



ELIXIR Europe

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CORBEL, INNOVATION BY OPEN ACCESS, June 2017

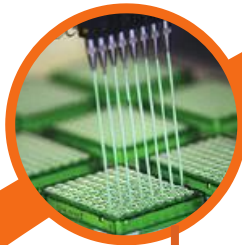


www.elixir-europe.org

ELIXIR connects national bioinformatics centres and EMBL-EBI into a sustainable European infrastructure for biological research data



environment



bioindustries



agriculture



medicine

ELIXIR underpins life science research – across academia and industry



ELIXIR Members



Belgium



Czech Republic



Denmark



EMBL



Estonia



Finland



France



Germany



Hungary



Ireland



Italy



Israel



Luxembourg



Netherlands



Norway



Portugal



Slovenia



Spain



Sweden



Switzerland



United Kingdom

ELIXIR Observers



Greece



ELIXIR in numbers

- ~ 180 institutes involved
- 600+ staff
- 11 Implementation Studies currently in operation
- 10 papers in ELIXIR F1000R channel
- 223 live events in TeSS
- 200+ companies attended Innovation and SME programme

Making Babies in the 21st Century
03 Jul - 14 Aug 2017

Efficient Parallel Programming with GASPI @ HLRS
3 - 4 Jul 2017

Foundation skills for HPC in computational biomolecular research - BioExcel Summer School
3 - 7 Jul 2017
Cambridge, GB

Cloud Computing in Bioinformat-

Foundation skills for HPC in computational biomolecular re-



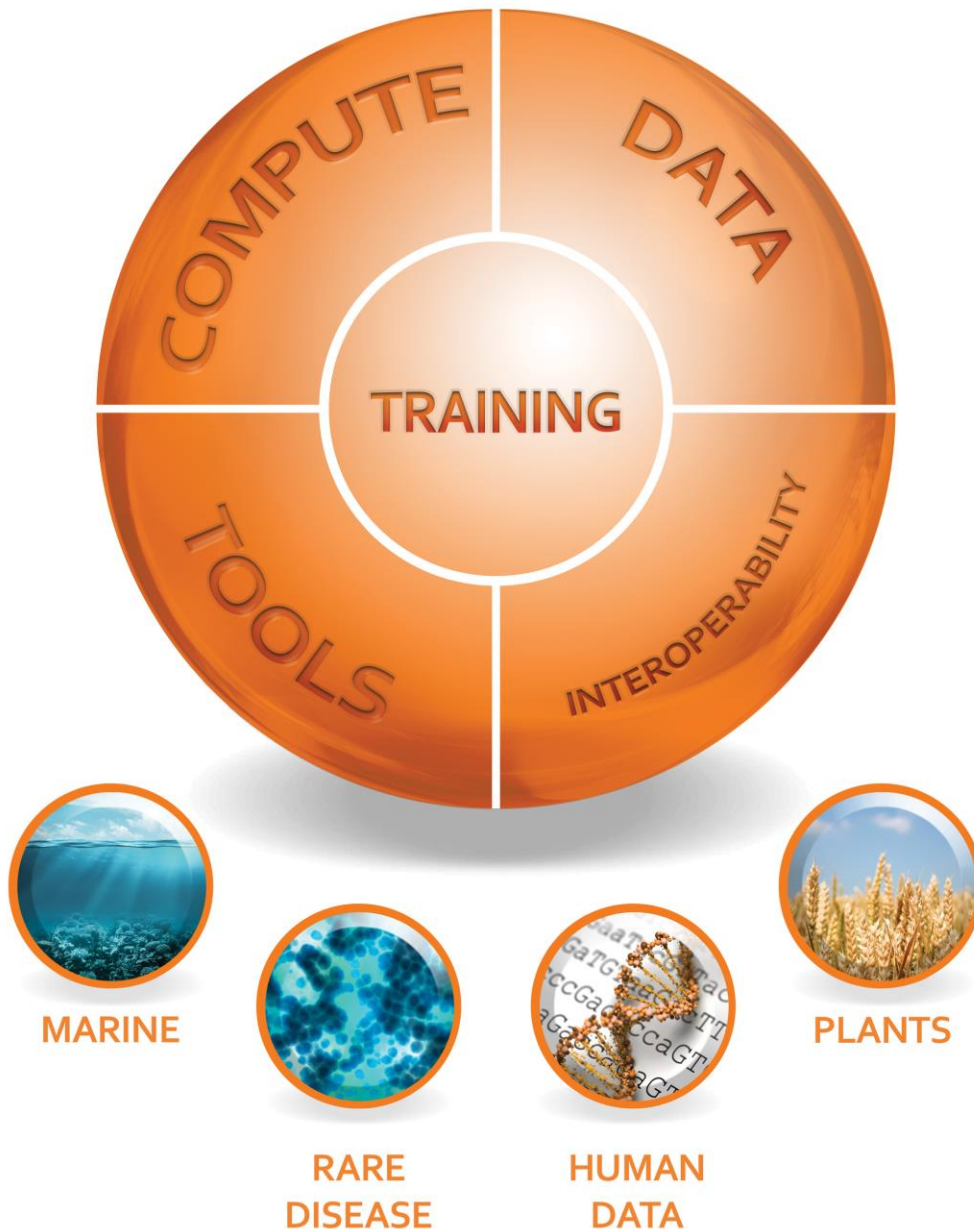
REVISED Identifying ELIXIR Core Data Resources [version 2; referees: 2 approved]

Christine Durinx, [Jo McEntyre](#), Ron Appel, Rolf Apweiler, Mary Barlow, Niklas Blomberg, Chuck Cook, Elisabeth Gasteiger, Jee-Hyub Kim, Rodrigo Lopez, Nicole Redaschi, Heinz Stockinger, Daniel Teixeira, [Alfonso Valencia](#)

ELIXIR Structure

Five technical platforms for
Data, Tools, Interoperability,
Compute and Training

Complemented by four Use
Cases for marine meta-
genomics, rare diseases,
human data and plants
sciences





Supporting industry



www.elixir-europe.org



ELIXIR Industry Advisory Committee



Public reports available at: https://www.elixir-europe.org/industry/understanding_industrys_needs



ELIXIR Industry strategy

1

Increase industry usage of ELIXIR resources and ensure that name is synonymous with quality

2

Enable Open innovation by Europe's SMEs

3

Build effective partnerships with key industry stakeholders and initiatives

4

Ensure effective communication between industry and ELIXIR

5

Support the bioinformatics training needs of industry



ELIXIR Industry strategy

April 2016

Background

Industry usage of many key bioinformatics resources within Europe is high. Users of ELIXIR services range from large multinationals to micro-SMEs and cover fields including pharma, biotech, food and agriculture and blue biotech. These industries are major employers globally, generating wealth and supporting transformation to a knowledge-based economy.

The biomedical sector is worth €16 billion annually. The pharmaceutical industry alone directly employs over 700,000 people in the EU, generating three to four times more downstream jobs and contributing to a trade surplus of €80 billion. As a sector, the bioinformatics industry is forecast to be worth \$13 billion by 2020. Europe is a rich breeding ground for biotech start-ups, with 1,799 healthcare biotech companies operating in Europe in 2014. The healthcare sector as a whole accounts for 8% of the total European workforce and for 10% of the EU's GDP¹.

In the food sector, the EU was the top world exporter of food and drink products in 2014, exporting \$67 billion (20.5% of world total) and importing \$6.9 billion (10.1%). Fish production in aquaculture is increasing on average 8.8% per annum globally, driven by technological developments and better molecular understanding of species and parasites.

Industry itself sees added value in ELIXIR in terms of reduced costs and decreased duplication of effort, access to common

data and interface standards and much better public-private data integration. Many of these requirements are addressed through the general implementation of ELIXIR and are relevant for all users in industry and academia.

Given the number of research-intensive companies in Europe, and the increasing reliance within industrial R&D upon computational methods, stimulating innovation and supporting industry is a key priority for ELIXIR. Indeed, ELIXIR's Scientific Programme for the period 2014-2018 includes a Strategic Objective to "Support Innovation in 'big-data biology'".

The range of industry sectors that ELIXIR has the potential to support is also broad - from publishers to SMEs to HPC and cloud providers. ELIXIR's Industry Strategy aims therefore to be comprehensive in its scope, yet focused and tailored enough to address the needs of each industry sector.

Understanding Industry's needs

In order to understand the needs of industry and ensure that proposed activities are fit for purpose, ELIXIR's Industry Advisory Committee² provides high-level strategic advice on the activities included in this strategy. The ELIXIR Industry Advisory Committee's recommendation reports^{3,4}, map closely against the activities within this strategy.

ELIXIR's Industry Strategy responds to input from several other reports and analyses of industry needs. The ELIXIR Preparatory Phase Industry report⁵, and a report entitled "Developing ELIXIR Interactions with Industry", commissioned in 2013 and carried out by ConnectedDiscovery, clearly articulates a number of key value drivers for

¹ Chakma et al. *Nature*, 2014, doi:10.1038/nature130181
² European Federation of Pharmaceutical Industries and Associations: <http://www.efpi.eu/en/efpi/efpi>

³ Bioinformatics Market by Sector (Molecular Medicine, Agriculture, Forensic, Animal Research & Gene Therapy), Segment (Sequencing Platforms, Knowledge Management & Data Analysis & Application Genomics, Proteomics & Metabolomics) - Global Forecast to 2020* <http://www.marketresearch.com/press-release/bioinformatics-market-forecasting-to-2020>

⁴ E.C. Investing in Health 2015 http://ec.europa.eu/health/investing_in_health_en

⁵ FoodDNAEurope, 2014 http://www.fooddnaeurope.eu/globalisation_data/europe/2014-2015/industry_and_the_food_and_drug.pdf

⁶ Sustainable aquaculture, forestry and fisheries in the bioeconomy http://ec.europa.eu/economy_finance/pdf/economy_fisheries_en.pdf

⁷ ELIXIR Preparatory Phase Industry Report <http://elixir-europe.org/elixir-preparatory-phase/industry-report>

⁸ ELIXIR Industry Strategy

² ELIXIR Scientific Programme 2014-2018 http://www.elixir-europe.org/sites/default/files/2014/05/elixir_scientific_programme_2014-2018.pdf

³ ELIXIR IAC membership <http://www.elixir-europe.org/elixir-iac-membership>

⁴ ELIXIR IAC Summary Report 2014 <http://www.elixir-europe.org/elixir-iac-summary-report-2014>

⁵ ELIXIR IAC Summary Report 2015 <http://www.elixir-europe.org/elixir-iac-summary-report-2015>

⁶ ELIXIR Preparatory Phase Industry Report <http://elixir-europe.org/elixir-preparatory-phase/industry-report>



Demonstrating impact



2010-2015:

30 771 patents used bioinformatics repositories to identify genes, enzymes, SNPs, ...



Vaccines



Pharmaceuticals



Beauty care



Industry enzymes

*Bousfield D, McEntyre J, et al. *Patterns of database citation in articles and patents indicate long-term scientific and industry value of biological data resources*. F1000Research 2016



2) Support Europe's SMEs and facilitate ELIXIR Nodes in engaging local users

- **Expand the reach and impact of ELIXIR's Innovation and SME programme**
- **Build lasting partnerships with SME industry initiatives, bodies and associations**
- **Support capacity building across ELIXIR Nodes on industry engagement**
 - Paper planned for 2017 on ELIXIR Node industry engagement and collaboration models



ELIXIR Innovation and SME programme: 2017/2018

Previous:

- Finland – Helsinki 27-28th February: Genomics and Health - Global resources for local Innovation (in collaboration with GA4GH)
- Spain - Barcelona 6-7th June: Genomics, bioinformatics and health - Public-private partnerships in open data (in collaboration with IMI and BioCat)



Upcoming:

- Belgium – Brussels 9-10th October: Microbiome and smart food (in collaboration with Flanders government)
- France - Paris 14-15th November: Rare diseases and personalized medicine
- Cambridge – UK 25-25th January 2018: Discovery of data, tools and training (in collaboration with OneNucleus)



ELIXIR INNOVATION AND SME FORUM ON FOOD AND NUTRITION DATA

- **9-10 Oct 2017, Brussels**
- Programme:
 - Present “interactively” free data resources and services available through ELIXIR
 - Showcase examples of innovative companies already using public data in their businesses
 - Integration of microbiome data
 - More information:

https://www.elixir-belgium.org/events/SMEforum_9101



Personalised nutrition for better health - targeting the microbiome

Evenement

dinsdag 10 oktober 2017 - 12:50 tot woensdag 11 oktober 2017 - 12:30

Save-the-date
10 & 11 October 2017

PERSONALISED NUTRITION FOR BETTER HEALTH - TARGETING THE MICROBIOME -

International workshop
KVS - Brussels City Theater

OECD
BETTER POLICIES FOR BETTER LIVES

DEPARTMENT OF
ECONOMY
SCIENCE &
INNOVATION

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Health systems are under increasing pressure due to the increasing incidence of complex chronic diseases. These are often linked to changing demographics and modified dietary patterns. Understanding the functioning of the human microbiome is opening new ways of treating many of such diseases as the microbiome has recently been described as a key biological interface between human genetics, and lifestyle and environmental conditions.

3) Build effective partnerships with key industry stakeholder initiatives

- Discussions around long-term storage of IMI data (**ELIXIR OncoTrack collaboration**)



- Work with Industry Clusters
 - European
 - Regional



flanders.bio





Thanks!



www.elixir-europe.org/excelerate

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