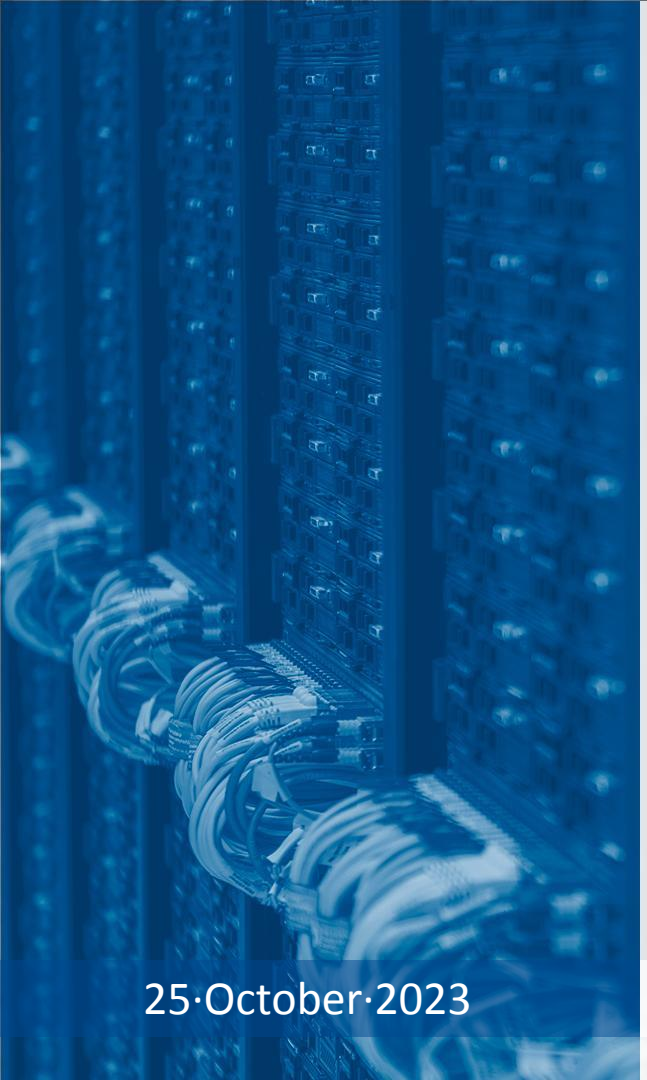


Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Open Sciences principles for Life Sciences: is it everything about data?

25·October·2023

Salvador Capella-Gutierrez, PhD. Team lead

About me

2008 - Computer Science Engineer by the Technical University of Valencia (UPV)

2010 - MSc in Bioinformatics by the Pompeu Fabra University (UPF)

2012 - PhD in Biomedical Health Sciences - Bioinformatics - by the Pompeu Fabra University (UPF) & Center for Genomics Regulation (CRG)

2013 - Postdoctoral fellow on a project funded by the Qatar National Research Foundation.

2016 - Unit lead at the Spanish National Cancer Research Institute (CNIO), responsible for the coordination of the Spanish National Bioinformatics Institute (INB/ELIXIR-ES)

2017 - Team Lead at the Barcelona Supercomputing Center (BSC), responsible for the coordination of the Spanish National Bioinformatics Institute (INB/ELIXIR-ES)

2018 - Deputy Head of Node of ELIXIR-ES

2020 - ELIXIR Tools platform Executive Committee (ExCo) member.

…

Mission of BSC Scientific Departments

Computer Sciences

To influence the way machines are built, programmed and used: programming models, performance tools, Big Data, Artificial Intelligence , computer architecture, energy efficiency

Earth Sciences

To develop and implement global and regional state-of-the-art models for short-term air quality forecast and long-term climate applications

Life Sciences

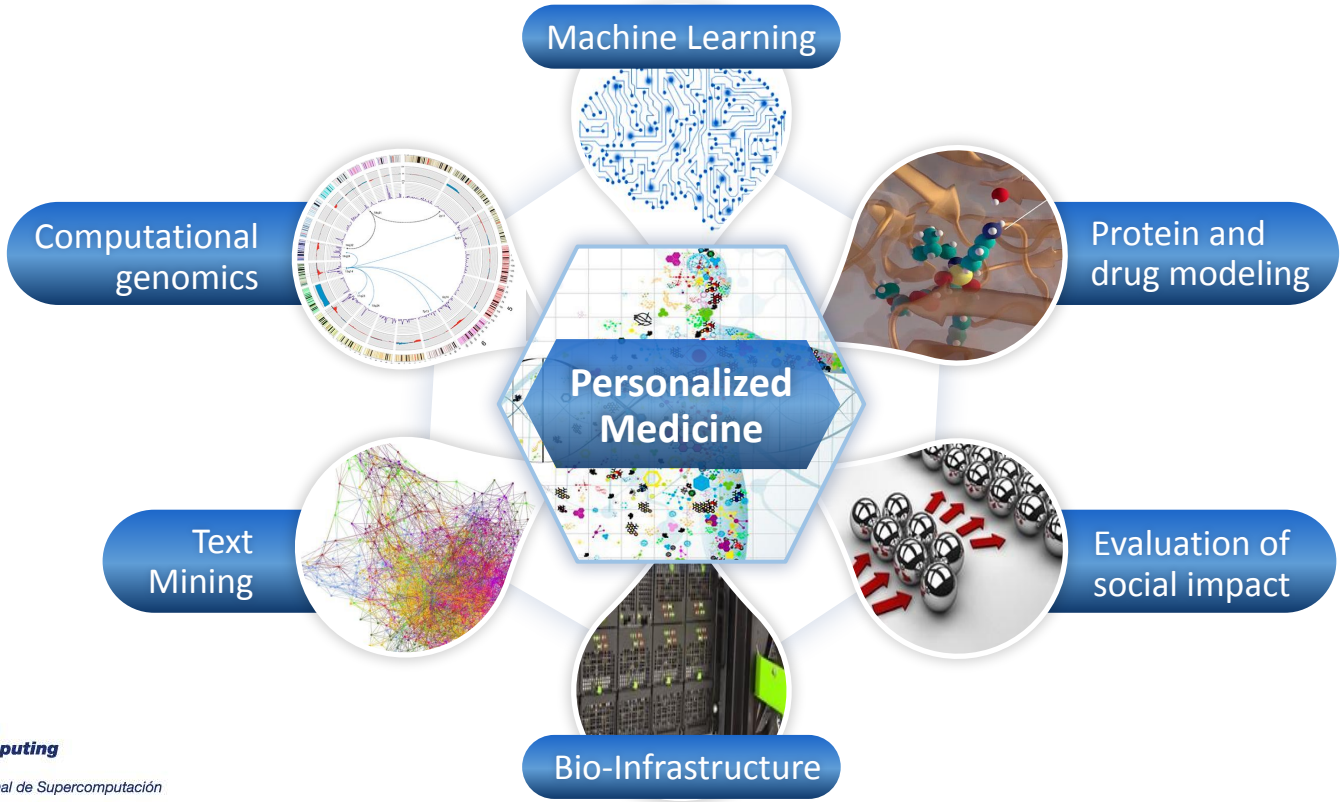
To understand living organisms by means of theoretical and computational methods (molecular modeling, genomics, proteomics)

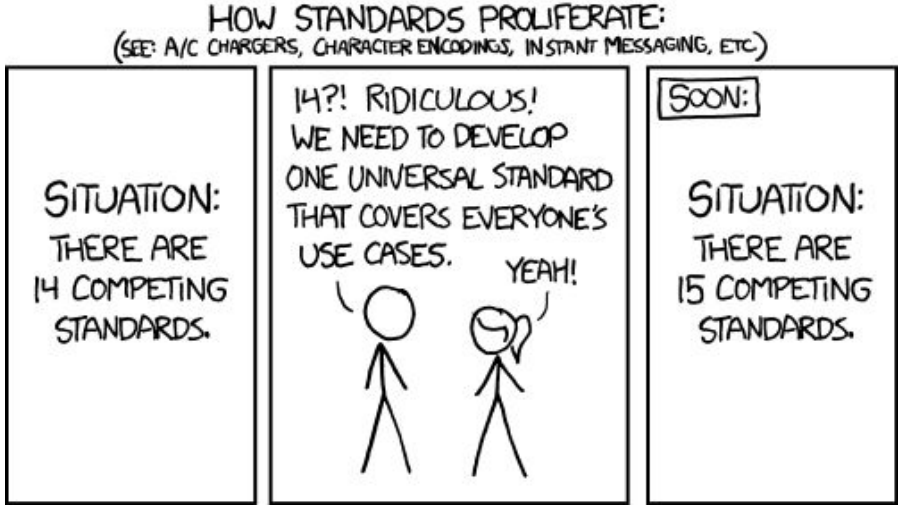
CASE

To develop scientific and engineering software to efficiently exploit super-computing capabilities (biomedical, geophysics, atmospheric, energy, social and economic simulations)

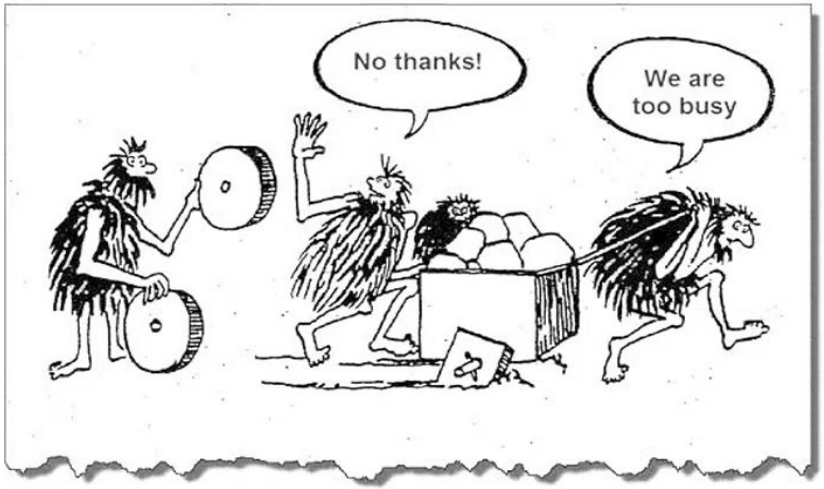
Life Sciences

Understanding living organisms by theoretical and computational methods





https://xkcd.com/927/

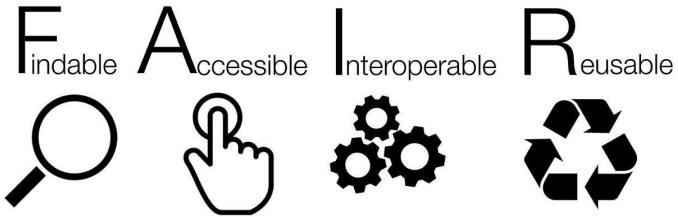


https://www.creativityatwork.com/busy-innovate/

Only data?

Only data?

Only data?



Only data?

Findable Accessible Interoperable Reusable

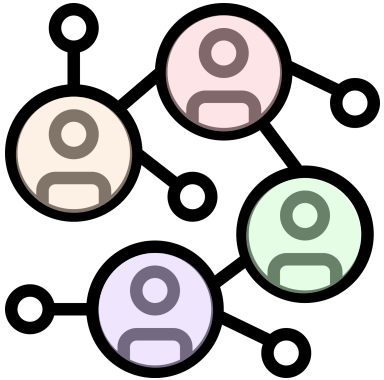
Instituto de Salud Carlos III

INB Spanish National Bioinformatics Institute

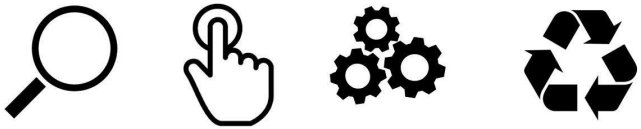
BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

elixir SPAIN

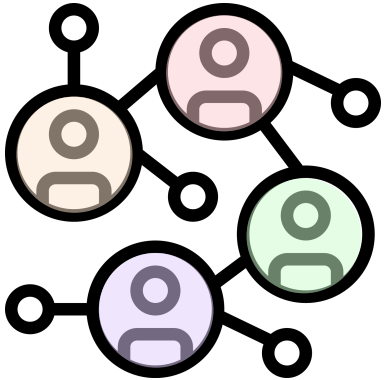
Only data?



Findable Accessible Interoperable Reusable



Only data?

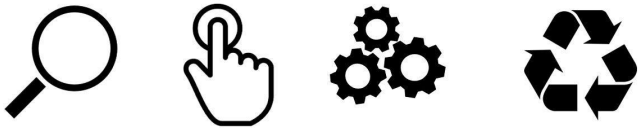


Data

People

Technology

Findable Accessible Interoperable Reusable



Standards

If you want to go

FAST

go alone.

If you want to go

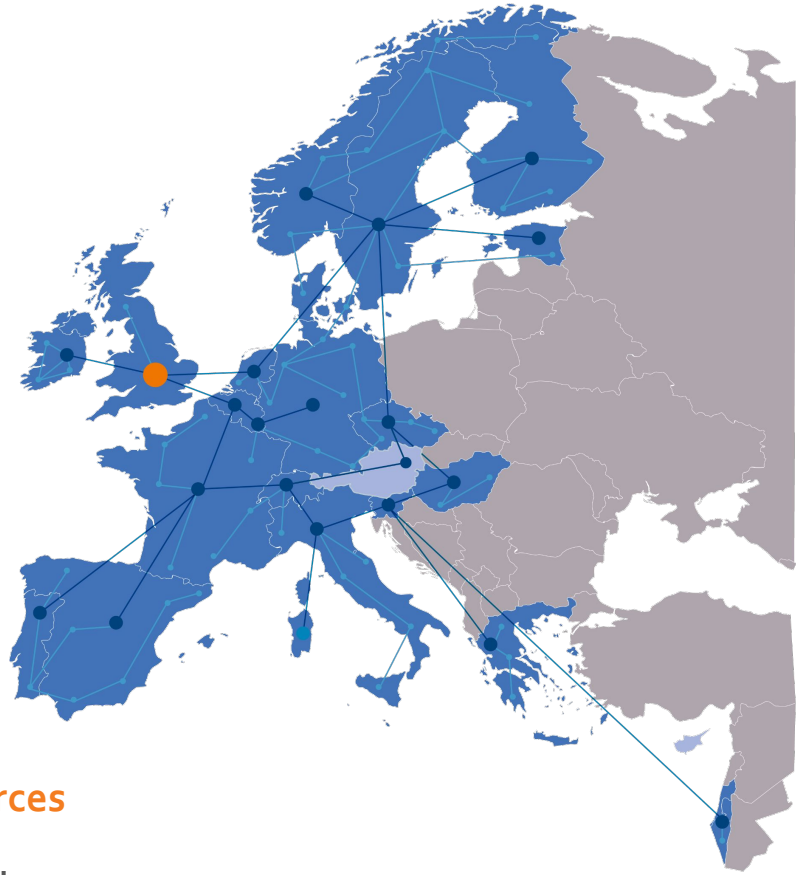
FAR

go together.

ELIXIR Europe

ELIXIR is an intergovernmental organisation that brings together life science resources such as

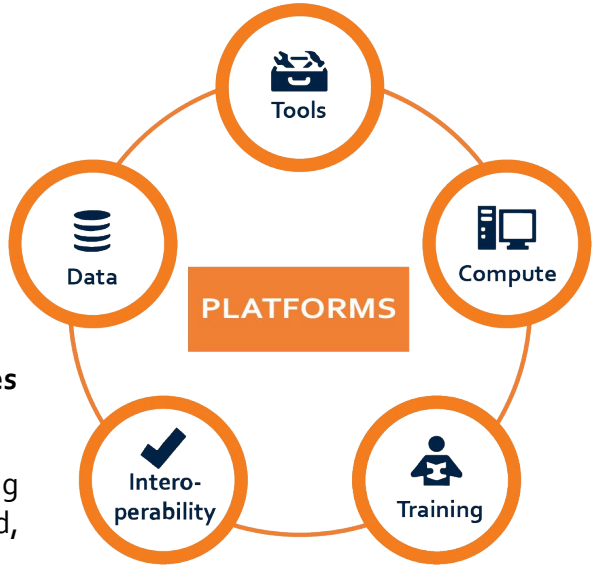
- databases
- software tools
- training resources
- interoperability resources
- compute resources
- data management support



The goal of ELIXIR is to **coordinate bioinformatics resources from across Europe so they form a single infrastructure**.

ELIXIR Platforms

Platforms bring together experts from Nodes to develop ELIXIR's technical vision and coordinate activities in defined technical areas. There are five Platforms:



Compute — Builds and integrates **cloud, compute, storage and access services** for the life-science research community

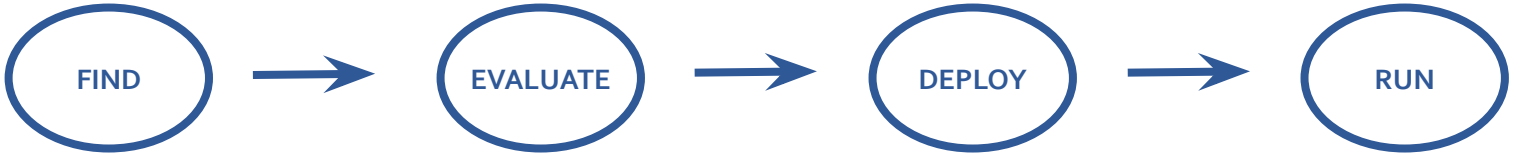
Data — Drives the use, re-use and value of life science data by providing **robust, long-term sustainable data resources** within a coordinated, scalable and connected data ecosystem

Tools — Helps communities **find, register and benchmark** software tools; maintains information standards and produces, adopts and promotes **best practices for tool development**

Interoperability — Helps people and machines to **discover, access, integrate and analyse biological data**; encourages the life science community to adopt **standardised file formats, metadata & vocabularies**

Training — Strengthens **national training** programmes; grows bioinformatics and research data management **training capacity and competence across Europe**; empowers researchers to use ELIXIR's resources

ELIXIR Tools Platform



bio.tools registry
WorkflowHub registry

OpenEBench

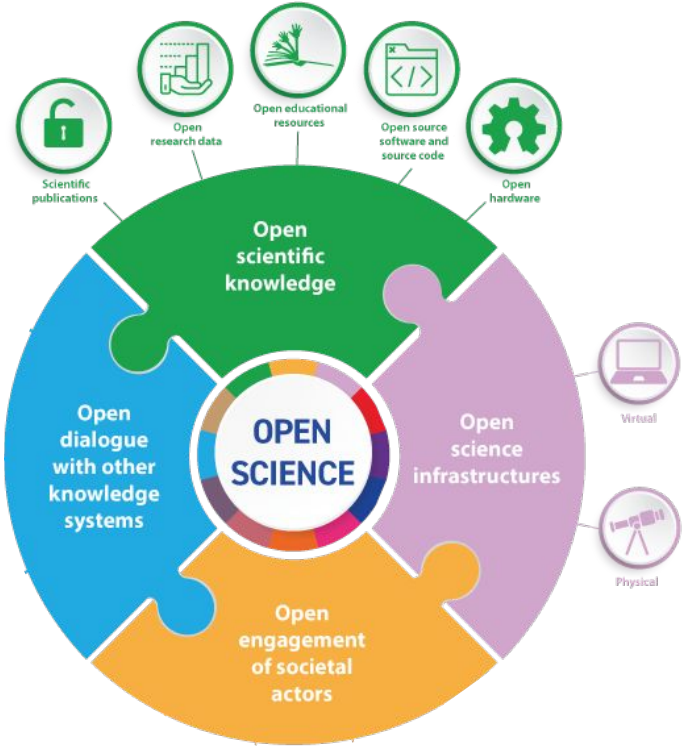
BioConda
Biocontainers

Galaxy

PROMOTE

Software best practices

Final reflections



Understanding open science. UNESCO. https://doi.org/10.54677/UTCD9302

https://inb-elixir.es http://elixir-europe.org

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MINISTERIO DE CIENCIA E INNOVACIÓN

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

ISC Instituto de Salud Carlos III

INB Spanish National Bioinformatics Institute

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