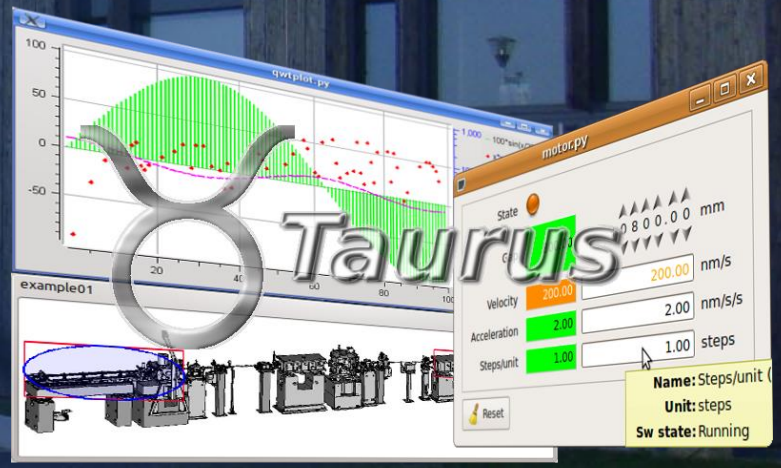
Taurus Workshop

Synchrotron SOLEIL | 12-13 May 2026

Yves-Marie ABIVEN



Welcome to SOLEIL !

Many thanks to the local organizing committee for making this workshop possible !

Patrick Madela
Arnaud Hemmerle
Déborah Iorio

And the support

Zbigniew Reszela
Oriol Vallcorba

SOLEIL II
La science éclaire l'avenir
Science lights up the future

Outline

- Workshop introduction
- SOLEIL II - a brief status update
- GUI status at SOLEIL - towards TAURUS
- Workshop outcome

Taurus Workshop | May 12-13, 2026

- TANGO community
  - Part of workshops meeting (SIG) allowing to focus on specific topics
- 2 Days
  - To get up to date on TAURUS technical status
  - To share use cases across our facilities
  - To get some hands-on experience!
- Collaboration
  - 44 participants (20 on-site, 24 remotely), 15 institutes, 15 contributions
- Organisation
  - Sessions held in the SOLEIL auditorium on Tuesday, in Libra room on Wednesday
  - Tonight: diner at "Chapeau" (ex "Living Room" in Palaiseau).

Meeting at 7 pm in the central building for car sharing.

GUI strategy in our facilities

- GUI strategy is a key topic addressed in scientific facilities

- Successful workshops in recent years to adress transformations :
  - ICALEPCS, NOBUGS, TAURUS Workshop @ ESRF

- Key topics at the last ICALEPCS:
  - Doing things right: Reusable GUI building blocks, UI customization, UX Working Group
  - Flexibility & efficiency: Zero/low-code solutions, automated GUI & synoptics generation

- Outcomes from the ICALEPCS GUI Workshop
  - Variety of technologies in use (mainly PyQt and Web), with common challenges around UX and keeping up to date
  - Organizational structures play a major role in the coherence — or lack thereof — of GUI approaches
  - UX Engineers should probably be more involved, yet only 4 out of 30 facilities currently do so
  - Web is favored for most new developments, while existing desktop approaches remain in place

Follow up of TAURUS Worshop 2023 @ ESRF

- Context:
  - Most institutes rely on GUI choices made in the early 2000s and are now reassessing them due to technical debt, new needs (remote access), and recruitment challenges.

- Diversity of approaches:
  - A review of 8 major institutes (DESY, CERN, XFEL, BNL, ELETTRA, DLS, PSI, FAIR) shows no universal solution
  - Strategies range from Java LTS to python/Qt and modern web-based frameworks.

- Dominant trends:
  - Java remains widely used.
  - Python/Qt is gaining ground as a smoother transition path.
  - Web-based solutions are growing but mainly for dashboards, rarely for complex control room applications.

- Non-technical criteria matter:
  - Team profiles, local culture, and recruitment constraints often drive decisions as much as technical considerations.

- Key technical criteria:
  - Application vs. technology lifetime, deployment complexity, performance, security, and development effort are the main factors for a sustainable long-term choice.

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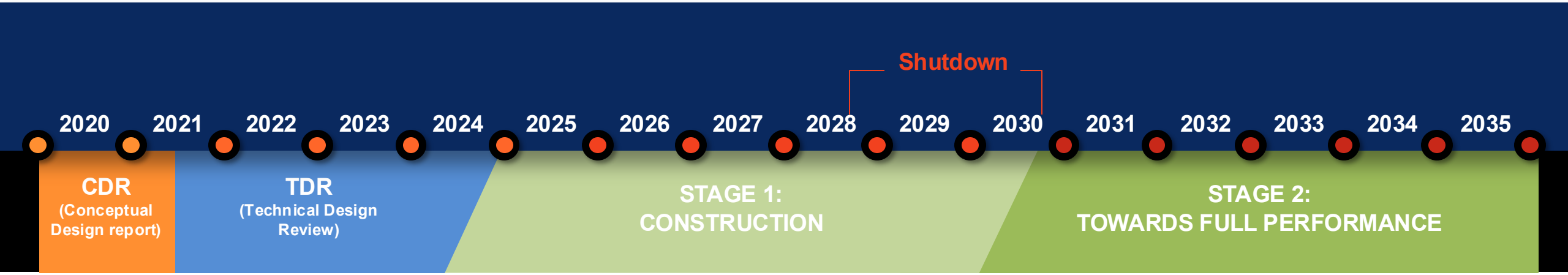
A workshop in the scope of SOLEIL II



- The SOLEIL II project entered its construction phase in **January 2025**.
- The project structure for stage 1 was approved by the SOLEIL Council in **July 2025**.
- In the current schedule, the start of the dark period / shutdown is planed for the **end October 2028** and the restart of the user program (end of the shutdown) is planed for the **end October 2030**.

SOLEIL II Project Organization

Council
CAF
CCA
CEAC
MAC
SAC
External Reviews

Steering Committee
SOLEIL II

Project Management Office
Administrative support
Planning
Resources
Budget
Purchasing
Risks
Quality
Safety
Change Management

Hélène Rozelot

1. SOLEIL II Project

Project Leader: Amor Nadji

Deputy: Javier Perez

1.1 Construction of Accelerators
Laurent Nadolski
Patrick Alexandre

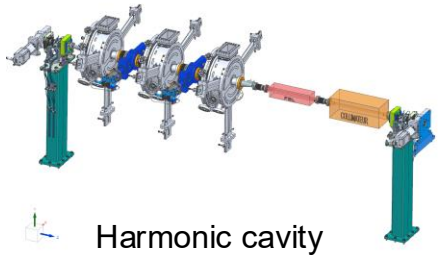
1.2 Relocation and adaptation of Beamlines
Kewin Desjardins
Stephanie Blanchandin

1.3 Overhaul of the information system
Yves-Marie Abiven
Emiliano Fonda

1.4 Infrastructure & Logistics
Christian Herbeaux
Mohamed Nouna

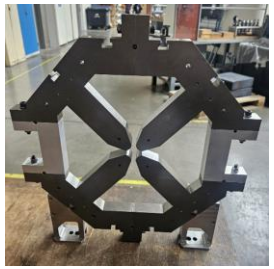
- Tenders are ongoing mainly for programs 1.1, 1.3 and 1.4

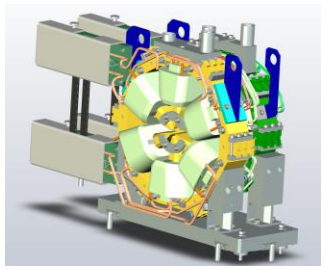
- P1.1: Construction of accelerators



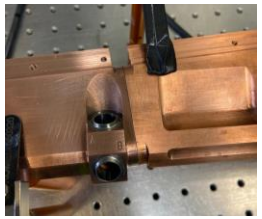
Harmonic cavity

BPM/bellow and electrode prototypes

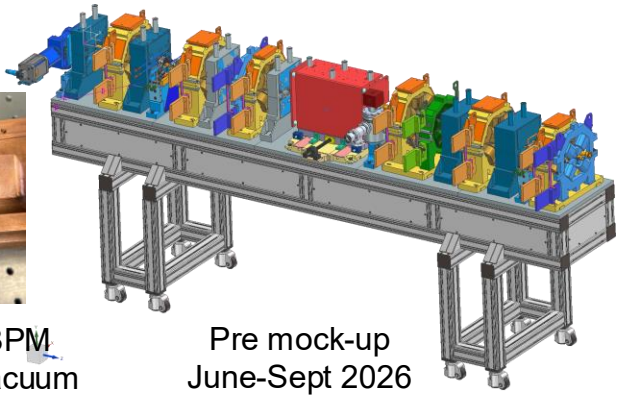




Magnet prototypes



Prototype of a BPM embedded on avacuum chamber

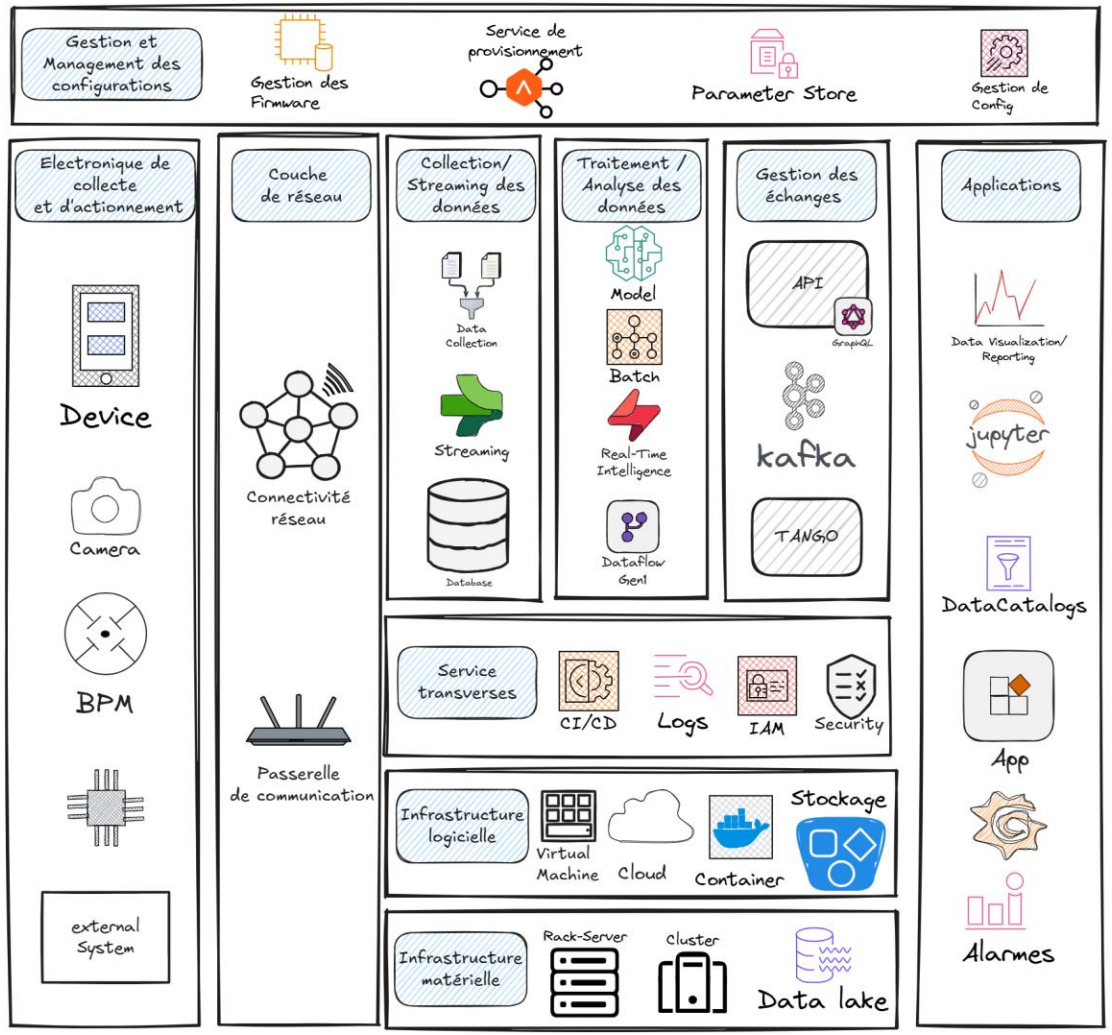


Pre mock-up June-Sept 2026

- P1.2: Relocation and Adaptation of Beamlines
  - Relocated: 4 ID + 1 BM beamlines
  - Re-aligned: 7 BM beamlines
  - Adapted: 15 ID beamlines
  - 7 Relocated or Refurbished labs.

- P1.4:Infrastructure & Logistics
  - Building projects : OREST construction and Existing building refurbishment
  - Utilities : Cooling water distribution, Validating Computational Fluid Dynamics (CFD) studies

Overhaul of the information system



Modernize IT infrastructures, systems and services so that the Information System:

- Adapts to new scientific contexts and challenges
- Remains modular, performant and resilient

Deliver and/or integrate all systems and services that will support the ramp-up to full performance at stage 2 for:

- The commissioning and operation of the accelerators
- The beam recovery on the beamlines and the restart of the user programme
- The means for infrastructures and logistical tracking to efficiently prepare the SOLEIL II components

TAURUS parts of the transformation in the program 1.3 for SOLEIL II

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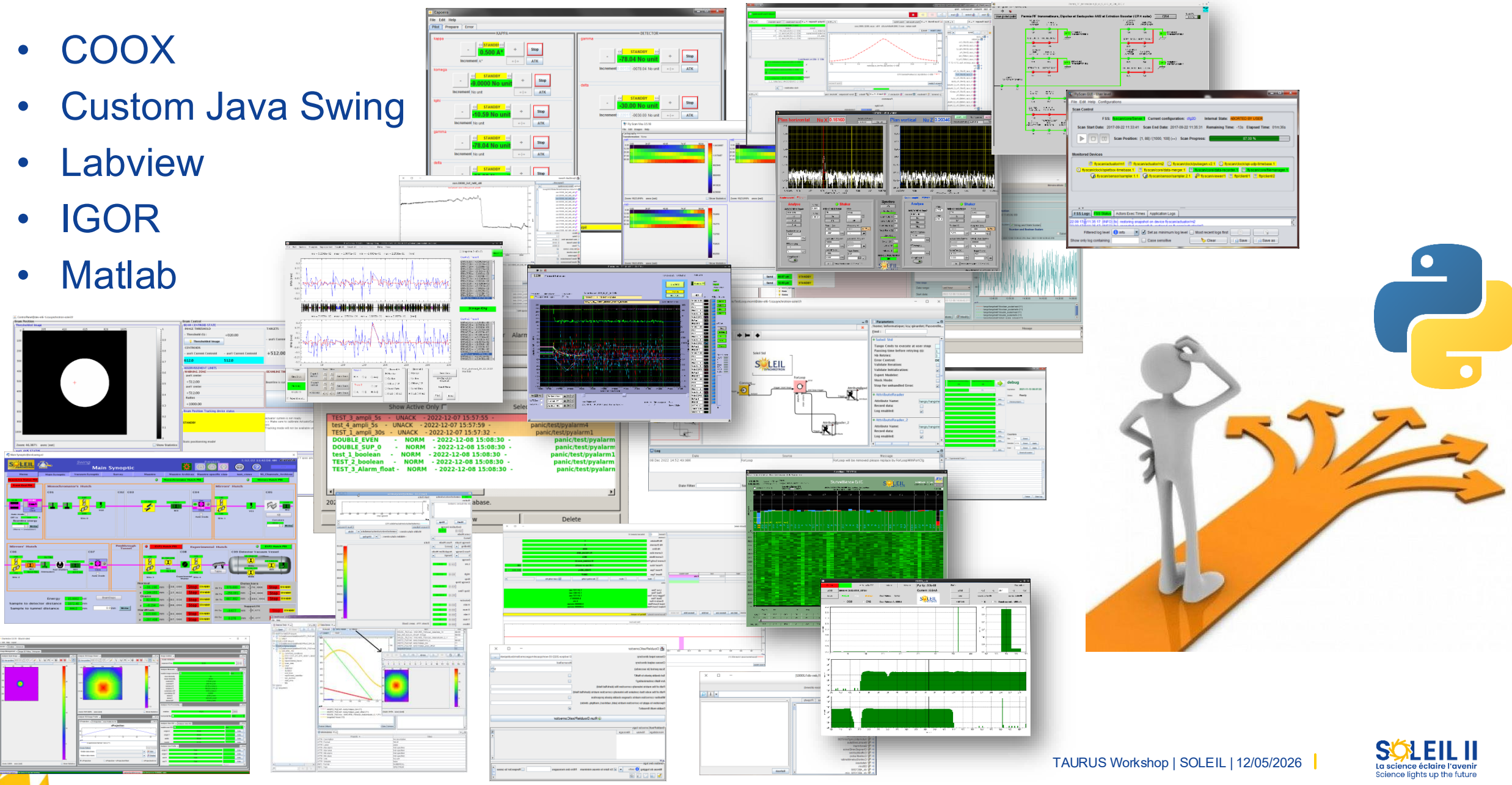
GUI @ SOLEIL

- COOX
- Custom Java Swing
- Labview
- IGOR
- Matlab



SOLEIL II
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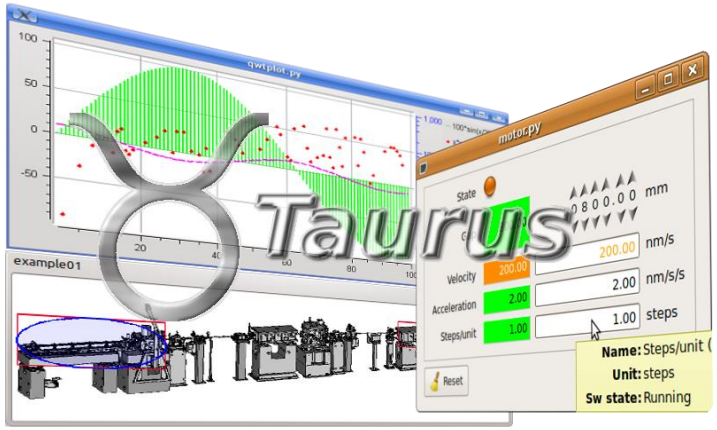
What we want ?

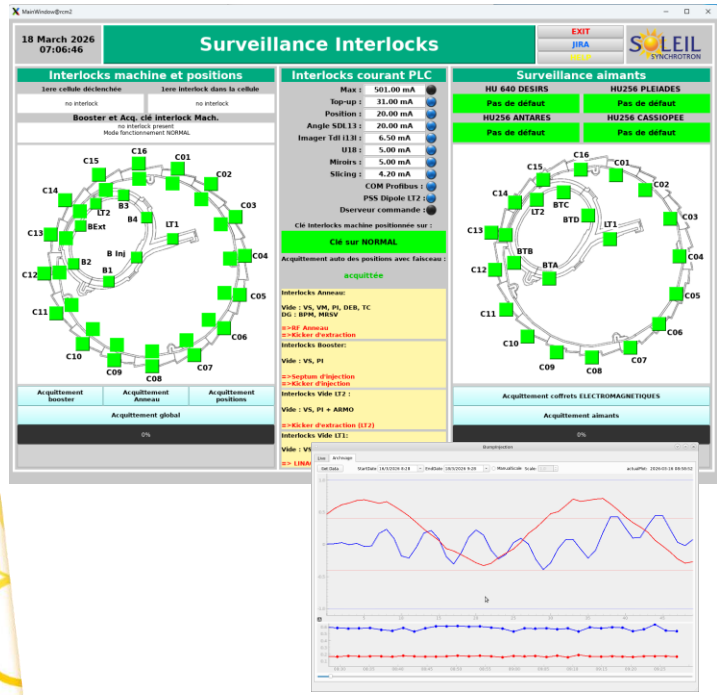
- Manage the legacy
  - SOLEIL uses **Java Swing** for building common GUIs.
  - **A common framework "comete"** was developed to simplify this process.

- Key features to maintain
  - **Widget library**: A collection of ready-to-use interface components.
  - **Data sources**: Easily connect to various data inputs.
  - **Connection management**: Intermediaries handle communication between widgets and data sources.
  - **Collaborative framework share with other facilities**

- Benefits
  - **Fast GUI development**: Quickly create new interfaces.
  - **Simplified integration**: Streamlines the connection of data to user interfaces.
  - **Users autonomy** : able to develop or adapt their own GUI

TAURUS @ SOLEIL





- **Taurus evaluated by a working group** with user from Accelerators, Beamline and developers from control group
- **Taurus** is a set of libraries and tools for creating control GUIs fiting our requirements
  - **For non-developers:**
    - Complete graphical interfaces in minutes
    - Easy modification via a graphical interface
  - **For developers:**
    - A simple Python API for creating and customizing applications
    - Data sources are in the form of "models", which simplifies their manipulation and integration into code
- **TAURUS** a new tool available on the control system after the workshop

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TAURUS Workshop opportunity

- To share knowledge, to discuss ideas, to make connections, and to get inspired

- Beyond TAURUS
  - How are you organized for GUI development?
  - What is your GUI strategy for acquisition, control and supervision?
  - Have you developed a widget library for accelerators and beamlines?
  - Is your approach similar for accelerators and beamlines?
  - Is Taurus and PyQt your main technology for GUI?
  - Do you have a UX approach for GUI design?
  - How do you leverage AI for GUI development?

Make this 2 days filled with

fruitful discussions,

inspiring exchanges

and creative breakthroughs !

Enjoy the workshop !