

ECAL detector project

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The electromagnetic calorimeter is

- The most expensive device of ILD (and it will remain it, whatever the choices)
- It will be a technical challenge (Silicon/scint. strip, VFE, ultra thin PCB, etc...)
- The most difficult to organise , fund and build

To do list for ECAL

- STEP 1** • optimise the detector for [√s going from 90 GeV to 250-600 GeV](#) (ECAL internal radius, pixel size, number of layers, acceptable guardring zone, etc...) and determine [the cost/performance curve](#)

“REAL” cost based on producers estimation
not just “private comm.” like in DBD ...

based on “engineering” PBS and industrial cost

.....

We have to forget the diplomacy and enter in real world

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WARNING !!

SID has performances on physics very similar to ILD for an ECAL radius of 1.2m... (sub cm pixels in ECAL allows to strongly reduce the radius... And the cost)

Comments from IDAG at Arlington 

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STEP 2

- **STRUCTURE** the project
- Mechanical study of module Barrel and Endcap for new radius/lentgh
- PCB with cost effective performances (*thickness, flatness, industrial prod. etc...*)
- VFE packaging (*baseline defined by the technical project leader*)
- SLAB in real life (*HV, LV, ASU connecting, etc...*)
- ECAL DAQ specific card
- Etc...

When ?

R&D collaboration was perfect for prototype phase, when the goals was to go to test beam and test ideas and performances on single particle

We are NOW going from this R&D phase to optimisation/choice phase. The work is not the same. In the new era, we will need to take into account

- The cost, organization, steering of the project
- The industrial aspects (production, quality test, minimizing transport cost, etc...)
- The performances for \sqrt{s} going from 90 GeV to 250-600 GeV

..... exemple

choice of baseline could be just related to industrial feasibility, not to what is possible in lab.

A project approach

A different structure and organisation is mandatory !!!
to discuss with industry, with funding agency, with ILC board ...

WHEN ?



ORGANISATION

*Waiting for the T0 of ILC
Could be probably too late
to prepare a TDR for T0+2-3 years*

Success

Disaster

Which organisation ?

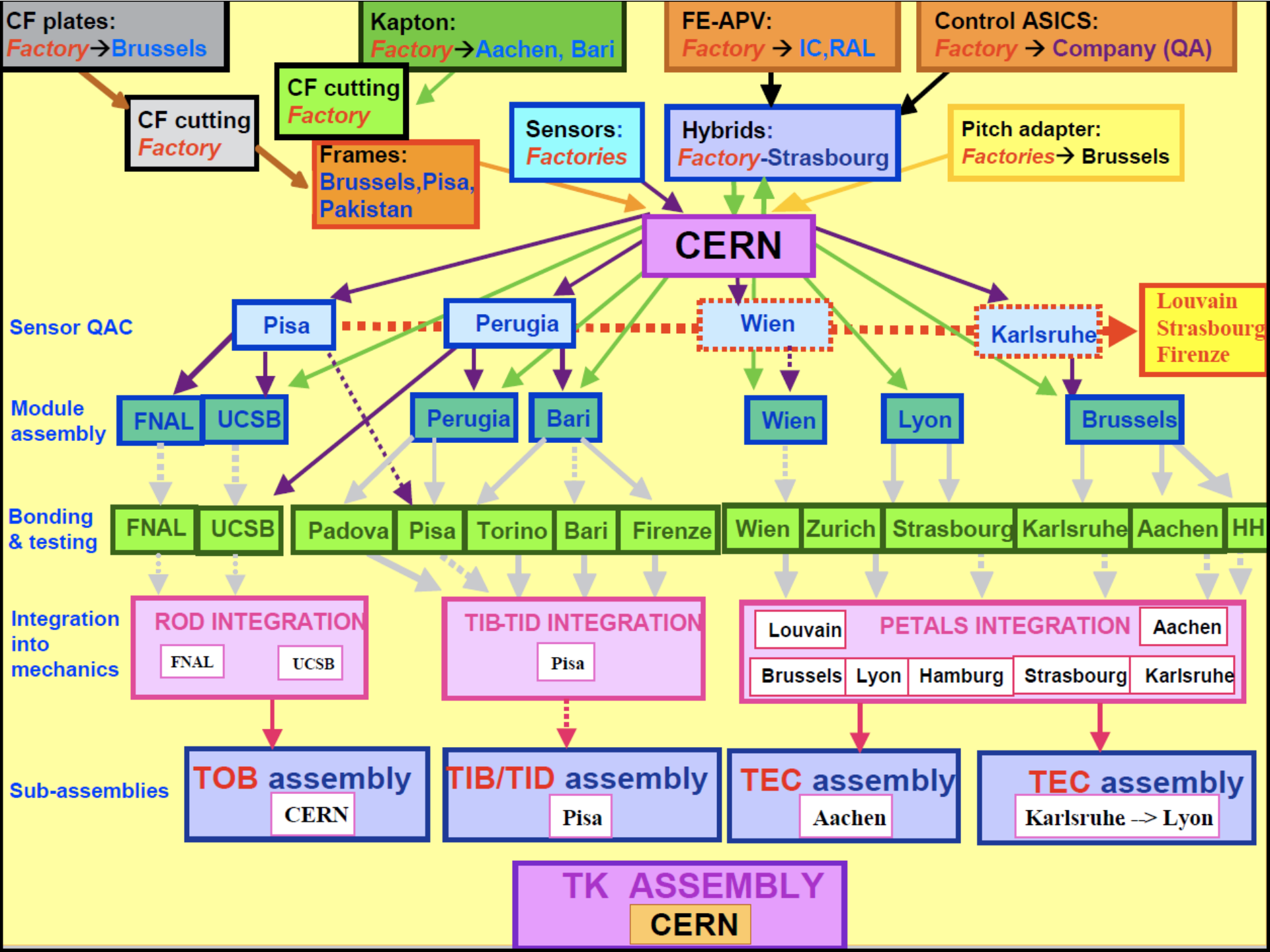
Multipolar organisation ,
Multipolar production site,
for the production of one detector

.....

Which will be used on one site

.....

Example of CMS tracker



Three major branches to get an organized system

- **Management**

To provide a uniform approach to a number of common management issues : PBS, project organisation, project phasing and planning, documentation management, cost & schedule, integrated logistic support...

- **Engineering**

To address a broad range of key engineering disciplines : system engineering, electrical & electronical, mechanical, software, control system, ...

- **Product assurance**

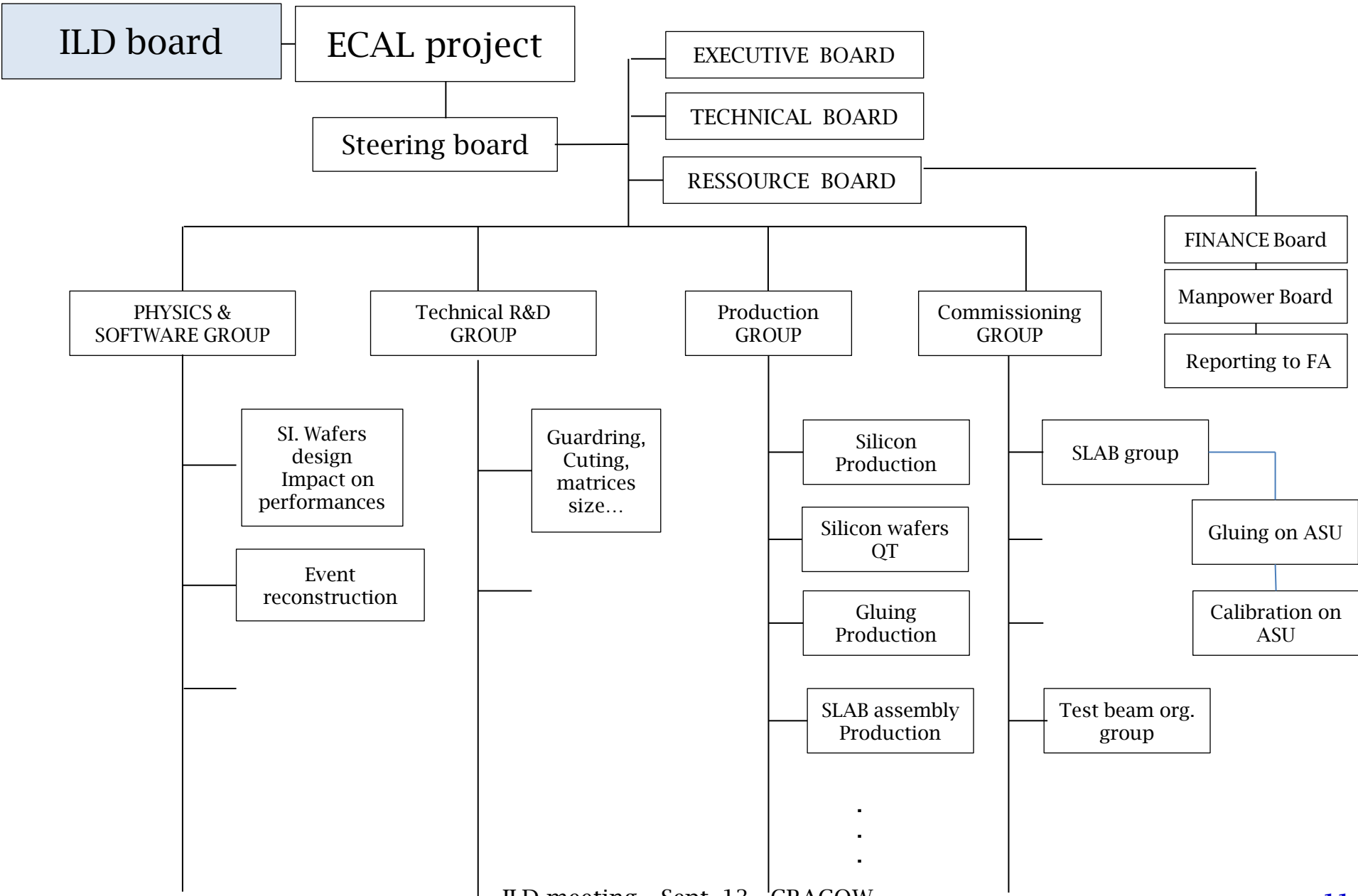
To provide both general coverage, and specific coverage for specific discipline : Quality assurance, EEE components control, material, mechanical parts & processes, software product assurance...

Requirements

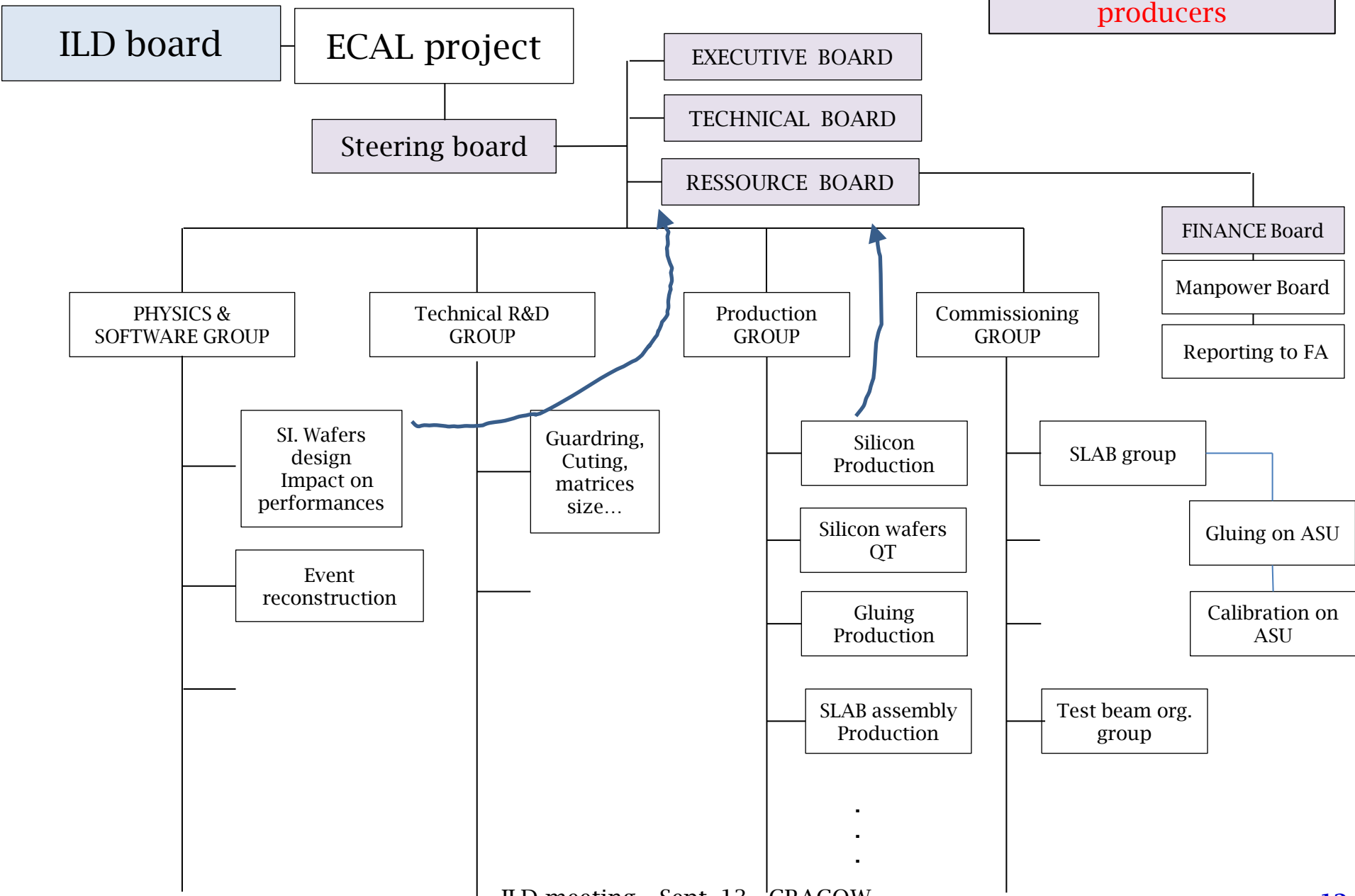
- **Responsibilities and authority of all actors :**
 - **identify the individual responsible** for the definition and set-up of the project organization
 - establish and maintain a project organization **relative to its level**
 - define the **authority for project management**
 - **define and the manage of sub-projects interfaces**
 - roles, responsibilities and authority of consultants and specialists
 - **Interrelations between the actors :**

Meetings scheduled on a periodic basis ; the results of the meeting shall be documented in the agreed minutes of the meeting, and also agreed actions shall be documented in **an action item list**
 - **Information technologies : as a minimum**
 - compatibility of data,
 - availability and accessibility of information,
 - security of data (type EDMS)
- ⇒ *A **Project organization** : **Implementation documents for project organization shall cover all items we have seen before (PBS, project organization, project phasing and planning, documentation management, cost & schedule, integrated logistic support...)***

POSSIBLE ORGANISATION
View of a physicist



POSSIBLE ORGANISATION
View of a physicist



Discussing with silicon producers

ECAL project collaboration **should be**

- open to US -SID group (SLAC, Oregon Univ., BNL, etc...)
- embedded in ILD and SID (groups remains member of)
- not embedded but in relation with CALICE (groups could be part of CALICE)
- the structure which will discussed with funding agency, with PAC, etc.. and with the ILD/SID and ILC detector board
- the collaborative structure which will give information to ILD board for the technology choice and report to ILC Board if ECAL talk is asked for.
- the organization which will fund and test a prototype for FINAL PROJECT
- Act as a substructure of the ILD collaboration, which will report to ILD structure for review of papers, reports, speakers bureau, etc...

SUMMARY

- We are entering in phase transition
- I propose to all people working on ECAL for ILC, to collaborate within a new organisation . This structure will be part of ILD(and SID if US join)
- This structure will be dedicated to ECAL only and embedded in ILD

My proposal to ILD to make the counting of FA interested !!!



The ECAL chapter could be part of the « ILD Express of interest »

We ask for to ILD JSB to endorse/include this point
In this express of interest