

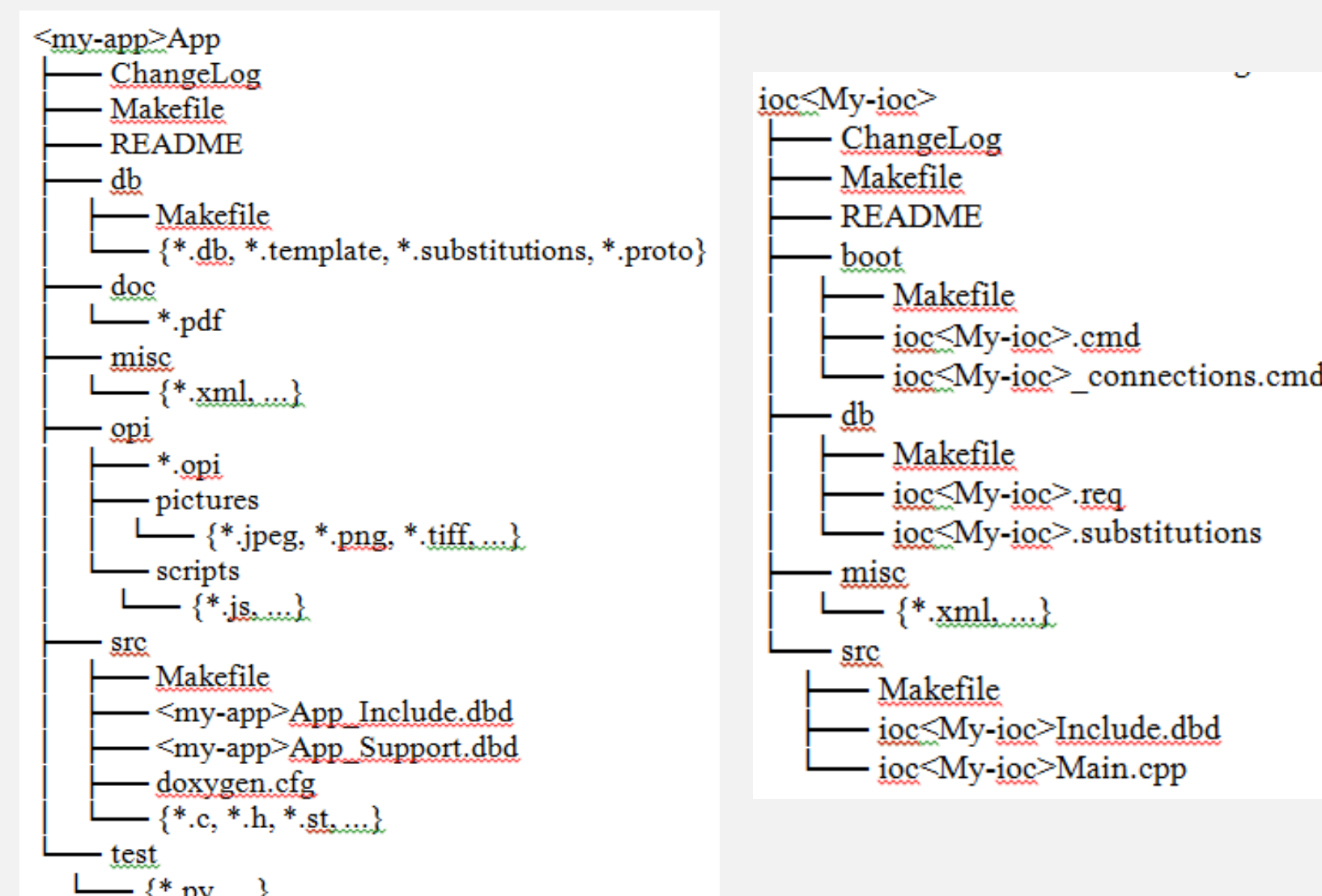
**Abstract:** Our Institute CEA Saclay Irfu was in charge of providing the hardware and software for the EPICS based control system platform for the accelerator projects Spiral2 at Ganil in Normandy and IFMIF/LIPAc at JAEA/Rokkasho (Japan). Our 3-year collaboration with ESS has given us the opportunity to use new COTS hardware. We have made our CEA Irfu control platform evolve by retaining relevant and evolutive ESS solutions. Currently, CEA Irfu is in charge of the design, construction and commissioning at SNRC of the project SARAF-LINAC[1] (MEBT and Super Conducting Linac) including its control. This paper will present our proposition of architecture for the SARAF Linac based on the new CEA Irfu hardware and software platforms.

## IRFU EPICS ENVIRONMENT

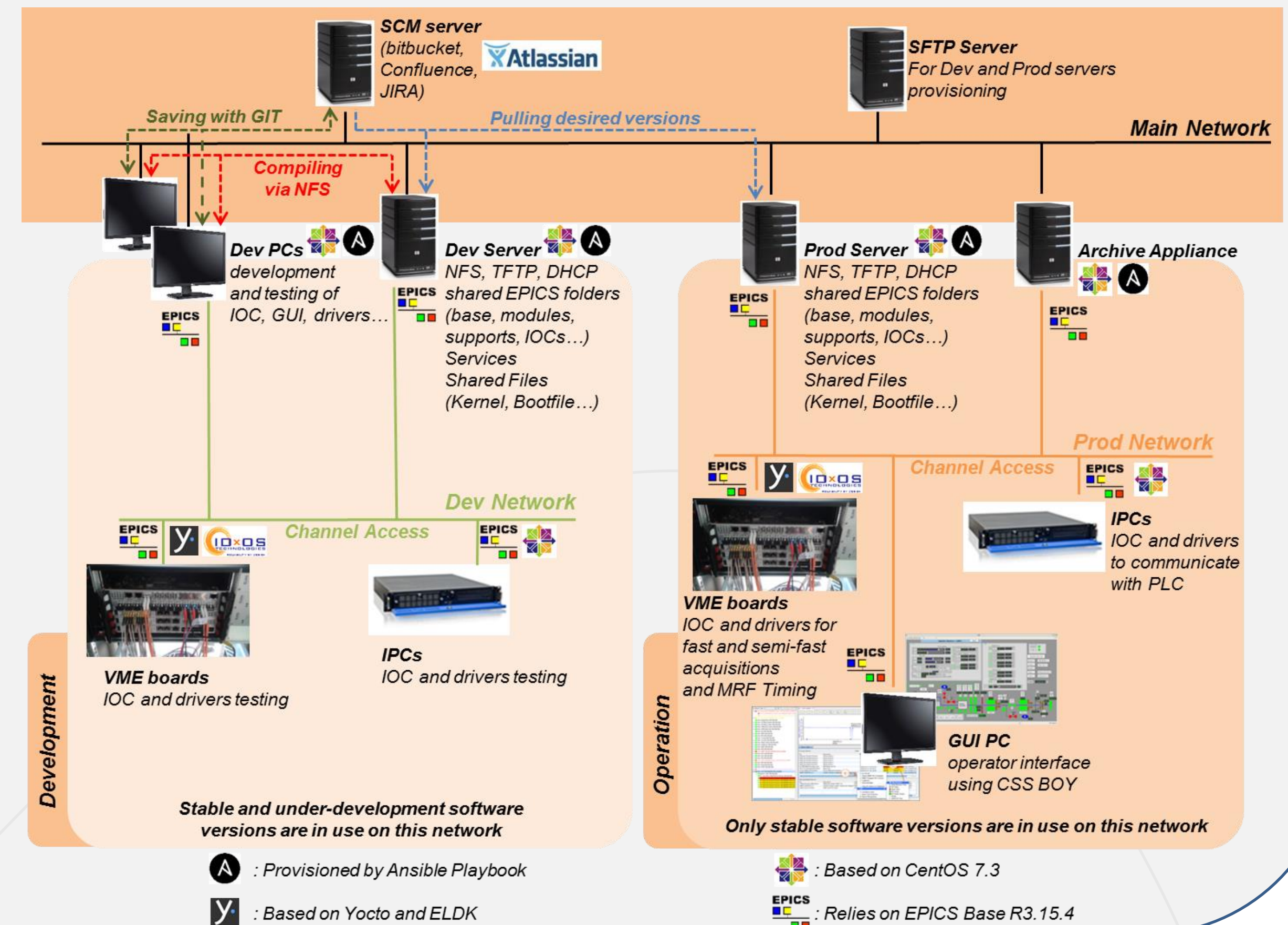
### EPICS based and PLC hardware solutions

Requirements	Sampling/monitoring frequency range	COTS solutions
Fast acquisition	1 MS/s up to 250 MS/s	VME64X & IOxOS CPU 1210/1211 IOxOS FMC ADC-3110/3111
Semi-fast acquisition	50 KS/s up to 2 MS/s	IOxOS FMC ADC-3117
Remote I/Os control	100 ms up to 1s	Kontron Industrial PC
LAN or serial	100 ms up to 1s	EtherCAT Beckhoff (Modbus/Tcp)
Process for vacuum and cryogenics & Remote I/Os & Interlock	100 ms up to 1s	Siemens PLC 1500 & I/O boards/ Fieldbus Profinet and remote I/Os

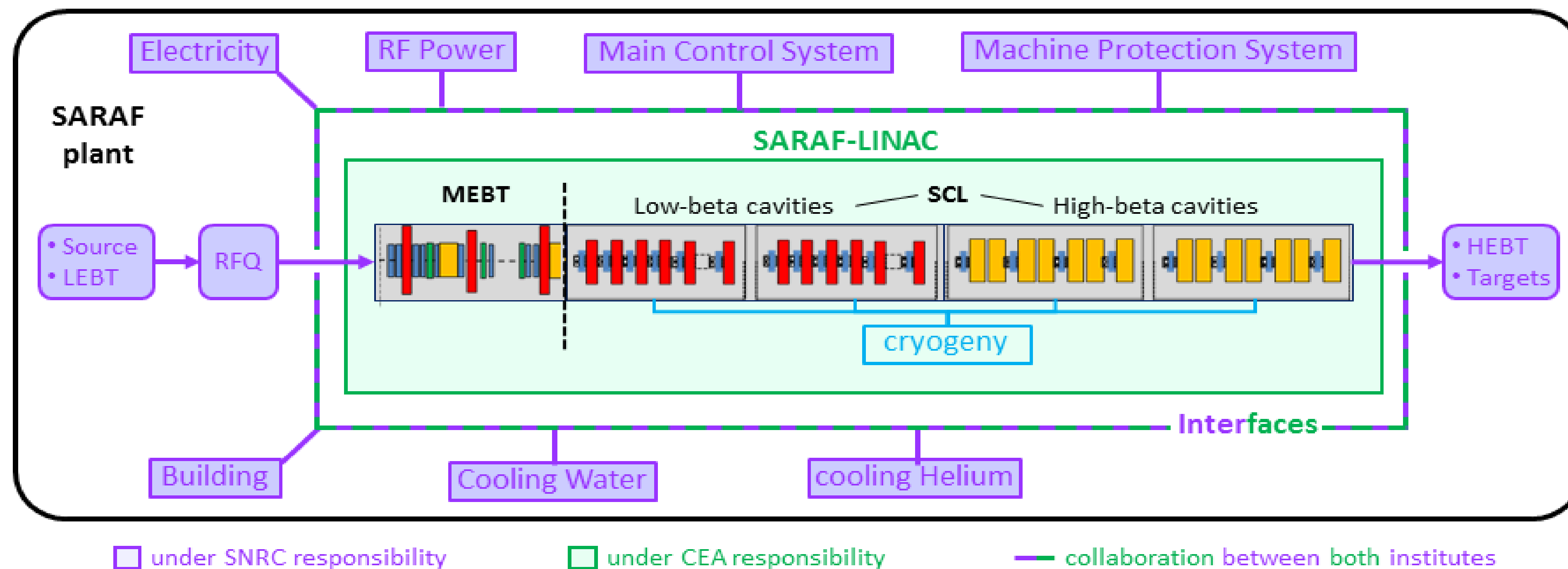
### EPICS Development template



### Development workflow

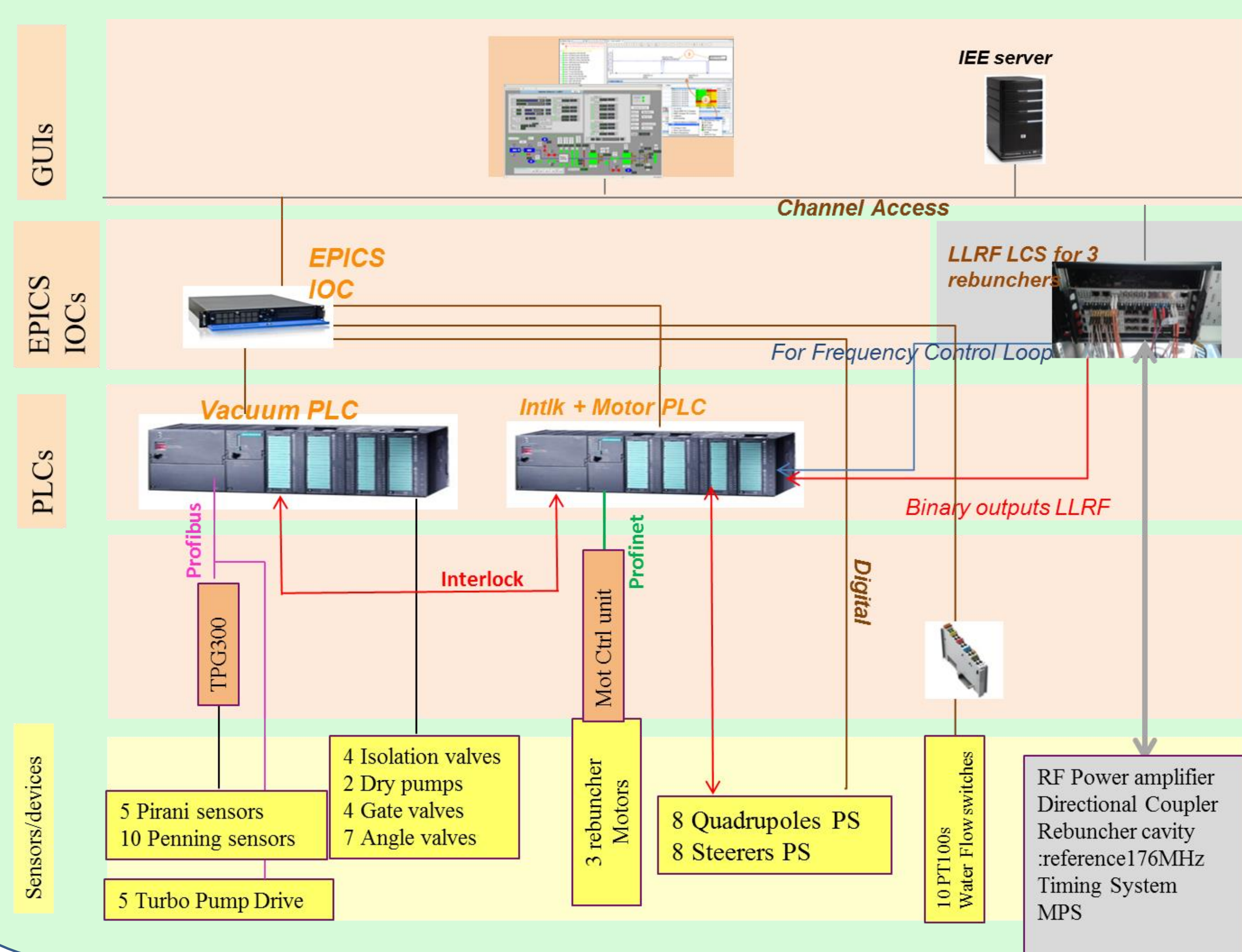


IEE provides a standard development model that should be adopted by all the developers involved in the control system for SARAF. These standards give the necessary homogeneity to the software modules produced.



CEA is committed to delivering a Medium Energy Beam Transfer line (MEBT) and a Superconducting Linac (SCL) equipped with beam diagnostics for supplementing the SARAF Linac accelerator in order to accelerate a 5 mA beam of protons or deuterons at the frequency of 176 MHz. The installation of the MEBT controls including diagnostics is planned for early 2020 and in 2021 for the SCL.

## MEBT control system to be tested at Saclay in 2019



## Cryomodule cryogenics PLC control at Saclay and Soreq

