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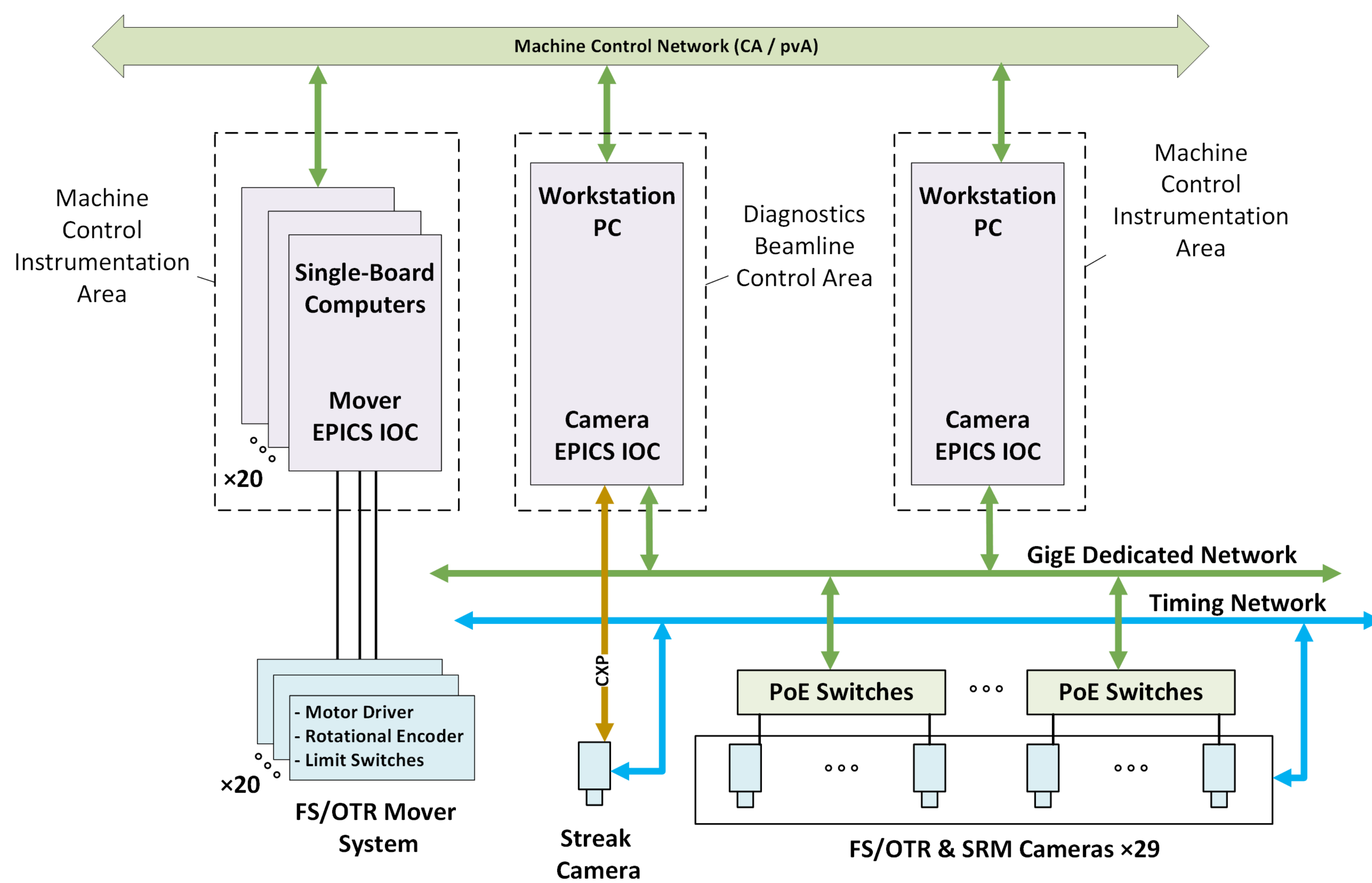
Abstract

There is an ongoing study at Iranian Light Source Facility (ILSF) aims to determine control solutions for a variety of diagnostics tools that will be placed at various locations around the facility. In this paper, an overview of the possible control solutions with a focus mostly on the low-level part of the control system is reported.

Introduction

The ILSF synchrotron light source is under design and construction and now that the basic design phase of the diagnostics subsystems is finished, our job in the control and diagnostics group is to study and document the possible control solutions for each diagnostics tools. However, the study is still in progress and our choices are not finalized yet. The diagnostics tools we will discuss in this paper are Fluorescent Screen (FS) and Optical Transition Radiation (OTR) systems, Beam Loss Monitors (BLM), Fast Current Transformer (FCT), Integrating Current Transformer (ICT), Faraday Cup (FC), and Direct Current Transformer (DCCT). These tools are categorized into three sections and the control solution is discussed for each one.

CAMERA BASED DIAGNOSTICSTOOLS



An Example of the Possible Solution for Interfacing Camera Based Diagnostics Tools to the Control System

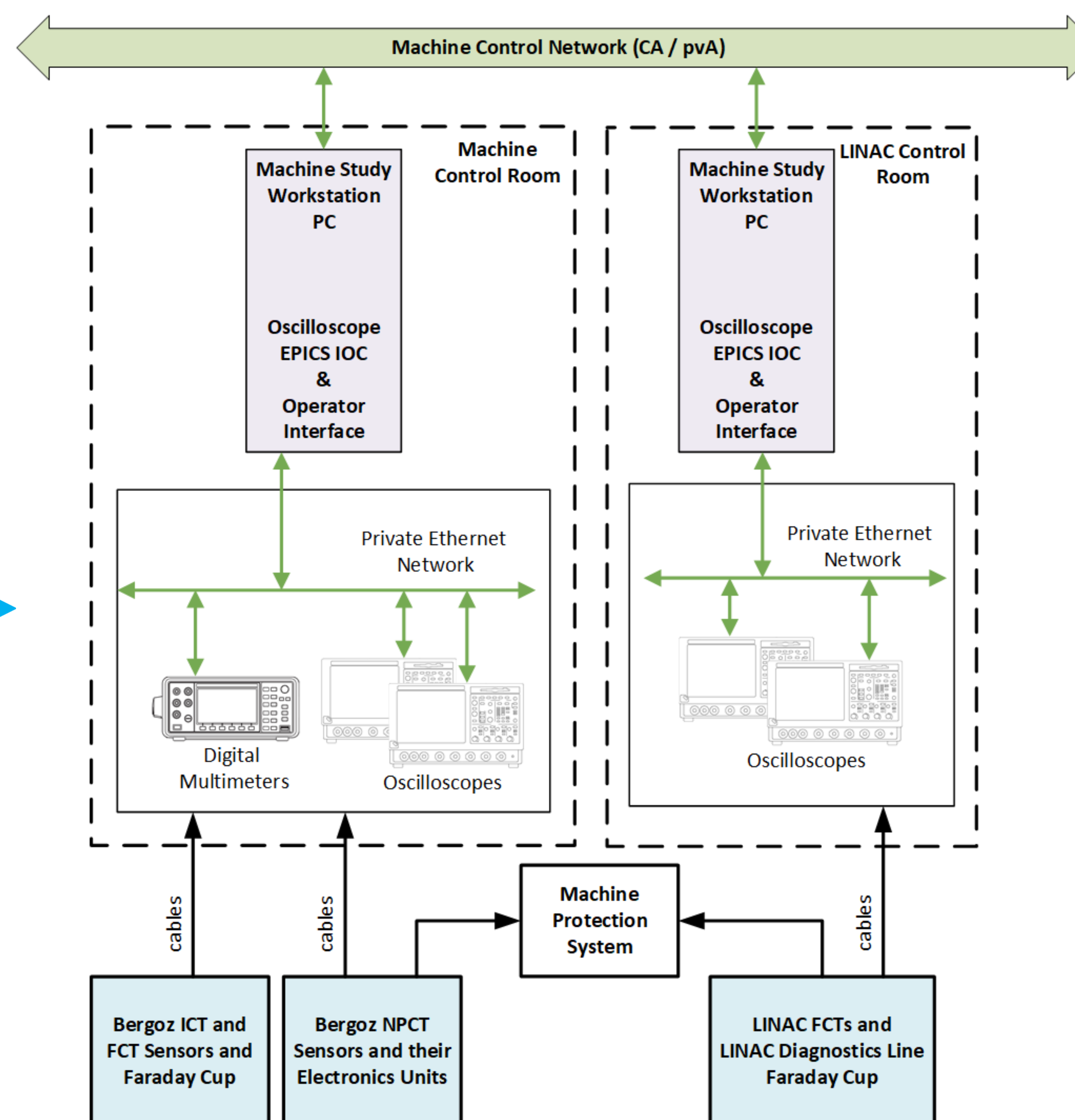
Camera Based Diagnostics Tools and their Controllable Components

Tool	Location	Qty.	Controllable Component
FS/ OTR	Linac Diagnostics line, LTB, Booster, BTS, Storage ring	20	Stepper Motors, CCD Cameras, Single-Board Computers
SRM	LTB, Booster, BTS, Storage ring, Diagnostics beamline	9	Streak Camera, CCD Cameras

Control Requirements and IOC Platform for the Camera System

Camera	Interface	Data Rate	Frame Grabber	IOC
CCD Camera	GigE	320 Mbps	No	PC
Streak Camera	CoaXpress	2000 Mbps	Yes	PC

DIAGNOSTICS TOOLS with ANALOG OUTPUTS

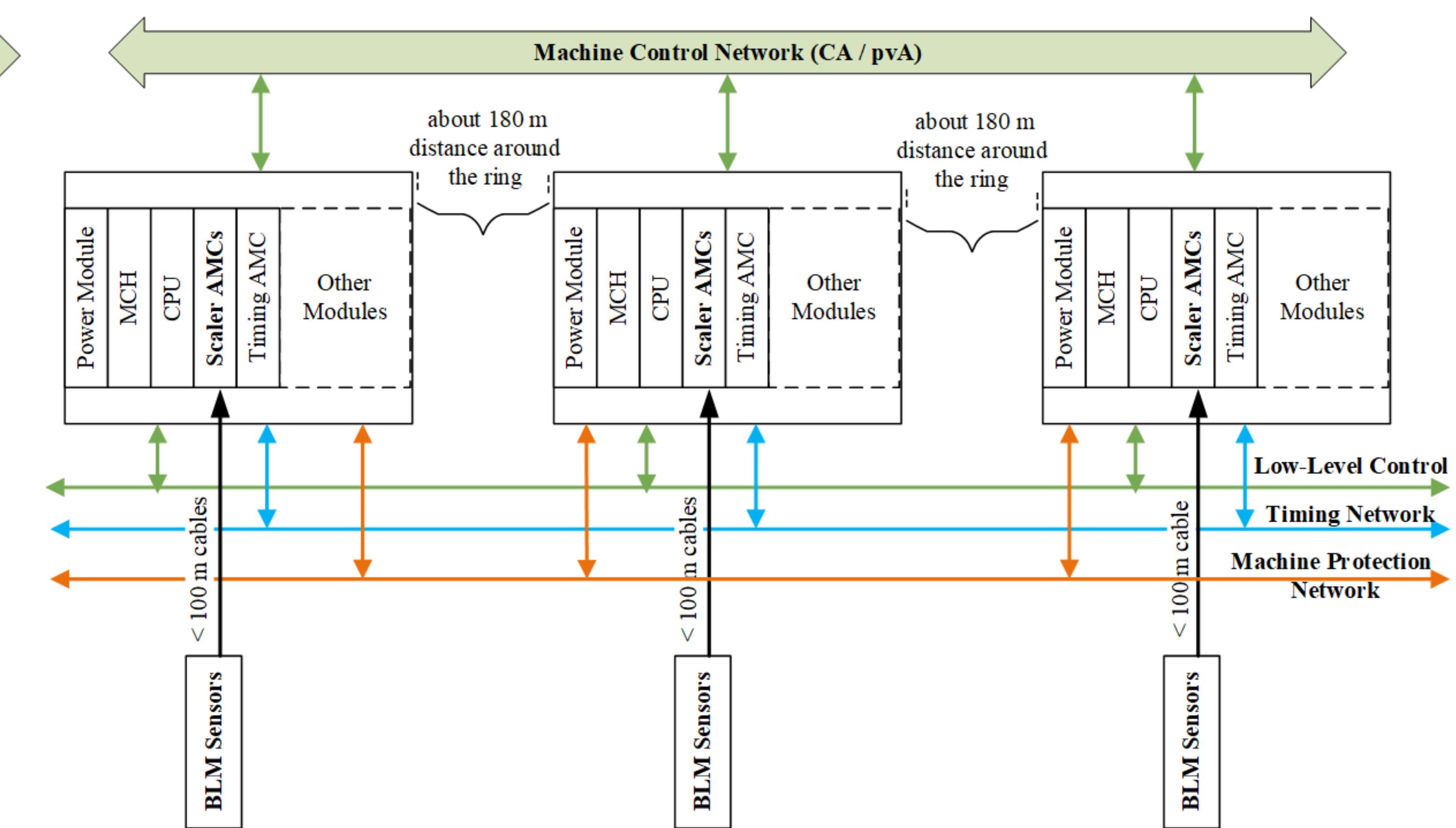


An Example of the Possible Solution for Interfacing Diagnostics Tools with Analog Output to the Control System

Control Requirements and IOC Platform for the Camera System

Tool	Location	Qty.	Controllable Component	IOC
FCT	Linac, LTB, BTS, Storage Ring	9	Oscilloscope 4GSa/s, 1GHz	PC
ICT	LTB	2	Oscilloscope 2GSa/s, 1GHz	PC
FC	Linac Diagnostics line	1	Oscilloscope 2GSa/s, 200MHz	PC
DCCT	Booster, Storage Ring	2	18bit Digital Multimeter	PC

BEAM LOSS MONITORS



An Example of the Possible Solution for Interfacing Beam Loss Monitors to the Control System

Location of BLM sensors and their IOC Platform

Location	Qty.	IOC
Near to the booster dipole magnets	55	MTCA
Near the storage ring dipole magnets	100	MTCA
Downstream of the RF cavities	6	MTCA
Near to the insertion devices	7	MTCA
Next to the collimators and scrapers	4	MTCA

Summary

We presented our progress in the ongoing phase of the study of possible control solutions for some of the ILSF diagnostics tools. We presented simplified layouts of control solutions for camera based diagnostics tools, mover systems of FS/OTR and scrapers, BLM system, and analog diagnostics tools. The next step is to choose between the solutions studied, and build prototypes and test benches accordingly.