



# The ILD meeting during ALCWS



# Agenda:



- Focus is on preparing the ILD Design Report (IDR)
- Report by all relevant groups.
- Detailed discussions during parallel sessions at the conference
- Topical meetings tomorrow – see schedule for more details.

# ILD: where are we going



- Prepare ourselves for the situation that the ILC is going forward
  - Contribute to making the science case for ILC
  - Make sure we are in a position to move rapidly forward should ILC transition into a real collaboration
- Prepare an optimized version of ILD
  - Conclude on the work ongoing since the DBD
- Prepare a contribution to the European Strategy Process, ESU

# ILD: where are we going



- Prepare ourselves for the situation that the ILC is going forward
  - Contribute to making the science case for ILC
  - Make sure we are in a position to move rapidly for ILC transition into a real collaboration
  - Setup and maintain a proper organisation,
  - Develop links into politics and to decision makers
- Prepare an optimized version of ILD
  - Conclude on the work ongoing since the DBD
- Prepare a contribution to the European Strategy Process, ESU

# ILD: where are we going



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    - Contribute to making the science case for ILC
    - Make sure we are in a position to move rapidly forward should ILC transition into a real collaboration
  - Prepare an optimized version of ILD
    - Conclude on the work ongoing since the DBD
  - Prepare a contribution to the European Strategy Process, ESU
- Conclude the work with benchmarking it against the ILD-S and ILD-L

# ILD: where are we going



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  - Prepare an optimized version of ILD
    - Conclude on the work ongoing since the DBD
  - Prepare a contribution to the European Strategy Process, ESU
- Publish the ILD Design Report
  - IDR

# ILD: where are we going



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  - Conclude on the work ongoing since the DBD
- Prepare a contribution to the European Strategy Process
  - Contribute to the community effort towards the ESU
  - Prepare an ILD contribution to the EUS

# ILD as an organisation



- We have setup an organisation which is working even though our resources are very limited
- Marc will report on the newest additions to ILD and other ongoing activities later today
- Kiyotomo has made great progress to organise and streamline our process to manage conference contributions and publications.

Many thanks to all of you for continuing to support ILD!



# ILD Design Report



- Document the work of the last 10 years in an update to the DBD / LOI:
  - The ILD Design Report, IDR
  - Summarises ILD philosophy and status
  - Summarises R&D done towards ILD
  - Summarises the organisation and the community which supports ILD
- This should be a stand-alone document which fully documents ILD and its achievements, for use both by us and by others. This will be a scientific, not a political document.
- We anticipate publishing this report.

# Benchmarks



WG	Process	Physics	Detector	ECM	Who
Higgs & EW	<b>H-&gt;bb/cc/gg</b>	<b>BR</b>	<b>c-tag, b-tag, JER</b>	<b>500 GeV</b>	<b>NN + NN</b>
	H->bb	mass	JER, JES	500 GeV	Ali Ebrahimi (10%) + Junping Tian
	ee->tautau	A_FB, tau-pol, A_LR	tau-reco	500 GeV	Daniel Jeans + <b>NN</b>
	H->mumu	BR	momentum resolution	500 GeV	Shin-ichi Kawada + <b>NN</b>
	H->invisible	BR limit	JER, hermeticity	500 GeV	Yu Kato + <b>NN</b>
	WW->qqlv	MW, TGCs, beam pol.	JES, JER, electron, mu	500 GeV	Kostiantyn Shpak + <b>NN</b>
	<b>vvqqqqq</b>	<b>QGCs</b>	<b>JES / JER</b>	<b>1 TeV</b>	<b>Jakob Beyer + NN</b>
	<b>gamma Z</b>	<b>A_LR, sigma_tot, JES</b>	<b>photon, JER/JES, e, mu</b>	<b>500 GeV</b>	<b>NN + NN</b>
Top, Bottom & QCD	tt->bbqqqq	x-section, AFB	b-tag, vertex charge, PID	500 GeV	Amjad + <b>NN</b>
BSM	low deltaM Higgsinos	natural SUSY	low-p tracking, PID, hermeticity	500 GeV	Swathi Sasikumar + <b>NN</b>
	<b>mono-photons</b>	<b>WIMPs / WISPs</b>	<b>photon reco, BeamCal</b>	<b>500 GeV</b>	<b>NN + NN</b>
	Zh, mh < 125 GeV	limit on ZZh coupling	p res, e reco, JER, hermeticity	500 GeV	Yan Wang + <b>NN</b>

# Structure of IDR



Goal: Document our work on ILD

- Update the last report (ILC DBD/ TDR)
- Report on recent developments
- Provide the scientific community a clear view on ILD, its strength, and its challenges
- Publish this report

# IDR



## Contents

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Report will be done  
in latex,

Repository is being  
setup:

<https://svnsrv.desy.de/desy/ILDIDR/trunk>

# Writing the IDR



- Structure exists, list of editors is being assembled
- First concrete ideas on possible input have been developed by technical groups
- Other groups (Physics, Software, etc) are in the process of assembling first ideas
- We will provide an easy mirror of the latest version on the ILD confluence page.

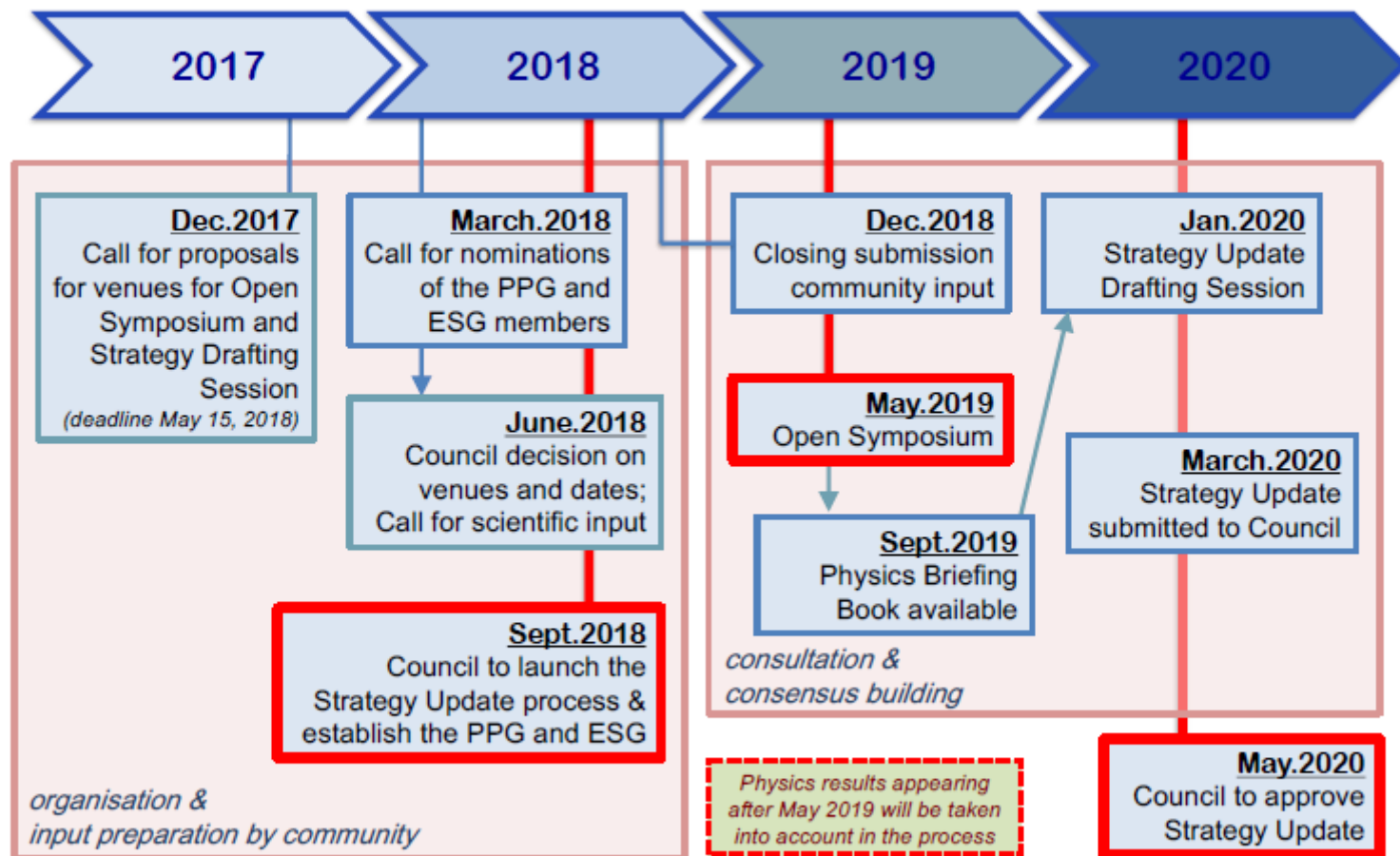
# ILD and the European Strategy

- Input for European strategy: collected now until December 18
- Community wide meeting to discuss all projects: middle of 2018
- Preparation of the strategy by strategy preparatory group, secretary is Halina Abamowitz
- Decision and communication of the new strategy: 2020

We all hope for a strong statement from Japan to put ILC on the real axis and make it enter into the European Strategy at high priority!



# European Particle Physics Strategy Update



# Input to the EUS



- International community: A paper on ILC, the ILC physics case, the ILC status
  - Coordinator Jim Brau
- European Context: A paper on the European plan towards ILC, opportunities in Europe, etc.
  - Coordinator Juan Fuster
- The ILD detector community: A paper on ILD, its capabilities, and its community
  - Coordinator Ties Behnke/ Kiyotomo Kawagoe



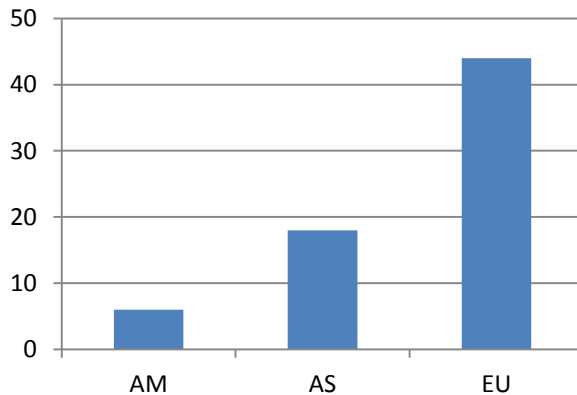
# ILD: The Group



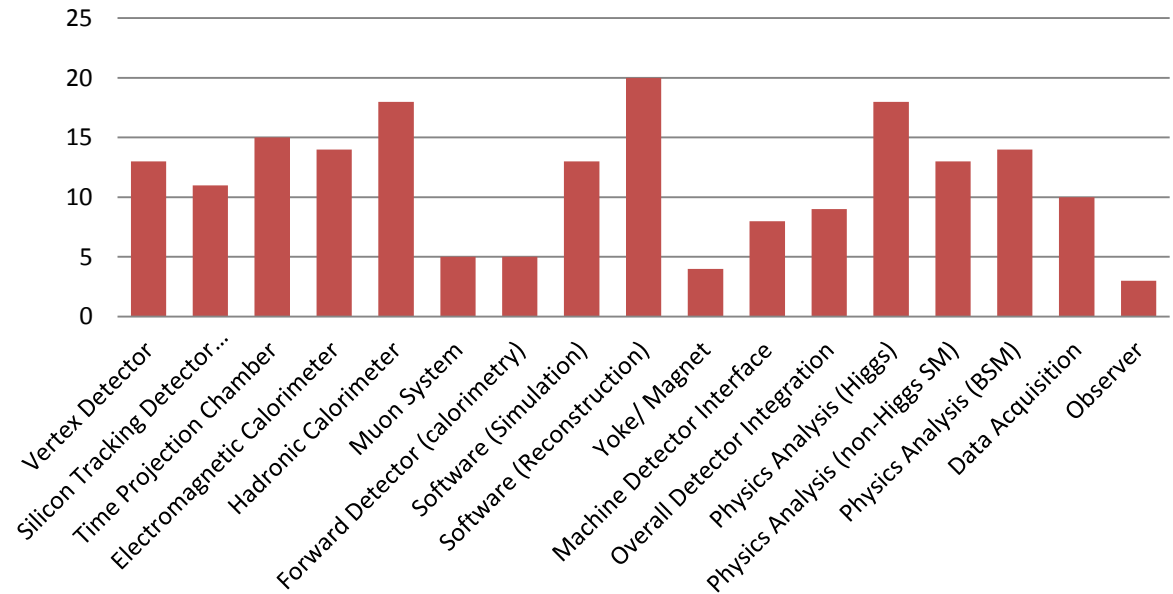
ILD:

Currently 68 groups signed up

**Region of Origin**



**ILD activities matrix**



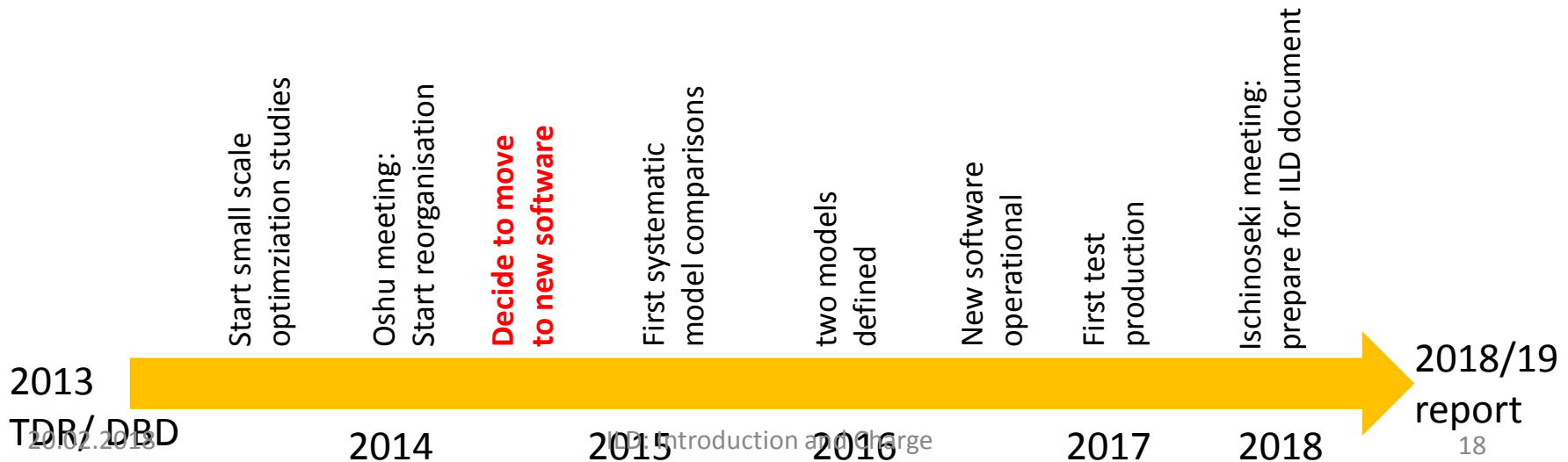
# ILD since 2013



Re-optimize ILD for optimal performance and cost/ performance ratio

Prepare the group to quickly ramp up activities in case of a postive decision

Provide a basis for realistic physics studies to make and improve the science case for the ILC. Most recently, strong push to make 250 GeV case



# Optimize the ILD detector



## Single particle Studies

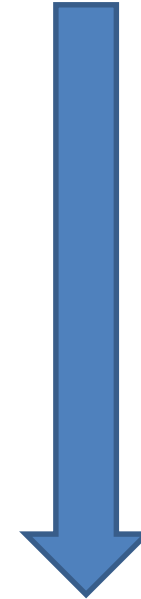
- Response studies focussed on one sub-detector
- “easy”, low resource needs, fast

## High Level performance studies

- Tracking, vertexing, particle flow
- Based on dedicated, maybe even unphysical samples
- Based on multiple subdetectors

## Physics Performance

- Selected physics channels to study performance for key measurements
- Need full samples, including backgrounds



Increasing complexity  
Increasing demands on samples

Do the optimization with a clear view on the physics we want to do!

# Alignment/ calibration



Do not forget: alignment/ calibration are key elements of the detector

We have very little dedicated studies on this so far

- Experience from test beam studies for some technologies

Detector	Alignement / $\mu\text{m}$	Comment
VTX	2.8	
SIT	3.5	Coherent displacements Alignement through tracks
TPC	3.6	
ECAL	100	
HCAL	1000 (?)	

Numbers from  
LOI: are they  
still correct?

# Costing



- Costing is re-starting: see talk this week by Henri
- We need to critically look at the work which was done 6 years ago and reestablish our costing baseline

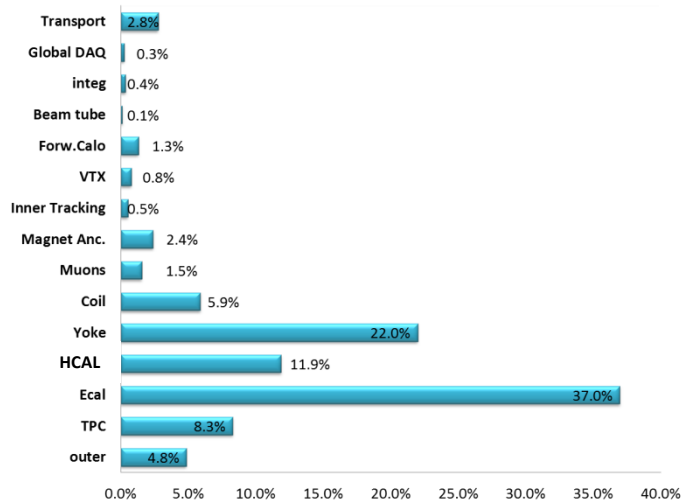
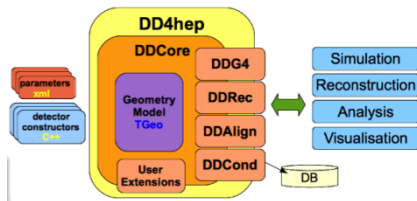


Table of relative costs taken from the DBD

Needs updates and improvements

We will enormously profit from the work of the integration group to setup a proper documentation system (see presentation by Karsten later this week)

# Software



Transition to new software framework mostly done  
Great and impressive job by the software group done with  
very limited personpower!

- First round of test production has happened
- Some problems found, but progress overall excellent
- See talk by Frank later today

# Outlook ILD



- Optimization comes to fruition.
- Ambitious goal to prepare comprehensive documentation towards the end of 2018.
- This meeting will be instrumental in finalising preparations and starting the “final” thing.
- I am looking forward to many interesting discussions and results.