

CERN non EU contribution to ILC

J.P.Delahaye

To : R. Aymar, Director-General

cc. : P. Ciriani, J. Engelen, Ph. Lebrun, M. Metzger, S. Myers, A. Naudi, W. von Rueden

From : J-L. Baldy, J-P. Delahaye, J. Ferguson, D. Schulte, L. Tavian, C. Wyss

Subject : CERN contribution to ILC in 2006 and corresponding resources

1 Summary

The CERN contribution to ILC and the corresponding resources in 2006 are summarized in the table 1 below:

Table 1 - M&P resources for ILC related work in 2006

| System | Coordinator | FTE | | | Material budget (kCHF) |
|---|---------------|------------|------------------|------------------|------------------------|
| | | Avail. | Missing | Total | |
| GDE participation | J.P. Delahaye | 1.2 | 0 | 1.2 | 60 |
| Travel & mini-workshops | J.P. Delahaye | - | - | - | 40 |
| Project management tools | J. Ferguson | 0 | 0 (2) | 0 (2) | 0 (30) |
| Cryogenics& cryostats | L. Tavian | 0 | 1.2 (2.1) | 1.2 (2.1) | 0 (30) |
| Civil engineering and conventional facilities | J.L .Baldy | 2.4 | 0 (1.0) | 2.4 (3.4) | 350 (390) |
| Cost studies | C. Wyss | 0.5 | 0 | 0.5 | - |
| TOTAL | | 4.1 | 1.2 (5.1) | 5.3 (9.2) | 450 (550) |

The figures indicated in table 1 correspond to the one agreed with the DG in a meeting held on 27/02/06. Figures between parentheses correspond to the initial estimates by the coordinator. Resources corresponding to "Project Management Tools" will be considered following decision by the ILC management on their possible use.

Mandate of study group about Project Management Tools

The study group is asked to address the following:

1. Elaboration of a vision & strategy for integrated project support involving analysis of user communities & requirements, enumeration of leading tools & best-practices and identification of interoperability and integration approaches.
2. Analysis of the status quo at CERN today with its existing tools
3. Development of a roadmap for future evolution including potential scenarios with their relative strengths & weaknesses along with technical & other implications as well as integration, in particular the link between management tools and CATIA 3D. The use of UGS team center as recommended by the ILC should be addressed as a possible option.
4. Estimation of costing covering both the one-off setup costs and the recurrent operating costs of the scenarios including support & maintenance efforts.
5. Analysis of the implications of the possible use of the management tools by an international community spread over distributed institutes and proposal of a strategy for their implementation.

The group is asked to produce a report by the end of May 2006.

Cryogenics

- 1. Definition and establishment of the RDR**
- 2. Definition of the cost estimate**
 - When relevant, the cost estimate will be based on the LHC experience return.
- 3. Studies and Developments (S&D)**
 - LHe II flow characteristics and tests,
 - Large sub-cooling heat exchangers,
 - Cryomodule and interconnections design and optimization,

CERN site specific cost Study

- The CERN site specific cost estimate will be done in phase with the technical definition of the equipment and shall be completed by end 2006. The input data and the considerations made for the cost estimates will be archived in an EDMS database, so as to keep the information available for later work. The knowledge acquired in this work will be used as much as possible to carry out in parallel a CLIC cost estimate.

CFS studies

The tasks of the Conventional Facilities and Siting (CFS) Group for 2006 will include all studies at Reference Design stage for the following fields of activity for both CERN and DESY sample sites : Civil Engineering, Power Distribution, Ventilation and Air Conditioning, Cooling Water system, Handling Equipment, Safety and Fire Fighting (Survey and Alignment design and R+D taken into consideration separately).

These studies will be managed by CERN (and DESY) staff with the cooperation of Consultants and Experts for each specific field of activity, through design contracts.

As far as possible, the same Consultants will be appointed for both European sample sites studies. The aim is to create and gather all relevant design documentation for inclusion into the Reference Design Report at the end of 2006.

The breakdown of the necessary resources in 2006 with a total of 390 kCHF are as follow:

- Software + databases 20
- Geotechnical Consultant 40
- Civil Engineering Consultant 100
- Other Experts (geologist, environment) 30
- CV Consultant 50
- EL Consultant 30
- CSE (Alarms and access) Consultant 40
- IC (cranes and lifts + transports) Consultant 50
- Miscellaneous costs 30

LoI FP7: SC-RF facility

The European partners of the TESLA Technology Collaboration and other interested institutions intend to propose a new European SCRF facility to be built and operated in the EU 7th Framework Program (FP7) by a collaboration of all interested European laboratories and institutes. This facility would permit to build and test high performance SCRF structures and to integrate them into modules.

For the last 10 years DESY together with its partners in the TESLA Technology Collaboration has been operating a major SCRF facility. Due to its age, the advancement of technology and cavity performance requirements this facility needs to be replaced by a next generation cavity preparation, assembly, and test facility in order to meet the increased requirements posed by projects like the ILC. The facility includes a considerable infrastructure such as clean rooms, cryogenics, surface preparation, ultra-high vacuum installations, RF test equipment etc.

We intend to ask CERN to host such a facility from 2008 in close collaboration with DESY and the other European participating laboratories or institutes, thereby taking advantage of the existing CERN facilities which will gradually become available following completion of LHC construction and making the best use of the expertise developed for the construction of the XFEL.

MBK R&D (FP7)

L-band, High Power and High Efficiency Multi Beam RF Amplifier, HEMBA

Type of the anticipated proposal: **JRA**

Description of the proposal:

Develop, build and commission an efficient (~80%), L-band, high power (10 - 50 MW), long pulse (100 μ – 1.5 ms) rf power source for the future Linear Colliders.

Estimated duration: 6 years

Estimated Cost (including manpower): 7 MEuro

List of possible interested institutes:

For the klystron development: International Linear Collider GDE (Int.), Thales Electron Device (F), E2V, TMD, Lancaster University. (UK), DESY-XFL (G), Tory, Svetlana, Istok (Russia), CPI, SLAC (USA), Toshiba (Japan).

For the modulator development: E2V (UK), Thales Electron Device, PULSE MC², Physique & industrie, EUROME V (F), North Star Research Corporation, Diversified Technologies, Inc., Applied Pulsed Power, Inc. (USA), FUG Elektronik, Puls-Plasmatechnik GmbH (DE). OCEM (IT), ScandiNova Systems AB (SE), JEMA (ES)

POSIPOL 2006 Workshop

CERN 26-27-28 April 2006

Purpose

This workshop discusses options and open issues of a polarized positron (POSItions POLarisés in French) source based on laser Compton back scattering for ILC and CLIC, and it coordinates R & D efforts towards a complete Compton source design.

The workshop topics include the optical layout and the beam dynamics of the Compton ring and its injector, the laser system, the optical cavities and the feedback. It will also include the e^+ production, the capture system, the e^+ stacking in the accumulator or in the damping ring and the e^+ pre-linac. The polarimetry issues will be treated as well.

The experimental program from the different laboratories (KEK, LAL, Frascati, SLAC, DESY,...) including various light sources will be discussed. An overview and a comparison with the undulator source will be presented.