



CLIC/ILC Collaboration Meeting: Objectives & Organization

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International Linear Collider – Global Design Effort
ILC-GDE



Introduction

- review selected subjects and define tasks which serve common interests –
 - **ILC and CLIC studies.**
 - **(or which are close enough to yield useful direct exchange)**
- Once defined, nominate contact persons for each subject (convenors)
 - **Who prepared the discussions for today's meeting**
 - **And will follow-up afterwards on listed tasks**



Meeting Format:

1. Start with a plenary session:
 - **the framework of the collaboration**
 - **(motivation, constraints...)**
2. Split in small working groups each one dedicated to a specific activity
 - **Agenda arranged by convenors prior to the meeting**
 - **Goal: Prepare the task list and develop written plan**
3. End with a plenary session:
 - **Present reports, discuss issues**
 - **Specific plans; or preparation of process**



Working Group locations:

- (Plenary 06-6-002)
 1. General (management)
 - **PS Complex (alternative: meeting room of 06-6-002)**
 2. Civil Engineering and Conventional Facilities
 - **Room C**
 3. Beam Delivery Systems & Machine Detectors Interface
 - **Room B**
 4. Detectors
 - **Room A**
 5. Cost and Schedule
 - **LHC – B040-R-A10 (alternative: 06-6-002)**
 6. Beam Dynamics & Beam Simulations including Low Emittance Transport
 - **Room B**
 - Joint session:
 - **Detectors / BDS-MDI**
 - **Detectors / CFS**



Example tasks – to set the stage:

1. CFS

- Tunnel and utility details/features are quite different, **BUT** →
- **Underground construction complexity, heat removal requirements, scale of the installation are common challenges**

2. Cost & Schedule

- **the CLIC and ILC cost/schedule groups meet for the first time**
- **Long list of common tasks – from managing input to parametric studies**



Example tasks – to set the stage:

1. BDS

- **This group has a long history of collaborative work**

1. Collimation

2. Detector Integration

3. Final Focus system and stabilization

2. General - management

- **Coordinate meetings, internal communication in an even-handed manner**
- **Prepare report for publication and distribution to the community**
 - Including understanding of level of commitment



Other subjects

- Positron generation based on Compton Scattering
- Damping Rings,
- Klystrons (L band) & Modulators with long pulses and high efficiency
- High power beam dumps
- Operational & reliability issues
- Machine Protection System
- Others?

- **NEXT TIME!**



Summary

- We (Akira and Nick and Marc) are pleased with the opportunity to develop a working relationship with the CLIC team on items of mutual benefit
- Our goals are to:
 - **Work with CERN scientists and engineers on ILC / CLIC items; toward solving ILC design challenges**
 - **Establishing connections and**
 - **Mutual basis for discussion on key items**
 - **Demonstrate a functioning collaboration through presentations to CERN / ILC communities etc.**



Why are we here?

- The two efforts are *commensurate* in scale
 - **Resources expended / planned are similar**
- *Define* (as much as we can)
 - **where we agree and**
 - **where we agree on the comparison**
 - **between the technologies**
- Connect the 2 communities so that their projects are *comparable*
- (There will be competition / collaboration – this is the nature of alternative technology development)

Prospects for Scientific Activities over the Period 2012 - 2016



To be decided in 2010-2011 in light of first physics results from LHC, and designed and R&D results from the previous years. This programme could most probably comprise:

- **An LHC luminosity increase requiring a new injector (SPL and PS).**

The total cost of the investment over 6 years (2011-2016: 1000-1200 MCHF + a staff of 200-300 per year. Total budget: ~200-250 MCHF per year.

- **Preparation of a Technical Design for the CLIC programme, for a possible construction decision in 2016 after the LHC upgrade (depending on the ILC future).**

Total CERN M + P contribution + ~250 MCHF + 1000-1200 FTE over 6 years.

- **Enhanced infrastructure consolidation: 30 MCHF + 40 FTEs from 2011.**

NB: Over the period 2012-2016. Effective participation of CERN in another large programme (ILC or a neutrino factory) will not be possible within the expected resources if positive decisions taken on LHC upgrade and CLIC Technical Design. This situation could totally change *if none of the above programmes is approved* or if a new, more ambitious level of activities and support is envisaged in the European framework.



CLIC resources (CERN)

- 53MCHF for the three years.
 - 60 people / year. 177 FTE.
 - ~steady at this level for several years.

		2008	2009	2010	Total
Material budget (kCHF)	Present MTP	4180	3550	3500	11230
	Additional LTP (White Paper)	4000	4000	4000	12000
	12 GHz power test stand	1050	1350	100	2500
	Total resources	9230	8900	7600	25730
Man-Power (kCHF/FTE)	Present MTP (175 kCHF/FTE)	8480/48.5	5355/30.6	5565/31.8	19400/110.9
	Add. White Paper (125 kCHF/FTE)	1250/10	3250/26	3000/24	7500/60
	12 GHz test stand	375/3	250/2	125/1	750/6
	Total resources	10105/61.5	8855/58.6	8690/56.8	27650/176.9



CTF3 budget (including Collaborations)

			Status March 04		Status Nov 05	
			Budget	Manpower	Budget	Manpower
			MCHF	p-y	MCHF	p-y
TOTAL TO COMPLETION			95.4	393.3	101.1	395.8
CERN	Existing Equipments		40.0		40.0	
	Contrib. 2000-2003		16.0	100.0	16.0	100.0
	Pledged 2004-2009		17.4	150.0	14.9	125.0
	Contingency		0.0	0.0	5.5	25.0
COLLAB	Contrib. 2000-2003		4.8	48.3	4.8	48.3
	Pledged 2004-2009		0.0	0.0	9.4	59.0
Missing			17.2	95.0	10.5	38.5



ILC Resources – 07 to 10

		FTE-Years							total M&S							
		Elec. Source	Posi. Source	Damping Rings	RTML	Beam Delivery	Simulations	total FTE-years	Elec. Source	Posi. Source	Damping Rings	RTML	Beam Delivery	Simulations	total M&S	
Americas	Canada			5				5			20				20	k\$
	USA	11	8	51	1	55	18	144	1154	144	19451	49	2700	66	23564	k\$
Asia	China			12	4	20	2	38		500	5000	100	200	100	5900	kRMB
	India															k\$
	Japan	2	7	16		23	4	52			722	0	375		1097	M JY
	Korea			2	2	4	3	12			26	26	201	26	279	M KRW
Europe	EU (CERN)			2		1	4	7			7		2.3	8.6	18	kEUR
	France		11		5	12		27		390			6		396	kEUR
	Germany		22	3		4	4	33		32	7		36	14	88	kEUR
	Italy			17				17			300				300	kEUR
	Poland															kEUR
	Russia															k\$
	Spain					2		2								kEUR
	Sweden				2	2		3								kEUR
	Switzerland															kEUR
	UK		4	7		65		76		35	63		1539		1637	kGBP
		13	51	116	14	189	34	416								



CLIC – ILC Collaboration Strategy

- Components – working together on pieces
 - **There will be much in common – starter projects kept definitively small.**
- What can ILC bring to CLIC?
 - **Use the same cost basis. – develop a credible comparison**
 - **ILC could even help in the costing of CLIC.**
- CLIC to ILC:
- CERN expertise helpful to solve.
 - **There may not always be a point to point balance.**
- For example: skill sets don't line up.

- The big picture may be harder to arrange.

- The credibility of each, through the broader community, will be facilitated through communication.



Plug-compatibility.

- One person develops a component that would work for both.
 - **May still need two efforts.**
- Start at the same energy.
 - **(CLIC has been asked to do that.)**



Meetings

- Goal: Break down barriers. – this has to be done at a high level so to have a global viewpoint.
- Overlap in each other's meetings.
 - **Working group agendas and attendance**
 - **Sharing experts.**
- Management meetings will be required...
- LCWS could/should be more generic – and include the CLIC community explicitly



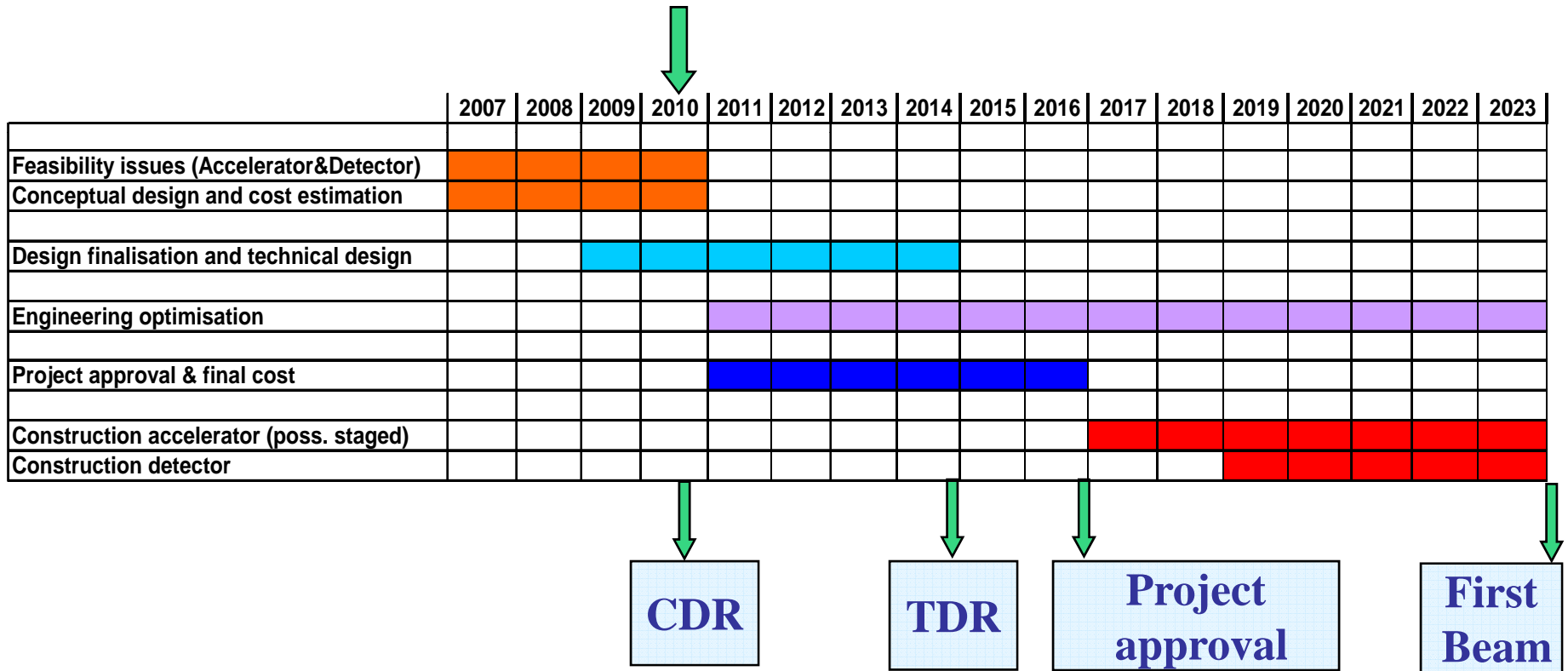
Time lines

- 2010-12-14
 - **Milestone period for CLIC**
- 2010 12.
 - **technical cost/risk reduction in 10**
 - **Credible plan 12.**
- at that time (~12) we will compare the two.
 - **We should prepare for that.**
 - **When we compare-should have common boundary conditions.**



Tentative long-term CLICscenario
Shortest, Success Oriented, Technically Driven Schedule

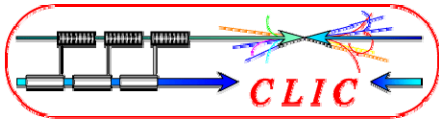
Technology evaluation and Physics assessment based on LHC results for a possible decision on Linear Collider funding with staged construction starting with the lowest energy required by Physics





We should:

- Present options in a credible and strong common basis.
- Define the criteria of comparison.
 - **(done at 500)**
- Ask: What would reconvene a recommendation process?



Conclusions - CFS



- Interaction Area is obvious area where resources can be shared
- Civil Engineering models can be worked on 'in parallel' for ILC & CLIC.
- Other possible areas of collaboration in the TS area : Ventilation, Electricity, Handling....
- Resources to be defined, if limited, then perhaps Joint 'Value Engineering' exercises could be the way forward, rather than full blown studies.....
- First milestone : At Sendai meeting develop deliverables for 2008 for ILC Value Engineering and ILC/CLIC common efforts
- Identify link persons for highlighted areas
- CFS Video meetings will continue with possible CLIC input on specific subjects



Conclusions: BDS

- Topics:
 - Optics Design and Optimization
 - Collimation
 - Detector Integration
 - Crab
 - ATF2
 - Instrumentation
 - MDI
 - Background
 - Stabilization
 - Radiation – surface/muons
- Strong list



Conclusion

- A lot of work devoted to preparation for this (first) CLIC / ILC meeting!
 - **Under difficult conditions US / UK**
- Thanks to conveners and teams