BILC07/ACFA Charge

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Detector Timeline

Synchronized with the accelerator benchmarks

Accelerator	**Detector**
(2005.12) Acc.Baseline Configuration Document	**Detector R&D report (by R&D panel)**
	(2006.2) **Detector Outline Document** (one for each detector concept)
(2007.2) Acc. RDR (Reference Design Report)	**DCR (Detector Concept Report** : one document)
Accelerator EDR	Detector EDR (within ±1 year of acc. EDR)

DCR

Y. Okada's talk
T. Behnke's talk

(Detector Concept Report)

DCR panel of editors

- –Physics
  - The physics section of the RDR/CDR/exec summary set
    A grand summary of ILC physics studies up to now
  - Editors: K. Moenig, A. Djouadi, S. Yamashita, Y. Okada, M. Oreglia, J. Lykken
- –Detector Concepts
  - Editors: J. Jaros, A. Miyamoto, T. Behnke,
- –Required R&Ds
  - Editor: C. Damerell (R&D panel chair, GDE RDB member)
- –Costs
  - Cost panel (M. Breidenbach, A. Maki, H. Videau)

A preliminary version is released during this workshop.

DCR is still not finalized now.

Accelerator Timeline beyond Beijing

- Feb 8, 2007
  - A draft RDR release
- Summer 2007
  - Finalize RDR
- Reorganize GDE toward EDR
- EDR completed in 2~3 years
- T0 + 7 years
  - Beam commissioning
  - +1 year : physics run

Detector EDR Timeline

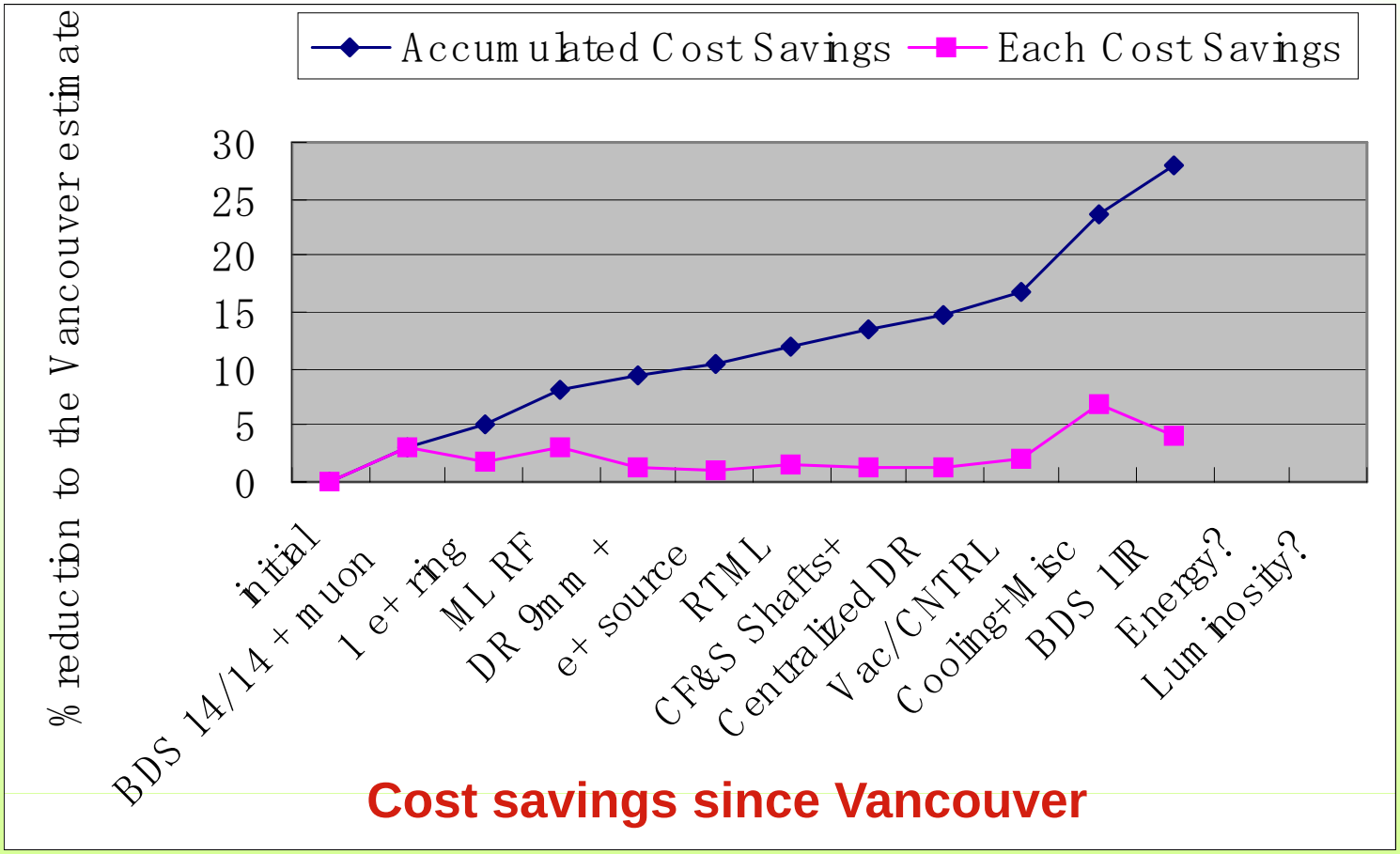
- Surface assembly requires the detector assembly to start earlier (by ~2.5 years) than otherwise.
  - Possible to assemble while the exp. hall is prepared.
  - Needed for beam commissioning at t0+7yrs.
- This forces the detector EDRs to be ready about the same time as the accelerator EDR.
- Need to converge to two detectors as early as possible. (Why two? Why not one?)

Case for two detectors

- Sociology and scientific opportunity
  - Greater scientific interest and greater support
- Cross-check and scientific redundancy
- Complementarity
  - Different systematics
  - Aggressive designs
- Competition
- Efficiency, reliability, and insurance
  - Maintenance/upgrade + running
- Historical examples supports the above

Baseline: 1IR

Barry Barish



Cost savings since Vancouver

BDS 1IR is the largest single cost-saving item.
Two detector, 1IR → push-pull.

Push-pull → Baseline

- Push-pull task force was proposed by GDE (~Sep.06)
  - WWS offered to provide names from the detector side
  - GDE and WWS agreed that the push-pull task force reports both to GDE and WWS
  - Summary and discussion on push-pull Tuesday morning (MDI session)
- CCB (Change Control Borad) asked WWS and MDI panel for inputs
- WWS has collected responses from detector concepts, put its own statement as a cover letter, and sent to CCB
- WWS and MDI accepted the push-pull option conditionally :

WWS statement on push-pull

- Since we cannot conclude with certainty that the push-pull option can meet the requirements of engineering and physics, if the push-pull approach is implemented in the reference design we think a two IR option must be maintained as a back-up in the RDR …

MDI panel statement on push-pull

- …provisions should be included in the baseline design to facilitate a change to the 2 IR design (later)…
- …urge the GDE and the WWS to give a new charge to the push-pull task force to continue the study of the technical implementation of the push-pull option. (present charge ended at Valencia Nov/06)

CCB Response to push-pull

- CCB recommends … incorporating the "1IR with two detectors push-pull" as Baseline Configuration.
- CCB recommends … to maintain the previous Baseline with "2IR, single hall, two detectors" as part of Alternative Configuration.
- CCB recommends … to reinforce a taskforce on Machine-Detector-Interface issues. The taskforce should be specifically charged, and be recognized as such, by both the GDE and WWS, to facilitate pertinent design development efforts and discussions on relevant executive matters.

MDI panel

- Members
  - Chair:
    - Hitoshi. Yamamoto
  - LEP (Luminosity, Energy, Polarization)
    - Wolfgang Lohmann, Tsunehiko Omori, Eric Torrence
  - GDE
    - Philip Bambade, Witold Kozanecki, Tom Markiewicz, Andei Seryi
  - Detector concepts
    - Phil Burrows, Karsten Buesser, Toshiaki Tauchi

- Tasks:
  - Maintain oversight of IR/MDI issues that are relevant both to accelerator and detectors
  - Report to WWS and GDE's BDS Area Group.
  - Organize joint MDI sessions of LCWS and some regional meetings

Probably a framework of communication between GDE and WWS at higher level. A discussion on this at a MDI session (Tue. Morning)

CCRs and WWS/MDI panel

- 14mrad+14mrad 2IRs (approved)
  - WWS asked inputs from MDI panel
  - CCB asked WWS and MDI panel and others for inputs
  - WWS/MDI both supported the CCR (provided that 2mrad R &Ds be maintained - SUSY search)
- Muon wall reduction (approved)
  - CCB asked MDI panel and others for inputs
  - MDI panel supported the CCR (provided that space is kept for the full muon walls - muon background may be serious)
- Surface assembly of detectors (approved)
  - CCB asked WWS and MDI panel and others for inputs
  - WWS/MDI supported the CCR (time scheduling, also a rational way of assembly ← CERN visit by MDI panel)

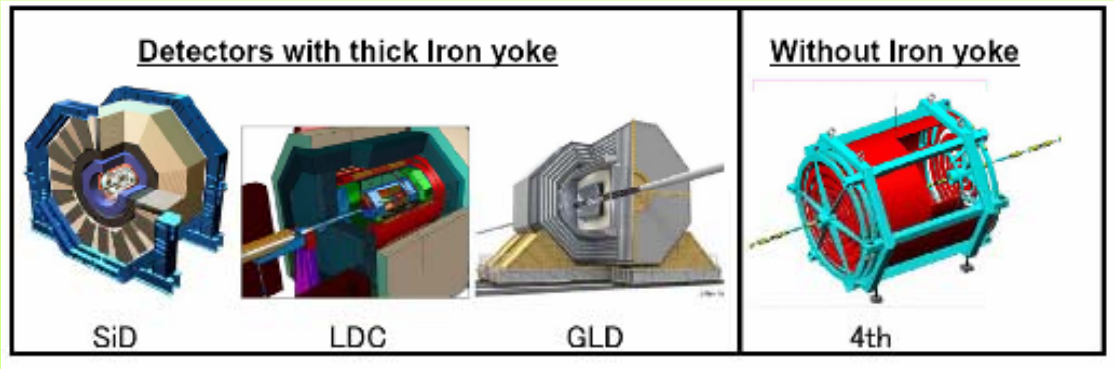
Other modification proposals and WWS

- Bunch number reduction (not an CCR: dropped)
  - Proposal : Reducing the number of bunches by 1/2 (cost saving of 2~3%)
  - WWS's informal comment: 'we would like GDE to double the luminosity by increasing the cost by 2~3%'
- Elimination of 3.5% energy overhead (CCR: re-submitted)
  - CCB asked WWS (and MDI panel) for inputs
  - WWS: we would not oppose this CCR ... express our concern in general with cost-cutting measures which jeopardize the full physics capability of the machine, particularly when they do so irreversibly.

Detector Roadmap

- How to converge to two detectors?
  - Currently we have 4 : SiD, LDC, GLD, 4th.
  - More may come (and we should not discourage it)
- Do we need a 'panel' to recommend how?
  - Can bottom-up efforts accomplish it?
- Do we need a CDR from each concept?
  - Good competition, or too many documents to write?

Need to strengthen both vertical(concepts) and horizontal(subdetectors) effort



Discussion session later today (5pm)

Detector R&D reviews

(horizontal effort)

- Purpose:
  - **'Improved communication leading to enhanced R&D programmes'**
- Format
  - 1 day open sessions + 1 day closed sessions + 1 day reporting
- Attached to each ILC phys/det workshops
  - **Beijing (2007/2) : Trackers (TPC, silicon trackers**)
  - DESY (LCWS 2007/6) : Calorimeters
  - Fermilab (2007/10) : Vertexing
  - Asia (2008 spring) : all others (PID, DAQ, Muon, etc.)
- Review panel members :
  - WWS R&D panel + external experts on each subdetector
  - One representative per region close to funding agencies

We need to:

- Finalize DCR
  - Time scale: as soon as possible
  - Perform further studies
- Work toward EDRs
  - Strengthen concept studies
  - Strengthen horizontal efforts
  - Form consensus on how to converge to two detectors
- Establish better communications with the accelerator camp
  - Including the push-pull study
- Prepare (brace..) for physics results from LHC

- Involve more people and countries

GDE management's idea of push-pull

Surely, you jest…