

# New Organization and activities for the detector

Sakue Yamada

ECFA LC workshop @ Warsaw

June 9, 2008

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## Introduction – what happened since last October

- ILCSC made a call for LOI last October with the due date end September 2008 for detectors to be implemented in the GDE's ILC design.
- Original plan: *Select 2 complementary and contrasting detectors to be included in the GDE's EDR.*
- *To conduct this procedure, ILCSC introduced RD and instructed RD to build a new management and to form **International Detector Advisory Group (IDAG)**, of which members were to be approved by ILCSC.*

Introduction (continued)  
Decision by ILCSC on Feb 11

- The procedure and the schedule modified
  1. To be synchronized with GDE's new time line, which was expanded to 2012 to produce **detailed technical design report**,  
*detector timeline was also expanded to 2012.*
  2. IDAG *validates* submitted LOIs to be implemented in GDE's *technical design*.
  3. *The due date shifted to end March 2009.*
- The new managing mechanism was presented to ILCSC.
- Call for EOI with the due date end March 2008

## A rough plan shown in Sendai

### Detector design phase I -- to 2010

- Focus R&D on critical elements
- Complete validated detector specification and initiate technical design work
- Update of physics performance
- Detailed studies of MDI design

### Detector Design Phase II -- till 2012

- React to LHC results
- Final confirmation of physics performance
- Complete necessary R&D
- Complete technical design for ILC proposal
  - Complete MDI technical design
  - Complete reliable cost role up
- Prepare for financial plan

These plans should be reviewed and refined through actual works.

### GDE-TDP- I

- Prioritized R&D for risk reduction and for final focus
- MDI

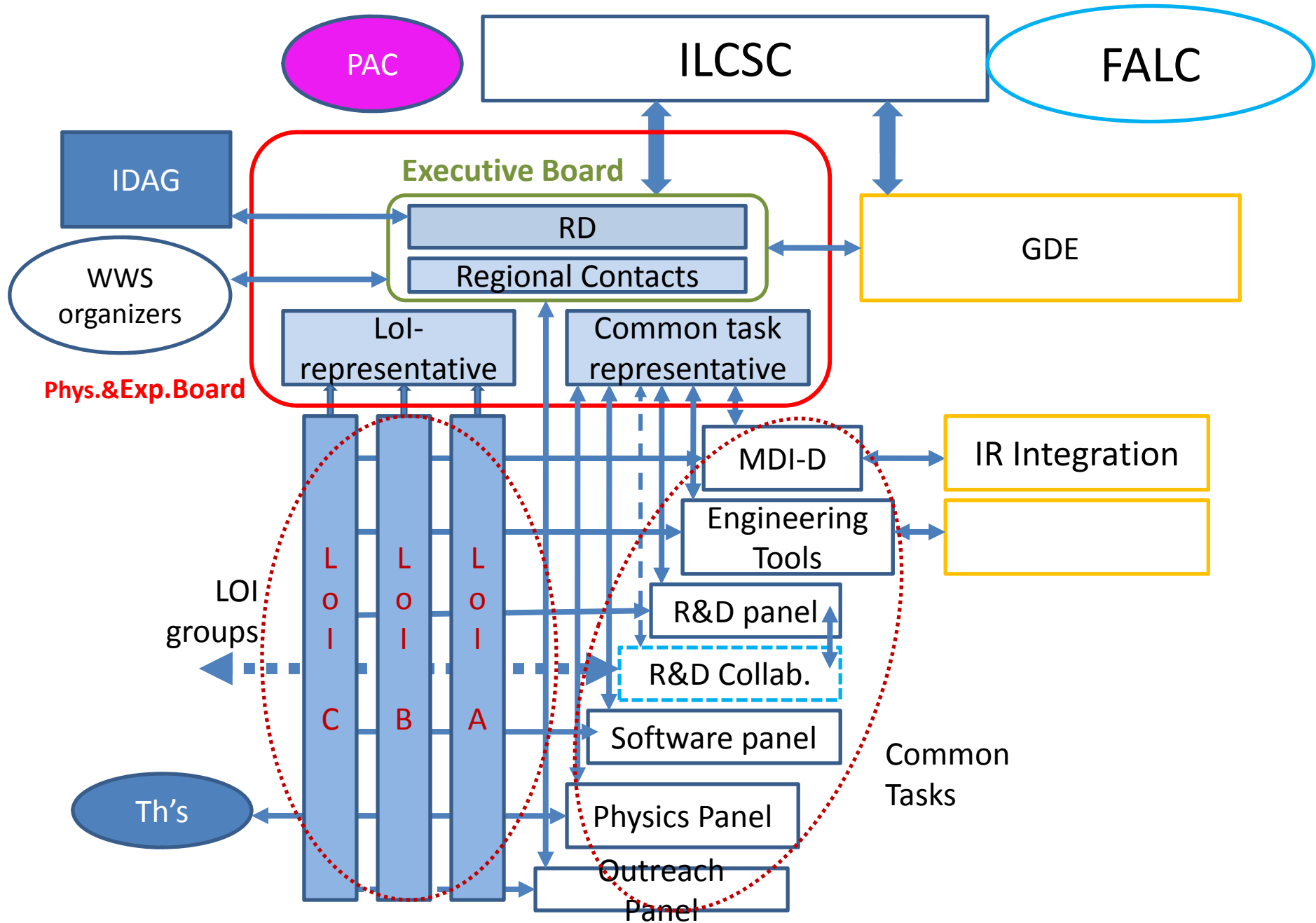
### GDE-TDP- II

- Complete technical design and needed R&D
- Complete reliable cost role up
- Project plan developed

A new detailed document

Jan.09, 2008

The managing mechanism was shown to ILCSC

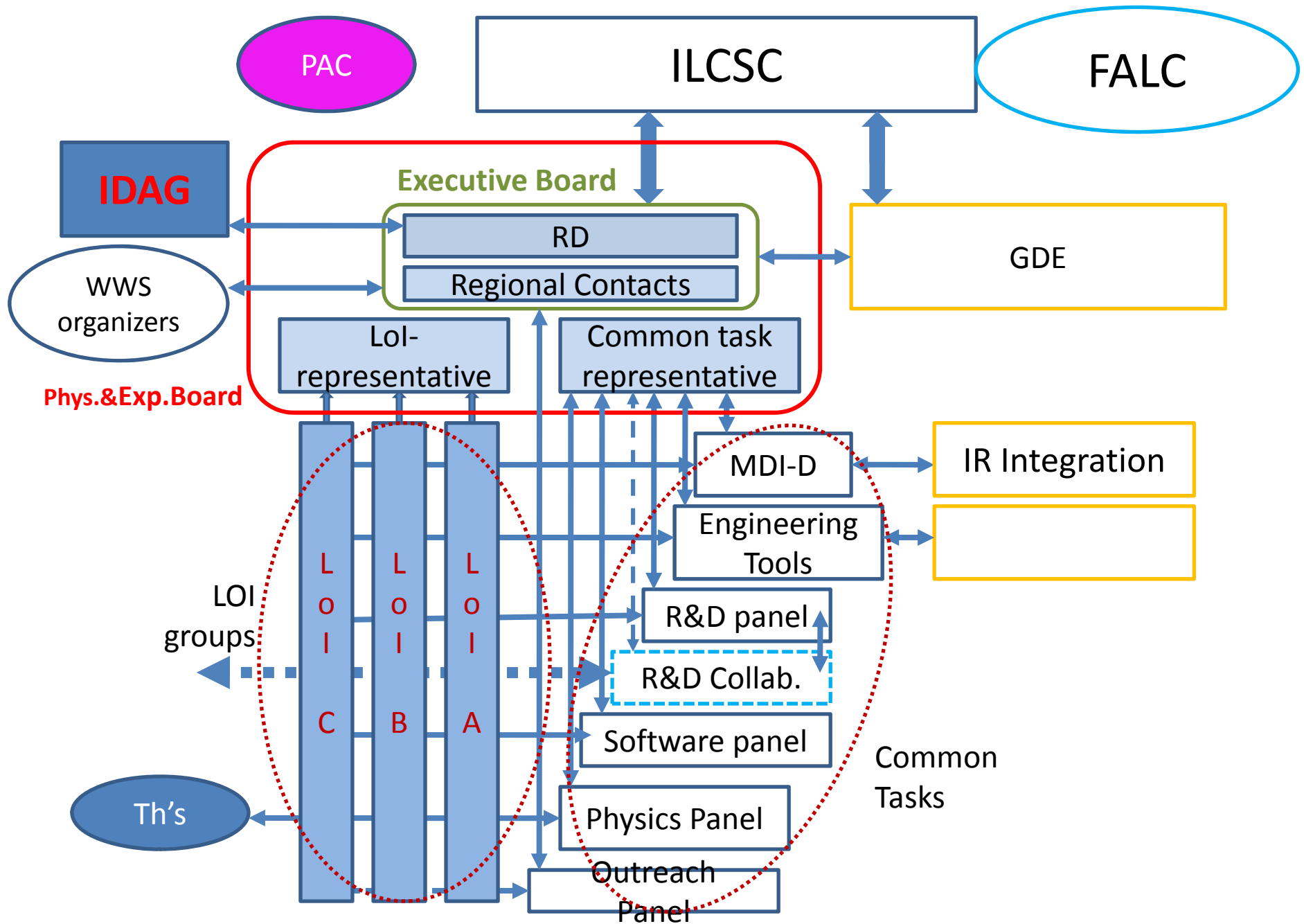


**These changes and the new managing structure were reported at the ACFA ILC workshop in Sendai, last March, and were described in the RD's report of ILC NewsLines.**

I asked the three co-chairs of WWS to become the first regional contacts. In order to keep good link with the detector community at the start, it was accepted by the regional communities to be practical. This solution was considered temporal one, but worked well.

Several more steps were made since March. The new management will be completed soon.

Jan.09, 2008



## International Detector Advisory Group (IDAG)

- Having seen the modification of the process and schedule, we could form IDAG.

*Almost all members kindly accepted to join.*

- We originally tried to have the first meeting during the Sendai ACFA workshop, but time was too short to prepare.
- Fortunately, several members who already planned to come met informally.



# IDAG members

In total 16 members

10 Experimentalists

3 Accelerator physicists

3 Theorists

Most of the experimentalist  
are from out of ILC community.

All the accelerator members  
and theorists are ILC experts

- Prof. Michael Danilov (ITEP)
- Prof. Michel Davier (LAL) (Chair)
- Prof. Abdelhak Djouadi (Paris Sud)
- Dr. Eckhard Elsen (DESY)
- Prof. Paul Grannis (SUNY)
- Prof. Rohini Godbole (IIS)
- Dr. Dan Green (FNAL)
- Prof. JoAnne Hewett (SLAC)
- Prof. Thomas Himel (SLAC)
- Prof. Dean Karlen (Victoria)
- Prof. Sun-Kee Kim (Seoul)
- Prof. Tomio Kobayashi (Tokyo)
- Dr. Weiguo Li (IHEP)
- Prof. Richard Nickerson (Oxford)
- Dr. Sandro Palestini (CERN)
- Prof. Nobukazu Toge (KEK)

## IDAG-Continued

- *At this ECFA workshop, the first IDAG meeting will be made.*
- *IDAG will discuss how to validate, how to proceed before and after LOI submission.*
- LOI groups will make presentations before the IDAG members this afternoon
- and each group will be invited to the closed IDAG meeting tomorrow morning.

## IDAG (continued)

- Discussions at ILCSC @ Dubna, last week  
**how to come up with two contrasting and complementary detectors**
- Different physics ?
- Similar physics but with different approach ?

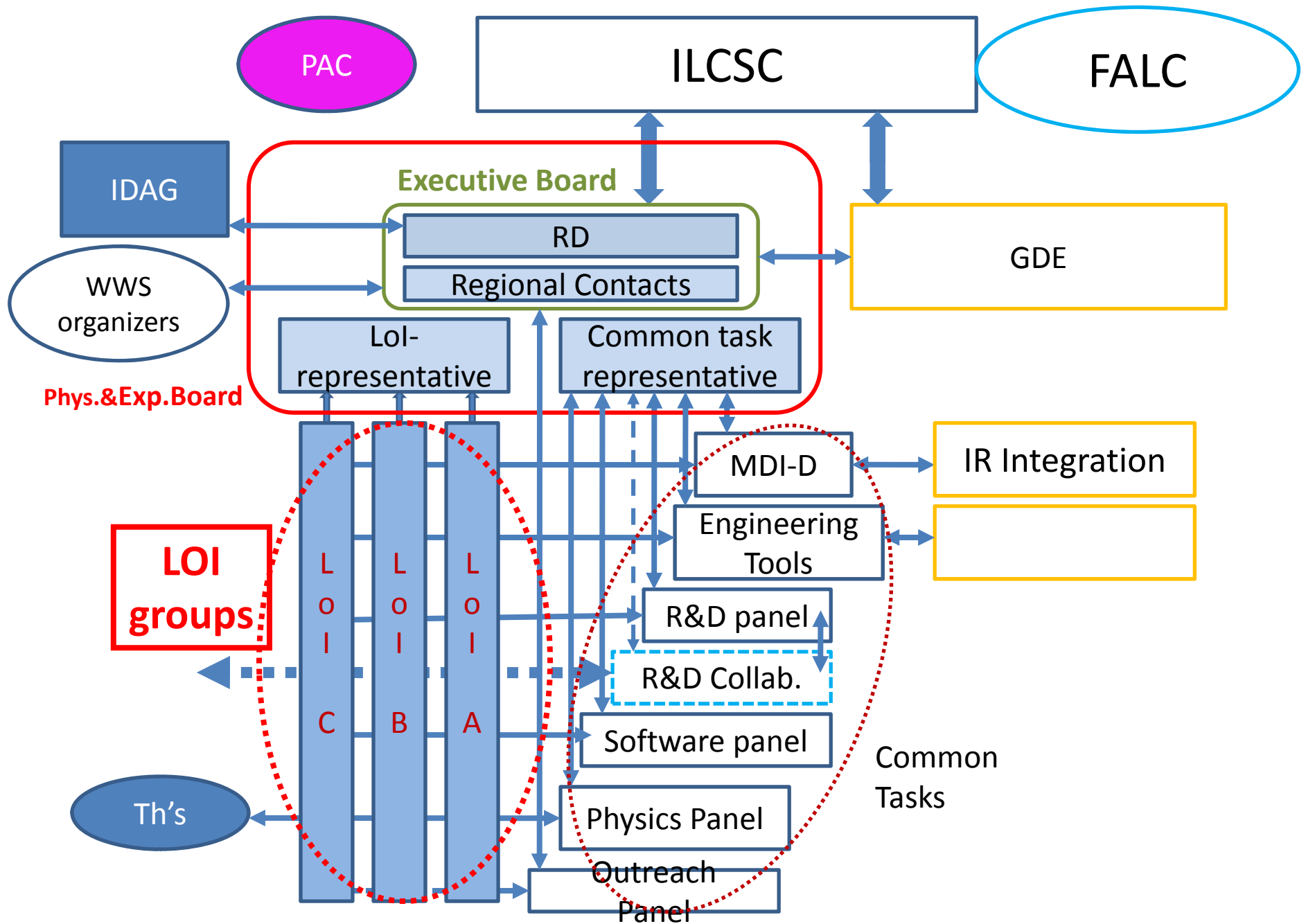
Considerations need to include:

switched running time,

reduction of systematic errors with different methods,

IDAG is not selecting but validating.

Jan.09, 2008



# Call for Expression of Interest

Required were:

- Statement of group's willingness to submit an LOI with studies of the agreed benchmark reactions,
  - 2 names of representatives  
and participating institutions.
- 
- Despite the close due date,  
three concept groups expressed their interests.  
*ILD, SiD, the 4<sup>th</sup> concept*

## ILD group

- Representatives: Ties Behnke (DESY), Yasuhiro Sugimoto (KEK)
- Participating Institutions: 169 (28 counties)

## SiD group

- Representatives: John Jaros (SLAC), Harry Weerts (ANL)
- Participating Institutions: 49 (8 counties)

## The 4<sup>th</sup> concept group

- Representatives: John Hauptman ( Iowa State ), G.P. Yeh (FNAL)
- Participating Institutions: 17 (10 counties)

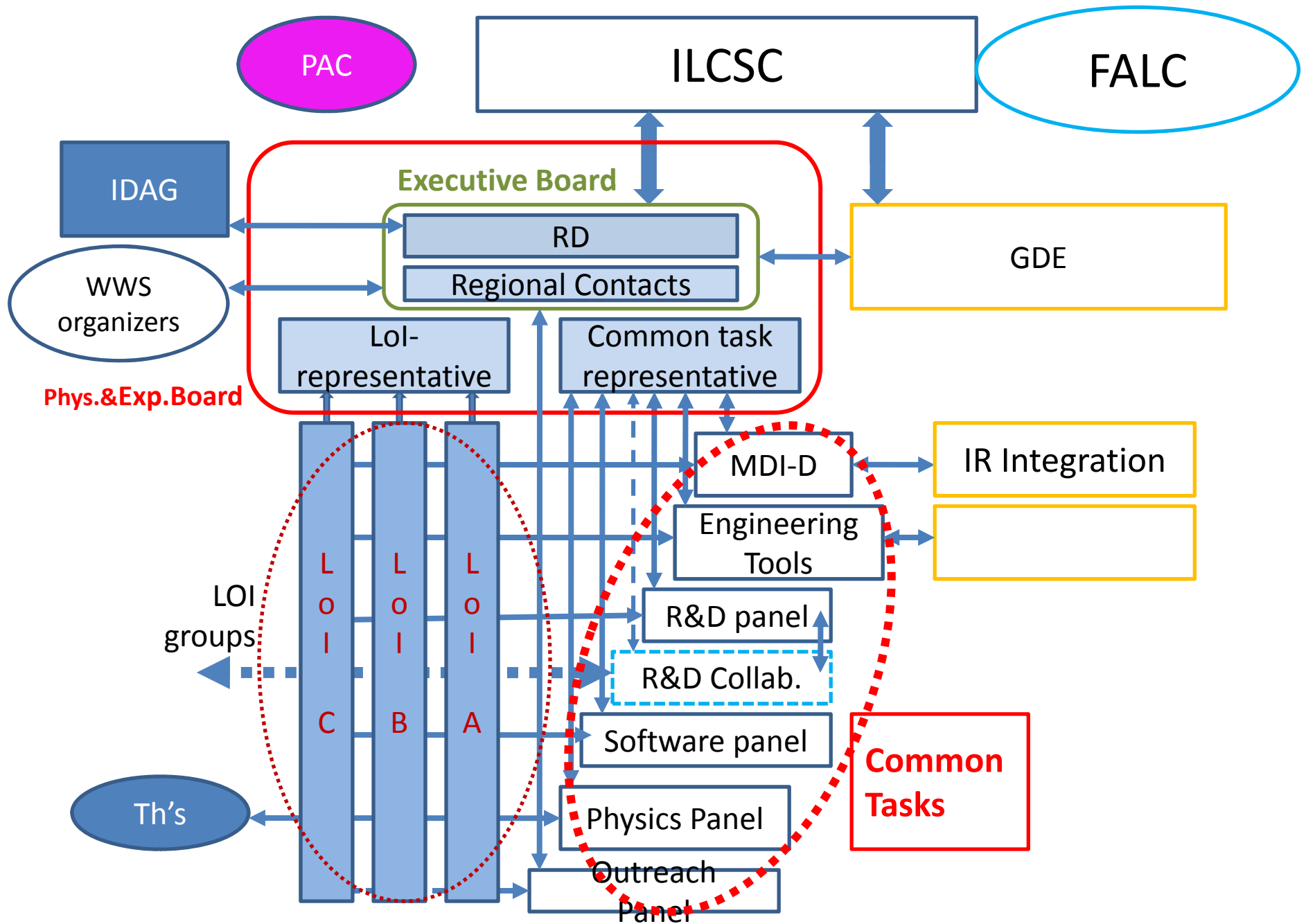
Maybe for a historical reason, participation shows geological clustering but with some smearing.

This tendency and the numbers may change in time.

## LOI groups (continued)

- **Establishment of the formal channel to contact LOI groups made the further actions possible (before LOIs are submitted).**
- **Meeting with LOI representatives, once a month**
- **This will form the Physics and Experiment Board**

Jan.09, 2008





# Common Task Groups

- Each LOI group has its physics aims and own detector concept, according to which its detector design will be optimized.
- The LOI groups are not competing and are yet in the stage of R&D.
- There are many issues which **can (and/or should)** be addressed in common.
- **Common task groups will work together cutting across the LOI groups.**
- **Many works are transferred from those of WWS Panels.**

## Common task groups -continued

- The following common task groups were formed with members from each LOI group.

**1. Machine Detector Interface (2 from each LOI)**

**2. Engineering Tools (1)**

**3. Detector R&D Panel (2-3)**

**4. Software Panel (1-2)**

**5. Physics Panel (2) + some theorists**

The Representative/convener of each common task group will participate the Physics and Experiment Board.

## Common task members at present

June 03.2008 (6:00GMT)

LOI group	ILD	SiD	the 4th
MDI	Karsten Buesser <a href="mailto:karsten.buesser@desy.de">karsten.buesser@desy.de</a> Toshiaki Tauchi <a href="mailto:toshiaki.tauchi@kek.jp">toshiaki.tauchi@kek.jp</a>	Phil Burrows <a href="mailto:p.burrows1@physics.ox.ac.uk">p.burrows1@physics.ox.ac.uk</a> Marco Oriunno <a href="mailto:oriunno@slac.stanford.edu">oriunno@slac.stanford.edu</a>	Bill Ashmanskas <a href="mailto:ashmanskas@fnal.gov">ashmanskas@fnal.gov</a> Alexander Mikhailichenko <a href="mailto:mikhail@lns61.lns.cornell.edu">mikhail@lns61.lns.cornell.edu</a>
Engineering Tool	Toshiaki Tauchi <a href="mailto:toshiaki.tauchi@kek.jp">toshiaki.tauchi@kek.jp</a>	Kurt Krempetz <a href="mailto:krempetz@fnal.gov">krempetz@fnal.gov</a>	Alessandro Miccoli <a href="mailto:alessandro.miccoli@le.infn.it">alessandro.miccoli@le.infn.it</a>
Det. R&D panel	Jan Timmermans <a href="mailto:jan.timmermans@nikhef.nl">jan.timmermans@nikhef.nl</a> Tohru Takeshita <a href="mailto:tohru@shinshu-u.ac.jp">tohru@shinshu-u.ac.jp</a>	Andy White <a href="mailto:awhite@uta.edu">awhite@uta.edu</a> Marcel Demarteau <a href="mailto:demarteau@fnal.gov">demarteau@fnal.gov</a>	Franco Grancagnolo <a href="mailto:franco.grancagnolo@le.infn.it">franco.grancagnolo@le.infn.it</a> Robert Carosi <a href="mailto:Roberto.Carosi@pi.infn.it">Roberto.Carosi@pi.infn.it</a> Yury Tikhonov <a href="mailto:Yu.A.Tikhonov@inp.nsk.su">Yu.A.Tikhonov@inp.nsk.su</a>
Software Panel	Frank Gaede <a href="mailto:frank.gaede@desy.de">frank.gaede@desy.de</a> Akiya Miyamoto <a href="mailto:akiya.miyamoto@kek.jp">akiya.miyamoto@kek.jp</a>	Norman Graf <a href="mailto:ngraf@slac.stanford.edu">ngraf@slac.stanford.edu</a>	Corrado Gatto <a href="mailto:cgatto@le.infn.it">cgatto@le.infn.it</a> Yen-chu Chen <a href="mailto:chenyc@fnal.gov">chenyc@fnal.gov</a>
Physics Panel	Keisuke Fujii <a href="mailto:keisuke.fujii@kek.jp">keisuke.fujii@kek.jp</a> Klaus Desch <a href="mailto:desch@physik.uni-bonn.de">desch@physik.uni-bonn.de</a>	Andrei Nomerotski <a href="mailto:A.Nomerotski1@physics.ox.ac.uk">A.Nomerotski1@physics.ox.ac.uk</a> Tim Barklow <a href="mailto:timb@slac.stanford.edu">timb@slac.stanford.edu</a>	Franco Bedeschi <a href="mailto:bed@fnal.gov">bed@fnal.gov</a> Aurore Savoy-Navarro <a href="mailto:aurore@lphhep.in2p3.fr">aurore@lphhep.in2p3.fr</a>

Two thirds of the members are from big HEP labs.

Some more members to be added.

## Current Status of the common task groups

- Nomination from each group was almost finished.
- Not all groups have started yet.
- After completion of the listing of the members, we nominate conveners of the groups, who will act as the representatives of the groups and join the Physics and Experiment Board.
- During this workshop there will be a joint meeting of all the members with R-Directorate and LOI representatives.

# Works by each common task Groups-1

## The MDI group

- Cooperate with the GDE's IR integration members (Brett Parker, Tom Markiewicz) of the BDS group on the machine-detector integration.
- We hurried to establish this group particularly in order to meet the speed of GDE's beam delivery system activities.

They work jointly since about a month.

They try first try to establish a common document on the IR Interface, which will be finalized Spring 2009.

## The Engineering Tool Group

- Contact with the corresponding group of GDE to use the same tools for designing.

## Works by each common task Groups-2

### Detector R&D Panel

- Works on the issues of Detector R&Ds
- Survey what are critical items for each LOI group and identify (common) problems, where groups can cooperate.
- Contact existing Detector collaborations
- Organize reviews of R&Ds, when necessary.
- Will be contacted by the RD or IDAG on detector R&D related issues.
- Note: Concept oriented priority issues will be left with the LOI groups.

## Works by each common task Groups-3

### Software Panel

- Work on the Software related issues
- Arrange common tools or data sets for simulations, including possible back grounds.
- Common codes for event generation
- In cooperation with the Physics panel, review and update the existing bench marks when needed.

## Current Status of the common task groups-4

### Physics panel

- Consider and update Physics at ILC including theory experts
- Prepare for the outputs from LHC
  1. Work out best possible physics programs for different results of LHC .
  2. Provide information on the desired reactions to see, required energy and luminosity.
  3. Organize workshops etc. when adequate.
- These studies will be made from purely physics point of view. They may provide material for considerations for staging by GDE or further by ILCSC.



Input from the GDE side related to this work by M. Ross.

## Dubna is the beginning

- Please take this message to Warsaw
- Please provide feedback
- Please advise and help us in this 'global value-engineering' activity!
- Marc (and PM)

The following 2 slides

# The Dubna meeting: PM plan

- The RDR represents a consensus design, which reconciled inputs from our constituent accelerator designers / engineers
  - CFS just one aspect
- We believe a more cost-effective design, based on the RDR, is possible and mandated by a need to ‘optimize’ the ILC design
  - (some sacrifices will be necessary)
  - This is to be started at the Dubna with assumptions →

# Assumptions:

- There exists a ‘minimal design’ that satisfies all scope requirements and facilitates cost comparisons for ‘optional’ features
  - Not a trivial concept due to design optimization and consolidation already in RDR
  - Also true for CFS (and other subsystems) specifically
- The shallow machine (pseudo-TESLA) is more cost-effective
  - Effective reliability strategy for single tunnel layout NOT done for RDR – due to time / resource limitations
- The process can be done within the ‘consensus – building’ context established for RDR
  - Our community must buy-in and participate
  - (started at the April DESY Zeuthen MDI meeting – see PM presentation)

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# Cost reduction is an important target for GDE

- Minimal machine
- Cost Engineering
- Staging

Natural elements to be considered

expecting a need to talk with governments some day.

- Final scenario needs to be agreed considering physics which is justified and convincing, although there may always be a possibility of surprise.
- The question exceeds the mandate of the Physics Panel.
- However, the work of the Physics Panel will be very important.

## Collaboration with CLIC for Detectors

- We participated in the CLIC-ILC meetings in February and May.
- Some practical actions were agreed taking the difference of the status of each detector communities into account.
  1. ILC side will provide simulation tools
  2. CLIC side will study the performance of different ILC concepts at higher energies.
  3. There will be cooperation in other areas which will be discussed further.
  4. CLIC members are participating here and will do so in the coming ILC workshops.

# Summary

- The new mechanism is set up and is start moving.
- We expect a good communication with IDAG staring here.
- The links to LOI groups was made and regular communication started.
- The Common task activities have partly begun. All groups will be taking off soon. There are a number of critical issues waiting to be worked on.
- There will be developing cooperation with CLIC det.
- Hopefully these can be handled well in the new mechanism.