MAC Introduction –presentation

RDB evolution during 2006-7

The RDB started weekly meetings early in 2006. Our consensus at that time was that we could not attempt successfully to manage the R&D program centrally, but we could, on our own initiative, develop a complete "Ideal R&D program," prioritized by the needs of the GDE Baseline. This generated a Work Breakdown Structure of several hundred items.
This was based on our judgment and was offered as fully public advice. It was presented to the GDE in March 2006. As expected, there were some disagreements on priorities with individual groups, and in some cases we modified them, but the whole, it seemed that they were generally accepted.
At the same time, the GDE encouraged us to form a number of "Task Forces" to address the creation of collaborative plans for R&D.
They were put together successively over a period of five months:

- S0/1-cavities, cryomodule
- S2 -cryomodule tests
- S3 -Damping Rings
- S4 -Beam Delivery System
- S5-Positron Source,

while some other systems, such as RF and Controls, were handled less formally.

During the year 2006, the RDB meeting as a whole carried out detailed reviews with the funding agencies in the U.K., the U.S., and Japan. Typical reviews were two days long, with follow-up meetings. We also strengthened our collaboration with the TTC, DESY and the EU programs.
In each case, WBS for the review were improvised by merging our Ideal list with the tables generated by the regional managers.

The focus of the Task Forces was the <u>Global Plan for Completion of the R&D</u>

The goal of the Plan is to bring the R&D to the stage that will allow the construction of the ILC to <u>move ahead</u>. (This may not coincide exactly with the completion of the EDR because of the nature of some of the deliverables. The Plan should be complete in general by 2009-10, but some items will continue at least one year longer, as R&D merges into construction.) The presentations in this meeting lay out that Plan, and they address:

- Brief highlights of new technical progress and current status,
- Evaluations of the relative benefit and cost of the R&D.

Our Task Forces pay full attention to the design Alternatives. It seems likely that in some cases the alternatives will become the Baseline of the ILC as constructed. Given the very tight resources available during the period of our Plan it is a delicate task to balance the Baseline and the Alternatives.

Evaluation of the effectiveness of the RDB in influencing the path of the R&D work within the ILC collaboration.

We have examined the concordance between the recommendations of the RDM on the relative priorities of given areas of the WBS and those determined by the funding agencies involved, or "alignment". Evidently, the agencies have quite legitimate concerns that do not enter our own considerations, but in some areas we might hope for a good degree of alignment. We can evaluate this at present in cases where we have the data on both terms of the ratio, and it is most meaningful when we have data on a large fraction of the effort. The RDB has examined the results, which are most complete for the case of S0, and we find that in the cases where there has been the most detail put into a detailed, global collaborative plan, the alignment is gratifyingly satisfactory.

Another task for the RDB is facilitating "Adaptation" to unanticipated financial, technical, regional, institutional, or safety driven changes.

Serious cases of this sort involve unanticipated impacts on vital areas of R&D, soluble only by resource transfers among different regions or funding agencies. If the problem is a large one, there will be shocks to the normal system of finance. As it happens, the RDB has been faced with such a problem in the period since the last MAC meeting, and is developing a recommendation to the GDE. This will be discussed in the S3, Damping Ring presentation by Andy Wolski.

Resources

The current state of our information on resources in the GDE effort does not allow a compact summary of the total resources. This is partly due to the different structure of the tasks in each Task Force, seen for example in a comparison of S0/1 and S2, partly due to the status of the collaborative structure

at this time. For this reason, a summary is given here, in the Tables below, since it will be easier to understand compared to seeing the data for each Task Force.

Tables on Resources in different Task Forces Sn

S0/1

Table needed

S2

Table 6, phases 1.x

Phase 1.2 needed for "move-ahead", "2009" with not all final cavity, not all type 4 cryomos, not full gradient, no beam turned on

Phase 1.3 needed for "OK", 2010, equals one RF unity, final cavity design, full gradient, type DFM cryomodules, with Beam

Costs, phases 1.x

Table 9, no labor, one region implementation

Phase	n_{CM}	n_{RF}	CM cost (M$)	RF cost (M$)	Basic Infrastruc. cost (M$)	Cost Sum (M$)
1	1	1	2	3	12	17
1.1	2	0	4	0	0	4
1.2	3	0	6	0	0	6
1.3	3	1	6	3	0	9
Subtotal	9	2	18	6	12	36
Non-beam related facilities						15
Beam related facilities						35
Total	9	2	18	6	12	86

S2 has made a study of cost estimates that illustrates the dilemma of comparing cost among labs, at least if one cannot control exactly what included. Example, for phase 1.3: S2 estimate from scratch $86M, Fermilab incremental costs $32M, KEK last increments $13.

Phase 2 –see presentation

S3

Table Staff Effort, FTE, no Facilities

S3 WBS	2007	2008	2009	2010
2.1.1	??	??		
2.1.4	7.5	7.5		
2.2.1	4.5	4.5		
2.2.3	8.5	8.5		
2.2.4	6.0	4.0	4.0	
3.5.1	8.0?	8.0?		

Table M&S, US $

S3 WBS	2007	2008	2009	2010
2.1.1	0	0		
2.1.4	250	250	100	100
2.2.1	0	0		
2.2.3	730	920		
2.2.4	200?	200?		
3.5.1	1,000?	1,000?	1,000?	

Table Facilities

S3 WBS	
2.1.1	None required
2.1.4	CesrTA, ATF, ALS, APS
2.2.1	None required
2.2.3	CesrTA, PEP-II, KEKB, DAΦNE, (LHC)
2.2.4	CesrTA, ATF
3.5.1	ATF, FNAL-A0, DAΦNE, (CesrTA)

Table CesrTA

Year 1	Year 2	Year 3	Year 4	Total
$481,693	$13,705,472	$13,987,788	$13,866,392	$42,041,345

S4

Table Needed

S5 and other

Is there a set of data?