Requirements for the DCS

DAQ meeting, LHC-B week

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Contents

- Progress on the DCS common project
- Common DCS kernel: User Requirements Document
- LHC-B specific requirements.

DCS common project

- The review of research sector (CERN) of last year pointed out the necessity of developing a common control infrastructure for all LHC experiments.
- Finally, after many meetings & discussions, it has been agreed to start a **common project for DCS**.
  - **Description**

    Generic control system for LHC experiments to monitor and operate the detector hardware and to interface to the CERN infrastructure and LHC accelerator.
  - **Objectives**

    Explore ways of providing a common DCS for all 4 experiments in a resource effective manner. Recommend and support which control system to use.
  - **Scope**

    Collect and analyse the user requirements for a control system which can be customised to the needs of the experiments. Evaluate existing solutions including expected costs (money+manpower). Provide guidelines for hardware interfaces. Use off-the-shelf system/components/modules (hardware+software) where possible. Implement common applications.

DCS common project (2)

- **Planing and Milestones**
  - » 1stQ '98 Finish user requirement documents
  - » 1stQ '98 Finish market survey of commercial control systems and the evaluation of EPICS and TIS-4000
  - » 'XX Interim recommendation on which control system to use
  - » 'XX Decision and final approval by experiments
- **Organization**

  Collaboration between the 4 LHC experiments + CO group (5 parties). Project leader.

  Steering body (2 representatives per party). The steering body decides on what tasks should be started and monitors progress. Assigns resources and man-power.

  Each task should be run as a formal project
  - Proposal: objectives, deliverables, planing, cost & manpower needs.
  - Reviews: periodic reviews of the sub-project.
  - Final report.

  Examples: evaluation of EPICS, evaluation of component technology, market survey, etc.
- **Monitoring**

  Should became a LCB project.

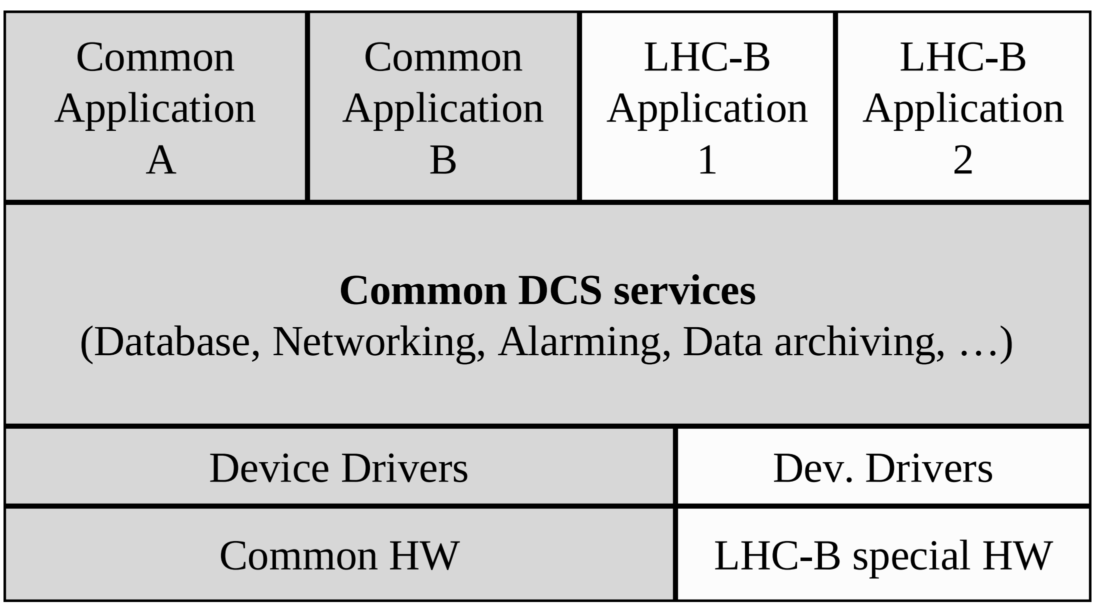
DCS common project (3)

– Resources (FTE)

	All	CERN	ECP
ALICE	0.4	0.4	
ATLAS	0.7	0.3	6*
CMS	0.6	0.6	
LHC-B	0.2	0.2	(*)1.0 missing

DCS Requirements

- We think that the LHC-B DCS should be built upon a kernel of services, standard applications and tools which are experiment independent. These *components* will be configured and adapted to the LHC-B needs. Therefore, we have envisaged two kinds of URDs:
  - **Requirements for the common kernel.**
  - **Specific LHC-B requirements.**



URD for the DCS kernel

- The URD is being written in collaboration with ALICE and ECP/CO.
  - Draft exists. (http://wwwlhcb.cern.ch/documents/notes/postscript/DCS_urd.ps)
  - The current version will be frozen the end of the year.
- The purpose of the document:
  - A reference when evaluating commercial solutions.
  - Starting point for the design of an architecture.
- The document consists on two parts:
  - **General description**. This part is quite verbose. It explains the DCS needs using often examples and scenarios. The requirements are under the following headings:
    - » Access control, Type of access, Users, Configuration, Commands, Alarm handling, Data acquisition, Commanding, Archiving and retrieval of data, Logging, Operator support, ...
  - **Specific requirements**. This part is a terse list of requirements.
- Our experience on writing the URD
  - Difficult task.
  - The past experience influences strongly the needs.

Specific LHC-B requirements

- The idea here is to collect LHC-B specific requirements and produce another document.
- At the current phase we are not interested in the exact number of channels, precision, definition of the control, loops, etc.
- We would like to know if the different sub-detector groups have special needs, different from what has been standard at LEP experiments. (HV, LV, Crate control, environmental parameters, etc.)
  - For example: Configuration and monitoring of front-end electronics, mechanical alignment systems, configuration and monitoring of read-out networks, etc.
- We have prepared a questionnaire which has been sent to sub-detectors and sub-system contacts.
- The questionnaire replies will be the basis of this new URD.

DCS in the Technical Proposal

- It is foreseen 1/2 page dedicated to DCS in the Data Handling chapter.
  - What the DCS should do and its scope. In particular, the enlargement to include aspects traditionally done by the run control.
  - Integration with the DAQ and Data monitoring system.
  - Some ideas on what kind of architecture we envisage. (distributed processing, global configuration database, etc.)
  - Implementation wishes: Commercial solutions, integration technology, hw & sw components, etc.
  - Programme of work.