

LEAPS MEETS QUANTUM TECHNOLOGY

1st Biennial LEAPS Conference at ELBA, Italy

MAY 15-20, 2022

Leonid Rivkin

PSI, EPFL

LEAPS Chair



LEAPS

League of European
Accelerator-based
Photon Sources



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Vision

A world where European science is a catalyst for solving global challenges, a key driver for competitiveness and a compelling force for closer integration and peace through scientific collaboration.

Mission

LEAPS use the power of its combined voice to ensure that member light source facilities continue to be world-leading, to act as a powerful tool for the development and integration of skills with a view to address 21st century global challenges, and to consolidate Europe's leadership in the field.

LEAPS is the largest consortium of analytical facilities world-wide and further expanding its service to an interdisciplinary European user community

19 facilities - **16** institutions - **10** countries

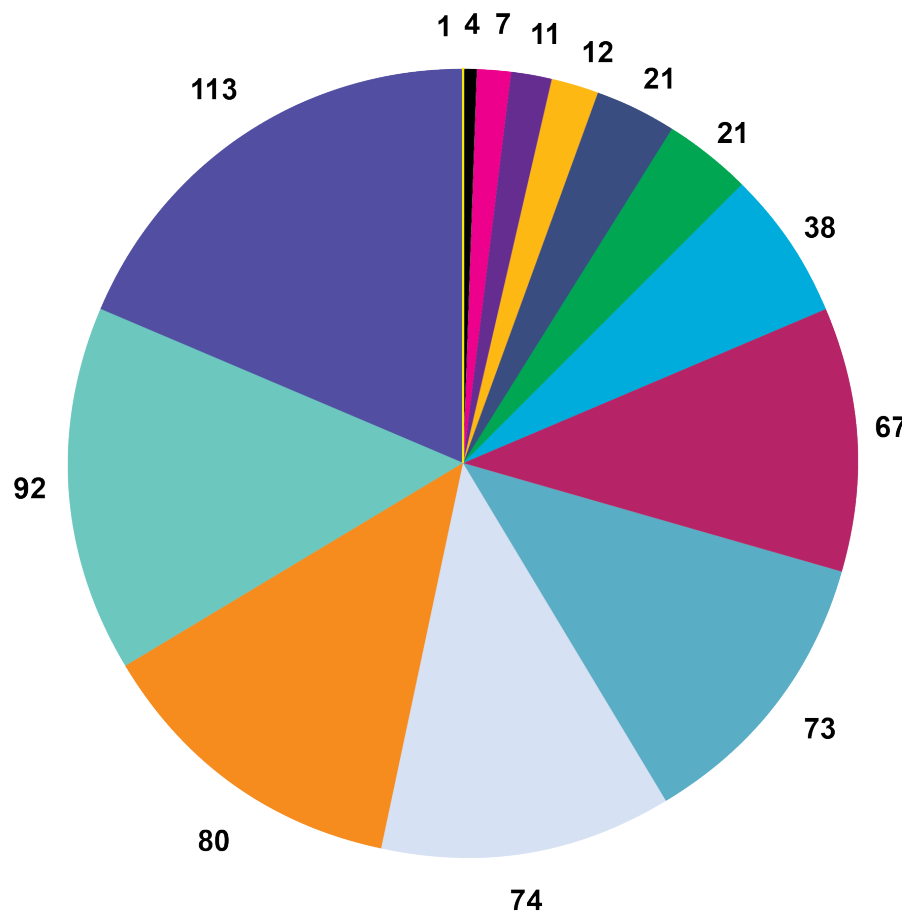
- > **300** operating End Stations
- > **1.000.000** h beamtime /year
- > **5.000** publications/year
- > **15** spin off companies
- > **35.000** users from all EU & beyond
researchers from all research areas



Construction and Operation (~ 800ME/year) through national funding

LEAPS provides discovery-driven access to a broad scientific community on focal research areas

The example of 



Nr of publications per area of research in 2018

- 1. Protein Crystallography (PX)
- 2. Solid state physics (electronic properties, magnetism, basic quantum materials)
- 3. Solid state physics/Materials science (structure, phase transitions, nanomaterials)
- 4. AMO physics
- 5. Biology--Life Sciences (not PX)
- 6. Chemistry--Surface Science--Catalysis
- 7. Instrumentation and technique development
- 8. Materials sciences for technology
- 9. Outside SOLEIL
- 10. Geo-sciences
- 11. Environmental Sciences
- 12. Materials sciences for information technology
- 13. Metrology
- 14. Cultural Heritage

LEAPS and its SPIN-OFFs

Fostering research and technology transfer through the creation of more than 15 spin-off companies



The European Strategy for Accelerator-based Photon Science

ESAPS 2022

1. Accelerator-Based Photon Science: Status and Developments
Strategic relevance, service provision, infrastructure/technology roadmap
2. ESAPS 2022 for Future Service Provision
Future schemes, pilots of strategic partnerships (targeted challenge driven service provision)
3. ESAPS 2022 for Facility Upgrades
Facility upgrades, Green LEAPS, Key enabling Technologies, Smart Specialisation, Open Innovation&Cooperation with Industry
4. ESAPS 2022 for the Digital and Green Transformation of the Operation of European User Facilities
Existing projects, DIGITAL LEAPS, Open Science
5. Transversal Priority Action Items
Training, IDEA, Synergies with neighboring RIs



... to be published very soon

Accelerator-based photon science strategy, prospects and roadmap in Europe: a forward view to 2030

Editors:

Rafael Abela (PSI), Thomas Tschentscher (EuXFEL) , Jean Susini (SOLEIL) , Gastón García (CMAM)

This **collection of papers** aims at providing a global view of the European photon science landscape and give insight in which are the main trends and prospects, with a long-term (towards 2030) view

All **16** European accelerator-based photon science **facilities** open to users, **plus one associate**, will be invited to contribute a paper

In addition, **2 papers** will be invited to deal with the **global perspective** in terms scientific trends and overall strategy, and the critical aspect of **data**



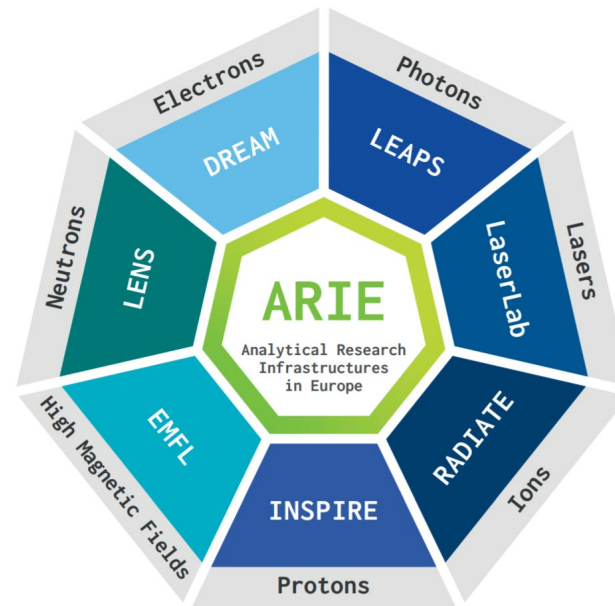
LEAPS relations with the European Parliament

- **Organization of a LEAPS event at the European Parliament** hosted by Lina Galvez - MEP and ITRE vice-chair (May 31, 2022), Chair: L. Rivkin

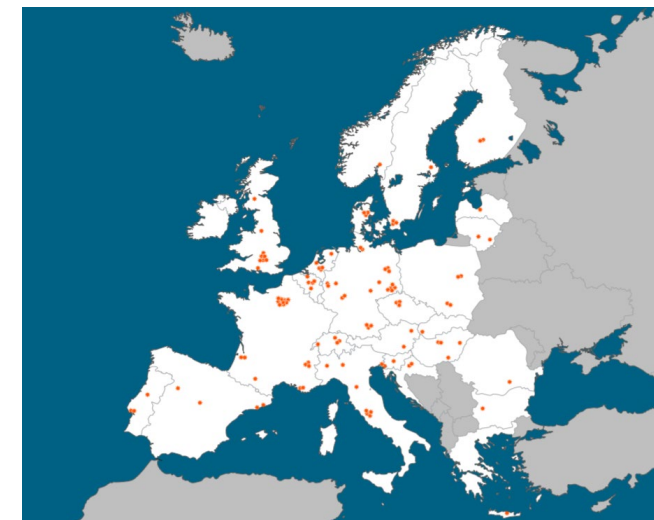
CONCEPT
<p>TITLE</p> <p>LEAPS: League of European Accelerator-based Photon Sources for the present and future Grand Challenges</p>
<p>Objective</p> <ul style="list-style-type: none">• Raise awareness on the substantive role of Research Infrastructures (RIs) to the new European Research Area (ERA) <p><i>LEAPS wants to present the European Strategy for Accelerator-based Photon Sources 2022-ESAPS 2022 which consists in a new RI strategy document which will enable Europe to cope with the grand challenges and which should be integrated in the new European Research Area to help making it both a reality and a success.</i></p>

COOPERATION

*Complementary
Multi-scale
Multi-modal*



More than 120 European RIs



- Enhanced communication among networks
- Optimizing the facility answers to EC calls opportunities
- Preparing to open combined user platforms
- Further developing the existing collaborations

LEAPS-INNOV

Open innovation for accelerator-based light sources in Europe

Learn More



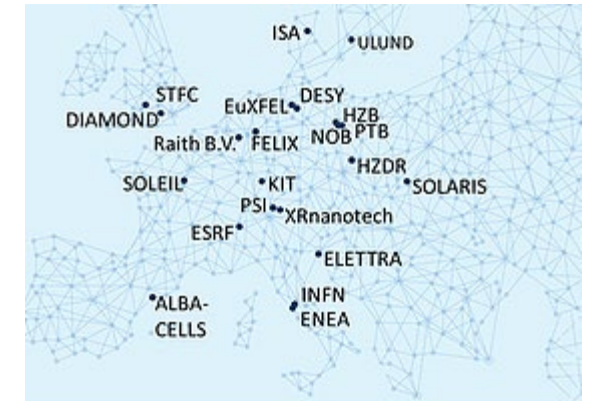
Visit <https://www.leaps-innov.eu/>

WPs

- Project Management and Dissemination
- Development of High Throughput X-ray Spectroscopy Detector System
- SuperFlat (Mirrors)
- NeXtgrating (Gratings)
- New positioning and scanning systems for speed and accuracy
- LIDs (Insertion Devices)
- Data Reduction and Compression
- Industrial Innovation through Light Source
- Innovation by Co-creation towards Global Challenges

Kick-off: April 2021

Annual meeting was f2f, in Barcelona on 3-5 May 2022



5TH LEAPS
PLENARY
MEETING

OCTOBER
26 - 28
2022



**SAVE
THE
DATE**

[5th LEAPS Plenary Meeting](#)

Paul Scherrer Institut, Villigen, AG

Save the Date for the 2022 LEAPS Plenary Meeting to be held
at the Paul Scherrer Institut in Switzerland

LEAPS meets Quantum Technology

Two way street

What LEAPS facilities can do
for the quantum revolution

What the quantum revolution
can do for the LEAPS facilities

Why QT at LEAPS facilities?

Intellectual excitement to engage talent

Core competencies/deliverables

- Large-scale interdisciplinary problem-solving
- Design, construction and operation of large facilities for diverse user base
- Strong interdisciplinarity

Producers as well as customers for high-tech solutions



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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.
Member States and facilities
should optimize
the funding instruments under
Horizon Europe
for the benefit of researchers and
innovators across all Europe”*

Thanks

Bedankt

Merci

Gracias

Tak

Tack

Danke

Dziękuję

Grazie

شكراً