



# Brief Overview of RDB Activities in 2021

Michele Svandrlik  
*(Elettra, LEAPS Research and Development Board Chair)*

*LEAPS Plenary Meeting  
20 October 2021*

## Research and Development Board Composition, *as of today*, and Overview of Activities

Role/WG/SG	Member
<b>Chair</b>	Michele Svandrlik, Elettra
<b>WG1.1</b>	Heinz Graafsma, DESY
<b>WG1.2</b>	Ray Barrett, ESRF
<b>WG1.3</b>	Klaus Kiefer, HZB
<b>WG1.4</b>	Marco Zangrando, Elettra
<b>WG2</b>	Marco Calvi, PSI Thomas Tschentscher, EuXFEL
<b>WG3</b>	Lorenzo Pivetta, Elettra
<b>WG4</b>	Antonio Bonucci, EuXFEL
<b>WG5</b>	Cecilia Blasetti, Elettra ( <i>leaving</i> )
<b>WG6</b>	Antje Vollmer, HZB
<b>SG1</b>	Amina Taleb, SOLEIL
<b>SG2</b>	John Bozek, SOLEIL Anton Barty, DESY
<b>CB Chair</b>	Ute Krell, DESY
<b>Assistants</b>	Julia Hauk, DESY Bárbara Calisto, ALBA

### Overview of RDB Activities:

- The RDB meets every month (on Zoom)
- 10 meetings Jan-Sep 2021
- Focus on **DIGITAL LEAPS**
- Discussions on **D.L.** within the RDB have been *inspirational for HE proposals*.
- Regular meetings of **D.L. Project Leaders**
- Regular information exchange  
CB  $\leftrightarrow$  WGs&SGs
- M. Calvi in the *Task Force on Funding Scheme for Internal Projects*, info exchange.
- Representative also in *Task Force on LEAPS positioning in the ERA*.

## DIGITAL LEAPS presented at the Plenary Meeting 2020

- On Nov 25, 2020, the GA suggested to prepare *a questionnaire* for the LEAPS members, in order to collect interest and comments from the facilities and also to understand which kind of activities could be started in-kind.
- It was also suggested to draft a **Position Paper** on **DIGITAL LEAPS**.
- The RDB started these two activities, in tight contact with the Coordination Board.
- As a first result, it appeared clear that the content of the proposals under the umbrella of **DIGITAL LEAPS** had to be reorganized and harmonized.
- A second important aspect was also to address the **Green aspects** under **DIGITAL LEAPS**.



## The three pillars: STARS, HR<sup>4</sup> and LIP

### DIGITAL @ LEAPS



# The Position Paper: to explain to stakeholders, European Commission, politicians, the impact of a Green DIGITAL LEAPS



## The DIGITAL LEAPS pillars

The Pillars are in the design phase, further details can be followed on [leaps-initiative.eu](https://leaps-initiative.eu)

**STARS:** "Enhanced remote access for users" will strive at more standardised procedures on sample mail-in and remote user access across facilities, and provide an extensive overview on information on technology tools useful to facilitate the remote access and the digital sample handling.

**HR<sup>4</sup>:** "Enhanced digital platforms for networking & training" will establish a digital collaborative platform such as Innovation Mall, or for remote training of staff and hybrid training for users both using also the new tools developed by the other pillars, and a collaborative platform to create a smart user network, with tight connection to industry.

**LIP:** "More resilient green sources & beamlines" will speed up the development of a digital interface system to access and autonomously operate green facilities, via digital twin, artificial intelligence and machine learning, virtual diagnostic, androids for remote access, the design of further photon instruments for remote access and standards for fully automated user beamlines and exploiting the use of permanent magnets for the new generation diffraction limited storage rings.

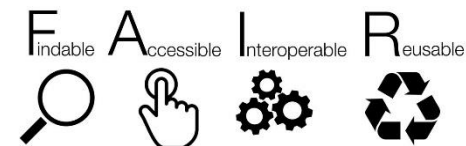
## DIGITAL LEAPS preserve GREEN DEAL goals

In addition to the research done at the LEAPS facilities, the guideline of the Digital LEAPS pillars is persevering audaciously the Green Deal goals and Europe's ambition to become climate neutral by 2050.

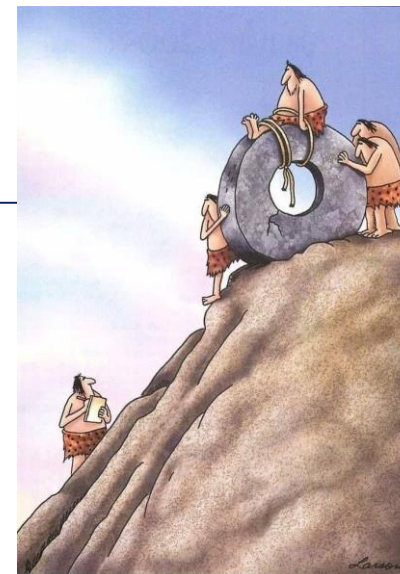
- Digital Remote User Operation is going in the direction to rationalize the movements of the people and its negative impact on the environment. At the same time, it will open up new access possibilities from geographically far countries e.g. Africa.
- Smart user network and digital collaboration platforms will multiply the possibilities with common developments in the areas of environmental and neutral climate challenges.
- Specific technology development, e.g., the permanent magnets or the energy saving in the big data management, will pursue the goal of improving the energy efficiency of the LEAPS facilities.
- These target areas identify improved services enabling the development of materials for circular economy in the future.

## STARS (courtesy K. Kiefer, C. Blasetti and L. Pivetta)

- Make **sample information F.A.I.R. compliant**
- Bring **EOSC standards** into sample handling
- Help users and user offices to **manage samples**
- Foster **automation** and **remote operation** at beamlines



**EUROPEAN OPEN  
SCIENCE CLOUD**



Early experiments in transportation

*Joint work of User Offices, IT, Facility scientists*



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# HR<sup>4</sup> Enhanced digital platforms for networking & training

(courtesy A. Bonucci)



- Digital collaborative platform - Innovation Mall
  - Remote staff training (RT) & Hybrid training for users
  - Collaborative platform for Smart User Network
- 
- **Objectives:** provide digital tools to the human resources of the LEAPS facilities:
    - *To foster transversal projects between the LEAPS facilities for development and upgrade.*
    - *To engage the use of LEAPS facilities, in the enlarged user ecosystem.*
    - *To promote the industrial collaboration for the development of innovative technologies.*
  - Based on third-party funding.
  - Digital tools mainly based on collective intelligence → **LEAPS identity (purpose, value, and culture)** and **LEAPS users identity** are a necessary condition:
    - *In HR4, a first activity of brainstorming to identify the main attributes of the LEAPS identity will be proposed. People with different background from different facilities will be involved.*

# Proposal to Horizon Europe Call INFRA-2021-DEV-01-03: eRImote

(courtesy of U. Krell and J. Hauk)

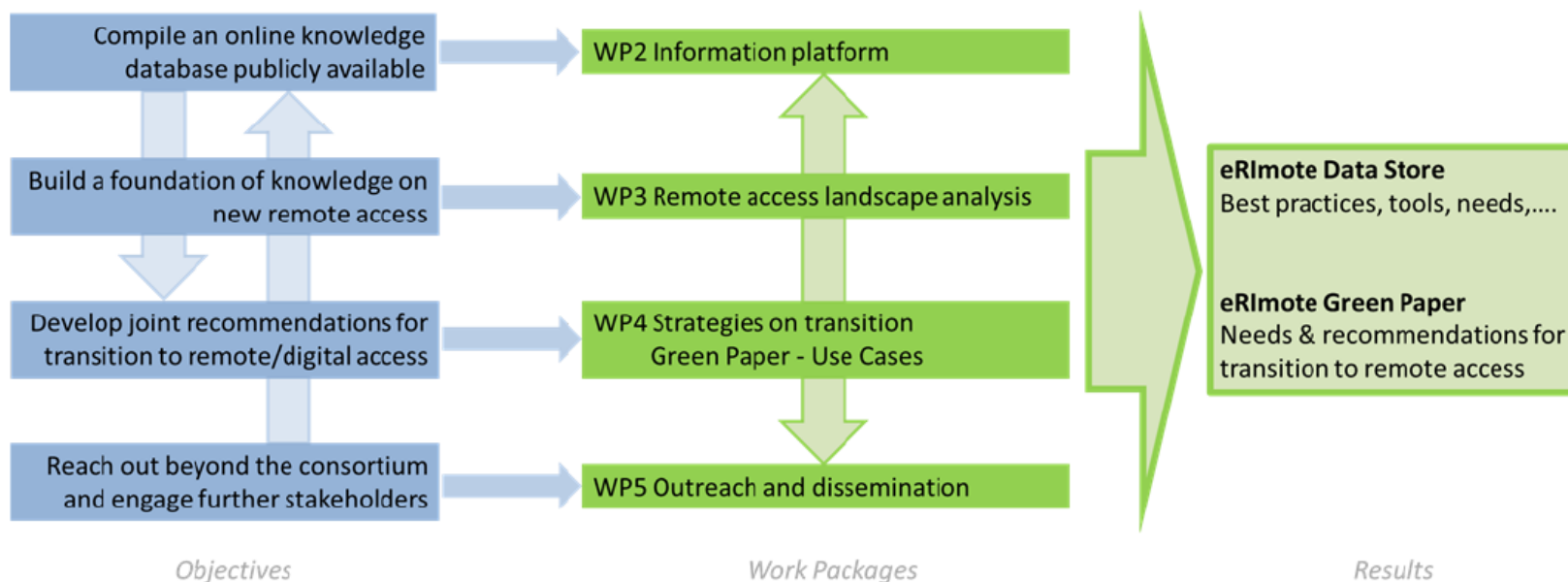
## eRImote Strategy



### Benefit for @ LEAPS

- More visibility in the European RI Landscape
- Build trust with other RI communities
- Stronger voice for 2nd half of HE

*eRImote identifies strategies and solutions for the transition to more remote/digital access*





## LIP: The LEAPS Integrated Platform *(courtesy M. Calvi)*

- *Digital Twinning:*

- **WP1:** Technology Platform (EUXFEL, L. Gelisio)
- **WP2:** Source and Beams (PSI, M. Calvi)
- **WP3:** Modules for Photonic Instruments (ILL, P. Mutti)

Part of DiTARI

- *Design activities and networking:*

- **WP4:** Androids for Remote Access (DESY, R. Wanzenberg)
- **WP5:** Permanent Magnets, *PerMaLIC* (ALBA, F. Pérez)
- **WP6:** The Fully Automated Beamline, FAB (DESY, H. Graafsma)

LIP LEAPS Internal Pilot Project

# DiTARI: Digital Twin Platform for Analytical Research Infrastructure Experiments *(courtesy M. Calvi and T. Tschentscher)*

- Proposal submitted to the call HORIZON-INFRA-2021-TECH-01-01
- Main purpose
  - Provide a platform for digital twinning of complex experiments at ARI facilities
  - Enable new science; make complex experiments and operation more efficient; address new communities
- Deliverables
  - DiTARI platform enabling to assemble Digital Twin applications (DiT), DiTARI Library, 4 operational DiTs
- Long-term aim
  - Become the common tool for digital twinning of ARI facilities, user communities
- Consortium of ARI and Materials Science institutes



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## Outlook for RDB activities

- Finalize the start of **DIGITAL LEAPS internal projects** (presentation for approval at the *GA on November 26, 2021*).
- Synergy with the *Task force on Funding Scheme for Internal Pilot Projects*, both for DIGITAL LEAPS and future LEAPS internal projects.
- Focus on strategic developments of common interest for the LEAPS facilities, inspired by WGs and SGs activities, that may be inspirational both for future
  - LEAPS Internal Projects and,
  - Proposals to HORIZON EUROPE calls in the second part of the program (2023 →)
- Support the GA and the CB to elaborate strategies for steering the content of future HE calls, to improve the matching with *the strategic developments of interest of the LEAPS facilities*, in the context of the *Analytical Research Infrastructures in Europe (ARIE)*.





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Thanks

Tak

Tack

Bedankt

Danke

Dziękuję

Merci

Grazie

Gracias

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