This policy brief is targeted at organisations that are looking at approaches to enhancing skills and improving training within their institutions especially when considering their long term objectives of increasing coordination and efficiency but also alignment and engagement with the European Open Science Cloud (EOSC).

**Introduction**

Realising the promise of Open Science is highly dependent and at the moment limited in many areas by the lack of appropriately skilled workforce (OECD, 2020) (European Commission, 2021). Although research data management and data stewardship have been increasingly prioritised in both organisational and national strategies for skills and training, it has not been sufficient to ensure the existing needs are met. The gaps will only grow exponentially as technology develops and partnerships like the EOSC further progress bringing forward new requirements and opportunities. “An EOSC network of skilled professionals is essential to bring a culture change for sharing research outcomes, and to empower individuals and institutions to develop and maintain EOSC competencies, skills and capabilities”. (European Commission, 2021, p. 6)

**The why of skills and training and the EOSC and research commons**

The Report on Digital Skills for FAIR and Open Science published by the EOSC Skills and Training Working Group in February 2021 discusses in detail the value of facilitating and cultivating a FAIR and open science culture and workforce within research organisations (including research performing and funding organisations, government agencies, research service providers, as well as private sector research organisations). For their wider implementation, operations and uptake, EOSC and other research common endeavours require a culture shift within organisations that needs to happen sooner rather than later, especially by investing and prioritising skills developments and training (European Commission, 2021, p. 15).

On the other hand, organisations should be keen to contribute to and align with such endeavours as these provide a framework and would have “an important role to play in ensuring recognition of digitally skilled professionals, propagating opportunities to acquire FAIR and open science skills, enabling access to relevant learning and training resources and influencing strategic agendas at the national and European levels.” (European Commission, 2021, p. 8)

**Why and how to approach this at organisational level?**

Collecting feedback on the Strategic Research and Innovation Agenda (SRIA) of the EOSC highlighted a need to involve a wider range of organisations at multiple levels in regards to the priority on open science training and professionalisation of associated roles. 20% of the 216 respondents collected in that effort indicated that the responsibility of the implementation of skills and training programmes lies at institutional levels. (European Commission, 2021, p. 11)
Concurrently, a survey and analysis performed by the EOSC Skills and Training WG pointed out that depending on the type of organisation seeking to engage with EOSC, a diversity of roles and a wide range of skills will become essential: “from an organisational perspective, EOSC requires a wide range of skills across function groups and proficiency levels, which in turn may require strategic planning for hiring, training and up-skilling staff with digital skills for FAIR and open science” (European Commission, 2021, p. 25).

As both the Digital Skills for FAIR and Open Science report and the EOSC SRIA recommended, at European level and especially on the EOSC side, this growing requirement needs to be translated in a sustainable manner through an EOSC skills and training strategy addressing “different professional and research roles as well as their functioning in an organisational or team setting (...) Institutional capacity in a broad sense (e.g. of organisations, units or teams) is crucial for the systemic and sustainable development of EOSC. Individual level skills and competencies for the basis but the group as whole is more than the sum of its parts”. (European Commission, 2021, p. 15)

There are many arguments for addressing the issue of skills and training at organisational level including investing in capacity and ensuring the competence building is sustainable, and remains within the organisations for a lower staff turnover and higher engagement internally and externally. The majority of research performing organisations provide support, in more or less structured ways, from modules, to once-off classes or lectures, workshops or online courses and guides.

Although the landscape is difficult to navigate and approaches to skills development and training are highly dependent on the type of organisation, the diversity of roles, skills and proficiency levels, there are also signs of convergence that are encouraging. The survey run by the EOSC WG highlighted that almost all interviewed organisations target supported roles like: Researchers (and Students), Data Scientist/Data Analyst, Data Curators, Data Stewards and Data Librarians with especially the latter also perceived to play roles as EOSC educators (mainly librarians) or EOSC promoters. Some organisations also train EOSC Enablers, Research Software Engineers, Data Research Infrastructure Support Professionals and Policy Makers. (European Commission, 2021, p. 32). Where present, most of the training is done by libraries and research support offices.

As part of national and disciplinary approaches, considerable efforts have been invested in formalising skills development and training resources through dedicated metadata schemas and interoperable catalogues. These were designed to highlight gaps and address duplication and issues of quality and help organisations and individuals to identify which resources are most appropriate.

Where fitting, organisations tend to leverage mechanisms for the provision of training in a coherent and coordinated manner that consider disciplinary specificities. Some of these are being piloted and considered for certification and accreditation and can take the form of competence centres or services associated with gatekeepers like libraries, repositories or other research service providers.
What can organisations do? - A few recommendations

Utilise common frameworks and curricula in the development of organisational programmes for skills development and training - this will facilitate alignment with external organisations and initiatives at national and international level. Some examples can be the Framework of actors in the EOSC Ecosystem, the Carpentries approach, FAIRsFAIR Competence Framework for Higher Education (FAIR4HE) or the LIBER Open Science Skills Visualisation. Leveraging these common approaches, frameworks and training catalogues support alignment and maximise interoperability.

Develop a comprehensive organisational skills and training policy - translate that into an action plan leveraging or adapting existing roles and defining emerging ones. Make sure organisational structures are considered and a clear communication mechanism is in place as skills development and training programmes are closely connected and dependent on support from departments like finance, administration and management, and human resources.

Make this a part of the wider research data management (RDM) policies or include references to that so as to ensure internal coherence and alignment and build meaningful connections across different organisational policies - a wider policy-level commitment to research data management, digital skills and training will help strengthen internal cohesion and increase efficiency.

Some organisations link training to performance evaluation. (European Commission, 2021, p. 33) however the processes around this have not been sufficiently explored although this is clearly one area of alignment with national and EU level incentives and skills recognition policies.

Investments are vital, if funds are limited consider roles and skills for which training of FAIR and open science are written into into European and national funding instruments or policies and be aware that “Skills and training programmes are funded by a wide range of sources, including government and other external funders, the institution itself, in-kind contributions from members and mixed sources (...) In both Hungary and Poland, RDM training has been commissioned by funders.” (European Commission, 2021, p. 34) In Ireland skills and training is part of the national approach to transition to open research.

Aim to leverage national and international fora driving the coordinated provision of training programmes. “The provision of training services is frequently done in collaboration with each of the other levels (other institutions, national organisations, international organisations).”(European Commission, 2021, p. 35). In addition, resources like the FOSTER+ Toolkit are freely available online while approaches like the Carpentries have successfully been implemented in different contexts to support the development of data and computational skills.

1 Data Carpentry https://datacarpentry.org/
3 LIBER Open Science Skills Visualisation https://doi.org/10.5281/zenodo.3702401
References/Sources and further reading


