Building skills for managing and exploiting data in ELIXIR and beyond - *A FAIR training journey*

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www.elixir-europe.org

Outline

- **ELIXIR**
- **The ELIXIR Training Platform**
  - Training Platform and its evolution
  - Key infrastructure elements
- **Training Platform Activities & Impact**
  - Training & Capacity Building across projects, networks and initiatives
  - Our statistics
  - TeSS
  - Scientific legacy
  - Making training materials FAIR
  - ELIXIR Training & EOSC
  - Data stewardship competences, skills & training, ELIXIR-CONVERGE
  - The global arena
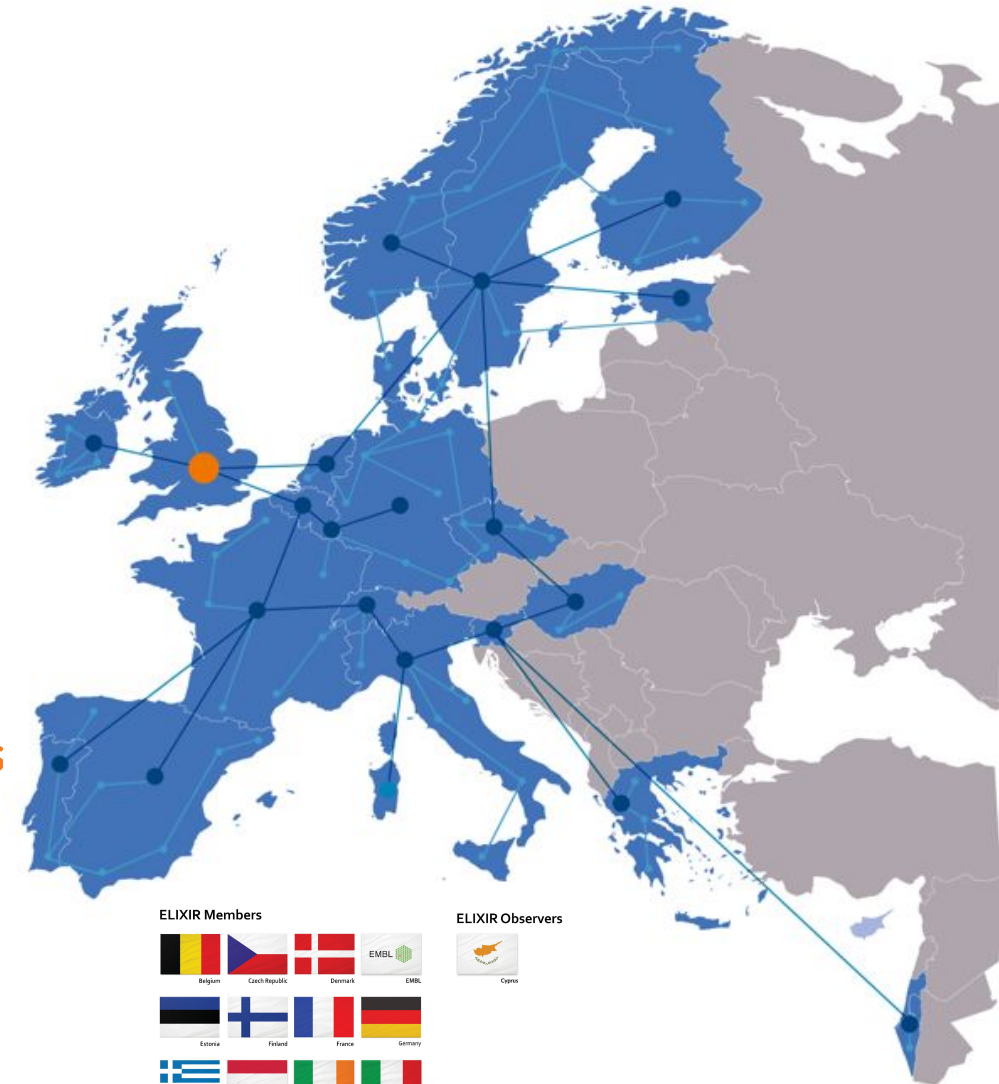
ELIXIR - data for life

ELIXIR is an intergovernmental organisation that brings

together life science resources such as

- databases
- software tools
- training materials
- data standards
- compute resources

The goal of ELIXIR is to **coordinate life science resources from acros**
Europe so they form a single infrastructure

ELIXIR in numbers

- 22 Members and 1 Observers
- ~ 180 institutes involved
- 700+ staff

ELIXIR Members

|			
Belgium	Czech Republic	Denmark	EMBL
Estonia	Finland	France	Germany
Greece	Hungary	Ireland	Italy
Luxembourg	Israel	Netherlands	Norway
Slovenia	Portugal	Spain	Sweden
Switzerland	United Kingdom		

ELIXIR Observers

Cyprus

ELIXIR Structure

ELIXIR coordinates activities through at least one of the five 'areas of activity' called Platforms:

- Compute
- Data
- Interoperability
- Tools
- Training

These Platforms are driven by eleven ELIXIR Communities which develop standards, services, and training within their life science domains.
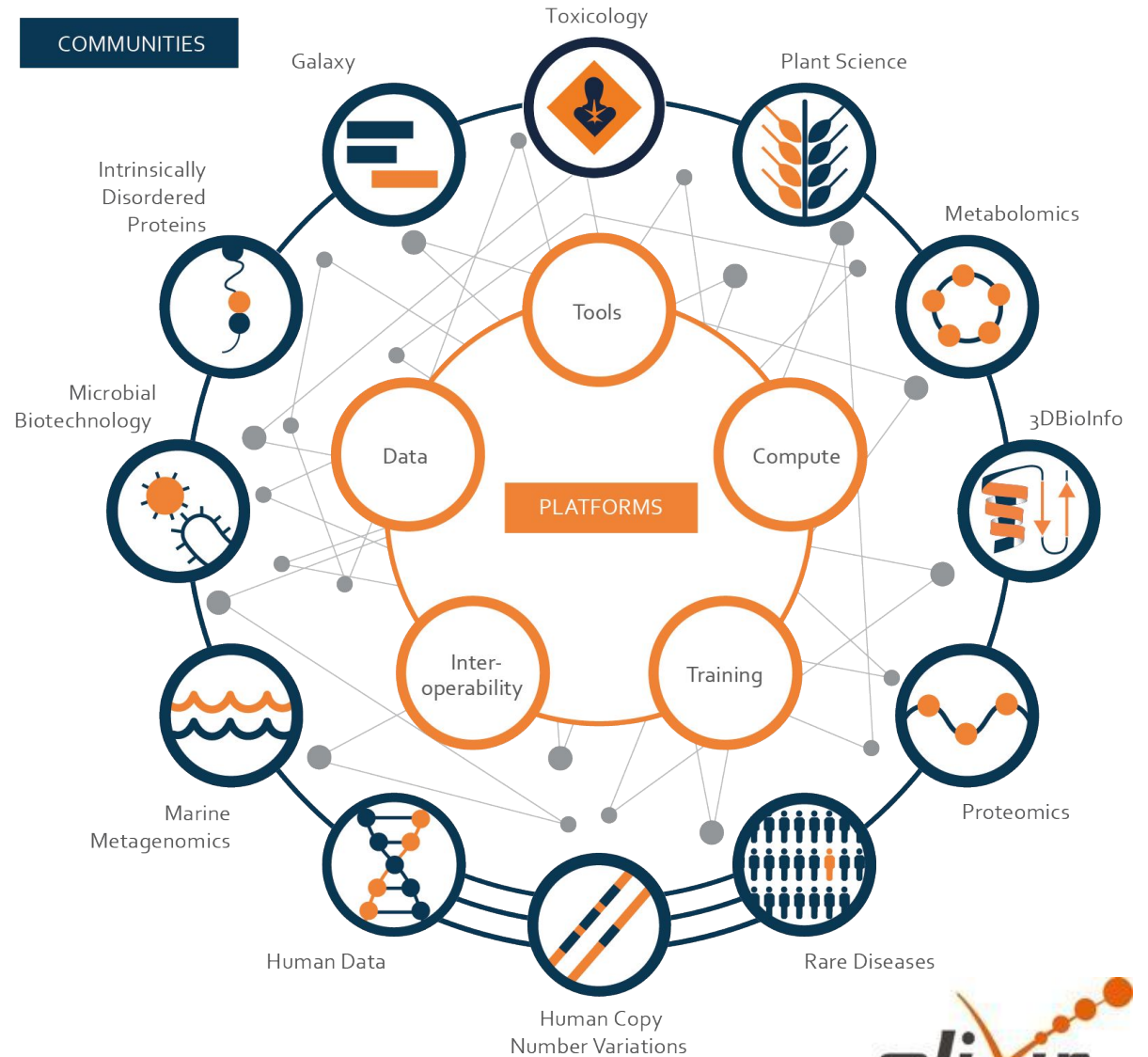
ELIXIR's Training Platform:
Professional skills for managing and exploiting data

- Establish **sustainable training infrastructure** supported and adopted by all ELIXIR Nodes

- Deliver a coherent, high-quality and impactful **ELIXIR training program**

- **Building on and complementing** training programmes in the 23 ELIXIR Nodes
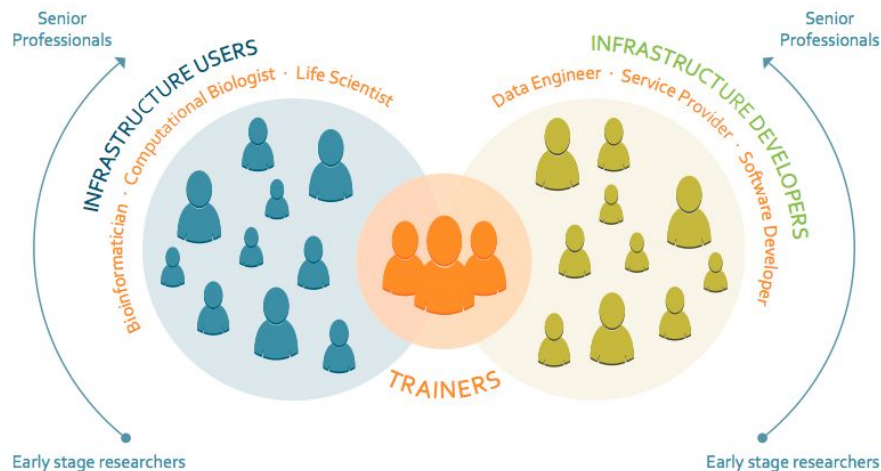
- Training Platform co-leads: Fotis Psomopolous (ELIXIR-GR), Jessica Lindvall (ELIXIR-SE), Eva Alloza (ELIXIR-ES)
- Training Platform Coordinator: Katharina Heill

ELIXIR Training anno 2022 – Key Infrastructure elements

- **ELIXIR-badged Training events** – for researchers, developers, infrastructure operators & trainers

- **Train-the-Trainer** – Programme consolidated and available for use; **ELIXIR Trainer Pool** and **train-the-trainer Pool** steadily growing.

- **ELIXIR Training portal TeSS –** Recognized in- and outside ELIXIR as a solid approach to catalogue and share training events and materials

- **ELIXIR Training Toolkit -** Training best practices, guidelines for trainers

- **Training Metrics Database (TMD) -** standardized metrics for quality & impact assessment

- **e-learning solutions -** in TeSS and in ELIXIR-SI EeLP

Training & Capacity Building across projects, networks and initiatives

In addition to ELIXIR "internally" (Platforms, Communities)

Projects

- EOSC-Life
- EJP-RD
- BY-COVID
- RITrainplus
- EOSC-Future
- EOSC4Cancer

Networks/organisations/initiatives

- EOSC
- Australian Biocommons
- GOBLET
- OECD
- Bioinformatics Education Summit
- Openaire CoP of Training Coordinators

TrP Impact - Training Metrics Database - Our statistics

Dashboard   **ELIXIR Training since Sept 2015**

ELIXIR wide summary statistics

Total number of events: **1,509** Total number of days of training: **4713** Total number of participants: **38707**

Total number of trainers: **5527** Total number of feedback responses (quality metrics) received: **20918**

Total number of events for which feedback (quality metrics) collected: **908**

Percentage of participants who provided feedback (quality metrics) for events where feedback was collected: **88.93 %**

ELIXIR Train-the-Trainer

- **398** people trained since ELIXIR started, over 32 courses (TtT)
- Course design: Considerations for trainers – a Professional Guide (ELIXIR-GOBLET)
- TtT Instructor's community

TrP Impact - the ELIXIR Training Portal TeSS

- TeSS is a **registry** to aggregate and disseminate **training events and materials**
    - October 2022: 1541 training materials, 139 upcoming events, > 8000 past events
    - also linked to the ELIXIR RDMKit

- majority scraped automatically
    - via dedicated scrapers and via Bioschemas

- > 70 training content providers (not only ELIXIR Nodes!)
    - ELIXIR Nodes & their institutes, Carpentries, Coursera, Galaxy, PRACE
    - Adoption by Australian Research Data Commons (DReSA), EGI, PaNOSC

- TeSS currently uses EDAM ontology and is in the process of implementing terms4fairskills

Welcome to TeSS: ELIXIR's Training Portal

Browsing, discovering and organising life sciences training resources, aggregated from ELIXIR nodes and 3rd-party providers.

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

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

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

Providers — Browse training providers to discover training resources they offer and follow links to their materials and courses.

ELIXIR's TeSS goes down under

A new registry for training materials, events, and trainers, has been launched in Australia. Digital Research Skills Australia (DReSA) is directly modelled on the highly successful, international ELIXIR Training e-Support System (TeSS) platform.

This launch is a direct result of cross-border conversations enabled by the ELIXIR-Australia BioCommons collaboration strategy. The need for a dedicated Australian iteration of a life science training registry was addressed and a working group was instigated involving Celia van Gelder, ELIXIR's Training Platform co-lead, and representatives from Australian research groups and infrastructures. This working group shared the details of the technical capabilities of TeSS and led to the development of DReSA which has received funding from the Pawsey Supercomputing Centre and the Australian Research Data Commons (ARDC).

TrP Impact - Scientific Legacy

A new pan-European Train-the-Trainer programme for bioinformatics: pilot results on feasibility, utility and sustainability of learning

Allegra Via[1], Teresa K Attwood[2], Pedro L Fernandes[3], Sarah L Morgan[4], Maria Victoria Schneider[5], Patricia M Palagi[6], Gabriella Rustici[7], Rochelle E Tractenberg[8]

OPINION ARTICLE

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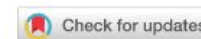
The ELIXIR-EXCELERATE Train-the-Trainer pilot programme: empower researchers to deliver high-quality training [version 1; peer review: 2 approved]

Sarah L Morgan[1], Patricia M Palagi[2*], Pedro L Fernandes[3*], Eija Koperlainen[4], Jure Dimec[5], Diana Marek[2], Lee Larcombe[6], Gabriella Rustici[7], Teresa K Attwood[8], Allegra Via[9]

OPINION ARTICLE

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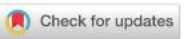
Developing a strategy for computational lab skills training through Software and Data Carpentry: Experiences from the ELIXIR Pilot action [version 1; peer review: 3 approved]

Aleksandra Pawlik[1], Celia W.G. van Gelder[2], Aleksandra Nenadic[3], Patricia M. Palagi[4], Eija Korpelainen[5], Philip Lijnzaad[6], Diana Marek[4], Susanna-Assunta Sansone[7], John Hancock[8], Carole Goble[3]

TrP Impact - Making training materials FAIR

- ELIXIR FAIR Training Focus Group
- PLoS 10 Simple rules paper (2020)
- Now working with the training community (inside & outside ELIXIR) on a lesson/handbook how to make training materials FAIR (Biohackathon 2021, 2022)

TrP Impact - Data stewardship/Data Management competences, skills & training

- **ELIXIR-CONVERGE WP2** (21 Nodes)
  - Design, build and deliver DM/DS courses, for data stewards, researchers, trainers and tool developers
  - Build expertise and training expertise in DM/DS in the Nodes
  - In alignment with national DM/DS strategies

71
Training events
from Feb 2020-Dec 2021

16
Countries
organised training
in Data
Management

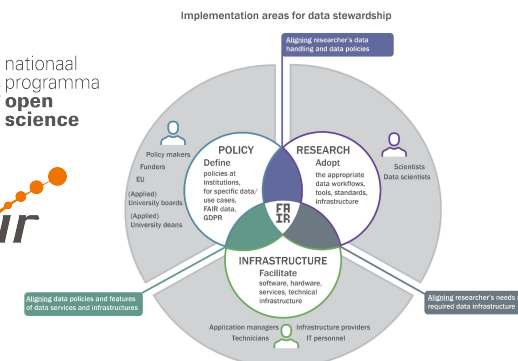**2105**
Participants

- **NPOS/ELIXIR Data Stewardship Competency Framework**
  - Three data steward roles: Policy, Research, Infrastructure

- **RDMkit**
  - Data Stewardship Roles implemented in the Your Role pages in the RDMkit
  - Links to TeSS resources

TrP Impact - ELIXIR Training & European Open Science Cloud

ELIXIR Training Platform is setting out to **become an EOSC Training Provider for the life science domain**

- 2020: Participation in **EOSC Working Groups skills & training**
  Report Digital skills for FAIR and open science

- 2021: The **ELIXIR/NPOS work on data stewardship competencies**
  mentioned explicitly as a use case in the EOSC Strategic
  Research and Innovation Agenda (SRIA)

- 2022:
  - Co-chair and/or task lead in the **3 Skills & Training related Task Forces** of the
    Advisory Group "Research careers and curricula" of the EOSC Association
  - ELIXIR TeSS will be a pilot for the EOSC Training Catalogue
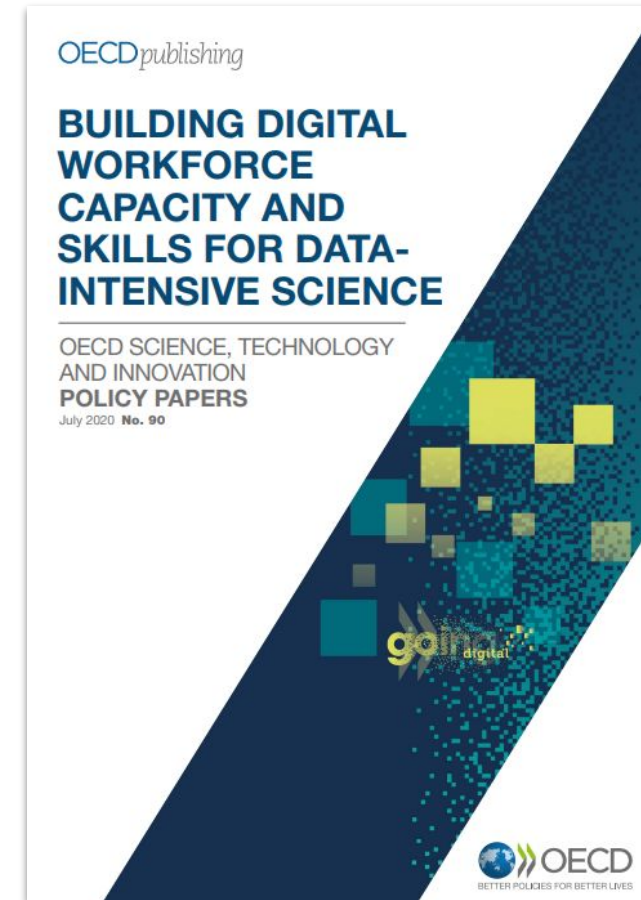
TrP Impact - The global arena

OECD report (2020)

Care - Share - Scale - Embed - Sustain

Acknowledgements

- ELIXIR Training Platform Members
  https://elixir-europe.org/platforms/training
- ELIXIR Training Coordinators Group (TrCG)
  https://elixir-europe.org/platforms/training/how-organised
- ELIXIR FAIR Training Focus Group
  https://elixir-europe.org/focus-groups/fair-training
- Current and Previous ELIXIR Training Executive Committee
- term4FAIRskills team https://terms4fairskills.github.io/
- NPOSF team
  https://www.openscience.nl/en/projects/project-f-professionalising-data-stewardship-competences-training-and-education
- CONVERGE WP2 members
  https://elixir-europe.org/about-us/how-funded/eu-projects/converge/wp2

References

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- ELIXIR Training Platform: https://elixir-europe.org/platforms/training
- ELIXIR Training Portal TeSS: https://tess.elixir-europe.org/
- ELIXIR Training Metrics Database: https://training-metrics-dev.elixir-europe.org/
- Course design: Considerations for trainers – a Professional Guide (ELIXIR-GOBLET)
- A framework to assess the quality and impact of bioinformatics training across ELIXIR https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1007976
- ELIXIR-SI EeLP https://elixir.mf.uni-lj.si/
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- EOSC Working Group Report Digital skills ofr FAIR and open science https://op.europa.eu/en/publication-detail/-/publication/af7f7807-6ce1-11eb-aeb5-01aa75ed71a1/language-en/format-PDF/source-190694287%20%20.
- SRIA https://www.eosc.eu/eosc-sria-v10-15-february-2021
- Advisory Group "Research careers and curricula" of the EOSC Association: https://www.eosc.eu/research-careers-curricula
- Towards FAIR data steward as profession for the life sciences" https://doi.org/10.5281/zenodo.3471707
- Professionalising data stewardship in the Netherlands. Competences, training and education. *Dutch roadmap towards national implementation of FAIR data stewardship* https://doi.org/10.5281/zenodo.4320504
- OECD report Building digital workforce capacity and skills for data-intensive science https://www.oecd-ilibrary.org/science-and-technology/building-digital-workforce-capacity-and-skills-for-data-intensive-science_e08aa3bb-en
- GOBLET-ELIXIR: Course design: Considerations for trainers – a Professional Guide https://f1000research.com/documents/9-1377
- NPOS/ELIXIR Data Stewardship Competency Framework in EBI Knowledge Hub:https://competency.ebi.ac.uk/framework/datasteward/1.0
- Digital Research Skills Australasia (dress.org.au)
- Training portal for the photon & neutron community: https://pan-training.hzdr.de/
- Training Catalogue of EGI - https://catalogue.hopto.org/