ILD Workshop purpose and scope
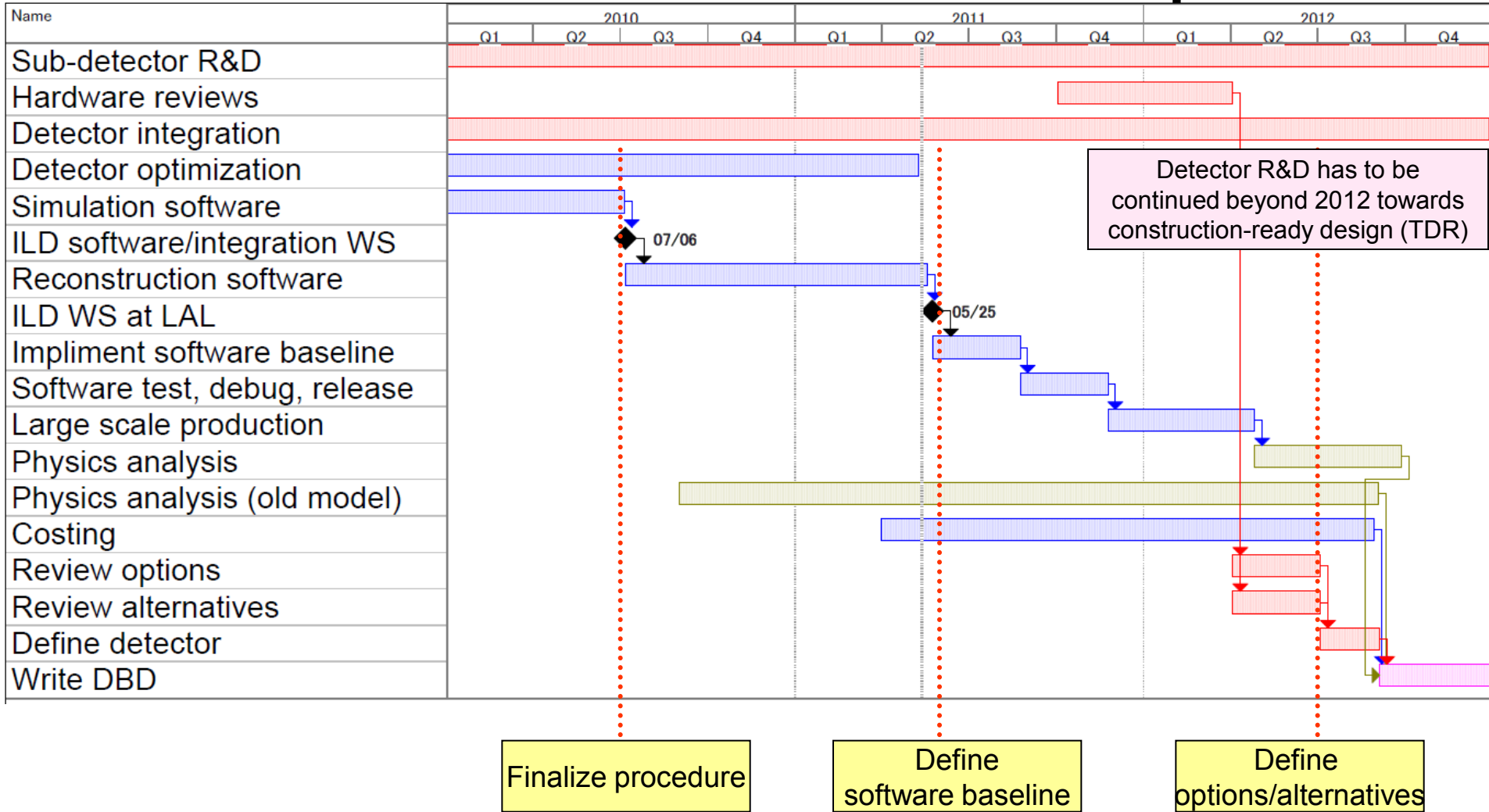
Yasuhiro Sugimoto

May 23, 2011

@ILDWS

This workshop

- This workshop was originally planned to be held at KEK
- Accident of Fukushima Daiichi Nuclear Power Plant after 3.11 earthquake made governments of several countries advise our colleagues not to go to Japan
- We decided to change the venue from KEK to LAL
- Many thanks to Roman and LAL people for undertaking the workshop host and preparing it in short time

Where we are

- Detailed Baseline Design report (DBD) should be submitted by the end of 2012
- "Realism" is required for design of sub-detectors, detector integration, cost estimate, and the simulation model
- Realistic design of sub-detectors and integration are getting their shape, but still on the way
- For mass production of the simulation data, physics analysis, and writing DBD, development of the simulation software has to be frozen 13 months before the deadline (F.G. @ILD meeting in ALCPG11)
- >1 month is necessary to implement baseline into simulation
  ➔Simulation baseline has to be completely fixed by coming autumn
- So it's time now to start defining the software baseline

Tentative ILD roadmap

Name	2010				2011				2012			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Sub-detector R&D												
Hardware reviews												
Detector integration												
Detector optimization												
Simulation software												
ILD software/integration WS			07/06									
Reconstruction software												
ILD WS at LAL						05/25						
Impliment software baseline												
Software test, debug, release												
Large scale production												
Physics analysis												
Physics analysis (old model)												
Costing												
Review options												
Review alternatives												
Define detector												
Write DBD												

Detector R&D has to be continued beyond 2012 towards construction-ready design (TDR)

Finalize procedure

Define software baseline

Define options/alternatives

4

Purpose of the workshop

- The purpose of this workshop is to accelerate effort towards DBD by
  - Reviewing status and plan of activities
  - Defining ILD software baseline
  - Planning for DBD
- Agenda includes
  - Reports from RD and GDE PM
  - Survey of detector R&D activity relevant to ILD
  - Review of physics analysis
  - CFS discussion
  - Discussion on MDI/Integration issues
  - Discussion on costing methodology
  - Review of software tools
  - Discussion and definition of ILD software baseline
  - Discussion on the next step

Software baseline

- For the purpose of mass production of simulation data for physics analysis, it is inevitable to define "one" design in the simulator ➜ Software baseline

- Requirement from software group on the Software baseline
  - Debugged MOKKA driver exists
  - Reconstruction code with demonstrated performance exists

- For other options not part of the software baseline but part of the hardware baseline, full simulation and reconstruction should be done to demonstrate the performance with less amount of data samples

Hardware options

- Baseline, options, and alternatives
    - ILD will not attempt to exclude sub-detector technologies (as long as they are applicable to ILD) or make a down-selection
    - If a sub-detector technology satisfies certain criteria, it will be considered as one of the sub-detector "options" of ILD
    - Sub-detector technologies which are not demonstrated to satisfy the criteria but still seems promising will be categorized as "alternatives"
- The hardware review process will start late 2011 or early 2012 (?)
- Detector "hardware baseline" which includes several sub-detector options will be defined in Q3 of 2012 (?)

Agenda

Monday 23 May 2011

09:00 - 10:45   Introduction
     Location: Room 101

     09:00   **Welcome** *15'*

     09:15   **Purpose and scope of the meeting** *30'*
         Speaker: Yasuhiro Sugimoto (KEK)

     09:45   **Report from the Research Director** *30'*
         per Webex

         Speaker: Sakue Yamada (KEK)

     10:15   **Report from ILC Project Manager** *30'*
         Speaker: Akira Yamamoto (KEK)

10:45 - 11:15   Coffee Break   (Universe (Room 101))

11:15 - 13:00   Subdetectors I
     Location: Room 101

     11:15   **Review of overall detector integration: short summary of requirements** *10'*
         Speaker: Ties Behnke (DESY)

     11:25   **VTX1: CMOS Status and Integration** *20'*
         Speaker: Jerome Baudot (IPHC - Strasbourg)

     11:45   **VTX2: FPCCD Status** *10'*
         Speaker: Yasuhiro Sugimoto (KEK)

     11:55   **Silicon tracking 1** *15'*

     12:10   **Silicon tracking 2, in particular forward tracking** *10'*
         Speaker: Ivan Vila Alvarez (Instituto de Fisica de Cantabria, Grupo de Altas Energias - Cons)

     12:20   **TPC** *20'*
         Speaker: Jan Timmermans (NIKHEF)

     12:40   **Discussion** *20'*

13:00 - 14:00   Lunch   ()

Introduction

Sub-detectors

8

Agenda

14:00 - 16:00 Subdetector II
Location: Room 101

14:00 **CALICE: overall plans until 2012** *30'*
Speaker: Felix Sefkow (DESY)

14:30 **ECAL review** *30'*
Speaker: Kiyotomo KAWAGOE (Kobe university)

15:00 **Analogue HCAL review** *30'*
Speaker: Frank Simon (Max-Planck-Institut fuer Physik)

15:30 **Digital HCAL review** *30'*
Speaker: imad laktineh (IPNL)

16:00 - 16:30 Coffee break   (Universe (Room 101))

Subdetector III
16:30 - 19:10 Location: Room 101

16:30 **Forward Region** *20'*
Speaker: Wojciech Wierba (Institute of Nuclear Physics Polisch Academy of Science)

16:50 **Recent Coil developments at CLIC** *20'*
Speaker: Andrea Gaddi (CERN)
Material: Slides

17:10 **Coil: Requirements for ILD: discussion** *20'*

17:30 **Muon system** *15'*
Speaker: Valeri Saveliev (National Research Nuclear University)

Optimisation of the muon system for CLIC *15'*

17:45

Speaker: Erik Van Der Kraaij

18:00 **ILD at CLIC: a status review** *30'*
Speaker: Lucie Linssen (CERN)

Sub-detectors

CLIC

9

Agenda

Tuesday 24 May 2011

09:00 - 10:30		**Analysis I**
		Location: Universe (Main Auditorium)

09:00   **Improvements in jet/flavor reconstruction and its application to ZHH** *30'*
Speaker: Taikan SUEHARA (The University of Tokyo)

09:30   **Particle Flow and Particle ID Performance with ILD** *30'*
Speaker: John Marshall (University of Cambridge)
Material: Slides

10:00   **Progress with SDHCAL reconstruction** *30'*
Speaker: Manqi Ruan (Laboratoire de l''Accelerateur Lineaire (LAL) (IN2P3) (LAL) - Un)

10:30 - 11:00   Coffee break   (LAL Orsay, Paris (Auditorium))

11:00 - 13:00   Backgrounds in ILD
Location: Universe (Main Auditorium)

11:00   **Review: Backgrounds in ILD** *30'*
Speaker: Katarzyna Wichmann (DESY)

11:30   **Backgrounds in CLIC: what can we learn for ILD** *30'*
Speaker: Andre Sailer (CERN, HU Berlin)

12:00   **Treatment of backgrounds in the DBD** *20'*

13:00 - 14:00   Lunch   (LAL Orsay, Paris (Canteen))

Analysis/Background
Webex available

Agenda

14:00 - 16:30   CFS Discussion

Discussion und experimental hall issues with ILC-CFS, SID and ARUP

Conveners: Karsten Buesser (DESY) , Toshiaki Tauchi (KEK)

Location: Salle Bleue

Material: **Webex Info**

14:00   **Introduction** *30'*
  Speaker: John Andrew Osborne (CERN)

14:30   **Push-pull Platform Studies and Simulations** *30'*
  Speaker: Marco Oriunno (SLAC National Accelerator Laboratory)

15:00   **Status of IR Design for CLIC** *30'*
  Speakers: Hubert Gerwig (CERN) , Andrea Gaddi (CERN)
  Material: **Slides**

15:30   **Discussion** *1h00'*

Tuesday afternoon:
Parallel session

Analysis	CFS

14:00 - 16:00   Analysis II

Location: LAL Orsay, Paris (Main auditorium)

14:00   **Towards and updated ILC physics case: BSM+plans** *20'*
  Speaker: Jenny List (DESY)

14:20   **Fast simulation of ILD** *25'*
  Speaker: Mikael Berggren (DESY Hamburg)

14:45   **Little Higgs with T-parity model at 1TeV using quick simulator** *20'*
  Speaker: Eriko Kato (tohoku univ)

15:05   **CLIC experience of using Whizard and Pythia** *20'*
  Speaker: Stephane Poss (CERN)

15:25   **Top mass analysis** *25'*
  Speaker: Philippe Doublet (LAL)

16:00 - 16:30   Coffee break   (LAL Orsay, Paris (Auditorium))

11

Agenda

16:30 - 18:30   Analysis III

Location: Universe (Main auditorium)

Analysis	CFS

16:30   **Status of Higgs Branching ratio** *20'*

Speaker: Hiroaki Ono (Nippon Dental University)

16:50   **Status of ttH** *20'*

Speaker: Hajrah Tabassam (Univerisity Of Edinburgh)

17:10   **Measurement of CP violation in the MSSM neutralino sector at the ILC** *20'*

Speaker: Mark Terwort (ILC)

CFS Discussion

16:30 - 18:30   *Discussion und experimental hall issues with ILC-CFS, SID and ARUP*

Conveners: Karsten Buesser (DESY) , Toshiaki Tauchi (KEK)

Location: Salle Bleue

Material: **Webex Info**

16:30   **Discussion and Overflow** *2h00'*

19:30 - 22:00   Workshop Diner

Location: La Baleine

12

Agenda

Wednesday 25 May 2011

09:00 - 10:00 Detector Integration
Location: LAL Orsay, Paris (Main auditorium)

09:00 **Report from the ILD MDI/ integration group** *30'*
Speaker: Karsten Buesser (DESY)

09:30 **Discussion: open subdetector integration issues** *30'*
Speaker: Matthieu Joré (LAL (CNRS/in2p3))

10:00 - 10:30 Coffee break (Auditorium)

10:30 - 13:00 Software and Simulation
Location: Universe (Main auditorium)

10:30 **Summary of software pre-meeting** *30'*
Speaker: Akiya Miyamoto (KEK)

11:00 **Plans of the Software group towards the DBD** *15'*
Speaker: Frank Gaede (DESY)

11:15 **Discussion/ possibly presentations: Subdetector status for the software baseline** *1h00'*

12:15 **Discussion: definition of the software baseline** *30'*

13:00 - 14:00 Lunch (LAL Orsay, Paris (Canteen))

14:00 - 15:00 Costing discussion
Location: Universe (Main auditorium)

14:00 **ILD costing methodology and discussion** *35'*
Speaker: Henri Videau (LLR-Ecole polytechnique)

14:35 **Discussion** *10'*

15:00 - 16:10 Discussion
Location: Universe (Main auditorium)

15:00 **Integration: conclusions from the meeting** *30'*

15:30 **ILD schedule and next steps** *30'*
Speakers: Ties Behnke (DESY) , Yasuhiro Sugimoto (KEK)

Detector Integration

Software/Simulation

Costing

Discussion

13

Topics to be clarified in this WS

- Simulation baseline
- Timeline of the large scale production
  - Readiness of software tools
  - 1 TeV machine parameter
  - Output from LHC
  - European strategy meeting
- State of the analysis
  - Benchmark processes are properly covered?
- State of the sub-detector design
  - Any missing part of the design studies?
- State of the detector design/integration
  - Some issues to be agreed upon
- Procedure of hardware review (?)