EPICS

APS Controls
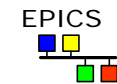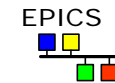
Marty Kraimer
APS

Field Buses

EPICS

◆ BITBUS
  ◆ Vacuum and Power Supplies
  ◆ Two VME Interfaces available
    ◆ Bitbus protocal good
    ◆ Interfaces bad
  ◆ Don't use
◆ Allen Bradley
  ◆ I/O good for slow I/O
  ◆ SV1R scanner not good
  ◆ SNS developing new interfaces. May require PLC
◆ KOYO PLC
◆ GPIB
  ◆ Many devices. Good EPICS support
  ◆ Hope for evolution to Ethernet
◆ Serial – Mainly for monitoring Conventional Facilities
◆ Future
  ◆ CAN
  ◆ DSP based solution for Power Supplies

Managing EPICS Databases

EPICS

- Follow guidelines from
  - EPICS IOC
    Software ConfigurationManagement
  - Document available Online
  - Chapter 7 explains APS/ASD Configuration Management Procedures
  - Similar to exampleApp
- Highlights
  - All human edited files under CVS control
  - All support available as releases
  - IOC applications
    - Managed on a branch
    - Small changes can be made easily
    - Large changes require a new branch
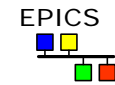
IOC Applications Directory Structure

EPICS

- /usr/local/iocapps/
  - r3.13.x/
    - support
    - ioc
  - iocinfo
    - bootlog
      - iocxxx – message written when ioc booted
    - iocdata
      - iocxxx – location of ioc
    - pvdata
      - iocxxx – list of record names. Generated at boot.
    - iocerrorlog
    - …
  - adlsys
  - opysys
  - …

Support
Directory Structure

EPICS

◆ /usr/local/iocapps/R3.13.2/support
- ◆ PSCU/
  - ◆ 1-3
  - ◆ …
- ◆ allenBradley
- ◆ base
- ◆ bitBus
- ◆ … Altogether >20 support directories
  - ◆ Some are APS specific
  - ◆ Some are unbundled EPICS products

Ioc
Directory Structure

EPICS

◆ /usr/local/iocapps/R3.13.2/ioc
- ◆ booster/
  - ◆ 1/ - This is branch
- ◆ linac/
- ◆ … Altogether 18 separate applications
◆ Ioc/booster/1
- ◆ bpmApp/
  - ◆ bpmDb/
  - ◆ … other Db directories
  - ◆ Src/
- ◆ …App – altogether 11 Apps
- ◆ iocBoot
  - ◆ Ioc… - altogether 18 iocs

High Level Applications

EPICS

- ◆ Controls Group not responsible
  - ◆ Operations Analysis Group
  - ◆ Mike Borland is group leader
- ◆ Based on SDDS Toolkit
- ◆ TCL/TK for SDDS Operator Interface
- ◆ PEM – Procedure Execution Manager
  - ◆ Invoke
  - ◆ Monitor
  - ◆ Create
- ◆ runcontrol record coordinates HLA
  - ◆ Soft record
  - ◆ Library provided for workstation apps
  - ◆ Implements a semaphore
  - ◆ Can be reset if an application crashes