Draft 1.1 for discussion with experiments and directorate

Review of the progress and planning of the computing efforts at CERN and of the LHC-experiments for the LHC start-up

1. Purpose and Mandate

At about mid-term between the publication of the technical proposals of the experiments and the start-up of LHC and well before the submission of the computing TDRs of the experiments it is an appropriate moment to review the computing plans of the LHC experiments and the corresponding preparations of IT Division with the following aims:

a) Update the assessment of individual, experiment specific, regional and CERN facilities and their relative roles required to perform the computing of the LHC experiments and update the estimates of the corresponding resources required. Identify activities which have to be done at CERN.

b) Assess the analysis software projects and their organisational structures, the corresponding role of CERN and possible common efforts

c) Review and comment about the overall and individual computing project management structures.

The outcome of the assessment will help CERN and the experiments to formulate resource loaded work-plans with objectives, detailed schedules and milestones between now and LHC start to be described finally in their computing TDRs.

The results of the review will be the basis for CERN, the collaborating institutes and their funding agencies, for the formulation of Computing Memoranda of Understanding, which will describe the commitments of institutes inside the collaborations towards their computing goals and commitments of CERN to provide computing infrastructure and central facilities for the LHC era. The MoUs should be put in place in 2001.

The review team should recommend actions and in particular common actions between experiments and IT Division that will help to achieve these goals within the existing resources.

The review reports to the Research Board and the Director General.

2. Participants to the review:

Review committee: (mainly not involved persons)
Chair,
Technical Panels for the various main subjects to be addressed
Experts from LHCC, Focus and LCB
Ex-officio representatives from the experiments and IT, "in attendance"

Steering Committee: Review chair, chairs of technical panels, Dir. TT+SC, Dir. Collider-Programmes, ..., one member of each of the experiments and of IT division.

2.1 Subjects of the technical panels

(preliminary, to be defined in discussions with IT Division, the experiments and the reviewers; the high level points would be announced and the details could be given as initial guidelines to the panels)

World-wide Analysis/Computing model: How the analysis is done

- Analysis process: Raw data -> ?? -> ?? ->??-> ?? -> physics plots

    How much data is retained at each stage

    How much processing is required at each stage

    How frequent are the cycles

- Calibration and alignment, availability of constants

- Simulation requirements

Software project: Design and development of the programs

- Organisation & planning

- Design process & methodology

- Architecture

    components and integration of simulation, reconstruction, analysis and event display

- Data model

- Technology choices (language, tools, database, ...)

- Implementation process

- Simulation

  GEANT4 migration and validation

  status & plans for - geometry, generators, physics, fast simulation, ..

- World-wide development team organisation and communication

- Training arrangements

- Long-term maintenance strategy of software

- Identify non-experiment specific software

- Further R&D requirements

- Quality assurance

Management & Resources:

- Management of the computing project

  regional centres, central facilities

  software project

  networking

- Resources required

- Experience required for design, implementation and management

  Quantity, availability, cost

- Organisation

- Computing system

  sizing (input from the analysis model group)

  funding sources

  role of CERN, regional centres, physics departments

- Operation

3. Form of the review

The chairperson will set up and mandate, together with the Director of TT+SC, the technical panels in consultation with the experiments and IT division.

Together with the chairpersons of the technical panels and in consultation with the experiments and IT division the chairperson will define the existing and needed documentation and presentations.

The chairpersons of the technical panels will then propose their programme of work.

The chairperson will organise regular steering committee meetings to guide the overall progress of the review.

4. Timing (subject to discussion with the experiments)

The organisation, the mandate and objectives of the review and the nomination of the participants should be established in September. This would include the agreement of the Director General (and other bodies designated by him) with the details of the review.

The review of the status of the existing computing plans would be finished by early 2000 and also the formulation of recommended actions.

The requirements and expectations of experiments from IT division, funding agencies involved in the LHC programme and CERN would be documented as far as possible. Definitions and clarifications of further requirements would be scheduled in the work-plans.

By end of spring 2000 preliminary resource loaded work-plans, with milestones and objectives supplying a coherent picture between experiments and IT division should be formulated and commented by the review team