

Subject: SiD LOI planning

Date: August 28, 2008

To: Subsystem/Subgroup Leaders

From: LOI editors (Hiro Aihara, Phil Burrows, Mark Oreglia)

Contents: 1. LOI schedule, 2. LOI outline, 3. Subsystem issues,
4. Request for presentations at Boulder workshop,
5. Writing/Editing LOI, 6. Internal Review of LOI Draft

Here is our plan to prepare a successful LOI for SiD on time.

1. LOI (tentative) schedule

September 17-29, 2008, Boulder Workshop: Presentations

October 31, 2008: Deadline for subsystem/subgroup reports

Deadline for zeroth LOI draft based on DOD

December 15, 2008: Deadline for the first LOI draft.

January 1 – February 28, 2009: Collaboration-wide review of LOI draft

March 2009: Submission of LOI to Research Director.

2. LOI outline

Following the guideline issued by Research Director (dated October 3, 2007, attached to this memo), we tentatively propose the LOI outline as follows:

In roughly logical order – details to be discussed; page estimates not to be taken too seriously, but note should be around 100 pages total! We hope that what should be included in Global issues become clearer as we learn more about what IDAG wants.

I Introduction (5)

- ILC physics (brief)
- SiD philosophy and rationale; emphasize strengths, uniqueness ...
- Outline of SiD design, and optimization process
- Pointer to cost and future R&D issues (later)

- SiD organization

II Global issues (10)

- The machine-detector interface: rationale, engineering drawings ...
- IR hall, assembly, access ...
- Push-pull issues, to include: strategy, time estimate, alignment, calibration...
- Backgrounds

III Subsystems: for each, to include:

- Performance requirements, pointers to physics benchmarks
- Design outline, including engineering details, drawings etc
- Technology options
- Baseline choice(s)
- Front-end electronics
- Performance: spatial resolution, efficiencies, energy/momentum resolution
- ...

Tracking system (10+)

EM calorimeter (10+)

HCAL (10+)

Forward systems (5?)

Magnet (5 or less)

Muon system (5)

DAQ (1)

Simulation tools + infrastructure, PFA ... (5)

IV Benchmarking results (25?)

V Cost estimate (5)

VI R&D (3) to include:

- Needs for further R&D
- Plans, goals, benchmarks, timescales

Summary (1)

Total pages: 100+

3. Subsystems issues

In order for us to collect the most updated information and share it with the collaboration at large, we would like to ask the subsystem groups to provide its description *roughly* organized in the following manner.

1. Definition of subsystem/subgroup

1.1 Name of the subsystem

1.2 Contact person(s) for LOI writing (!very important !)

1.3 Geometrical definition: Where it is located. Dimensions

1.4 Function

1.5 Requirements/specifications

Typical physics benchmark(s) that your system is most relevant.

2. Description of the subsystem

2.1 Concept

2.2 Baseline design

2.3 Expected performance

2.4 Illustrations/Drawings that you *definitely* want to include in LOI

2.5 Options

3. R&D roadmap

3.1 Issues

3.2 Milestones (Before 2012, and after 2012)

3.3 Resources needed

4. Estimated construction schedule

4.1 Time table

4.2 Required human resources

5. Estimated cost

6. Organization of the subsystem group

6.1. Institutions involved

7. Q&A : anticipated questions from IDAG and answers to them (in available).

4. Request for presentations at Boulder Workshop (September 17-19, 2008)

We would like to ask your representatives to address the above subsystem issues as much as possible in their talks (one on Wednesday and the other on Friday). We also appreciate if they can specifically point out what is different from what is in DOD, so we can clearly identify the progress that each subsystem group has made.

5. Writing/Editing LOI

The LOI will be written in LaTeX (not in MS-Word) !

LOI editors use the DOD as a starting draft and update it.

We ask each subsystem group to submit a report, prepared using LaTeX and eps figures, by no later than October 31, 2008.

There are no page limits and each subsystem/group should prepare this report with all relevant material necessary to document the subsystem/group. This report can be an update of DOD, but must include the information listed above. LOI editors, then, with the help from subsystem contact persons, condense this information into LOI that meets RD/IDAG requirements by December 15, 2008.

6. Internal Review of LOI draft

We envision the extensive internal review/referee process will take place during January and February 2009.

October 3, 2007

Guideline for the definition of a Letter of Intent to express an interest to design and engineer a detector at the International Linear Collider

The purpose of this draft document is to define more precisely the letters of intent (LOIs) for detectors at the ILC.

With the LOI a group expresses its interest to develop a design for a detector at the ILC. LOIs will form the basis on which two groups will be invited to further develop and detail their plans and eventually submit an engineering design report, EDR.

The LOI should contain information on the proposed detector, its overall philosophy, its sub-detectors and alternatives, and how these will work in concert to address the ILC physics questions. The evaluation of the detector performance should be based on physics benchmarks, some of which will be the same for all LOIs based upon an agreed upon list and some which may be chosen to emphasize the particular strengths of the proposed detector. It should contain a discussion of integration issues with the machine. It should be developed enough to allow a first preliminary assessment of civil engineering issues like interaction hall, support halls etc. It should enable the reader to judge the potential of the detector concept and to identify the state of technological developments for the different components. Alternative technological options should be elaborated. Where needed, areas of further research and development should be identified, together with timelines and milestones. The group submitting the LOI should define its position and role in the ongoing international research and development for a detector at the ILC. The LOI should include a preliminary cost estimate for the detector. The overall length of the LOI should not exceed 100 pages.

The LOI can, but need not, refer to other documents where more technical details are given. If so these documents should be submitted together with the LOI.

In addition to a concise technical description of the proposed detector the LOI should present the structure of the group which is proposing the detector. The resource needs and their evolution in time should be presented. The LOI will not represent any formal commitment of the groups signing it to the project or the proposed detector. It should however enable the reader to judge the capacity and the seriousness of the groups to carry out the work until the EDR.