SOLEIL and SYMETRIE company collaboration to build Tango ready in-vacuum diffractometer

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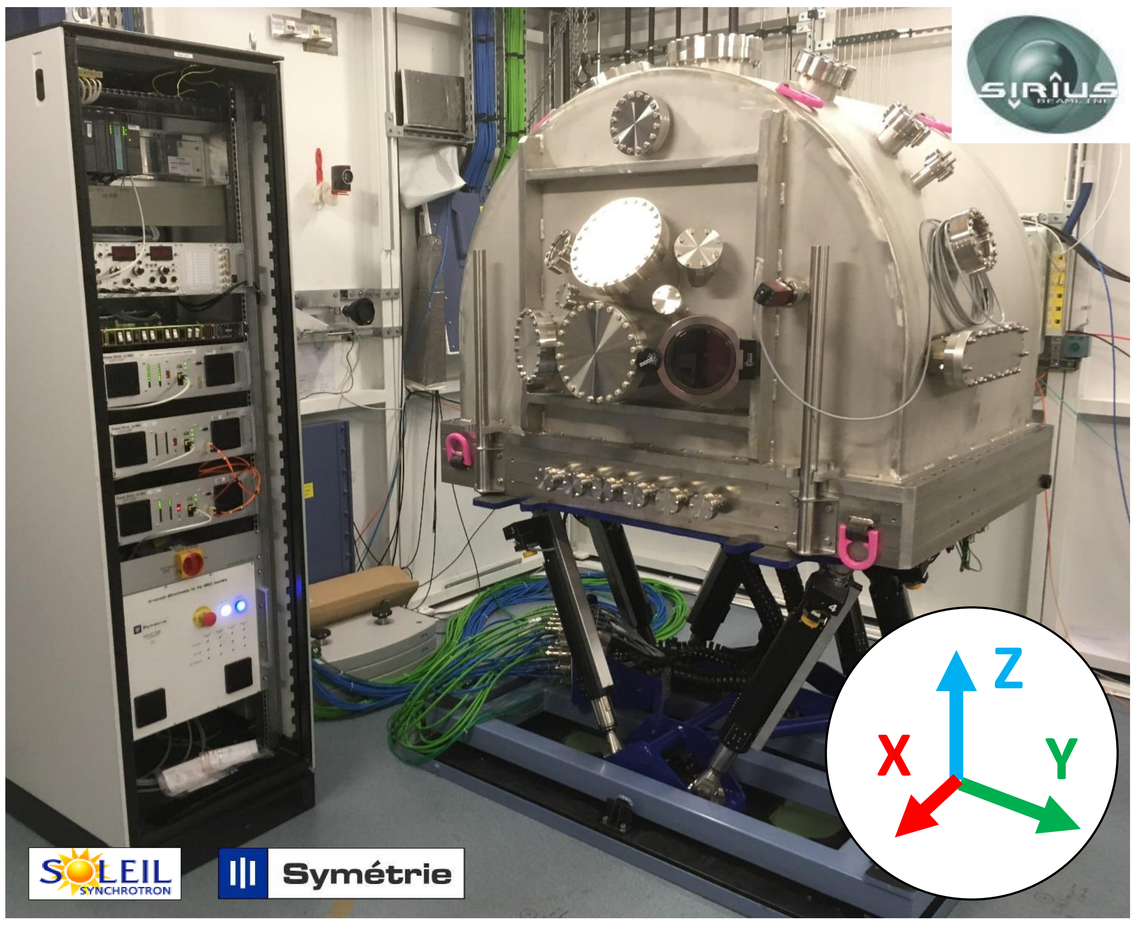
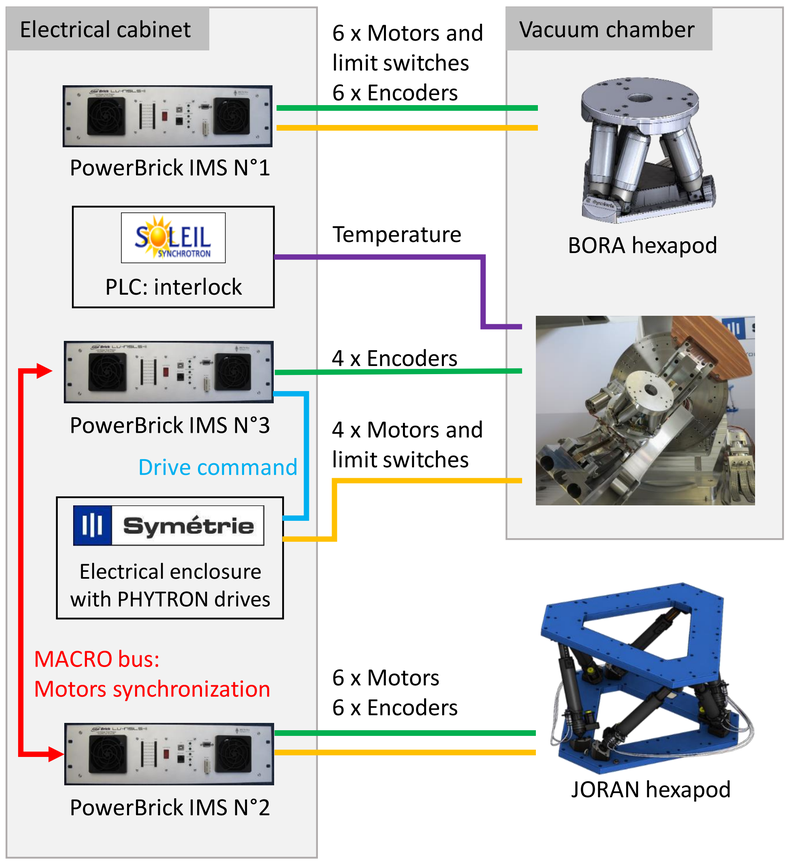
Context : SOLEIL (France) and MAXIV (Sweden) Joint project developed by SYMETRIE company and complementarily funded by an Ile-de-France region project (DIM Oxymore) [1]

SIRIUS beamline diffractometer composed of 3 subsystems:

- **JORAN hexapod** at the bottom (carries the system with the vacuum vessel), and **used to align the center of the diffractometer.**
- **4-circle in-vacuum diffractometer**
- **BORA hexapod** embedded **inside the diffractometer** and **used to align the sample stage**





Hardware architecture for control

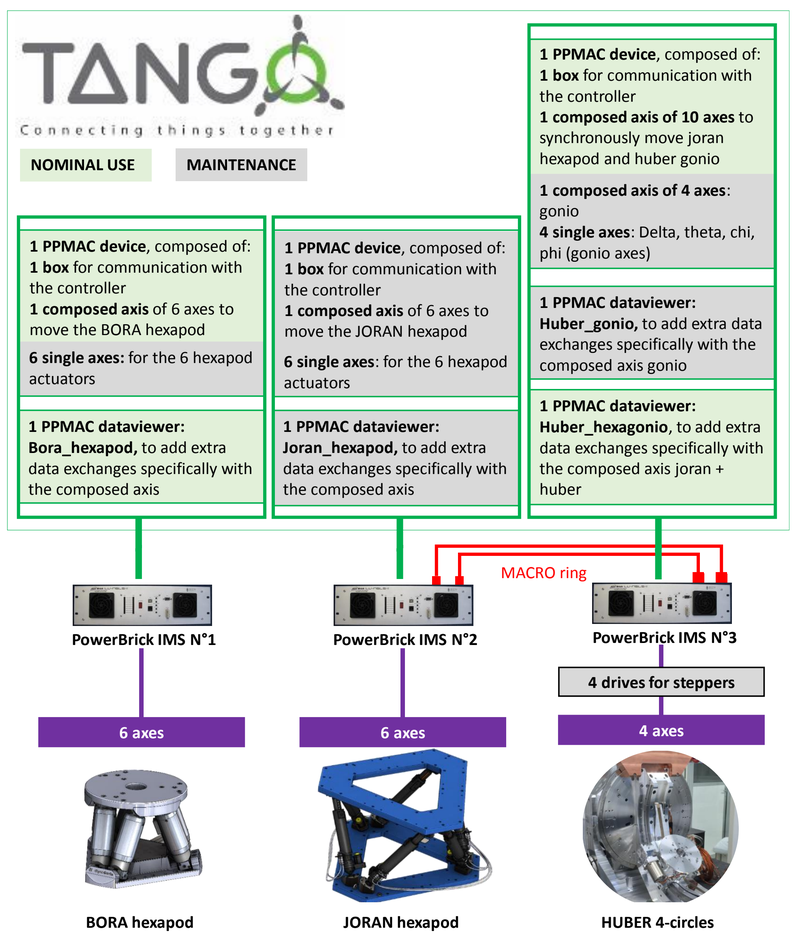
Control architecture : Based on Standard SOLEIL hardware and software architecture fully integrated in TANGO.

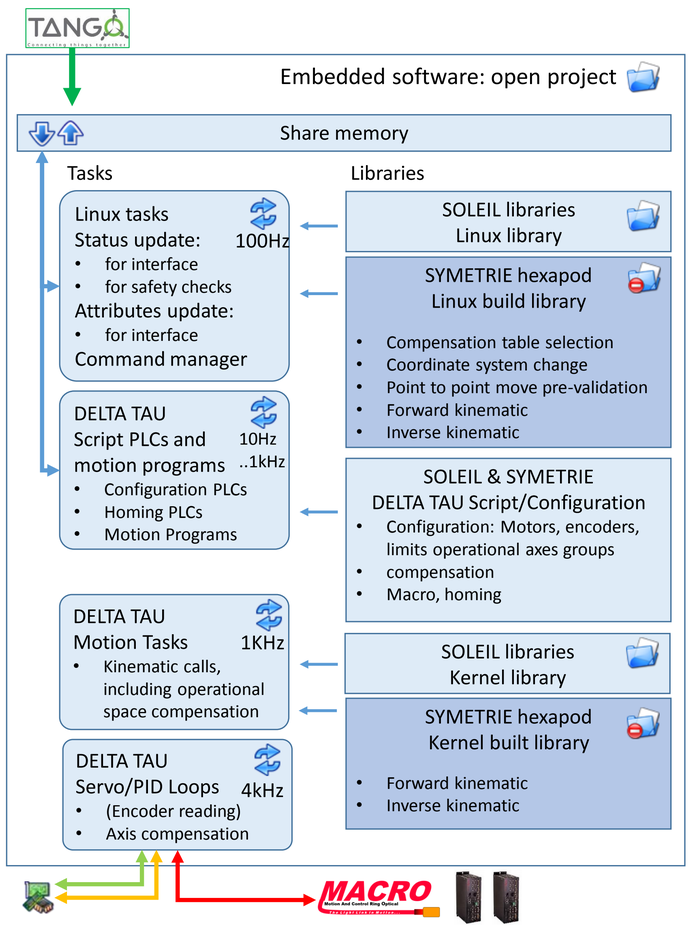
Hardware devices use **PowerBrick Delta Tau controller** selected in the context of REVOLUTION project at SOLEIL.

TANGO Software interface using :

- Device **PowerPMACBox** for the controller and general data.
- Device **PowerPMACAxis** for driving physical axes.
- Device **PowerPMACComposedAxis** for driving composed virtual axes (one device/CS).
- Device **RawDataViewer**, a diagnostic tool providing read-only raw firmware data of Power PMAC for specified axis.

Embeded software manage the **kinematics**, the **hexapod moves pre-validation**, the **coordinate systems changes**, some **real-time security** verification





Tango device and embedded software integration

Successfull Collaboration

Diffractometer factory acceptance tests :

- **mechanical integration on the beamline**
- **metrology constraints,**
- **vacuum quality of the chamber,**
- **project management and collaboration successfully achieved**

This project convinced in SOLEIL in the **choice of the DELTA TAU controller** for its systems requiring complex control.
It also confirms that the **software architecture is flexible** and well **adapted** for **ollaboration**

[1] The Ile de France region (project <FORTE>, DIM-Oxymore)