LHCb Online Interface to the Conditions Database

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OUTLINE

- Conditions, Conditions DB & LHCb Online
  - LHCb Online Interface to the CONDB
    - System components
    - Data flow
  - Summary
**CONDITIONS**

- **Non-event detector data that vary with time**

- **Condition Object**
  
  - **Metadata**
    - Data item identifier
    - Interval of Validity: \([\text{since, until}]\)
    - Version information
  
  - **Payload**
    - Actual data variables: \(\text{temperatures, calibration parameters, etc.}\)
Hierarchical organization & Versioning

Interval of Validity access & Versioning

Data payload

```xml
<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE DDDB SYSTEM "conddb:/DTD/structure.dtd">
<DDDB>
<condition name="">
<param name="" type="">
</param>
</condition>
</DDDB>
```
ONLINE CONDB

- Subset of monitoring data from HW

- Online Usage
  - Publisher: control system
  - Consumer: trigger processes
 INTERFACE TO CONDB

- Store data produced in the LHCb pit

- System components
  - PVSS panel
  - PVSS control scrip
  - Conditions database server: COOL
    - API for reading and writing conditions data
    - Developed by LCG group at CERN
    - Management condition data in the LHC experiment
  - Communication layer
    - DIM (Distributed Information Management ) system
    - Developed at CERN
    - Machine independent inter-process communications
**PVSS PANEL**

- Define conditions
  - LHCb framework component
  - Display existing nodes in the CONDB

- Select parameters & update type
  - Condition update type
    - Time
    - Change value
    - Value + or – value or %
    - Opt. Combination

- Server status & error msn

- Visualization XML
• Gets the existing definitions existing as dpe.

• Creates 1 thread per condition

• When is the right moment:
  - Builds the XML string
  - Sends the condition to the server

• Independent from the panel
  - Gets automatically new condition definitions
CONDB SERVER

- Publishes the CONDB nodes as DIM service
- Receives the conditions as DIM command
- Generic implementation
  - COOL ⇒ Different relational backends

SQLite & Oracle