RD's Report

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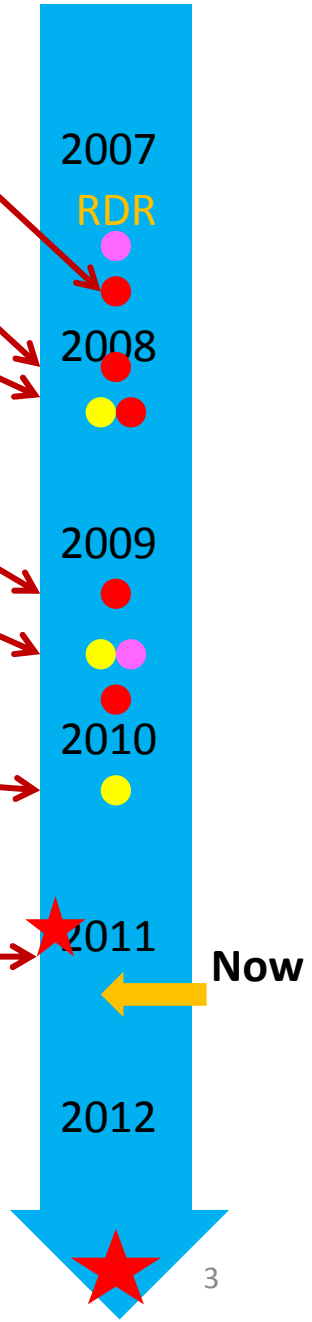
ILDworkshop@LAL

Outline

- Introduction
- Interim Report
- The detector groups
- IDAG monitoring
- Common Task groups
- Benchmark task force
- Common costing working group
- Cooperation with CLIC detector
- Plan for post2012 activity

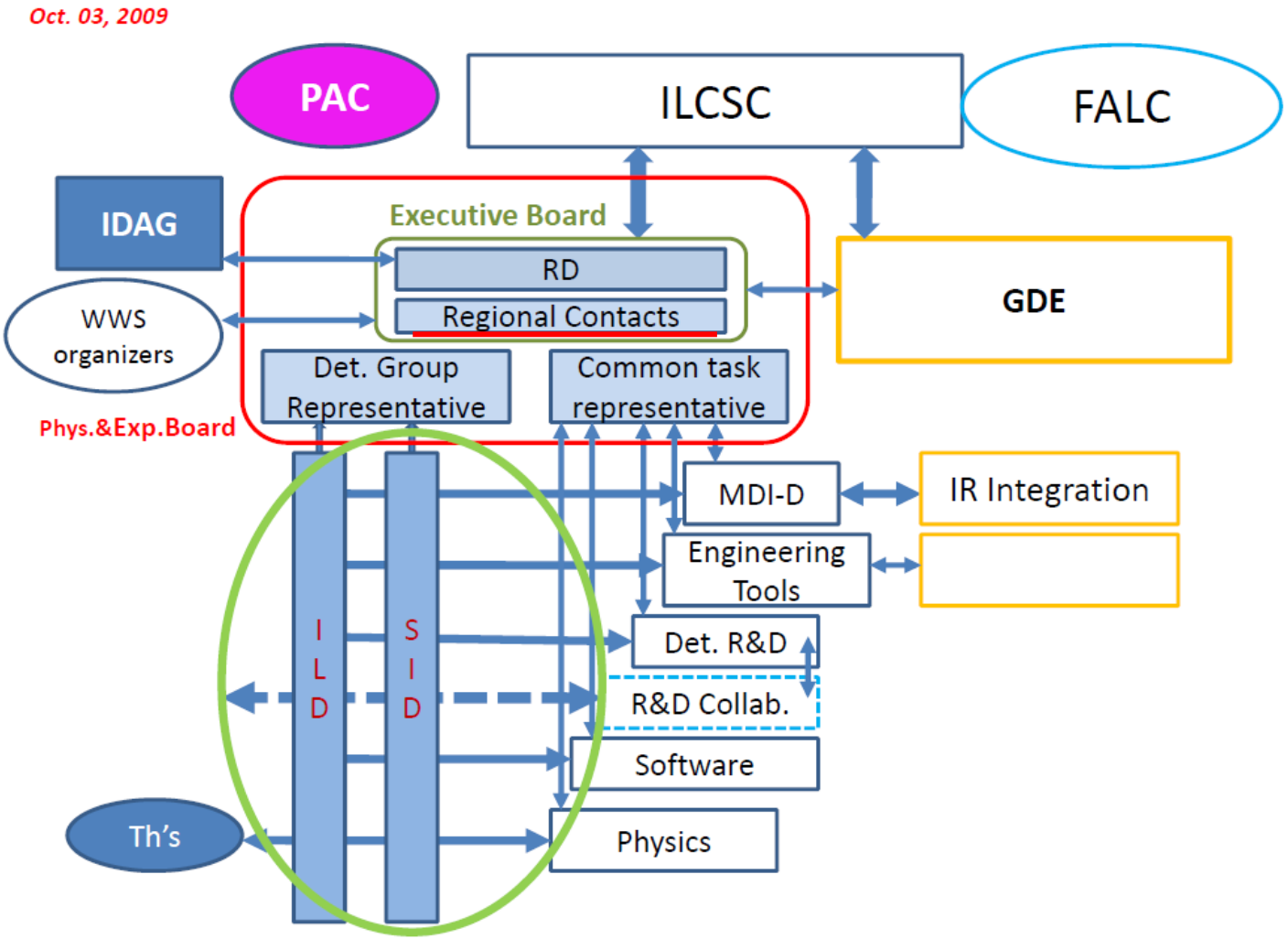
Time line of the LOI process

- Oct. 2007: **Call for LOIs was made by ILCSC**
- 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(being completed)**
- **End 2012: Detailed Baseline Design Report and updated physics case for ILC**



How to continue

The European regional contact changed end January 2011 from F. Richard (LAL) to Juan Fuster (Valencia) .



Interim Report

The interim report is being finalized to be published in a similar form like the GDE's interim report.

- **It is a good time to make such a report.**
- **Readers:**

➢ **ILCSC**: to report the status of the detector activity

➢ **Colleague physicists and funding agencies**

➢ **Ourselves: to review where we are in each activity**

- **Many people contributed in making drafts.**
- **It will be passed to the communicators. Delayed a bit.**

Contents of IR

- **Physics prospect as seen at present**
- General introduction including the history of the LOI process and on organization of the activity
- **Activity of the validated groups on R&D and the status of preparation towards DBD**
- **Update of physics simulation since RDR**

  (Many simulations were made for LOIs.)
- Activity of each common task groups
- Activity of SB2009 working group
- CLIC-ILC cooperation

- The length will be ~100 pages.

Detector groups

Both ILD and SiD groups are continuing

detector R&D, design work

and preparation for new simulations

in view of the 9 items to be considered.

E.g.

- R&D for critical components to demonstrate feasibility,
- Define baseline design including realistic support structure, holes, I/O cables, etc.
- Settle Push-Pull scheme
- Study new benchmarks
- Improved cost estimation

I understand you meet now to settle many questions to complete these works for DBD.

IDAG monitoring

- IDAG keeps monitoring the activities of detector groups and CTGs twice a year.
- **IDAG met during ALCPG11 in Eugene last March.**

1. discussed with the management,
2. made interviews with the detector groups,
   and Engineering tool CTG,
3. examined the planning of the detector groups towards DBD.
   (This was the major aim of the Eugene meeting.)
4. **Suggested about the costing methods of the two groups.**

IDAG Monitoring(continued)

- **ILD and SiD presented detailed plans for BDB.**
- **ILD described its plan and policy**

  not to exclude possible options,

  while the baseline detector design for physics simulation will be fixed by Summer 2011.
- **It was accepted by IDAG.**
- **SiD described their detailed plan for DBD contents. There was some uncertainty left about the degree of completion for each item. (They continue the effort.)**

General difficulty about resources

- **Both groups stated**

  that human resources are limited.
- **The yet-unknown resource situation makes precise planning difficult at present.**
- **Under such environment, the both groups made their best effort for planning.**

IDAG recommendation on Costing

- Last year IDAG recommended **that the two groups use a common costing method.**
- **A small working group on costing was formed, members from ILD, SiD, management,+ advisor.**

- CLIC detectors impose another and similar boundary condition for the costing of the two detectors.
- **GDE is much advanced about how to coordinate different costing methods in different regions.**
- **We can follow successful ideas. It is also meaningful to compare with the accelerator cost.**

IDAG's comment on Cost (continued)

- IDAG discussed the difference of M&S costs listed in the LOIs and recommended to watch updated cost estimates in early stage.

The LOI costs were premature and were not fully coordinated between the groups.

Under the presently agreed method, there will be better numbers to be compared.

The difference reflects the difference of the size and detector components.

Interesting to see if this affects performance.

There was a discussion in PAC last week, too.

(How precise the cost in DBD will be ?

The effect of many options in the cost ?)

Quick view of the Common Task Groups

- **MDI:** They have been working on push-pull to reach a common solution between ILD and SiD.

  In Eugene, the final agreement was obtained that both groups will use platforms.

  CLIC-push-pull team will participate officially in the push-pull study. (Outcome of the request to ILCSC.)

- **Engineering Tools:** The agreement was to use EDMS, which is used by the accelerator people.

  More practical question was **how to maintain the system and was solved.**

  The group met with IDAG in Eugene and IDAG was happy about its activity.

Common task groups (continued)

- **Detector R&D:**

  The group was interviewed by IDAG last October,

  where **the status of R&D of the most of the major components was presented.**

  IDAG was content with the presented progress.

- **There are a number of spin-off of ILC originating detector R&D found in other fields and experiments.**

  IDAG recognized this important and suggested to make a complete list of spin-off cases.

  This was reported to PAC by the IDAG chair, and to ILCSC by me.

  The same recognition was made by both PAC and ILCSC.

  The group is working on the report, to be ready by Summer.

Common Task Groups (continued)

- **Software Group:**

This group also was interviewed by IDAG last October.

The group is working effectively and IDAG was content.

The group played an important role in the discussing for new benchmarks and is now preparing various tools for their simulations.

It also communicates with the CLIC simulation team.

- **Physics Group:**

The group lead the discussion to finalize new benchmark reactions and volunteered to make the physics chapter of DBD.

(more details in later slides for new benchmark task force)

The group made a significant contribution for the interim report.

Common Task Groups (continued)

Next role of the physics CTG:

The group will further play a major role to make **the physics chapter of the DBD**, which is common to the both detectors, by sharing efforts with the detector groups.

(Michael Peskin volunteered to coordinate the writing of the chapter during the PEB meeting in Geneva.)

The physics chapter includes update of ILC physics case from the physics volume of RDR, *taking into account of the studies for LOI and the new information from LHC.*

The group organized a team of subject conveners, inviting more members, and preparation works will start in earnest this Summer. **It will be a center of focus at the Granada LC meeting in September.** The current plan can be found at:

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

People who are interested to contribute, please contact Michael Peskin or an appropriate subject convener.

The task force for new benchmarks

- **Member:**

Mikael Berggren(ILD), Tim Barklow(SiD),

Akiya Miyamoto, Norman Graf (Software CTG)

Michael Peskin (convener), Keisuke Fujii, Georg Weiglein (Physics CTG)

Revisit the new benchmarks in view of the developing physics prospect, the resource of the detector groups and suggestion by IDAG

Report was made January 2011 (can be accessed through Web.)

Conclusion of the task force

The two groups and the CTGs agreed:

- **Three new process to be studied:**

  e+e- > **$\nu\bar{\nu}H$**, **W+W-, $t\bar{t}H$** @ 1 TeV

- **Each group repeats one of the LOI processes @500 GeV with the final detector configuration**,

  and with the same event sample

- Beam polarization taken into account
- All relevant physics back grounds to be included
- How to produce machine background

Preparation started.

- Various software tools are being prepared by the software CTG.

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

- **Hope:** when the detector baselines are fixed, simulation can be started with these tools.

Common costing WG

- **Following the IDAG's suggestion,**

  the costing WG was formed last year with experts of the both groups and an experienced advisor.

Members:

Henri Videau, Tomoyuki Sanuki (ILD)

Marty Breidenbach, Kurt Krempetz(SiD)

Sakue Yamada (management)

Peter Garbincius (Advisor)

Basic agreement confirmed:

to use the same way of presentation as the accelerator costing, i.e. material and manpower are listed separately.

For more precise details, consideration is under way.

Agreements at present

1. what to include in the cost,
2. to list material cost and man-power separately,
3. to use FY2012 ILCU (like the accelerator cost),
4. to use the same unit costs for several materials. (CLIC-detectors do the same.)

(So far they are Si-det, W, Iron, Stainless steel.
These cover a large fraction of the cost.)

Cooperation with CLIC

- **Cooperation with CLIC detector is increasing, in view of CLIC CDR. Several members participate in the CLIC-CDR preparation.**

Many common efforts on going. They are essentially grass-root cooperation.

Through the joint WG, we surveyed them and identified further possibilities for cooperation,

e.g. **a workshop of experts is being organized on pulse-powering.**

It is hoped that once CLIC-CDR is completed, there will be more participation from the CLIC side for ILC DBDs. ***(Proposition for possible items was sent from CLIC group to each ILC group.)***

Plan for post 2012 phase

- **ILCSC began planning the post 2012 phase last Summer.**
  We welcome this.
- **ILCSC chair, Jon Bagger, invited the detector community to comment on the CPDG document.**

  Comments were sent by some individuals, WWS, SiD group and the detector management.
- **We strongly wished to participate in the coming discussions to polish its content.**

- **During the last ILCSC, February 2011, more detailed discussion started.**

Plan for Post 2012 (continued)

- **ILCSC will discuss further the possibility of international consortium for the scheme after 2012 at the next meeting in Mumbai.**
- ***Possibility and difficulties will be studied in each region by relevant ILCSC members by that time.***
- **Consideration for the scheme will be made after the Mumbai meeting by including members from the user community.**

What's needed for us

- ***It is crucial that the detector community remain actively participating in the discussions,***

so that we can

continue R&D/physics studies after 2012,

reduce the difficulties which we have now

and prepare for the project realization.

Also it may be the time for us to start thinking concrete plans for our own activity after 2012.

How we wish to continue ?

What need to be done further ?

Design of the detector with more engineering studies?