TUMBCMO33

Expanding Motion Architecture Using EtherCAT in the Australian Synchrotron

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ANSTO

Motion Architecture Extension at Australian Synchrotron

Drivers

- BRIGHT Program standardization
- Standardized deployment model for our facility
- Reduce stock volume and cost
- New development path for the future
- Support safety motion applications
- Pandemic related supply chain issues
- Reduce single vendor dependence

Constraints

- In-house development, maintenance
- hardware dependencies
- skill dependencies

Strategy

- Full support with minimal change to the existing Software Stack
- Keep Hardware Interfacing standard (wiring and connectors)
- Limit and restrain the scope of smart devices, configuration management for ongoing support
- Various H/W suppliers available for EtherCAT support

EtherCAT fieldbus as a technology makes sense for our facility

Update on Bright Beamlines at ANSTO's Australian Synchrotron
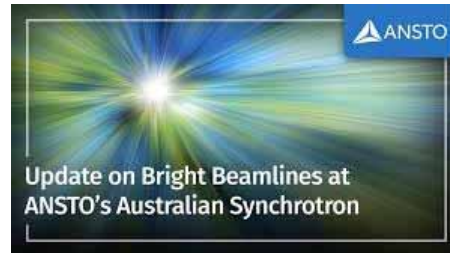
Extended Architecture

Standardized deployment model

- Same software stack - easy integration
- Same configuration process as PB
- Application data contained in standard templates (BaseConfig)

Additional In-House Software support

- Control System Breakdown Structure (CSBS) database modelling tool
- QT based GUI generator tool
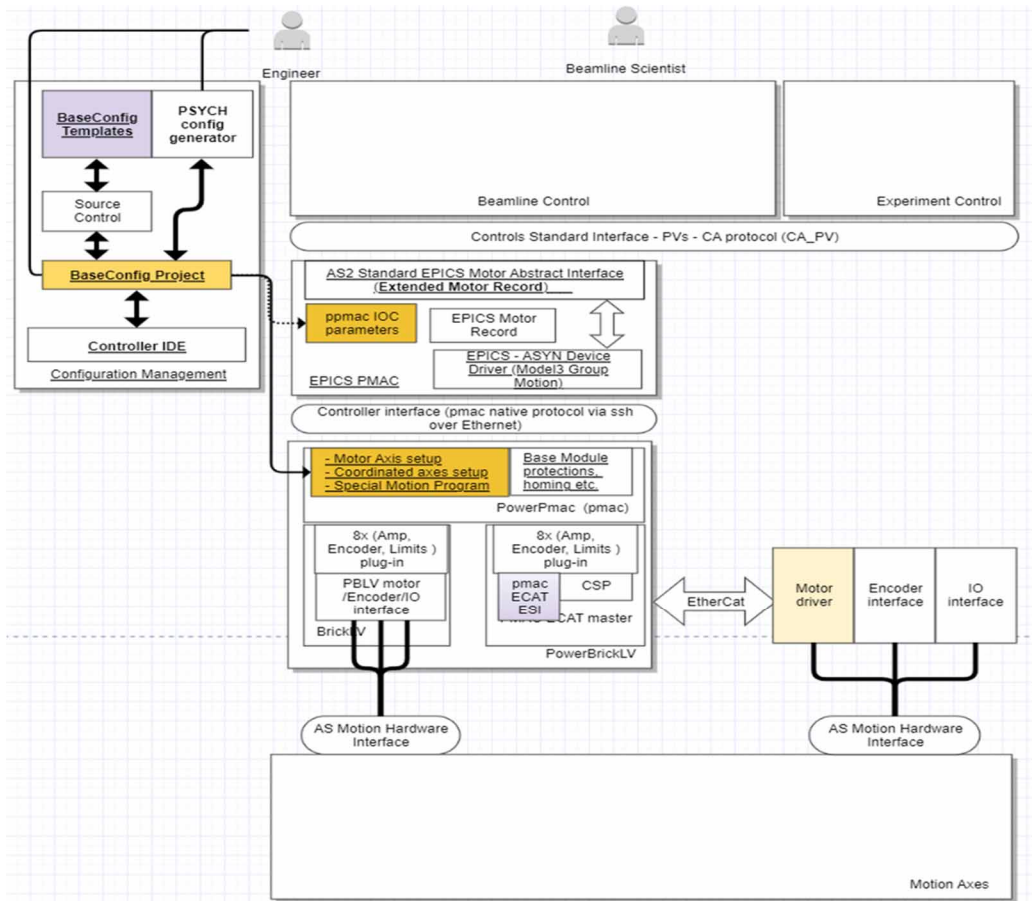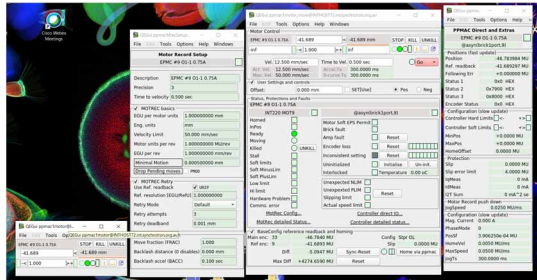
The Ocelot prototype: PB host with 2 Ocelot AUG23

- 24 total axes (8 axes PowerBrick host & 16 axes EtherCAT)
- 48VDC @ 5A, 2-phase stepper motor control
- Customizable PCB based interface back plane
- Cable interface standardized (use existing cable systems)
- External power supply (uses existing PSU)
- One external host controls up to 8 IOC
- One IOC per EtherCAT controller

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