EPICS

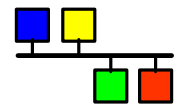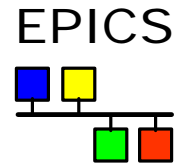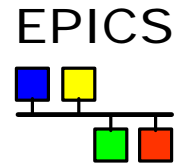# *APS Controls*

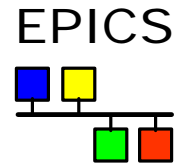Marty Kraimer

APS

Field Buses

- ◆ 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
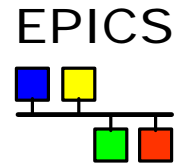
Managing EPICS Databases

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
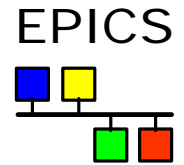 - ◆ opysys
  - ◆ …

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
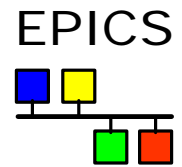   ◆ Some are unbundled EPICS products

Ioc
Directory Structure

- ◆ /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

- ◆ **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