



WP13: Access to Plasma Beam testing facilities

CERN / May 4th 2017 / kick-off meeting

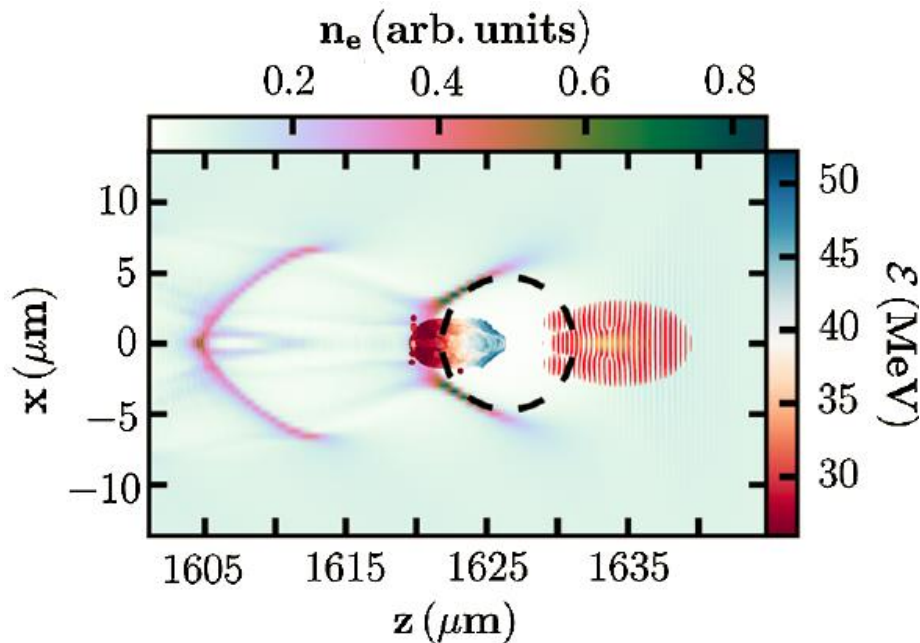
Brigitte CROS / CNRS - LPGP

Outline

- Main characteristics of proposed beams
- Brief Introduction of the facilities offering access in WP13:
 - LULAL (Lund University)
 - UHI100 LPA (CEA LIDYL)
 - APOLLON MUST-LPA (CNRS LULI)
- Organisation of access
- Summary

Electron beams generated by Laser driven wakefield in a plasma

- Non linear interaction of the laser pulse with a plasma generates relativistic electrons over mm scale

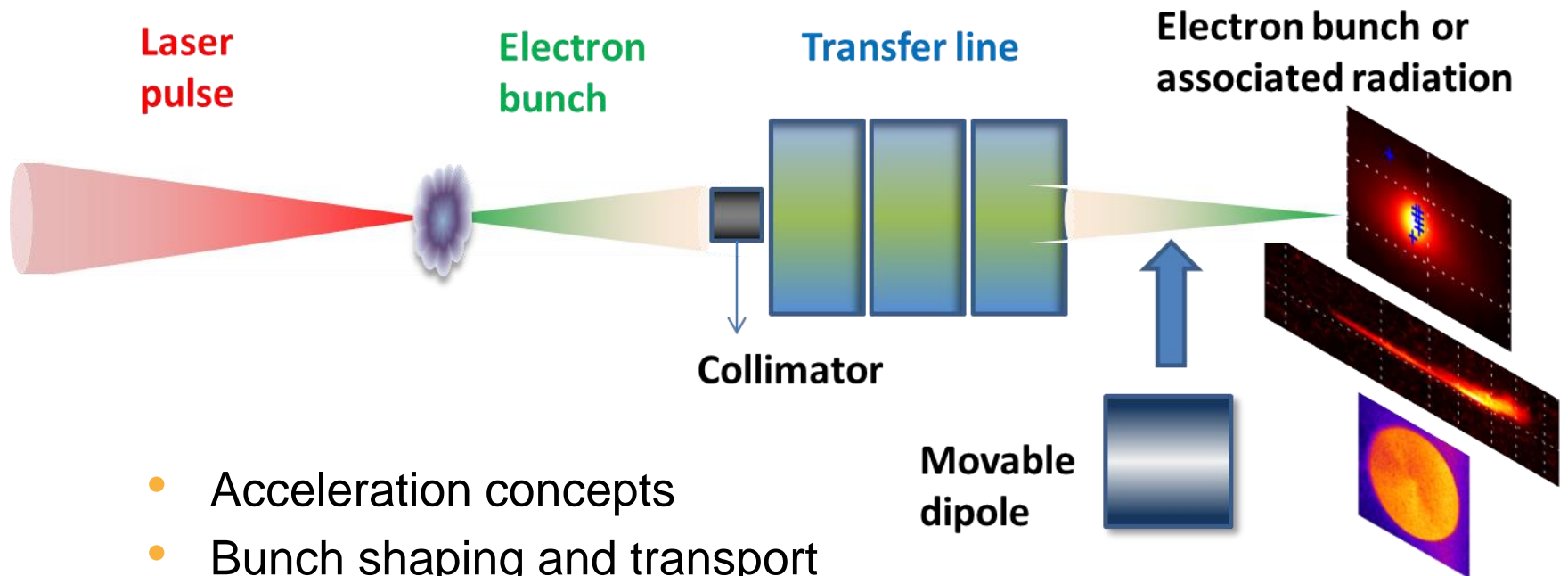


- Typical parameter range for WP13 facilities
- Energy: 50 MeV – 300 MeV
- DE/E: 5 % -100%
- Charge: 1- 100pC
- Duration: 10-100fs

P. Lee et al, PRAB 19, 112802 (2016)

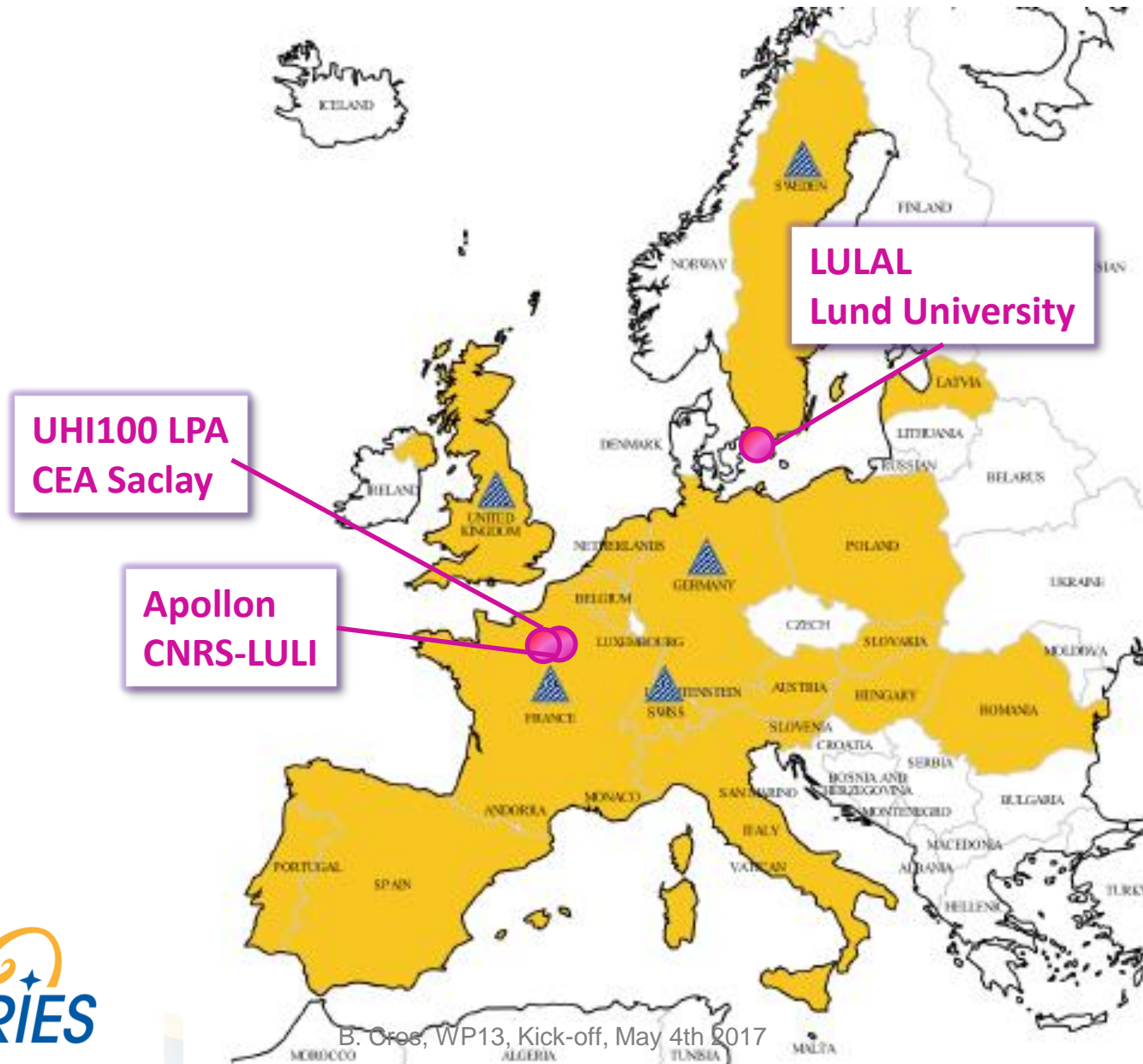
Flexible offer, adjustable to user's application

- Parameter range and configuration can be selected depending on user's interest



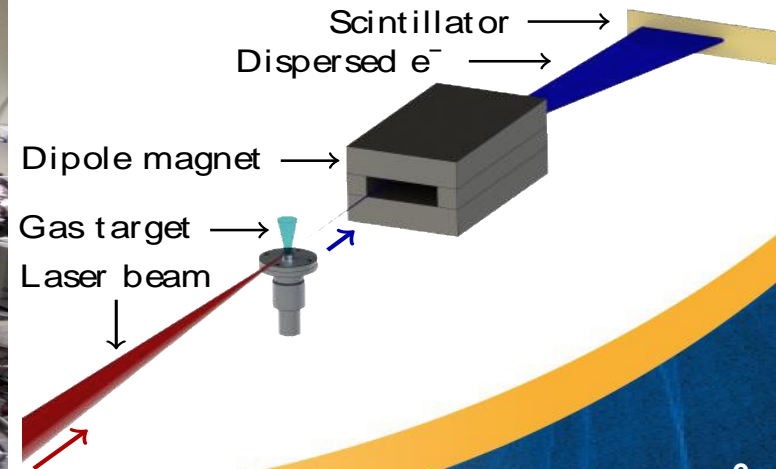
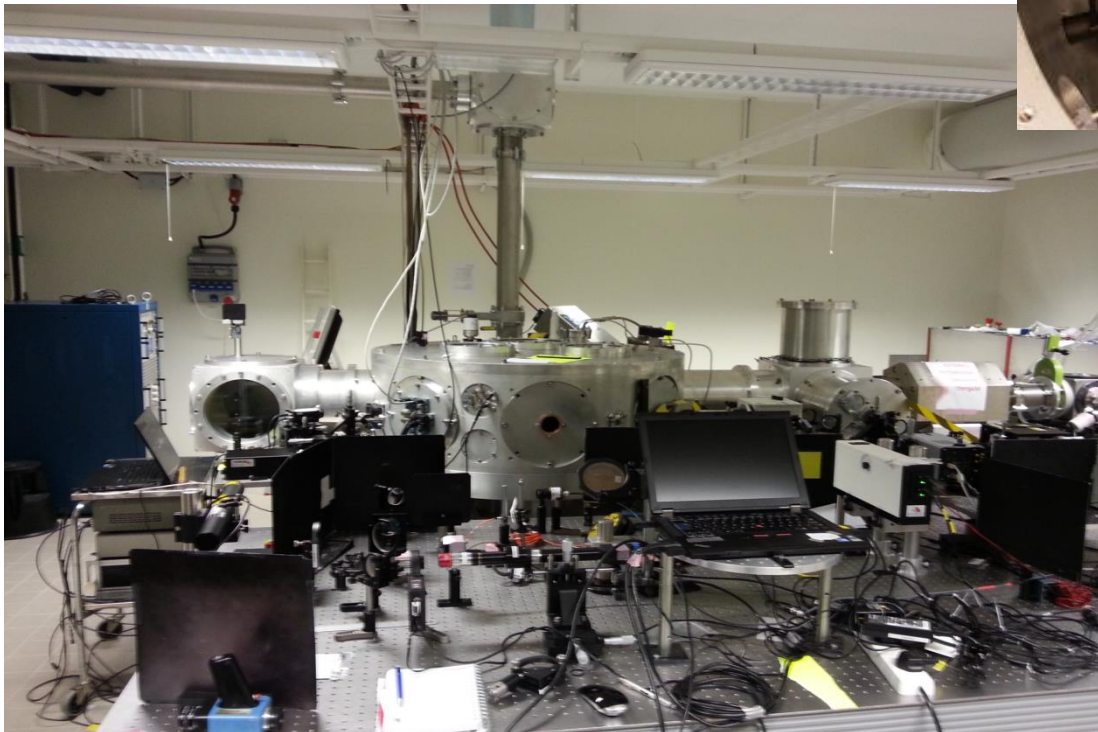
- Acceleration concepts
- Bunch shaping and transport
- Diagnostics development
- Use of electron bunch or associated radiation as drivers for applications

Location of plasma beam testing facilities



LULAL main features

- Laser-accelerated electron beam (100 MeV, 10 pC, 10 fs, 1 mm.mrad)
- Flexible laboratory for laser-plasma acceleration experiments
- High-power laser (60 TW, 30 fs, 10 Hz)



LULAL offered access

- Facility in operation: 2017-2021
- Typical TNA experiment campaign
 - Scientific collaboration with the hosting research team
 - 3-5 weeks, 3-8 visitors from 1-3 institutes, supported by 3-6 staff
- Scientific contact: Olle Lundh, olle.lundh@fysik.lth.se
 - Inform existing and potential collaborators about the possibility to submit proposals through ARIES



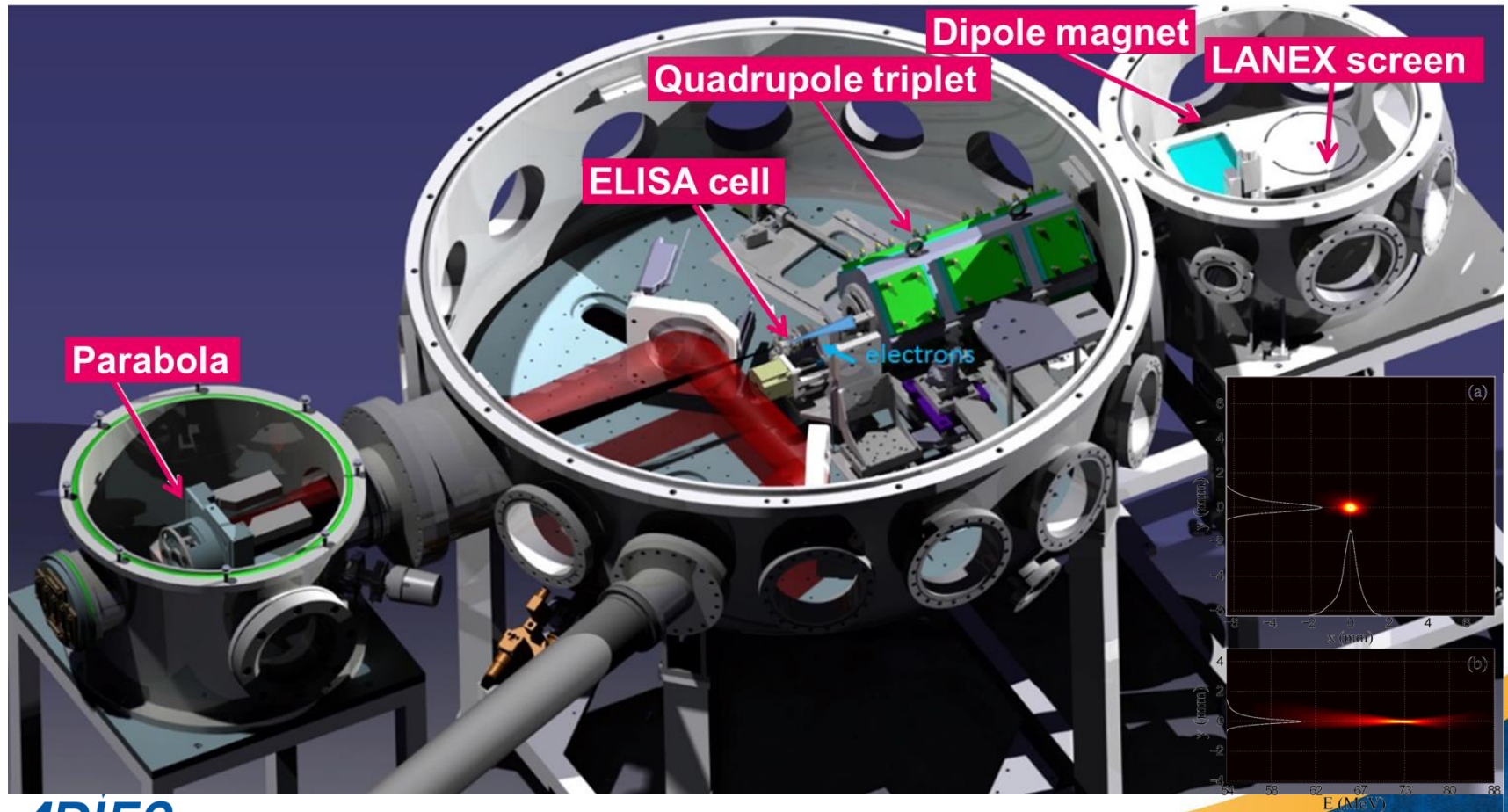
UHI100 Facility : electron bunch acceleration and transport

- **Currently in operation, CEA LIDYL**
- Total of 4 ARIES projects (160 hours each)
- For ARIES users, access to
 - **UHI100 experimental area** devoted to electron acceleration
 - Laser plasma **electron beamline** equipped with state-of-the-art instrumentation
 - **Electron bunches** (50-200 MeV)
- Opportunity to test concepts or equipment before experiments with APOLLON facility
- Scientific contact: Sandrine Dobosz-Dufrénoy,
sandrine.dobosz@cea.fr



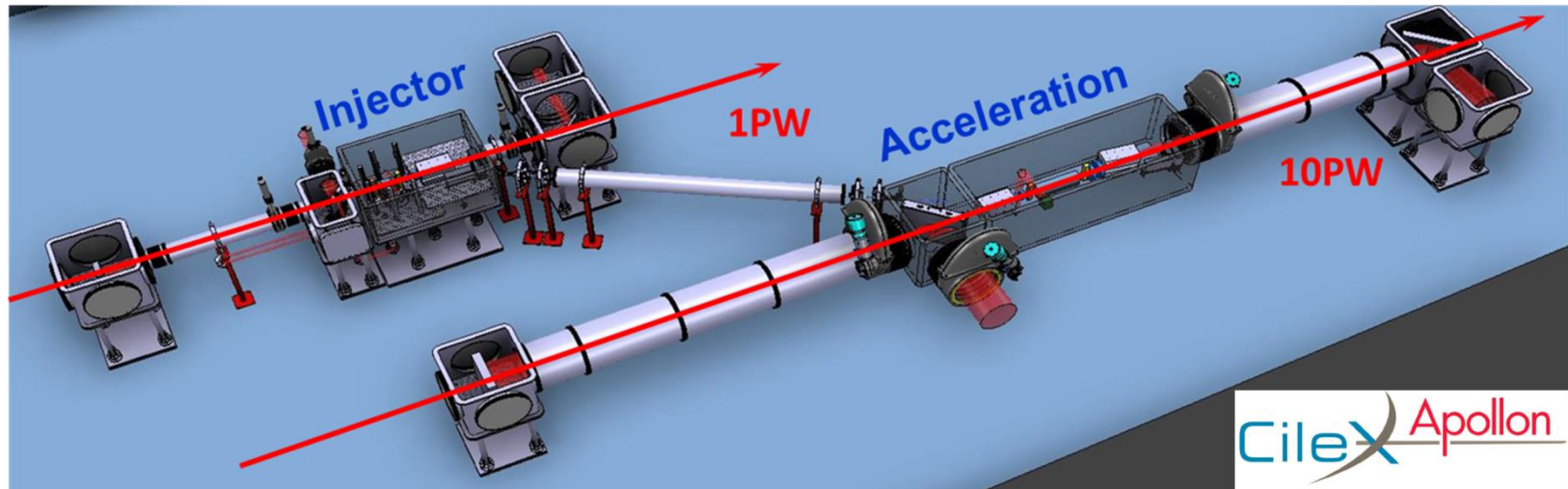
Set-up with magnetic line at UHI100

- Electron bunch imaged 1m away from the plasma source
- Other configurations are possible



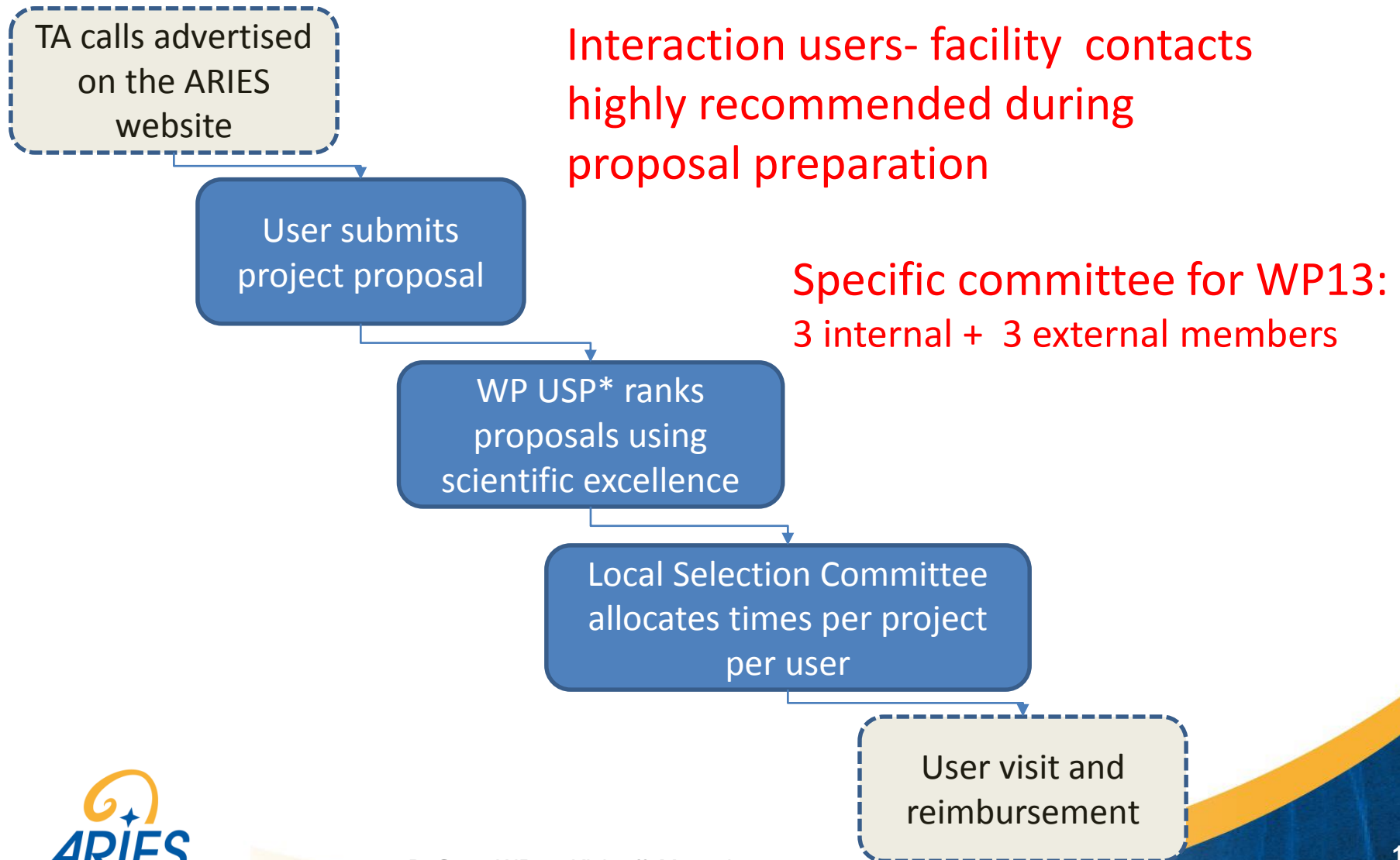
Apollon CILEX : electron acceleration test facility

- Opened to users after **2018**, CNRS-LULI – **contact**: B. Cros
- Total of 6 ARIES projects (30 hours each)
- **Electron bunches from the injector** (50-200 MeV)



- to test novel electron acceleration concepts
- to optimize the injector,
- to test innovative methods to measure its properties
- to manipulate the beam
- to study electron beam – plasma coupling processes, including synchronization and stability

Evaluation procedure (comments for WP13)



Summary

- 3 facilities will provide access to electron bunches driven by laser in plasma
- Users are invited to contact WP13 coordinator or facility contacts to prepare proposals
 - 2 groups have already expressed their interest for access to UHI100 and Lund facilities



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Thank for your attention



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Additional slides

Review procedure

- The user groups interested in beam tests at one of the WP13 TA facilities must **request access by submitting (in writing) to the ARIES WP13 User Selection Panel (USP)** a description of the work that they wish to carry out for testing of and the names, nationalities and home institutions of the users.
- **Requests are reviewed and selected based on scientific excellence by the common USP** set up at the beginning of the project. The composition and operation of the USP is described in section 3.2.
- The primary criterion for selection **is scientific merit**, but for the same scientific merit priority will be given to new users and users coming from countries where such infrastructure is not available.
- Then the **ranking of the proposals will be handed over to the Local Selection Committees of each facility, which will allocate access for each project and user.**

Coordination USP-local facility committee

- The **TA Facility Coordinators will be members of the corresponding USP and the other members will be international experts** independent from the beneficiaries. **At least one half of the USP members will be independent from the beneficiaries of ARIES.** The Work Package Coordinator will chair the USP.
- **Each USP will meet twice a year** to consider requests for Transnational Access under WP9-13 and will approve, using scientific excellence of the proposals as primary criterion, the ranking of the proposals submitted for TA support in ARIES.
- In case certain facilities receive an overwhelming number of excellent proposals, the USP may recommend some of the projects to be carried out at another facility which offers similar TA in ARIES.
- Then **the ranking of the proposals will be handed over to the Local Technical Committee of each facility, which will allocate the time slot for each project and user group.** In case of incompatibility with the technical requirements or with the facility schedule, the Local Technical Committee will have also the right to refuse applications and send them back to the USP with recommendations for technical improvements or schedule changes.