



# D9.3 EOSC Training Programmes Results



Version 1.0  
October 2023

## D9.3 / EOSC Training Programmes Results

Lead by **CESSDA**

Authored by Ana Inkret (CESSDA/UL-ADP), Shanmugasundaram Venkataraman (OpenAIRE), Kim Ferguson (Open/AIRE/DANS), Louise Bezuidenhout (Open/AIRE/DANS), Pascal Flohr (Open/AIRE/DANS); Iryna Kuchma (OpenAIRE/EIFL), Milica Ševkušić (OpenAIRE/EIFL); Heinrich Widmann (EUDAT/DKRZ), Daniel Thomas Lópe (ELIXIR/EMBL); Paula Moura (OpenAIRE/UMINHO); Edward Pull (GÉANT/Jisc)

Reviewed by Anca Hienola (FMI) & Athanasia Spiliotopoulou (JNP)

### Dissemination Level of the Document

Public

### Abstract

The EOSC Future training programme revolved around key stakeholder groups and learning paths: EOSC providers, end-users, trainers, intermediaries, and project internal. The full curriculum covers over 120 topics that focus on the EOSC-Core services and developments of the EOSC Future project. The training programme included both face-to-face and online events. Additionally, self-paced educational materials were made available on the OpenPlato learning platform and onboarded to Knowledge Hub, providing EOSC stakeholders with stable, sustainable, and reusable learning resources.

## Version History

Version	Date	Authors/Contributors	Description
Vo.1	24/05/2023	Shanmugasundaram Venkataraman (OpenAIRE), Irena Vipavc Brvar (CESSDA/UL-ADP), Ana Inkret (CESSDA/UL-ADP)	Initiation – Proposed ToC
Vo.2	23/09/2023	Heinrich Widmann (EUDAT/DKRZ); Kim Ferguson, Louise Bezuidenhout, Pascal Flohr (Open/AIRE/DANS); Iryna Kuchma, Milica Ševkušić (OpenAIRE/EIFL); Shanmugasundaram Venkataraman (OpenAIRE); Ana Inkret (CESSDA/UL-ADP); Daniel Thomas Lópe (ELIXIR/EMBL); Paula Moura (OpenAIRE/UMINHO); Edward Pull (GÉANT/Jisc)	First draft
Vo.3	24/09/2023	Shanmugasundaram Venkataraman (OpenAIRE)	Review
Vo.4	25/09/2023	Irena Vipavc Brvar (CESSDA/UL-ADP), Ana Inkret (CESSDA/UL-ADP)	Incorporation of comments and final version to be circulated to GA
V1.0	18/10/2023	Irena Vipavc Brvar (CESSDA/UL-ADP), Ana Inkret (CESSDA/UL-ADP), Ron Dekker (TGB), Mike Chatzopoulos (ATHENA)	Final Version submitted to EC

## Copyright Notice



This work by Parties of the EOSC Future Consortium is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/). The EOSC Future project is co-funded by the European Union Horizon Programme call INFRAEOSC-03-2020, Grant Agreement number 101017536.

## Table of Contents

Table of Contents .....	2
Table of Tables .....	3
Glossary .....	4
List of Abbreviations .....	4
1. Executive Summary .....	5
2. Introduction .....	6
3. Training programme .....	6
<b>3.1 Actor groups and initial training analysis.....</b>	<b>6</b>
3.1.1 Consumers .....	6
3.1.2 Providers .....	7
3.1.3 Intermediaries .....	7
3.1.4 Trainers .....	7
3.1.5 Project internal training .....	7
<b>3.2 General methodology and FAIR training materials.....</b>	<b>7</b>
<b>3.3 Training actionable roadmap .....</b>	<b>7</b>
<b>3.4 Learning paths .....</b>	<b>8</b>
<b>3.5 Asynchronous courses.....</b>	<b>8</b>
3.5.1 Internal review .....	9
3.5.2 Onboarding to Knowledge Hub .....	10
4. Results .....	10
<b>4.1 Topics.....</b>	<b>10</b>
4.1.1 Consumers .....	10
4.1.2 Providers .....	10
4.1.3 Intermediaries .....	12
4.1.4 Trainers .....	12
4.1.5 Project internal.....	13
<b>4.2 Live trainings.....</b>	<b>14</b>
4.2.1 Delivered synchronous training .....	14
4.2.2 Planned until the end of the project.....	17
<b>4.3 Asynchronous courses.....</b>	<b>17</b>
<b>4.4 Other events, efforts, and materials .....</b>	<b>20</b>
4.4.1 Open call .....	20
4.4.2 Discussion cards .....	20
4.4.3 Conference sessions etc. ....	20
4.4.4 Task forces in the Community of Practice.....	21
<b>4.5 Takeaways and challenges .....</b>	<b>21</b>
5. Conclusions .....	22
6. Appendix A – EOSC Future Training Actionable Roadmap .....	24
7. References .....	28

## Table of Tables

Table 4-1: Training modules for EOSC consumers .....	10
Table 4-2: Training topics for providers .....	10
Table 4-3: Training modules and topics for intermediaries .....	12
Table 4-4: Training modules and topics for EOSC trainers .....	12
Table 4-5: Training modules and topics for project partners .....	13
Table 4-6: List of synchronous trainings .....	14
Table 4-7: Synchronous training planned before the end of M30.....	17
Table 4-8: Overview of self-paced courses .....	17
Table 4-9: List of external events.....	20

## Glossary

EOSC Future project Glossary is included for reference: <https://wiki.eoscfuture.eu/x/JQCK>

## List of Abbreviations

Acronym	Definition
<b>AAI</b>	Authentication and Authorisation Infrastructure
<b>API</b>	Application Program Interface
<b>CoP</b>	Community of practice
<b>D10. 1</b>	Deliverable 10.1 EOSC Future Stakeholder Engagement and Communication Strategy and Plan
<b>EOSC</b>	European Open Science Cloud
<b>KH</b>	Knowledge Hub
<b>LMS</b>	Learning Management System
<b>NOAD</b>	OpenAIRE National Open Access Desks
<b>SCORM</b>	Shareable Content Object Reference Model
<b>SP2</b>	Science Project 2 – Dashboard on the State of the Environment
<b>WP10</b>	Work package 10 – Stakeholder Engagement, Outreach & Marketing
<b>WCAG</b>	Web Content Accessibility Guidelines

## 1. Executive Summary

WP9 included various elements, and within T9.2, it had specific objectives that can be outlined as follows:

- Train communities to onboard data and services in the EOSC.
- Design and implement training programme for end users and providers to be used across different disciplines and countries (some focus on Western Balkans).
- Build network of training experts and activities; develop and roll out train-the-trainers programme to align, enhance and sustain different trainers' networks, focusing on use/FAIR integration and use of EOSC data, services, software, and training.
- Set up EOSC-wide training building on the CoP for Training Coordinators (networks of training coordinators of pan-European and national EOSC-related initiatives and infrastructures) as well as EOSC projects and association.

Delivering on these specific objectives required coordinated work to produce tailored content aimed at different stakeholder groups and covering at a minimum the core services that make up EOSC and other topics that are peripheral but interlinked and essential to the understanding of the philosophy behind EOSC's aims and the legal aspects that would need to be fulfilled.

Work required close monitoring of the technical WPs to assess their various levels of maturity which could in turn be reflected in learning resources that would be comprehensible from the most basic levels. This report presents the culmination of that work, which will be enriched in the upcoming extension period and further reported in *D10.5-EOSC Training Results*.

## 2. Introduction

The overall objective of the work in Task 9.2 – Training Delivery and Content Integration was to train stakeholders to become active users and providers of EOSC, and to increase the uptake of resources and Open Science. The objective translates to:

- Training researchers and research communities to onboard data and services in the EOSC platform; support users on using resulting services and embed them in research workflows.
- Designing and implementing a structured modular and reusable training programme for EOSC end users and providers to be used across different disciplines and countries (with some emphasis on Western Balkans).
- Building a cross-discipline, cross-infrastructures network of training experts and aligned training activities; developing and presenting an EOSC train-the-trainers programme to align, enhance and sustain different trainers' networks, focusing on use/FAIR integration and use of EOSC data, services, software, and training.<sup>1</sup>

The work began by engaging with five principal actor groups in the EOSC ecosystem, outlined in *D10.1 EOSC Future Stakeholder Engagement & Communication Strategy and Plan*<sup>2</sup>: consumers (end-users, researchers, research communities, citizen scientists, commercial entities), service and data providers (service managers in research and e-infrastructures, private sector, open-source communities), intermediaries (research performing organisations, libraries, data stewards, funders, policy makers, research administrators)<sup>3</sup>, trainers and project partners. After an analysis of their needs for successful participation in EOSC and identification of gaps in existing EOSC initiatives, task partners developed a plan for an integrated set of courses for each group and began developing resources for both live and self-paced training. The courses focused on the functionalities developed or supported by the EOSC Future project, particularly the Core services, rather than general topics such as Open Science, data management or FAIR principles, although these are presented in context, where applicable, to provide a holistic overview.

In the time of preparing this report, the learning resources for some of the asynchronous courses are still in development and will be completed before the end of the project.

## 3. Training programme

### 3.1 Actor groups and initial training analysis

The actor groups were the starting point for the work on the planning of the training programme, organisation of events and production of learning resources. A separate taskforce was formed for each group, and each began the planning with an analysis of the needs and requirements of each user group and a review of existing resources. The taskforces then defined specific training goals for each user group and prepared the first proposal of the curricula. These were presented in the *Initial Training Analysis* document that also outlines the future steps and practical considerations.<sup>4</sup> The initial findings are important for the development of the final curricula and the way the training activities were later conducted, so it is worth summarising the main points.

#### 3.1.1 Consumers

- The goals are to improve service awareness and use, develop skills in using EOSC services and tools, and enable the design of workflows that use multiple EOSC resources.

---

<sup>1</sup> Clare, H. et al., 2022, MS32 *EOSC Training Roadmap and Rules of Participation for Onboarding EOSC Training Resources*.

<sup>2</sup> Garavelli, S., Witpas, K. and S. Jones 2021, *D10.1 EOSC Future Stakeholder Engagement and Communication Strategy and Plan*. [online] Available at: <https://eoscfuture.eu/wp-content/uploads/2022/12/EOSC-Future-WP10-CSC-D10.1-EOSC-Future-Stakeholder-Eng.-Com.-Strategy-Plan-2021-09-08.pdf>

<sup>3</sup> As defined in D10.1 (Garavelli et al. 2021).

<sup>4</sup> EOSC Future Initial Training Analysis, [https://docs.google.com/document/d/11mWU6-YjPAmSZmt\\_2TC7JCe7ftKlnD2X/edit](https://docs.google.com/document/d/11mWU6-YjPAmSZmt_2TC7JCe7ftKlnD2X/edit).



- The training enables EOSC end-users to find relevant tools, apply EOSC resources to their research, combine tools and services in their workflows, reproduce research outcomes, and find the support they need.
- The potential audience in this group is very large, so formats must vary. Use cases and concrete examples can help demonstrate the added value of EOSC.

### 3.1.2 Providers

- The goal is to upskill existing and potential EOSC providers to integrate their resources into the EOSC portal.
- The training familiarises the resource experts with the benefits, purpose, and functions of EOSC. It enables them to onboard services and resources, produce presentations and training for the users of their resources, and join EOSC providers' network.
- Providers have diverse backgrounds and needs. Proposed training topics were based on the results of a survey that the taskforce had carried out to learn more about the required knowledge.

### 3.1.3 Intermediaries

- For institutions such as universities, research performing organisations and libraries, the goal of training is to ensure that the institutions can support their members in using and contributing to EOSC.

### 3.1.4 Trainers

- The goal is to upskill existing trainers, enabling them to teach EOSC topics. The programme also strengthens the EOSC network of training experts to ensure reach and sustainability of EOSC training activities.
- For trainers, the reusability of learning resources and good documentation is particularly important. Training materials should be easily reusable and adjustable.

### 3.1.5 Project internal training

- The goal is to ensure that the project teams are adequately prepared to ensure success of the project.

## 3.2 General methodology and FAIR training materials

The guidelines and templates for producing learning resources and organising training events that were created during the mapping were gathered in the EOSC Future Training Handbook<sup>5</sup>. All training developed by T9.2 made use of the ABC learning design framework<sup>6</sup> and utilised training analysis and development documents developed in the EOSC Synergy project<sup>7</sup>. FAIR sharing and reuse of learning resources is ensured by onboarding the content to the EOSC Knowledge Hub.

## 3.3 Training actionable roadmap

The topics from the initial training analysis developed into the training actionable roadmap, a living and adaptable list of training modules and topics. The team used it to map priorities, track and assign tasks and document emerging content. The roadmap lists 22 modules with over 120 topics for the five EOSC actor groups, defining the full curriculum for EOSC users and encompassing the key results of EOSC Future.

In the course of the project, certain topics were prioritised as they proved more expedient for the learners or for the project goals, such as EOSC Core services and service documentation for EOSC providers. Other topics that depended heavily on the technical features under development in EOSC Future, such as workflows for end-users and tailored training for communities of the EOSC Future Science Projects, were delayed or eventually retired to focus on more pertinent subjects. Nonetheless, the roadmap is an important result of the training pillar. The

---

<sup>5</sup> EOSC Future Training Handbook, <https://wiki.eoscfuture.eu/display/PUBLIC/EOSC+Future+Training+Handbook>.

<sup>6</sup> ABC Learning Design, <https://abc-ld.org/>.

<sup>7</sup> EOSC Synergy Online Training Handbook, <https://moodle.learn.eosc-synergy.eu/course/view.php?id=15&section=0#tabs-tree-start>.

curriculum (Appendix A, excluding the project-internal content) could be further developed and integrated by future EOSC projects.

### 3.4 Learning paths

A key component of the training development and delivery is the concept of learning paths. These learning paths provide users of the EOSC Knowledge Hub with a customised set of training courses and modules on the EOSC core services and resources. This equips them with the knowledge and level of expertise needed to act confidently as EOSC users.

The defined actor groups were expanded and mapped with the profiles. Subsequently, the profiles led to the learning paths for an initial six personas:

- EOSC Institutional Facilitator
- EOSC Resource Provider
- EOSC User Trainer
- EOSC Research Practitioner
- EOSC Citizen Science Practitioner
- EOSC Accelerator

The personas are described in detail the project Wiki.<sup>8</sup>

The learning paths will provide learners with an easily accessible entry point into the self-paced resources in the EOSC Knowledge Hub. Learners will be able to self-identify their needs with those stated in the learning path descriptions and will then be guided to the relevant resources.

### 3.5 Asynchronous courses

To ensure easy access, use, and sustainability of EOSC Future learning resources, the team focused on delivering self-paced content, with the goal that all topics will have a self-paced course that learners are able to use independently. A loose workflow was established to integrate the self-paced resources with the OpenPlato learning platform.<sup>9</sup>

The content of each learning resource was completed in a collaborative environment to create a backup master document, typically being a Google Doc, in which a narrative was built in a linear fashion. The content was based on live training or created from scratch using the established pedagogical framework. Each interactive online module was then created with a standardised EOSC Future template in the Articulate authoring tool<sup>10</sup> which includes the web browser-based Rise 360<sup>11</sup> and the standalone Storyline application,<sup>12</sup> with the former being the favoured option. Although commercial, Rise 360 offers ease-of-use – with a shallow learning curve – for content creators, whilst also producing professional quality, engaging outputs. Rise 360 also provides the means to produce SCORM packages, which are the standard file format for learning management system (LMS; e.g. Moodle) deployment, and which can then be onboarded to the EOSC Knowledge Hub via the OpenPlato<sup>13</sup>. The decision was also made to export modules in PDF and HTML formats since these are available through Rise 360's export options and provide accessible file formats for further reuse.

Certain topics required the input of content specialists (developers). Learning resources were reviewed internally by the Quality Assurance Taskforce to ensure that they met high pedagogical standards.

---

<sup>8</sup> Learning Paths, <https://wiki.eoscfuture.eu/display/PUBLIC/Learning+Paths#LearningPaths-Learningpathsperactor>.

<sup>9</sup> OpenPlato platform, <https://openplato.eu/>.

<sup>10</sup> Articulate creator tool, <https://articulate.com/>.

<sup>11</sup> Rise 360 tool, <https://articulate.com/360/rise>.

<sup>12</sup> Storyline 360 tool, <https://articulate.com/360/storyline>.

<sup>13</sup> Details of the process in *D9.2 EOSC Knowledge Hub (Training Catalogue and Platform)*.

### 3.5.1 Internal review

The internal pedagogical review was based on best practice principles, and the following template for the module layout was used:

- Landing page:
  - Introduction
  - Objectives
  - Learning outcomes
  - Pre-requisites (as applicable)
- Module structure:
  - Section list:
    - Each section comprises:
      - Intro
      - Main learning
      - Knowledge check questions
      - Summary
  - End of module quiz
    - 10-15 questions based on main learning throughout all sections
  - Conclusion (Once quiz is complete). This includes:
    - Congratulating learner on completion
    - Summing up of learning
    - Revisit / recap on main objectives
    - Take away activities (as applicable)
    - Signposting to relevant contact details and supporting resources section
    - What/where next? Signpost to next module (as applicable)
  - Supporting resources section
    - Contains any links to further a participants' learning
    - The info from these resources/websites should not be key to answering any of the knowledge check/quiz questions within the module itself.
    - The learning within the module should be 'self-contained'.
    - Any references to these resources/websites within the module should be signposted to this section.

The reviews included the following steps:

- Familiarising oneself with the content: understanding the learning objectives and goals of the resources. This is to establish a framework for evaluation and determine if the content aligns with the listed learning outcomes.
- Assessing the instructional design and use of the interactive tools available in Articulate; considering effective organisation, logical flow, and the use of appropriate media (text, images, videos, etc.) to enhance the learning. The content should engage the learner effectively and promote better understanding.
- Checking for interactivity and engagement: increase the number of interactive elements like knowledge check questions (where learners are asked questions during the course of a module and which are not graded) and activities that encourage reflection and participation, where possible.
- Checking the accessibility and usability: ensuring that the materials are user-friendly and can be easily navigated by learners. Naturally, the modules need to adhere to the WCAG (Web Content Accessibility Guidelines) standard.
- Evaluating assessment strategies: reviewing the knowledge check questions and (where provided) end of module quizzes to see if they effectively measure the learning and provide meaningful feedback to learners.
- Consolidating the availability of support materials for learners and transferring these additional resources into their own dedicated section, so as to ensure the learner remains within the module.
- Collating the appraisal and recommendations for improvement and discussing them with the authors.

### 3.5.2 Onboarding to Knowledge Hub

The learning resources created in T9.2 were published on the OpenPlato platform and onboarded to the EOSC Knowledge Hub in line with the established onboarding procedures for learning resources<sup>24</sup>.

## 4. Results

### 4.1 Topics

The tables below summarise the completed live trainings and learning resources in relation to the Training Actionable Roadmap.

#### 4.1.1 Consumers

Table 4-1: Training modules for EOSC consumers

Module	Topics	Type	
		Live session	Self-paced
2. EOSC Portal	2.1 Introduction to the EOSC Portal	Hybrid, 30/05/2023 and online, 27/04/2023	Available in <a href="#">OpenPlato</a>
	2.2 Overview of the structure: what can be found on the EOSC Portal?		
	2.3 EOSC Catalogue & Marketplace: Navigation and Discovery		
	2.4 Information about resources		
	2.5 My EOSC Marketplace		
	2.6 Choosing services		
	2.7 Accessing services		
	2.8 Ordering services		
	2.9 Use cases: Using EOSC resources		
4. EOSC "Champions"	4.2 Dashboard for the State of the Environment	Organised by SP2	Available in <a href="#">Articulate</a>
	4.5 Tracing biostructures		In progress
	4.12 Additional to Science Projects: EOSC for Arts and Humanities Sensitive data in EOSC	Hybrid, 30/05-1/06/2023	In progress
	Virtual Observatory and EOSC		Under review (draft available in <a href="#">GitHub</a> )
5. GDPR and Legal Issues	5.3 Sensitive data for social sciences and humanities	19/07/2023, 30/08/2023	Under review

#### 4.1.2 Providers

Table 4-2: Training topics for providers

Module	Topics	Type	
		Live session	Self-paced
1. EOSC How to	1.1 EOSC: Increased visibility of your services on a cross-domain interoperable platform & other benefits	Online, 27/04/2022 and 12/05/2023	

<sup>24</sup> For more information, see *Rules of participation for Onboarding EOSC Training Resources and EOSC Marketplace*, <https://wiki.eoscfuture.eu/x/8gOK>.

	1.2 EOSC Portal & Marketplace		
	1.4 Make your services FAIR, i.e. known, discoverable, accessible, interoperable and re-usable		
	1.5 Make your data discoverable	Online, 12/06/2023	Planned
<b>2. EOSC-Core Integration</b>	2.1 AAI	Planned	Available in <a href="#">Articulate</a>
	2.3 EOSC Order Management service	Planned	Available in <a href="#">Articulate</a>
	2.4 EOSC Helpdesk	Online, 8/3/2023	Available in <a href="#">OpenPlato</a>
	2.5 EOSC Monitoring Service	Online, 27/6/2023	Available in <a href="#">OpenPlato</a> (longer version) and in <a href="#">Articulate</a> (short version)
	2.6.1 Accounting for services		In progress
	2.6.2 Accounting for research products	Online, 12/6/2023	Under review (available in <a href="#">Articulate</a> )
<b>3. Legal issues</b>	3.3 Privacy Policy, Terms of Use	Online, 07/12/2022 and 23/01/2023	
<b>5. Onboarding</b>	5.1 Service onboarding 5.1.1 How to onboard services to the EOSC Marketplace via the EOSC Providers Dashboard (GUI)	Online, 27/04/2022	Under review (available in <a href="#">Articulate</a> )
	5.1.2 How to onboard services to the EOSC Marketplace via the EOSC Portal Open API	Online, 25/1/2023	Under review (available in <a href="#">Articulate</a> )
	5.2 Onboarding data and resources	In person, 05/06/2023	In progress
<b>7. Creating support material for your service</b>	2.7.1 Introduction to service documentation	Online, 9/11/2022	In progress
	2.7.2 Describing a service in the EOSC catalogue/marketplace	Online, 9/11/2022 and 29/08/2023	
	2.7.3 Producing effective service usage instructions and tutorials	29/03/2023, 08/09/2023	
	2.7.4 Tips for creating technical service documentation "written by IT people for IT people"	29/09/2023	
	2.7.5 Preparing a framework for service evaluation		Planned

#### 4.1.3 Intermediaries

Table 4-3: Training modules and topics for intermediaries

Module	Topics	Type
		Self-paced
<b>1. What institutions need to know? Engaging with the EOSC portal</b>	1.1 EOSC in a nutshell	Available in <a href="#">OpenPlato</a>
	1.2 Answering research questions with EOSC	
	1.3 How can your institution benefit?	
	1.4 How can your institution get involved?	
	1.5 How can libraries get involved?	
	1.6 How can institutional IT services get involved?	
	1.7 Introduction to the EOSC portal	
	1.8 What can be found on the EOSC portal?	
	1.9 Onboarding	
	1.10 Supporting institutions as EOSC providers	
	1.11 Interacting with EOSC: flowcharts for institutions	
	1.12 EOSC in practice stories: 1) Developing a central hub for Social Sciences and Humanities resources; 2) What's in EOSC for DARIAH's partner institutions? 3) Integrating institutional repositories in Serbia in EOSC; 4) EOSC-Pillar use case: Integration of data repositories into EOSC based on communities approach; 5) Climate research	

#### 4.1.4 Trainers

Table 4-4: Training modules and topics for EOSC trainers

Module	Topics	Training type	
		Live sessions	Self-paced
<b>1. Preparing to train about EOSC</b>	1.1 Meta overview	Online, 21-24/11/2022, 26-29/06/2023, 11-15/09/2023	Available in <a href="#">OpenPlato</a>
	1.2 How can EOSC be integrated into research		
	1.3 Answering questions about EOSC		
	1.4 Practical advice on teaching about EOSC		
<b>2. EOSC Portal</b>	2.1 Introduction to the EOSC Portal		Available in <a href="#">OpenPlato</a>
	2.2 What can be found on the EOSC Portal?		
	2.3 EOSC Catalogue and Marketplace: What can be found?		

	2.4 Resource pages		
	2.5 Choosing, accessing and ordering services		
	2.6 Onboarding		
	2.7 Quiz		
<b>3. Addressing legal &amp; ethical issues</b>	3.1 Meta overview of ethical issues relating to EOSC		Available in <a href="#">OpenPlato</a>
	3.2 Ethical and legal issues and EOSC		
	3.3 A closer look at safe and responsible use of data and equitable access		
	3.4 Overview of resources and advice on how to engage institutional ethics/legal teams		
	3.5 Practical advice on teaching legal/ethical issues		
<b>4. Crafting your own training using EOSC resources</b>	4.1 Refresher of the principles of pedagogy and training design		Available in <a href="#">OpenPlato</a>
	4.2 Introduction to EOSC Future learning paths and curricula		
	4.3 Making use of existing EOSC resources		
	4.4 Producing FAIR EOSC training materials		
	4.5 EOSC Knowledge Hub and metadata for learning resources	Online, 11-15/09/2023	In progress
	4B Introducing interaction in synchronous and asynchronous training activities		Available in <a href="#">OpenPlato</a>
<b>5. Incorporating accessibility into EOSC training</b>	5.1 Defining accessibility and its importance in training		In progress
	5.2 Accessibility with regards to disability, geography and internet access equity	Online, 08/06/2023, 13/09/2023	
	5.3 Practical advice and tools to enable accessibility in your training materials		
<b>6. Module 6: Integrating EOSC into research case study</b>	Science project case study: Dashboard for the State of the Environment	Not intended for live training	In progress

#### 4.1.5 Project internal

Table 4-5: Training modules and topics for project partners

Module	Topics	Type	
		Live session	Self-paced
<b>1. GDPR and Legal Issues</b>	1.1 Meta overview of ethical issues relating to EOSC	Online, 25/07 2022	Available internally
	1.2 Overview ethical/legal activities within EOSC		
<b>2. Software Quality Assurance</b>	2.1 Effective processes for SQA		Planned

## 4.2 Live trainings

The workflow for planning and implementing a training event – such as a training workshop – included the following steps:

- Identifying a coordinator and forming a preparation group.
- Contacting experts.
- Holding the first preparatory meeting, agreeing and deciding on a date<sup>25</sup>, time, length and format of the event.
- Finalising the content and sequence of the event.
- Finalising organisational and technical preparations: registrations, Zoom environment (if not provided by WP10), interactive tools such as Slido, breakout sessions, responsible persons.
- Announcement and promotion of the event in close cooperation with WP10.
- Conducting the event.
- Collecting and analysing feedback from the audience to confirm that training goals were met and note what to change in next iteration, if planned.
- Documenting and reporting on the number of participants, their response, any important points that were raised, lessons learned regarding both organisation and content.
- Publishing training materials and recordings in cooperation with WP10.
- Considering and planning next iteration.
- Reusing event materials in self-study content.

Live training served as more than just a resource for asynchronous content; it also presented a valuable opportunity to test the response of the learners and gain insights into their requirements. The learners were in turn able to address their questions directly to the topic experts and exchange experiences with their peers. The discussions, learners' feedback and trainers' comments were documented and used to improve future iterations and the self-study materials.

### 4.2.1 Delivered synchronous training

Table 4-6: List of synchronous trainings

Date	Event	Audience	Participants (if available)	Event website/Materials	Roadmap
22/09/2021	EOSC Core: Implementation plan, expectations and contributions from different stakeholders, workshop at the Open Science Fair 2021	Consumers, Providers, Intermediaries	150	<a href="https://eoscfuture.eu/eventsfuture/eosc-future-at-the-open-science-fair/">https://eoscfuture.eu/eventsfuture/eosc-future-at-the-open-science-fair/</a> <a href="https://www.opensciencefair.eu/past-editions/2021/121-workshops">https://www.opensciencefair.eu/past-editions/2021/121-workshops</a>	Providers 2
27/04/2022	How to onboard Services to EOSC-Portal, training session at the Provider Days	Providers	60	<a href="https://eoscfuture.eu/eventsfuture/provider-days/">https://eoscfuture.eu/eventsfuture/provider-days/</a>	Providers 1.1
25/05/2022	Workshop: Preparing training on EOSC	Trainers	40	<a href="https://eoscfuture.eu/eventsfuture/train-the-trainer-preparing-training-on-eosc/">https://eoscfuture.eu/eventsfuture/train-the-trainer-preparing-training-on-eosc/</a>	Trainers 1
07/07/2022	Workshop: Facilitation & moderation skills	Trainers	13	<a href="https://eoscfuture.eu/eventsfuture/eosc-life-eosc-future-joint-training-workshop-facilitation-moderation-skills/">https://eoscfuture.eu/eventsfuture/eosc-life-eosc-future-joint-training-workshop-facilitation-moderation-skills/</a>	Trainers 4.1

<sup>25</sup> Project partners tracked national holidays and competing events such as international conferences in a shared calendar to prevent any scheduling conflicts.



<b>09/11/2022</b>	Service documentation for EOSC providers Workshop 1: Describing your service for onboarding	Providers	52	<a href="https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-1-describing-your-service-for-onboarding/">https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-1-describing-your-service-for-onboarding/</a>	Providers 7.1-2
<b>21-24/11/2022</b>	Train-the-Trainer: An active learning course on understanding & using EOSC	Trainers	40	<a href="https://eoscfuture.eu/eventsfuture/train-the-trainer-an-active-learning-course-on-understanding-using-eosc/">https://eoscfuture.eu/eventsfuture/train-the-trainer-an-active-learning-course-on-understanding-using-eosc/</a>	Trainers 1-4
<b>07/12/2022</b>	How to write Privacy Policy and Terms of Use documentation for the EOSC Portal	Providers		<a href="https://eoscfuture.eu/eventsfuture/training-how-to-write-privacy-policy-and-terms-of-use-documentation-for-the-eosc-portal/">https://eoscfuture.eu/eventsfuture/training-how-to-write-privacy-policy-and-terms-of-use-documentation-for-the-eosc-portal/</a>	Providers 3.3
<b>23/01/2023</b>	Prototyping Privacy Policy & Terms of Use documentation for the EOSC Portal	Providers		<a href="https://eoscfuture.eu/eventsfuture/training-workshop-pp-tou-prototype-documentation-for-the-eosc-portal/">https://eoscfuture.eu/eventsfuture/training-workshop-pp-tou-prototype-documentation-for-the-eosc-portal/</a>	Providers 3.3
<b>25/01/2023</b>	Training Module: Streamlining the Onboarding to the Service Catalogue using APIs	Providers		<a href="https://eoscfuture.eu/eventsfuture/training-module-streamlining-the-onboarding-to-the-eosc-marketplace-using-apis/">https://eoscfuture.eu/eventsfuture/training-module-streamlining-the-onboarding-to-the-eosc-marketplace-using-apis/</a>	Providers 5.1.2
<b>08/03/2023</b>	Mastering EOSC Helpdesk: Training for providers and support teams	Providers	24	<a href="https://eoscfuture.eu/eventsfuture/eosc-helpdesk-training/">https://eoscfuture.eu/eventsfuture/eosc-helpdesk-training/</a>	Providers 2.4
<b>29/03/2023</b>	Service documentation for EOSC providers Workshop 2: Producing effective service usage instructions and tutorials	Providers		<a href="https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-2-producing-effective-service-usage-instructions-and-tutorials/">https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-2-producing-effective-service-usage-instructions-and-tutorials/</a>	Providers 7.3
<b>27/04/2023</b>	EOSC skills for students, teachers and researchers at the European Open Science Cloud (EOSC) and Research Data Management (RDM) Webinar, organized by the Circle U. European University Alliance	Consumers	35	<a href="https://www.circle-u.eu/resources/training-sessions/data-management/index.html">https://www.circle-u.eu/resources/training-sessions/data-management/index.html</a>	Consumers 1
<b>12/05/2023</b>	EOSC Future at the RltrainPlus Community of Practice Meeting: EOSC Portal and Marketplace	Providers		<a href="https://eoscfuture.eu/eventsfuture/eosc-future-at-the-next-rltrainplus-cop-meeting-eosc-portal-and-marketplace/">https://eoscfuture.eu/eventsfuture/eosc-future-at-the-next-rltrainplus-cop-meeting-eosc-portal-and-marketplace/</a>	Providers 1

<b>30/05/2023</b>	EOSC Portal: what is there for researchers?, WPG's contribution at Open Science Forum, organized by the project Strentex	Consumers	30	<a href="https://strentexproject.com/join-our-open-science-forum/">https://strentexproject.com/join-our-open-science-forum/</a>	Consumers 2.2
<b>30/5-01/06/2023</b>	Datathon on Privacy and Sensitive Data	Consumers		<a href="https://eoscfuture.eu/eventsfuture/dice-datathon-on-privacy-and-sensitive-data/">https://eoscfuture.eu/eventsfuture/dice-datathon-on-privacy-and-sensitive-data/</a>	Consumers 5.3
<b>05/06/2023</b>	How to register as data source in EOSC at the Dataverse Community Meeting 2023	Providers	44	<a href="https://projects.iq.harvard.edu/dcm2023">https://projects.iq.harvard.edu/dcm2023</a>	Providers 5.2
<b>08/06/2023</b>	Improving the accessibility of the EMBL-EBI website: background, process, and lessons	Providers and Trainers	55	<a href="https://eoscfuture.eu/eventsfuture/improving-the-accessibility-of-the-embl-ebi-website-background-process-and-lessons/">https://eoscfuture.eu/eventsfuture/improving-the-accessibility-of-the-embl-ebi-website-background-process-and-lessons/</a>	Trainers 5.3
<b>12/06/2023</b>	How to make your research products discoverable in the EOSC Portal	Providers	67	<a href="https://eoscfuture.eu/eventsfuture/how-to-make-your-research-products-discoverable-in-the-eosc-portal/">https://eoscfuture.eu/eventsfuture/how-to-make-your-research-products-discoverable-in-the-eosc-portal/</a>	Providers 1.6
<b>26-28/06/2023</b>	EOSC Future Train-the-Trainer Active Learning Course	Trainers		<a href="https://eoscfuture.eu/eventsfuture/eosc-future-train-the-trainer-active-learning-course/">https://eoscfuture.eu/eventsfuture/eosc-future-train-the-trainer-active-learning-course/</a>	Trainers 1-4
<b>19/07/2023</b>	Sensitive data for Social Sciences and Humanities	Consumers	28		Consumers 5.3
<b>27/06/2023</b>	How to make sure that my EOSC service is up and running? [EOSC Monitoring]	Providers	18	<a href="https://eoscfuture.eu/eventsfuture/how-to-make-sure-that-your-eosc-service-is-up-and-running/">https://eoscfuture.eu/eventsfuture/how-to-make-sure-that-your-eosc-service-is-up-and-running/</a> <a href="https://docs.google.com/document/d/1lfZdeM8KqdlngHXztUUSXrtRbfjCIMFTyQPOCZwxwgQ">https://docs.google.com/document/d/1lfZdeM8KqdlngHXztUUSXrtRbfjCIMFTyQPOCZwxwgQ</a>	Providers 2.5
<b>29/08/2023</b>	Service documentation for EOSC providers Workshop: describing your service for onboarding (second iteration)	Providers	26	<a href="https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-describing-your-service-for-onboarding/">https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-describing-your-service-for-onboarding/</a>	Providers 7.1-2
<b>30/08/2023</b>	Sensitive data for Social Sciences and Humanities (second iteration)	Consumers	11		Consumers 5.3
<b>08/09/2023</b>	EOSC Providers Workshop: Creating effective usage instructions & tutorials for your services (second iteration)	Providers	19	<a href="https://eoscfuture.eu/eventsfuture/eosc-providers-workshop-creating-effective-usage-instructions-tutorials-for-your-services/">https://eoscfuture.eu/eventsfuture/eosc-providers-workshop-creating-effective-usage-instructions-tutorials-for-your-services/</a>	Providers 7.3

11-15/09/2023	EOSC Future training workshop in North Macedonia	Consumers, Providers, Intermediaries, Trainers	90	<a href="https://eoscfuture.eu/eventsfuture/eosc-future-western-balkans-and-ukraine-training/">https://eoscfuture.eu/eventsfuture/eosc-future-western-balkans-and-ukraine-training/</a>	Consumers 1-2, Intermediaries 1-2, Providers 1-2
11-15/09/2023	3rd Edition of the EOSC Future Train-the-Trainer Active Learning Course	Trainers		<a href="https://eoscfuture.eu/eventsfuture/3rd-edition-of-the-eosc-future-train-the-trainer-active-learning-course/">https://eoscfuture.eu/eventsfuture/3rd-edition-of-the-eosc-future-train-the-trainer-active-learning-course/</a>	Trainers 1-5

#### 4.2.2 Planned until the end of the project

Table 4-7: Synchronous training planned before the end of M30

Date	Event	Audience	Event website/Materials	Roadmap
29/09/2023	Service documentation for EOSC providers Workshop 3: Writing technical documentation for your service - by IT people for IT people	Providers	<a href="https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-3/">https://eoscfuture.eu/eventsfuture/service-documentation-for-eosc-providers-workshop-3/</a>	Providers 7.4

### 4.3 Asynchronous courses

The self-paced learning resources created from within the project are available via the EOSC Knowledge Hub.<sup>16</sup> Striving for FAIR compliance to the greatest extent feasible and ensuring the sustainability of the materials constituted a significant aspect of the work. Creating engaging, interactive content was also a key element in the considerations of the design of these modules and influenced the choice of authoring tool for our purposes – in this case a commercial tool, Articulate Rise 360, was chosen. The self-paced courses are accessible to learners via the EOSC Knowledge Hub and the OpenPlato platform, while trainers who would like to reuse the resources in their own training will also be able to access the master files in Zenodo and tailor them to the needs of their respective audiences.

Tg.2 also provided pedagogic support for resources created by the Science Projects and will continue to do so where applicable.

Completed self-paced courses are listed in under the training topics in section 4.1 and those that have already been made publicly available are further described in the table below. The courses are already in use: early feedback for one of the courses for providers (Providers 5.1, How to onboard services to the EOSC Marketplace via the EOSC Providers Dashboard) was offered by the REPOPSI team<sup>17</sup> who were actively supported by the training team and used the course as their main source of information for successfully onboarding their service to EOSC. They found the course useful and easy to understand.<sup>18</sup>

Table 4-8: Overview of self-paced courses

Module/course	Description
<b>For EOSC End-users – Science Project 2: Dashboard for the</b>	The Dashboard for the State of the Environment service, developed in the EOSC Future science project, provides insight on the state of the environment via an interactive dashboard. This module is intended for researchers, policy

<sup>16</sup> EOSC Knowledge Hub, <https://eoscfuture.eu/ker/eosc-knowledge-hub/>.

<sup>17</sup> Repository of Psychological Instruments in Serbian, <https://marketplace.eosc-portal.eu/services/eosc.ubfzf.repopsi>.

<sup>18</sup> EOSC in practice story #24; Aleksandra Lazić. (2023). *Enhancing FAIRness and TRUSTworthiness in the REPOPSI open repository*. Zenodo. <https://doi.org/10.5281/zenodo.8215164>.

<b>State of the Environment</b>	<p>makers, and members of the public who would like to use the Dashboard, either to view and access the visualised data or to provide data to be shown on the Dashboard. For those who would like to duplicate the architecture to develop their own dashboard, a separate tutorial is being developed.</p> <p>URL:  <a href="https://rise.articulate.com/share/GJdRuh4HI6KLHWydFB8r3_ekOOQuTyVD#/">https://rise.articulate.com/share/GJdRuh4HI6KLHWydFB8r3_ekOOQuTyVD#/</a></p>
<b>For EOSC End-users – Module 2: The EOSC Portal</b>	<p>The module gives an overview of the main functionalities of the EOSC Portal for researchers and other consumers (end-users) of EOSC data, services and software). This module is intended for researchers regardless of their discipline or career stage.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=25">https://openplato.eu/blocks/catalog/detail.php?id=25</a></p>
<b>For EOSC End-users – Virtual Observatory and the European Open Science Cloud</b>	<p>This course summarizes the journey of data through the Virtual Observatory (VO) and the European Open Science Cloud (EOSC). Researchers in astronomy will learn how to publish their data and will be introduced of new Open Science capabilities like EOSC.</p> <p>URL: <a href="https://cds-astro.github.io/a-FAIR-journey-for-astronomical-data/">https://cds-astro.github.io/a-FAIR-journey-for-astronomical-data/</a></p>
<b>For EOSC Providers – Onboarding services to the EOSC Marketplace via the EOSC Providers Dashboard</b>	<p>The module provides an overview of the procedures for onboarding services to the EOSC Marketplace. Onboarding is a process that a provider must follow to register a resource in the EOSC Marketplace. The onboarding process is different for research products (publications, data, software), services, data sources and learning resources.</p> <p>URL: <a href="https://rise.articulate.com/share/Z8tgoUChHCpkM0Qact5ZUikjOlrv8mi">https://rise.articulate.com/share/Z8tgoUChHCpkM0Qact5ZUikjOlrv8mi</a></p>
<b>For EOSC Providers – How to onboard services to the EOSC Marketplace via the EOSC Portal Open API?</b>	<p>The module gives an overview of the procedures for onboarding services to the EOSC Marketplace. Onboarding is a process that a provider must follow to register a resource in the EOSC Marketplace. The onboarding process is different for research products (publications, data, software), services, data sources and learning resources.</p> <p>URL:  <a href="https://rise.articulate.com/share/x3WjyyypsDY9TQHeQjqDLbQOfkDTXrpG#/">https://rise.articulate.com/share/x3WjyyypsDY9TQHeQjqDLbQOfkDTXrpG#/</a></p>
<b>For EOSC Providers – EOSC Order Management System</b>	<p>This module explains how to integrate the EOSC Order Management System with services available via the EOSC Marketplace in order to make it easier for users to order services. The EOSC Order Managements System is relevant for providers offering services that are not Open Access, i.e. those that require paying or negotiating access.</p> <p>URL:  <a href="https://rise.articulate.com/share/ux5GyloVI5QFI2DWvDSjnglW7YcPLImE#/">https://rise.articulate.com/share/ux5GyloVI5QFI2DWvDSjnglW7YcPLImE#/</a></p>
<b>For EOSC Providers – How to integrate your service with the EOSC Helpdesk?</b>	<p>This module on the EOSC Helpdesk is intended for service providers who have onboarded services to the EOSC Marketplace and would like to integrate their existing helpdesks with EOSC Helpdesk in order enable users to contact them via the EOSC Marketplace or use the EOSC Helpdesk as-a-service to manage user requests.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=45">https://openplato.eu/blocks/catalog/detail.php?id=45</a></p>
<b>For EOSC Providers – EOSC Monitoring Service</b>	<p>This module explains how to integrate the EOSC Monitoring Service with the services onboarded to the EOSC Marketplace. Course is intended for service providers who have onboarded services to the EOSC Marketplace and want to</p>

	<p>integrate the EOSC service monitoring system enabling them to monitor the performance of their services and infrastructures.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=46">https://openplato.eu/blocks/catalog/detail.php?id=46</a></p>
<p><b>For EOSC Providers – EOSC Authentication and Authorisation Infrastructure (AAI)</b></p>	<p>This module EOSC Authentication and Authorisation Infrastructure (AAI) is intended for service providers who have onboarded services to the EOSC Marketplace and would like to make it easy for users to access them without having to log in at multiple domains or using multiple sets of credentials. If a service is integrated with the EOSC AAI, users will be able to access it using an academic or social account that they already have.</p> <p>URL: <a href="https://rise.articulate.com/share/wBtKWgiBqmo_efer5cq55B-XZZprba3V">https://rise.articulate.com/share/wBtKWgiBqmo_efer5cq55B-XZZprba3V</a></p>
<p><b>For EOSC Providers: EOSC Accounting for research products</b></p>	<p>This module is intended for the providers who have onboarded data sources and research products to the EOSC Marketplace and would like to track the usage of the research products contained in their data sources across platforms and have these metrics displayed on the research products' details pages in the EOSC Marketplace.</p> <p>URL: <a href="https://rise.articulate.com/share/DnfD2tTZ0JpqyVKFORjv7YPbTMrH-o_h">https://rise.articulate.com/share/DnfD2tTZ0JpqyVKFORjv7YPbTMrH-o_h</a></p>
<p><b>For EOSC Intermediaries – Module 1: What institutions need to know? Engaging with the EOSC Portal.</b></p>	<p>This module offers an overview of the European Open Science Cloud (EOSC) and the EOSC Portal, what EOSC enables and how new institutional services can be onboarded - via a collection of practical use cases, examples illustrating EOSC tailored to different domains and success stories on using EOSC resources.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=39">https://openplato.eu/blocks/catalog/detail.php?id=39</a></p>
<p><b>For EOSC Trainers – Module 1: Preparing to Train About EOSC</b></p>	<p>A train-the-trainer course on preparing to teach about using the European Open Science Cloud (EOSC).</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=37">https://openplato.eu/blocks/catalog/detail.php?id=37</a></p>
<p><b>For EOSC Trainers – Module 2: The EOSC Portal</b></p>	<p>A train-the-trainer course which will give you an overview of the main functionalities of the EOSC Portal and get you ready to deliver training to your user communities.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=38">https://openplato.eu/blocks/catalog/detail.php?id=38</a></p>
<p><b>For EOSC Trainers – Module 3: Addressing Legal &amp; Ethical Issues</b></p>	<p>A train-the-trainer course on addressing legal and ethical issues relating to European Open Science Cloud (EOSC) use.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=40">https://openplato.eu/blocks/catalog/detail.php?id=40</a></p>
<p><b>For EOSC Trainers – Module 4: Crafting your own training using EOSC resources</b></p>	<p>A train-the-trainer course on setting up and delivering your training on EOSC.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=41">https://openplato.eu/blocks/catalog/detail.php?id=41</a></p>
<p><b>For EOSC Trainers – Module 4b: Introducing interactivity in asynchronous training</b></p>	<p>This EOSC Future module designed to introduce trainers to adding interactivity to asynchronous training.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=47">https://openplato.eu/blocks/catalog/detail.php?id=47</a></p>
<p><b>EOSC Future Trainers Learning Path</b></p>	<p>This series of four modules aim to provide the foundational knowledge to teach about what EOSC is and its usage. The modules in the learning path can be completed in any order but we recommend following the designated</p>

	<p>numbering. Each module is also available outside of this learning path as a standalone module.</p> <p>URL: <a href="https://openplato.eu/blocks/catalog/detail.php?id=44">https://openplato.eu/blocks/catalog/detail.php?id=44</a></p>
--	---

## 4.4 Other events, efforts, and materials

### 4.4.1 Open call

In order to widen the scope of training activities beyond the project partners themselves and engage with outside partners, an open call was set up to produce training and learning resources in collaboration with WP9. This would be funded by other direct costs that were available through OpenAIRE. We identified a number of possibilities primarily through OpenAIRE's network of national open access desks (NOADs)<sup>19</sup> and some other key players in the open science community. The eventual targets that were settled on were the NOADs from Turkey, France and Hungary and a partner of the EATRIS consortium<sup>20</sup> – the European Joint Programme on Rare Diseases (EJPRD).

As a result of complications related to the timing and eligibility of three of these options, only one option, Turkey, proceeded with the delivery. They organized and conducted an in-person training event for local researchers and other stakeholders.<sup>21</sup> The event was based on the virtual training previously provided by the training actor group from WP9, serving as a template. Interest in the community was significant (with 188 applicants and 34 selected participants). According to the results of the survey, it was seen that the overall satisfaction level of the participants was relatively high. Many participants requested the continuation of EOSC training and the planning of new activities for the advanced level.

### 4.4.2 Discussion cards

The discussion cards are a leaning resource that can be used as an ice-breaker game for a wide range of stakeholders. The card deck is composed of myth-busting and statement cards that can be used to guide a discussion on EOSC, Open Science and ethical and legal issues in training or other events. Blank templates are available for trainer's additional topics or statements. The cards are currently available in Articulate.<sup>22</sup>

### 4.4.3 Conference sessions etc.

Task partners represented the training pillar of the project in several external conferences. The objective was to raise awareness of the training activities among the stakeholders, the intermediaries in particular, and to discuss other developments of the project.

Table 4-9: List of external events

Date	Event	Audience	Participants	Event website or materials
07 April 2022	<b>SSHOC Final Conference</b> Deep dive: training resources FAIRification, community and future opportunities	Trainers, Intermediaries	60	<a href="https://eoscfuture.eu/eventsfuture/sshoc-final-conference/">https://eoscfuture.eu/eventsfuture/sshoc-final-conference/</a>
07 July 2022	<b>Panel at LIBER 2022</b> Conference: Supporting EOSC: Putting Institutions in the Driving Seat	Trainers, Intermediaries	60	<a href="https://wayback.archive-it.org/org-1617/20220712152147/https://liberconference.eu/programme/panel-discussions/panel-discussion-">https://wayback.archive-it.org/org-1617/20220712152147/https://liberconference.eu/programme/panel-discussions/panel-discussion-</a>

<sup>19</sup> National Open Access Desks, <https://www.openaire.eu/noad-activities>.

<sup>20</sup> EATRIS, European infrastructure for translational medicine, <https://eatris.eu/>.

<sup>21</sup> Building a Community of EOSC Experts in Türkiye, blog, <https://www.openaire.eu/blogs/building-a-community-of-eosc-experts-in-tuerkiye>.

<sup>22</sup> EOSC Ice Breakers (discussion cards), <https://rise.articulate.com/share/gLvIEU8Alie5aWiM5wXl2XxHnoorNkAu#/>.

				<a href="#">supporting-eosc-putting-institutions-in-the-driving-seat/</a>
3-5 May 2023	<b>14th BAD Congress - Portuguese Association of Librarians, Archivists, Information and Documentation Professionals</b>  O papel das Bibliotecas na European Open Science Cloud	Trainers, Intermediaries, providers	80	<a href="https://publicacoes.bad.pt/revistas/index.php/congressosbad/article/view/3023">https://publicacoes.bad.pt/revistas/index.php/congressosbad/article/view/3023</a>
12-15 June 2023	<b>Open Repositories 2023</b>  OpenAIRE Content Provider Dashboard: recent developments from OpenAIRE Nexus and EOSC future projects	Providers, intermediaries	320	<a href="https://zenodo.org/record/8077646">https://zenodo.org/record/8077646</a>
19-23 June 2023	<b>EGI 2023</b>  OpenAIRE PROVIDE dashboard: a service to enable trust and value within the EOSC repositories	Providers, intermediaries		<a href="https://whova.com/web/M8zkrmLo5DUwlnug54VINPkHTdssyl49PHa20jCW2Qg%3D/Agenda/">https://whova.com/web/M8zkrmLo5DUwlnug54VINPkHTdssyl49PHa20jCW2Qg%3D/Agenda/</a>
5-7 July 2023	<b>Liber 2023</b>  OpenAIRE Content Provider Dashboard: enabling trust and value within the EOSC repositories	Providers, intermediaries, Trainers	400	<a href="https://zenodo.org/record/8134821">https://zenodo.org/record/8134821</a>

#### 4.4.4 Task forces in the Community of Practice

Two task forces (TFs) were established as part of the Community of Practice (CoP) of Training Coordinators<sup>23</sup> which is an independent, informal network originally set up by OpenAIRE that includes over 100 training coordinators – national, institutional and from major European research infrastructures. These two TFs were (i) quality assurance of training resources, and (ii) EOSC training, conducted work through the last reporting period. The first TF has produced a fundamental resource on the quality assurance of training resources<sup>24</sup> and has now concluded its mission. The second TF is being positioned as a long-term group that follows a similar approach to the CoP of Training Coordinators. It aims to become an informal group with monthly meetings, which allows training coordinators that specifically work in the EOSC ecosystem to come together, network and work on solutions collaboratively.

#### 4.5 Takeaways and challenges

One of the challenges in creating the learning resources was concurrent development of the core services: this delayed the initiation of training and required frequent updates of the learning resources, for example in case the EOSC Portal. Complex technical documentation of other components, compounded with increased demand for feedback from the developers, led to delays in release of learning resources. A recommendation for similar

<sup>23</sup> Community of Practice for Training Coordinators, <https://www.openaire.eu/cop-training>.

<sup>24</sup> Alves et al. (2023). Quality assurance criteria for learning resources. Zenodo. <https://doi.org/10.5281/zenodo.7520222>

future projects is to begin training at a later stage to the start of the project, rather than right at the beginning. Technical and other experts should be involved in the training development and have some effort in the training WP.

On the other hand, training could also contribute to the technical development with engagement and co-creation activities (such as user-testing, providing feedback). Such an outcome were the WP9 recommendations for the accessibility of EOSC Future outputs and EOSC services. This topic was also integrated into the learning programme for trainers.

Some overlap with the communication activities was noted in terms of engagement and feedback from relevant communities.

Close cooperation with WP10 was also fundamental for streamlining the event processes, while communication and coordination with relevant WPs, science projects, and INFRAEOSC-07 projects was key in establishing a relevant training programme that addressed the needs of the stakeholders. Gathering the feedback of the participants should continue in the Knowledge Hub. The input from learners who have utilised the asynchronous modules can provide valuable insights into the efficiency and usability of the materials.

In terms of pedagogical and organisational takeaways, some of the factors that proved particularly relevant were finding effective ways of handling user/participant data and feedback; enriching the training materials with relevant use cases; early integration with science projects and science clusters; responding to accessibility issues; reusing existing material and ensuring accessibility, reusability, and sustainability of our own materials; and providing learner communities with a clear learning path, prioritising the most important topics for respective groups or levels.

In the continuation of the project, the team will identify areas for improvement and make necessary updates to enhance the quality and effectiveness of the learning materials.

## 5. Conclusions

The specific objectives outlined at the start of this report were the main motivators of the work described in this deliverable. In addition to these, we aimed to achieve supplementary targets, including learning paths and quality assurance. Moreover, the EOSC Future project aimed to identify a number of key exploitable results (KERs) that were of IPR value. The KH and its contents, produced by WP9's team, were acknowledged as one such result and are designated as KER#6.

This will ensure in part the sustainability of the KH and its in-house produced learning resources and will be part of the handover process for future EOSC projects that will have a remit to build on the work in EOSC Future.

Certain aspects warrant further investigation, and in this context, we provide some points for future EOSC-related projects to consider, particularly regarding training and learning:

- Providing a type(s) of qualification whether this is formal or informal – the work presented here will allow badging but has not been explored further due to the complexities of awarding anything more formal.
- A range of topics that were identified through the course of the project but which were not addressed due to time and other constraints. These have been documented in our internal training actionable roadmap and will be made available for the handover. An example is in the case of research funders, policy makers, research administrators, and stakeholders in EOSC partnership, future training should enable them to understand and be up to date with the current status of EOSC and be ready to raise awareness of EOSC.
- Learning paths – the rules for these have been defined with respect to the OpenPlato platform but can be elaborated further, especially for specific user types that were not addressed in our initial mapping.
- Further outreach to external catalogues that provide learning resources.
- Further outreach to marginalised and/or underrepresented communities and stakeholders. During the course of our work, we were able to deliver one major training event for the Western Balkans and Ukraine, which was very well received by the >90 participants (25 out of 26 respondents to our after-event survey gave overall satisfaction as “very good” [7] or “excellent”[18]; the programme was



particularly empowering and impactful for librarians). The programme that was used could be redone in the future in different contexts.

The work conducted through the course of the EOSC Future project has provided a blueprint for further training and skills-related work as the EOSC platform is improved and developed.

## 6. Appendix A – EOSC Future Training Actionable Roadmap

Module	Topics
<b>Consumers Actor Group</b>	
<b>1. EOSC for users</b>	1.1 History and governance
	1.2 What's in it for me?
	1.3 System of systems
	1.4 FAIR
<b>2. EOSC Portal</b>	2.1 Introduction to the EOSC Portal
	AG1.2.2 Overview of the structure: what can be found on the EOSC Portal?
	AG1.2.3 EOSC Catalogue & Marketplace: Navigation and Discovery
	AG1.2.4 Information about resources
	2.5 My EOSC Marketplace
	2.6 Choosing services
	2.7 Accessing services
	2.8 Ordering services
	2.9 Use cases: Using EOSC resources
<b>3. Workflows</b>	3.1 Single point of entry (AAI)
	3.2 Profile / Dashboard
	3.3 Marketplace specifics: terms of agreement, licensing, training resources
	3.4 Collaborative environments
	3.5 "Quick start" guide
<b>4. EOSC "Champions"</b>	5 science clusters
	4.1 Climate-Neutral and Smart Cities
	4.2 State of the Environment
	4.3 Climate Change Impact on Biodiversity and Ecosystems in Europe
	4.4 The Dynamics of Biological Processes
	4.5 Tracing biostructures
	4.6 Imaging COVID-19 data in EOSC
	4.7 COVID-19 Metadata Findability and Interoperability
	4.8 The Extreme Universe and Gravitational Waves
	4.9 Dark Matter
	4.10 Access Management for Distributed Research Infrastructures
4.11 Additional to Science Projects EOSC for Arts and Humanities Open Science in practice in EOSC Sensitive data in EOSC EOSC for Biomedical Sciences Virtual Observatory and EOSC	
<b>5. GDPR and Legal Issues</b>	5.1 Meta overview of ethical issues relating to EOSC
	5.2 Overview ethical/legal activities within EOSC
	5.3 Sensitive data for SSH
<b>Providers Actor Group</b>	
<b>1. EOSC How to</b>	1.1 EOSC: Increased visibility of your services on a cross-domain interoperable platform & other benefits
	1.2 EOSC Portal & Marketplace
	1.3 Rules of Participation

	<p>1.4 Make your services FAIR, i.e. known, discoverable, accessible, interoperable and re-usable</p> <p>1.5 Make your data discoverable</p> <p>1.6 Case studies</p>
<b>2. EOSC-Core Integration</b>	<p>2.1 AAI</p> <ul style="list-style-type: none"> <li>2.1.1 Making it easy for users to access EOSC resources</li> <li>2.1.2 AAI Federation</li> <li>2.1.3 Integration options</li> <li>2.1.4 Integration through an EOSC AAI Federation member</li> <li>2.1.5 Integration through an EOSC AAI Federation member</li> <li>2.1.6 Integration for service providers using SAML</li> <li>2.1.7 Integration for service providers using OpenID Connect</li> <li>2.1.8 Use cases</li> </ul> <p>Supporting resources</p>
	<p>2.3 EOSC Order Management service</p> <ul style="list-style-type: none"> <li>2.3.1 What is the EOSC Ordering Management service?</li> <li>2.3.2 Integration options</li> <li>2.3.3 Integrating a external order management system</li> </ul> <p>Supporting resources</p>
	<p>2.4 EOSC Helpdesk</p> <ul style="list-style-type: none"> <li>2.4.1 What is a Helpdesk?</li> <li>2.4.2 EOSC helpdesk</li> <li>2.4.3 How does it work?</li> <li>2.4.4 How to integrate the EOSC Helpdesk with onboarded services?</li> <li>2.4.5 Requirements for the integration of the EOSC Helpdesk</li> <li>2.4.6 Step-by-step integration guide</li> <li>2.4.7 Use cases</li> </ul> <p>Supporting resources</p> <p>Quiz</p>
	<p>2.5 EOSC Monitoring Service</p> <ul style="list-style-type: none"> <li>2.5.1 What is EOSC Monitoring?</li> <li>2.5.2 How does it work?</li> <li>2.5.3 Navigating through the monitoring user interface</li> <li>2.5.4 Integration options</li> <li>2.5.5 Monitoring an Onboarded Service</li> <li>2.5.6 Monitoring an Infrastructure</li> <li>2.5.7 Integrating an external monitoring service</li> <li>2.5.8 Combine the results of existing tenants</li> <li>2.5.9 Third-party services exploiting EOSC monitoring data</li> <li>2.5.10 Creating custom probes</li> <li>2.5.11 Use cases</li> <li>2.5.12 Quiz</li> </ul> <p>Supporting resources</p>
	<p>2.6. EOSC Accounting</p> <ul style="list-style-type: none"> <li>2.6.1 Accounting for services</li> <li>2.6.2 Accounting for research products           <ul style="list-style-type: none"> <li>2.6.2.1 Introduction to EOSC Accounting for Research Products</li> <li>2.6.2.2 Service architecture</li> <li>2.6.2.3 Integration: PUSH workflow</li> <li>2.6.2.4 Integration: PULL workflow</li> </ul> </li> </ul>

	Supporting resources Quiz
	<ul style="list-style-type: none"> <li>2.7 EOSC Interoperability Framework <ul style="list-style-type: none"> <li>2.7.1 EOSC Interoperability Framework Guidelines</li> <li>2.7.2 AI discovery (could be the same as the EOSC How to - Make your data discoverable, AI above)</li> <li>2.7.3 IT security forensics</li> <li>2.7.4 FitSM for service providers</li> <li>2.7.5 Open science monitor</li> <li>2.7.6 Service integration with Core and Horizontal services</li> <li>2.7.7 EOSC metrics dashboard</li> <li>2.7.8 EOSC Resource Catalogue Integration</li> <li>2.7.9 Integrated discovery services</li> <li>2.7.10 Bundles and workflow support in the EOSC Marketplace</li> </ul> </li> </ul>
<b>3. Legal issues</b>	3.1 GDPR
	3.2 IPR
	3.3 Privacy Policy, Terms of Use
<b>4. Rules of participation</b>	4.1 Service management
	4.2 Quality assurance
<b>5. Onboarding</b>	<ul style="list-style-type: none"> <li>5.1 Service onboarding <ul style="list-style-type: none"> <li>5.1.1 How to onboard services to the EOSC Marketplace via the EOSC Providers Dashboard (GUI)</li> <li>5.1.2 How to onboard services to the EOSC Marketplace via the EOSC Portal Open API</li> </ul> </li> </ul>
	5.2 Onboarding data and resources
	5.3 Catalogue registration
	5.4 Service validation & TRL assessment
<b>6. Business models and engagement</b>	6.1 EOSC DIH
<b>7. Creating support material for your service</b>	7.1 Introduction to service documentation
	7.2 Describing a service in the EOSC catalogue/marketplace
	7.3 Producing effective service usage instructions and tutorials
	7.4 Tips for creating technical service documentation "written by IT people for IT people"
	7.5 Preparing a framework for service evaluation
<b>8. Onboarding training resources</b>	8.1 EOSC Knowledge Hub
<b>Facilitators/Intermediaries</b>	
<b>1. What institutions need to know? Engaging with the EOSC portal</b>	1.1 EOSC in a nutshell
	1.2 Answering research questions with EOSC
	1.3 How can your institution benefit?
	1.4 How can your institution get involved?
	1.5 How can libraries get involved?
	1.6 How can institutional IT services get involved?
	1.7 Introduction to the EOSC portal
	1.8 What can be found on the EOSC portal?
	1.9 Onboarding
	1.10 Supporting institutions as EOSC providers
	1.11 Interacting with EOSC: flowcharts for institutions
	1.12 EOSC in practice stories:

	<ol style="list-style-type: none"> <li>1) Developing a central hub for Social Sciences and Humanities resources</li> <li>2) What's in EOSC for DARIAH's partner institutions?</li> <li>3) Integrating institutional repositories in Serbia in EOSC</li> <li>4) EOSC-Pillar use case: Integration of data repositories into EOSC based on communities approach</li> <li>5) Climate research</li> </ol>
<b>Trainers</b>	
<b>1. Preparing to train about EOSC</b>	1.1 Meta overview
	1.2 How can EOSC be integrated into research
	1.3 Answering questions about EOSC
	1.4 Practical advice on teaching about EOSC
<b>2. EOSC Portal</b>	2.1 Introduction to the EOSC Portal
	2.2 What can be found on the EOSC Portal?
	2.3 EOSC Catalogue and Marketplace: What can be found?
	2.4 Resource pages
	2.5 Choosing, accessing and ordering services
	2.6 Onboarding
	2.7 Quiz
<b>3. Addressing legal &amp; ethical issues</b>	3.1 Meta overview of ethical issues relating to EOSC
	3.2 Ethical and legal issues and EOSC
	3.3 A closer look at safe and responsible use of data and equitable access
	3.4 Overview of resources and advice on how to engage institutional ethics/legal teams
	3.5 Practical advice on teaching legal/ethical issues
<b>4. Crafting your own training using EOSC resources</b>	4.1 Refresher of the principles of pedagogy and training design
	4.2 Introduction to EOSC Future learning paths and curricula
	4.3 Making use of existing EOSC resources
	4.4 Producing FAIR EOSC training materials
	4.5 EOSC Knowledge Hub and metadata for learning resources
	4B Introducing interaction in synchronous and asynchronous training activities
<b>5. Incorporating accessibility into EOSC training</b>	5.1 Defining accessibility and its importance in training
	5.2 Accessibility with regards to disability, geography and internet access equity
	5.3 Practical advice and tools to enable accessibility in your training materials
<b>6. The Science Project 'Dashboard for the State of the Environment' as a case study in your training on EOSC Core Services</b>	6.1 What is the Dashboard for the State of the Environment Science Project?
	6.2 How did EOSC core services get used in the Dashboard project?

## 7. References

- [1] Clare, H. et al., 2022, MS32 EOSC Training Roadmap and Rules of Participation for Onboarding EOSC Training Resources
- [2] Garavelli, S., Witpas, K. and S. Jones 2021, *D10.1 EOSC Future Stakeholder Engagement and Communication Strategy and Plan*. [online] Available at: <<https://eoscfuture.eu/wp-content/uploads/2022/12/EOSC-Future-WP10-CSC-D10.1-EOSC-Future-Stakeholder-Eng.-Com.-Strategy-Plan-2021-09-08.pdf>> [last accessed 06/07/2023].
- [3] EOSC Future Initial Training Analysis. 2022. [online] Available at: <[https://docs.google.com/document/d/11mWU6-YjPAmsZmt\\_2TC7JCe7ftKlnD2X/edit](https://docs.google.com/document/d/11mWU6-YjPAmsZmt_2TC7JCe7ftKlnD2X/edit)>
- [4] EOSC Future Training Handbook. 2022. [online] Available at: <<https://wiki.eoscfuture.eu/display/PUBLIC/EOSC+Future+Training+Handbook>>
- [5] ABC Learning Design. 2015. [online] Available at: <<https://abc-ld.org/>>
- [6] EOSC Synergy Online Training Handbook. 2020. [online] Available at: <<https://moodle.learn.eosc-synergy.eu/course/view.php?id=15&section=0#tabs-tree-start>>
- [7] Learning Paths. 2022. [online] Available at: <<https://wiki.eoscfuture.eu/display/PUBLIC/Learning+Paths#LearningPaths-Learningpathsperactor>>
- [8] OpenPlato learning platform. [online] Available at: <<https://openplato.eu/>>
- [9] Articulate creator tool. 2023. [online] Available at: <<https://articulate.com>>
- [10] Rise 360 tool. 2023. [online] Available at: <<https://articulate.com/360/rise>>
- [11] Storyline 360 tool. 2023. [online] Available at: <<https://articulate.com/360/storyline>>
- [12] Vallo, C., Venkataraman, S. and P. Principe 2022, *D9.2 EOSC Knowledge Hub (Training Catalogue and Platform)*.
- [13] Rules of participation for Onboarding EOSC Training Resources and EOSC Marketplace. 2022. [online] Available at: <<https://wiki.eoscfuture.eu/x/8gOK>>
- [14] EOSC Knowledge Hub. 2023. [online] Available at: <<https://eoscfuture.eu/ker/eosc-knowledge-hub/>>
- [15] EOSC Marketplace, Repository of Psychological Instruments in Serbian. 2023. [online] Available at: <https://marketplace.eosc-portal.eu/services/eosc.ubfzf.repopsi>.
- [16] EOSC in practice story #24; Aleksandra Lazić. (2023). *Enhancing FAIRness and TRUSTworthiness in the REPOPSI open repository*. Zenodo. <https://doi.org/10.5281/zenodo.8215164>.
- [17] National Open Access Desks. 2023. [online] Available at: <<https://www.openaire.eu/noad-activities>>
- [18] Gourdal, G., 2023, *Building a Community of EOSC Experts in Türkiye*. [online] Available at: <<https://www.openaire.eu/blogs/building-a-community-of-eosc-experts-in-tuerkiye>>
- [19] EOSC Ice Breakers. 2023. [online] Available at: <<https://rise.articulate.com/share/gLvIEU8Alie5aWiM5wXl2XxHnoorNkAu#/>>
- [20] Community of Practice for Training Coordinators. 2023. [online] Available at: <<https://www.openaire.eu/cop-training>>
- [21] Alves, R., Ansine, J., Bezuidenhout, L., Buss, M., Clare, H., Correia, A., England, J., Flohr, P., Garnett, V., Havemann, J., Hellström, M., Hoebelheinrich, N., Jacobs, N., Kragh, G., Kuchma, I., Leenarts, E., Thomas-Lopez, D., Manca, M. T., Moura, P., Oset García, P., Paladin, L., Príncipe, P., Ševkušić, M., Shanahan, H., Shanmugasundaram, V., Szuflita-Żurawska, M., Whyte, A. (2023). *Quality assurance criteria for learning resources*. Zenodo. <https://doi.org/10.5281/zenodo.7520222>.