CLIC CDR preparation - WG5 "mini-meeting" on cost

Summary notes of the meeting held on 26 April 2010

Present:
C. Clerc (LLR), K. Elsener, A. Gaddi, H. Gerwig, L. Linssen, M. Nordberg, D. Schlatter

Excused:
H. Videau

1) Introductory Remarks (K. Elsener)

This first meeting of a small group of WG5 members has as main aim to start the process towards a CLIC detector cost estimate. An overview of the methods used for the CLIC accelerator cost estimate is seen as a good starting point for the discussion. The summary of the work which led to the ILD detector cost estimate for the LoI should provide plenty of input for discussion on the forthcoming work for CLIC detector costing.

2) Issues, Methods and Organisation for costing the CLIC accelerator project (Ph. Lebrun)

For the CLIC accelerator, costing is based on a mixture of scaling and analytical estimates. The base-line version of the accelerator is costed, while options are mentioned and will be addressed in the TDR phase.
Issues discussed during and after Philippe's presentation mostly concentrated on the need for a complete WBS and for clear boundaries in the MDI region, as well as on the various differences between detector and accelerator cost estimates. For example, it is generally assumed that, for its projects, CERN is covering the risks for inflation, price escalation, exchange rates etc., while this can be a much more difficult issue for the experiments.
Contingency is a major discussion point, can be dealt with in various ways but must be addressed in the process (or at the end) of the CLIC detector costing exercise.
In the CLIC case, experimental caverns and their infrastructure are part of the accelerator cost estimate - more detailed boundaries in the MDI region still need to be established.
While it is generally agreed that operations cost are not part of a construction project, issues such as lifetime of components, energy consumption etc. do impact the technical choices and the cost of a project. Similarly, spare components are often not directly included in the project cost, but there has to be at least a large degree of awareness of component lifetime vs. cost (project or operations).

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3) ILD cost estimate (C. Clerc)

The ILD cost estimate is based on the excercise made for LDC in 2005/2006, by H. Videau and C. Clerc with input from the various sub-detectors. When ILD came into being, its cost was scaled (by size) from the LDC estimate.
There was a rather loose organisational structure for this costing excercise, and there had been no contact with GDE to define the borders between experiment and accelerator. The requirement was to address components to a level of 1% of the total detector cost, i.e. to approximately 2 MEuros.
Scaling was applied where possible, based on experience from ATLAS and CMS, and from STAR for the TPC. Cost drivers were identified, and in many cases quotations from industry (though few) were received. The discussions concerning the silicon (large amounts needed, for ECal and tracker) turned out

to be difficult because companies did not want to commit (even for a near future) to the technology chosen by the experiments. Meanwhile, the detector concepts are exploring possibilities in India, China and Korea.
For the detector magnet, the CMS cost was used with an added cost (assumed inflation) of 3% per year.

4) Next Steps - Next Meeting

Important next steps are:

- continued close contacts and collaboration with ILC concepts
- distribute relevant ILD information (WBS, other data; action: K. Elsener with help of C. Clerc)
- distribute link(s) to previous talks about the CLIC costing tool
- produce a more detailed WBS for a CLIC detector (use ILD WBS as starting point)
- start looking for input data for CLIC detector cost estimate (scaling or analytical approach)
- invite J. De Jonghe or a collaborator for a demonstration of the CLIC costing tool

The next meeting will be called after consultation with everyone, the main topic will be the demonstration of the CLIC costing tool (action: K. Elsener).