SuperB Online

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Machine Interface

Experiment / Run Control System

Databases
Configuration
Conditions
Ambient
Inventory

Computing Infrastructure
File Servers, SysAdmin, etc.

"Hardware" Trigger

Code & Release Mgmt

Performance Monitoring

Detector/"Slow" Control System

FCTS

Execution Frameworks

Networks

Detector Readout Systems

Data Quality Monitoring

GUIs Visualization

Event Builder

Bookkeeping

Software Triggers/ Filters

Data Persistency

Code

Format: Open Discussion of Online Components

- Go through the major online system components
- Look for existing technology that could be applicable
- Use the BaBar breakdown of Online system components (just as example)
  - a lot of them start with "O" :-)

Online Data Flow - Odf

- ROM software + Event builder interface on farm
  - Event flow management in ROMs, test trigger generation
  - Feature extraction
  - Crate-level event builder
  - Network event builder (ROMs + farm)
  - FCTS, ROM + part of farm configuration
  - DAQ deadtime and performance monitoring
- Custom-developed code

Online Event Processing Oep

- Event handling in the Farm
  - Execution framework on L3 farm nodes
  - Configuration (startup & teardown) of processes on farm nodes
  - Fast Monitoring (Data quality)
    - Event server ("trickle stream")
    - Reconstruction
  - Run-building + Data logging
  - Distributed histograms & collection
  - GUIs for data quality monitoring
- Corba, DIM/SMI++, JAS, custom code

Online Run Control Orc

- High-level management of DAQ system components
  - Sequencing and state synchronization of all Orc and Oep components - data taking and calibration
  - Distribution of configuration information
  - Sequencing of configuration database access
  - Sequencing of error handling and component recovery
  - Sequencing of automated logbook entries
  - Interface to detector control system (for full automation)
    - In factory-mode BaBar detector controlled by PEP state
- DIM/SMI++, EPICS, custom code

Online Detector Control Odc

- Control and monitoring of detector components ("Slow control")
  - Managing subdetector states (ramp up, down, calibration, etc.)
  - Monitor actual values against set values (flows, pressures, temperature, LV/HV ...)
  - Alerts + Alarms
  - Secondary detector safety (soft safety, e.g. integrated rad doses)
  - Interface to PEP-II
  - Archiving and retrieval of time-series values ("Ambient database")
- EPICS, Root, Jas, custom code

Online Databases

- Database infrastructure
  - Configuration DB
  - Conditions DB
  - Ambient DB
  - Logbook DB
  - Data location DB (where are the files)
- Root, MySQL, Oracle, custom code

Computing Infrastructure - CMP

- Online computing infrastructure and system administration
  - File and compute servers (farm, applications, etc)
  - Workstations & operator consoles
  - Network (event builder + infrastructure)
  - System administration & security
  - Backups (disk+tape)
  - Liaison with SLAC computing services
- Electronic Logbook + Shifter tools
  - automated paging, paging web form, etc.
- MySQL, Taylor (sysadmin tool), Amanda, etc.

Focus on Factory Mode

- A significant focus was placed on operational efficiency as part of B-Factory operation
  - Automation
    - Ramping, run start stop, error recovery, etc.
    - Optimization of automated procedures (e.g. automated rampdown on beam loss in the expectation of next fill)
    - Good shifts would run at close to 100% efficiency with no manual intervention required
    - 2 shifters for most of the time + experts on call
  - Focus on fixing problems and improving procedures
  - Keep detailed records of
  - 1 minute / shift adds up to 1.5h / month!