Charge of the Workshop

28 Jan. 2010

Yasuhiro Sugimoto

Workshop Agenda

- Pre-Meetings: 27th
  - Software
  - MDI/Integration
  - DAQ
- SB2009 issues: This morning
- Work plan towards the detailed baseline design report in 2012
  - Collaboration with CLIC
  - MDI/Integration
  - Sub-detector R&D
  - Physics benchmark
  - Software
  - Optimization
  - Next step

Schedule

- 2009 Aug. LOI validation
- 2009 Aug. **RD's "work plan after validation"**
- 2009 Sep. Discussion of ILD work plan at ALCPG
- 2009 Oct. ILD's rough work plan sent to RD
- 2009 Nov. ILC PAC at Pohang: RD reported on our work plan
- 2010 Jan. This workshop: Detailed work plan should be defined
- 2010 Feb. RD report at ILCSC: Revised work plan required
- 2010 Mar. LCWS2010: IDAG review on new work plan

- 2010 Jul. RD's oral report at ICHEPP
- 2010 Oct. ECFA 2010: IDAG review
- 2010 ? Detector Interim report by RD to ILCSC

- 2012 Spring Make a skeleton of DBD report (Progress report)
- 2012 Dec Finalize DBD report

RD's Work Plan after Validation

1. Demonstrate proof of principle on critical components
   When there are options, at least one option for each subsystem will reach a level of maturity which verifies feasibility
2. Define a feasible baseline design
   While a baseline will be specified, options may also be considered
3. Complete basic mechanical integration of the baseline design accounting for insensitive zones such as the beam holes, support structure, cables, gaps, or inner detector material
4. Develop a realistic simulation model of the baseline design, including the identified faults and limitations
5. Develop a push-pull mechanism, working out the movement procedure, time scale, alignment and calibration schemes in corporation with relevant groups
6. Develop a realistic concept of integration with the accelerator including the IR design
7. Simulate and analyze updated benchmark reactions with the realistic detector model, including the impact of detector dead zones and updated background conditions
8. Simulate and study some reactions at 1TeV, including realistic higher energy backgrounds, demonstrating the detector performance
9. Develop an improved cost estimate

RD's Work Plan after Validation

- For each item, a **detailed timeline with identified milestones** will be constructed, leading to a detailed baseline design of the detector
- **Required resources,** whether currently in place or not, will be specified
- RD will support the effort of the detector groups to get resources from the funding agencies
- **IDAG will review** development of the progress of each detector design group

How should we specify the "required resources"?

- $ and FTE

or

- something like "Supported", "Partially supported", "Proposing", "To be proposed"

ILD's rough Work Plan

- Based on the discussions at ILD meeting in ALCPG WS, outline of the ILD work plan was made out, and submitted to RD on October 22nd

October 21, 2009

Outline of the ILD Work Plan

1. Introduction

In this note, the outline of the ILD work plan for the detailed baseline design report from LCWA2009 (2009/10/03) till the end of 2012 is shown. Based on this timeline, detailed work plan will be constructed by the ILD Workshop in January 2010.

The timeline of the plan is shown as a Gantt chart of Microsoft Project. Here, the numbers in parenthesis at the end of the task names correspond to the item number of the "Work plan after validation till 2012" given by the Research Director.

In the Gantt chart, bars of "Detector R&D" and "MDI/Integration" end in August 2012. It is just because this chart shows the work plan for the "detailed baseline design report". The R&D and design activities, including those for non-baseline options, towards the construction ready design (TDR?) will surely continue after August 2012.

2. Milestones

2.1 End of Jan. 2010

ILD Workshop at Paris (Jan 28-30): Detailed work plan of sub-detectors, as well as that of global ILD design, should be established by this workshop.

2.2 Mar. 2010

LCWS2010 at Beijing (Mar. 26-30): The detailed work plan will be reviewed by IDAG.

2.3 Aug. 2011

Define a feasible baseline options: Based on the R&D results by then, we will define the baseline options which should be implemented into the ILD simulator. Critical issues which could give impact on the physics results, such as material budget of sub-detectors (thickness of TPC endplate, for example), the amount and path of cables/tubes, detector holes, etc., should be defined. On the other hand, details of sub-detectors, such as sensor technology of the vertex detector or gas-amplification device of TPC, do not necessarily have to be decided at this point.

2.4 Sep. 2011

Define a feasible baseline design: Based on the defined baseline options of sub-detectors, the design of the ILD structure and integration will be defined. Then, implementation of the design into the ILD simulator will be started.

2.5 Mar. 2012

Complete implementation of design: The implementation of the baseline design into the simulator will be completed and tested by this time, and mass production of simulation data will be started. We can then start writing the progress report of the detailed baseline design.

2.6 Aug. 2012

Freeze the baseline design: The baseline design and options are determined here based on the R&D results. Once the baseline design is frozen, we can start detailed cost estimate and writing the "detailed baseline design report".

2.7 Dec. 2012

Submit the report.

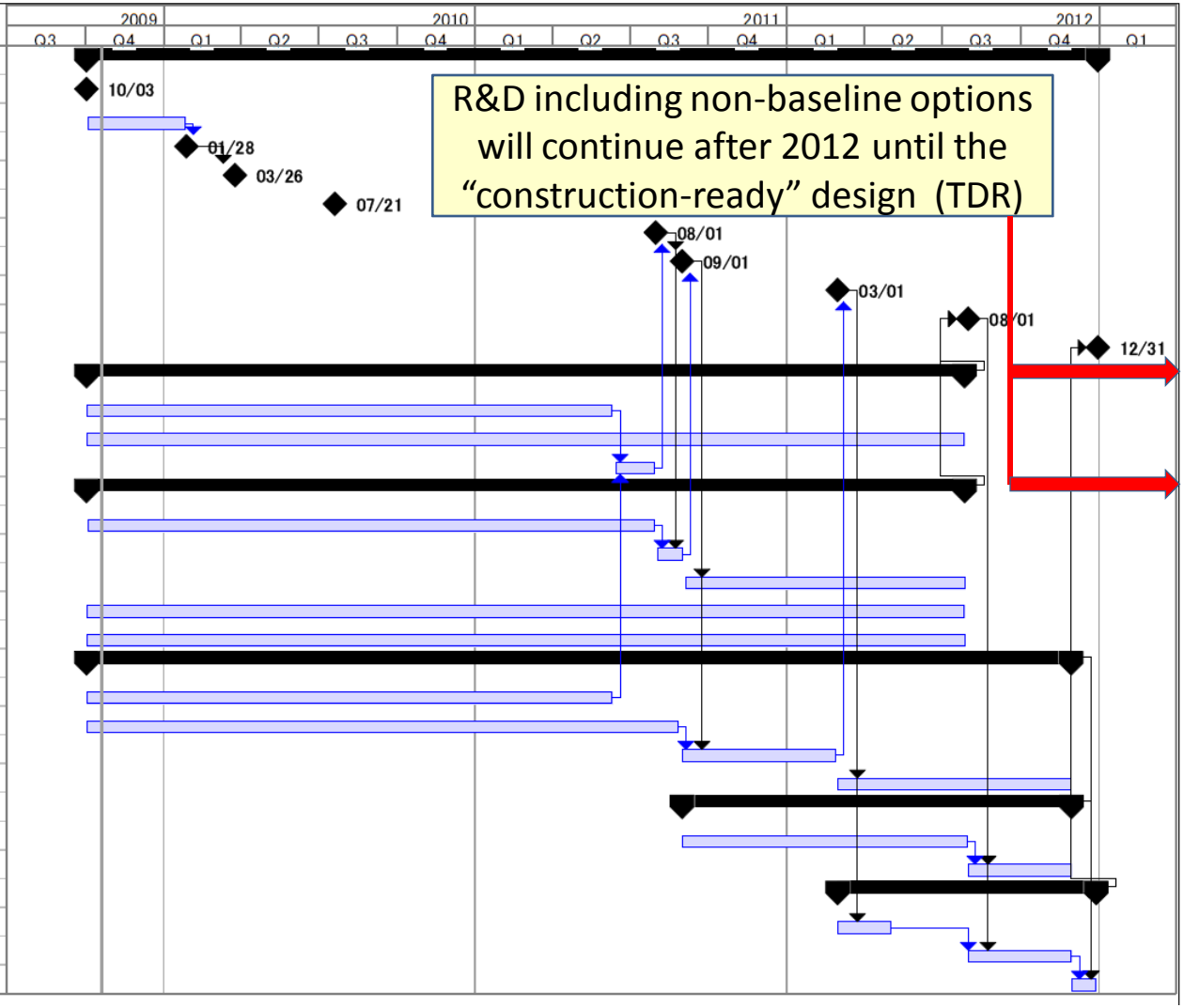
ILD's rough Work Plan

- We listed up several milestones
  - Jan.2010: ILD Workshop
  - Mar.2010: LCWS2010
  - Aug.2011: Define baseline options for full simulation
    - Material budget of sub-detectors
    - Path and amount of cables/pipes, detector holes
    - etc. which could give impact on physics results should be defined
  - Sep. 2011: Define a feasible baseline design
    - Design of ILD structure and integration
  - Mar. 2012: Complete implementation of design into simulator
    - Start mass production of simulation data
    - Progress report of the detailed baseline design
  - Aug. 2012: Freeze the baseline design
    - Baseline design and options are determined based on the R&D results
    - Start detailed cost estimate and writing the detailed baseline design report

These milestones are subject to discussion in this workshop

ILD's rough Work Plan

ID	Name	Duration
1	**Detailed baseline design**	**38.41mons**
2	LCWA2009	0mons
3	Detailed Work Plan	3.7mons
4	ILD Workshop	0mons
5	LCWS2010	0mons
6	ICHEP2010	0mons
7	Define a feasible baseline options (2)	0mons
8	Define a feasible baseline design (2)	0mons
9	Complete implimentation of design	0mons
10	Freeze design	0mons
11	Submit detailed baseline design report	0mons
12	**Detector R&D**	**33.4mons**
13	R&D for proof of principle of the baseline (1)	20mons
14	R&D for detailed design/industrialization (1,2)	33.4mons
15	R&D Review	1.5mons
16	**MDI/Integration**	**33.41mons**
17	R&D for integration/alignment	21.59mons
18	Complete baseline integration design (3)	0.91mons
19	Detailed design of integration/alignment (3)	10.68mons
20	R&D for push-pull mechanism (5)	33.4mons
21	Design of integration with accelerator (6)	33.41mons
22	**Simulation**	**37.45mons**
23	Simulation on det. performance/optimization	20mons
24	Improvement of framework/tools/analysis	22.5mons
25	Implimentation of baseline (4)	5.8mons
26	Simulation/Analysis (7,8)	8.9mons
27	**Cost estimate (9)**	**14.82mons**
28	Develop methodology	10.8mons
29	Estimate for the baseline design	3.95mons
30	**Writing the report**	**9.86mons**
31	Progress report	2mons
32	DBD report drafting	3.95mons
33	DBD report editing	0.95mons



Goal of this Workshop

- In this workshop, we will devise a detailed work plan and timeline towards the detailed baseline design of ILD till 2012 satisfying the RD's work plan
  - Clarify and identify tasks needed for
    - Design and optimization of ILD
    - R&D and detailed design of sub-detectors and MDI/integration
    - Full simulation and development of software tools
    - Physics benchmark
  - Draw a detailed timeline with milestones for each items
- Additional discussion issues
  - Evaluation procedure for the "baseline" in which "feasibility" is proven
  - Next step: Written reports on the detailed work plan before ILCSC meeting (Feb. 25th) and LCWS2010 (Mar.26th) (?)
    - The level of detail of the work plans ?
    - Should we specify the responsibility for each item ?
    - How to specify the required resources ?