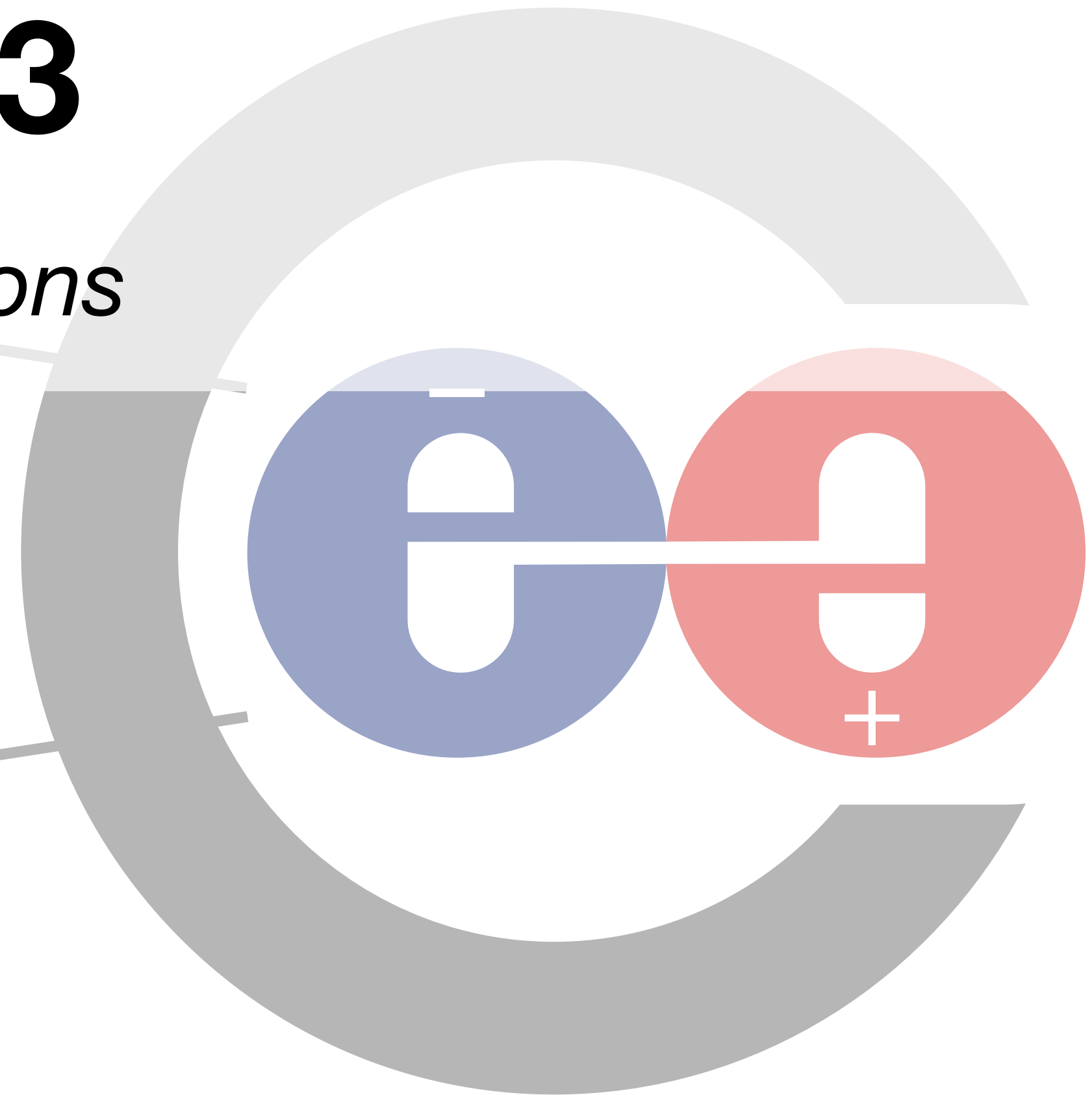


IDT WG3

A few Impressions

CALICE



Frank Simon

Max-Planck-Institute for Physics

***CALICE Collaboration Meeting
Everywhere, March 2021***



**MAX-PLANCK-INSTITUT
FÜR PHYSIK**

Outline

- IDT Introduction - mostly taken from Tatsuya Nakada
- IDT WG3 - mostly taken from Hitoshi Murayama
- Timeline for Detectors - taken from Tatsuya Nakada, with my own interpretation
- Finally: What is the ILC status?

IDT Introduction

mostly taken from Tatsuya Nakada

The ILC International Development Team

Following the LCC, established by ICFA



- **In February 2020 ICFA/LCB meeting at SLAC:**
after the presentations by
Mr. H. Masuko, Deputy-Director General, MEXT Research Promotion Bureau
Hon. T. Kawamura, Chairperson of the Federation of Diet Members for the ILC
ICFA asked the LCB to propose a way to move to the preparatory phase for the ILC to be constructed in Japan.
- LCB worked out a proposal to setup **the International Development Team (IDT)**, with KEK as the host, to pave a way to establish the ILC Pre-laboratory.
- **In June 2020, LCB/LCC ended their terms** defined by the ICFA.
- **In August 2020 ICFA meeting**
ICFA setup the **ILC IDT and appointed the members of the Executive Board**, with an aim to establish the ILC Pre-lab within ~1.5 year.
- **Since then,**
the IDT Executive Board has started working.

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- Since then,
the IDT Executive Board has started working.
- The ILC is envisaged as a global projects with a fair share of the cost, mostly in the form of in-kind contribution for the accelerator, among the participants, while the infrastructure cost should be taken cared by the host country, i.e. Japan: \Rightarrow a truly international project.
- The natural consequence is that the Pre-lab will also be a global enterprise, thus making an international effort to set-up.

Why IDT?

The IDT Mandate

What's the plan?

- Clarifying the function and organisation of the ILC Pre-Lab based on the KEK International Working Group report,
- Developing a common understanding for the condition to start the ILC Pre-Lab,
- Providing an international framework for the ILC accelerator effort and coordinating further R&D and engineering design work for the ILC in order to sustain the community effort and to guarantee a smooth transition to the ILC Pre-Lab phase,
- Providing an international framework for the ILC physics and detector activities and coordinating physics and detector R&D effort in order to sustain the community effort and guarantee a smooth transition to the ILC Pre-Lab phase,
- Discussing with international partners (e.g. universities, national and regional laboratories) for resources needed for the ILC Pre-Lab, and
- Providing necessary information to the national authorities to support their discussion of the establishment of the ILC Pre-Lab.

ICFA

ILC-IDT

Executive Board

Andrew Lankford (UC Irvine): Americas Liaison

Shinichiro Michizono (KEK): Working group 2 Chair

Hitoshi Murayama (UC Berkeley/U. Tokyo): Working group 3 Chair

Tatsuya Nakada (EPFL): Executive Board Chair and Working group 1 Chair

Yasuhiro Okada (KEK): KEK Liaison

Steinar Stapnes (CERN): Europe Liaison

Geoffrey Taylor (U. Melbourne): Asia-Pacific Liaison

Working group 1
Pre-lab set-up

Working group 2
Accelerator

Working group 3
Physics & Detectors

Scientific secretary: Tomohiko Tanabe (KEK)

Communication team led by Rika Takahashi (KEK)

Unlike LCB/LCC, **ILC-IDT is focused on the ILC.**

KEK provides administrative, logistic and some financial support.

IDT WG3

mostly taken from Hitoshi Murayama



WG3 Organisation and mandates

Chair: Hitoshi Murayama (Berkeley/Tokyo)
 Deputies: Jenny List (DESY) and Claude Vallée (Marseille)

Coordinator and Deputy coordinator(s)

Kiyotomo Kawagoe (Kyushu), Alain Bellerive (Carleton),
 Ivanka Božović Jelisavčić (Belgrade)

Secretariat?

Steering Group
 Subgroup conveners, Coordinator and Deputy Coordinator(s)

Speaker's bureau

Andy White (UT Arlington), Ties Behnke (DESY), Yuanning Gao (Peking), Frank Simon (MPP), Jim Brau (Oregon), Keisuke Fujii (KEK), Phil Burrows (Oxford), Francesco Forti (INFN),
 Filip Zarnecki (Warsaw), Patty McBride (Fermilab), Mihoko Nojiri (KEK), CERN member, Timothy Nelson (SLAC), Kajari Mazumdar (Mumbai), Phillip Urquijo (Melbourne), Dmitri Denisov (Brookhaven)

Interface with machine

Detector and technology R&D

Software and computing

Physics potential and opportunity

Coordinate the interactions between the accelerator and facility infrastructure planning and the needs of the experiments

Provide a forum for discussion and coordination of the detector and technology R&D for the future experimental programme

Promote and provide coordination of the software development and computing planning

Encourage and develop ideas for exploiting the physics potential of the ILC collider and by use of the beams available for more specialised experiments

Karsten Buesser (DESY), Yasuhiro Sugimoto (KEK), Roman Poeschl (Orsay), US

Marcel Vos (Valencia), Katja Krueger (DESY), Petra Merkel (Fermilab), David Miller (Chicago)

Frank Gaede (DESY), Jan Strube (PNNL), Daniel Jeans (KEK)

Michael Peskin (SLAC), Junping Tian (Tokyo), Aidan Robson (Glasgow)

IDT WG3 Mandate & Work Plan

Focussing on Detector R&D

Terms of reference from ICFA:

WG3 carries out the ILC physics and detector activities. It continues the study of the ILC physics capabilities and detector efforts as previously carried out under the LCC framework, reflecting the on-going progress of the field. It guides the community to be ready when the ILC Pre-Lab will establish its physics program.

WG3 Community actions

ILC is moving towards the preparatory laboratory stage (Prelab), currently envisioned to start in 2022. In order to activate the community towards preparing the Expressions of Interest for the experiments, the Physics and Detector Working Group (WG3) aims to:

- Raise awareness and interest in the ILC development and expand the community.
- Support newcomers to get involved in physics and detector studies.
- Encourage new ideas for experimentations at the ILC

While achieving this, WG3 will pay special attention to:

- support of existing activities, as basis for any growth, through the IDT period
- visibility for young scientists engaging in ILC activities
- increased diversity among conveners

IDT WG3 Mandate & Work Plan

Focussing on Detector R&D



Terms of reference from ICFA:

WG3 carries out the ILC physics and detector activities. It continues the study of the ILC physics capabilities and detector efforts as previously carried out under the LCC framework, reflecting the on-going progress of the field. It guides the community to be ready when the ILC Pre-Lab will establish its physics program.

WG3 Community actions

ILC is moving towards the preparatory lab order to activate the community toward Physics and Detector Working Group (WG3)

- Raise awareness and interest in the ILC
- Support newcomers to get involved
- Encourage new ideas for experiments

While achieving this, WG3 will pay special attention to:

- support of existing activities, as well as the development of new ones
- visibility for young scientists engaged in ILC
- increased diversity among contributors

Technical aspects:

- Identify all machine/detector interface issues to be addressed by the Prelab to finalize the ILC design (e.g. interaction campus, experimental hall, interaction regions, operating scenario), through a forum of exchange of information between machine and detector requirements, and study their implications for the experiments design.
- Monitor the global detector R&D - in ILC detector concept groups, detector R&D collaborations, and beyond the current ILC community - and enable new efforts to introduce emerging detector technologies into the ILC experiments.
- Coordinate performance studies to assess the detector requirements of the ILC experiments as well as the relative performance of alternative detector solutions.
- Contribute to defining how the Prelab structure can best foster the detectors' final design and construction preparation in liaison with the worldwide academic bodies and industrial landscape.

Marcel Vos, Katja Krueger, Petra Merkel, **David Miller**

- **Detector design and development:** this panel forms the liaison to the existing detector concepts and R&D collaborations, attracting new groups to the ILC detector R&D effort and exploring new ways to attract resources. This panel should also monitor the detector R&D of the global community and identify and review promising new detector technologies, to enable their integration into the ILC experiments.
- **Detector performance studies:** Monte-Carlo simulation studies to assess the benefit of new detector technologies and to compare the performance of alternative solutions. This panel has strong links to the software and physics working groups.

Timeline for Detectors

taken from Tatsuya Nakada, with my own interpretation

evolved from a proposal that I had been asked to work out with others in the IDT WG3 SG

Timeline of Detectors

With my own interpretation

Timeline for the ILC experiments

- 2021 IDT calls for Eol
Necessary R&D for Eol
- 2022 ----- Assumed start of Pre-lab -----
- 2022 Eol presentation
Necessary R&D for Lol
- 2023 **Lol submission and presentation**
Continuation of R&D
Selection process by the ILCC
- 2024 **ILCC recommendation on the first set of the projects to proceed toward TP**
Necessary R&D for TP
- 2025 TP submission and presentation of the first set of experiments
Continuation of R&D
Selection process by the ILCC
- 2026 ----- Assumed start of ILC-lab -----
- 2026-27 ILCC recommendation for the first set of experiments to proceed toward TDRs
- 2027 **ILC-lab approval of the first set of experiments and request to proceed toward TDRs**

- Funding agencies will not provide dedicated ILC detector R&D funds before the Pre-lab being established.
- For some Eols, R&D would be needed to make Lols.
→ driving the timing for the Lol submission
- Selection process starts with the Lols.
→ driving the timing for the Lol decision
- Experiments are formally approved based on TPs.
- The ILC-lab is needed for approvals.
- Availability of resources is part of the approval criteria.
→ driving the timing for the TP decision
- These considerations are for the initial set of experiments. There could be more experiments proposed at later time.

From Tatsuya Nakada /
IDT EB

Bottom line
(my interpretation):

- **2023**: Detector concepts
- **2025**: Technical layout with options
- **2027**: Proceed to TDRs, final technology choices

There is (some) time to explore new ideas!

IDT: International Development Team
Eol: Expression of Interest
Lol: Letter of Interest
TP: Technical Proposal
TDR: Technical Design Report
ILCC: ILC Committee

IDT-EB 21/12/2020

Finally: What is the Status of ILC

Getting out the Crystal Ball (well - checking slides at LCWS)

Conditions to start Pre-Lab

As of Feb. 24, 2021

taken from
Masanori Yamautchi

- Japanese MEXT has not yet disclosed the conditions for starting the Pre-Lab. Following conditions are necessary to be met in the proposal by the IDT.
 - The organization and function of the Pre-Lab described in the IDT report are appropriate, and the technological development program is feasible. In particular, it is expected that technological development at the Pre-Lab will solve problems that have remained as issues.
 - Participations are expected from the international physics communities and laboratories, including financial contributions.

The Position of MEXT

Also stated to ICFA



“In the Diet session held on 25th February, a member of the Diet enquired MEXT Minister whether MEXT gave its consent to the budget request for ILC’s pre-laboratory or not if the two conditions were met; (A) IDT’s proposal on the pre-laboratory, which includes its organisation, functions, and R&D plan, is appropriate and feasible; (B) financial contributions from foreign institutions to the pre-laboratory are promising.

taken from
Masanori Yamautchi

The major points of MEXT Minister’s response are as follows;

- The ILC project needs to resolve its various challenges including its international cost sharing and technical feasibility, as well as to obtain broad internal and external cooperation not for its pre-laboratory but for the ILC project itself.
- Under the current situation that the perspective of broad internal and external cooperation for the ILC project itself as well as its pre-laboratory is not promised, it is difficult to obtain the people’s understanding in Japan for investing the pre-laboratory. It is necessary to obtain the clear perspectives on financial contributions to the ILC project itself from the US and European countries in prior considering the pre-laboratory.”

Other remarks by the Minister Hagiuda (Feb. 25, 2021)

- “I am very much in favor of building this facility in Japan, but it cannot be done without international cooperation.”
- “As I said earlier, I fully understand the necessity of the facility itself. I believe that we should proceed only after the international community comes to the table and confirms its commitment.”

ICFA: Expect that ICFA Chair Stuart Henderson, will send a letter to Minister Hagiuda “encouraging” MEXT to invite foreign government officials to discuss potential commitments to the ILC.

The U.S. government has been very supportive of the ILC in Japan.

DOE welcomes recent statements from MEXT Minister Hagiuda regarding international partners coming to the table. DOE would be eager to come to the table.

taken from
Andy Lankford