RD's Report on detector activity

General Overview

Project Advisory Committee

@Prague

Sakue Yamada

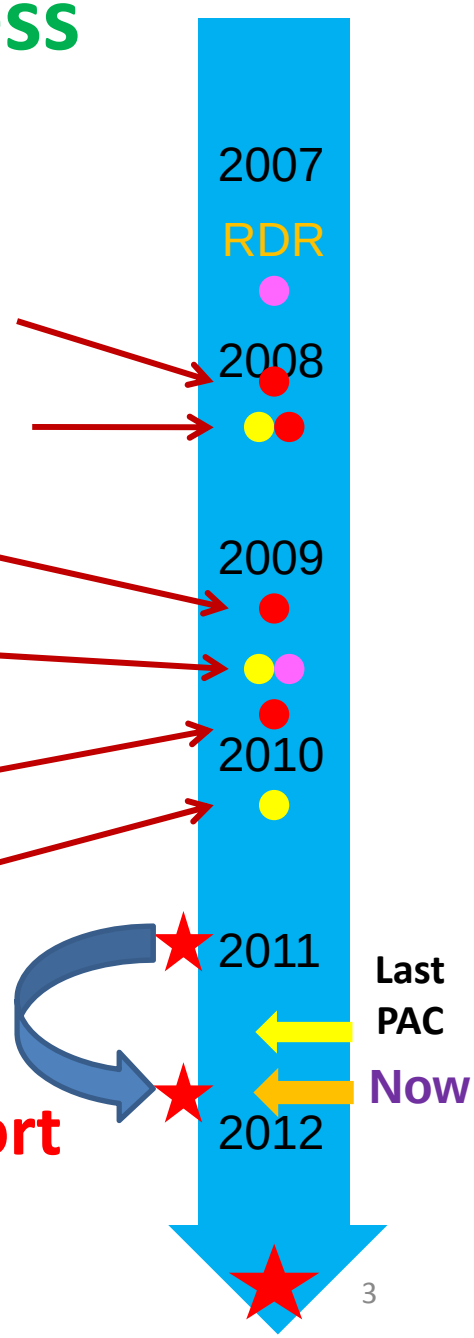
November 14, 2011

Contents

- **Interim Report**
- **Brief overview & update of the detector groups**
- **IDAG meeting in Granada**
- **Common task groups, SB2009WG**
- ***(Detector groups, MDI , CLIC-ILC cooperation and SB2009WG** are presented separately in detail*
- **on Post 2012 scheme and physics/detector program**

The time line of the LOI process

- Oct. 2007: **Call for LOIs was made by ILCSC**
  appointment of RD to conduct the process
- Jan. 2008: Detector management was formed
- Mar.2008: IDAG formed, 3 LOI groups known
- Mar.2009: 3 LOIs submitted
- Summer 09: IDAG recommendation for
  validation and ILCSC's approval
- Oct 2009: Work plan of the validated groups
- Mar:2009: IDAG began monitoring the progress
- End 2010: Interim report to be produced
- ***The final edit was finished.***
- End 2012: **Detailed Baseline Design Report**



The interim report

- The final edit was completed end of October.
- Its check has been just finished.
- Now design work for the page layout is going.

The title:

International Linear Collider Physics and Detectors

2011 Status Report

Tentatively the cover may look like this.

IR contents

- ILC Physics
- Record of the LOI process
- Status of the Detector R&D
- Update of the physics simulation since RDR
- Activity of the Common Task Groups
- Activity of the other WGs

  SB2009WG, CLIC-ILC cooperation

In total about 100 pages

Lessons

It took much longer than originally expected.

The drafts were prepared early 2011.

Editing required a long time for several different reasons.

Wordings (Many abbreviations and jargons)

Different expressions for the same thing

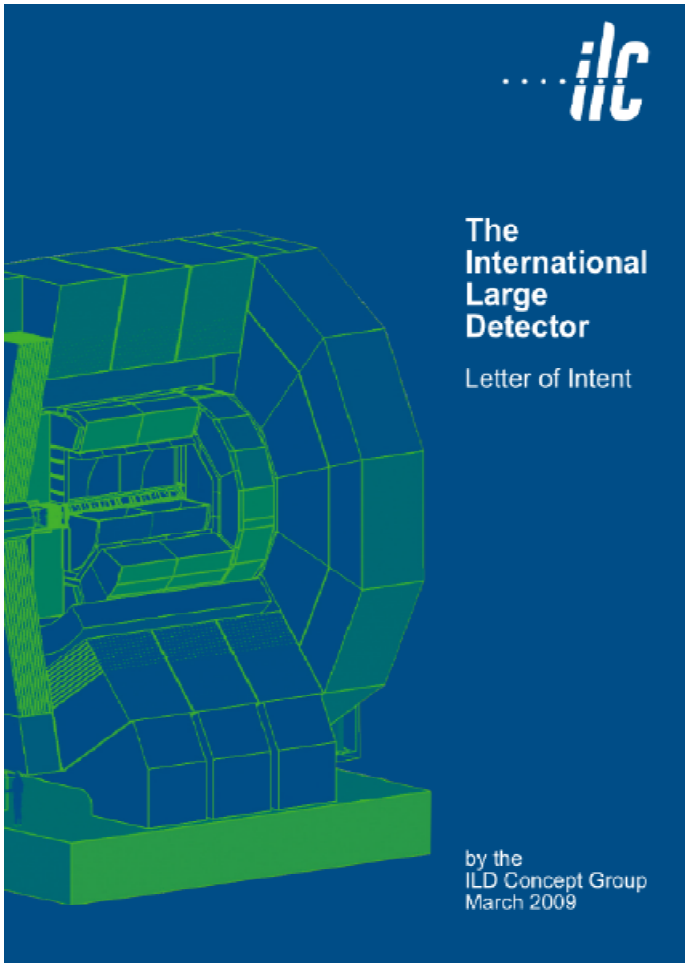
High quality figures, credits

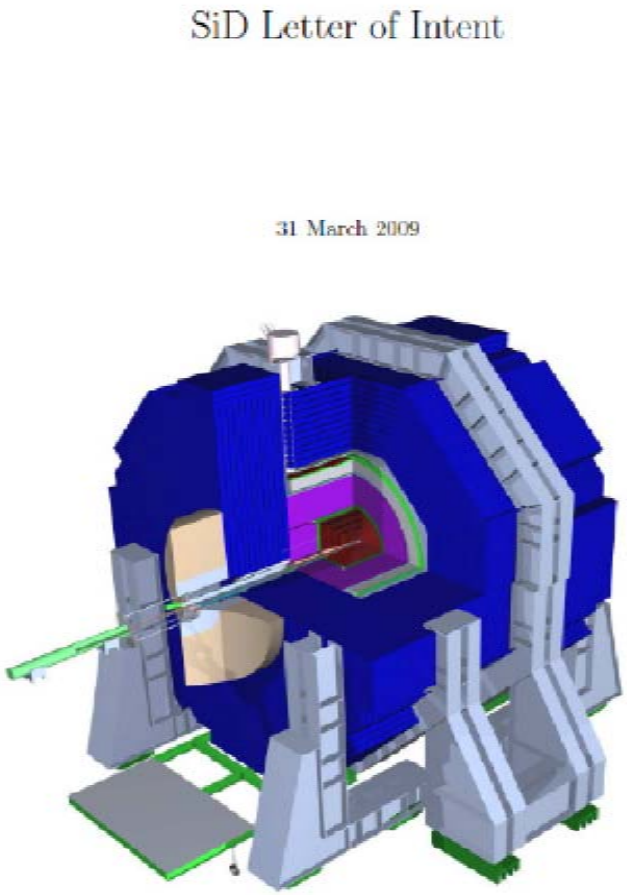
We must avoid these for DBD.

The communicators worked hard to pick up and solve these problems.

Time lag made some items obsolete requiring updates.

Status of of the detector groups





The groups are now

Finalizing

- **Component R&D for feasibility proof,**
- **Baseline-detector definition,**
- **Integration study**

and preparing for

- **Physics simulation of new benchmarks.**

These are to be included in the DBD report.

These work follow a guideline with 9 items.

Detector groups (continued)

- Flexible plan is needed in view of the limited resources.
- ***Their details will be presented by each group. (J.Timmermans, P.Burrows)***
- ***The groups are doing their best under the difficult environment;***

barely sufficient R&D budget and human resources.

The requirement to demonstrate the capability for the project proposal will be fulfilled (unless the environment becomes worse in the last year).

Resources

- **In Europe new budget, AIDA, started for LHC-upgr, CLIC&ILC.** (*reported at the last meeting*)

  Additional contributions are made by the countries under their research programs, too.
- **In US, the final year (FY2011) of University R&D funding has been awarded.**

  A new joint proposal for lepton collider detector R&D was proposed. Informally DOE has indicated they will not fund joint project, but it will examine projects individually and may fund some early next calendar year.
- **In Japan, the major budget (grant) for universities was renewed successfully for 5 years from FY2011.**

Engineering Support

- Positive report last time: CLIC push-pull team joined ILC push-pull effort.
- **In addition part-time support could be obtained from BNL and LAPP.**
- They are working on the MDI issues.

Physics simulation for DBD

- **Bench marks were listed. (3 reactions @1 TeV)**
- **Detector baselines were fixed.**

  (Important step for ILD)
- **Various software tools have been prepared by the software CTG.**

  Barklow, Berggren, Miyamoto (of the Software CTG) will generate common sample of physics events and BG events.

They will begin 1 TeV simulations after an agreement is reached with accelerator colleagues on the 1 TeV beam parameters.

Physics Simulation (continued)

SB2009WG has been coordinating discussions of 1 TeV parameters with GDE since the last PAC meeting. (Cf. SB2009WG)

More details to be reported by Jim Brau.

IDAG monitoring

IDAG keeps monitoring twice a year

- the activities of the detector groups
- the activity of the common task groups
- **and matters related to physics and detectors.**

The meetings are held during LC workshops.

Monitoring of the concept groups

The progress of the groups:

- ***Their detailed plans for DBDs were presented to IDAG***

  in Eugene, last March during ALCPG11-WS,

  in Granada, last September during LCWS11.

IDAG chair will report its observation.

The IDAG monitoring very helpful to us.

- ***It gives the groups good chance to watch their plans themselves carefully.***

IDAG monitoring (continued)

- **In Granada a discussion was made how IDAG will monitor the content of DBD in advance.**

  The schedule and material for DBD to be monitored

- **These have been agreed with the groups later.**

  By February 2012: Outline of the contents

  By September: first draft

- ***IDAG can check the DBD effectively in April (Korea) and October(Texas).***

IDAG recommendation on Costing

- Last year IDAG recommended **that the two groups use a common costing method**
- **And a working group on costing was formed.**

Some of the agreements between the groups, e.g.

- **What to include,**
- **how to list**
- **Unit price for major materials**
- ***Recently some details on magnet/coil costing***

Detector Costing (continued)

- By February 2012 each group will make the first update of the LOI cost.

- And if there is a need to coordinate further, the WG will try that.

Format of the DBD

- Preparation has just started.
- Coordination between the 2 groups and also with GDE foreseen

Not much is fixed yet.

Style: 2 volumes

physics volume and detector volume

Detector volume contains 2 detectors

Each detector part will be ~150 pages.

Quick view of the Common Task Groups

- **MDI**: Big progress since Eugene

Close cooperation with GDE-BDS&CFS groups

and with CLIC push-pull group.

(The detailed report is made by Karsten.)

- **Engineering Tools:**

The first step was completed by choosing EDMS.

The next step is to help the two groups organize themselves to use the system.

A tutorial session was made in Granada.

CTG continued

- **Detector R&D**:

Following the suggestion of IDAG, supported by PAC and ILCSC, the group completed the report on Spin-off of the ILC detector R&D.

It is now published. (ILC-REPORT-2011-034)

http://ilcdoc.linearcollider.org/record/35252

There was a presentation of the study in Granada.

The group will investigate the availability of the test beams.

CTG continued

- **Software:**

  The group is ready with the common tools for the simulation of the new benchmarks, i.e. event generation, physics background generation.

  Coordination work was done well.

  They've been waiting for the final choice of the beam parameters, which is now reached. (cf. SB2009WG)

  Production will start soon.

CTG continued

- **Physics:**

They prepare for the physics chapter of DBD.

Several sub-groups were organized for possible physics scenarios for ILC foreseeing and following new findings at LHC.

http://www.slac.stanford.edu/~mpeskin/PhysicsChapter.html

There was a session during LSWS11 in Granada for presentation of each group and open discussions.

SB2009WG

- After finishing the original task, the group continues to be the contact point to GDE on the 1 TeV beam parameter and fix them for simulation.
- There was a good progress during LCWS11 in Granada and there were intensive discussions after that.
- It was crucial for the DBD simulation.

Recently they reached a good solution:

- **Details to be reported by Jim Brau, the convener.**

Cooperation with CLIC detector

- **Juan Fuster will report more in detail.**
- **The joint working group surveyed on-going and possible cooperation.**
- **As a result, a workshop of experts on the powering scheme was held. It proved useful and will be repeated.**

The most cooperation is made on the grass-root level intensively. (e.g. Participation to CLIC-CDR)

- **CLIC group offered to each ILC group a list of possible items for contribution towards DBD.**

Each group discussed with CLIC group in Granada.

- **Cooperation for 1 TeV simulation will be intensified.**

Post 2012 program

- This is a serious concern of the groups:

  “what will happen to DBD after 2012 ?”

The community appreciate the initiative of ILCSC and will be much interested in participating in the discussions.

Post 2012 program

The large effort of the groups was motivated by the desire and hope to perform physics at ILC.

If this hope disappears, the community will also disappear.

If the hope becomes weak, the community becomes smaller, too, losing young people.

This affects very badly to the project.

It is crucially important we have a clear plan for the future.

The detector community wishes their hard work be awarded by the realization of the project ,

also remaining R&D and physics studies can be continued further after 2012.

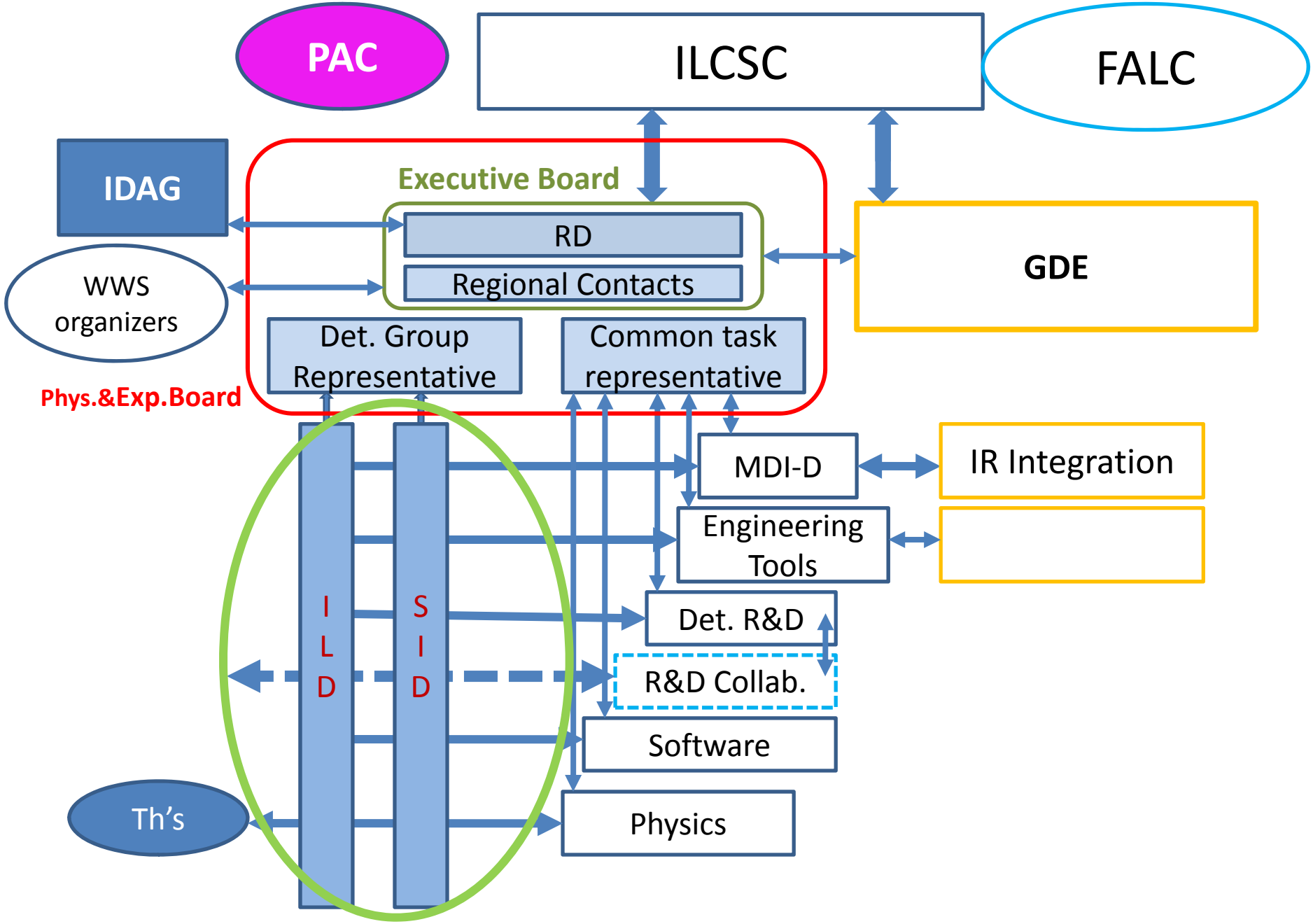
Hope: In the new scheme, it is possible, difficulties can be reduced and R&D studies can be strengthened.

Post 2012 scheme (continued)

- Some comments on the present organization which may be reflected in the consideration of the new physics/detector organization.

(more personal view)

Oct. 03, 2009


PAC
ILCSC
FALC
IDAG
Executive Board
RD
Regional Contacts
GDE
WWS organizers
Det. Group Representative
Common task representative
Phys.&Exp.Board
MDI-D
IR Integration
Engineering Tools
I L D
S I D
Det. R&D
R&D Collab.
Software
Th's
Physics

Some remarks on the present organization

The concept groups:

- **They were formed for DBD.**
- The both groups are deeply involved in designing CLIC detectors.

  (ILC groups and CLIC groups overlap but are not identical.)
- After DBD, the groups will wish to continue

  hoping LC will be realized.
- **The LOIs were not for construction.**
- But the kernels are likely to be kept for construction.
- ***When can (should) they go to the next stage of engineering design?***

Remarks on the present organization

The management

- WWS co-chairs became the regional contacts, after consulting ILCSC and regional steering bodies.
- It was agreed as a temporary solution. Since ILC is still under R&D phase, communication with the community was considered important.
- It worked very well for the communication with the community. But it also created confusion and difficulty (also for RCs who carried two hats).
- If the new scheme makes one step closer to ILC realization, it may be better to have ILC-proper RC.

(WWS considers LC in a wider sense and longer range.)

Remarks on the present organization

- **IDAG** was extremely helpful.
- It received a clear request from us and responded effectively,

  validation of LOIs

  monitoring the progress of the groups for DBD,

  monitoring the activity of the CTGs

In the new scheme:

What are the concrete request if there is an advisory body ? (It depends on the new program.)

Comment on the present organization

Common task groups:

- The philosophy of cooperation between the concept groups were good at this stage.
- In general they were effective and productive.
- **They made good link among the concept groups and functioned as links to the bodies, like GDE, R&D collaborations and theory group.**
- **In the new scheme similar cooperation may be useful.**

Comment on the present organization

Working Groups:

They were made when needed.

They had a character of CTG with coordination and agreement making between the groups.

SB2009 WG was very productive and made a good link to GDE besides the MDI CTG.

Comment on the present organization

Budget:

- Now RD is also supported by GDE's common fund.
- It is used mainly for IDAG travel and related needs.
- For the IDAG members from universities, this is helpful.
- **No resources to support the detector groups.**

In the new scheme, should there be any budget to support the groups ?

- **E.g. For the engineering help for integration:**

  If we could invite retired engineers for a limited time, it might have been effective.

Summary

- The interim report finished editing.
- Our efforts are now converging for DBD.
- IDAG has a concrete plan how to monitor the DBD drafts of the groups.
- Simulation of 1 TeV reaction will begin very soon.
- We wish detector community wish to participate in the discussion of post 2012 scheme wishing the project relization.