Minutes of LHC-CP Link Meeting 1

Subject	:	LHC Controls Project
Date	:	16:00 6 June 2000
Place	:	866 2D-05

Participants :

Billen, R		SL-MR,
Brahy, J		LHC-IAS,
Carlier, E		SL-BT,
Ciapala, E		SL-HRF,
Di Maio, F		PS-CO,
Gavaggio, R		LHC-VAC,
Gayet, P		LHC-ACR,
Gras, JJ		SL-BI,
Jonker, M		SL-CO,
King, Q	(Secretary)	SL-PO,
Lauckner, R	(Chairman)	SL-DI,
Lamont, M		SL-OP,
Martel, P		EST-ISS,
Pezzetti, M		LHC-ECR,
Ruggiero, F	(replacing Bruning)	SL-AP,
Sollander, P		ST-MO,
Vanden Eynden, M		SL-CO,
Walckiers, L		LHC-MTA,
Wolf, R		LHC-MMS

Excused :

Bruning, O	SL-AP,
De Rijk, G	SL-MS,
Rodriguez Mateos, F	LHC-ICP

Distribution : LHC-CP members, S. Myers

Agenda :

1. Mandate of LHC-CP	M. Vanden Eynden
2. Review of goals for 2000	R. Lauckner
3. Topics for future meetings	Tour de table
4. AOB	

The Chairman opened the meeting and explained that, except during the summer recess, LHC-CP Link meetings will be held every two weeks to further the aims of the LHC-CP. An important element of this is communication, so the meetings will be a forum for presentations by the participants on controls activities within their groups.

1. Mandate of LHC-CP M. Vanden Eynden

The project mandate was presented (see attached slides) and is now awaiting approval by the LHC-CP steering committee before being published on the project web site. In the

discussion, JJ Gras asked if databases are in the scope of the project. R. Lauckner replied that they are, but they are not a hot issue at the moment. Furthermore, the SL database experts in SL-MR are fully occupied with LEP dismantling. R. Billen confirmed this and said that databases for LHC were not included in their year 2000 objectives.

2. Review of goals for 2000 R. Lauckner

The project goals were presented (see attached slides), and it was restated that timescales are tight. In addition, it was noted that:

- The LHC-CP core team has been in discussions with the groups debating middleware with the aim of reducing the number of middleware domains (M. Vanden Eynden).
- R. Lauckner and M. Lamont will start collecting more details of RT requirements.
- Little was said about alarms during the LHC-CP workshop, however, M. Tyrell has been contacted and is starting work on the LHC alarm system.

In the discussion, F. Ruggiero picked up the issue of naming conventions which prompted a lively debate. P. Gayet explained that while a single solution is unlikely, the objective of each system should be clear, and the solution should meet the objective. F. Ruggiero mentioned that the optics oracle database already has an established naming convention for accelerator objects and that this would make a good starting point for naming for controls software.

M. Jonker opened the issue of Slow Timing (millisecond level) which was also discussed at some length. The Timing Working Group has established that the requirements for Slow Timing are actually rather limited, but do include systems which will not require real-time control. It was mentioned that there are several possible solutions for this requirement, including the use of data networks to transmit absolute time events in advance, however the Timing Working Group was not expected to propose or select solutions. This will fall to the LHC-CP, although it is not seen as especially urgent. M. Jonker stated that a real-time network could perform event distribution duties, and that it was also conceivable (though inelegant) to use a timing network to implement real-time control. It was noted that L. Evans is sceptical of the real-time requirements of LHC, given that the machine will be very slow. Q.King mentioned that String 2 could be used to test some of the new ideas for event distribution, although scaling issues would remain given the size of LHC compared to String 2. F. Di Maio reminded the group that Slow Timing had been considered as part of the SL/PS convergence and that it would be useful to clarify this work in light of the LHC.

E. Ciapala asked about the relationship between alarms and post mortem analysis. R. Lauckner explained that they were not tightly related because the large data sets related to P.M. analysis would not conform to the strict data format of alarms. However, it was also noted that the results of post mortem analysis could lead to alarms and that alarms could be included in the analysis.

3. Topics for Future Meetings Tour de Table

The Chairman mentioned that a questionnaire would be sent to LHC-CP linkmen to invite topics for discussion, however, he also invited suggestions from everyone present. The following topics (and people) were proposed for future meetings:

- Vacuum controls — R. Gavaggio
- Future front end systems — P. Ribeiro
- Requirements for Slow Timing (from TWG) — M. Jonker

Additional topics were mentioned but without candidates:

- Logging
- Databases
- Integration of industrial components.

4. AOB

The next meeting will be in 2 weeks. The agenda will include a presentation on the Vacuum Controls from R. Gavaggio.

Actions	**Person**
Prepare presentation for next meeting.	R. Gavaggio
Review RT requirements for end of 2000.	M. Lamont, R Lauckner
Launch formal top down analysis of LHC control system.	M. Lamont

M. Vanden Eynden's Transparencies

LHC-CP Project Mandate

- Purpose of the Project
  - high goals of performance, reliability and flexibility have been set for the LHC control system
  - many groups from several divisions involved at all levels (equipment control, communications, generic services, etc.)
  - ☛Need for :
    - making efficient use of resources
    - avoid duplication by ensuring consistent technical choices
    - ensuring that the control system offers the requested levels of functionality and performance for developing and operating the machine
    - vision and planning

LHC-CP Project Mandate

- Scope of Activities (1/2)
  - Technical
    - monitor technical activities in the groups, encourage common designs and minimize diversity whenever possible
    - contribute to the definition (vision) of the overall HW and SW architecture of the LHC control system
    - initiate development and support for domains like communication protocols, data management, alarms and logging, industrial components, etc.
    - specify and manage production of the application software for the LHC control room
    - beam and power abort system is OUT of scope

LHC-CP Project Mandate

- Scope of Activities (2/2)
  - Management/Planning
    - clarify division of responsibilities between control rooms
    - produce integrated planning for controls activities of all the groups involved :
      - milestones (intermediate objectives to attain)
      - responsibilities
    - establish collaborations and clarify interfaces with other controls projects @ CERN including SLI, LTI, CNGS, SPS-EA (same resources and … same control system)

LHC-CP Project Mandate

- Objectives of the Project (1/2)
  - Long Term
    - delivery of control system for machine commissioning and initial physics operation
  - Near Term
    - establish and coordinate control system tests activities at String2
    - anticipate and organize control system developments required for hardware installation and commissioning
    - define and organize control system developments for the sector test

LHC-CP Project Mandate

- Objectives of the Project (2/2)
  - 2000
    - Review and adopt PS/SL Middleware Project (new LHC-CP sub-project)
      - review requirements and model in view of LHC
      - produce V1.0
      - group efforts and encourage common choices
    - establish requirements for RT control of the LHC and initiate a sub-project
    - continue formal requirements analysis
    - examine integration of systems built from industry (DCS) or built using industrial components (PLCs, …)
      - tendering guidelines (with controls groups)
      - development and support guidelines (with controls groups)
    - establish slow timing philosophy for LHC

LHC-CP Project Mandate

- Organization
  - core team
    - Ph.Gayet, M.Lamont, R.J. Lauckner (PL), M.Vanden Eynden
  - Steering Committee
    - SPS and LHC Technical Committee
  - Sub-projects
    - mandated by LHC-CP
    - resources provided by groups after approval of the mandate by the Steering Committee

GOALS FOR 2000
(Follow up of the First LHC-CP Workshop)

Robin Lauckner

Major Issues

- The Project mandate should be formalized and a PDR written up based on the COOP Forum and the LHC-CP Workshop
- Project links to LHC division must be tightened & interfaces to other projects defined e.g. SPS2001, LTI; several groups prefer a CERN wide approach to Control System Strategies.
- Time scales are tight: QRL installation in March 2003, a need for a control system for hardware commissioning and a large part of the infrastructure for the Sector Test.
- String 2 should be used to gain experience on operation without beam.
- Clarification of the controls requirements for hardware installation, the TI 8 / Sector Test and octant commissioning, is a pre-requisite to Project Planning
- The project should embrace PS/SL Middleware WG and the LDIWG and review these activities in the light of LHC requirements and resources.
- The project should initiate the clear specification of the Real Time services and then create a sub-project for design and construction.

More Issues

- SCADA guidelines are required within 12 months.
- The project should create a sub-project to address the guidelines and support required by groups integrating industrial solutions.
- There is a perceived risk that the project will not win control of resources and manpower.
- Power and Beam Abort triggering will not depend on the control system, there may however be a soft abort and post mortem is important.
- Results of Radiation Tests may have considerable impact on groups.
- Will the Controls system contain EIS as defined in INB regulations?
- A formal top-down approach must be launched - specification of high level requirements.
- Several groups are requesting guidance on naming conventions; data management should be addressed.
- The approach for LHC Alarms should be reviewed.
- The project should "adopt" the Future Front Ends working group.
- The need for timing events and the associate services needs clarification.
- A common approach for waveform acquisition is required

Work for 2000

- Middleware
  - Look for standard approach (inter, intra …)
  - Check LHC needs being met
- Real Time Control
  - Establish requirements and milestones
  - Initiate technical preparation
- Start Formal Requirements Analysis
- Industrial Systems Integration
  - Look at turnkey and CERN developed activities
  - Organize Guidelines and Support
- Establish slow timing philosophy for LHC