutions and other stakeholders to recognise researchers' skills for data stewardship and open research practices?
- What can EOSC do to nurture the career structures and rewards for professional support staff who contribute to open research practices?

## References

[1] [https://ec.europa.eu/research/openscience/pdf/os\\_skills\\_wgreport\\_final.pdf](https://ec.europa.eu/research/openscience/pdf/os_skills_wgreport_final.pdf)

[2] [https://cdn1.euraxess.org/sites/default/files/policy\\_library/os-rewards-wgreport-final\\_integrated\\_0.pdf](https://cdn1.euraxess.org/sites/default/files/policy_library/os-rewards-wgreport-final_integrated_0.pdf)

## Author(s)

