HMPID DCS
SOFTWARE IMPROVEMENTS
DURING LS2

HMPID PLENARY MEETING 14 DECEMBER 2018

A.Franco - INFN Bari - Italy

HMPID DCS DURING RUN2

- HMPID's DCS software demonstrated good stability and operability during the LHC RUN2 period. No particular inefficiencies were highlighted and some inconveniences found, were solved effectively.

- Nonetheless, the system is not yet fully automated and the intervention by the on-call expert has often been requested.

- The DCS, designed and built between 2004 and 2008, is composed by obsolete versions of software, which are poorly efficient on the most modern hardware installed at P2.

- Finally, the GUI presents a 'vintage' graphic that should be modernised according to current GUI design trends.

IMPROVEMENTS DURING LS2

HMPID sub-systems on which to intervene :

- High & Low voltage sub-system

- C_6F_{14} Liquid Circulation sub-system

- DCS SIEMENS WinCC software

- DCS Historical Data manipulation

HIGH & LOW VOLTAGE

Hardware

- Substitution of the CAEN SY1527 main Power Supply controller with a new SY4527 version

- General maintenance and possible replacement of HV cards

- Verification and possible repair of the HV cables

- General maintenance and possible replacement of CAEN EASY system LV boards.

HIGH & LOW VOLTAGE

Software

- Complete revision of the FSM control software, in order to better respond to the new standard of DCS control commands (GO_SAFE, etc.)

- Implementation of an automatic recovery mechanism from trip conditions of HV channels

- Introduce a graphic facility for the shifter, which allows a simpler manual recovery from trip conditions

C_6F_{14} LIQUID CIRCULATION

Hardware

- General maintenance and possible replacement of SIEMENS PLC modules

- Complete review of the Transparency Measurement Station

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C_6F_{14} LIQUID CIRCULATION

Software

- Porting of the PLC software in the actual version of SIEMENS STEP7 development environment

- Implementation of the functionality to modify the operating parameters remotely by means of the DCS GUI

- Complete the automation of the control for the Liquid Circulation System and the Transparency Measurement Station

SIEMENS WINCC SOFTWARE

- General upgrading to the new WinCC AO version

- Complete review of the FSM/SMI control software

- Review of the 'Configurator Agent' software

- ALICE O2 integration

- Design and implementation of a frontend GUI for the friendly extraction of historical data

ALICE O2 AND HMPID DCS (I)

Acording the information reported on the Upgrade of the Online–Offline Computing System TDR (CERN-LHCC-2015-006) the Detector DCS will be able to exchange data with the ALICE O2 System.
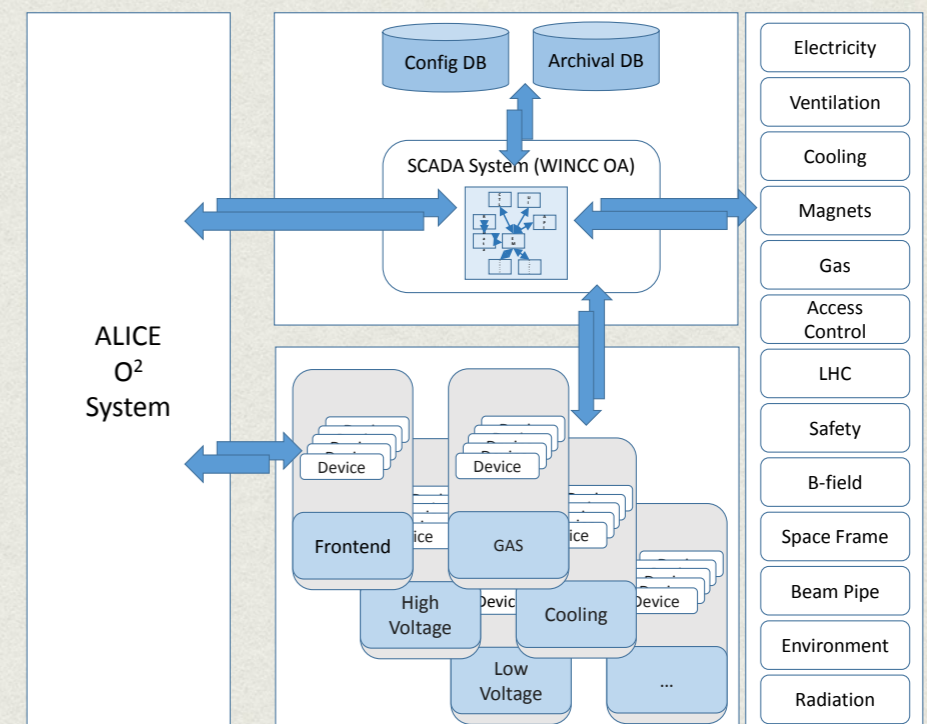
In addition the detector will make a use of GBT-based read-out links. These links are interfaced to the O2 system and are used for transferring both physics and control data. The electronics of the detector will therefore be accessed by the DCS through the O2 system.

ALICE O2 AND HMPID DCS (II)
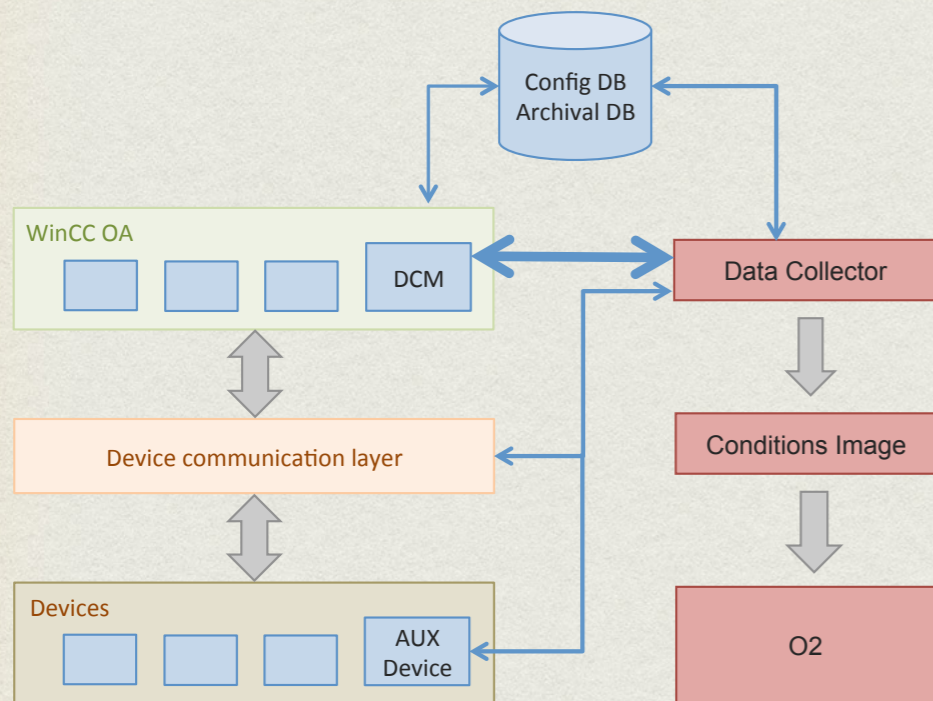
The data exchanged between the DCS and the O^2 system can be divided into two categories: the conditions and the configuration data.

The Configuration data are reloaded each time the detector configuration changes, as during RampUp. All configuration data are retrieved from the DCS configuration database

The Conditions data are collected, during the Data Tacking, from devices such as temperature, power supplies parameters, gas references, etc. ..

"The O2 architecture will be based on a **Data Collector**, that connects to all detector systems and acquires available conditions data. It consults the **DCS configuration and Archival databases** and finds the physical location of each datapoint. With this information, it establishes connections to individual systems and subscribes to published values".

A Data Collector Manager **DCM**, implemented in WinCC will push data to Data

Collector, using DIM as transfer protocol

TIME SHEDULE

TASK	DURATION	START	END
DCS software O2 upgrade	120 h	23/10/19	27/11/19
DCS software upgrade	300 h	08/11/19	19/02/20
Istallation and test of DCS	40 h	25/03/20	06/04/20
DCS software HV improvement	80 h	01/10/19	23/10/19
HMPID DATE software framework in O2	120 h	19/02/20	25/03/20
Maintenace and test of Freon Transparency plant	7 h	29/10/19	11/11/19
Maintenance of HMPID Database	22 h	29/07/20	07/09/20
Trigger Fan In/Out module firmware/software development	60 h	08/05/19	28/05/19
Istallation and test of DCS - Readout comunication software	32 ore	07/05/20	15/05/20
Liquid system PLC software upgrade	240 h	01/02/19	24/05/19
Istallation and Test of FLPs	80 h	06/04/20	07/05/20

... waiting for RUN T~~H~~REE ?!