Managing Users' Needs and Expectations

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EIROforum: What we have in common

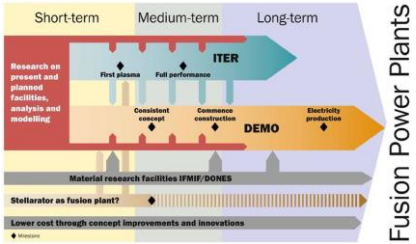
World-class Research Infrastructures

CERN

Eu-XFEL

ESO

EUROfusion



ESRF&ILL

EMBL

ESA

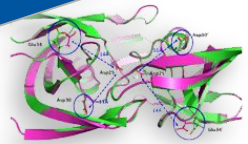
EIROforum

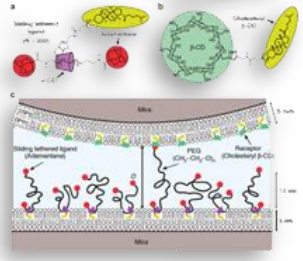
EIROforum: What we have in common

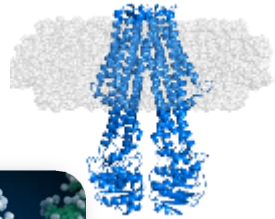
A strong commitment to serving society

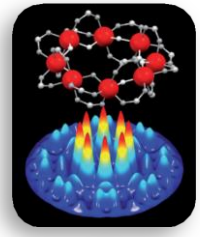
The ILL's research portfolio as an example

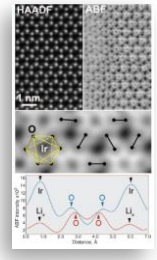
From the origin of the universe to the origins of life

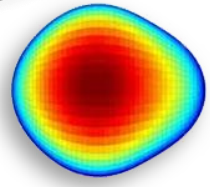


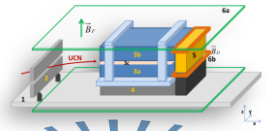


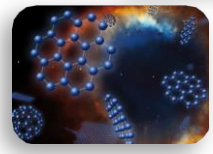


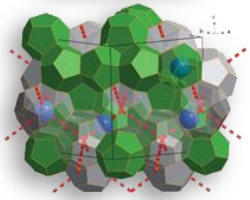


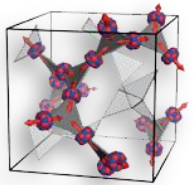


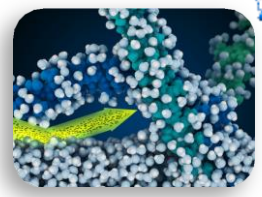












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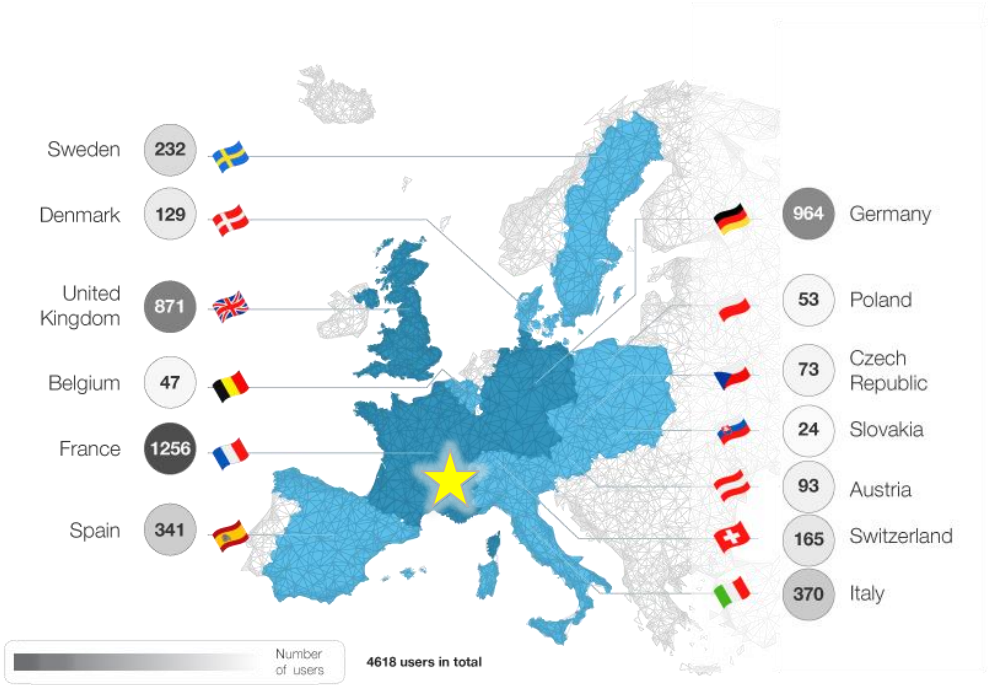
The hub-and-spoke ecosystem of Large-Scale Research Infrastructures

For example:
Each year, the ILL welcomes about 1 500 users out of a pool of more than 10 000



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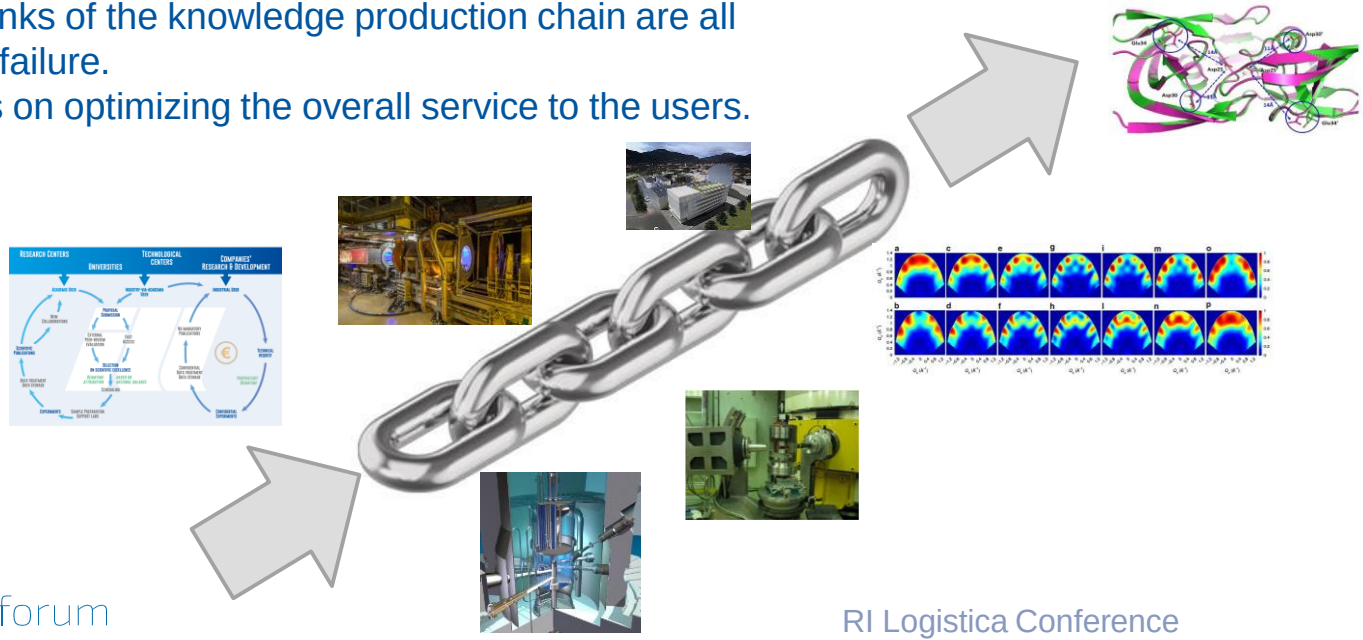
The hub-and-spoke ecosystem of Large-Scale Research Infrastructures

- For a user experiment to be successful, many conditions have to be met.
- The individual links of the knowledge production chain are all single points of failure.
- Success hinges on optimizing the overall service to the users.



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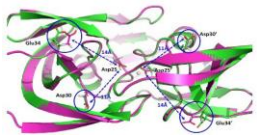
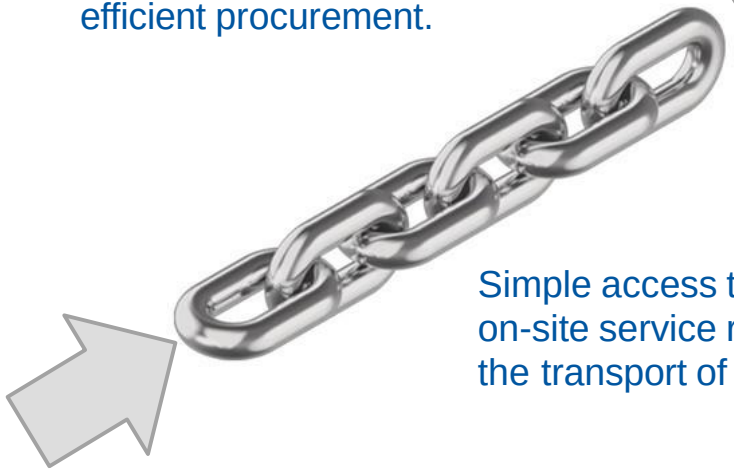
Connecting the links in the chain calls for sound logistics

High technical performance and reliability requires efficient procurement.



Exploitation of the data requires excellent IT logistics.



Attracting the best science to the facility requires a submission and selection process that guarantees low barriers to access.

Simple access to beam time and excellent on-site service require efficient logistics for the transport of samples and equipment.

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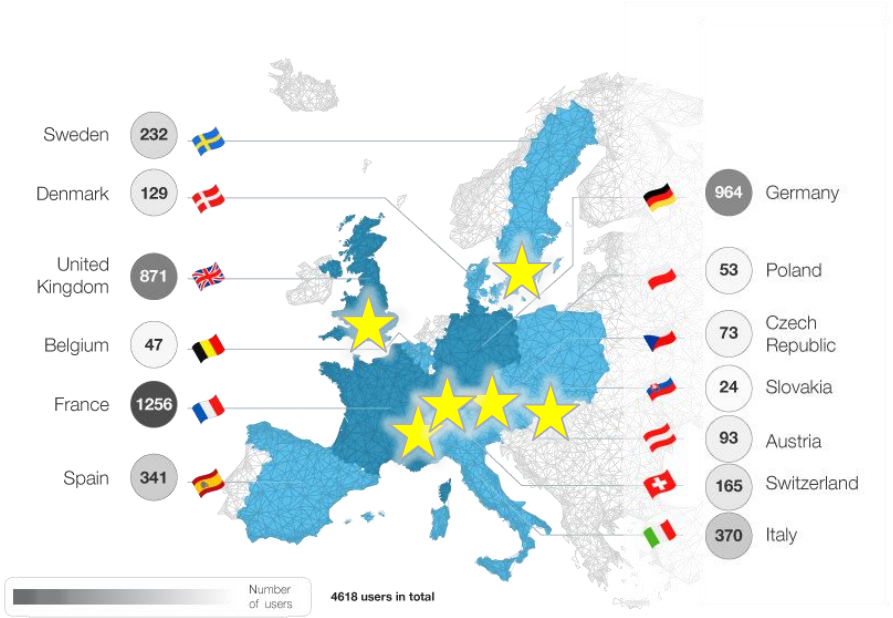
The hub-and-spoke ecosystem of Large-Scale Research Infrastructures

The reality is even more complex due to the existence of multiple hubs and "multi-messenger" research.
Users expect a “borderless environment”.

LEAPS

LENS



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Connecting the links in the chain calls for sound logistics

A number of areas are worth highlighting:

- Logistics for equipment critical to the facility
- Logistics for complex experimental set-ups, including administrative questions (liability, customs, VAT, etc.)
- Logistics related to the sample
- Logistics related to the experiment (travel, subsistence, remote control, etc.)
- Logistics related to data

Recent experience gathered in the context of Covid-19 has demonstrated how important it is to have good control of logistics even in degraded situations.
It has also underlined the need for standardised solutions.
However, tighter security regulations also complicate logistics.

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Logistics for equipment critical to the facility

- Damage incurred during transport of unique items of equipment with a replacement value of several billion € can severely compromise the future of a research facility.
- This is because such damage may deprive users of access to certain capabilities for several years.
- Budgets do not allow this risk to be mitigated via a back-up manufacturing plan.
- The solution therefore resides with the securing of logistics.
- Covid-19 has also highlighted the importance of remote acceptance of equipment.

NEUTRONS FOR SCIENCE

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Logistics for equipment critical to the experiment

- Many experiments require the installation of sophisticated equipment.
- In addition to transport issues, customs and VAT matters are important, in particular for shipments from outside the European Union.
- The legal risks for the facility are far from negligible.
- Users expect the facility to help find appropriate solutions.

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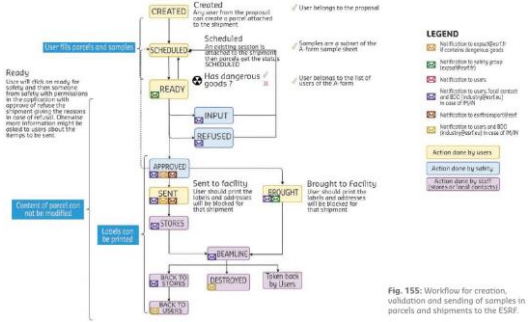
Logistics related to the sample

- Users expect to be able to deliver their samples to the facility even in a degraded situation.
- For delicate samples, this can be a complex logistical undertaking.
- An example of a solution from EMBL:
  - A fully automated protein-to-structure pipeline has been developed based on the CrystalDirect technology and the **Crystallographic Information Management System (CRIMS) software**. The pipeline can be operated by scientists from any computer with an internet connection and provides virtual access to the EMBL's structural biology facilities.
  - It is still possible for scientists to send samples via the post from anywhere in the world and access their results via **CRIMS.** The CRIMS software can communicate with the ESRF synchrotron in Grenoble and the PETRA III synchrotron in Hamburg to support automated and remote X-ray data collection.

Logistics related to the sample

An example from ESRF:

- ESRF has for many years provided a mail-in service for industrial experiments and mail-in/remote access for structural biology experiments.
- The COVID-19 pandemic has accelerated the need for large-scale remote and mail-in access solutions for user experiments, and in particular the need to be able to accurately track the large numbers of samples and tools transiting through the facility. In just a few months, a sample-tracking module has been developed and implemented in an existing module **(ICAT+) of the metadata catalogue ICAT.**
- ESRF worked exclusively in mail-in mode for the entire facility for a number of months in 2020 and in 2021.
- The ESRF developments were supported and accelerated by European H2020 funding through the ESFRI Landmark project “STREAMLINE”.



Logistics related to the experiment

- Users expect to be able to access their experiment remotely.
- The pressure on facilities to reach climate neutrality targets increases this demand.
- An example from ILL: **VISA platform** - Virtual Infrastructure for Scientific Analysis
- VISA enables academic and industrial researchers to access data and analysis tools remotely.
- The cloud-based application does not require the use of high-powered computers – just a web browser and an internet connection.
- It gives users the same experience at home as they would have if they were carrying out their data analysis at the facility.
- As an all-in-one package, VISA makes it easy for everyone in a proposal team to collaborate on the analysis of the same datasets by allowing members of the team and instrument scientists to share the same analysis environment in real time.

Logistics related to the experiment

- However, many activities related to the core missions of Research Infrastructures cannot be carried out remotely.
- This is particularly true for the provision of hands-on training, as stressed by all Scientific Councils.
- It is therefore important to develop robust logistics for on-site visits.
- EIROforum has made considerable efforts to enhance cross-facility good practices throughout the Covid-19 pandemic.
- Users expect assistance, clarity and a coherent approach.

And then there is the logistics for data

Accelerating research through Open Science and Global Data Sharing

EMBL-EBI and partners have launched the COVID-19 Data Portal for the sharing and analysis of SARS-CoV-2 data

The functionality is constantly improving as new data is uploaded: latest microscopy data, drug target prioritisation tool from Open Targets, plus serology data & 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 Portal: 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

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 the 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

Contributions of raw viral sequence data from EMBL member states

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

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