

# Towards Detailed Baseline Design

Introduction to ILD meeting in  
ALCPG2009

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# LOI

- Mar. 31: Submission of LOI
- Apr. 15: Additional questions from IDAG
- Apr. 17~: TILC09
  - LOI talks at plenary session
  - Interviews with IDAG
    - Common session on benchmark
    - Group by group
  - Post-Tsukuba questions from IDAG
  - ILD meeting
- Jun. 19: IDAG interview at Paris
  - Documents answering IDAG questions uploaded to ILD web page before the interview
- Aug. 17: IDAG report to RD
- Aug. 19: IDAG report endorsed by ILCSC at LP2009 in Hamburg
  - ILD and SiD are “validated”
  - Detector R&D on dual readout calorimeter is encouraged
  - It does not imply that concepts not validated shall not be candidates for ultimate approval for the ILC

# After validation

- Membership of common task groups (CTG) are modified
- Work plan after validation till (the end of) 2012 has been proposed by RD and discussed at the Physics and Experiment Board (PEB) meeting (see next page)
  - For each item, a detailed timeline with identified milestones will be constructed, leading to a **detailed baseline design** of the detector
  - Required resources 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
- RD's request
  - ILC PAC will be held Nov.2-3 in Korea
  - RD will report on the detector work plan there
  - RD wants to have our timeline by ~Oct.20
    - Detailed timeline will be discussed at the ILD WS Jan.2010 in Paris
    - We can make a rough timeline by Oct.20 through the discussion in this meeting and phone meetings after ALCPG2009

# Work plan after validation

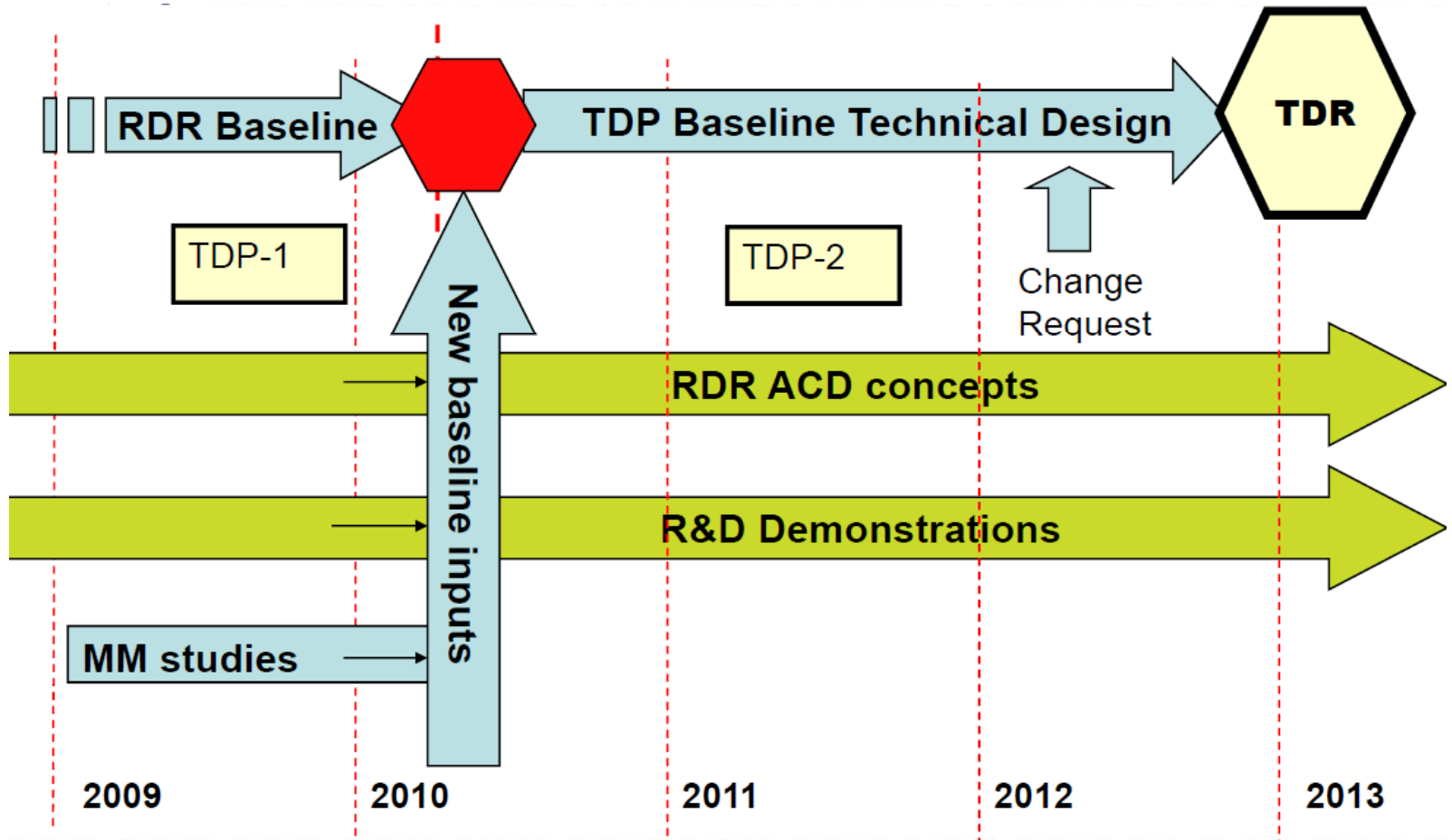
1. Demonstrate proof of principle on critical components  
When there are options, at least one option for each subsystem will reach a level of maturity which verifies feasibility
2. Define a feasible baseline design  
While a baseline will be specified, options may also be considered
3. Complete basic 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

# ILD position on “baseline”

- Defining the baseline design does not mean choice of technology for construction
- Baseline design for DBD is something like the baseline design for LOI, i.e., an example of the detector design to show the feasibility and the physics performance
- For each sub-detector, we should establish at least one feasible option
- Detector integration scheme and push-pull design should be established based on the baseline design

# Re-baseline

- GDE plan



# Re-baseline

- Impact on physics should be investigated
  - New LowP option → Beam B.G., Lum and Lum spectrum
  - Positron source → Beam E spread, Lum in low energy (<500 GeV) operation
- Timeline
  - Jul.2009: Accelerator Design & Integration (AD&I) meeting
  - Sep.2009: Albuquerque meeting
  - Dec.2009: AD&I meeting (phys/det people will be invited)  
→ Proposal document final draft
  - Jan.2010: AAP review
  - Mar.2010: LCWS in Beijing → Fix new baseline design
  - Jul.2010: Presentation of new design at ICHEPP in Paris

# Timeline for ILD

- Key dates

- Nov.2-3,2009: ILC PAC in Pohang: Reports by RD and CTGs
- Jan.2010: Dedicated ILD workshop: Define detailed work plan
- Mar.2010: LCWS2010 in Beijing
- Jul.2010: ICHEPP in Paris
- Sep.2010: ECFA WS at CERN
- WWW: Finish critical R&D
- XXX: Fix ILD baseline design
- YYY: Start mass-production of sim data
- ZZZ: Start writing DBD report
- Early 2012: Make a skeleton of DBD report
- Dec.2012: Finalize DBD report

Detector interim report

- What to do soon

- Define rough timeline by ~Oct 20: Decide WWW, XXX, YYY, ZZZ
- Start thinking about detailed work plan towards DBD and the goal for the interim report in 2010
- Get information of the new baseline from GDE, and study the impact on physics