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

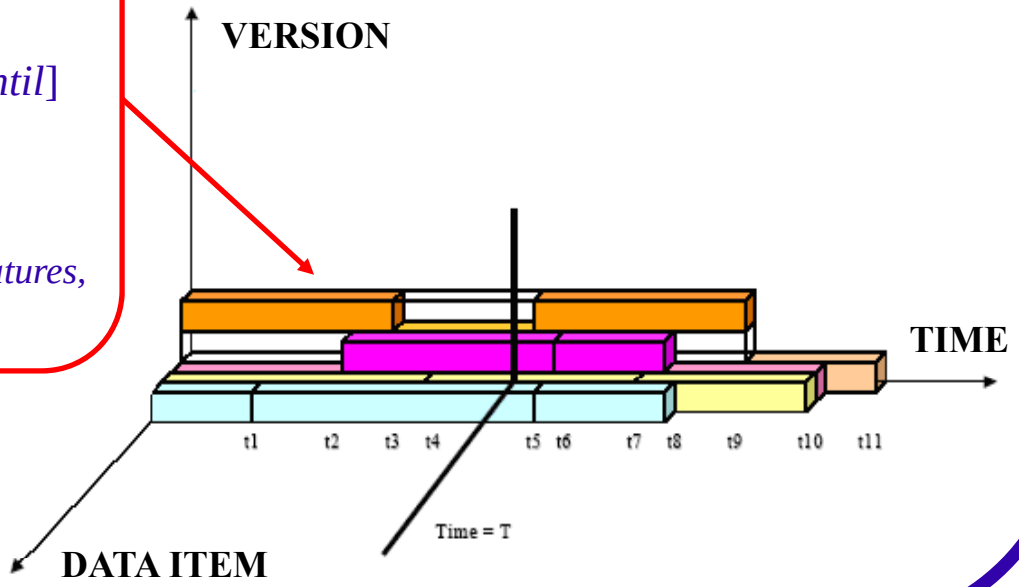
- **Non-event detector data that vary with time**
  - **Condition Object**

- Metadata

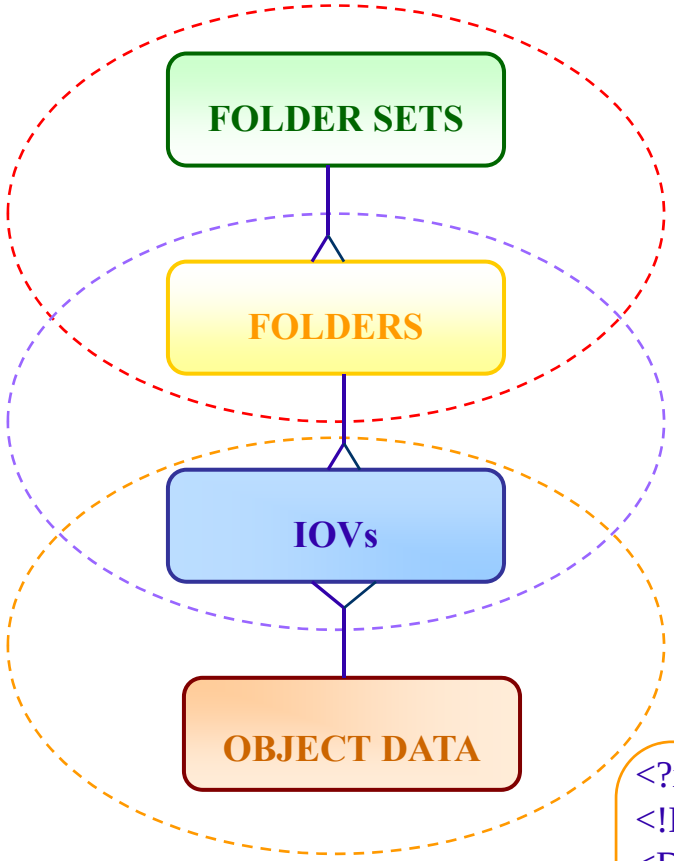
- Data item identifier
- Interval of Validity: [*since, until*]
- Version information

- Payload

- Actual data variables: *temperatures, calibration parameters, etc.*



CONDITIONS DB



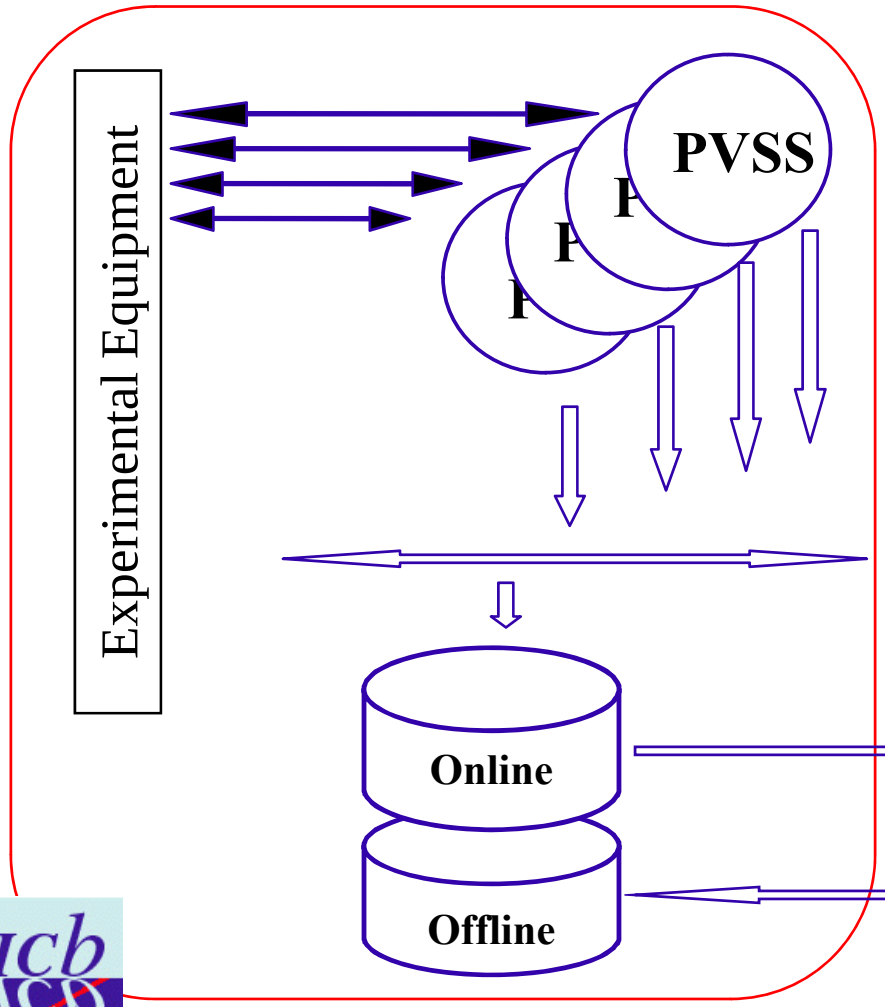
Hierarchical organization
&
Versioning

Interval of Validity access
&
Versioning

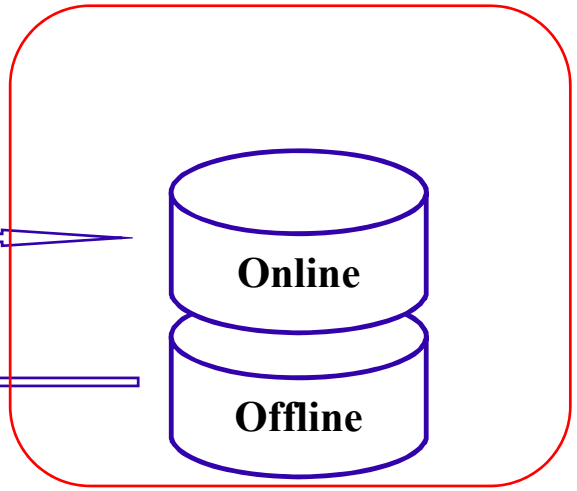
Data payload

```
<?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**

- SCADA(Supervisory Control and Data Acquisition)
- Developed by ETM
- Software package for control and visualization

  - **Conditions database server:** **COOL**

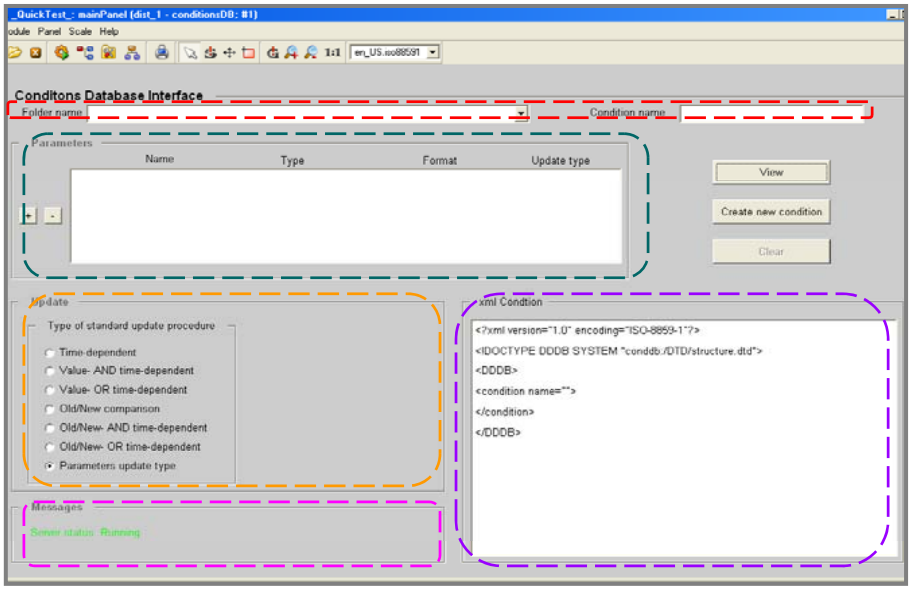
- API for reading and writing conditions data
- Developed by LCG group at CERN
- Management condition data in the LHC experiment

  - **Communication layer**

- DIM (Distributed Information Management) system
- Developed at CERN
- Machine independent inter-process communications

PVSS PANEL

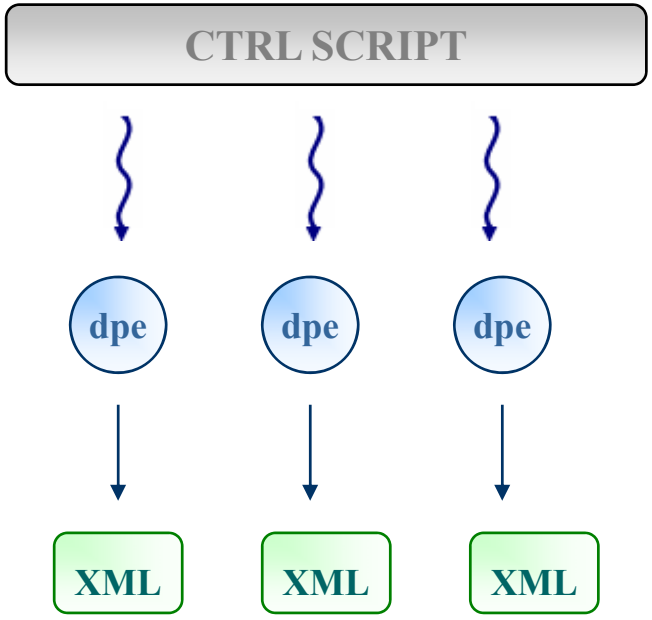
- Define conditions
  - LHCb framework component
    - Display existing nodes in the CONDB



- Select parameters & update type
- Condition update type
  - *Time*
  - *Change value*
  - *Value + or – value or %*
  - *Opt. Combination*
- Visualization XML
- Server status & error msn

PVSS CTRL SCRIPT

- Gets the existing definitions existing as dpe.
- Creates 1 thread per condition
- When is the right moment :
  - Builds the XML string
  - Sents 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