

Control System Expansion and Upgrade Requirements Outline

Compatible Expansion

- existing applications work with new subsystems
- expansion compatible with future upgrades to core

Smooth Incremental Upgrade

- change portion of system during shutdown day or two
- return to operational system at end of shutdown
- quick back-out if problems develop

Controls Availability Requirements

- less than 8 hours/year user operation downtime acceptable?

- maintain availability

 - high reliability

 - short time to repair (15 min avg)

 - reboot

 - broken i/o hardware

 - broken core hardware

Maintenance Schedule

- monthly

 - one 8 hour shutdown (monday)

 - one 4 shift two day shutdown (mon-tue)

- annually

 - one approx 6 week shutdown

 - possibly a second usually shorter shutdown

Legacy Compatibility for Upgrade

- rear I/O cable plant

- electrical isolation per sector (communications)

- 3U rack plan

- Low heat load, power consumption

- 4 x 16 bit ADC, DAC (see ILC specs for details)

- 24 bits TTL type I/O (see ILC specs for details)

- I/O density 6x ILC per 3U chassis

Legacy Bandwidth

- ILC polling 100 hz (nom)

 - to ILC local memory

- CMM polling 20hz (nom)

 - to CMM shared memory

- PC application polling DMM 10+ hz

 - DMM fetches from shared memory

Interim System Configuration

- (CRIOC, SRIOCs)

- VME

- 68K cpu, 10mb ethernet

- VxWorks RTOS

- EPICS RT Database, Applications, Channel Access Data Transport

Prototype System - Third Harmonic Cavity

- cPCI chassis (semicustom)

- powerpc CPU, 10/100 ethernet

VxWorks
EPICS
IP Carrier boards
Rear I/O adapter board (custom)
IP I/O card (custom)
GPIB via HP box
serial via ??