What is requested from sub-detectors in the perspective of integration in the overall detector

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which may condition the presence in the software baseline

Remember: Software ≠ Hardware

Goal

We have to provide a DBD by the end of 2012 as requested by the RD

In this DBD, ILD has to be described and shown as a detector

- fulfilling the physics aims of ILC

- complying with the accelerator constraints (e. g. push pull) and environmental ones

- understood from the point of view
  of the technologies used in the sub-detectors,
  of the way they make an adequate overall detector

The proof for the first point is provided by an adequate chain of simulation, digitisation, reconstruction and analysis.

Indeed we are requested to have

- a realistic, detailed debugged simulation:
  dead zones, inefficiencies, noise, etc.
- a realistic, debugged digitisation,
- a working reconstruction,
- adequate performances.

(message from Ties on the 18th of April)

It means that the parameters for simulation and digitisation are properly determined for each sub-detector option.

They come from physics and technological behaviour (test beam)
but also from the way the pieces are assembled into one detector (plays and interplays), the supports and services.

Therefore, the sub-detectors have to provide a detailed CAD model with services
support, power cables, cooling, acquisition

which can fit into the global ILD CAD model taken care of by M. Joré.

The fact that the sub-detector fits into its envelope (place holder) will be checked as well as the compatibility of its services with the other detector pieces.

The CAD model and the simulation one have to be compatible,
this can be checked easily once the drawings under EDMS,

it would be nice that the sub-detectors do not rest in the air in the simulation but are properly supported.

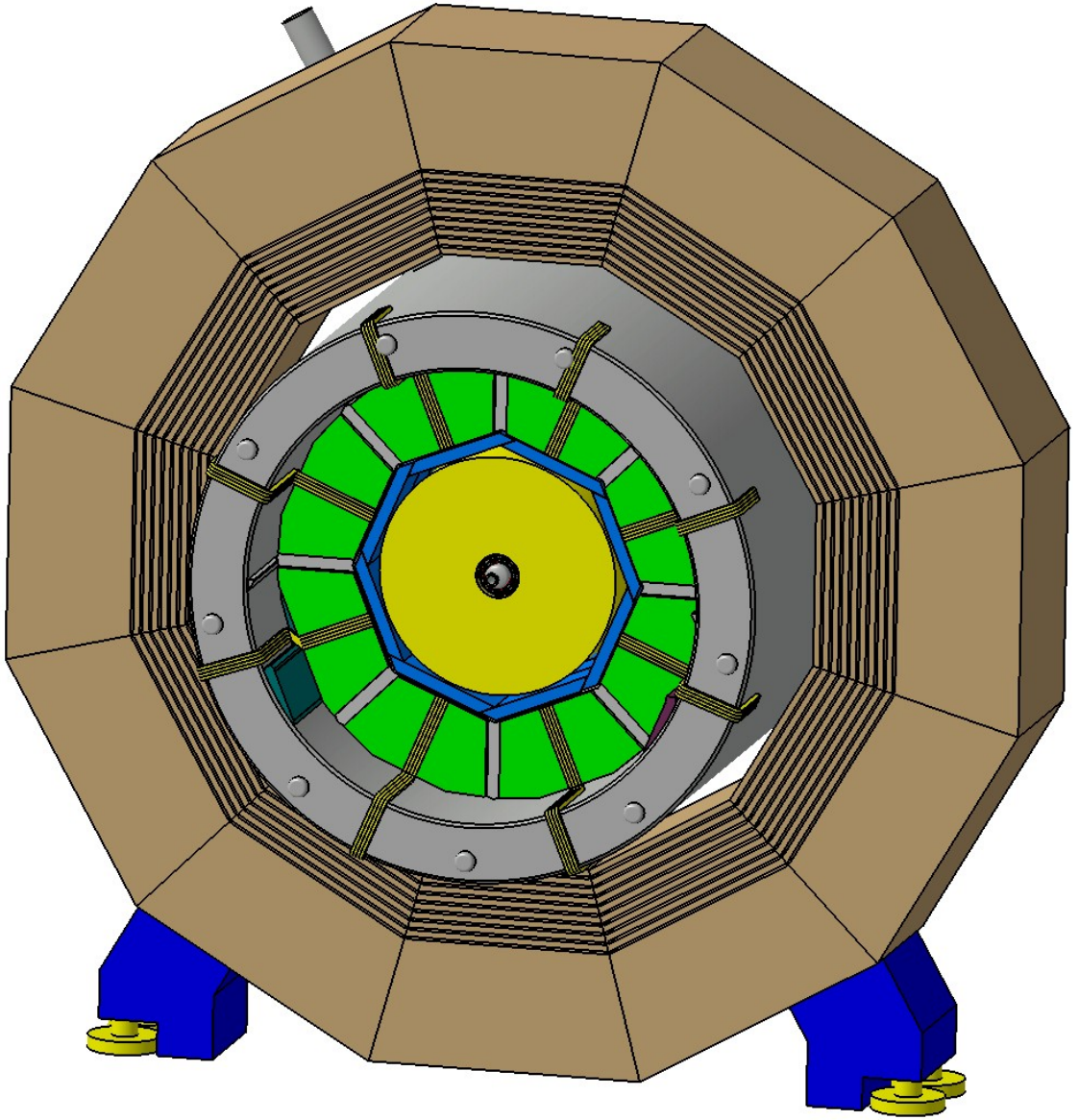
This integration in the model can bring the proof that the sub-detector is compatible with the accelerator and the rest of the detector from a purely mechanical point of view

but the electronic and thermic integration has also to be proven:
sensitivity to temperature, compatibility of the cooling with the neighbours
protect them from heat, protect them from water leaks
protect them from vibrations (air cooling)

singularly the problem of power pulsing and its incidence on the powering

our main problem is more getting the power in, than the signal out.

But once this said we have to consider much more coordination and sharing on many domains like cooling, alignment etc.



Thus, we expect the sub-detectors to bring the proofs

that the detection works under the expected conditions,
physics prototypes, beam tests

that the sub-detector can be built in a suitable way
mechanical design, technological prototypes

that the services are understood, power, cooling, acquisition
not a ton of copper, power pulsing, plumbing

that it can be assembled and tested in the expected site(s)
inter-connexions, tooling

that it fits in the overall structure
taking care of its services and those of others

that it can be serviced if needed*

that it is affordable, the cost will be discussed later in he workshop

* all reasonable efforts should be made to minimise the servicing once into operation

It is likely that all this will be difficult to bring to light now
and even for the DBD

we have to do our best and,
in order to have a consistent project we should
identify what is missing
what is the expectation to cover the subject,
what are the associated risks
is there an alternative to mitigate the risks.
(can we live without?)

The main problem today is not having different options, it is a blessing
it may be to have parts left in escheat!

We have to make sure that we have a working detector!

As we are still not ready to build, ...
it could be wise to emphasise the future of the technologies we develop
and not make too early choices.

Let us go for the theory of sub-detectors

keeping in mind again that a software baseline or reference
does not define the hardware.

But for a large Monte-Carlo production,
and in particular for background

we need to define one sbaseline