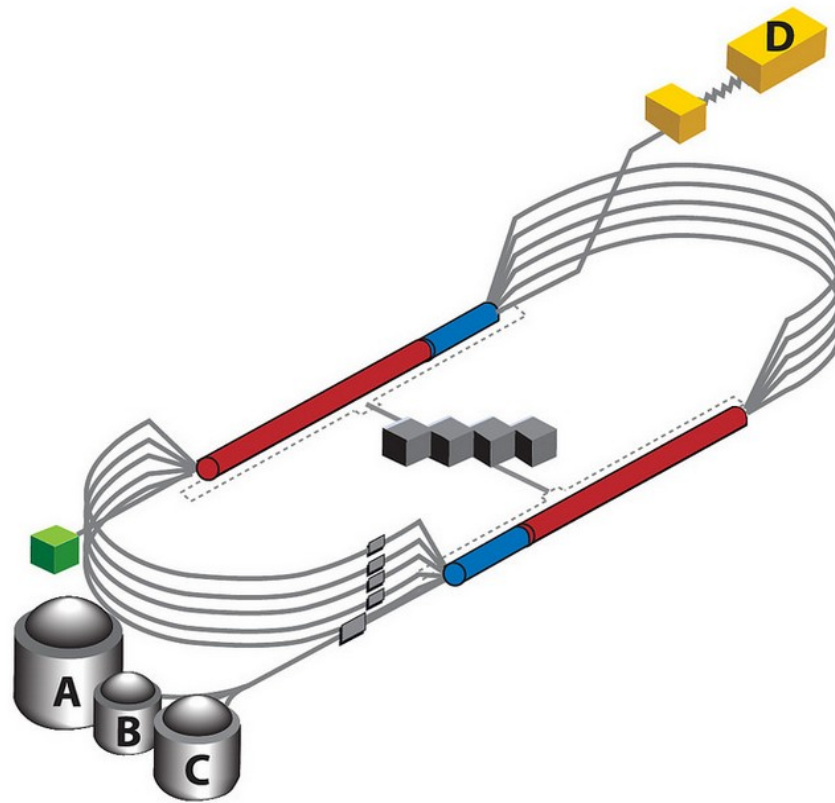


Training Control Room Accelerator Physicists

By Isodoro Carlino & Noel Okay

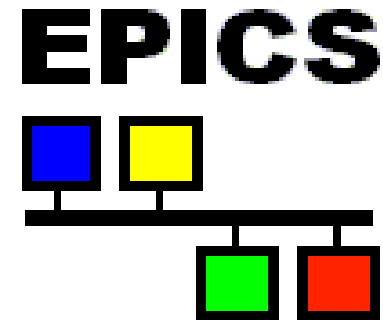
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CEBAF @ JLab



EPICS and Channel Access

- The EPICS control System allows Process Variables (PVs) to be protected against unauthorized modification through the use of Channel Access (CA controls.)









How does Channel Access work?

- Channel Access (CA) is deployed on an ioc (Input/Output Controller) by ioc basis.
- Only Operators and Crew Chiefs are allowed to modify PV values during Accelerator operation. (UserID.)
- Some PV's can only be modified by qualified Crew Chiefs.

How does CA work?

- Access on individual IOCs can be opened by the operations staff.

JTabs IOC Channel Access Control - Injector 02Oct14 22:41:14									
Name	Status	Rack	Heartbeat	Duration		Status		TimeLeft	LastReboot
iochelgen		IN03B04	1930557	0	0	Secure	Open	0	10SEP14 14:25:22
iochelmag			1934307	0	0	Secure	Open	0	23Jun90 01:19:01
iocibc0102		IN02B23	821819	0	0	Secure	Open	0	23Sep14 10:25:03
iocin1		IN03B04-27	262927	0	0	Secure	Open	0	29SEP14 21:38:25
iocin1 mag		IN03B21-18	1930027	0	0	Secure	Open	0	10SEP14 14:33:27
iocin2		IN03B04-18	106106	0	0	Secure	Open	0	01OCT14 17:12:49

12 GeV Commissioning

- Crews supplemented by accelerator physicists.
- Usually physicists are supported by dedicated operator with Channel Access.
- Paradigm unworkable in commissioning period.
- Method needed to allow physicist access to control system under their own UserID.

Machine Access Control (MAC)

Training

- Assured an adequate level of training in accelerator safety.
- Assured an adequate level of training in operation protocols.
- Must be applicable to accelerator physicist with varying knowledge of actual machine operation.

MAC Training Curriculum

- Based on a subset of existing new Operator Training.
- Created using Moodle, a free software e-training platform. (Moodle = Modular Object Oriented Dynamic Learning Environment)



MAC Training Curriculum



- Modular
- Multimedia capable platform (text, video, graphics, hyperlinks.)
- Self paced
- Individual student records.
- Standard prior to opening CA for operators.

MAC Training

Machine Access Control Training Curriculum	
Course #	Course Name
MCC101	Introduction to MCC
MCC103	MCC Operations Manual
MCC104	Accelerator Operations Directives
MCC-107	Introduction to the JLab Computer Network
MCC110	Operator Screens
MCC111	General Tools Screen
MCC112	Log books and log entries
MCC131	Input Output Controllers (IOC)
MCC132	Archiver
MCC139	SRF Control Screens
MCC145	Channel Access Control
MCC148	The Operator's Workstation
MCC-702.08	AOD Supplement (Just in Time)
MCC-702.19	Operations Safety (Just in Time)
ADM008	Machine Access Control Briefing
	July 23, 2014
	Maintained by: okay@jlab.org

Objective of MAC Training

- Provides students with
 - basic accelerator safety guidelines
 - basic machine control knowledge of EPICS
 - control screen basics
 - basic logbook and logging requirements.
 - Control room protocol & Accelerator Directives

Support and Response

- Fully supported by the Director of Operations
- Required by a special Commissioning addendum to the Accelerator Operating Directives.
- 24 of 27 physicists completed program.
 - Only qualified personnel were allowed machine control system access while providing support.

Support and Response

- There was a generally positive response from physicist students (probably due to strong management support.)
- Only significant complaint was time necessary to complete program, which took 8-12 hours to complete.
- Helpful feedback from knowledgeable students on content which will be applied to improving course for Operators.

Support and Response

- Many said they did not realize how much operators needed to know to run the accelerator

Summary & Results

- MAC program was successful – resulted in better support for commissioning.
- Training courses were improved by physicist feedback.
- Operator/physicist interaction improved.
- Operations safer, due to additional knowledgeable staff in MCC.

Summary & Results

- Better understanding of safety requirements by supporting physicists, scientists and oncall staff.
- Better test plans for commissioning because training physicists created better test plans because they have a better idea of control room protocol and machine conditions, control screens available and environment.

Questions

