



EIROforum
serving european science

The EIROforum and its Innovation Activities: Collaboration Opportunities with ERICs

Helmut Schober
Chairman, EIROforum
Director, ILL



EIROforum: Who we are

European Intergovernmental Research Organisations forum

- Charter signed in 2002 with currently eight members

Overarching goal:

Help its member organisations reaching their full potential within the ERA

- Learn from each other
- Collectively present shared interests (public, stake and shareholders)
- Co-ordinate activities, including technology development and technology transfer

Structure: EIROforum Council, Coordination Group and Thematic and Ad Hoc working Group



EIROforum: What we have in common

World-class Research Infrastructures



CERN



Eu-XFEL



ESO



ESRF&ILL

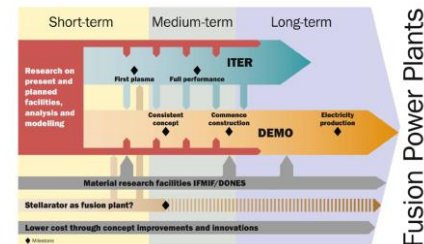


EMBL



ESA

EUROfusion

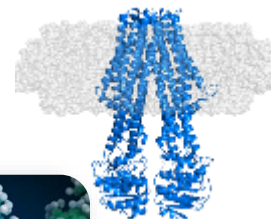
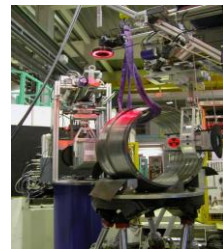
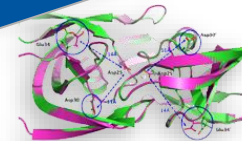
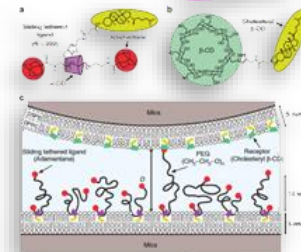
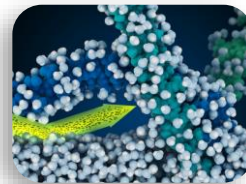
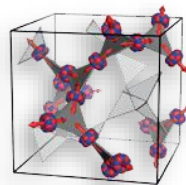
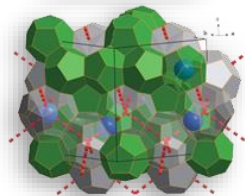
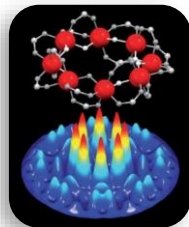
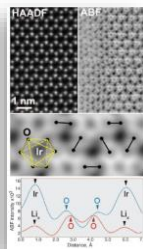
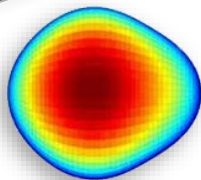
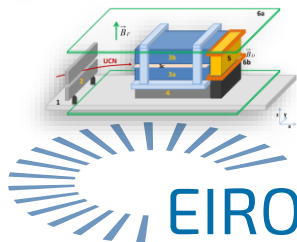


EIROforum: What we have in common

A strong commitment to serving society

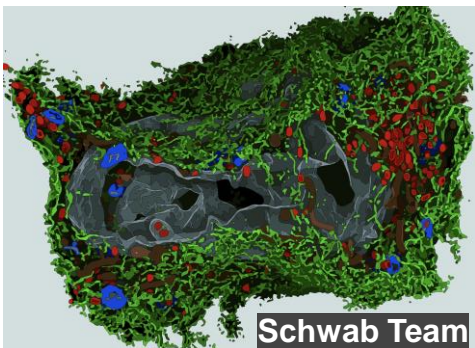
The research portfolio of the ILL as an example

From the origin of the universe to the origins of life



An example of Socio- Economic Impact: Fighting Covid-19

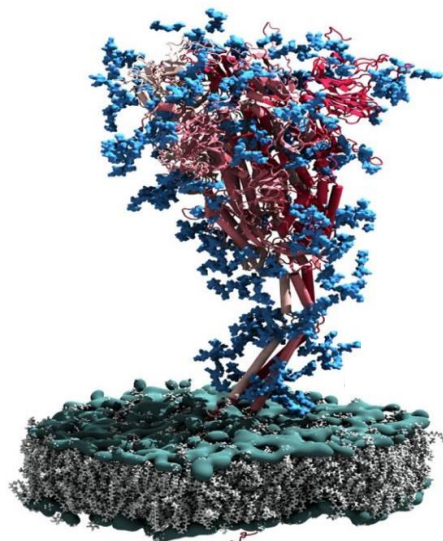
SARS-CoV-2: Collaborative research breakthroughs



Schwab Team

Integrative imaging (FIBS-SEM and Electron tomography) reveals SARS-CoV-2 induced cellular alterations

Provides comprehensive public repository of virus-induced ultrastructural cell changes



Beck Group

Research on the spike proteins on the surface of the SARS-CoV-2 virus that bind to human cells during infection. The spike proteins have unexpected freedom of movement and a protective coat to “hide” themselves from antibodies

Turoňová *et al.* *Science*, 2020

COVID-19 Data Platform: Six months of action

Accelerating research through Open Science and Global Data Sharing



EMBL-EBI and partners launched the COVID-19 Data Platform, enabling the sharing and analysis of SARS-CoV-2 data

Functionality constantly improving and new data uploaded - latest microscopy data, drug target prioritisation tool from Open Targets, and serology data and wastewater tracking in the future

Rapid access to datasets and results supports the development of diagnostics, therapeutics and effective vaccines

National Data Portals have been launched by [Norway](#), [Poland](#), [Slovenia](#), [Sweden](#) and [Japan](#) with support from EMBL



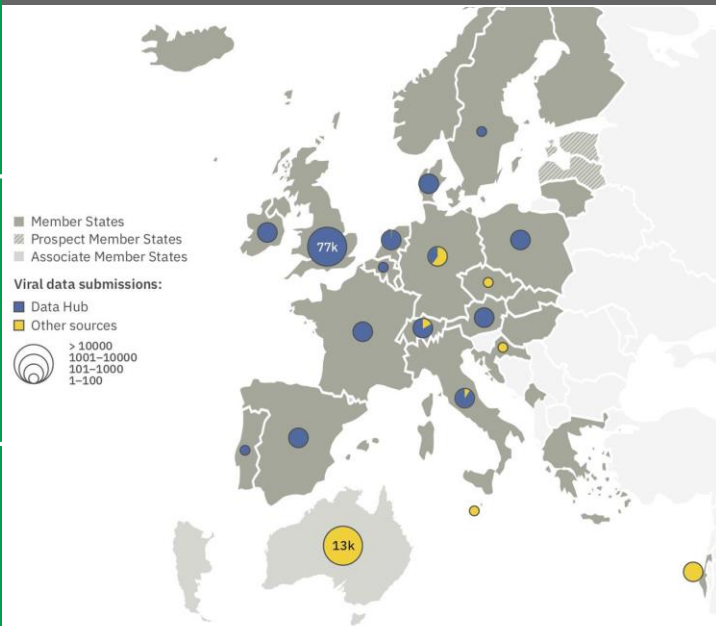
COVID-19 Data Platform: For science and society

>3m web requests by ~99k users from >175 geographical locations

>300 institutions from 40 countries have deposited data

>3m
web
requests

Contributions of raw viral sequence data from EMBL member states



'Other sources' include sequences submitted via the International Nucleotide Sequence Database Collaboration.

open access to >100k SARS-CoV-2 sequences,
>1k host sequences and 180k publications

>100k
SARS-CoV-
2
sequences

COVID-19 pandemic highlights the power of, and
need for international collaboration

**EMBL's Data Portal serves as a model for how
to share infectious disease data in the future**

>40
countries
deposited
data

EIROforum:

To fulfil our mission we push technology

Examples for impact on innovation



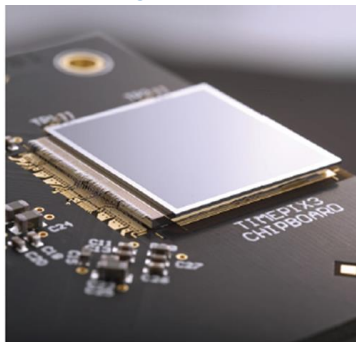
EIROs innovation cases

EIROforum **IMKTT Brochure** on EIROs innovation cases available online

CERN

The Medipix technology

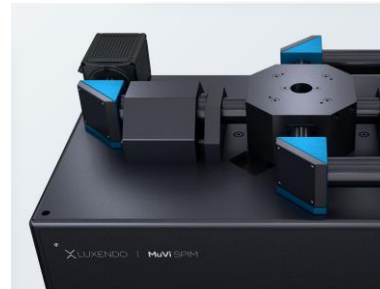
- Medical imaging, space dosimetry, education, and material analysis
- Contributing to value creation, in its application areas, but also through business creation.



EMBL

Luxendo

- EMBL spin-off company
- Overcomes limitations in conventional fluorescence microscopy
- Allows imaging of living samples over longer periods of time without damaging the specimen.

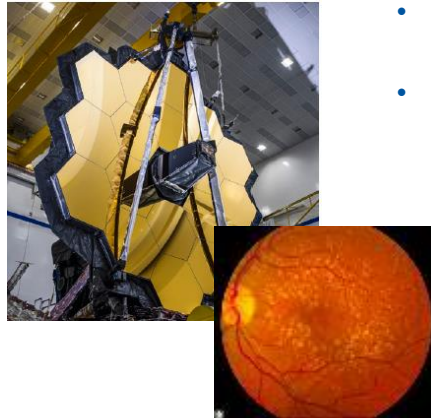


EIROs innovation cases

ESA

The James Webb Telescope

- ESA, NASA and the Canadian Space Agency
- Development of one of the instruments (MIRI)
- Development of a 'Retinal Densitometer' which measures very small changes in the reflectivity of the retina
- Identify age-related macular degeneration



ESO

Hydraulic based damping system for transporters

- Pushed the transport technology to new horizons
- Solution to safely transport a 100-ton antenna in extreme conditions
- **ALMA**: Atacama Large Millimeter/submillimeter Array
- The most powerful radio telescope in the world

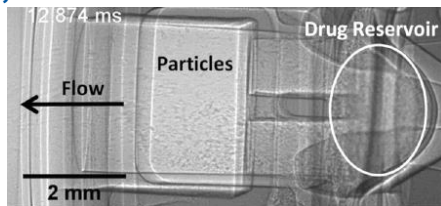


EIROs innovation cases

ESRF

Prior PLM Medical

- Prior PLM Medical turned to the ESRF for help in improving pressurised metered dose inhalers (PMDI)
- X-rays at ESRF's beamline ID19 used to penetrate inhaler devices and **visualise internal features** at a rate that **conventional techniques, such as industrial CTs, cannot reach.**



EUROfusion

- **Superconducting Magnets** lie at the heart of MRI devices.
- **Palladium alloy membranes** treat effluents from chemicals and automobile industries.
- **Explosive metal forming** expanded to the aeronautics industry.
- **Remote handling techniques** used in JET Tokamak are applied to high-energy physics, space science nuclear decommissioning, and modern surgical methods.



EIROs innovation cases

EuXFEL

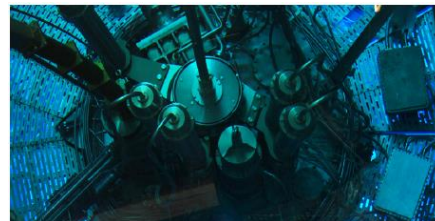
- Collaborations with companies to develop state-of-art technology.
- Concepts found applications beyond FEL development and operation
- **A high-pressure support table** for all the optical components at the Femtosecond X-Ray Experiments (FXE) instrument:



- A load capacity of >2600 kg
Move in vertical and horizontal directions as well as all three rotational axes.
Positional accuracy is better than 1 μm with less than 100 nm nominal resolution

ILL

- Nuclear reactor produces neutrons essentially for scientific studies,
- Providing **innovative radioisotopes** for use in the **medical sector**.
- Lutetium-177 by irradiating a stable precursor, ytterbium-176.
- Several thousand cancer patients benefit every year from this treatment
- Other innovative radioisotopes, such as terbium-161 and scandium-47.



EIROforum: Exploiting synergy to foster innovation

EIROforum innovation activities

- Working Groups on
 - Innovation Management and Knowledge / Technology Transfer (IMKTT)
 - Instrumentation
- Actions
 - Cross-support in bilateral projects
 - Market place to foster collaboration with industry
 - Jointly organised schools, conferences and workshops

Cross-support in bilateral projects

ATTRACT



- Developing breakthrough technologies for science and society
- Create a co-innovation ecosystem between fundamental research and industrial communities
- EIROs part of the consortium: CERN, EMBL, ESO, ESRF, EuXFEL, ILL

FUTTA

- EUROfusion launched in 2014 a Technology transfer project named “Fusion Technology Transfer Activity FUTTA”
- Funded under FP7-EURATOM-FUSION
- Coordinated by ESA
- Second phase FUTTA II



Example of one of the 170 retained projects for seed money:
3D-CANCER-SPEC
Disruptive imaging spectroscopy for minimal-invasive cancer diagnostics

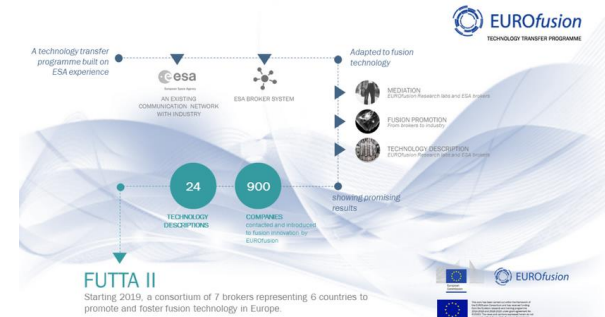


Photo: <http://techtransfer.euro-fusion.eu/index.php/about-us/>

Market place

Big Science
Business
Forum
2021

BSBF 2021

- 18 February: 3rd BSBF Webinar Technology Transfer Track
- Preparation of the real Technology Transfer Track in Granada (29-30 September 2021)
 - **Objective:** The objective of the Technology Transfer Track is to provide Research Infrastructures and companies attending the forum the means to share and seek technologies with potential cross-market applications, either in Big Science or in other markets.
 - **How it works:** Proposal of opportunities for technology transfer: publication on the website, dedicated poster and short technology transfer meeting presentations in front of limited audiences.

EIROforum Schools

ESI2019: EIROforum school on instrumentation

- EIROforum Instrumentation Working Group
- Project Day: Knowledge Transfer and Research Infrastructures Exploitation
- ESTEC, Noordwijk, The Netherlands

ESI2021: 7th EIROforum School on Instrumentation

- Local organisers are: ESRF and ILL in Grenoble
- 2021 June 7 – 11
- “Predicting and reacting to Crisis” covering both response to Covid-19 and Climate change



EIROforum – ERIC Forum

Collaboration opportunities

Identify areas of common interest despite our diversity
(e.g. optimal re-use of research data and research data challenges)

- Learn from each other
- Align outreach, promotion and lobbying activities
- Coordinate project funding and implementation

The EIROforum partners differ in their practices but face a number of common challenges, shared by many other RIs in Europe

EIROs and ERICs future

- Collaboration at the EIROforum level or with EIROs individually
- Examples:
 - ILL-ESS collaboration
 - *RI Logistica - Programme Committee* between some EIROs and ERICs
- A possible way forward
 - Dedicated actions (meetings, declarations, exchange)
 - Set-up of a structure for communication and points of contact

Thank you for your attention