

Possible layout (status Monday 17.10)

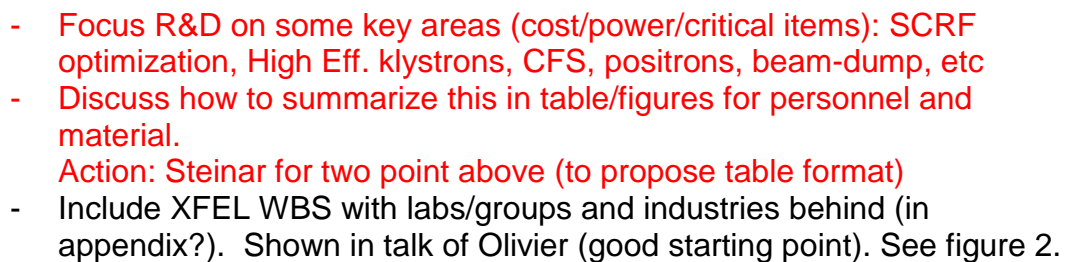
(in red tasks for next meeting)

Chapter 1) Short introducing (max 1 page):

- Purpose of document (mention EJADE) incl. relevance to EUS
- Define timeline being used (reflected in chapter division later)
- Introduce relevant activities 1)GDE/LCC/ADI, 2)XFEL, 3)CLIC, 4)ATF2, 5) EJADE
- Define detectors (mostly) away from this document (action Marcel, Thomas to produce draft text), mention overall costs, refer to LHC experience and costs, author model for sharing (maybe separate chapter 4.5)
- Comment on that we include both material costs – the one used to define sharing - and personnel (cost) associated (in FTE?)

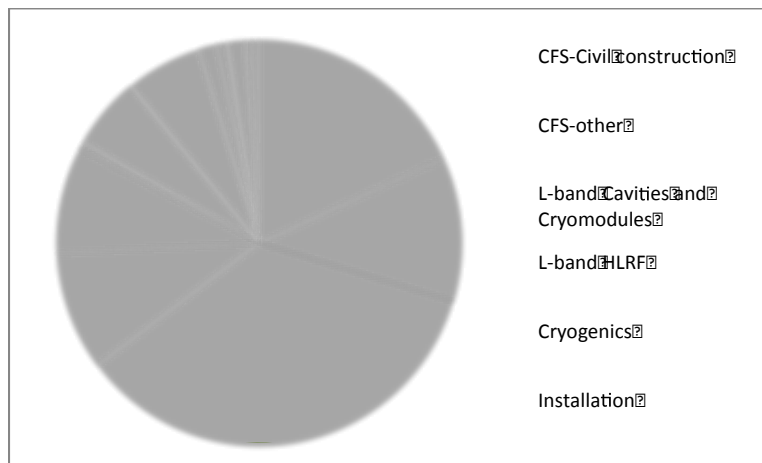
- Explain status quo and five brief subchapters the efforts in the five activities above that are relevant for ILC

Discuss how we keep knowledge from E-XFEL to a potential ILC constr. start

[illegible]

Chapter 3) Preparation phase (after some level of Japanese and ESU green light) - 2019-2022, 4-6 pages

- Introduction saying that we will look at European capabilities for deliverables across the ILC WBS:
<https://indico.cern.ch/event/571650/contributions/2320068/attachments/1355782/2049013/wbs-ilc.xlsx>
- Choose as model 1/3 of high tech items (~23% of overall), justify by common sense and [Nomura report](#) (illustrate with figure below).



- Estimate ~3% (~200 M\$) in overall prep. phase budget, with ~40 M\$ European budget
- Emphasis that we now consider a build up phase towards construction later (beyond 2022) for each item.
- Assume we are talking about final prototypes, pre-series with (preferable) European industry, plus participation in technical design team, facility preparation where relevant
- Define estimate per item for Europe
- Match possible deliverables across the WBS with an estimate of persons/material budgets needed (using availability of expertise based on what we know from the activities above and input from each country (equivalent of the one for EXFEL)
Action: Nick (with Hans, Olivier) prepare blank EXCEL ala E-XFEL for ILC, fill in for DESY and distribute to all WG reps. See slides of Nick, Olivier, Angeles Andrea plus oral statements.
See Nicks spreadsheet at (mail 30.11 for access info):
<https://desycloud.desy.de/index.php/s/u0QR9M90guumA6E/download?path=%2FDocuments&files=ILC%20WB%20EURO%20BMP.xlsx>
Discuss next steps

		Labour (hours)	Germany	France
		Relative	DESY ?	CEA Saclay LAL
		HOURLS		
1	CFS	30.1%	x	
2	SC 3.3 GHz Cryomodules	34.4%		
3	1.3 GHz Power Source & Distribution	9.5%		
4	Cryogenic Systems	8.6%		
5	Electron Source	0.5%		
5.1	AD&I			
5.2	Magnets & Power Supplies	0.1%		
5.3	Vacuum Systems	0.0%		
5.4	SBB RF	0.0%		
5.5	Instrumentation	0.1%		
5.6	Dumps and Collimators	0.0%		
5.7	Installation	0.0%		
5.8	Controls and Computing	0.1%		
5.9	Laser, DC Gun and SBB Activities	0.1%		
6	Positron Source	1.8%		
6.1	AD&I			
6.2	Magnets & Power Supplies	0.8%		
6.3	Vacuum Systems	0.0%		
6.4	Capture RF power	0.2%		
6.5	Instrumentation	0.2%		
6.6	Dumps and Collimators	0.2%		
6.7	Installation	0.0%		
6.8	Controls and Computing	0.2%		
6.9	Target, RF, Capture and Pre-accel RF, Aux. Source	0.2%		
7	Damping Rings	3.9%		
7.1	AD&I			
7.2	Magnets & Power Supplies	1.9%		
7.3	Vacuum Systems	0.8%		
7.4	650 MHz Power Source	0.3%		
7.5	Instrumentation	0.3%		
7.6	Dumps and Collimators	0.0%		
7.7	Installation Hardware	0.0%		
7.8	Controls and Computing	0.3%		
7.9	650 MHz SRF Cryomodules	0.2%		
8	RTML	2.9%		
8.1	AD&I			
8.2	Magnets & Power Supplies	1.6%		
8.3	Vacuum Systems	0.5%		
8.4	Instrumentation	0.5%		
8.5	Dumps and Collimators	0.2%		
8.6	Installation	0.0%		
8.7	Controls and Computing (may include LRF)	0.2%		
8.8	Area Specific			
9	Main Linac	2.8%		
9.1	AD&I			
9.2	Magnets & Power Supplies	0.4%		
9.3	Vacuum Systems	0.0%		
9.4	Instrumentation	0.2%		
9.5	Dumps and Collimators	0.0%		
9.6	Installation	0.1%		
9.7	Controls and Computing (incl. LRF)	2.1%		
9.8	Area Specific			
10	BDS	2.1%		
10.1	AS&I			
10.2	Magnets & Power Supplies	1.0%		
10.3	Vacuum Systems	0.1%		
10.4	SC Crab Cavity Systems	?		
10.5	Instrumentation	0.3%		
10.6	Dumps and Collimators	0.5%		
10.7	Installation	0.0%		
10.8	Controls and Computing	0.3%		
10.9	Area Specific			
11	IR	0.0%		
12	Computing & Controls (common)	3.0%		
13	Installation (common)	0.5%		
14	Laboratory Management	0.0%		
15	Simulation and Operation (common)	0.0%		

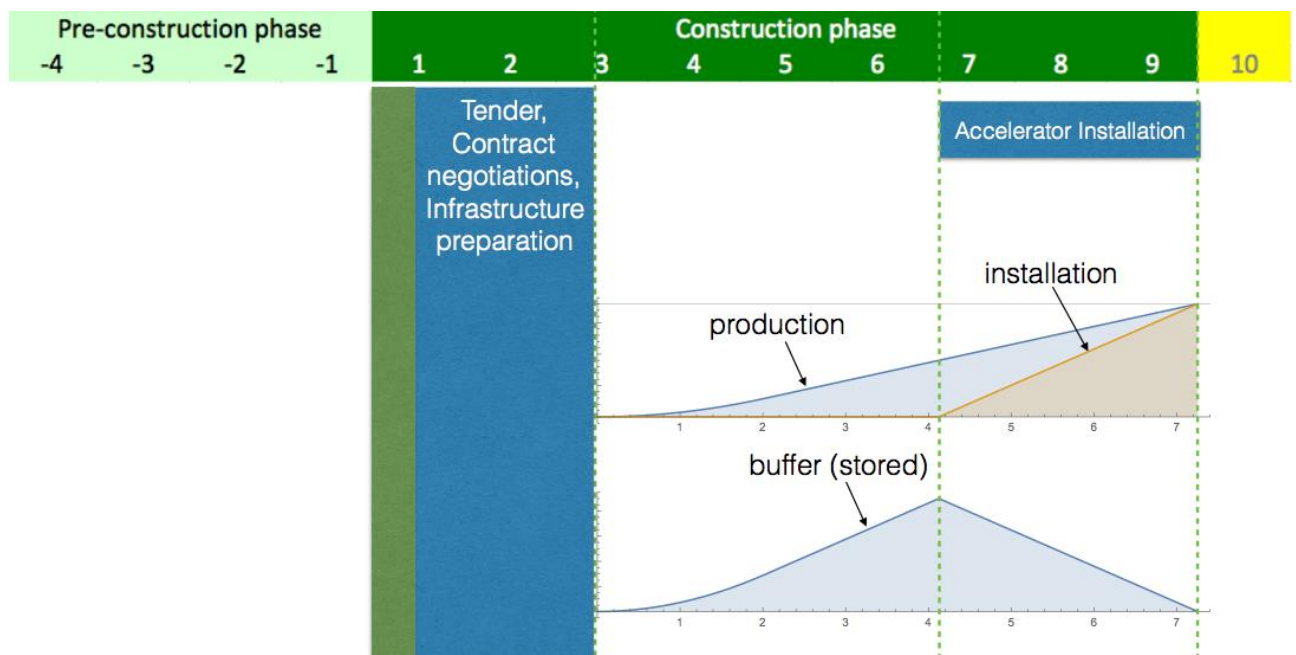
- For organization see chapter 5.
- Also important in this phase will be international negotiations.

Chapter 4) Mini chapter about construction phase beyond the timeline above (2 pages)

- Costs of the items considered above if we would deliver the percentages mentioned.
- Explain how to scale costs/personnel/European effort with delivery percentages.
- Include estimate of prod. capacities (Nomura and experience) in (mostly) European industries (see example from NRI report)

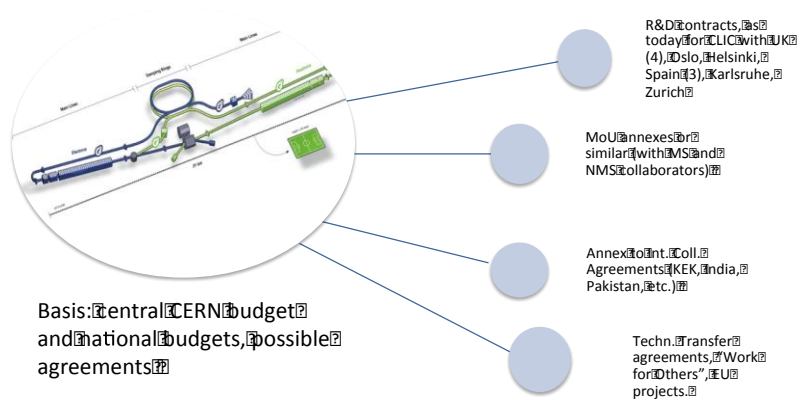
Cryogenic plants	10 plants	<ul style="list-style-type: none"> ■ Underground units (refrigerators): 2K ■ On surface units: 4.5 K ■ Required power: 50–60 MW 	CERN Air Liquide	<ul style="list-style-type: none"> ■ Prototype(s) • LHC cryogenic plant (same scale and technology, 55 MW) • Plant component technologies already established ● Required performance achieved 	<ul style="list-style-type: none"> ■ Technical issues • Improvement of cooling efficiency and maintenance of long-distance cryogenic transfer lines • Reduction of helium loss ● Manufacturing-related issues N/A 	<ul style="list-style-type: none"> ● Manufacturing (mass production) • Air Liquide (France), Linde (Germany, Switzerland)
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- Budget profile estimate (timeline, big money in 2026 onwards)
Example in Nick's presentation 19.10 (for cryomodules, can be translated to budget profile, add budget profile in pre-const.phase (flat at ~10 MCHF) – should to attempt to mat. and personnel ?



Chapter 5) Possible involvement forms of Europe (2 pages)

- Project organization in Europe (particularly relevant for prep. phase)
Action Steinar



- Council papers for involvement with Japan, brief discussion of possible models in construction phase (Action Steinar)
http://cds.cern.ch/record/1288975/files/001288975_English.pdf
(still need to find more information)

Chapter 6) Summary with plots and statements that can be used in slides (1-2 pages)

- Repeat that we have looked at potential of researchers and industry in Europe to aid informed discussions and decisions about a potential European role in the project if it becomes reality.
- Summary timeline needed on European side for decisions (maybe trivial and can be skipped) on our side.

Refs and appendixes

Questions/Comments:

- Next meeting looking at main points in red, main discussion of the ILC equivalent EXFEL table (four points, one per chapter 1, 2, 3 and 5)
- Contact Poland – who ? On hold.
- Cryomodules not at CERN (decide) ? Go with EXFEL line.
- Operation costs ? Both acc. and detectors ... consider at the end if at all.