

RD's Report

Project Advisory Committee @ Pohang

Sakue Yamada

Nov. 3, 2009

LOI Validation and Reorganization

Common Task Groups

Working Group for SB2009

Planning of the validated groups

IDAG monitoring after validation

Validation of the LOIs and Reorganization

- IDAG examined the LOIs very intensively.
- Its report was made on August 17,
earlier than formerly expected.
- **IDAG Conclusion:**
ILD and SiD are recommended to be developed.
The dual readout cal technology is recommended for R&D.
- **ILCSC in Hamburg on August 19 endorsed the IDAG conclusion.**
- We could go into the new phase.

This is an important step ! Thanks to IDAG

- IDAG report was presented by the chair at ALCWS09 in Albuquerque

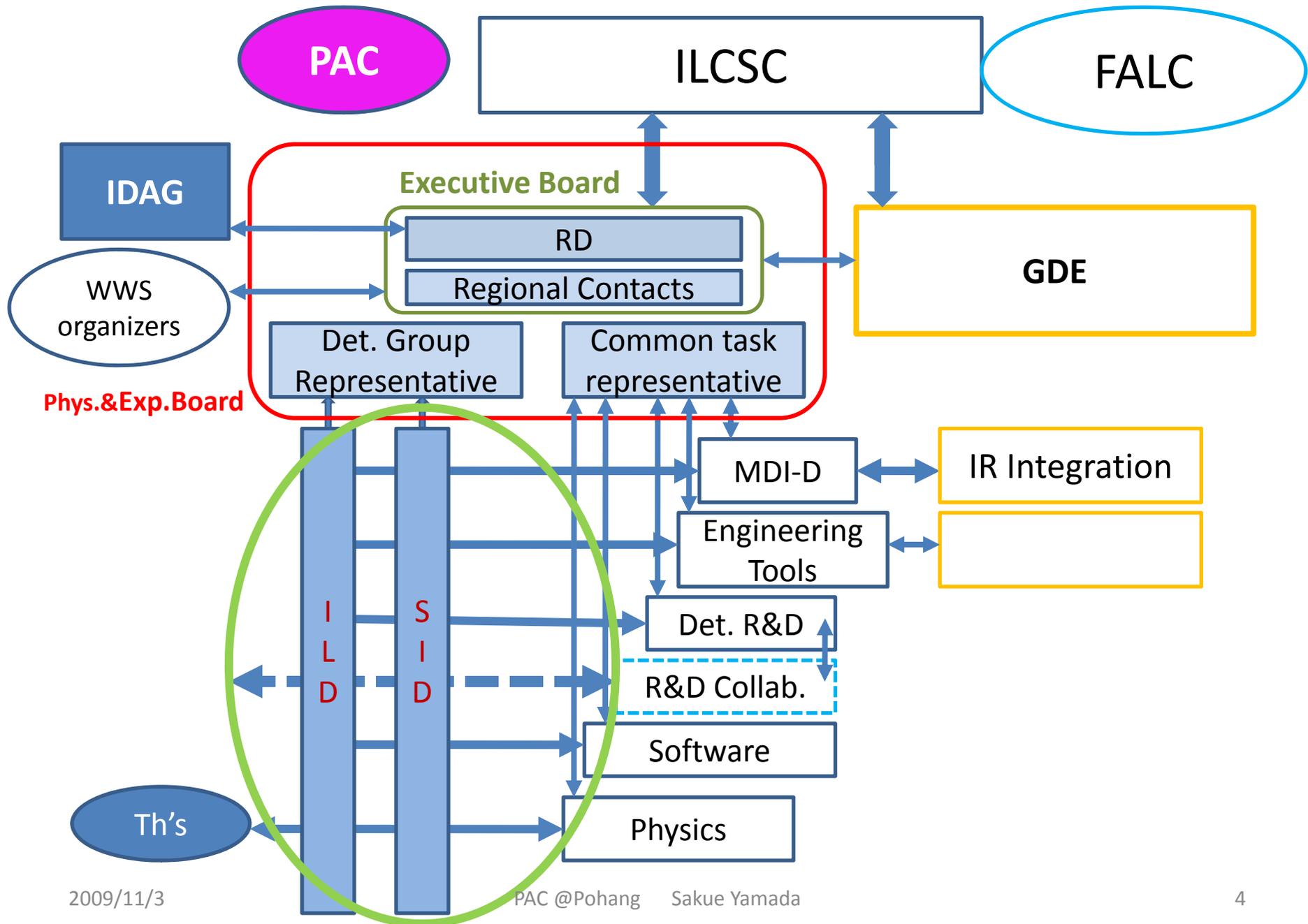
Reorganization

- The validation was accepted by the community.
- The detector organization was reorganized

Physics and Experiment Board

includes the representatives of the validated groups.

Oct. 03, 2009



Common Task Groups

- The common Task groups also are made of the **members of the validated two groups** and **the members from wider community**. (In the latter case, the members from the 4th group remain.)
- In order to reinforce the groups and to meet increasing tasks, some members are being added.

Common Task Group Members

10/03/2009

MDI

Convener: Karsten Buesser
Deputy: Phil Burrows

From LOI groups

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members from out of LOI groups

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Representatives
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**Recommended
by the wider
community
(3 th. +3 exp.) or
added by the
group**

Working group to study SB2009

- In order to study SB2009 and communicate with GDE in a systematic way, a working groups was formed after the Albuquerque meeting.

Members: Jim Brau (management, convener)

Mark Thomson(ILD), Tom Markiewicz(SiD)

Karsten Buesser(MDI),

Akiya Miyamoto (Software)

Keisuke Fujii (Physics)

The first comments and questions

- The working group compiled questions and comments from the respective bodies and passed them to GDE. We hope this starts closer communication with GDE on the SB2009.

Concerns about

1. Reduced luminosity at low energy (for the low mass Higgs studies),
2. beam energy spread (crucial for missing mass measurement)
3. Increased beam background etc.

These require longer running time (more running cost) for the same physics output.

Questions:

beam parameters at 250 GeV, 350 GeV and 500GeV.

M.C. simulations are planned to study the performance under SB2009. of which results will be shared with GDE.

We began to proceed along the plan as was presented in Vancouver

Time Plan after validation

- **Validated LOI groups will proceed with R&Ds according to their priorities, make choices of critical detector components, and complete advanced conceptual designs by 2012.**
- IDAG keep watching the entire process.
- Interim report is planned in 2010.
- It will be a written report by the RD with contributions from the LOI groups on their progress.
- In 2012 the groups will complete their reports.
- **In order to realize this plan, financial support will be crucial for the LOI groups to complete the required R&Ds, i.e. for the participating groups, particularly university groups, to accomplish their roles.**
- **Efforts are being made in each region. But the outcome is not clear.**

2009/11/10

S. Yamada@PAC Vancouver

33

Plan of the detector groups in the new phase

- We prepared with the detector groups how to proceed R&D and physics studies after validation more precisely.

In total 9 items are listed.

- The groups will make up their detailed plan for each of them with mile stones.
- Their progress will be checked by IDAG at several occasions through 2012.

How to do this was discussed with the IDAG chair and some members during LCWA09 in Albuquerque.

Items for the planning of the detector groups

1. Continue R&D on critical components *to demonstrate proof of principle*
2. Define a **feasible baseline design** (Options may also be considered.)
3. **Complete basic mechanical integration of the baseline design** accounting for insensitive zones
4. Develop a **realistic simulation model** of the baseline design, including faults and limitations
5. Develop a **push-pull mechanism** working with relevant groups
6. Develop a **realistic concept of integration with the accelerator** including the IR design

Plan of the detector groups (cont'ed)

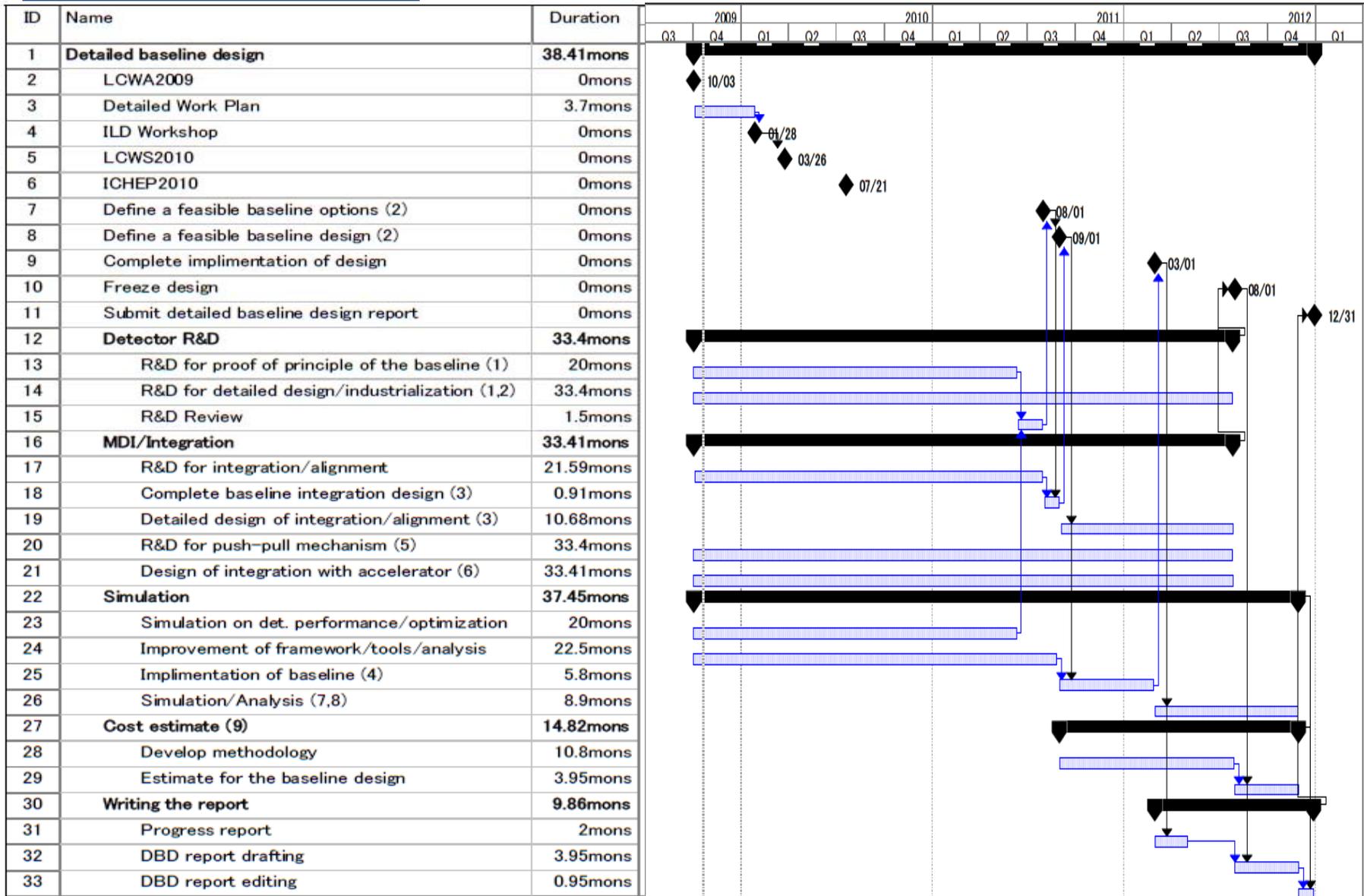
7. **Simulate and analyze benchmark(*) reactions, which can be updated**
8. **Simulate and analyze some reactions at 1 TeV, including realistic higher energy backgrounds demonstrating the detector performance.**
9. **Develop an improved cost estimate.**

(*) Not a benchmark in the sense of LOI preparation, but more expected or desired reactions to study.

Planning of the groups

- Both ILD and SiD groups tried hard to make their detailed plans, which they handed me last week.
- Both groups warned that these were the best they could do at present and the plans could be modified in the future.
- **Difficulties are:**
 1. that the financial support for the activity is NOT clear over the coming years,
 2. that they need to discuss with different R&D collaborations, which requires time.

ILD

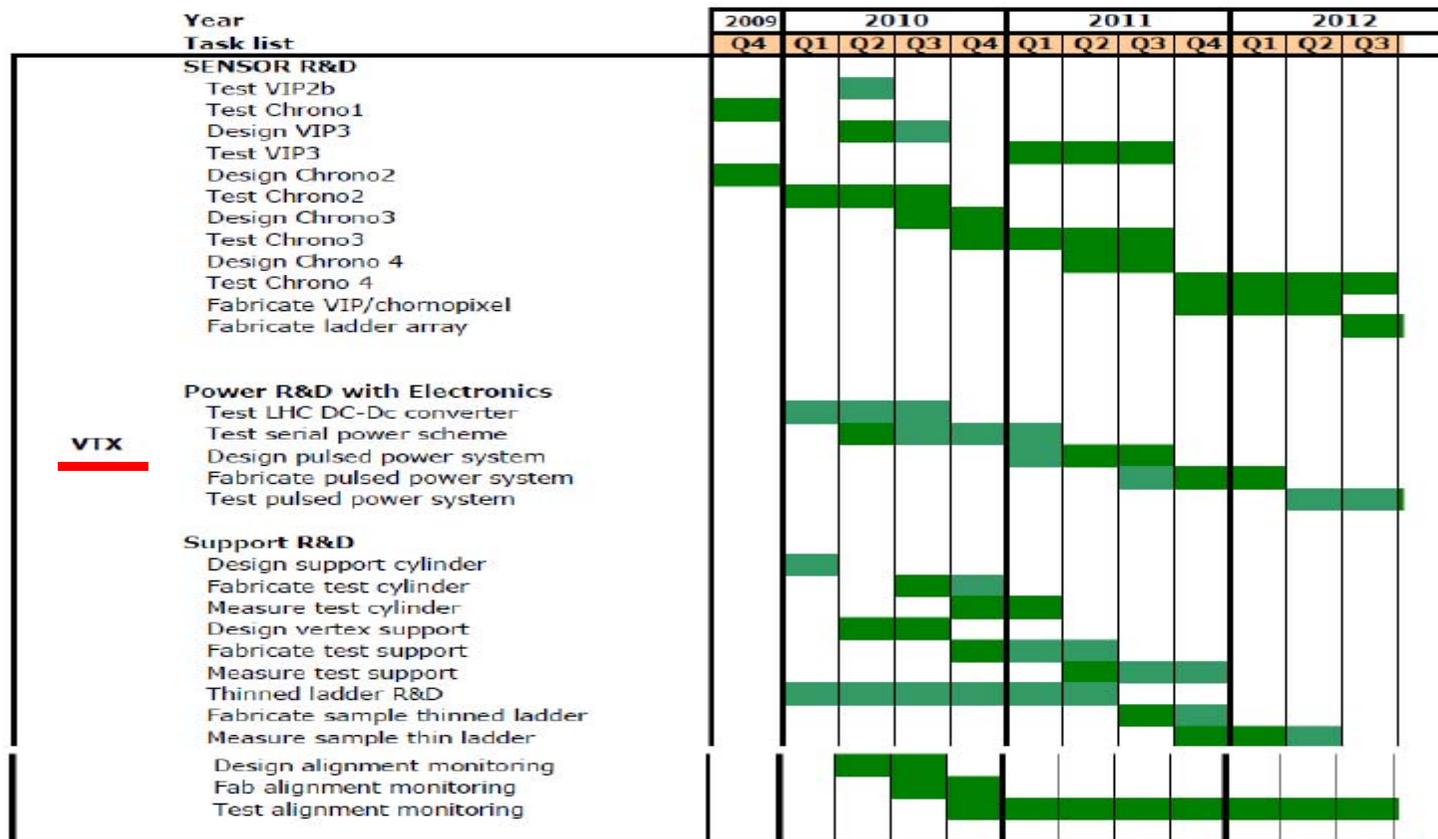


SiD

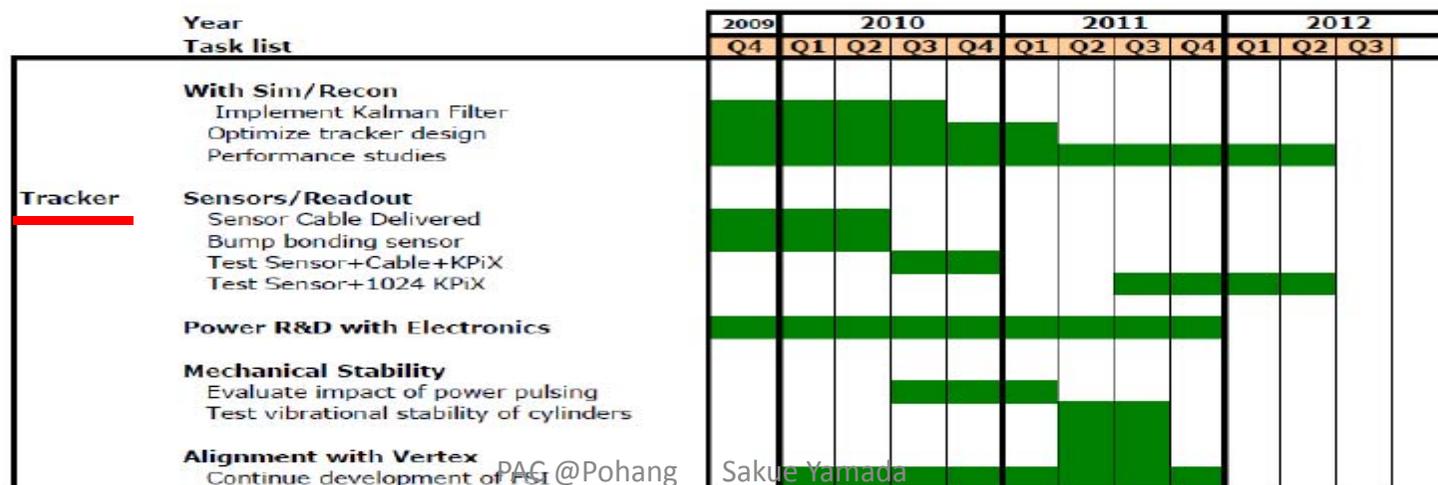
Year	2009	2010				2011				2012		
Task list	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Overall Schedule												
Work Plan												
Develop Sim Infrastructure for Realistic Detector Description												
Optimize Detector Design												
Engineering input for global params												
Freeze Global Params												
Define Subdetector volumes, supports, services, deadspaces												
SiD Baseline Geometry in G4												
Subsystem Engineering Designs and Proofs of Principle												
Subsystem Performance Studies												
Generate Physics and Backgrounds												
Reconstruct Simulated Events												
Analyze Benchmark Reactions												
Complete SiD Technical Report												

The very long graph below shows the SiD schedule for individual subsystems.

They also list required and available resources for each item.



VTX



Tracker

Both groups scheduled similarly

- The groups planned backward from 2012, foreseeing that for their final simulation and analyses, i.e. 1 year will be needed.
- Baseline design must be fixed early enough for this period.
- R&Ds on critical components to verify feasibility must be finished desirably by that time, i.e. about 1~2 years from now.
- They will yet continue R&Ds after finishing these works, in order to improve.

IDAG monitoring: How ?

- It may be difficult for IDAG to concentrate like for validation since the period is much longer.
- It will be hard for the detector groups to produce so much detailed material like LOIs too often.

Update of the LOIs will be enough to have their progress checked.

- **There will be LC workshops twice a year, where IDAG members collect information about advancement, interview the detector groups and meet to discuss their findings.**
- **There will be two written documents available for their examination;**
 - A) material of the groups for the RD's interim report in 2010,**
 - B) status report early 2012, prepared for IDAG, before the groups start writing their final report. (This will be the last check by IDAG.)**

Cooperation with CLIC detector

- We worked in the GDE's working group for ILC-CLIC cooperation. The detector groups were in contact with CLIC detector people.
- During the last ILCSC meeting, following GDE's proposition to make a joint working group for general issues of cooperation, ILCSC suggested that the detector part also creates a joint working group on general detector issues for cooperation between CLIC.

A mandate document was prepared for this.

- We plan to work along the mandate, and are now discussing with CLIC how the joint WG will be organized.
- Francois Richard will report more in detail.

Summary

- Validation of the submitted LOIs was a big step since the last PAC meeting. **ILD and SiD were validated.**
- Following the validation, the detector organizations (PEB and common task groups) were reorganized to come into the new phase.
- **To respond to GDE's SB2009, a working group was set up.**
- **The detector groups made their detailed plans to proceed toward completion of detailed BLD in 2012.**
They may be modified depending on future resources.
- **How IDAG will monitor the progress through 2012 was considered.**
- **Joint working group on general issues for CLIC-ILC detector cooperation will be set up.**