



LEAPS

League of European
Accelerator-based
Photon Sources

The LEAPS-EOSC Vision

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Vice Chair of LEAPS

2nd ESFRI Workshop on RIs and EOSC
„RIs shaping EOSC“
Video Conference Oct 7, 2020



LEAPS – Fact sheet



19 facilities in 16 institutions

more than 300 operating beamlines

more than 700 Mio € operation budget

more than 24.000 users

from all disciplines and industry

free access to all academic users from all MS and worldwide

outstanding service to industry and innovation

more than 25.000 publications in the past 5 years

see documents at

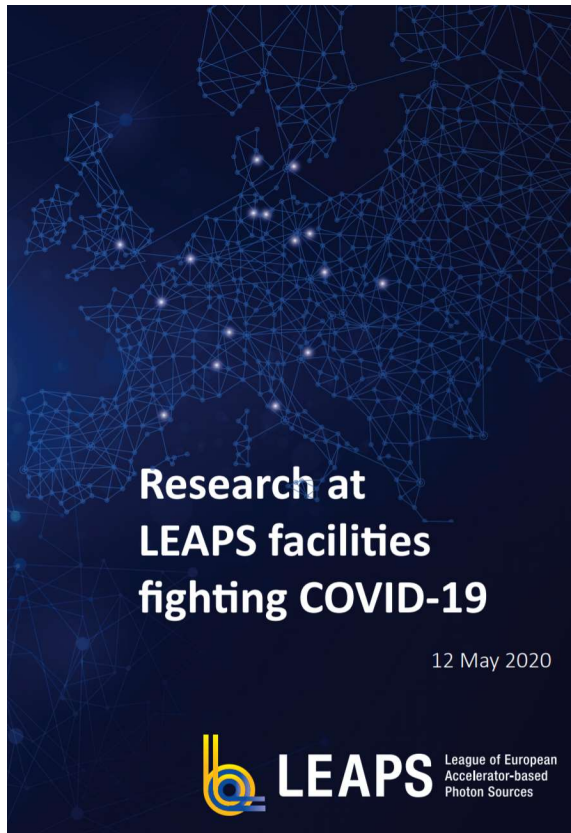
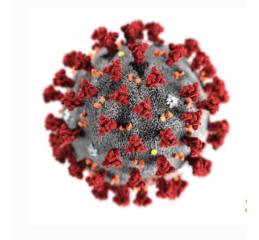
<https://leaps-initiative.eu/about/leaps-documents/>



LEAPS Answering to COVID-19 Pandemic

LEAPS Position Paper on COVID-19
Published mid-May on our website

https://leaps-initiative.eu/wp-content/uploads/2020/05/LEAPS_fighting_COVID19_May2020.pdf



Operation during and after the pandemic
Scientific contribution to fight the pandemic
Drug screening, fast Corona test technologies
Tissue imaging,

LEAPS facilities: system relevant infrastructure

- Make LEAPS facilities resilient against crisis situations
- LEAPS project: **Digital LEAPS**



Digital LEAPS

- **AI-assisted resilient and energy-saving operation of LEAPS Research Infrastructures**

Autonomous operation of complex accelerators

- **Digital user operation modes**

Remote user experiments

Real-time analysis of data

- **Advanced digital communication**

Lessons Learnt: new digital forms of communication



- **Digital training concepts**

New forms of training exploiting Virtual Reality (from schools to universities)

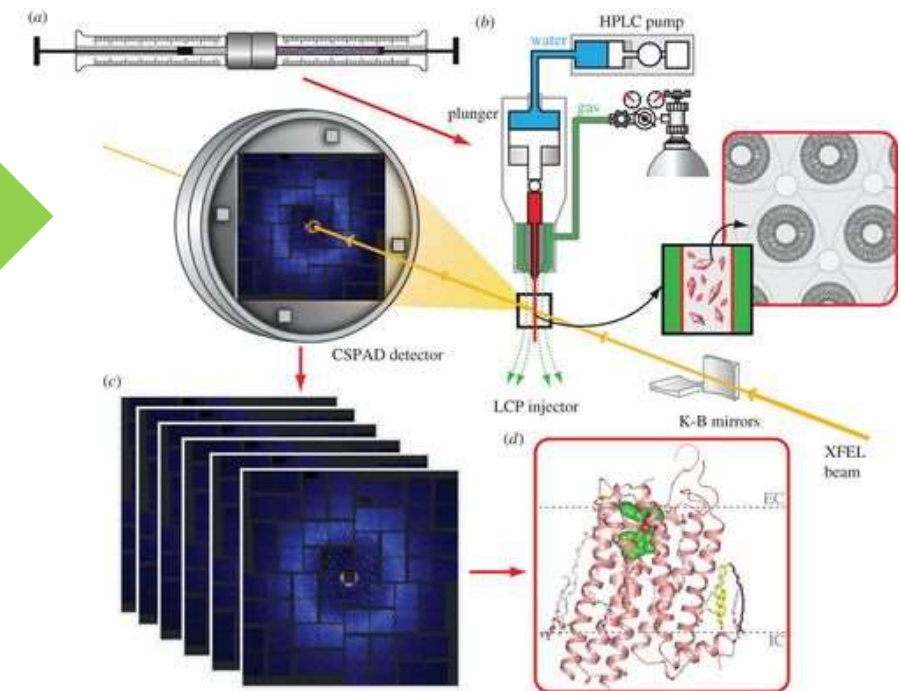
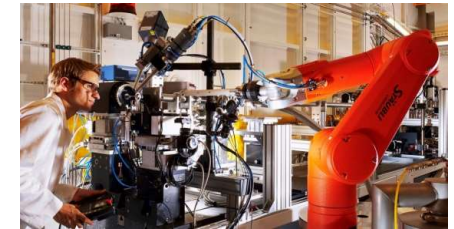
- **AI-assisted molecular infection fight**

LEAPS facilities prepare for future infection *fight* (virus, bacteria, parasites)

- **Advanced materials for the digital transformation and circular economy**

- **Develop open data concepts**

LEAPS-EOSC



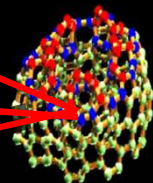
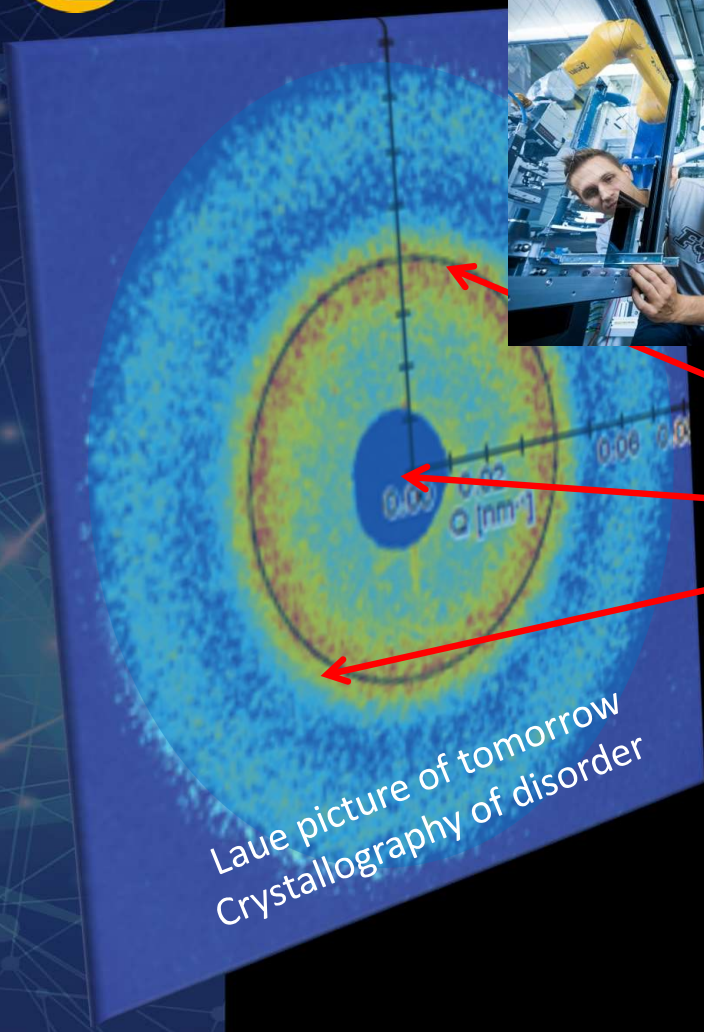


Accelerator-Based X-ray Sources on Complex Matter

LEAPS @ work today and tomorrow



High rate of complex data sets



X-ray lasers - new SR sources

- highest brightness
- highest coherence
- all relevant time and length scales

Nano-Bio Matter
real time
operando

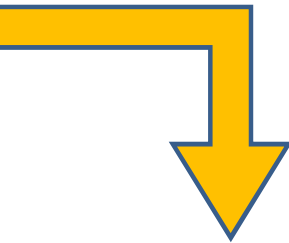


LEAPS-EOSC and the Data Challenge

tomorrow



- LEAPS User (> 24.000)
- Physics
- Chemistry
- Biology
- Geo Sciences
- Health
- Cultural Heritage
- Information
- Materials Design
-



Primary Publication/s

user

time lag
experiment → publication:
1-3 years

→ Default embargo period:
2-3 years



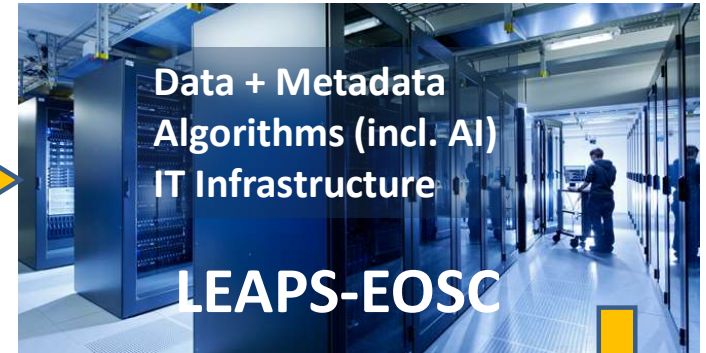
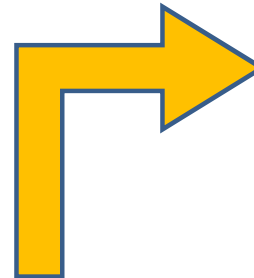
Useful „raw data“ + Metadata

user + LEAPS

FAIR+R Principles
LEAPS Standards in
Diffraction, Imaging, Spectroscopy



ExPaNDS



Data + Metadata
Algorithms (incl. AI)
IT Infrastructure

LEAPS-EOSC


- LEAPS-EOSC user
 - Physics
 - Chemistry
 - Biology
 - Geo Sciences
 - Health
 - Cultural Heritage
 - Information
 - Materials Design
 -
- FAIR+R





LEAPS-EOSC

European Commission
Labs
Governmental bodies
(legal entities)

LEAPS Labs 
deliver

- data
- IT Infrastructure
- online algorithms


(needs resources)

LEAPS will need
services from EOSC



→ LEAPS-EOSC partnership

European Consortia
as Partners

LEAPS 
(working together
with LENS)
delivers and validates

- standards
- tools
- concepts

according to
FAIR+R Principles

**integrating the large
user community (ESUO)**



LEAPS

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“The strength of LEAPS lies in its staff and users, hailing from all European countries, beyond those which host the facilities.”

Coping with the LEAPS data challenge will open the gateway to a new level of science and innovation.”

