Work Plan and Milestones
-Discussion-

Karsten Buesser

ILD Workshop

Paris

27.01.2010

RD's Work Plan for the Concepts

1. Demonstrate proof principle on critical components. When there are options, at least one option for each subsystem will reach a level of maturity which verifies feasibility.
2. Define a feasible baseline design. While a baseline will be specified, options may also be considered.
3. Complete basic mechanical integration of the baseline design accounting for insensitive zones such as the beam holes, support structure, cables, gaps or inner detector material.
4. Develop a realistic simulation model of the baseline design, including the identified faults and limitations.
5. Develop a push-pull mechanism, working out the movement procedure, time scale, alignment and calibration schemes in cooperation with relevant groups.
6. Develop a realistic concept of integration with the accelerator including the IR design.

RD's Work Plan for the Concepts

7. Simulate and analyze updated benchmark reactions with the realistic detector model. Include the impact of detector dead zones and updated background conditions.

8. Simulate and study some reactions at 1 TeV, including realistic higher energy backgrounds, demonstrating the detector performance.

For 7 and 8, Specific physics channels will be investigated and defined by the Physics Common Task Group and supported by the Software Common Task Group.

9. Develop an improved cost estimate. Include in this work the identification of cost drivers and specification of main uncertainties.

For each of the above items, a detailed timeline with identified milestones will be constructed, leading to a detailed baseline design of the detector by 2012. Required resources, whether currently in place or not, will be specified.

What does it mean?

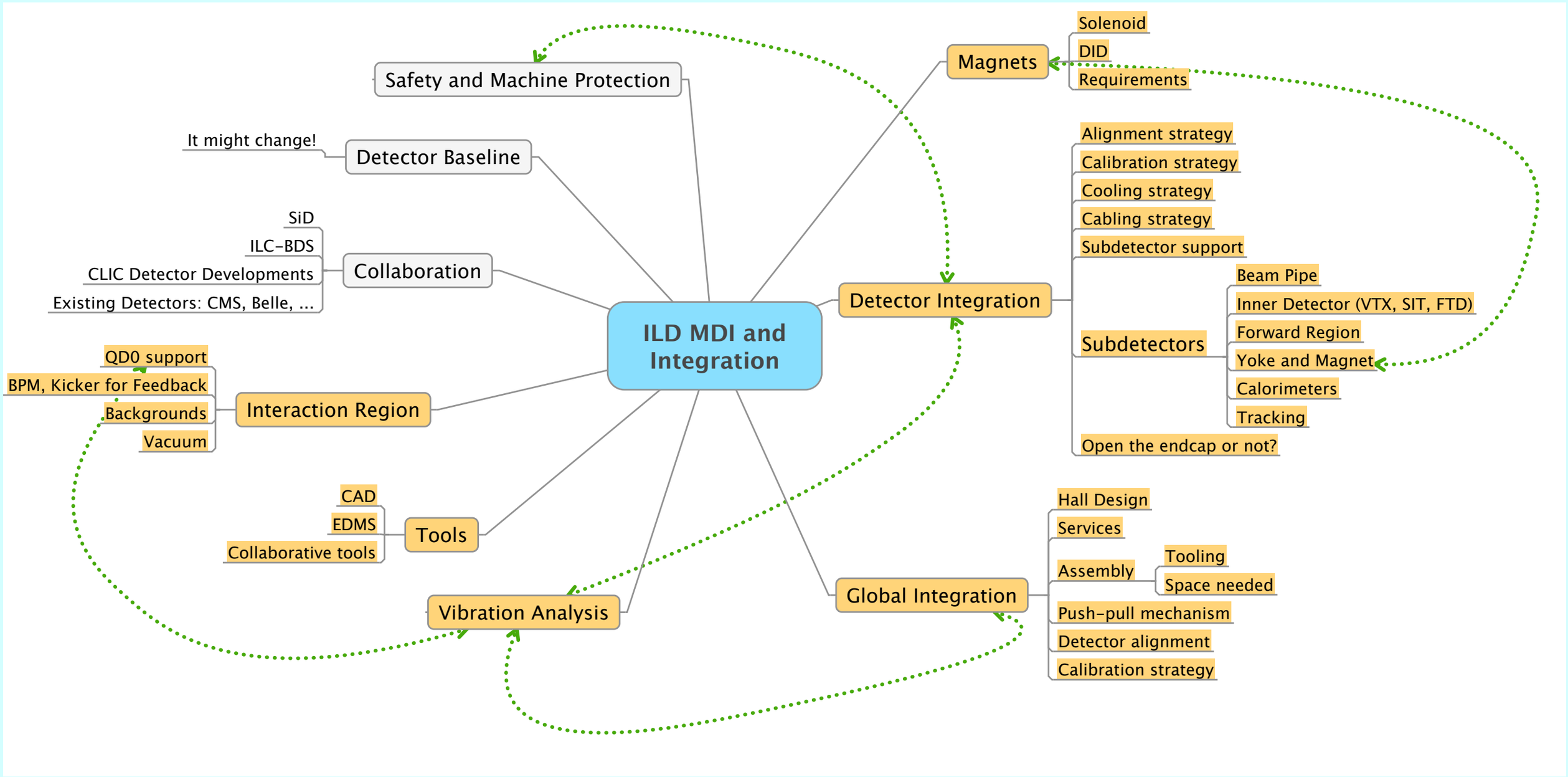
- What is the anticipated level of detail?
  - Conceptual ideas?
  - Technical designs?
  - Prototypes and measurements?
  - Blueprints and specifications?

- We need to synchronise with the global ILD efforts
- We need to synchronise with the global ILC efforts
- Resources are very limited

- Identify critical items and resources

MDI and Integration

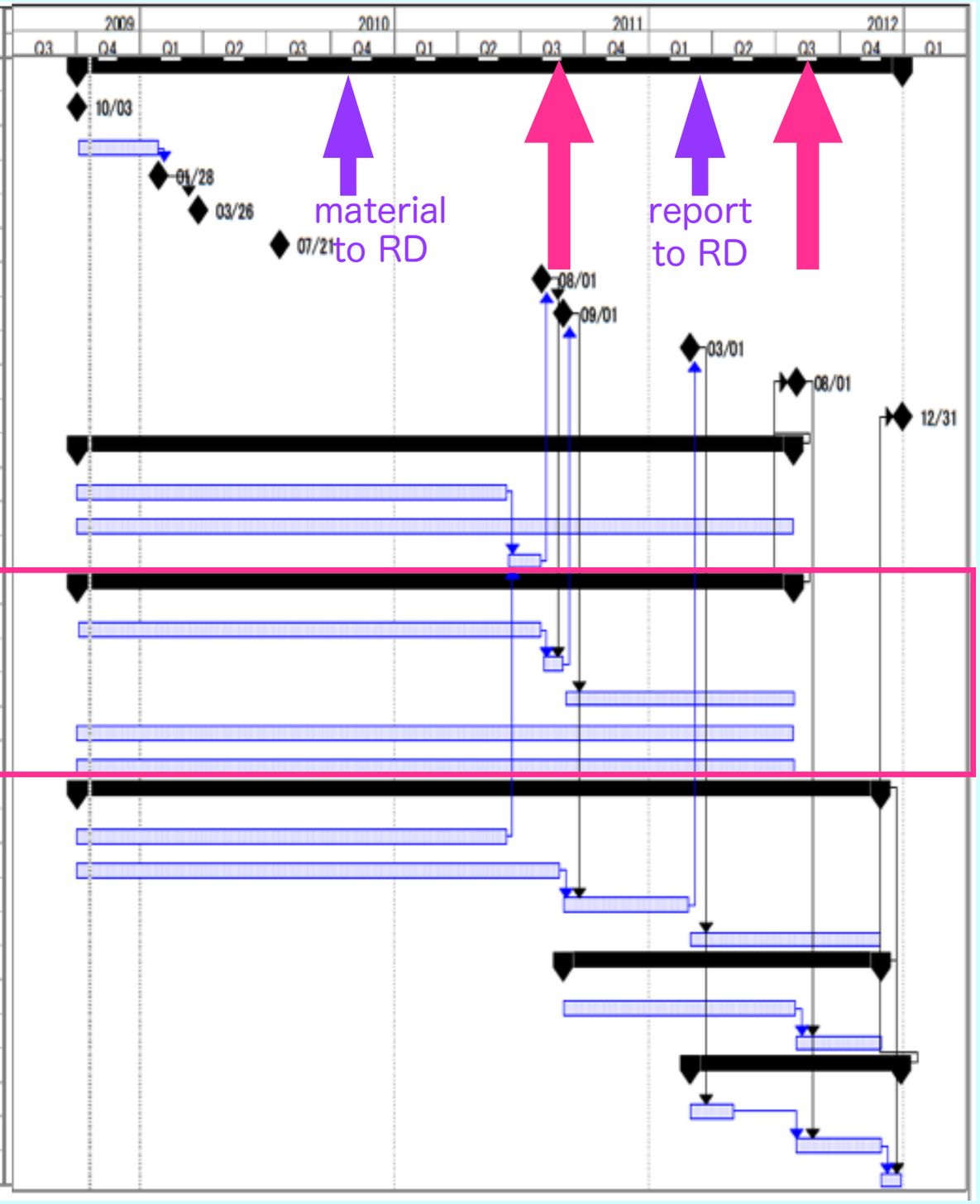
- My view (probably incomplete):



ILD Milestones

T. Tauchi:

ID	Name	Duration
1	**Detailed baseline design**	**38.41mons**
2	LCWA2009	0mons
3	Detailed Work Plan	3.7mons
4	ILD Workshop	0mons
5	LCWS2010	0mons
6	ICHEP2010	0mons
7	Define a feasible baseline options (2)	0mons
8	Define a feasible baseline design (2)	0mons
9	Complete implimentation of design	0mons
10	Freeze design	0mons
11	Submit detailed baseline design report	0mons
12	**Detector R&D**	**33.4mons**
13	R&D for proof of principle of the baseline (1)	20mons
14	R&D for detailed design/industrialization (1,2)	33.4mons
15	R&D Review	1.5mons
16	**MDI/Integration**	**33.41mons**
17	R&D for integration/alignment	21.59mons
18	Complete baseline integration design (3)	0.91mons
19	Detailed design of integration/alignment (3)	10.68mons
20	R&D for push-pull mechanism (5)	33.4mons
21	Design of integration with accelerator (6)	33.41mons
22	**Simulation**	**37.45mons**
23	Simulation on det. performance/optimization	20mons
24	Improvement of framework/tools/analysis	22.5mons
25	Implimentation of baseline (4)	5.8mons
26	Simulation/Analysis (7,8)	8.9mons
27	**Cost estimate (9)**	**14.82mons**
28	Develop methodology	10.8mons
29	Estimate for the baseline design	3.95mons
30	**Writing the report**	**9.86mons**
31	Progress report	2mons
32	DBD report drafting	3.95mons
33	DBD report editing	0.95mons



MDI Work Plan Proposal (T. Tauchi)

Work Plan	Responsibility	Status	date
Push Pull			
platform		proposed	Mar.09
mechanism, e.g. air-pads, rails, Hilman rollers etc.			
stability during movement			
re-positioning within +/- 1mm and 100urad			
tolerable for synchrotron radiation and pairs ?			
self-shielding of detector with Pacman for radiations	T.Sanami	done for LoI	Mar.09
Pacman design	K.Sinram, A.Herve	on-going	Jan.10
cryogenics,i.e. flexible cryo & vacuum lines and current supply			
QD0			
support	H.Yamaoka, M.Jore	on-going	Jan.10
vibration	H.Yamaoka	on-going	Jan.10
re-positioning within +/- 200um and 5urad by actuator			
monitoting by MONALISA, integration ?			
opening endcap on the beam line ?	K.Buesser	on-going	Jan.10
1m wide space is very small and the endcap is very heavy			
opening and assembly at the garage position	C.Clerc	done for LoI	Mar.09
calibration and re-alignment (monitoring) of sub-detectors	sub-detector		
Z-pole running for the calibration in every time ?	sub-detector		
experimental hall design with SiD and accelerator	A.Herve	on-going	Jan.10
Beam induced backgrounds			
upstream/downstream beam backgrounds	LDC,GLD	to be updated	
collimation depth, aperture of beam pipes around IP	BDS	to be updated	
beam-beam backgrounds		done for LoI	Mar.09
aperture and material of beam pipes around IP	H.Videau	on-going	Jan.10

MDI Work Plan (cont.)

Work Plan	Responsibility	Status	date
Detector integration	Integration Coordinator ?		
each integration box separated by 'no-go zones'		proposed	Jan.10
support structures in 'no-go zones' ?			
strength of deformation and vibration			
cooling : all heat to be taken out by each sub-detector		proposed	Jan.10
cabling of signals and eletric powers	U. Schneekloth	done for LoI	Mar.09
gas lines			
alignmnet and monitoring system and time	sub-detector		
calibration method and time	sub-detector		
Z-pole running and the integrated luminodity ?	sub-detector		
TPC requests 1pb^{-1}; a few hours(days) with 10(1)% e^+ source			
Magnet System			
Coil and anti-DID	F.Kircher	on-going	Jan.10
Yoke design ; tail catcher and muon system	U. Schneekloth, R.Stromhagen	on-going	Jan.10
Coil in endcap			
Vacuum System	U.Suetsugu, H.Videau	done for LoI	Mar.09
Tools			
3D-CAD : CATIA	M.Jore	on-going	Jan.10
EDMS	C.Clerc	on-going	Jan.10
Collaborative tools			

Work Plan Conclusions (T. Tauchi)

Let's define ;

- Cooling strategy
- Sub-detector integration strategy
- Alignment strategy to estimate time in the push-pull
- Calibration strategy to estimate time in the push-pul
- Complete work plans with responsibility

Let's make milestones “monthly” as much as possible for

1. Baseline integration design by autumn 2011
2. Detailed design of integration and alignment by autumn 2012
3. Complete the report by end of 2012

Questions to all of ILD

- How do we optimise the general detector parameters (sizes)?
- How do we optimise L* vs luminosity?
- Do we want to open the endcaps?
- Integration methodology:
  - Can we agree on integration boxes with no-go areas?
  - Can we define a cooling strategy: every sub-detector takes out its own heat completely?
  - WBS structure for EDMS, to be synchronised with SiD
- Do we need an DID/Anti-DID? Who will redo the related background studies for ILD?
- Do we need corrector coils?

- What is the detail of the work plan and milestones needed?
- How do we synchronise the MDI work plan with the ILD work plan?

- Where do we need more discussions?