



# Initial Thoughts on SiD CDR

CDR = Conceptual Design Report

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( this is not the DCR and not a DOD)

( confused ? You are not alone)



## Timeline and assumptions

H.Weerts

Currently there are 4 detector design concepts ( # DOD's submitted in spring)

Ultimately there will be two detectors for ILC

How to reduce from 4 → 2 ?

Current thinking ( within WWS and others (?)):

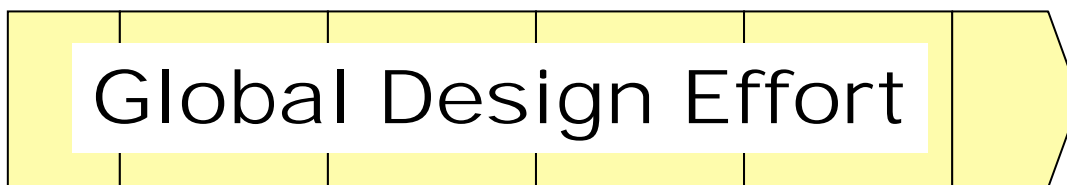
(being discussed)

Detector concepts will be asked to produce Conceptual Design Reports (CDR).

A committee ( from ILCSC, GDE, ILC lab ?) will review them and two will be requested to submit Technical Design Reports (TDR) for the two detectors ( to be built)

→ SiD needs to start working towards a CDR

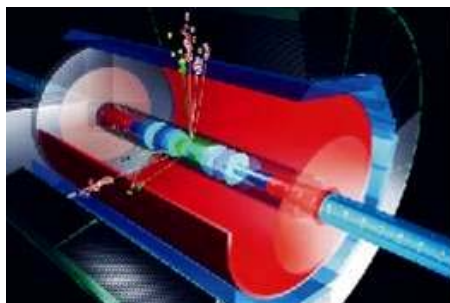
2005    2006    2007    2008    2009    2010



→ **Baseline configuration** = DOD for detectors

→ **Reference Design** = DCR for detectors

→ **Technical Design**



→ **ILC R&D Program**

→ **Expression of Interest to Host**

→ **International Mgmt**

Where is the CDR for detectors ??

Need to start now



# What should CDR be ?

H.Weerts

## Definition of the SiD CDR/what is in it

Should describe the concepts, ideas & costs underlying SiD Should be persuasive

Simulation & analyzing it, is the foundation for CDR

Need a concept simulation that shows optimization i.e. vary main parameters and convince ourselves that we are at "maximum" in physics performance and "minimum" in cost.

Present one detector with options

Identify areas that need R&D

Need engineering (mechanical support) and better drawings of concept. Example: tracker & vertex Discussion this morning

Assumption is that detailed layout, support & engineering is not part of this CDR.

Address: push—pull, self shielding, cooling etc.

Can we write a CDR and not be a collaboration ?



## Engineering-- this morning

H.Weerts

We had (relatively large, 12) meeting with mechanical engineers from Fermilab, SLAC and Argonne this morning.

Do we want to start ? **Yes**

How should SiD start working on a mechanical design involving engineers?

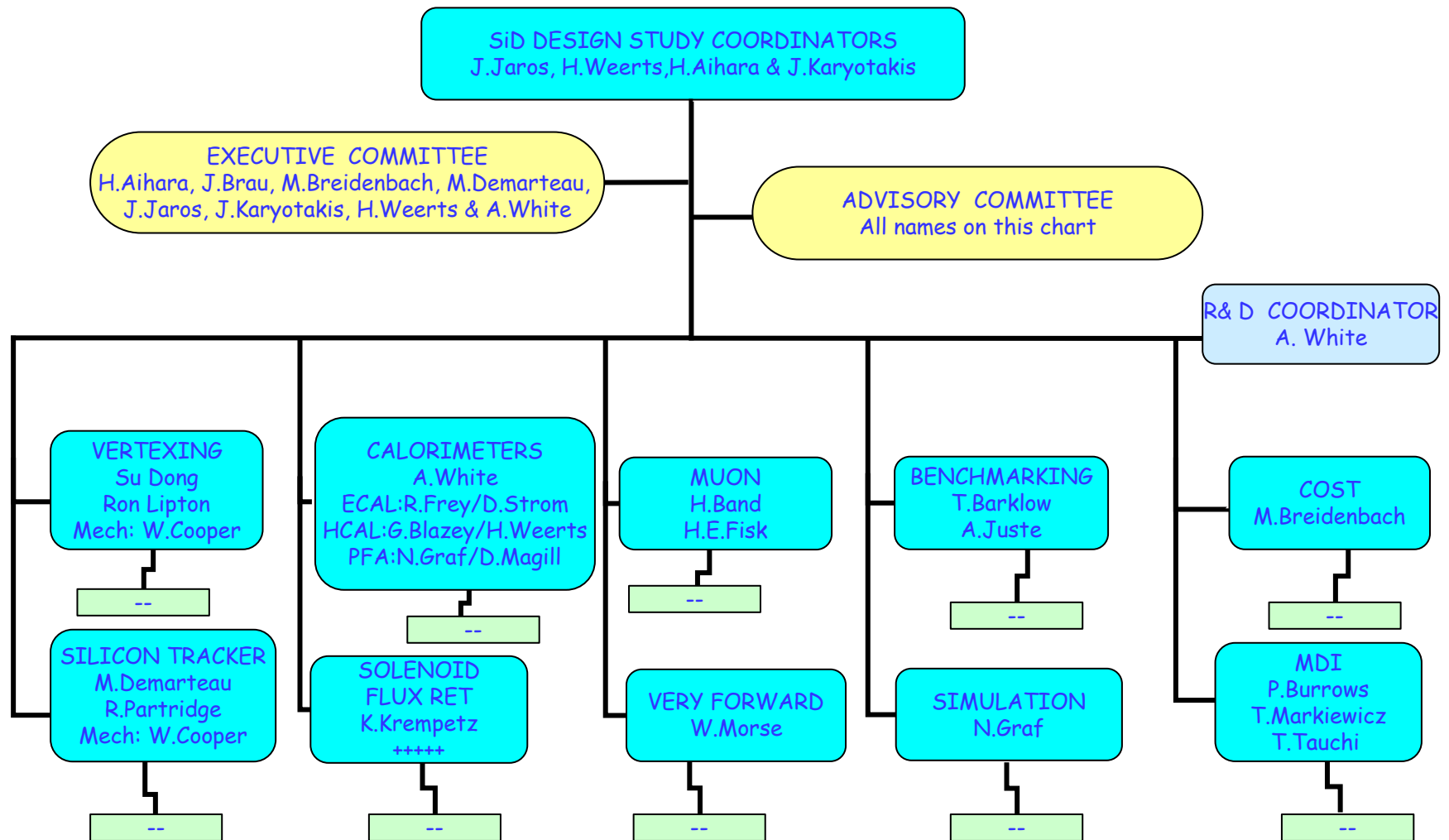
**Ideally:** have one full time person address integration & work with people responsible for subdetectors

**Reality:** have SiD engineering/integration meetings to discuss subdetectors and detector integration; try to identify 0.5 FTE for integration & build up

Start this is in near future

A lot of work already done on vertex and tracking detector (Cooper)  
Some work on solenoid (Smith, Wands)

## SiD organization and subgroups





## What do we "know" and what not ?

### Understood.....

Beam backgrounds  
 Vertexing ... Identify hardware  
 Tracking is Si strip based  
 EMCAL is W/Si pixel  
 Solenoid, concept clear a la CMS  
 Muon system can be solved

Have simulation of SiD

Fast physics simulation

### Questionable.....

PFA concept.....improving  
 Many concept choices based on it  
 (driving the design & \$\$\$)  
 Do we need it ? Yes probably  
 If yes, need to make it more  
 "transparent"/"trusted"....

Analyzing simulation  
 Do we have reliable and  
 algorithms, whose results we  
 believe ?

Hadron calorimeter configuration

**Goal:** Focused simulations for alternatives; rely on existing tools