OSCARS
Open Science Clusters' Action for Research & Society

Funded Project

mTeSS-X: Scaling training portal federation for RIs through Multi-tenanting and Exchange

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Implemented by

The University of Manchester

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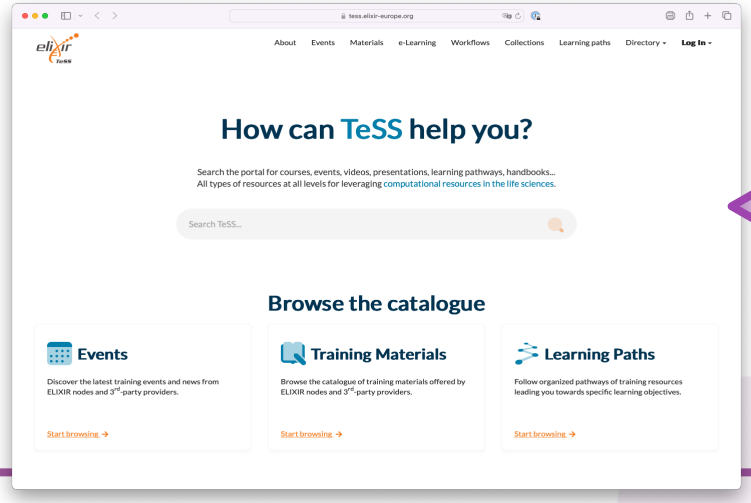
UNIVERSITY OF LIMERICK OLLSCOIL LUIMNIGH

UNIVERSITY OF TARTU

Funded by the European Union

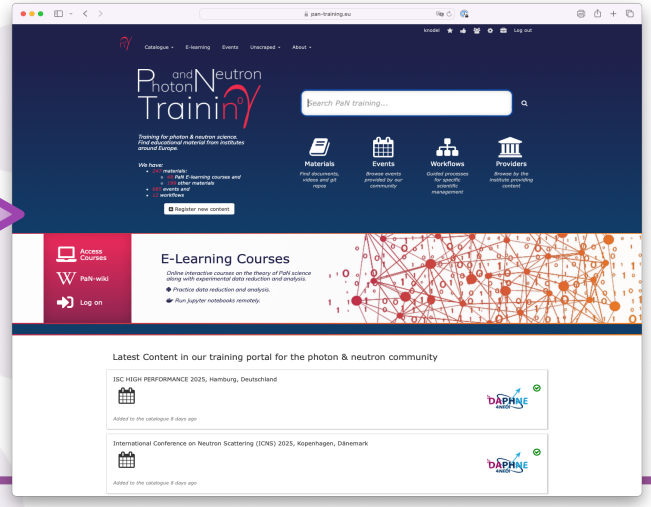
The Challenge – Registries for Training Events and Materials

- RIs and EOSC projects have **limited training catalogue capability** beyond sparse, **outdated lists on web pages**, while cross-portal exchange has been discussed but not practised.
- **Fragmentation of resources** prevents the reuse of valuable training materials and limits the dissemination.
- Over the last year the **Training eSupport System TeSS** has become a hub for training in several communities, such as ELIXIR TeSS and PaN-Training:



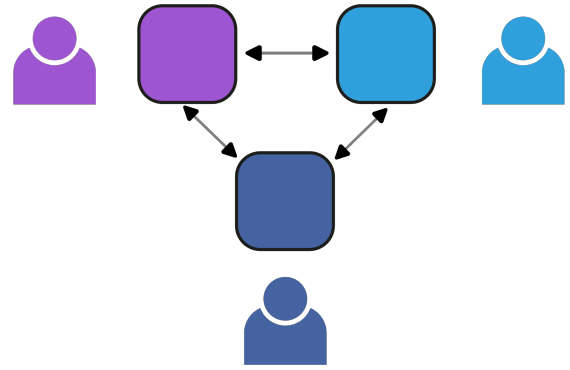
LS RI
Life Sciences

PaNOSC
Photon and Neutron Science

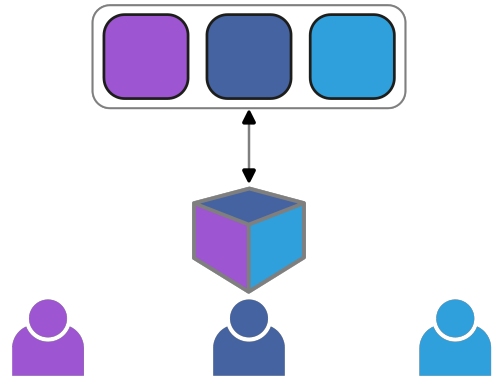


Our Solution to Solve the Problem of Fragmentation: mTeSS-X

- **TeSS-X: Exchange between catalogues:**
  The TeSS catalogues are separate instances and **automatically exchange nominated content** through a dedicated interface for metadata harvesting.



- **mTeSS: Multi-space catalogue:**
  The catalogues are pooled into a shared TeSS instance with independent look, content, identity, shared catalogue management and **community-specific selections** of training material are called "**views**" or "**spaces**".



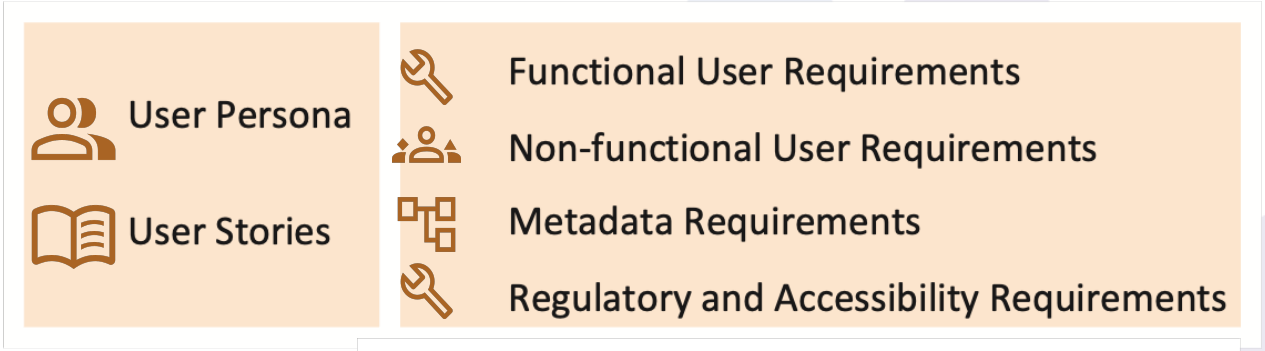
Project Structure and Timeline

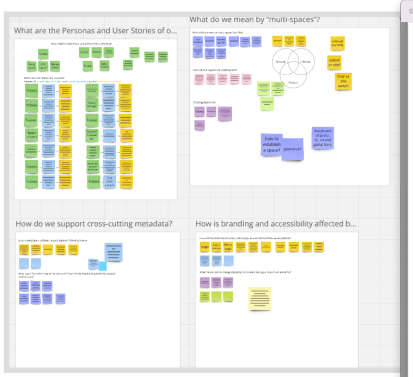
- WP1: Project **management**, planning and preparation
- WP2: Community engagement: **requirements analysis** and use case definition
- WP3: Multi-tenant **mTeSS** Prototype
- WP4: Exchange extension **TeSS-X** Prototype
- WP5: **Onboarding** of Science Clusters and RIs
- WP6: Migration and establishing **sustainability**

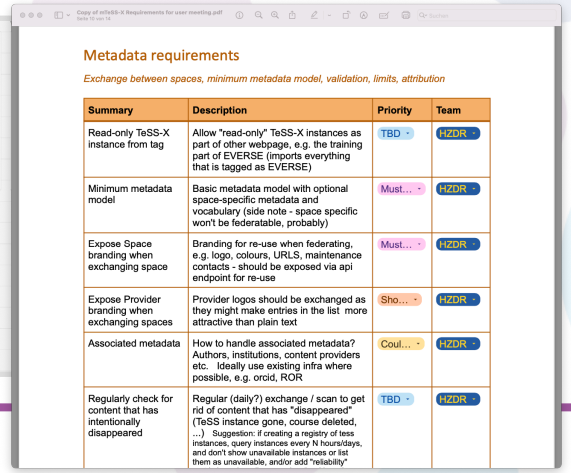
Year	2024	2025				2026		
Quarter	Q4 M1-3	Q1 M4-6	Q2 M7-9	Q3 M10-12	Q4 M13-15)	Q1 M16-18	Q2 M19-21	Q3 M22-24
WP1								D6
WP2		D1						
WP3						D2		
WP4					D3			
WP5					D4		D5	
WP6								D6
In-person meetings	Kick-off Recruit Focus Group			Mid-project			Final	

Requirements Analysis and Outreach (WP2)

- Project website: elixirtess.github.io/mTeSS-X
- Kick-Off and two Focus Group Workshops on user requirements and metadata/spaces
- Requirements analysis document (D1) published: 10.5281/zenodo.15120732



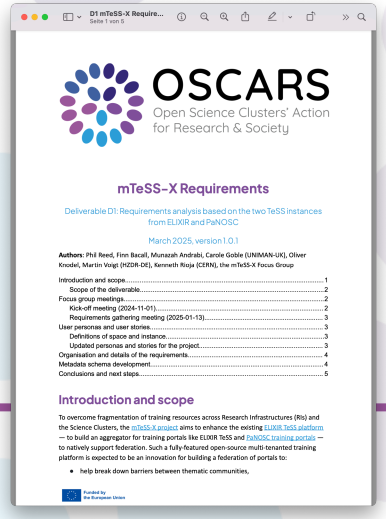




Metadata requirements

Exchange between spaces, minimum metadata model, validation, limits, attribution

Summary	Description	Priority	Team
Read-only TeSS-X instance from tag	Allow "read-only" TeSS-X instances as part of other webpage, e.g. the training part of EVERSE (imports everything that is tagged as EVERSE)	TBD	HZDR
Minimum metadata model	Basic metadata model with optional space-specific metadata and vocabulary (side note - space specific won't be federatable, probably)	Must...	HZDR
Expose Space branding when exchanging space	Branding for re-use when federating, e.g. logo, colours, URLS, maintenance contacts - should be exposed via api endpoint for re-use	Must...	HZDR
Expose Provider branding when exchanging spaces	Provider logos should be exchanged as they might make entries in the list more attractive than plain text	Sho...	HZDR
Associated metadata	How to handle associated metadata? Authors, institutions, content providers etc. Ideally use existing infra where possible, e.g. orcid, ROR	Coul...	HZDR
Regularly check for content that has intentionally disappeared	Regular (daily?) exchange / scan to get rid of content that has "disappeared" (TeSS instance gone, course deleted, ...) Suggestion: if creating a registry of tess instances, query instances every N hours/days, and don't show unavailable instances or list them as unavailable, and/or add "reliability"	TBD	HZDR



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mTeSS-X Requirements

Deliverable D1: Requirements analysis based on the two TeSS instances from ELIXIR and PaNOSC

March 2025, version 1.0.1

Authors: Phil Reed, Finn Bacall, Munazah Andrabi, Carole Goble (UNIMAN-UK), Oliver Knodel, Martin Voigt (HZDR-DE), Kenneth Rioja (CERN), the mTeSS-X Focus Group

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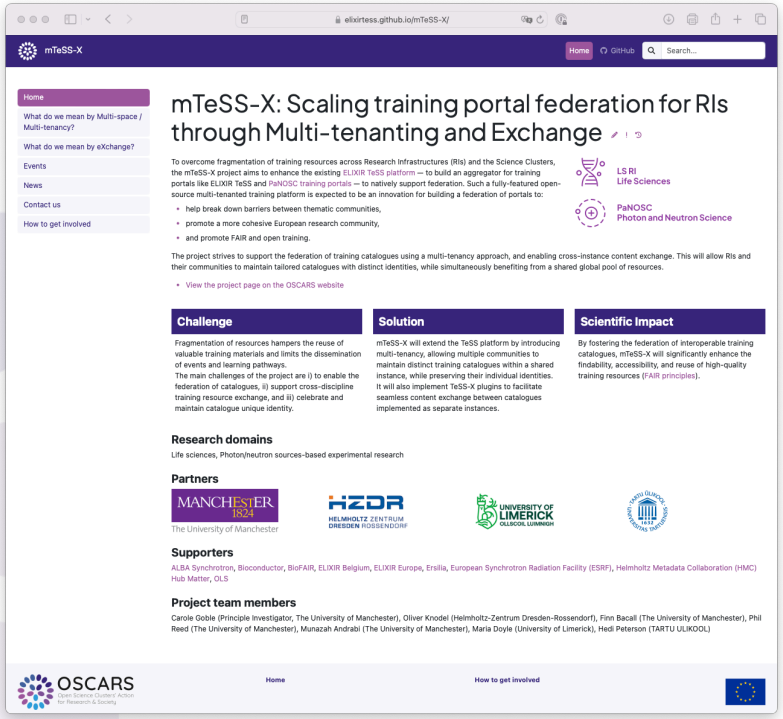
Scope of the deliverable 2
Focus group meetings 2
Kick-off meeting (2024-11-01) 2
Requirements gathering meeting (2025-01-13) 3
User personas and user stories 3
Definitions of space and instance 3
Updated personas and stories for the project 3
Organisation and details of the requirements 4
Metadata schema development 4
Conclusions and next steps 5

Introduction and scope

To overcome fragmentation of training resources across Research Infrastructures (RIs) and the Science Clusters, the mTeSS-X project aims to enhance the existing ELIXIR TeSS platform — to build an aggregator for training portals like ELIXIR TeSS and PaNOSC training portals — to natively support federation. Such a fully-featured open-source multi-tenanted training platform is expected to be an innovation for building a federation of portals to:

- help break down barriers between thematic communities,



mTeSS-X: Scaling training portal federation for RIs through Multi-tenanting and Exchange

To overcome fragmentation of training resources across Research Infrastructures (RIs) and the Science Clusters, the mTeSS-X project aims to enhance the existing ELIXIR TeSS platform — to build an aggregator for training portals like ELIXIR TeSS and PaNOSC training portals — to natively support federation. Such a fully-featured open-source multi-tenanted training platform is expected to be an innovation for building a federation of portals to:

- help break down barriers between thematic communities,
- promote a more cohesive European research community,
- and promote FAIR and open training.

The project strives to support the federation of training catalogues using a multi-tenancy approach, and enabling cross-instance content exchange. This will allow RIs and their communities to maintain tailored catalogues with distinct identities, while simultaneously benefiting from a shared global pool of resources.

- View the project page on the OSCARS website

Challenge

Fragmentation of resources hampers the reuse of valuable training materials and limits the dissemination of events and learning pathways.
The main challenges of the project are i) to enable the federation of catalogues, ii) support cross-discipline training resource exchange, and iii) celebrate and maintain catalogue unique identity.

Solution

mTeSS-X will extend the TeSS platform by introducing multi-tenancy, allowing multiple communities to maintain distinct training catalogues within a shared instance, while preserving their individual identities.
It will also implement TeSS-X plugins to facilitate seamless content exchange between catalogues implemented as separate instances.

Scientific Impact

By fostering the federation of interoperable training catalogues, mTeSS-X will significantly enhance the findability, accessibility, and reuse of high-quality training resources (FAIR principles).

Research domains

Life sciences, Photon/neutron sources-based experimental research

Partners

The University of Manchester

Supporters

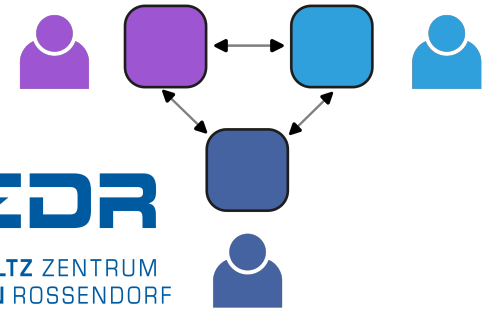
ALBA Synchrotron, Bioconductor, BioFAIR, ELIXIR Belgium, ELIXIR Europe, Ersilia, European Synchrotron Radiation Facility (ESRF), Helmholtz Metadata Collaboration (HMC) Hub Matter, OLS

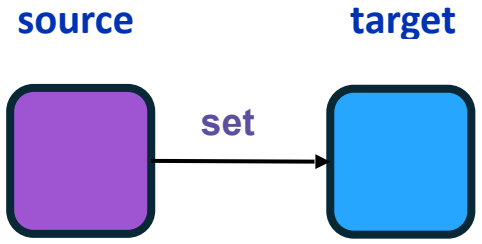
Project team members

Carole Goble (Principle Investigator, The University of Manchester), Oliver Knodel (Helmholtz-Zentrum Dresden-Rossendorf), Finn Bacall (The University of Manchester), Phil Reed (The University of Manchester), Munazah Andrabi (The University of Manchester), Maria Doyle (University of Limerick), Hedi Peterson (TARTU ULIKOOL)

TeSS-X: Exchange Between Catalogues

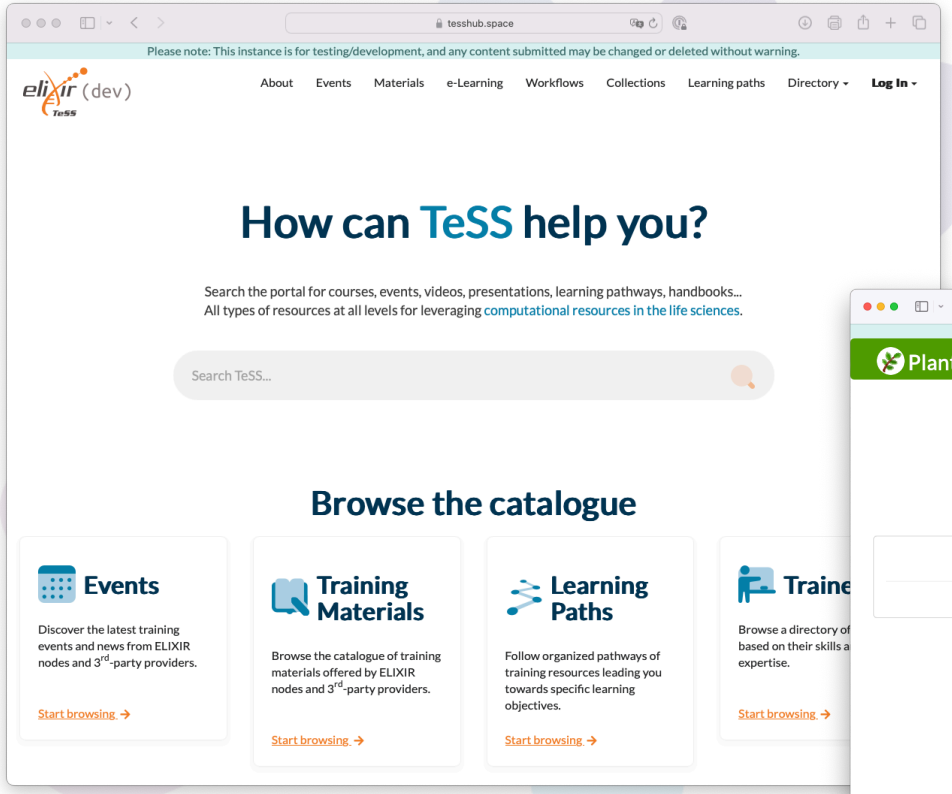
- Objective: Cross-instance sharing of materials and events
- Exchange protocol: **OAI-PMH**
  - Established standard used by a large number of catalogues for harvesting
  - Enables harvesting not only from other TeSS catalogues, but also from portals such as **B2Find or the EOSC Catalogue**
  - Provision on source catalogue by (admin or user) configurable **sets**
- Based on a standardised metadata schema from **schemas.science**
  - With a unique identifier for each material: TeSS-Instance + itemID
  - Comprehensible and transparent origin of the materials across instance borders
  - Possibility to exclude items from sharing
- Harvesting or import from source into target catalogue by (admin or user) configurable background tasks

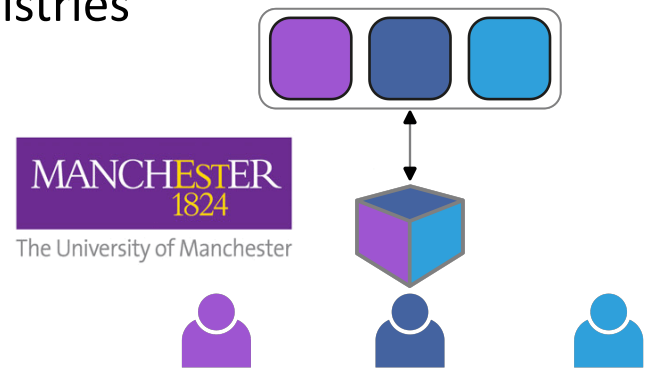




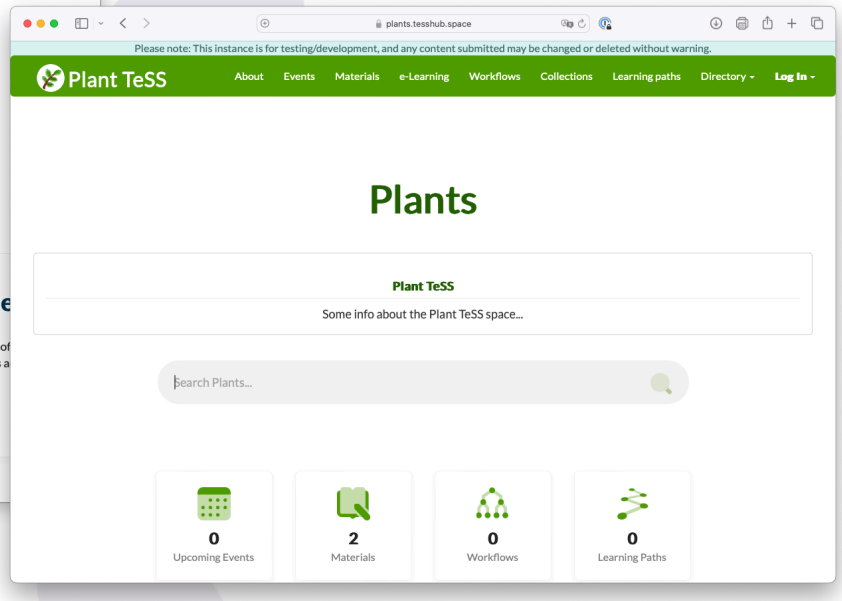
mTeSS: Multi-space catalogue: TeSSHub

- One **TeSSHub** instance (https://tesshub.space) hosts multiple TeSS registries with individual:
  - Design,
  - Logo,
  - Content,
  - Providers,
  - Users,
  - …

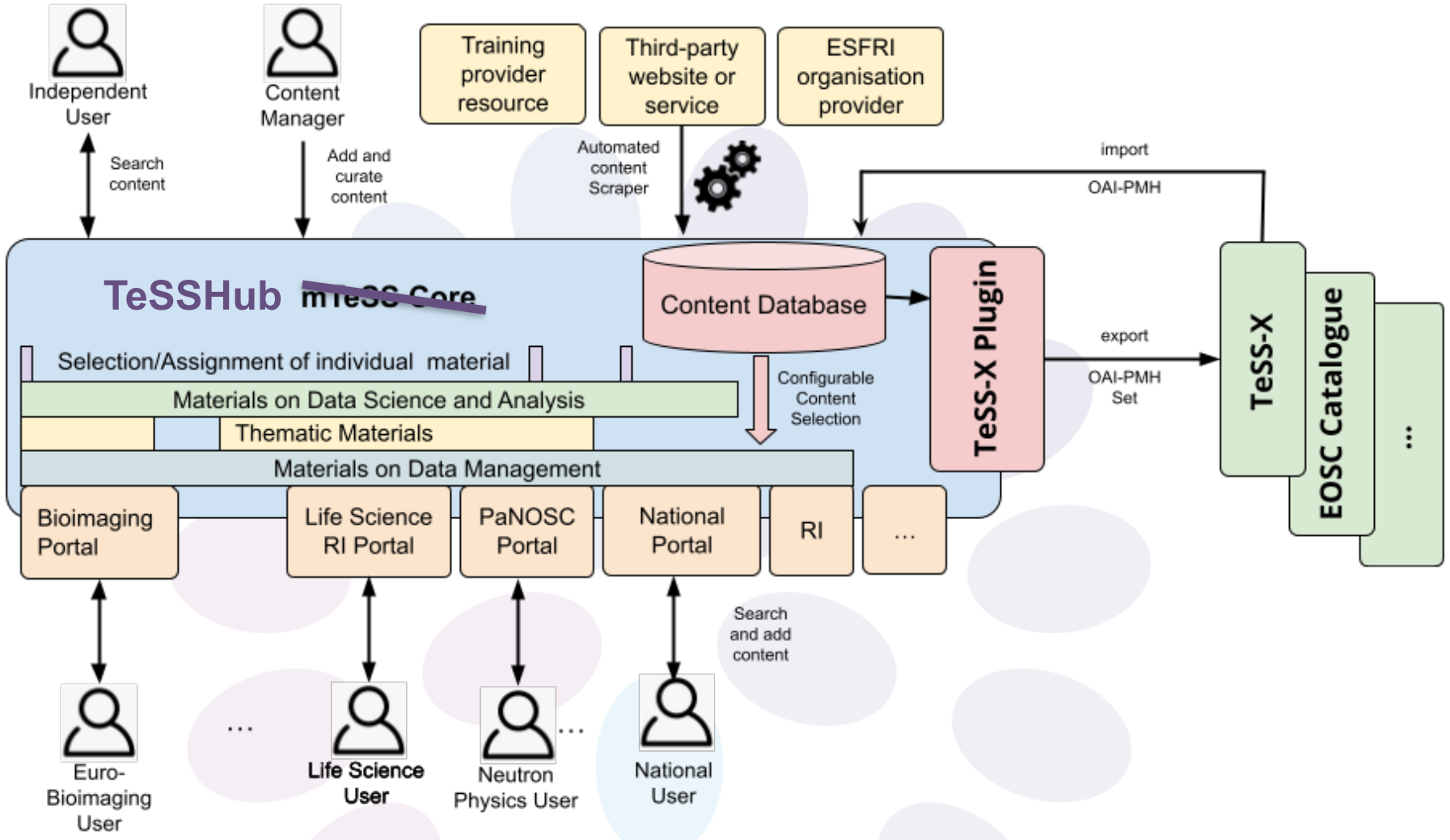




https://plants.tesshub.space/



Overall Concept

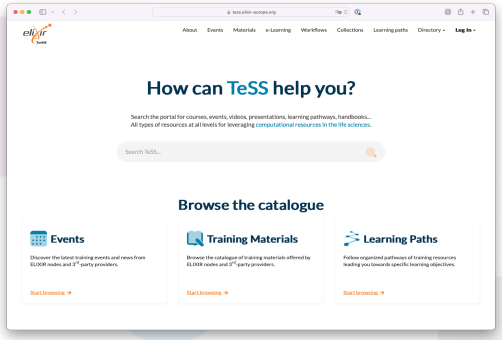


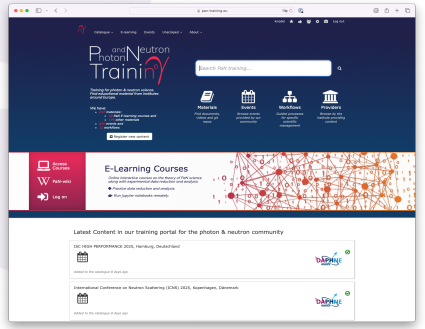
The Outcome for our Communities

- **mTeSS-X** will significantly enhance the findability, accessibility, and reuse of high-quality training resources by the federation of interoperable training catalogues.
- The project will improve the sustainability of training portals by **reducing operational duplication** and enabling resource-sharing across portals.
- It will be possible to **integrate further science clusters, communities and RIs into common catalogues** of training materials with different community-specific views.
- Training consumers will have the availability of a much higher amount of **FAIR training resources across scientific disciplines**.

Risks Within the Project

- **Competing catalogues can be an alternative**:
  With dedicated **community workshops** various communities are involved right from the beginning.
- **Lack of demand for training catalogues**:
  Rather unlikely due to **increasing demand** for high-quality training resources.
- **Lack of user uptake**:
  TeSS and PaN-Training are **already established catalogues** that have already successfully survived the start-up phases:





Project Team

The University of Manchester, UK	**Carole Goble** Finn Bacall Munazah Andrabi Phil Reed
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CERN	Kenneth Rioja

Supporters

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Thank you