Data Monitoring: System Tests?

• Currently:
  – SVAC Data reports:
    – Made for each run:
      » Separate Digi and Recon reports
    – Static html pages with histograms and written text:
      » No reference histograms
      » No drill-down capability for additional detailed information
      » No user interaction
    – Purpose is to catch big problems!
      » Not for detailed diagnostics!

• Use System tests?
  – Build on the Software release system tests
  – More dynamic system:
    – Histograms stored in database
    – Reference releases (histograms)
    – Some user interaction (choose ref. release, log scale)
Data Monitoring: Requirements I

- Requirements:
  - Automatically updated for each run
  - Results linked from eLog
  - Separate web page with links to runs:
    - Search capability:
      » Want to look at plots for all Science runs from today ...

- Pass/Fail criteria:
  - Reference runs:
    - Default reference run depending on the run type
    - Allow user choice of reference run
  - Automatic spike/dead channel search:
    - Flag if one bin is N% higher/lower than neighbouring bin
  - Hard coded flagging:
    - Flag histogram if some arbitrary condition is (not) fulfilled
  - Pass/Fail will be based on a subset of all histograms!
Data Monitoring: Requirements II

• Drill down capabilities:
  – **Multiple levels of histograms:**
    – Level 1: Simple monitoring - Summary plots
    – Level 2: More detailed plots
    – ..... 
    – Level N: Expert histograms for debugging
  – **Multiple ways of navigation:**
    – User level based:
      » Summary plots, experts plots
    – Subsystem based:
      » CAL --> CalDigi --> CalAdc

• User interaction:
  – **Compare histograms:**
    – Choose reference run
  – **Correlate histograms:**
    – Plot Hist1 vs Hist2
Data Monitoring: Requirements III

• Will need to interact with:
  – eLog
  – Runs database
  – MOOD/MOOT:
    – Link to and extract relevant configuration information
    » If looking at CalAdc: Link to CAL thresholds
  – Calibrations database:
    – Link to and extract relevant calibration constants
  – Housekeeping:
    – Queries automatically based on time of run
  – Data products:
    – Ntuples and root files
    » In case further investigations necessary

• Will be run based!
• Flexible design:
  – Must be easy to add new features as we go along ....
**Data Monitoring Web Page: List Of Runs**

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Run Type</th>
<th>Start time</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Science</td>
<td>18:00:00 Dec 24 2005</td>
<td>Key1</td>
</tr>
<tr>
<td>0002</td>
<td>CI</td>
<td>20:00:00 Dec 24 2005</td>
<td>Key2</td>
</tr>
</tbody>
</table>

- Link to system tests for this particular run
- Links to eLog
- Links to MOOD/ MOOT

The page should contain a list of the N most recent runs. In addition, need **search capabilities**.
Eduardo's Data Monitoring GUI

### Monitoring Distributions for run 12345

Default reference for this release is v7r3p2. [Commentary RM Summary](#)

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Configuration</th>
<th>Summary Plots</th>
<th>Details</th>
<th>Pass/Fail</th>
<th>Comments</th>
<th>Data Files</th>
<th>Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAT</td>
<td>431243</td>
<td>43</td>
<td>443</td>
<td>443/0</td>
<td>Dec 1 2005</td>
<td>digi recon merit svac</td>
<td>10</td>
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<tr>
<td>Trigger</td>
<td>-</td>
<td>34</td>
<td>443</td>
<td>443/0</td>
<td>Dec 4 2005</td>
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<tr>
<td>FSW</td>
<td>-</td>
<td>12</td>
<td>443</td>
<td>443/0</td>
<td>Dec 14 2005</td>
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<td></td>
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<tr>
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<td>443/0</td>
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<td>443/0</td>
<td>Dec 2 2005</td>
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<td>443/0</td>
<td>Dec 22 2005</td>
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<tr>
<td>SAS</td>
<td>-</td>
<td>43</td>
<td>443</td>
<td>443/0</td>
<td>Dec 1 2005</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not sure what the criteria will be

ID of config from MOOT
Link to a page with tables with values of config used (need tabs to handle 16 modules etc)

Anders W. Borgland
### Data Monitoring: Run Information

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Subsystem</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Summary plots LAT</td>
<td>Key1</td>
</tr>
<tr>
<td></td>
<td>Detailed plots LAT</td>
<td>Key1</td>
</tr>
</tbody>
</table>

**Subsystem plots:**
- TRG: TRG related config info
- TKR: TKR related config info
- CAL: CAL related config info
- ACD: ACD related config info
- FSW: FSW related config info
- DIAG

Links to histograms for individual subsystems

Links to (subsystem) configuration information
Data Monitoring: Summary/Detailed Plots

Run: 0001

<< TRG  TKR  CAL  ACD  FSW  DIAG >>

CalAdc   CalOccupancy   CalEnergy   Cal...

Histograms

<< Previous

Next >>
Data Monitoring: Subsystem Information

CAL: Summary plots

Detailed plots: CalDigi: - CalAdc
- CalDigiOccupancy
- ......

CalRecon: - CalXtalEnergy
- CalXtalOccupancy
- CalTkrAlignment
- ......

Thresholds

CalCalibCts

Links to configuration and calibration information