



TeSS

The ELIXIR Training Registry

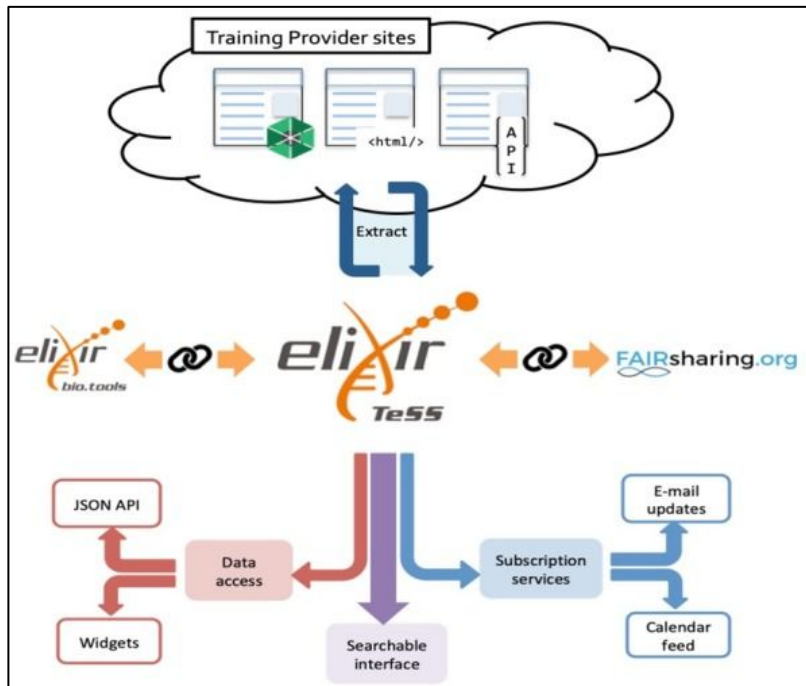
<https://tess.elixir-europe.org>

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University of Manchester



What is TeSS?



- **ELIXIR's training portal to aggregate events and training materials**
- One-stop shop for trainers and trainees to discover online information and content e.g., training materials, events and interactive tutorials
- Content is extracted from provider sites, linked with other registries and accessed through various media

TeSS Goals

- A gateway, showcase and catalogue for **training and training content providers** to share materials and event information
- A gateway and catalogue for **trainees and trainers** to find training events and resources
- An **aggregator** to promote training events and related news
- An **added value service** with curated and organised content: collections, Learning Paths



The TeSS Training Portal

<https://tess.elixir-europe.org>

How can TeSS help you?

Search the portal for courses, events, videos, presentations, learning pathways, handbooks...
All types of resources at all levels for leveraging computational resources in the life sciences.

Search TeSS...

> 100
content
providers

255
upcoming
events

14,664
past
events

Browse the catalogue



Events

Discover the latest training events and news from ELIXIR nodes and 3rd-party providers.

[Start browsing →](#)



Materials

Browse the catalogue of training materials offered by ELIXIR nodes and 3rd-party providers.

[Start browsing →](#)



Workflows

Create training workflows to visualise learning steps and link to resources specific to your training needs.

[Start browsing →](#)



Trainers

Browse a directory of trainers based on their skills and expertise.

[Start browsing →](#)

3,473
materials

Manual & Automatic Content Registration

- Content can be added to TeSS both **manually** and **automatically**
- **Manual** mode involves the user filling out a form and is perfect for one off pieces of content
- **Automatic** mode uses “scrapers” to pull the data from websites without user interaction required
 - appropriate for providers with a large collection of resources that frequently changes



Automatic Registration with Bioschemas



<https://bioschemas.org/>

- Single, unified scraper based on Bioschemas to pull data from providers websites
- **Bioschemas scraper** - crawls websites looking for Bioschemas markup conforming to **TrainingMaterial, Course & CourseInstance** profiles in Bioschemas
- Worked in close collaboration with the Bioschemas team, providers and the ELIXIR training platform for the successful rollout of the Bioschemas scraper



TeSS Supports:

Events

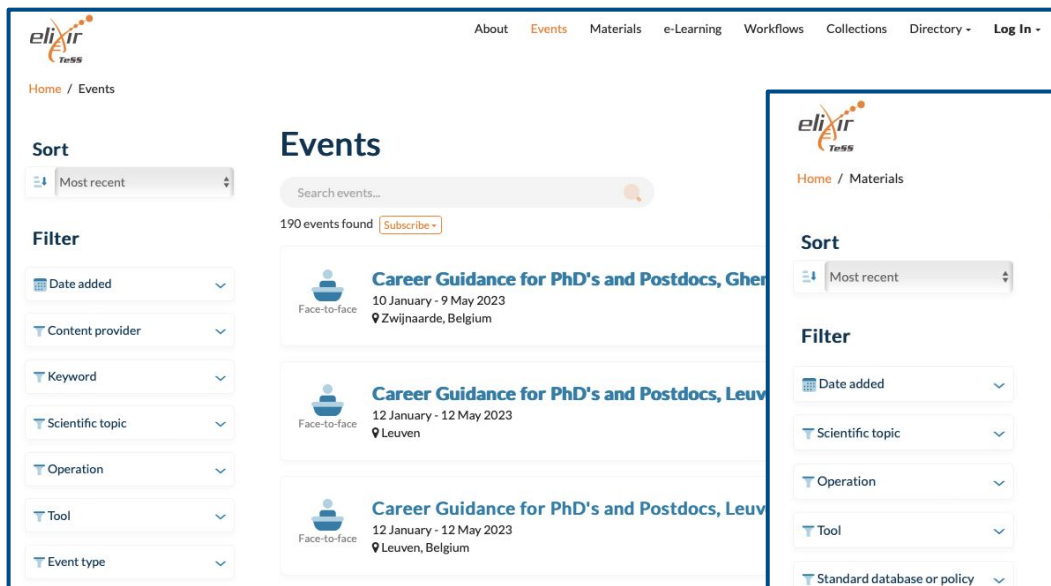
Materials

e-Learning

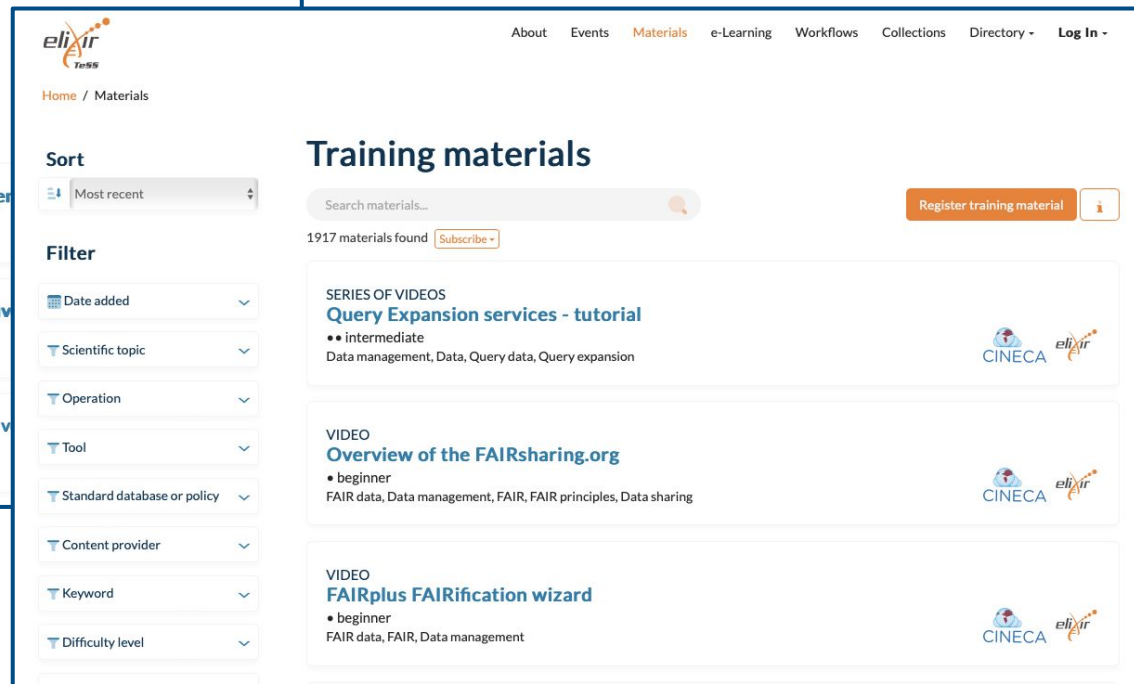
Workflows

Collections

Materials in TeSS are training resources that can be accessed at any time.. Can be a variety of different formats, including online tutorials, videos, ppt.



The screenshot shows the 'Events' page on the TeSS website. The navigation bar includes 'About', 'Events', 'Materials', 'e-Learning', 'Workflows', 'Collections', 'Directory', and 'Log In'. The page title is 'Events' and it shows '190 events found'. A search bar is present. A filter sidebar on the left includes options for 'Date added', 'Content provider', 'Keyword', 'Scientific topic', 'Operation', 'Tool', and 'Event type'. Three event listings are visible, all titled 'Career Guidance for PhD's and Postdocs, Ghent' or 'Leuven', with dates from January to May 2023 and locations in Belgium.



The screenshot shows the 'Training materials' page on the TeSS website. The navigation bar includes 'About', 'Events', 'Materials', 'e-Learning', 'Workflows', 'Collections', 'Directory', and 'Log In'. The page title is 'Training materials' and it shows '1917 materials found'. A search bar is present. A filter sidebar on the left includes options for 'Date added', 'Scientific topic', 'Operation', 'Tool', 'Standard database or policy', 'Content provider', 'Keyword', and 'Difficulty level'. Three material listings are visible, all titled 'Query Expansion services - tutorial' or 'Overview of the FAIRsharing.org' or 'FAIRplus FAIRification wizard', with difficulty levels ranging from 'beginner' to 'intermediate', and topics related to data management and FAIR principles.

Events in TeSS are face-to-face or online training opportunities that have set start and end times

TeSS Supports:

Events

Materials

e-Learning

Workflows

Collections

elixir TeSS

About Events Materials e-Learning

Home / Workflows

Workflows

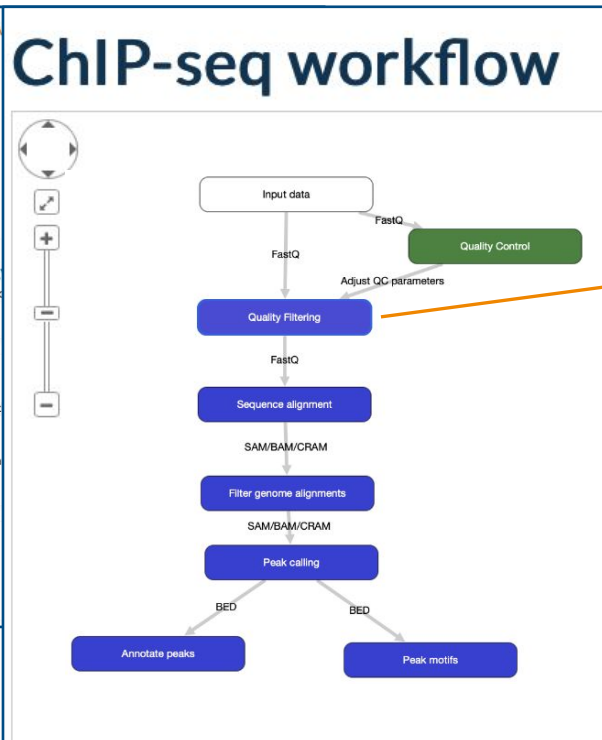
Sort: Most recent

Filter: Scientific topic, Target audience, Keyword, Licence, Difficulty level, Author, Contributor

Search workflows...

27 workflows found

- Building-interoperable-and-reusable-systems-biology**
A learning path for systems biology biocurators which will support the creation and precise hypotheses and predictions.
- Carpentree test case**
Manual example created as proof of concept for our Carpentree project, created at April 2019
The lessons referred to are:
- Programming with Python (PP): <http://swcarpentry.github.io/python-novice-inflam>
- Plotting and...
- ChIP-seq workflow**
Basic workflow for ChIP-seq analysis
Topic: ChIP-seq



Quality Filtering

Quality filtering to remove low quality reads. This is recommended to be quite lenient, to only remove bad quality read data and speed up processing afterwards

Tools

[Tool: Trimmomatic](#)

Command-line tool
A flexible read trimming tool for Illumina NGS data

[Input: FastQ](#)

[Output: FastQ](#)

[Operation: Filtering](#)

Workflows encapsulate different types of, and/or approaches to, training, at different levels of granularity, within easy-to-use visual displays

TeSS Supports:

Events

Materials

e-Learning

Workflows

Collections

The screenshot shows the 'Collections' page on the TeSS website. The navigation bar includes 'About', 'Events', 'Materials', 'e-Learning', 'Workflows', 'Collections', 'Directory', and 'Log In'. The page title is 'Collections' and it shows '9 collections found'. The collections listed are:

- Byte-sized RSE series**: Byte-sized RSE (Research Software Engineering) is a series of short interactive tutorial sessions where you can learn how you write and manage your research software in just 1 hour. They provide opportunities to gain hands-on experience, in an informal...
- ELIXIR hCNV community - collection of courses and materials.**: The ELIXIR human Copy Number Variation (hCNV) - collection of courses and materials.
- RDMbites: Data management essentials**: A collection of bites of content – short videos of less than 5 minutes – produced by ELIXIR-UK Fellows. You can navigate the essentials of data management in the life sciences. For watching the entire collection visit the [YouTube playlist]...
- RDMbites: Image data**: A collection of bites of content – short videos of less than 5 minutes – produced by ELIXIR-UK Fellows. You can navigate learn how to manage bioimage data. For watching the entire collection visit the [YouTube playlist]...

The screenshot shows the 'Collection' page for 'RDMbites | Bioimage metadata - REMBI'. The page displays 'Showing 11 materials' and lists several video items:

- RDMbites | Bioimage metadata - REMBI**: REMBI, metadata
- RDMbites | Bioimage metadata - REMBI: study**: REMBI, metadata
- RDMbites | Bioimage metadata - REMBI: study component**: metadata, REMBI
- RDMbites | Bioimage metadata - REMBI: biosample**: REMBI, biosample, metadata

Additional details shown include:

- Keywords**: Image Data, OMERO, REMBI
- Owner**: [xenia.sitja \(Xenia Perez Sitja\)](#)
- Collaborators**: [cathunter \(Catherine Hunter\)](#), [knoterla \(Krzysztof Poterłowicz\)](#), [mtera \(Robert Andrews\)](#)

Collections are related training materials/events for domain of study (e.g. Data Management) grouped together

Coming soon: Learning paths

Learning paths

Search learning paths...

Subscribe Register learning path Manage topics

3 learning paths found

- Introduction to Galaxy and Sequence analysis
2 topics 0 materials
Sequence analysis galaxy
- R Data Analysis for Life Science
7 topics 2 materials
R Statistics Data Analysis
- Single cell analysis
3 topics 0 materials
test GEN

R Data Analysis for Life Science

This learning path is designed to equip life science professionals and students with the skills to use R for data analysis. R is a powerful statistical programming language that is widely used in bioinformatics, genomics, and other fields within life sciences. This path covers the essentials of R programming, data manipulation and statistical analysis, all tailored to the specific needs of life science applications.

Keywords: R, Statistics, Data Analysis
Authors: Alexia Cardona, Loredana Le Pera
Contributors: Jessica Lindvall
Status: Under development
Prerequisites:
No prior programming experience is required, but familiarity with basic statistics is beneficial

Learning objectives:

- data manipulation
- statistical analysis

1 R Programming

- HANDS-ON TUTORIAL R introduction
beginner
R script software engineering data visualisation programming
- First Steps with SQL for Data Science
beginner
SQL programming

2 Data Manipulation

- intermediate 0 materials

Content provider

elixir

ELIXIR
building a sustainable European infrastructure for biological information, supporting life science research and its translation to medicine, agriculture, bioindustries and society. ELIXIR unites Europe's leading life science organisations in managing and safeguarding the massive amounts of data being generated every day by publicly funded research. It is a pan-European [how more](#)

nodes

elixir ITALY
elixir SWEDEN
elixir UNITED KINGDOM

Learning paths are a pathways that guide learners through a set of learning modules (courses/materials) to be undertaken progressively to acquire the desired knowledge and skills on a subject by the end of the pathway.

TeSS Features



Institutional Login

Institutional Login



Login via LS Login using your institutional or Google credentials with 1-click sign-on to.

- Favourite resources
- Add new events & materials
- Create new training workflows



Search & Filter

- 170+ Upcoming events
- 2000+ Training materials
- Apply multiple filters

Date Added	
Anytime	⌵
Content provider	
SIB Swiss Institute of Biol...	✕
Keyword	
training	✕
data management	4
data visualisation	4
experimental biology	4
genes and genomes	4
programming	4
functional genomics	3
high-performance computing	3
reproducibility	3
Show more keywords	⌵
Online	
<input type="checkbox"/> Only show online events	
City	
Streamed	✕



Events

Stay informed about upcoming events of interest

- E-mail subscription
- Import into calendar applications

Subscribe ▾

Subscribe via email

Add to calendar



API

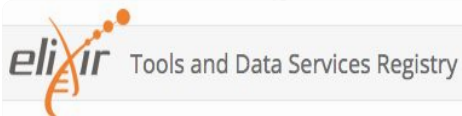
- Allows third parties to include data from TeSS in their own websites or products
- Full control of how to present that data
- Submit events and materials programmatically

TeSS Features



Link with Registries

- Training events can be linked with resources from other registries



Tools & Data services
from bio.tools



Databases, standard, & policies
from fairsharing.org



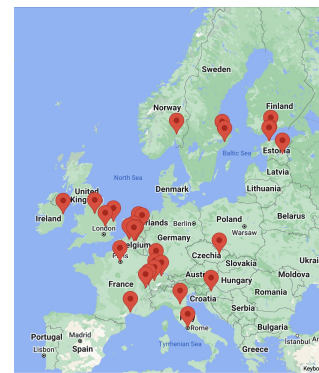
Ontological Annotation

- All training materials/ events can be annotated with EDAM ontology
- Plans to integrate terms₄fairskills in progress



Events Map

- View filtered events plotted on a map to see most accessible & relevant event



TeSS Providers

>100 Content providers on TeSS

Register content provider

What are content providers in TeSS?

Search content providers...

Title ascending

104 content providers found

Previous 1 2 3 4 Next



iAnn
iAnn is a portal for enabling collaborative announcement dissemination by providing providing...
0 upcoming events (3540 past events)



University of Cambridge
Bioinformatics Training
We offer a broad range of undergraduate and postgraduate hands-on training courses focused on...
4 training materials
23 upcoming events (550 past events)



VIB
VIB Training
11 training materials
56 upcoming events (407 past events)



software carpentry
Software Carpentry
The Software Carpentry Foundation is a non-profit organization whose members teach researchers...
70 training materials
0 upcoming events (1926 past events)



PRACE
Partnership for Advanced Computing in Europe
1 upcoming event (948 past events)



Galaxy Training
GitHub repository and its website companion containing a collection of training materials for...
515 training materials
0 upcoming events (7 past events)



EMBL-EBI
European Bioinformatics Institute (EBI)
BioSchemas aims to improve the Findability on the Web of life sciences resources such as...
22 training materials
0 upcoming events (1343 past events)



Galaxy PROJECT
Galaxy Project
There are many approaches to learning how to use Galaxy. The most popular is probably to just...
0 upcoming events (536 past events)



Royal Statistical Society
Royal Statistical Society is a world-leading organisation promoting the importance of statistics...
0 upcoming events (16 past events)



CodeRefinery
CodeRefinery acts as a hub for FAIR (Findable, Accessible, Interoperable, and Reusable) software...
0 upcoming events (2 past events)



ALEXANDER FLEMING
Biomedical Sciences Research Center "Alexander Fleming"
The Biomedical Sciences Research Center "Alexander Fleming" is a non-profit research organisation...
1 training material



NORBIS
NORBIS, the Norwegian national research school in bioinformatics, biostatistics and systems biology
NORBIS is the Norwegian research school in bioinformatics, biostatistics and systems biology, and...
0 upcoming events (1 past event)



RiskGONE
0 upcoming events (1 past event)



CRG
Centre for Genomic Regulation
The CRG is an international biomedical research institution of excellence whose mission is to...
3 training materials
0 upcoming events (2 past events)



Genomics Core KU Leuven/UZ Leuven
The Genomics Core is a facility that advances the development and implementation of novel genomic...
0 upcoming events (1 past event)



FAIRsharing
FAIRsharing is a web-based, searchable portal of three interlinked registries, containing both...
1 training material



sequera labs
Sequera Labs
Founded by the creators of [Nextflow](http://www.nextflow.io), Sequera Labs mission is to foster...
0 upcoming events (1 past event)

Register content provider

What are content providers in TeSS?

Search content providers...


Title ascending

104 content providers found

Previous 1 2 3 4 Next



UCL Engineering
Our research is shaping the future of engineering - and of society. Find out more about the...
0 upcoming events (1 past event)



The Australian Bioinformatics And Computational Biology Society (ABACBS)
The Australian Bioinformatics And Computational Biology Society (ABACBS, pron. 'abakus) is focused...
3 training materials
0 upcoming events (2 past events)



WikiPATHWAYS
WikiPathways
WikiPathways is a database of biological pathways maintained by and for the scientific community.
1 training material



UNIVERSE-HPC project
[UNIVERSE-HPC project] (https://excalibur.ac.uk/projects/universe-hpc/) is developing and piloting...
5 training materials




Software Sustainability Institute
Since 2010, the Software Sustainability Institute has facilitated the advancement of software in...
1 training material



CC Test
CC test



University College London



Workflow4metabolomics
In the context of collaboration between metabolomics (MetaboHUB French infrastructure) and...
1 training material



Bioinformatics.ca



Cloud-SPAN
Cloud-SPAN deploys high quality learning resources that will train researchers to effectively...
1 training material



University of Ljubljana, Faculty of Medicine
Faculty of Medicine is part of University of Ljubljana, the oldest and largest institution of...
1 training material



University of Bradford



Fraunhofer FIT
As a partner for digitization, Industry 4.0 and the Internet of Things, the Fraunhofer Institute...
1 training material



ExCALIBUR
[Exascale Computing Algorithms & Infrastructures Benefiting UK...]
1 training material

Widgets

- Easy to use widgets that can be embedded in an external webpage (e.g. a training provider's website) to display live TeSS content
 - Useful for training providers whose content changes frequently, or who have limited control of their website
- Can be pasted into an HTML document and customised with only a basic understanding of HTML
 - Various styles & functionality (and extendable if needed)
 - Can be scoped (e.g. to only show certain providers' content)

- [All ExCo Meeting](#)
30 January 2023
- [Symposium Beyond the Genome](#)
3 February 2023
- [Introduction to Git & GitHub](#)
8 February 2023
- [TCR analysis workshop](#)
2 May 2023

Basic example just showing a list of events

Scientific Topics	
Python script	1
City	
Cambridge	1
Country	
Belgium	x
United Kingdom	x
Switzerland	3
Target Audience	
Graduate students	1
Institutions and other external ...	1
Postdocs and Staff members f...	1

2 results found

Country: Belgium x or United Kingdom x Python x Search

Date	Name	Location
18 April 2023	Introduction to Python for Biologists (ONLINE LIVE TRAINING)	Cambridge, United Kingdom
18 September 2023	Single-cell RNA-seq analysis using Python	United Kingdom

[View your results on TeSS](#)

Complex example with search and filtering

Live examples at: https://elixirtess.github.io/TeSS_widgets/



External Integrations

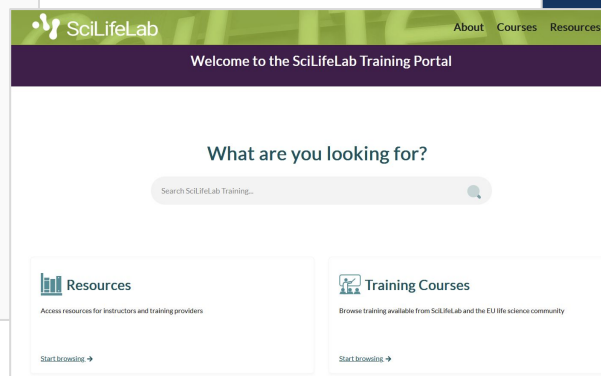
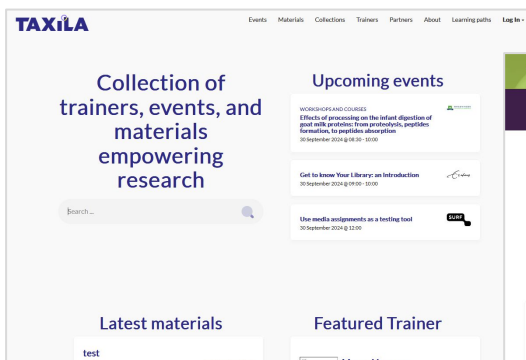
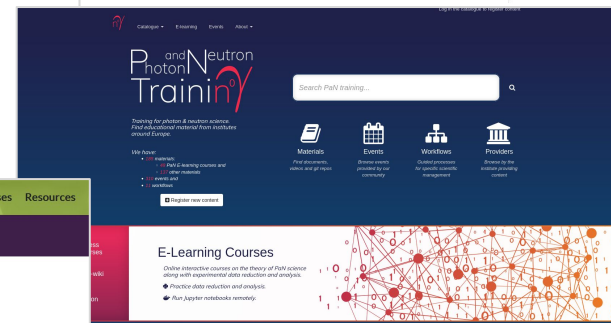
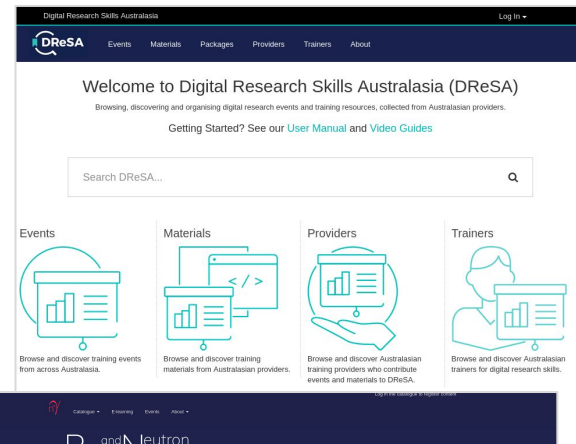
- **LS Login**
 - Allows users to log-in to TeSS using their institutional account (or Google, Apple or ORCID account)
- **EDAM**
 - The EDAM ontology is used as a vocabulary of terms to annotate events and materials
- **Bio.tools**
 - Allow users to search bio.tools and link to tool entries from training material entries in TeSS
- **FAIRsharing**
 - Allow users to search FAIRsharing and link to standards, databases and policies from training material entries in TeSS
- **Google Maps**
 - Events with location data can be viewed on a Google Map, when browsing or when viewing a specific event
 - Also used to provide autocompletion of address fields when registering events through the interface
- **Nominatim**
 - Provides geo data for events that are scraped or registered through the API, so that they can be plotted on a Google Map



TeSS Global

<https://github.com/ElixirTeSS/TeSS>

- TeSS is a reusable software platform, and is actively used by several communities outside ELIXIR:
 - Digital Research Skills Australasia (<https://dresa.org.au>)
 - Photon and Neutron (PaN) training (<https://pan-training.eu/>)
 - Taxila - Open science training in the Netherlands (Under development <https://taxila.nl>)
 - SciLifeLab training (<https://training.scilifelab.se/>)



TeSS Community

Developer Community

- Moving from single node (UK) to multinode (with EE)
- E.g. Encourage open development practice and contribution

ELIXIR Training Platform Community

- Moving from playground for training ideas to production-release model
- E.g Bioschemas markup, streamlined scrapers, collection curation

User community

- Moving from simple aggregator to curated gateway
- E.g. learning paths, collections, weeding dead content, accurate tagging



Community Interactions: TeSS Club

- Fortnightly meetings, hackathons, shared activities, open priority setting, open contribution to unite the community
 - Hard core attendee group. Focus for wider engagement.
- Slack channel on the main ELIXIR Workspace
 - `#tess_club` - [#tess_club](https://elixir-europe.slack.com) - elixir-europe.slack.com
- Join the mailing list
 - <https://lists.elixir-europe.org/mailman/listinfo/tess> elixir-europe.org
- Email us - tess-support@googlegroups.com
- More details: <https://elixirtess.github.io/about/>



TeSS Future

- mTeSS-X - Multi-tenancy/exchange between instances
- Learning paths
- UX improvements (Keyword curation)
- Customization improvements
- Multi-language support
- LLM integration (Content scraping, metadata enrichment)
- Metadata extensions



Who

University of Manchester

- Prof. Carole Goble
- Finn Bacall
- Munazah Andrabi
- Phil Reed

