



TDR Preparation:

Presentation at EC Face-to-Face meeting

13 July 2012

John Carwardine



Outline

- Preamble and background
- Proposed EC sign-off workflow
- A few policy questions
- TDR preparation status



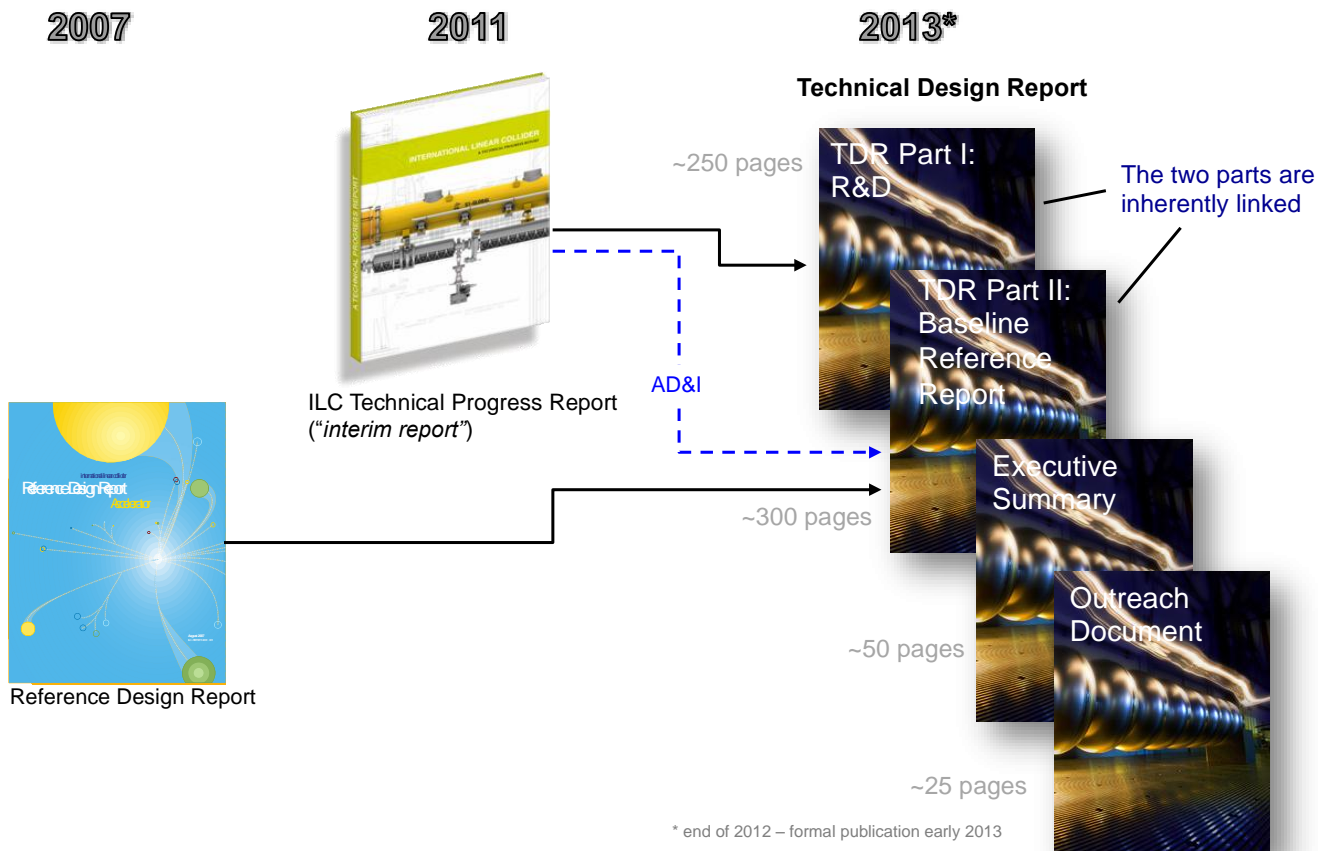
TEB Membership

- Chair
 - John Carwardine**
- Original editing team
 - **TDR1: Eckhard Elsen, Hitoshi Hayano, (Jim Kerby)**
 - **TDR2: Nan Phinney, Nobu Toge, Nick Walker Phil Burrows**
- New on editing team
 - **Chris Adolphsen (SCRF for Akira, not formally on TEB)**
 - **Kaoru Yokoya**
 - **Mike Harrison**
 - **Brian Foster**
- PMs
 - **Marc Ross**
 - **Nick Walker**
 - **Akira Yamamoto**
- Technical Editing
 - **Maura Barone**
 - **Benno List**



Preamble

Technical Design Report volumes



Scope of Part-I (R&D)

- Comprehensive report on TDP R&D programs
 - where and how we spent the money
- Similar in scope to R&D sections in Interim Report
 - Formulate and emphasize key results and conclusions
 - Reported results should support the Baseline Design (decisions)
 - Implicitly is a snapshot of the state-of-the-art in key technologies
- Additional Scope beyond the Interim Report
 - Summary of siting studies and other technical studies
 - Summary of proposed future R&D programs
 - Description of the 'Evolution of the Design' changes, process, choices from RDR to TDR baseline design
 - Summary of relevant programs not directly ILC (eg EU-XFEL)



Part II: ILC Baseline Design Report

- Relatively detailed description of the updated baseline design
 - **on which the cost estimate is based**
- Similar level of detail to RDR
 - **But some differences in structure (*see later*)**
- Stand-alone document
 - **Relevant content from the RDR will have to be part of the content of the TDR ('cut/paste and revise')**
- Supporting R&D results to be referenced to Part I
- Design details reference to Technical Design Documentation (TDD) in ILC-EDMS
 - **electronic version to contain hyperlinks**



Siting-driven variants

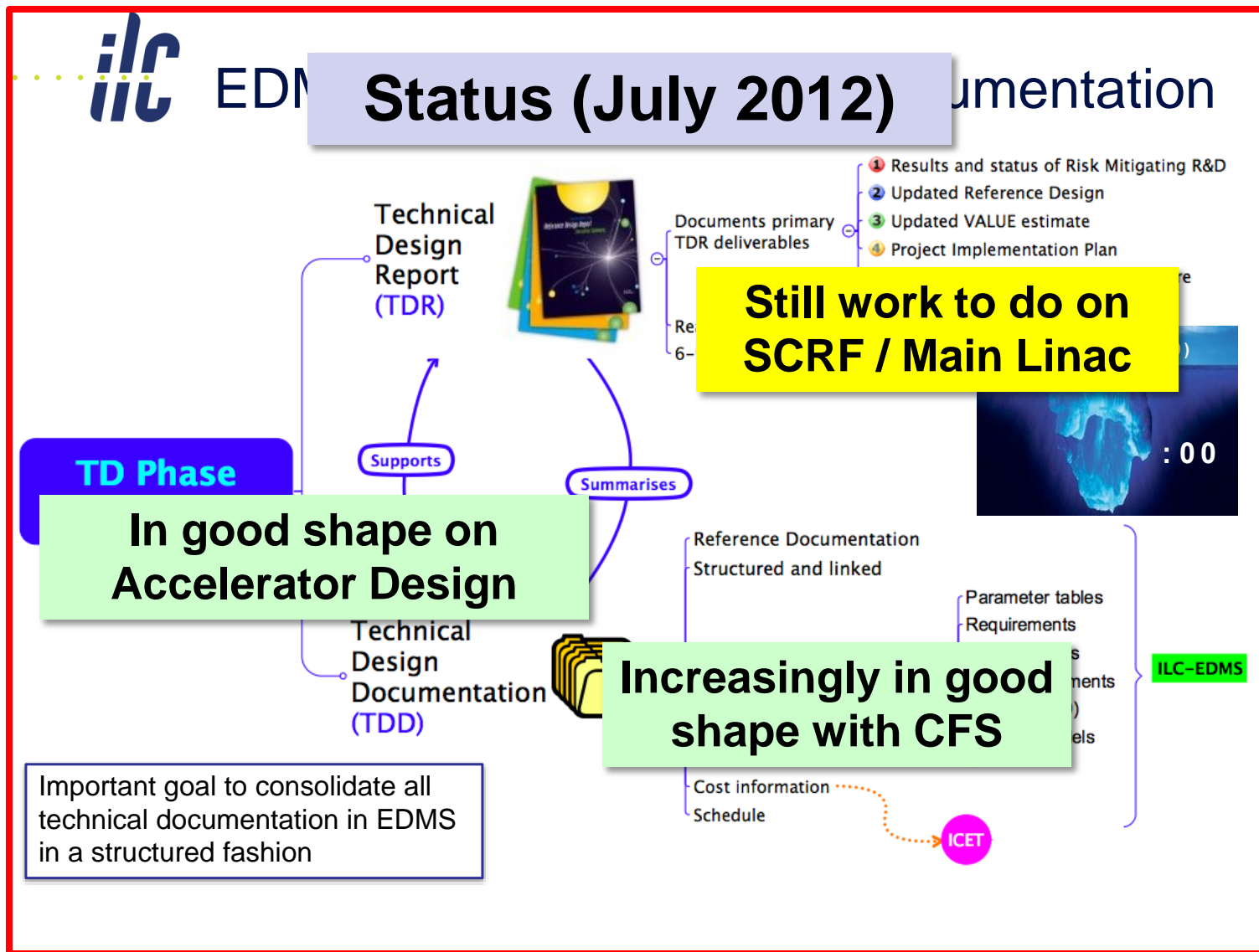
- Two variants of the Civil and Technical design for the Main Linac
 - **Mountainous site with horizontal access and using RDR HLRF**
 - **Flat site allowing vertical access and using KCS HLRF**
- We need to use consistent language, titles, and document organization in order to make things easier for readers to identify the relevant pieces
 - **Affects: HLRF, ML layout, CF&S, cryo, IR hall, cost & schedule**

- The plan is to organize the document from a siting-centric viewpoint
 - **Eg HLRF chapter will be divided into two main sections:**
 - HLRF for mountain region site with horizontal access
 - HLRF for flat site with vertical access
 - **Authors should keep in mind any siting-sensitive issues**

[How to deal with other specific siting issues, eg. a slope in the main linac..?]

How much detail?

- Page counts allocated to each section should provide strong initial guidance on the level of detail expected
 - Part-I (R&D)
 - **Scope is similar to the Interim Report, but should be expanded to include conclusions and supporting material for Part-II**
 - Part-II
 - **Use appropriate balance and level of detail and content**
 - **Support design Documentation database in EDMS and be referenced**
- Specific guidance from EC on the appropriate balance and level of detail will be very important**
- Ultimately it will be down to the editing process to achieve the desired balance and coherence





Process for EC sign-off



Editing process

- Individual editors assigned to a chapter
- First round editing done by the assigned editor
- Goal for second round of editing the goal is to take a broader look at the content across chapters
- Part of TEB webex meeting agendas: review of content and issues chapter by chapter



Mechanics for sign-off process

- All the working documents are accessed through the TDR portal on Forge (<http://forge.linearcollider.org/tdr>)
 - **There is an EC shared account (cf email from Barry containing links to TDR snapshot)**
- During editing process, we have Revision Management (SVN), but chose not to have formal Change Control
- For EC formal sign-off and Change Control, submit the active version to EDMS
 - **...but only once the documents are in 'Release' status**
 - **Piece-meal sign-off is doable (see later). But implicitly requires a two-stage sign-off process through EDMS**



Proposed timeline for EC review / sign-off

	12 July	31 July	14 weeks	20 Oct	Mid Nov	End Nov	
Feedback from EC on balance and level of detail							
Editing							
EC/TEB joint review & revise							
TDR source goes into EDMS							
EC formal sign-off							
Submit to PAC							

Some issues

- Giving guidance on balance & details without all material
- Assume separate review process for Costs, integrate later
- Some material may arrive in Oct, eg new FLASH results



Piece-meal review & sign-off..?

- Important that we don't lose the bigger picture
 - **Section by section: No**
 - Too fine could miss the broader context and overall tone)
But it's important to make sure have the details correct
 - **Part by Part (TDR1, TDR2):**
 - Obviously! Overall tone of document, presentation, etc
 - But pragmatically, also need to review finer details
- Proposed: use groupings of chapters/sections that together make up one of either:
 - **Accelerator**
 - **CFS**
 - **SCRF/ML**



Subsets for sign-off... ?

This is the content that defines the ILC

TDR1

TDR2

1.Introduction
2.Evolution of the ILC design

3.SCRF
– **Cavities, CMs, HLRF**
– **S1-Global**

4.Beam Test Facilities
– **FLASH**
– **Fermilab NML**
– **Quantum Beam**

– **CesrTA**
– **ATF2**

5.Accelerator Systems R&D

6.CFS

7.Post-TDR R&D

8.Summary

01.Introduction
02.Layout

03.SCRF Linac Technology
04.ML layout for a flat topography
05.ML layout for a mountain topography

06.Esource
07.Psource
08.Damping Ring
09.RTML
10.BDS

11.Global Technical Systems
12.Commissioning, Ops, Availability

13.CFS

Installation, Survey & Alignment

14.Upgrade

15.Post-TDR Engineering, Risk Mitigation

16.Project Implementation Planning

17.Cost & Schedule

18.Summary



Policy questions



Policy on References...?

- Longevity of references is important!
 - **Already, some important RDR references are gone!**
- Goal: references should still be available in 10yrs, ie
 - **Journal references**
 - **Permanent URL (such as a DOI, arXiv, JACoW), or a (DESY) EDMS ID**
 - **No more references a la "*XYZ consultants: 'a very expensive report,' unpublished*"**
- References that are less likely to be permanent..?
 - **Put into EDMS and reference EDMS number?**
 - **Raises issues of copyright and ownership**



Publication items to be addressed

- Eventually, will need to decide details of the final TDR
 - **Typsetting, where document will be printed, print quality, etc. Takes time, but don't need to decide yet**
 - **Format and forum for electronic / online formatting etc**
- What about the form of the released draft to PAC and other review committees?
 - **Making it available in electronic form (pdf) is clear**
 - **E-book publishing**
 - **Will need to decide on level of public access**
 - **Plan on a limited number of printed copies?**
 - Presumably yes, but the 'economy' version



Who's on the author list?

- For RDR, was very time-consuming right down to the last minute to get the right list of authors and institutions
- Will need to consider our policy on authorship and institutional credit for TDR
- What about for the released draft?



TDR preparation status, editing, issues...



Editing process

- Individual editors assigned to a chapter
- First round editing done by the assigned editor
- Goal for second round of editing the goal is to take a broader look at the content across chapters
- Part of TEB webex meeting agendas: review of content and issues chapter by chapter
 - **So far, have covered TDR2-CFS**
 - **Almost ready for TDR1-SCRF (looks good)**

Pdf packages emailed earlier in the week show exactly what we have

... status by chapter and section over next three slides



Status by section (TDR1)

#	Subject	Content Author	Editing status	Content Editor	Source
TDR1 - 1.Introduction (1)					
188	All Sections	Nicholas Walker	2. Ready for editing	Hitoshi Hayano	TeX
TDR1 - 2.Evolution of the ILC design ... (1)					
250	Section: All Sections	Nicholas Walker	2. Ready for editing	Eckhard Elsen	TeX
TDR1 - 3.SCRF (8)					
201	Section: R&D towards mass-production and design for manufacture	Jim Kerby	3. With Editors	Eckhard Elsen	TeX
200	Section: RF power generation and distribution	Shigeki Fukuda	3. With Editors	Eckhard Elsen	TeX
199	Section: Cryomodule, cryogenic thermal balance, and quadrupole R&D	Paolo Pierini	3. With Editors	Eckhard Elsen	TeX
198	Section: The S1-Global experiment	Hitoshi Hayano	3. With Editors	Eckhard Elsen	TeX
197	Section: Cavity Integration	Hitoshi Hayano	3. With Editors	Eckhard Elsen	TeX
196	Section: High-gradient SCRF cavity R&D and the yield evaluation	Rongli Geng	3. With Editors	Eckhard Elsen	TeX
194	Section: Development of worldwide SCRF R&D infrastructure	Jim Kerby	3. With Editors	Eckhard Elsen	TeX
117	Section: Overview	Akira Yamamoto	3. With Editors	Eckhard Elsen	TeX
TDR1 - 4.Beam Test Facilities (6)					
224	Section: ATF2	Toshiaki Tauchi	0. Not received	Kaoru Yokoya	
206	Section: Quantum Beam experiment	Hitoshi Hayano	2. Ready for editing	Hitoshi Hayano	Word
205	Section: Fermilab-NML beam facility	Mike Church	2. Ready for editing	Hitoshi Hayano	Word
204	Section: CesrTA and electron-cloud R&D	Mark Palmer	0. Not received	Kaoru Yokoya	
203	Section: FLASH '9mA' Experiment	John Carwardine	0. Not received	Hitoshi Hayano	
202	Section: Overview	Marc Ross	0. Not received	Hitoshi Hayano	
TDR1 - 5.Accelerator Systems R&D (6)					
227	Section: Beam Dynamics (simulations)	Toshiaki Tauchi	0. Not received	Kaoru Yokoya	
226	Section: Beam Delivery System (MDI)	Andrei Seryi	0. Not received	Kaoru Yokoya	
225	Section: Damping Ring	Susanna Guiducci	3. With Editors	Kaoru Yokoya	Word
187	Section: Positron Source	Wei Gai	3. With Editors	Kaoru Yokoya	Word
186	Section: Electron Source	John Sheppard	3. With Editors	Kaoru Yokoya	Word
120	Section: Overview	Marc Ross	0. Not received	Kaoru Yokoya	
TDR1 - 6.CFS (1)					
267	Section: All Sections	Vic Kuchler	4. Edited / In Review	Mike Harrison	Word
TDR1 - 7.PostTDR (1)					
209	All Sections	Marc Ross	2. Ready for editing	Hitoshi Hayano	Word
TDR1 - 8.Summary (1)					
210	All Sections	Nicholas Walker	0. Not received	Eckhard Elsen	



Status by section (TDR2) (1)

#	Subject	Content Author	Editing status	Content Editor	Source
TDR2 - 01.Introduction (1)					
71	All Sections	Ewan Paterson	4. Edited / In Review	Nan Phinney	TeX
TDR2 - 02.Layout (1)					
100	All Sections	Nicholas Walker	4. Edited / In Review	Nan Phinney	TeX
TDR2 - 03.SCRF Linac Technology (7)					
171	Section: Cavity and cryomodule test	Hitoshi Hayano	0. Not received	Chris Adolphsen	
170	Section: Low-level RF control concept	John Carwardine	1. Received	Chris Adolphsen	TeX
169	Section: RF power source	Shigeki Fukuda	3. With Editors	Chris Adolphsen	Word
168	Section: Cryomodule design including quadrupole and cryogenic systems	Paolo Pierini	0. Not received	Chris Adolphsen	
167	Section: Cavity integration (couplers, tuners, etc)	Hitoshi Hayano	0. Not received	Chris Adolphsen	
166	Section: Cavity performance and production specifications	Akira Yamamoto	3. With Editors	Chris Adolphsen	Word
165	Section: Main Linac top-level parameters and general layout	Chris Adolphsen	0. Not received	Nicholas Walker	
TDR2 - 04.ML layout for a flat topography (3)					
107	Section: Low-Level RF for Klystron cluster scheme	John Carwardine	0. Not received	Chris Adolphsen	
104	Section: Klystron cluster scheme RF power distribution system	Chris Nantista	3. With Editors	Chris Adolphsen	Word
101	Section: Layout	Chris Adolphsen	0. Not received	Nicholas Walker	
TDR2 - 05.ML layout for a mountain topography (3)					
106	Section: Low-Level RF for Distributed klystron scheme	John Carwardine	0. Not received	Chris Adolphsen	
105	Section: Distributed klystron scheme RF power distribution system	Shigeki Fukuda	3. With Editors	Chris Adolphsen	Word
102	Section: Layout	Chris Adolphsen	0. Not received	Nicholas Walker	
TDR2 - 06.Esource (1)					
260	All Sections	John Sheppard	3. With Editors	Nan Phinney	TeX
TDR2 - 07.Psource (1)					
239	Section: All Sections	Wei Gai	3. With Editors	Nan Phinney	Word
TDR2 - 08.Damping Ring (1)					
247	All Sections	Mark Palmer	3. With Editors	Nan Phinney	TeX
TDR2 - 09.RTML (1)					
252	Section: All Sections	Nikolay Solyak	3. With Editors	Nan Phinney	TeX
TDR2 - 10.BDS (3)					
296	Section: All Sections	Andrei Seryi	0. Not received	Phil Burrows	
160	Section: High-power beam dumps	Andrei Seryi	0. Not received	Phil Burrows	
156	Section: IR layout and MDI	Andrei Seryi	0. Not received	Phil Burrows	



Status by section (TDR2) (2)

#	Subject	Content Author	Editing status	Content Editor	Source
TDR2 - 11.Global Technical Systems (3)					
185	Section: Global Control System	John Carwardine	1. Received		TeX
184	Section: Dumps and colimators	Marc Ross	0. Not received		
116	Section: Instrumentation and feedback	Marc Ross	0. Not received		
TDR2 - 12.Commissioning, Operations, and Availability (5)					
136	Section: Operability	Marc Ross	0. Not received		
135	Section: Machine Protection	Marc Ross	0. Not received		
134	Section: Radiation shielding and PPS zones	Marc Ross	0. Not received		
133	Section: Commissioning	Marc Ross	0. Not received		
108	Section: Availability	Marc Ross	0. Not received		
TDR2 - 13.CFS (4)					
293	Section: All Sections	Vic Kuchler	1. Received	Phil Burrows	Word
164	Section: Installation	Fred Asiri	1. Received	Phil Burrows	Word
132	Section: Construction Schedule	John Osborne	1. Received	Phil Burrows	Word
131	Section: Alignment and Survey	John Osborne	1. Received	Phil Burrows	Word
TDR2 - 14.Upgrade (4)					
163	Section: Schedule and estimated cost	Nicholas Walker	0. Not received	Kaoru Yokoya	
162	Section: Energy (TeV) upgrade	Nicholas Walker	0. Not received	Kaoru Yokoya	
161	Section: Luminosity upgrade	Nicholas Walker	0. Not received	Kaoru Yokoya	
111	Section: Overview	Nicholas Walker	0. Not received	Kaoru Yokoya	
TDR2 - 15.Post-TDR (4)					
180	Section: Technical Risk assessment	Marc Ross	0. Not received	Nicholas Walker	
179	Section: Scope of remaining engineering	Marc Ross	0. Not received	Nicholas Walker	
178	Section: Remaining R&D issues	Marc Ross	0. Not received	Nicholas Walker	
110	Section: Maturity of design	Marc Ross	0. Not received	Nicholas Walker	
TDR2 - 16.PIP (1)					
114	All Sections	Mike Harrison	1. Received	Phil Burrows	Word
TDR2 - 17.Cost (3)					
183	Section: Construction schedule	Gerry Dugan	0. Not received	Nan Phinney	
181	Section: Value Estimate for the construction of the ILC	Gerry Dugan	0. Not received	Nan Phinney	
109	Section: Value Estimate methodology	Gerry Dugan	0. Not received	Nan Phinney	
TDR2 - 18.Summary (1)					
115	All Sections	Nicholas Walker	0. Not received	Nicholas Walker	



Content organization issues

- TDR2 Main Linac now organized into three chapters:
 - **Common SCRF technology**
 - **Main Linac site specific designs (Flat + Mountain)**
 - **We need to see how this works out in terms of flow**
- Still some chapters without clear scope:
 - **Commissioning/Ops/Availability**
 - **Global Technical Systems**
- Sections in CFS that should be separated:
 - **Installation -> separate chapter, per RDR?**
 - **Survey & Alignment -> Separate chapter, per RDR?**
 - **Construction schedule -> move to Cost Chapter?**

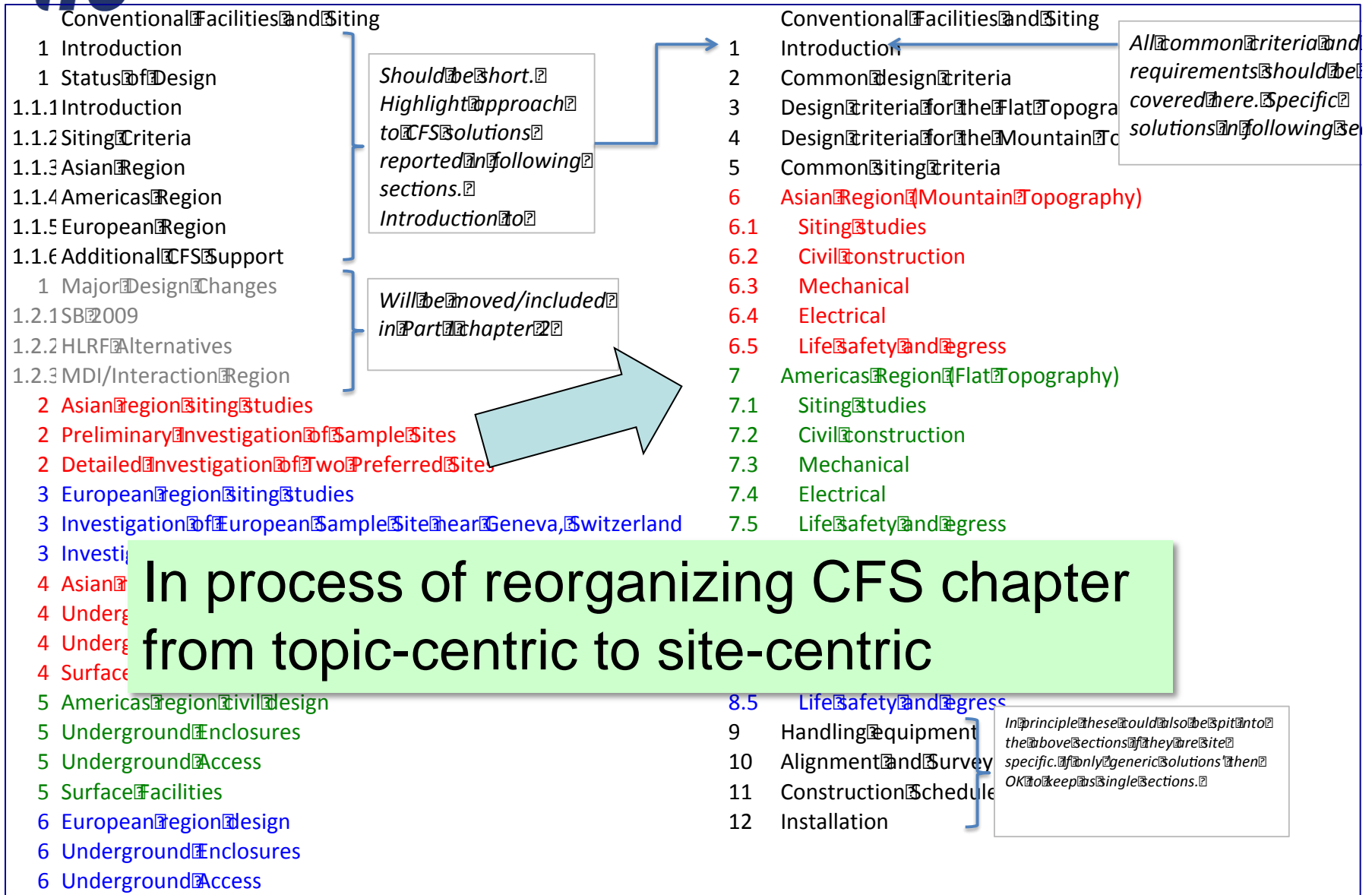


CFS

- Will be a lot of work! (Expected, given RDR experience)
- Far too much material (88 pages vs 38 assigned)
- TDR presents two two siting concepts: Flat, Mountain
- But there are three CFS site-specific designs
 - **Americas, European, Asian**
 - **None of the regions was able to cover all design topics**
 - **Makes organization of material rather difficult**



CFS chapter being revamped





Technical Editing issues

- Technical Editing – a huge task
 - **Templates, tools, resource management**
 - **Address technical issues with the submissions**
 - Figures and images, text, references and links
 - File conversions and integration (eg Word to LaTeX)
 - **Versioning and repository management (SVN)**
 - **Assembly of document packages**
- Final document will be in TeX
 - **Unfortunately (for the Technical Editors), more than half the submissions are in MS Word**
 - **Migrating Word docs to TeX as feasible**



Dealing with Figures

Chapter	# Figs	Part II Introduction	2
TDR 1 Introduction	1	TDR 2 General parameters and systems overview	18
Evolution of the ILC design in the Technical Design	3	SCRF Main Linacs	2
Superconducting RF technology	90	Main linac layout for a flat topography	7
Beam Test Facilities	21	Main linac layout for a mountain topograp	0
Accelerator Systems R&D	37	Electron source	6
Conventional Facilites and Siting Studies	3	Positron source	14
Post-TDR	0	Damping Rings	19
Summary	0	RTML	10
	155	Beam Delivery System and MDI	0
		Global Technical Systems	4
		Commissioning, Operations, and Availabilit	0
		CFS	77
		Upgrade options	0
		Scope of post-TDR engineering	0
		PIP	5
		Cost and Schedule	0
		Summary	0
			164

Received so far...

- Many figures are not of publication quality
- We may still be working on the figures beyond December



Finally

- **Are we going to make December?**
 - **We have a lot of work ahead of us, but Yes!**
 - **... may need flexibility on tech editing items in Dec draft**
- An interactive iterative review & sign-off between EC and editors is proposed, to formally begin at Arlington
 - **Based on larger not smaller subdivisions – don't want to lose the second-level editing step**
- Feedback is requested from EC on the general level of content, balance,...
- Active participation of EC members in the process is much appreciated and very welcome