



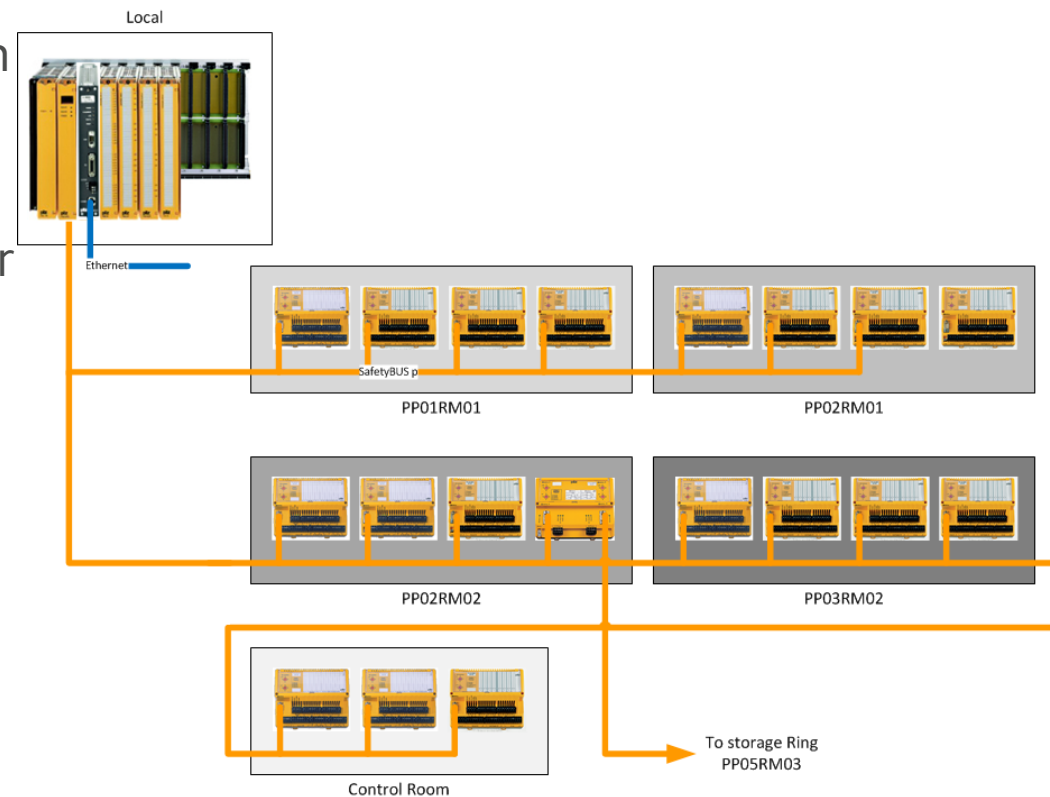
# Machine PSS upgrade at Australian Synchrotron

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# Background

- Existing Personnel Safety System (PSS) at the Australian Synchrotron has reached its End of Life.
- Most of the PILZ PSS-3000 hardware and software is no longer available, supported or repairable.
- This would affect the availability of the machine and beamlines for experiments.

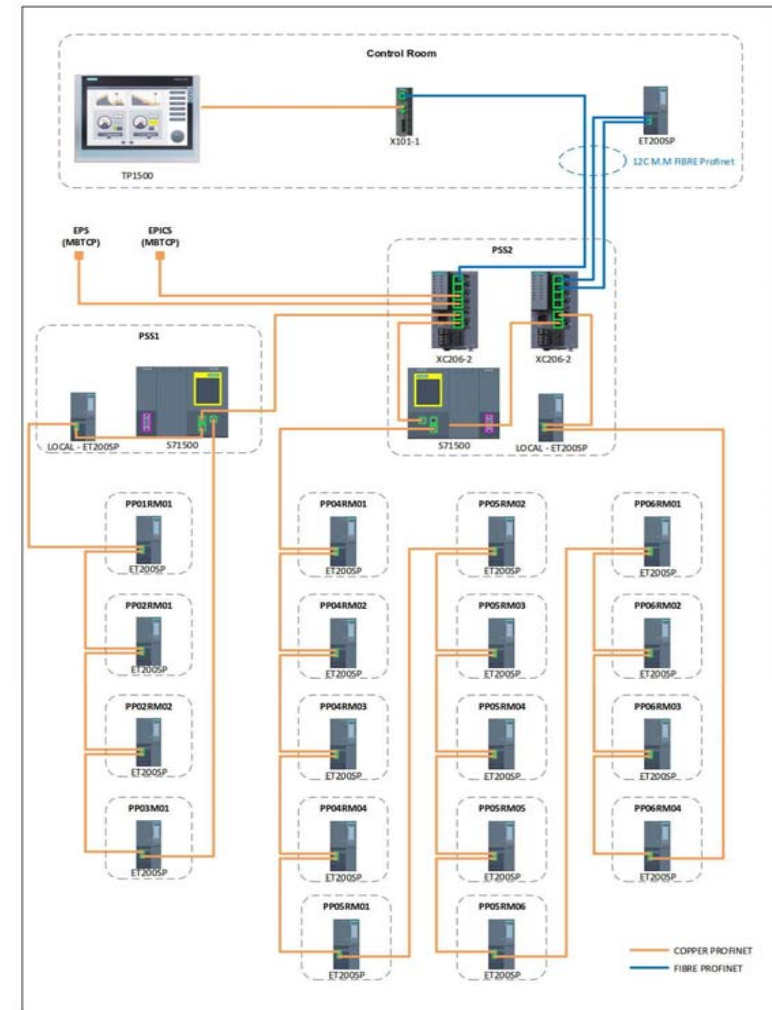


# Machine PSS Upgrade Project

- The project aims to reduce the risk of a facility wide unplanned shutdown by executing an upgrade/ replacement of the existing PSS PLC hardware and software platform.
- Accommodating new Bright beamlines/front-ends PSS requirements
- Pilz proposed upgrade path (PSS 4000) is almost like installing a new system.
- A tedious and delicate cut-over process in a limited time frame
- The new PSS hardware/software should be fully tested before the installation to be able to meet the tight schedule
- A powerful PLC simulation tool is required
- Other safety PLC platforms also on the table
- The project has been put to open tender and awarded to a well-known system integrator.

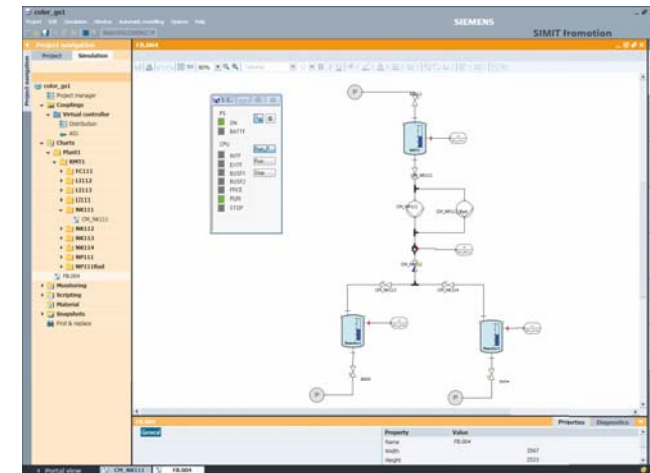
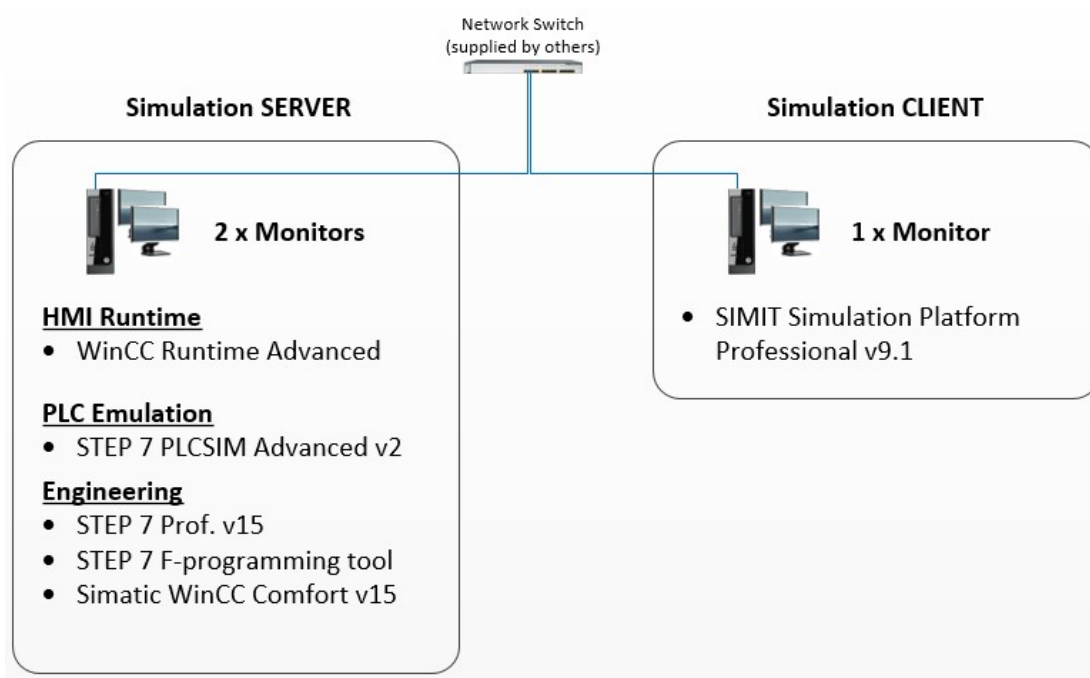
# System Architecture

- The proposed PSS will be based on Siemens S7-1500F safety PLCs and PROFINET/PROFISafe remote I/O system.
- PROFINET ring topology with MRP redundancy
- EPICS interfacing via MODBUS TCP/IP
- The same platform will be used for new BRIGHT beamlines' PSS



# Simulation Platform

- SIMIT simulation platform from SIEMENS with connectivity coupler to PLCSIM Advanced
- Capable of simulating S7-1500F systems with Standard and Fail-safe local and remote I/O
- PSS program validation, virtual commissioning and operator training



# Project Timeline

<b>Project Milestone</b>	<b>Baseline month</b>
Project start	March 2018
Request for Tender Issued	May 2018
Tender selected and contract signed	Sep 2018
Detailed Design Completed + Functional Assessment	Feb 2019
FAT completed	Jun 2019
Installation Completed	Dec 2019
SAT/ Validation/Handover - ARPANSA Submission for approval	Jan 2020
ARPANSA Approval to Operate	Feb 2020
Completion of outstanding issues/ Final Handover	May 2020
Project close (1 month post handover/signoff)	30 <sup>th</sup> June 2020

# Thank you

