

The DBD: Outline and Scope

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@DESY

RD's guideline

What is to be included in the Detailed Baseline Design Report (draft)

April 29, 2010

- Draft of the guideline was distributed in May
- This document contains descriptions on
 - Readers of DBD
 - Outline of DBD
 - Page limit
 - Items to be included
- We have discussed on this document at ILD EB meetings and PEB meetings

The detailed baseline design report will be addressed to the following readers:

- 1) ourselves and accelerator colleagues to be confident that physics aims can be obtained,
- 2) particle physicists active in other facilities, who are experienced, discerning and possibly supportive when convinced,
- 3) physicists in different fields, who may be cooperative or critical,
- 4) government or funding agency people who may not read details but request experts to examine.

The submitted LOI's are good starting bases for the detailed baseline design, describing overall features of the proposed detector concepts. Each LOI has physics motivation, basic strategy of the design, component description, status of component R&D, physics performance for the benchmark reactions, time schedule and rough cost estimation. Some options are left to be decided after more complete R&D and performance tests. The detailed baseline design needs to be advanced from the LOI to a more solid level including pre-engineering detailed designs of integration and stability requirements to convince the feasibility and performance of the detector.

The length should not be too long, maybe 100 ~ 150 pages.

The items to be included in the BDB are listed.

Physics motivation and basic design strategy to reach the goal

Detector concept and baseline design

The description of each component including its feasibility and observed performance

Mechanical construction including support structure (*)

Installation scheme into the IR and with the accelerator

Push-pull mechanism and performance,

Physics simulation on the benchmark reactions

Cost estimation

(*) Better to have it as precisely as possible, but how detailed it should/can be needs to be discussed.

Readers

- Guideline
 - ourselves and accelerator colleagues to be confident that physics aims can be obtained,
 - particle physicists active in other facilities, who are experienced, discerning and possibly supportive when convinced,
 - physicists in different fields, who may be cooperative or critical,
 - government or funding agency people who may not read details but request experts to examine.
- Our comment
 - Target is not clear
 - It is impossible to satisfy all readers by one document
 - ➔ Executive summary is necessary
- Answer from RD
 - Main target should be the particle physicists doing other experiments
 - Organization of volumes will be discussed including the executive summary volume and the physics volume

Outline of DBD

- Guideline
 - The submitted LOI's are good starting bases for the detailed baseline design, describing overall features of the proposed detector concepts
 - Each LOI has physics motivation, basic strategy of the design, component description, status of component R&D, physics performance for the benchmark reactions, time schedule and rough cost estimation
 - Some options are left to be decided after more complete R&D and performance tests
 - The detailed baseline design needs to be advanced from the LOI to a more solid level including pre-engineering detailed designs of integration and stability requirements to convince the feasibility and performance of the detector
- Our comment
 - Charge is very broad, without any details
 - This leaves a lot of freedom to the concept groups, but also makes it harder to see the real reason for DBD
 - Integration aspects of the detector are major difference from LOI, and should be stressed

Page limit

- Guideline
 - The length should not be too long, maybe 100~150 pages
- Our comment
 - Its impossible to describe “detailed” baseline design, and options for the case of ILD in such a short report
 - There should be no page limit

Items to be included

- **Guideline**
 - Physics motivation and basic design strategy to reach the goal
 - Detector concept and baseline design
 - The description of each component including its feasibility and observed performance
 - Mechanical construction including support structure (*)
 - Installation scheme into the IR and with the accelerator
 - Push-pull mechanism and performance,
 - Physics simulation on the benchmark reactions
 - Cost estimation
- (*) Better to have it as precisely as possible, but how detailed it should/can be needs to be discussed
- **My comment**
 - Estimation of construction period of the detector should be made, as well as estimation of cost

Our conclusion??

- There should be Executive Summary Volume which government or funding agency people can read and understand to some extent
- Physics case of ILC should be described in Physics Volume coordinated by physics common task group. It could include updated results of fast simulations. (This volume may be prepared earlier (spring 2012) to be used as an input to EU strategy decision(?))
- ILD Volume
 - Target readers are high-energy physicist, some of whom could be asked by governments to review the document
 - It should convince HEP colleagues of the **feasibility** and performance of the detector
 - Major difference from LOI would be the engineering aspects: integration, cabling, power supply, cooling, cryogenic for solenoid, etc, and performance at high energy (1TeV)
 - In order to describe the detailed design of the baseline and options, there should be no page limit (balance between accelerator TDR should be considered)