



Digital LEAPS

**Androids for remote access: kick-off meeting
Day 2 – Wrap Up**

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Wrap Up

- **INFN**
 - ✓ Needs for Remote Handling
 - ✓ Well advanced in automation for target exchange, might exchange information on coupling tools exchangers
 - ✓ Working on procedures for recovery scenarios in case of problem – Mandatory for any remote interventions, things might go wrong. Recovery foreseen for the moment on Front
- **ELETTRA**
 - ✓ Robotics for Telepresence
 - ✓ Strong experience in navigation
 - ✓ Investing on AI and image processing
 - ✓ Can be invited to present to the AI Working group at CERN
 - ✓ Interested in having, if existing, point clouds/digital reconstruction of other labs accelerator/tunnel to test their own navigation algorithms
- **XFEL**
 - ✓ MARWIN – Operational robot for RP measurements
 - ✓ Driver licence needed to guide robot in the tunnel – Regulations/Certifications needed in other labs?
 - ✓ Improvements foreseen towards precision. Foreseen to be tested in other labs?

Wrap Up

- **CERN – Radiation testing and IoT**
 - ✓ COTS components database for tested devices might be shared with LEAPS labs
 - ✓ Radiation facilities like CHARM and Cobalt60 could be open to LEAPS labs to test COTS under radiation
 - ✓ Experience of COTS testing under radiation and electronic design for rad-tol devices might be shared and presented to LEAPS labs
 - ✓ New in-house communication protocol can improve communication efficiency, is this the right way to go? 5G?
- **MAXIV**
 - ✓ Lots of robotic developments not always converging on common approach on HW and SW
 - ✓ Robot for survey tasks has been developed because industrial solutions are precise as best as 1 mm, insufficient for facility needs.
 - ✓ Strong wish to have a centralized automation/robotic service/support within MAXIV.

Wrap Up

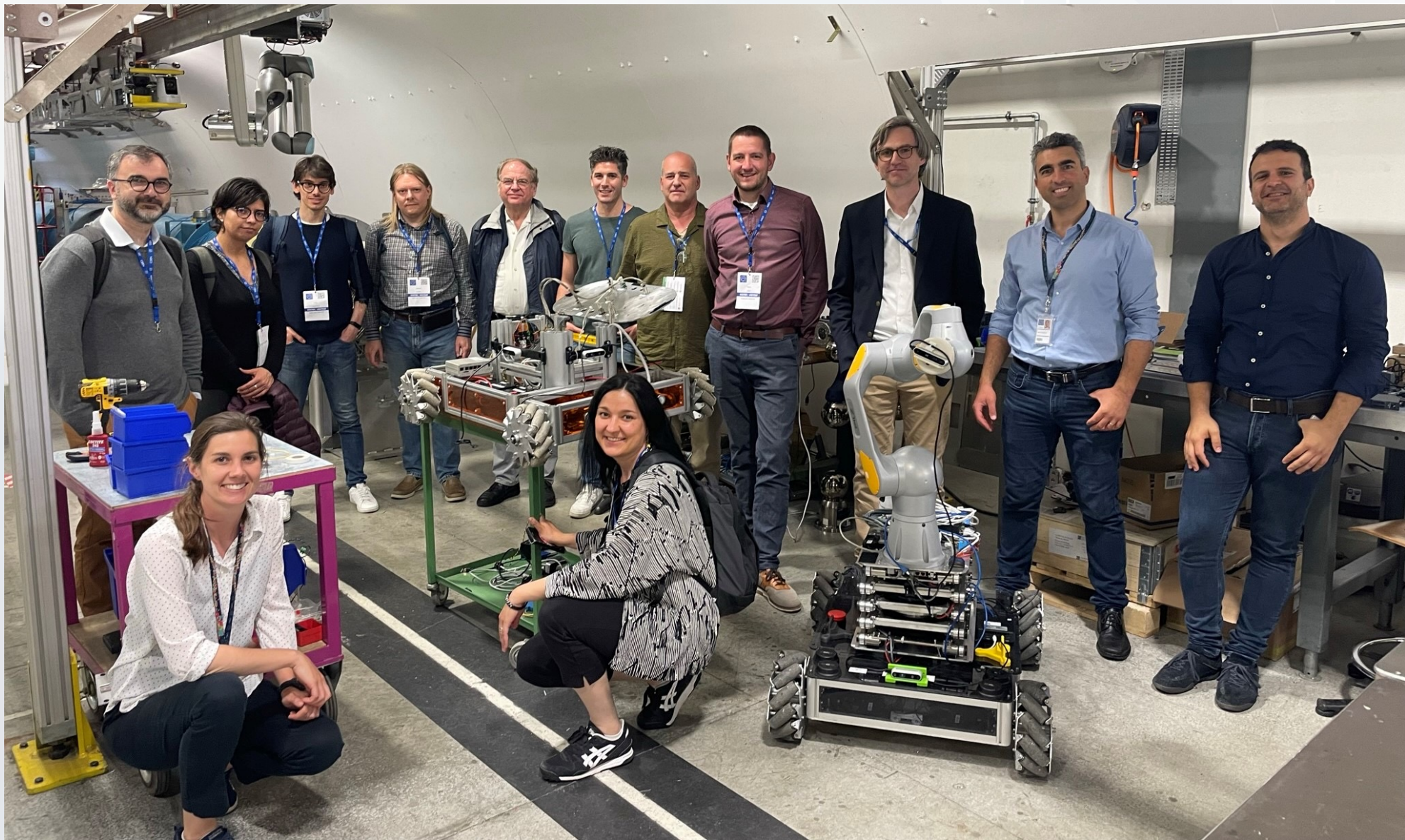
- **DESY**
 - ✓ Existing solution for protein crystallography using robots for sample exchanges. Experience could be shared amongst other labs (i.e. SOLEIL, MAXIV, PSI, ELETTRA etc.)
 - ✓ Remote maintenance needs, willing to use remote systems
 - ✓ Can existing solution of other labs being tested at PETRAIII? Could LEAPS support this?
- **SOLEIL**
 - ✓ Strong operational experience in using robotic arms (SW and HW)
 - ✓ Built API for Staubli → TANGO, can be shared with other labs?
 - ✓ Discussion on common robotic framework that might be started (generic to be coupled with different accelerator operational control systems, e.g. TAGO, TINE, EPICS, FESA Etc.).
 - ✓ Which is the best robotic operational system? (ROS, custom etc.)
 - ✓ Centralized engineering support (why not present in other labs? Funds, trust in automation?)

Wrap Up

- **PSI**
 - ✓ Existing solutions for repetitive tasks implementing COTS, mechanical work and experience in using robots for magnetic measurements and fine tuning
 - ✓ Large experience with electronics implemented in tunnel
 - ✓ Needing precise positioning sensors rad-tol to substitute current absolute optical encoders (i.e. Heidenhein)
 - ✓ Problem in accelerator environment using Beckhoff, EMI or Radiation problem. Possibility to use CERN RADMON to understand the problem
- **CERN - Robotics**
 - ✓ Experience in using robots in harsh and semi-structured environment. Development ongoing to improve current solutions to other accelerator areas.
 - ✓ Might exchange feedbacks on sample exchangers (i.e. SOLEIL) and coupling tools (i.e. INFN)
 - ✓ Might benchmark and improve current solutions (ROV for remote inspection and RP measurements) in other labs. Could LEAPS support this?
 - ✓ Open HW and open software strategy to be envisage

Possible future steps

- Workshop has been extremely useful to know each other. Thanks a lot for the participation!
- Future MoU between LEAPS and CERN when LEAPS will be a legal entity.
- In the meantime other bilateral collaboration agreement can be organized
- European call → INFRATEC 2025. LEAPS will coordinate



May 23rd, 2023



LEAPS

League of European
Accelerator-based
Photon Sources

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7



May 24th, 2023