

# LHCb Online Interface to the Conditions Database

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## OUTLINE

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



## CONDITIONS

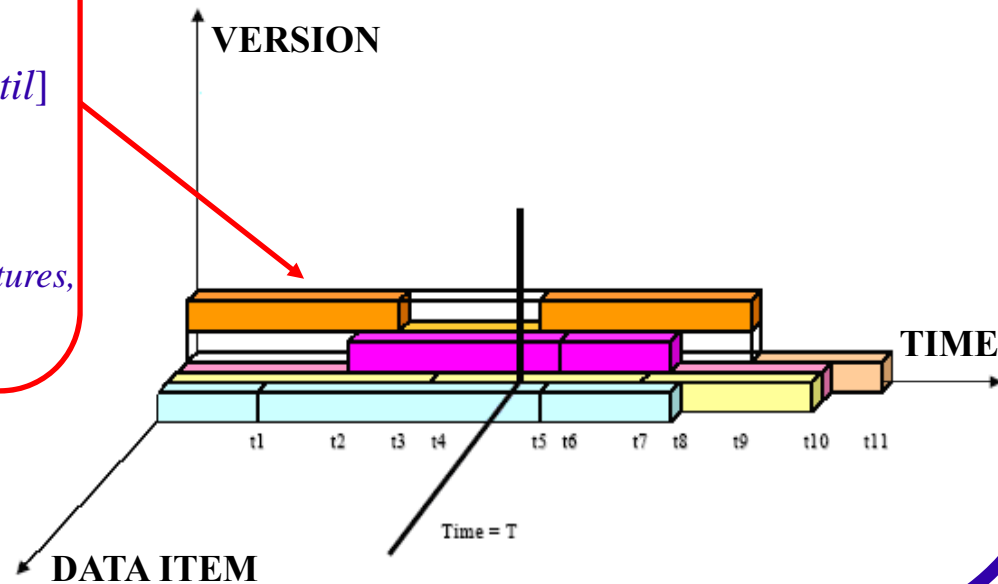
- Non-event detector data that vary with time
- Condition Object:

### - Metadata

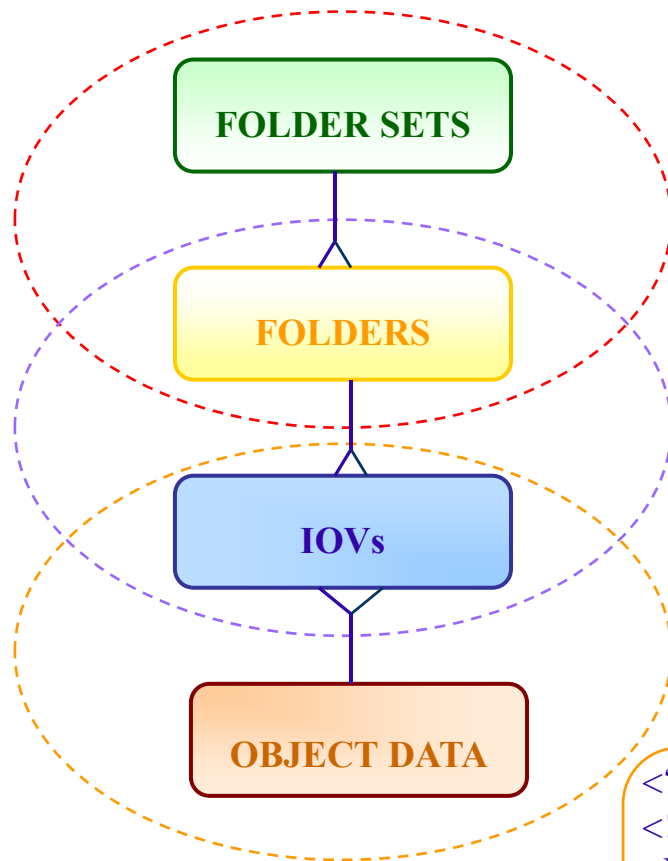
- Data item identifier
- Interval of Validity: [*since*, *until*]
- Version information

### - Payload

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



## CONDITIONS DB



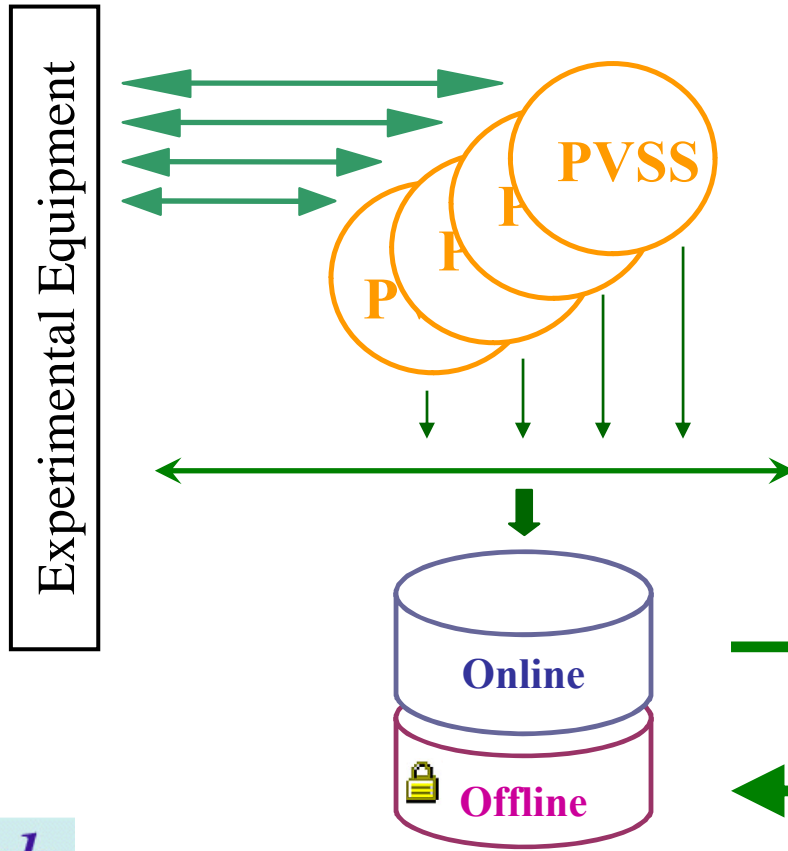
Hierarchical organization  
&  
Versioning

Interval of Validity access  
&  
Versioning

Data payload

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

## ONLINE CONDB



- Subset of monitoring data from HW

- Online Usage

- Publisher: *control system*

- Consumer: *trigger processes*

LHCb  
LHCb

LHCb pit

CERN

## INTERFACE TO CONDB

- Store data produced in the LHCb pit
- System components

- PVSS panel



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

- 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

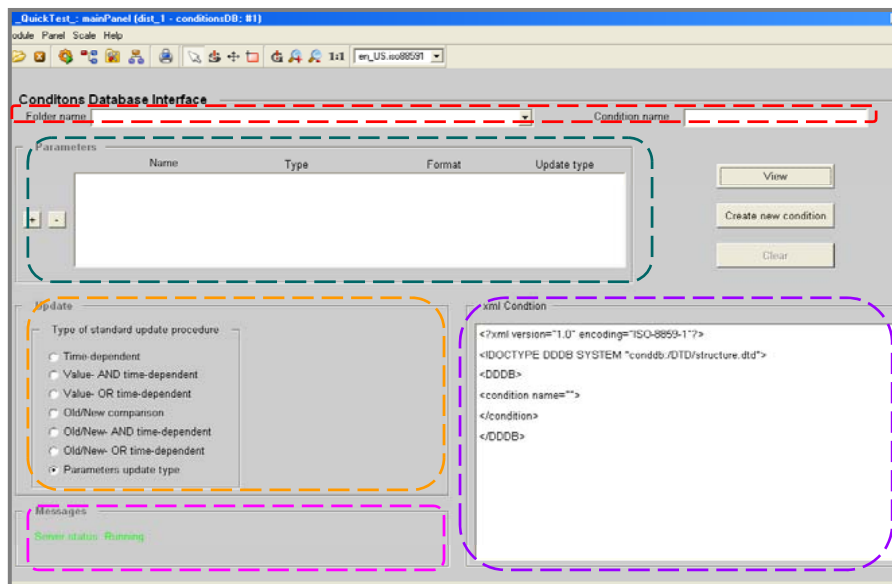


- DIM (Distributed Information Management ) system
- Developed at CERN
- Machine independent inter-process communications



## PVSS PANEL

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



- Select parameters & update type

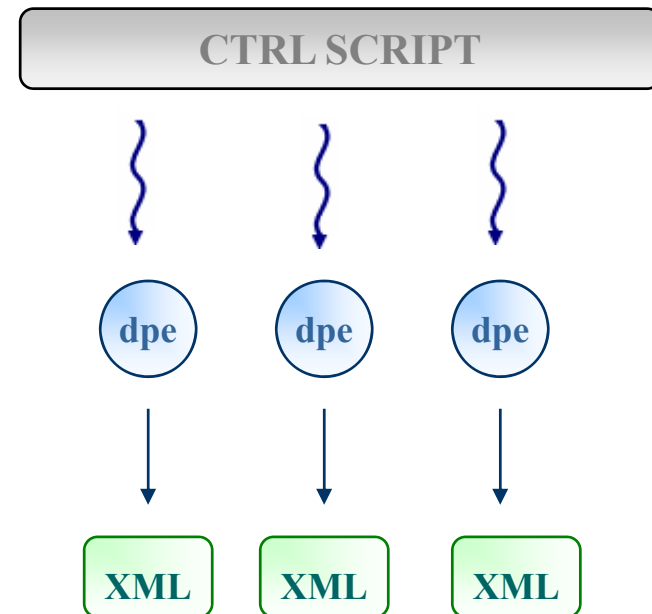
- Condition update type
  - Time
  - Change value
  - Value + or - value or %
  - Opt. Combination



- Server status & error msg
- Visualization XML

## PVSS CTRL SCRIPT

- Gets the existing definitions stored 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

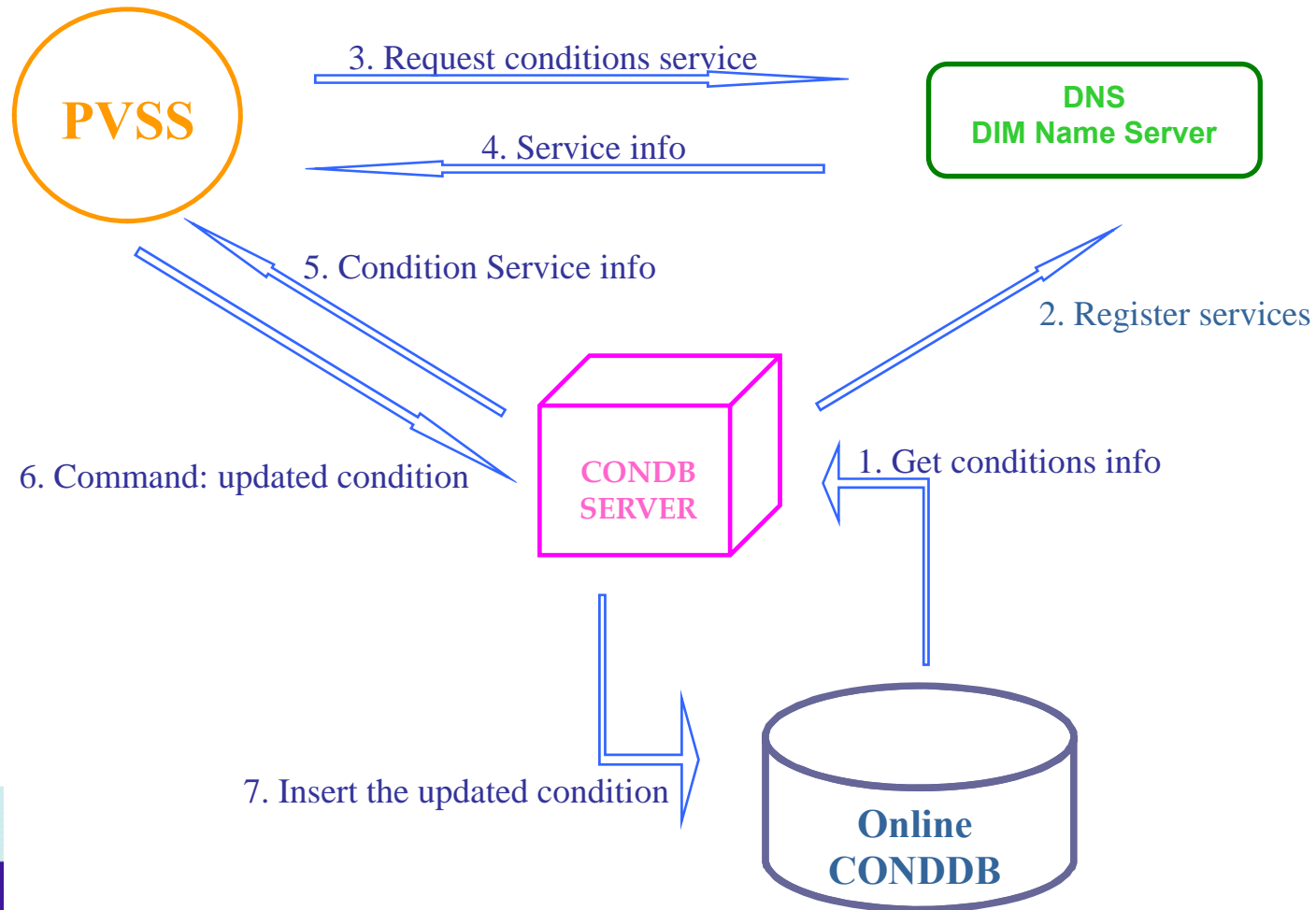
- Publishes the CONDB nodes as DIM service
- Receives the conditions as DIM command
- Generic implementation

COOL → Different relational backends

SQLITE  
&  
Oracle



## DATA FLOW



## SUMMARY

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- **System fully functional (still being tested by users)**
- **Simple and flexible way to define conditions**
- **Generic implementation of the server**





Questions

