

Design Integration and Configuration Management

Benno List
DESY



LINEAR COLLIDER COLLABORATION
Designing the world's next great particle accelerator



Technical Design Documentation

- TDD: The complete set of documents, CAD models and drawings that represent the design as described in the TDR
 - EDMS is used to store the TDD
 - TDD as we have it now was a result and deliverable of the Technical Design Phase II
 - The TDD must be maintained and elaborated in the Preconstruction Phase
 - > this needs a systematic approach:
- Configuration Management**

Assembling the TDD was a lot of work

Put. These. Info. EDMS. Now.

9/27/2011

B. List: EDMS for CFS

2011: Gentle persuasion

EDMS: ILC TDR Design Register

9/4/2014

BDS Lattice Review / M. Woodley

2014: Satisfied customers



Power Point is no Documentation



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The authors presented their preliminary analysis at a round table discussion at the 1998 Annual Meeting of the American Political Science Association. When presenting their analysis, the authors were informed that the information they presented was considered to be in a manner that violated confidentiality. The authors are currently working to address this issue. The authors are currently working to address this issue.

The slide covered the levels of literacy, identified by the title and the symbols on the end of each line. These levels presented a hierarchy that was clearly contained in 1-3 single sentences. Indication marks that the title is containing "Review of last time follows classroom on" refers to the pre-defined list change, but to the choice of the words used to predict the answer.

Only at the bottom of the slide development slide story page, did I find a note that some of the slides had been checked by a student. I then looked at the data and noticed that the model on which arguments based their damage assessments. I then noticed a comment that the slides stayed very similar 400 times longer. This comment led me to suggest that a more appropriate label for the slide would be "Review of the Data Analysis: Evaluation of the Model."¹⁰

[illegible]

As information is provided up an organization hierarchy, from people who are closest to the data, managers to high level leaders, they are gathering and interpreting information to fit needs of the decision maker, it is easy to understand how a senior manager might use the PowerPoint slide and an executive level person a data management system.

At many points during its investigation, the Board was assisted in matters relating primarily to the use of NASA official property of individual agents. The Board reserves comments on the American Association's use of official property as a dissemination of the professional methods of technical surveillance to NASA.

The separate questionnaire results for "satisfaction" and "dissatisfaction" are shown in Table 1. As can be seen, the results are mixed. While satisfaction with the quality of the information is high, satisfaction with the quality of the information is low. This is due to the fact that the information is often outdated and the quality of the information is often poor. The results also show that the quality of the information is often poor. The results also show that the quality of the information is often poor.

The book is a collection of short stories and a few novellas that are as concerned with character as with "life's mysteries." As in the novel, Lewis takes pleasure in small but subtle details. (The last paragraph of the final story, "The Green," explains, barely words enough, as it appears in the text.)

The report provides information for students in management in the private sector who are considering the opportunities of the Information Technology industry. It also contains suggestions and advice which young managers in private industry can use to help them to develop their careers. The approach is to provide suggestions on important issues which students may face when considering the opportunities of the Information Technology industry. The advice was written specifically for the report and is not intended to be a guide to the industry or to the career opportunities available in it. The advice is intended to be a guide to the career opportunities available in the industry and to the career opportunities available in the industry.

There is a need for improved and accurate information on the extent of disease and the impact of disease on the environment. This is especially true for the emerging and re-emerging diseases that are currently a major public health concern. The World Health Organization (WHO) has estimated that there are 100 million people with infectious diseases, and that the number of deaths from infectious diseases is 10 million per year. The WHO has also estimated that the economic burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the environmental burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the social burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the cultural burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the political burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the economic burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the environmental burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the social burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the cultural burden of infectious diseases is \$100 billion per year. The WHO has also estimated that the political burden of infectious diseases is \$100 billion per year.

See Report of Columbia Accident Investigation Board, vol. 1, p. 191 at <http://caib.nasa.gov/news/report/volume1/default.html>

At many points during its investigation, the Board was surprised to receive similar presentation slides from NASA officials in place of technical reports. The Board views the endemic use of PowerPoint briefing slides instead of technical papers as an illustration of the problematic methods of technical communication at NASA.

The New York Times

Magazine

WOULD	U.S.	N.Y. / REGION	BUSINESS	TECHNOLOGY	SCIENCE	HEALTH	SPORTS	OPENING
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PowerPoint Makes You Dumb

By CLIVE THOMPSON
Published: December 14, 2000

In August, the Columbia Accident Investigation Board at NASA released Volume 1 of its report on why the space shuttle crashed. As appeared, the ship's foam insulation was the main cause of the disaster. But the board also fingered another unusual culprit: PowerPoint, Microsoft's well-known "slideshow" program.

NASA, the board argued, had become too reliant on presenting complex information via PowerPoint, instead of by means of traditional ink and paper technical reports. When NASA engineers assessed possible wing damage during the mission, they presented the findings in a confusing PowerPoint slide -- so crammed with nested bullet points and irregular short forms that it was nearly impossible to untangle. "It is easy to understand how a senior manager might read this PowerPoint slide and not realize that it addresses a life-threatening situation," the board sternly noted.

The analysis by Dr. Edward Feltz of the disc from the Dobson Assassination Team briefing, 100 The Grove Dr. (Dobson) is identical to



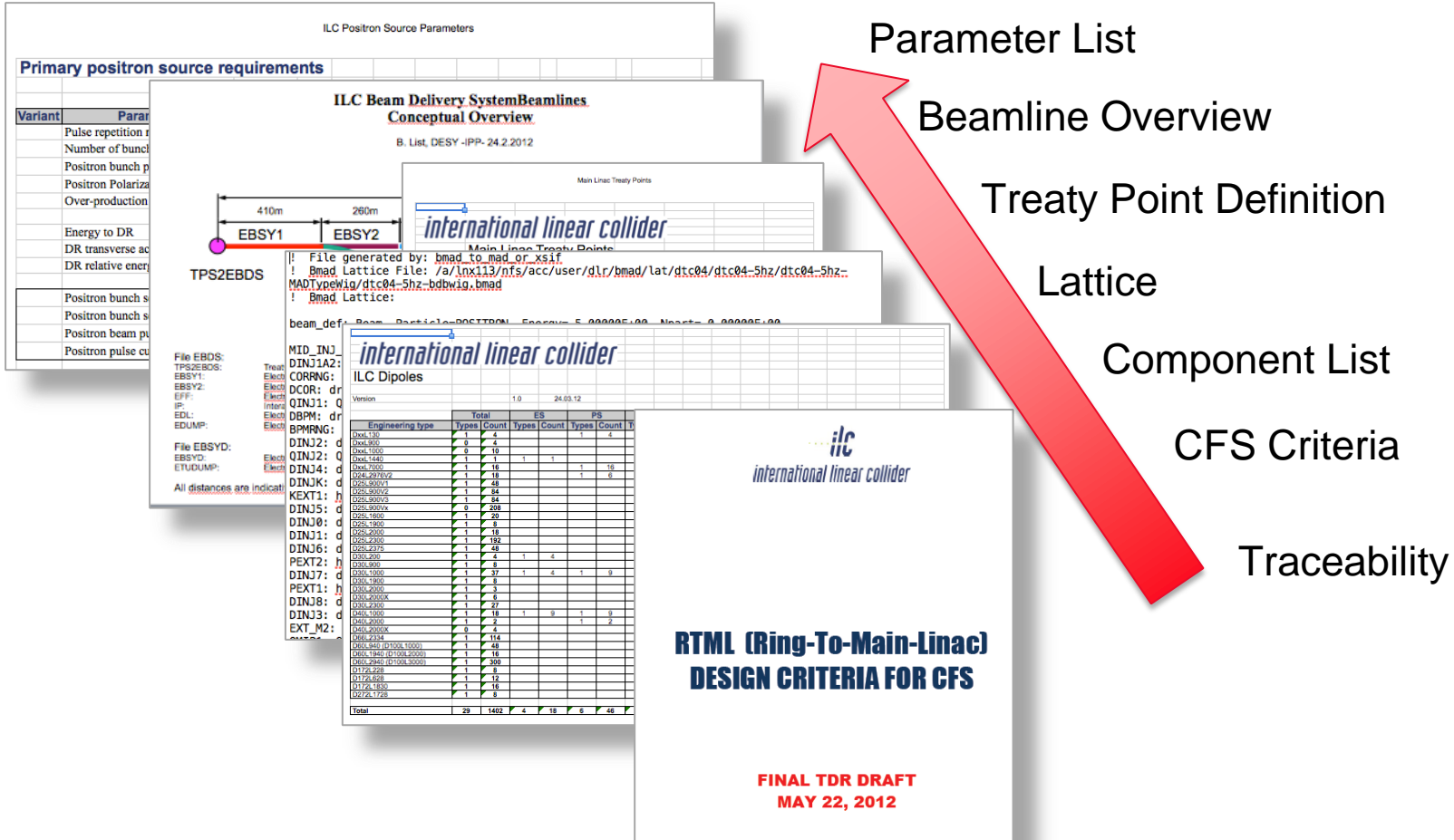
- Design Register: Lists status of beamline design and completeness of mandatory documents
- Defines the core of the baseline documentation
- Documents listed here (existing or newly prepared) are subject to Change Control

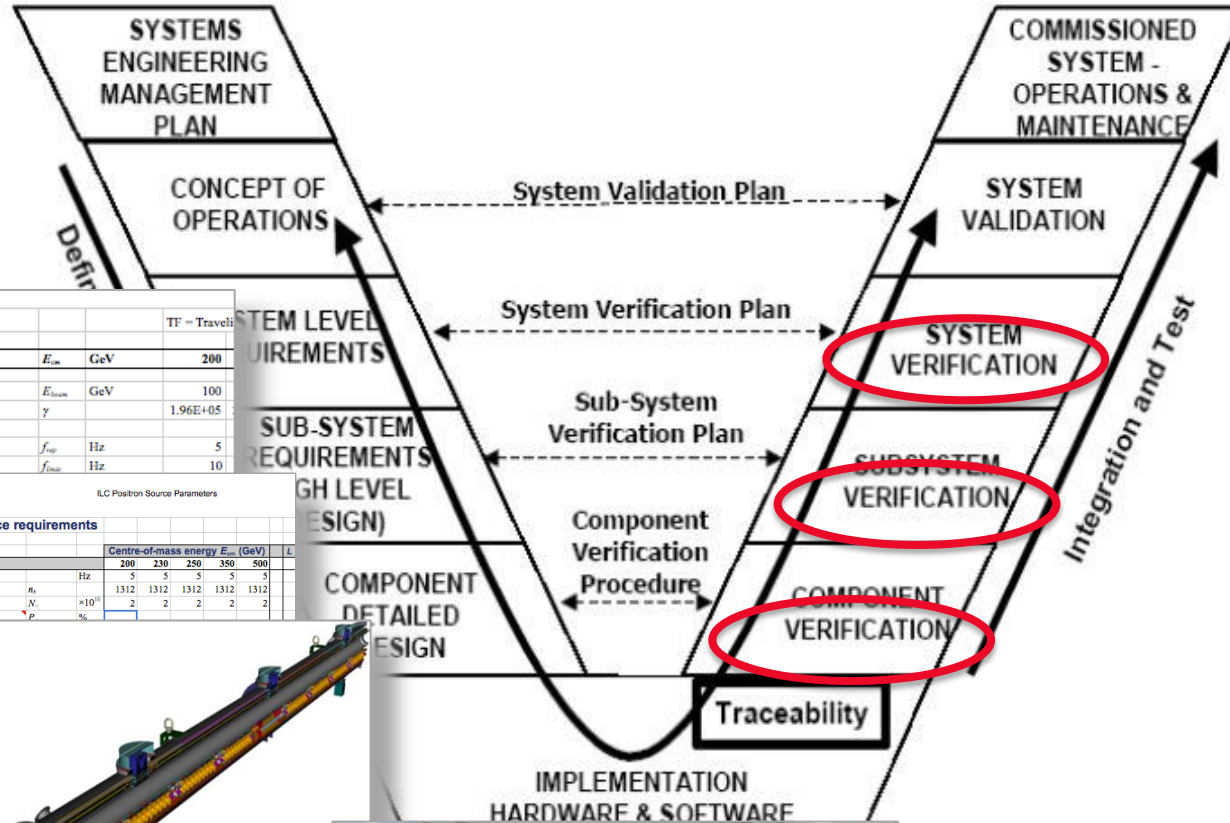
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
ID	Description	System	Class	Prim/Sec	Beam	Length	Int. length	z Pos./End	CFS location	Rem.	Lat. Stat.	Lat. Ref	Magnets	Mag. Ref.	PS
76	TEML2PS	Treaty Point E-ML to PS	PS	TREATY	PRIM	E	0.0	0.0	-3251	T-8	Complete	501			
77	EUPM	PS Undulator Protection and Matching	PS	BEAMLINE	PRIM	E	377.4	377.4	-2874	T-8, UJ-7	Complete	22	Concept	4, 3	
78	EUND	Undulator Section	PS	BEAMLINE	PRIM	E	359.3	736.7	-2568	UJ-7	Complete	22	Engineering	4, 3, 18	
79	MEUNDEND	Undulator End	PS	MARKER	PRIM	E	0.0	736.7	-2568	UJ-7, T-6	Complete	22	Concept	4, 3	
80	EDUMPEX	Dump Line Extraction Section	PS	BEAMLINE	PRIM	E	missing	missing	missing	T-6	Complete	22	Concept	4, 3	
81	EDOGL	PS Dogleg	PS	BEAMLINE	PRIM	E	423.6	1160.3	-2111	T-6, UJ-5	Complete	22	Concept	4, 3	
82	TPS2BDS	Treaty Point PS to BDS	PS	TREATY	PRIM	E	0.0	1160.3	-2111	UJ-5	Complete	501			
83															
84		Positron Source, Electron Secondary Beamlines	PS		SE										
85	TEML2PS	Treaty Point ML to PS	PS	TREATY	SE	1									
86	EFADL	PS Fast Abort Dump Line	PS	BEAMLINE	SE	2									
87	EFAD	PS Fast Abort Dump	PS	DUMP	SE	3									
88															
89	MEUNDEND	Undulator End	PS	MARKER	SE	5									
90	EPUNDDL	PS Post Undulator Dump Line	PS	BEAMLINE	SE	6									
91	DBETUD	BDS Tune-up Dump	BDS	DUMP	SE	7									
92															
93	BDS	Electron BDS Main Lines	BDS		PR	10									
94	TPS2BDS	Treaty Point PS to BDS	BDS	TREATY	PR	11									
95	EENMEA	Energy Measurement Chicane	BDS	BEAMLINE	PR	12									
96	ETUDEX	Marker Tuneup Dump Extraction	BDS	MARKER	PR	13									
97	ETUNL	Tuning Line	BDS	BEAMLINE	PR	14									
98	EPOL	Polarimeter Chicane	BDS	BEAMLINE	PR	15									
99	EBECOLL	Betatron Collimation	BDS	BEAMLINE	PR	16									
100	EENCOLL	Energy Collimation	BDS	BEAMLINE	PR	17									
101	EFFM	Final Focus Matching Section	BDS	BEAMLINE	PR	18									
102	EFFS	FF Energy Spectrometer	BDS	BEAMLINE	PR	19									
103	EFFD	Final Focus	BDS	BEAMLINE	PR	20									
104	IP	Treaty Point Interaction Point	BDS	TREATY	PR	21									
105	EMDUMPL	Electron Main Dump Line	BDS	BEAMLINE	PR	22									
106	EMDUMP	Electron Main Dump	BDS	DUMP	PR	23									
107															
108															

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Overview over Mandatory Documents																
Global																
Electron Source																
Positron Source																
Damping Ring																
RTML																
Main Linac																
BDS																
WBS																
System Overview																
Parameter List																
Beamline Description																
Beamline sketch																
Lattice																
Treaty Point Definitions																
Component List																
Component Specifications																
Heat Load Calculation																
CFS Criteria																
Cost Overview																

Overall TDD Status

- TDD incomplete in several areas due to lack of personpower during TDP-II
- New ADI team leaders should review baseline documentation available in their area
- Missing and incomplete documents should be provided
- We need a plan how to complete and evolve the design itself and its documentation in the preconstruction phase





IP and General Parameters

			TF = Travel
Centre-of-mass energy	E_{cm}	GeV	200
Beam energy	E_{beam}	GeV	100
Lorentz factor	γ		$1.96E+05$
Collision rate	f_{rep}	Hz	5
Electron linac rate	f_{linac}	Hz	10

ILC Positron Source Parameters

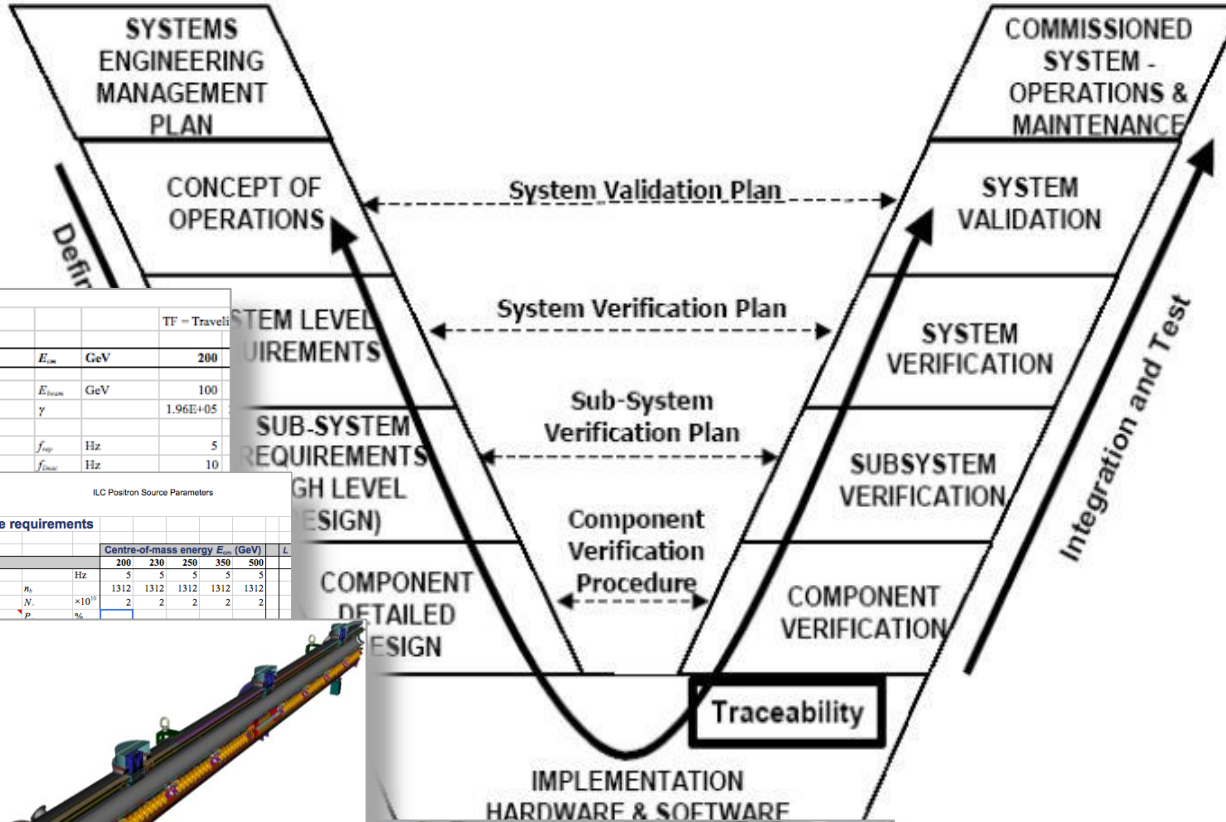
Primary positron source requirements

Variant	Parameter	200	230	250	350	500
	Pulse repetition rate	Hz	5	5	5	5
	Number of bunches		1312	1312	1312	1312
	Positron bunch population	N_b	$>10^{11}$	2	2	2
	Positron Polarization	p	%			
	Over-production margin					
	Energy to DR					
	DR transverse acceptanc					
	DR relative energy acc					
	Positron bunch separati					
	Positron bunch separati					
	Positron beam pulse let					



- System overview: what does the system do
- Beam line description: what is the purpose of each beam line section?
- Failure mode analysis: what can go wrong? What happens then? (Diagnosis, collimation, abort, damage to components)
- **Requirements:** what has each beam line to deliver?
- The make a design verifiable, one needs documented requirements.
- We need to ask ourselves: what have we forgotten? How can we be sure we have not forgotten anything (important)?

- Current parameter lists focus on typical operation parameters
- Maximum ratings almost nowhere specified
- Cf. any data sheet: operating range - absolute max ratings
- "Risks" are not always "threats", some are opportunities!
- Any "high risk" component has potential to perform better than design - can we make use of that?
- Example: if cavities perform at 35 MeV/m, can the Klystrons power them?
- Distinguish deliberate performance limitations (technological limits, costs) from accidental limits ("nobody told us to plan for that")



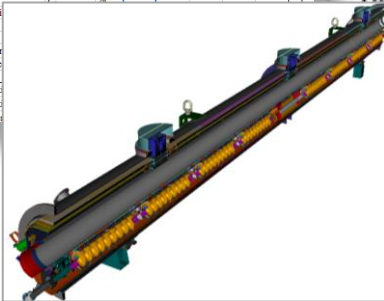
IP and General Parameters

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Centre-of-mass energy	E_{cm}	GeV	200
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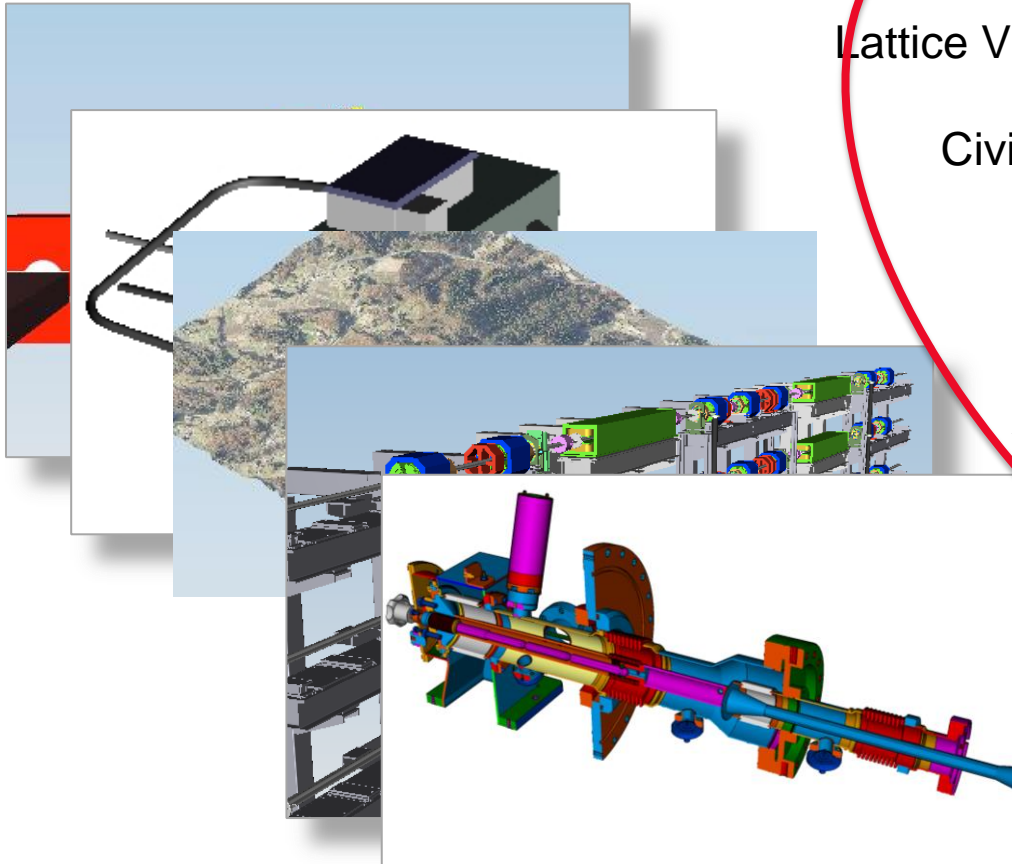
ILC Positron Source Parameters

Primary positron source requirements

Variant	Parameter	200	230	250	350	500
	Pulse repetition rate	5	5	5	5	5
	Number of bunches	1312	1312	1312	1312	1312
	Positron bunch population	$>10^{11}$	2	2	2	2
	Positron Polarization	%				
	Over-production margin					
	Energy to DR					
	DR transverse acceptanc					
	DR relative energy acc					
	Positron bunch separati					
	Positron bunch separati					
	Positron beam pulse let					



Examples of 3D Models



Lattice Visualization

Civil Facilities

Surface Models

Accelerator Sections

Components

Tie to documents!

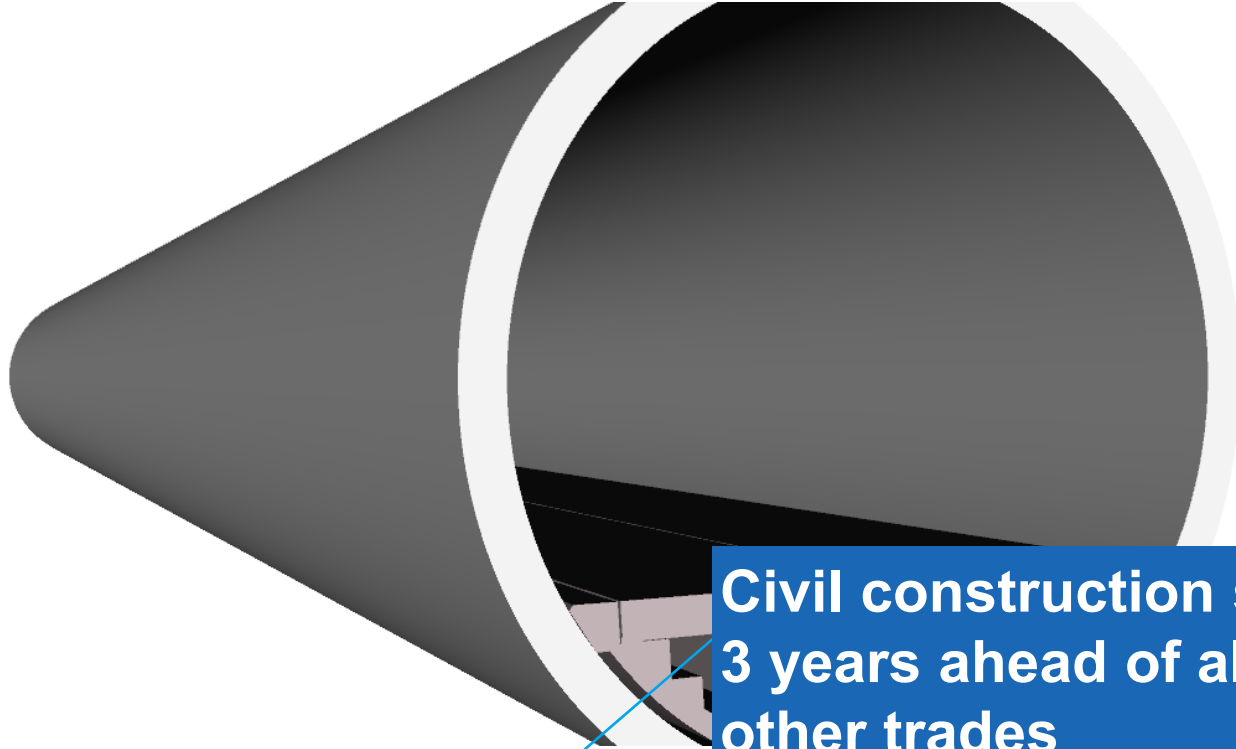
Integrate!

[illegible]

**RTML (Ring-To-Main-Linac)
DESIGN CRITERIA FOR CFS**

**FINAL TDR DRAFT
MAY 22, 2012**

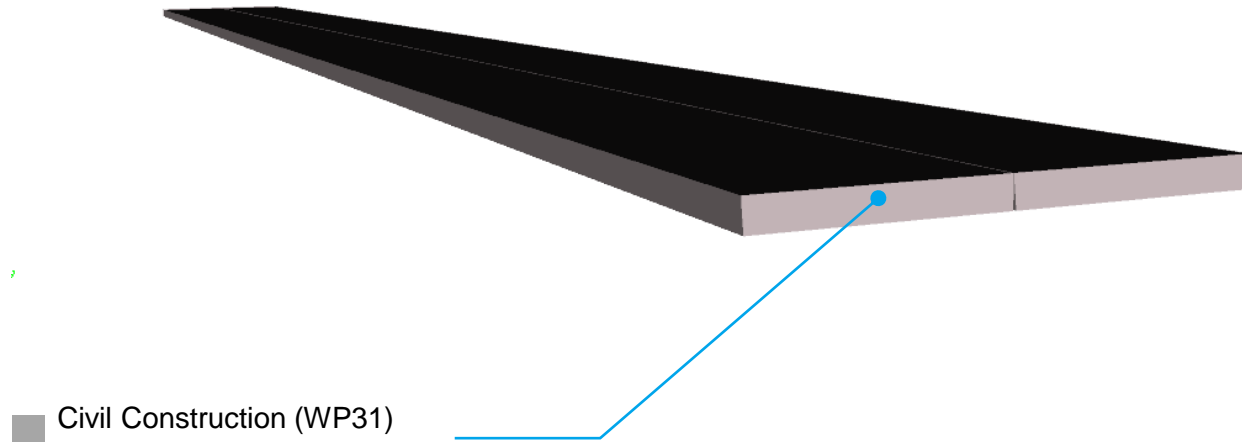
- **Design integration is a methodical process in which all design contributions are combined into a complete and consistent design for all stakeholders.**
- **We have achieved some integration between lattice, tunnels and caverns, and detectors.**
- **Underground structures are only partially available in 3d for the Japanese site. Complete 3d data would be helpful to review and improve the design.**
- **We need to make sure that all necessary connections to the surface (access tunnels) are foreseen.**



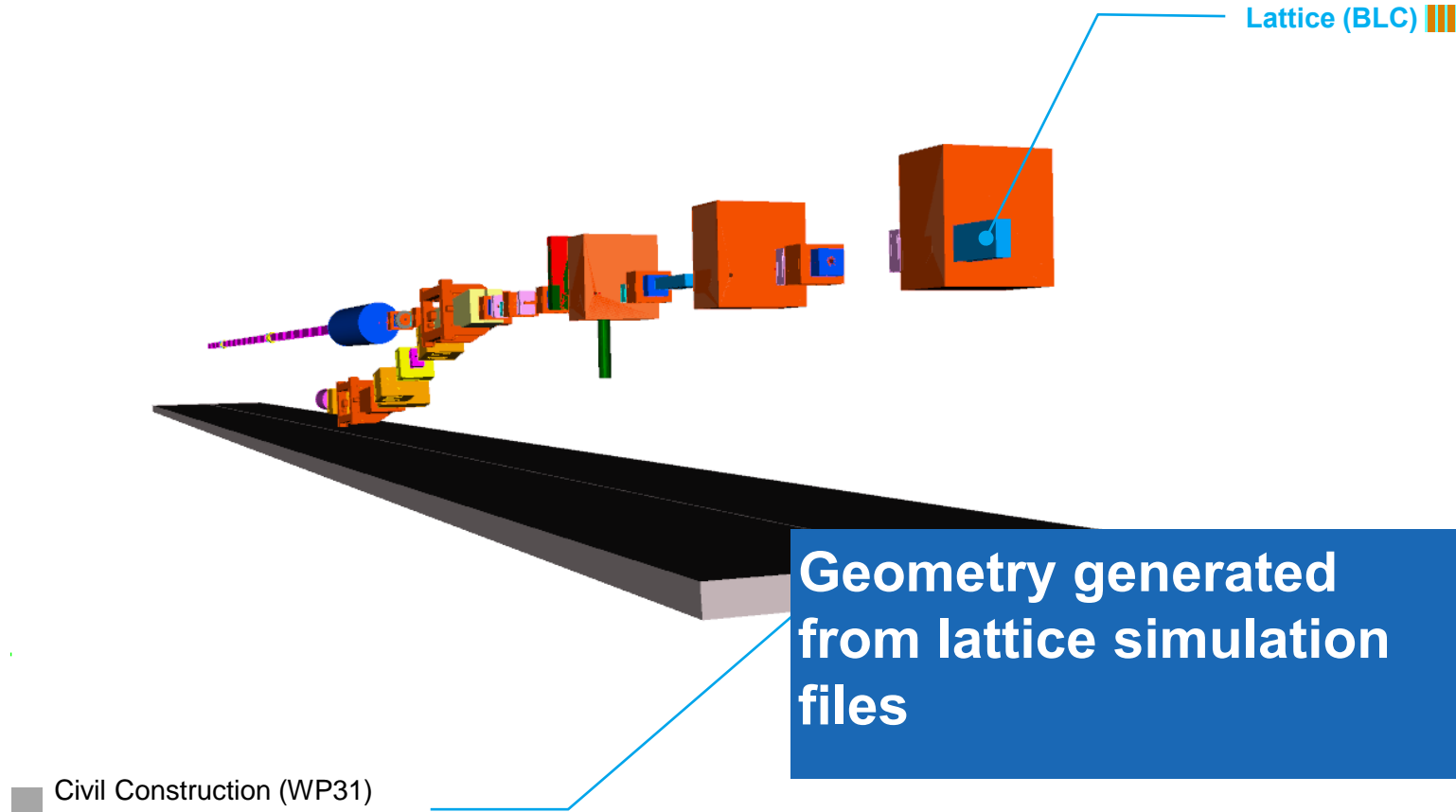
**Civil construction starts
3 years ahead of all
other trades**

■ Civil Construction (WP31)

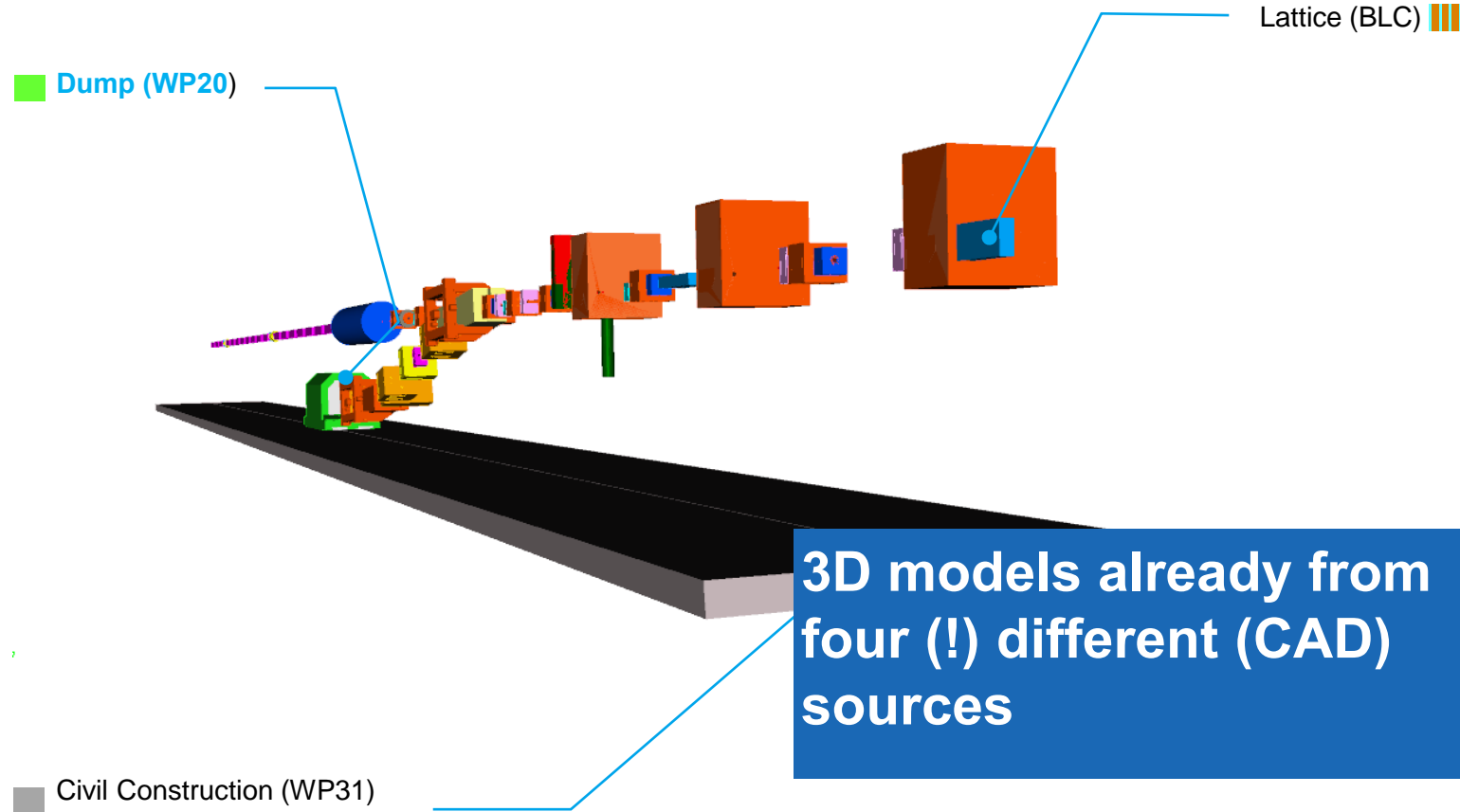
Design Integration at European XFEL



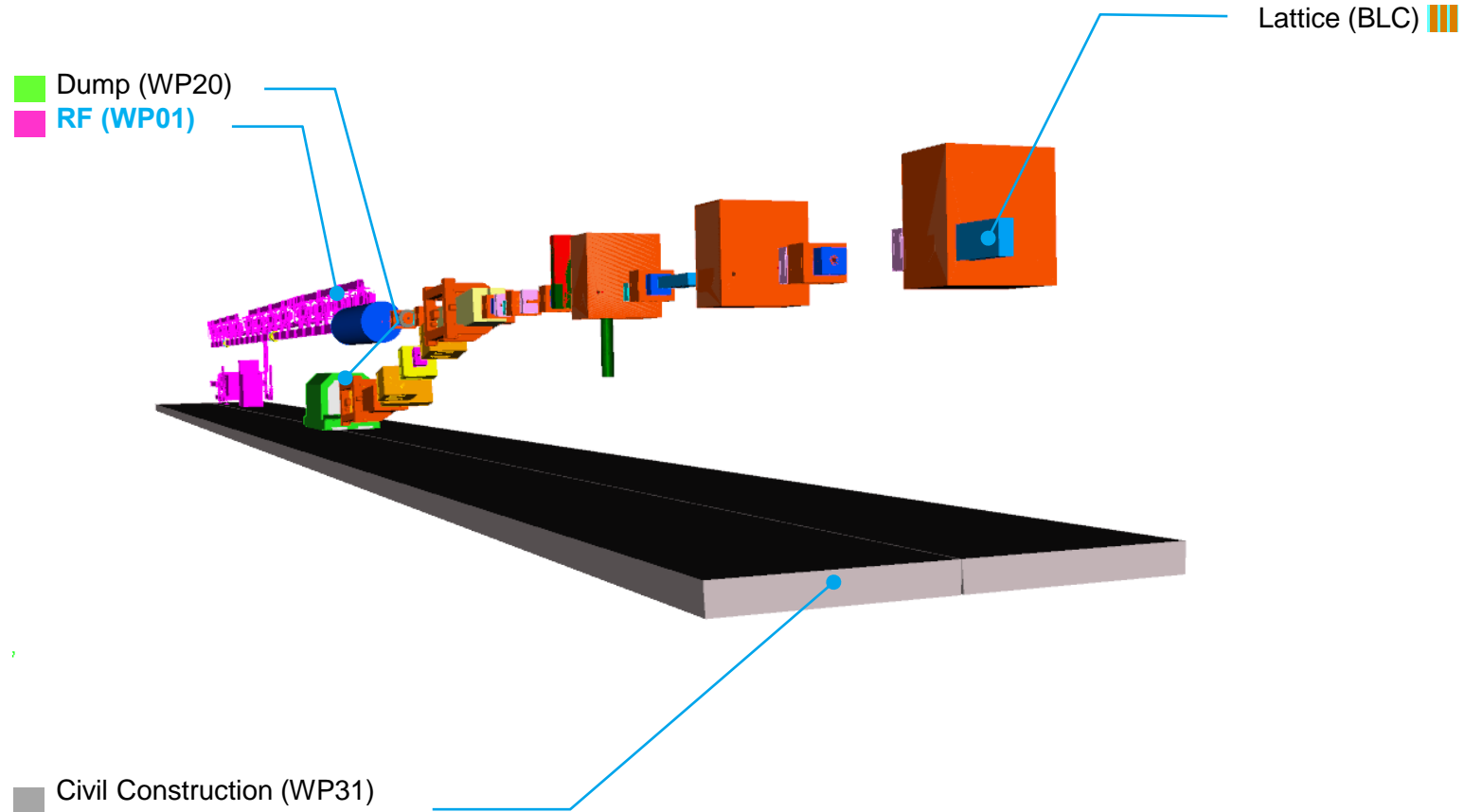
Design Integration at European XFEL



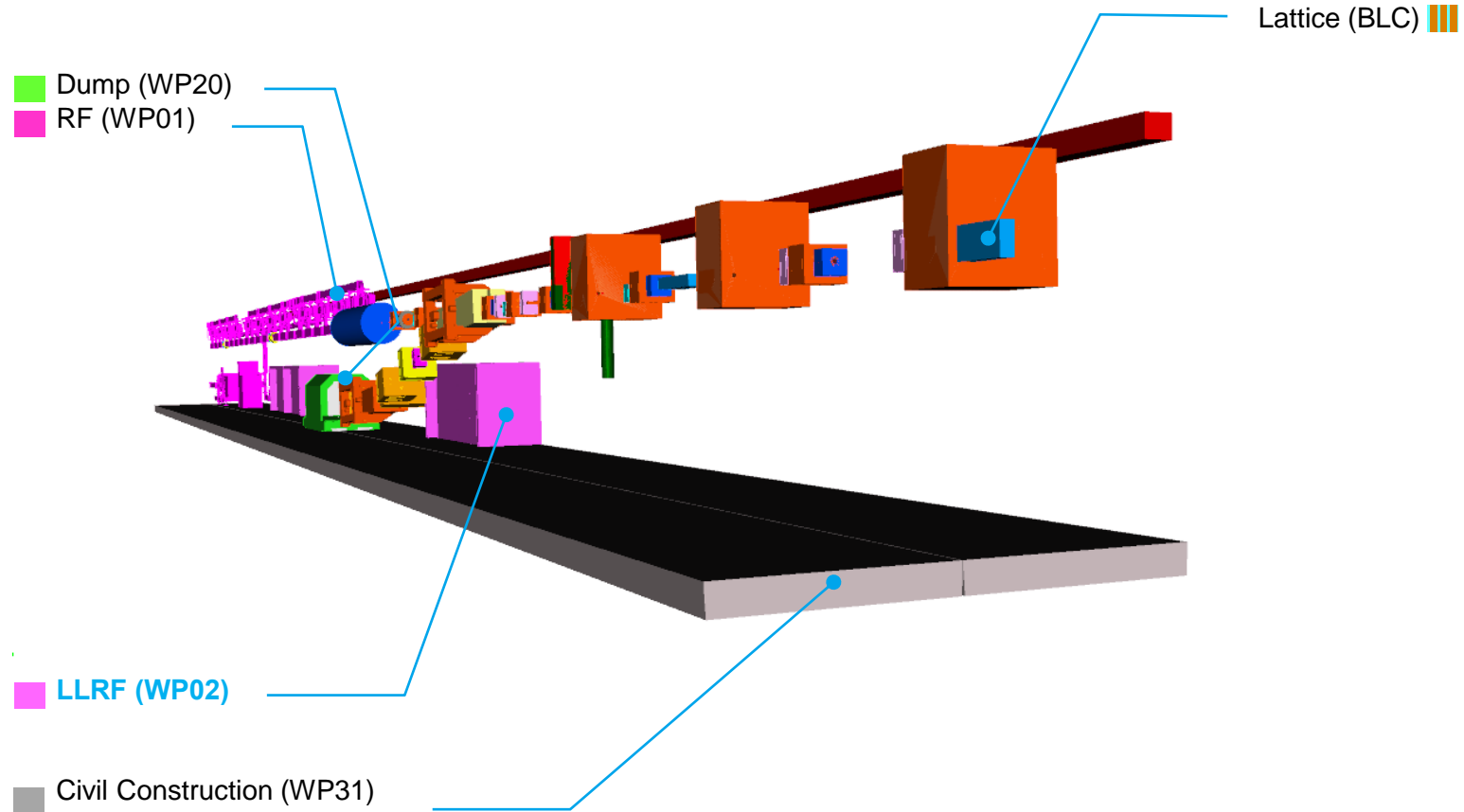
Design Integration at European XFEL



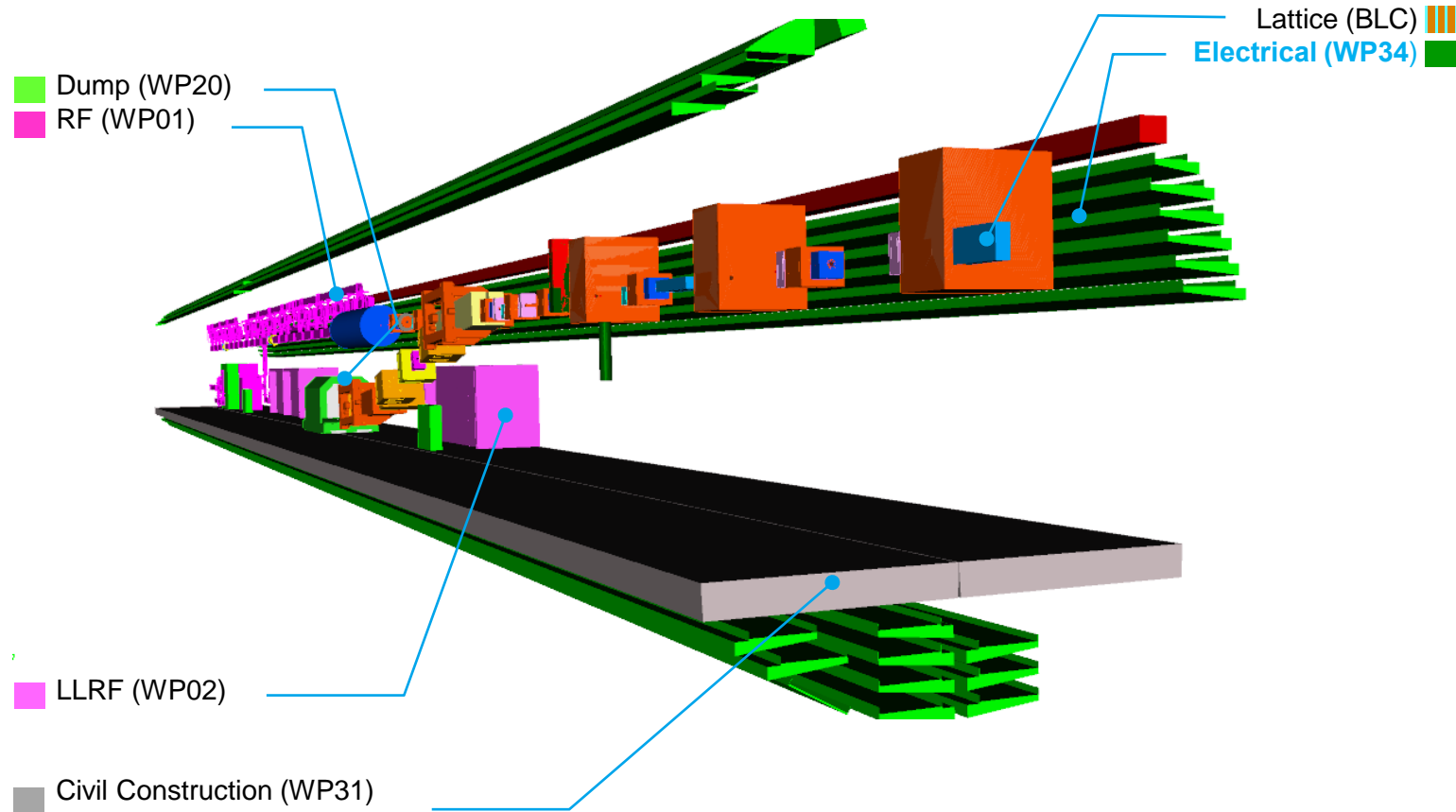
Design Integration at European XFEL



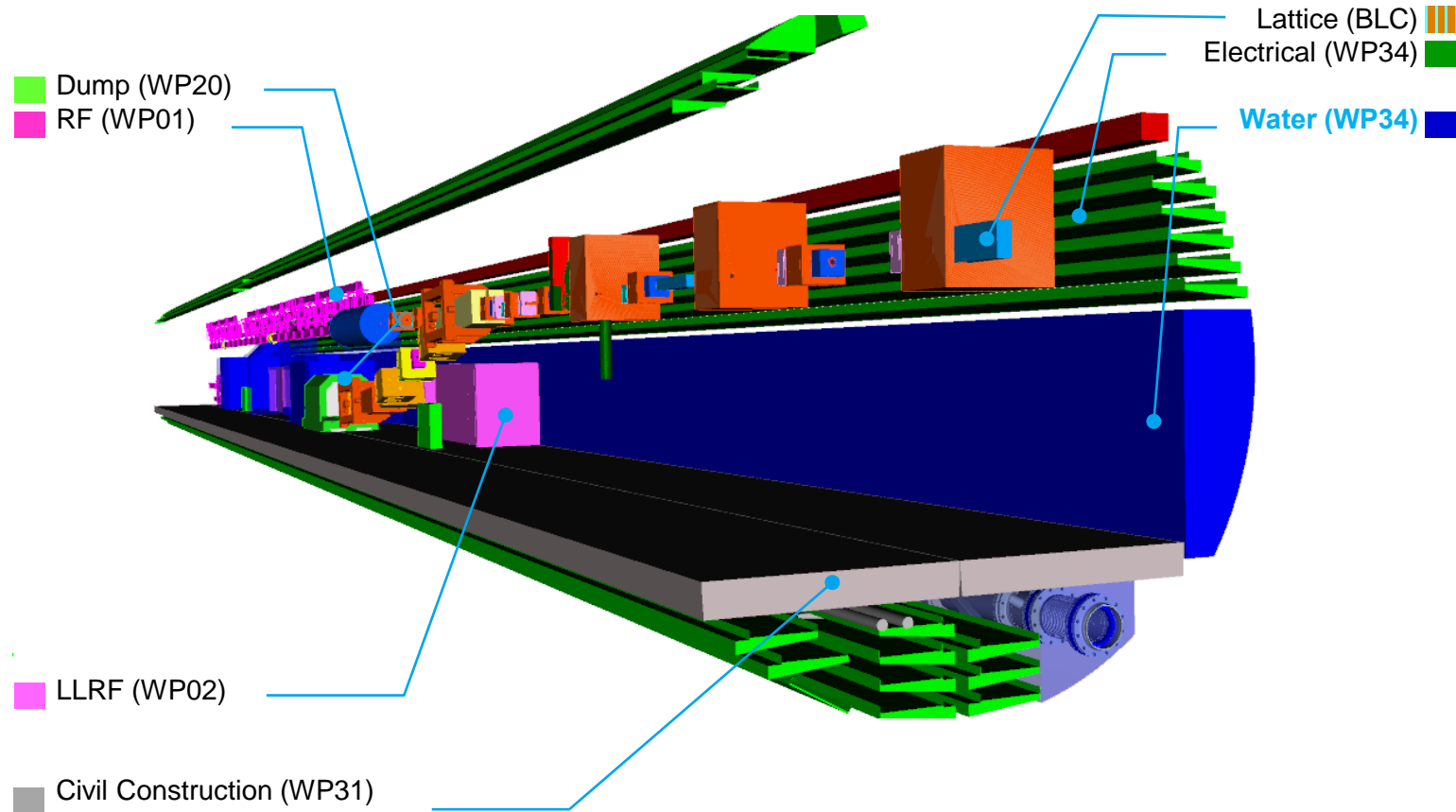
Design Integration at European XFEL



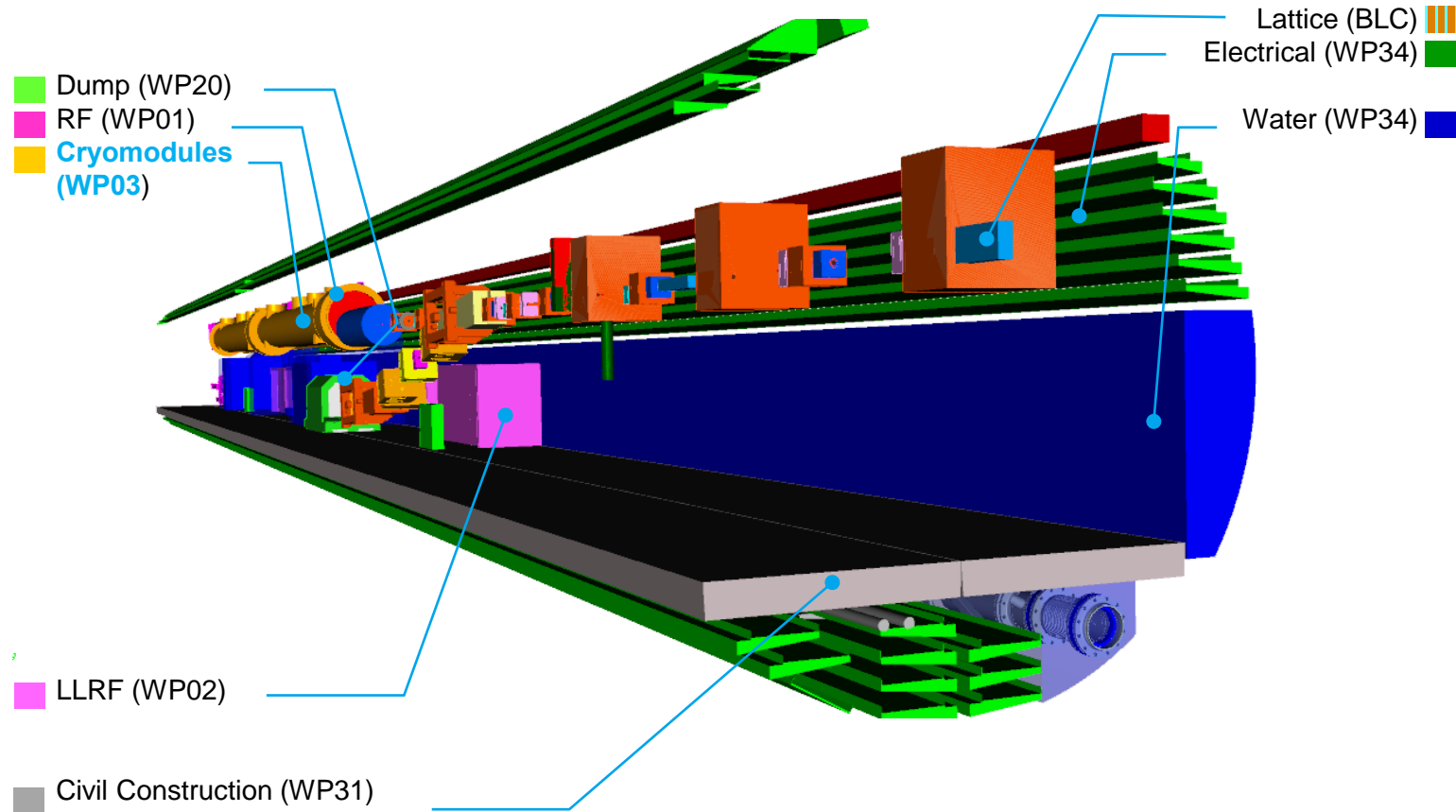
Design Integration at European XFEL



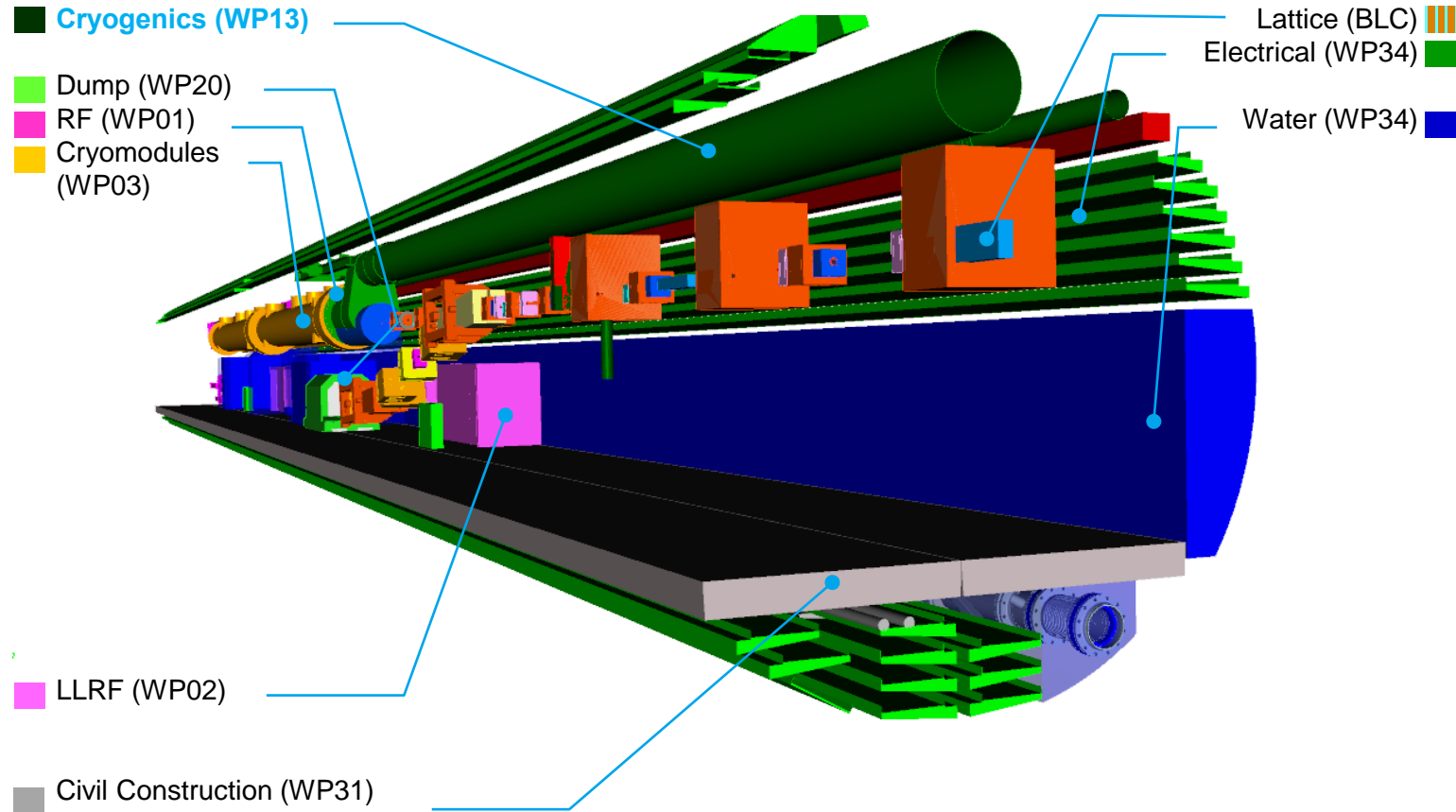
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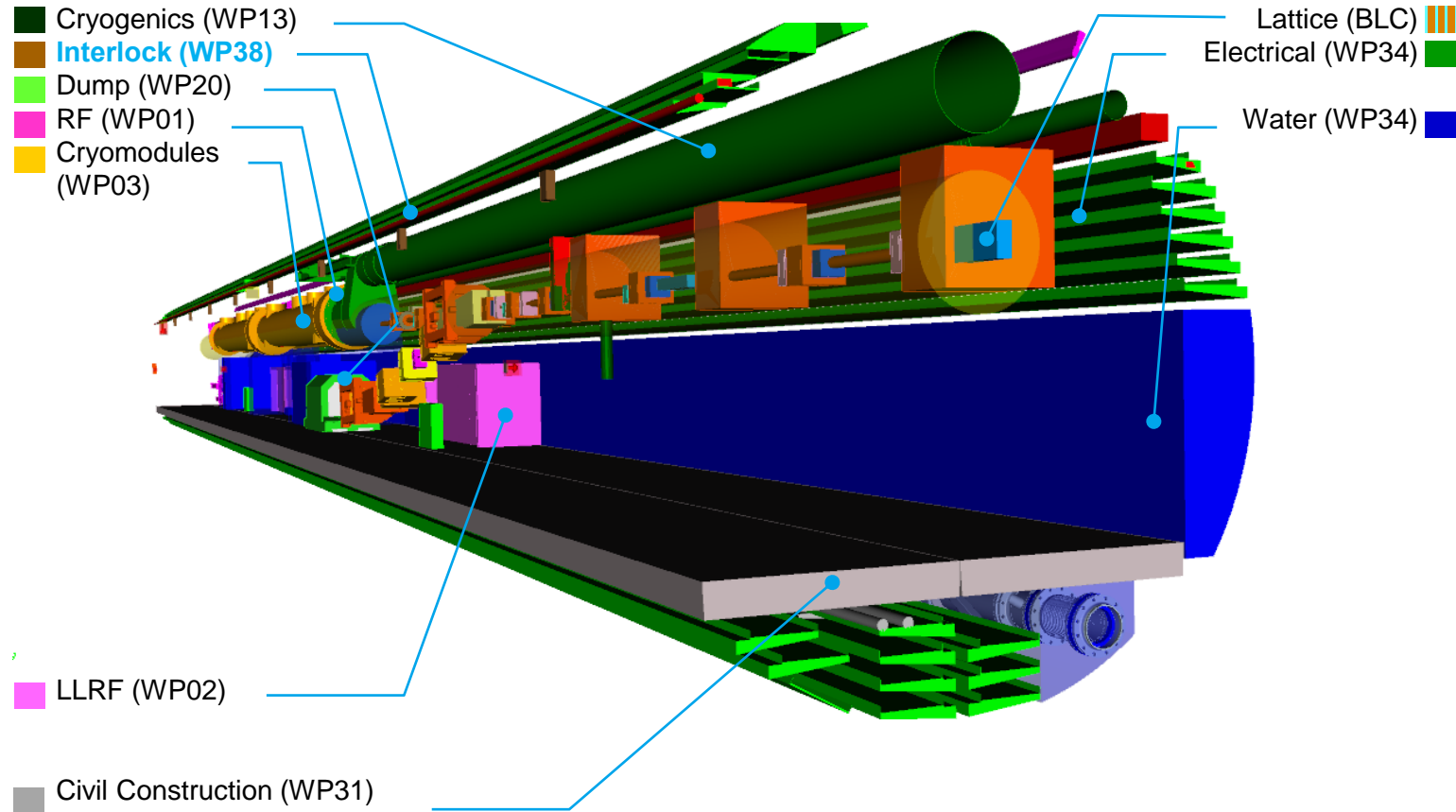
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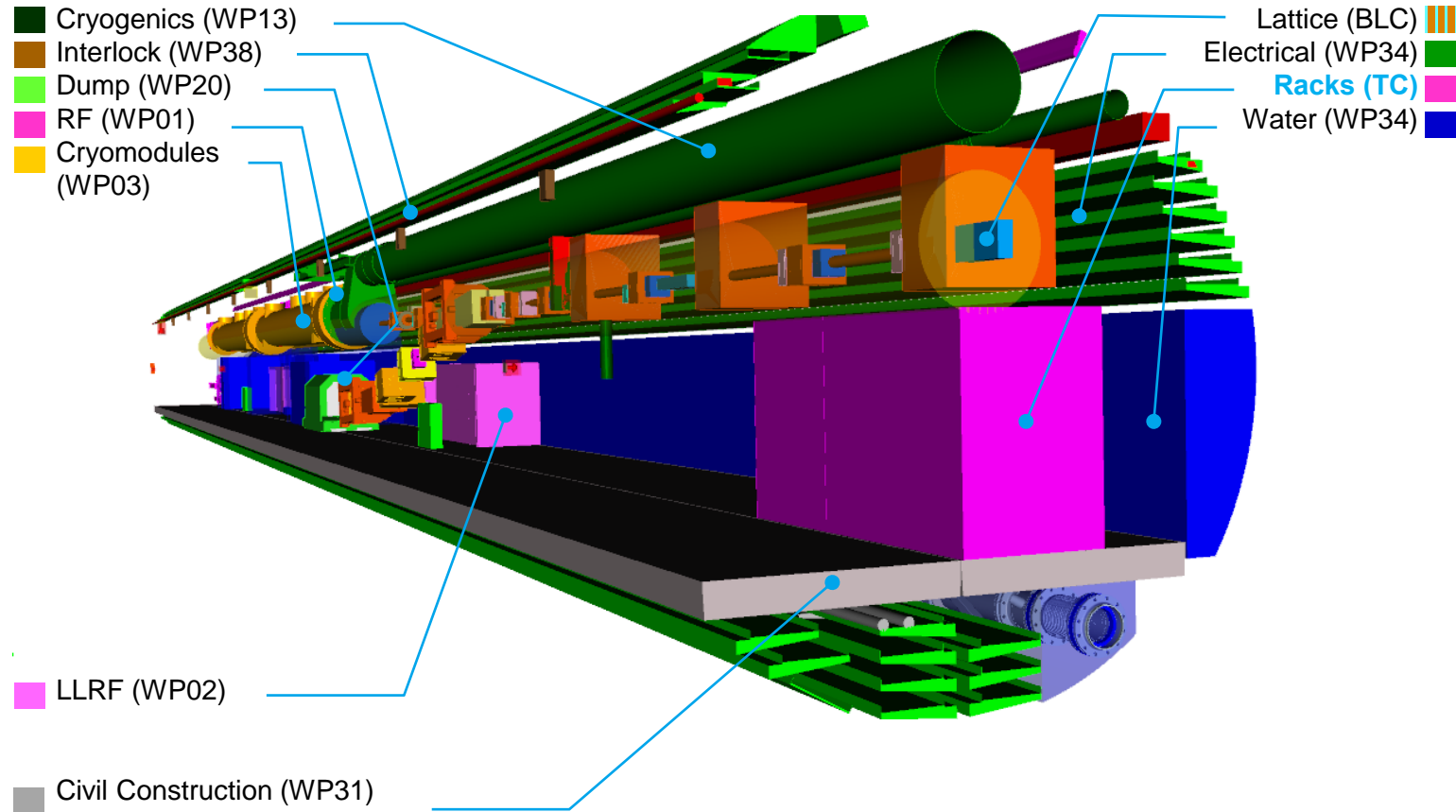
Design Integration at European XFEL



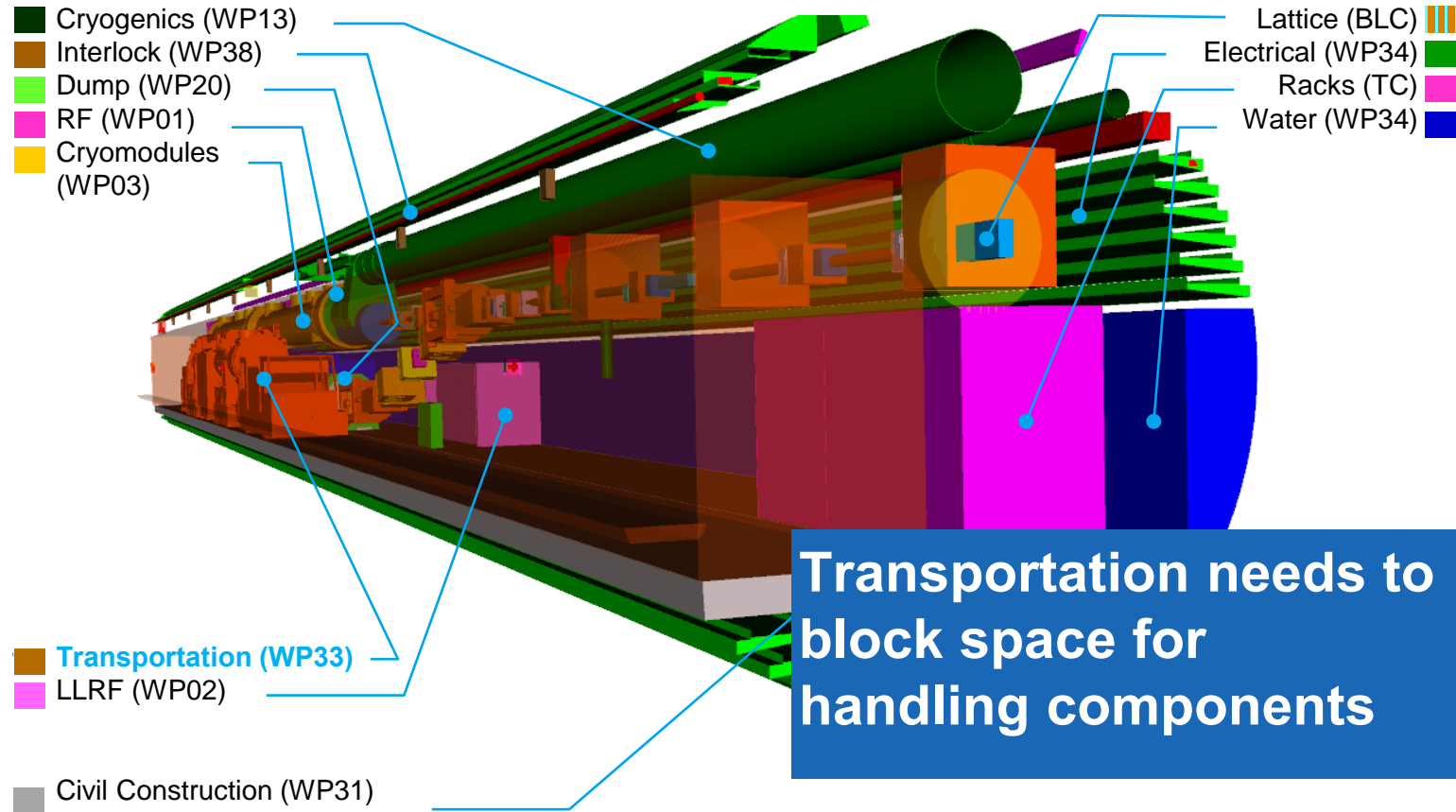
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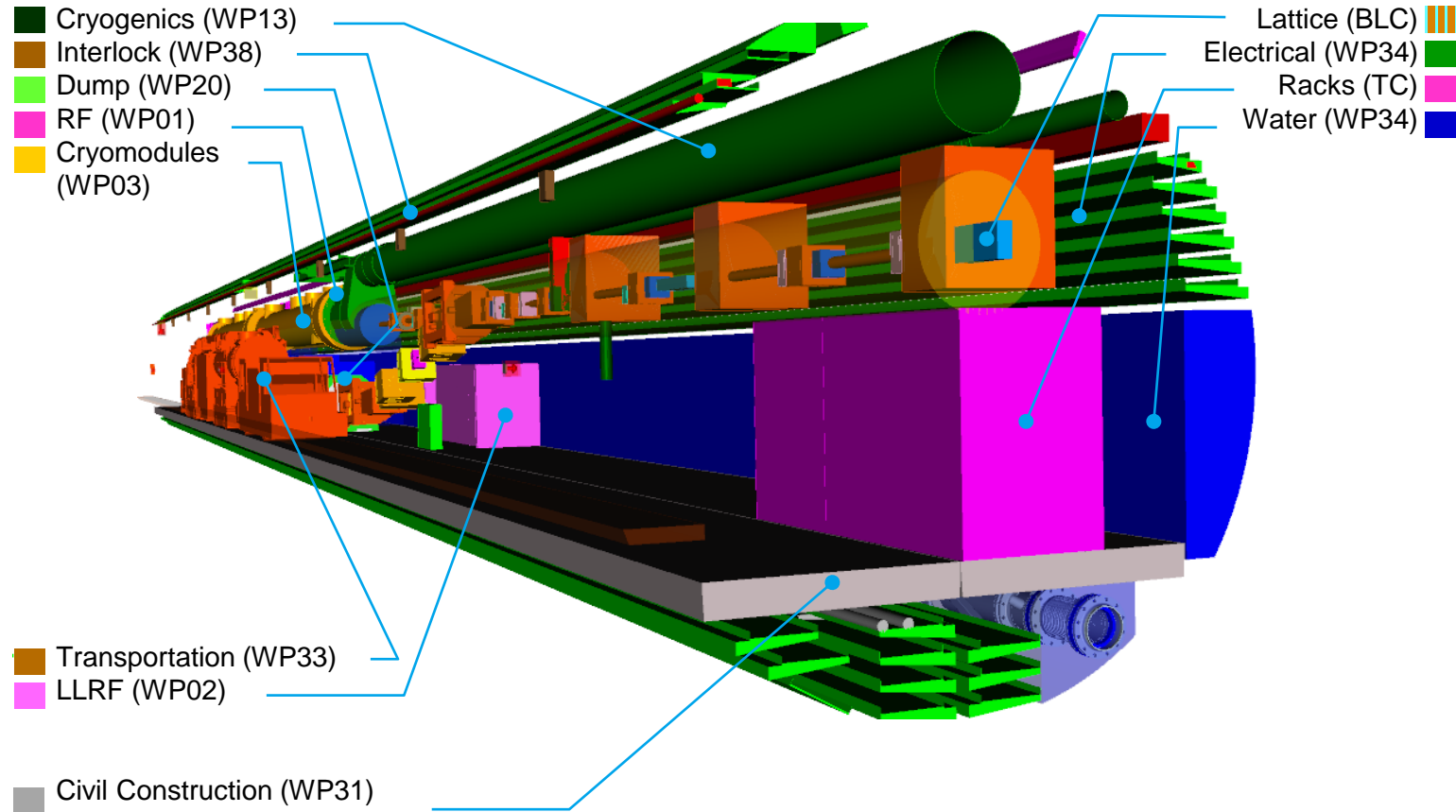
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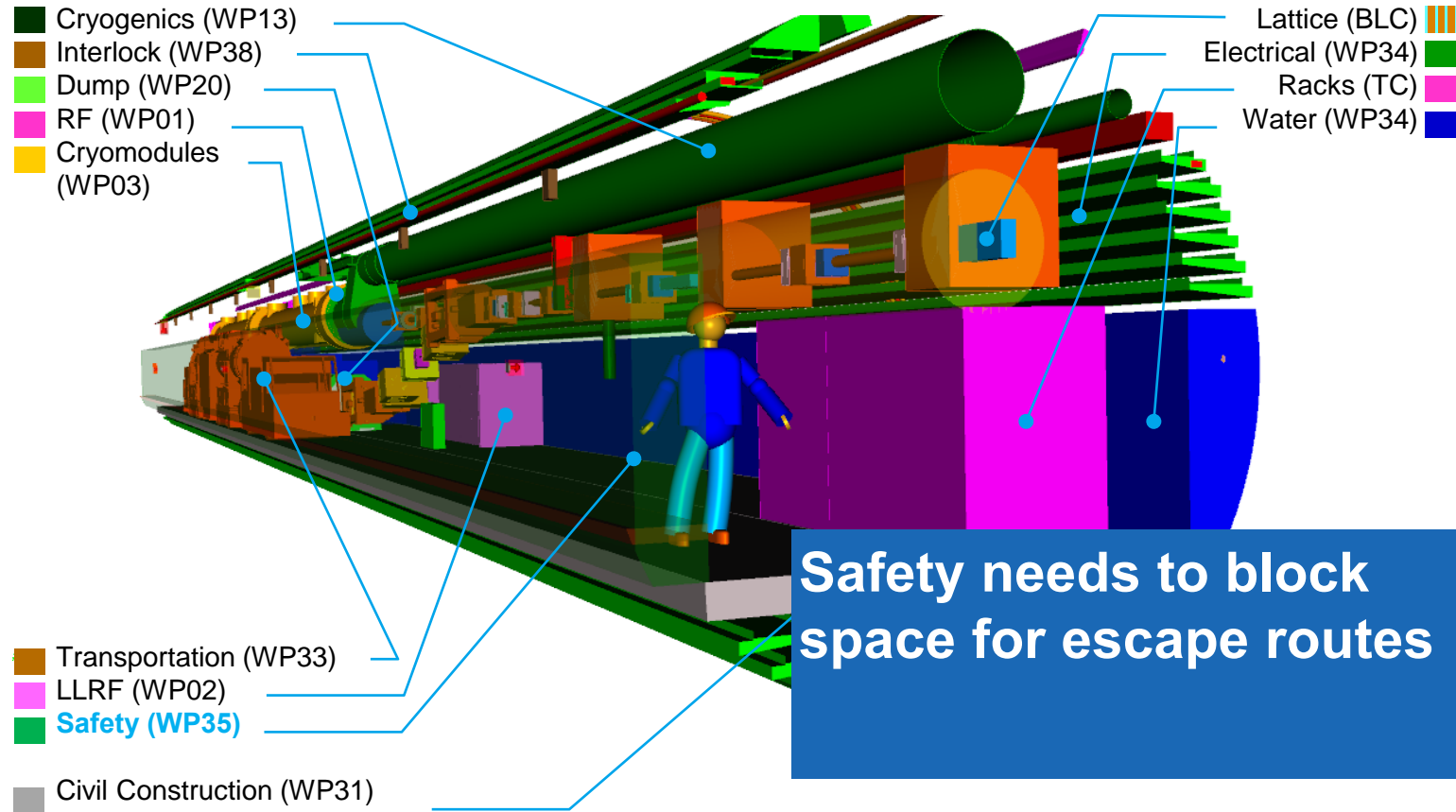
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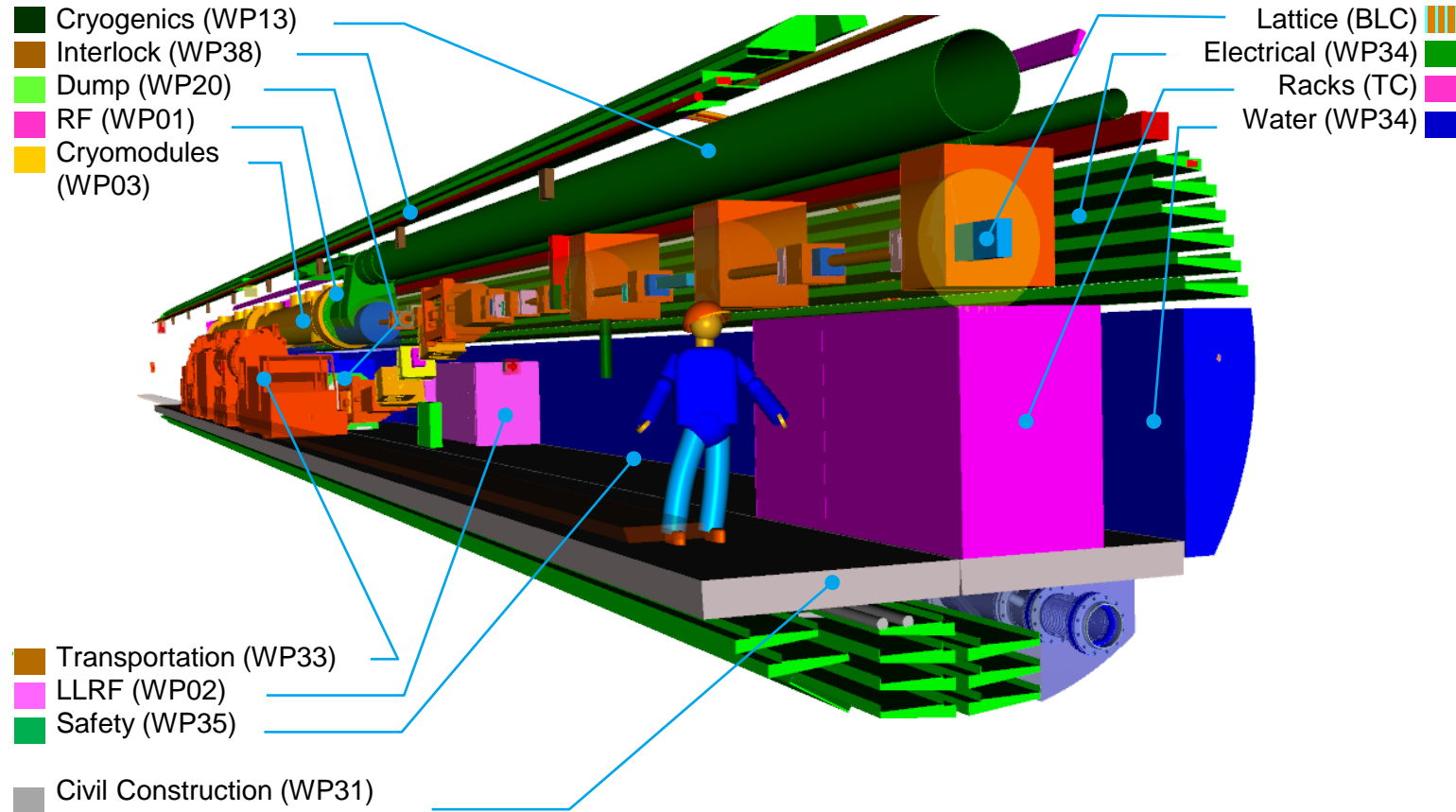
Design Integration at European XFEL



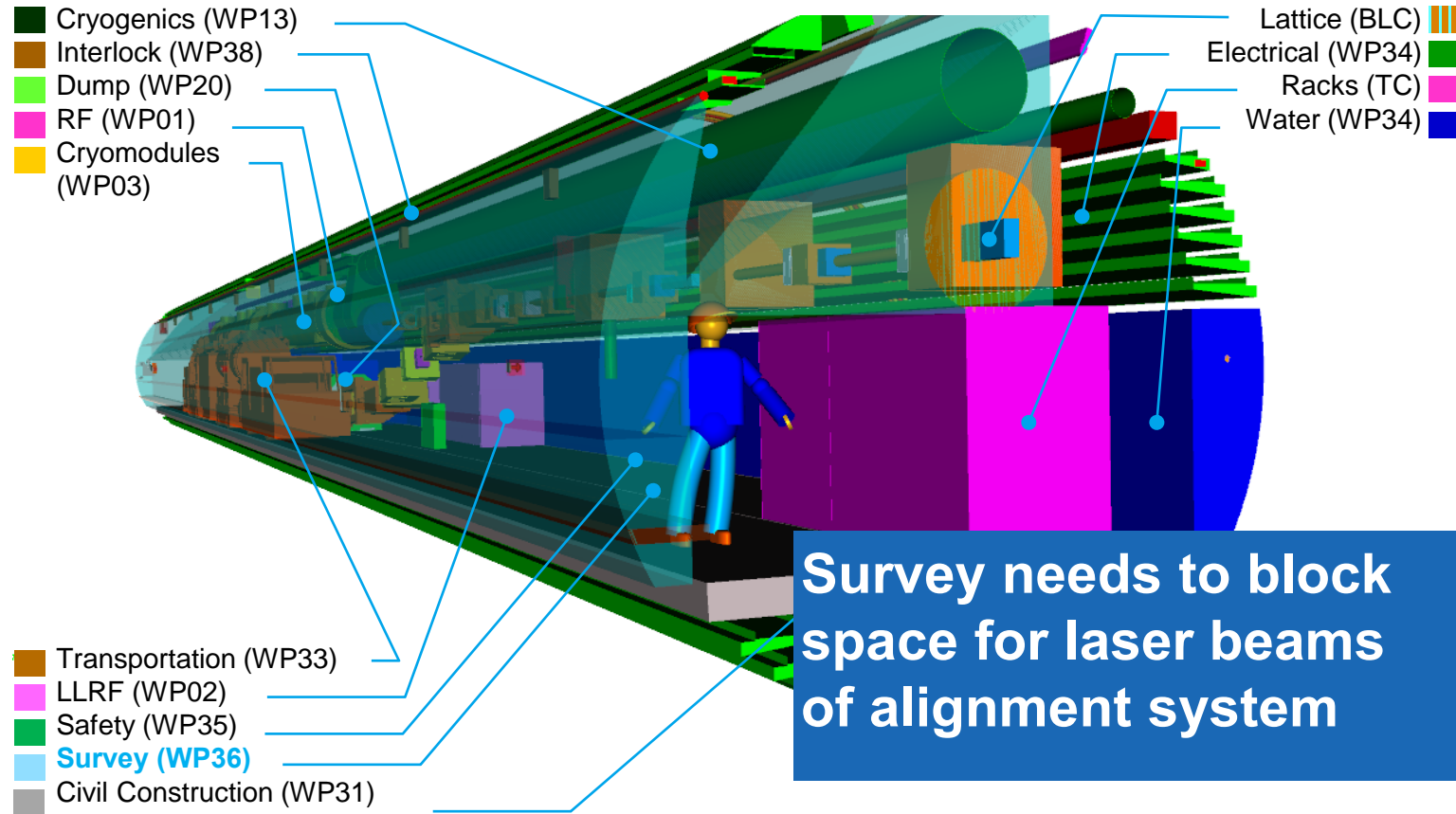
Design Integration at European XFEL



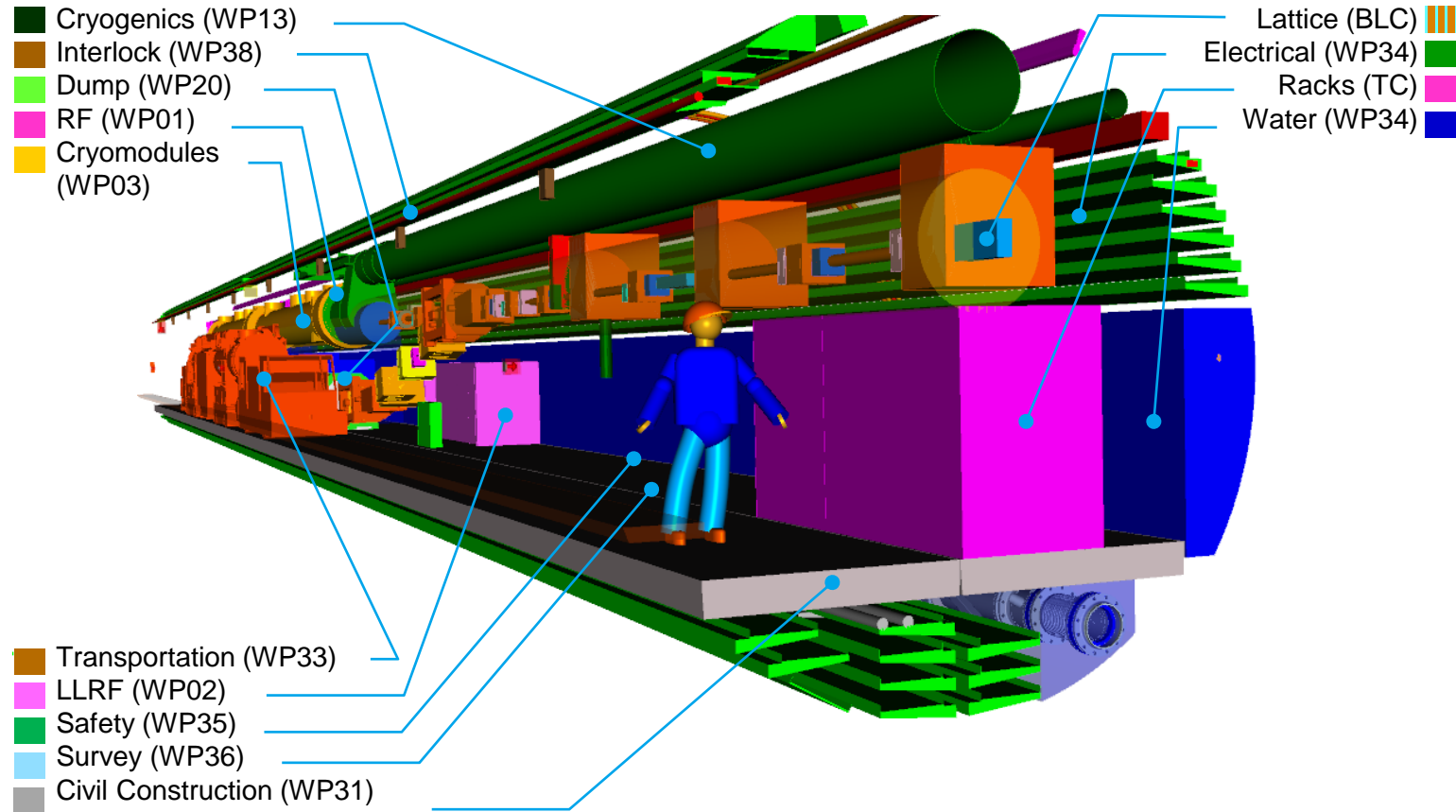
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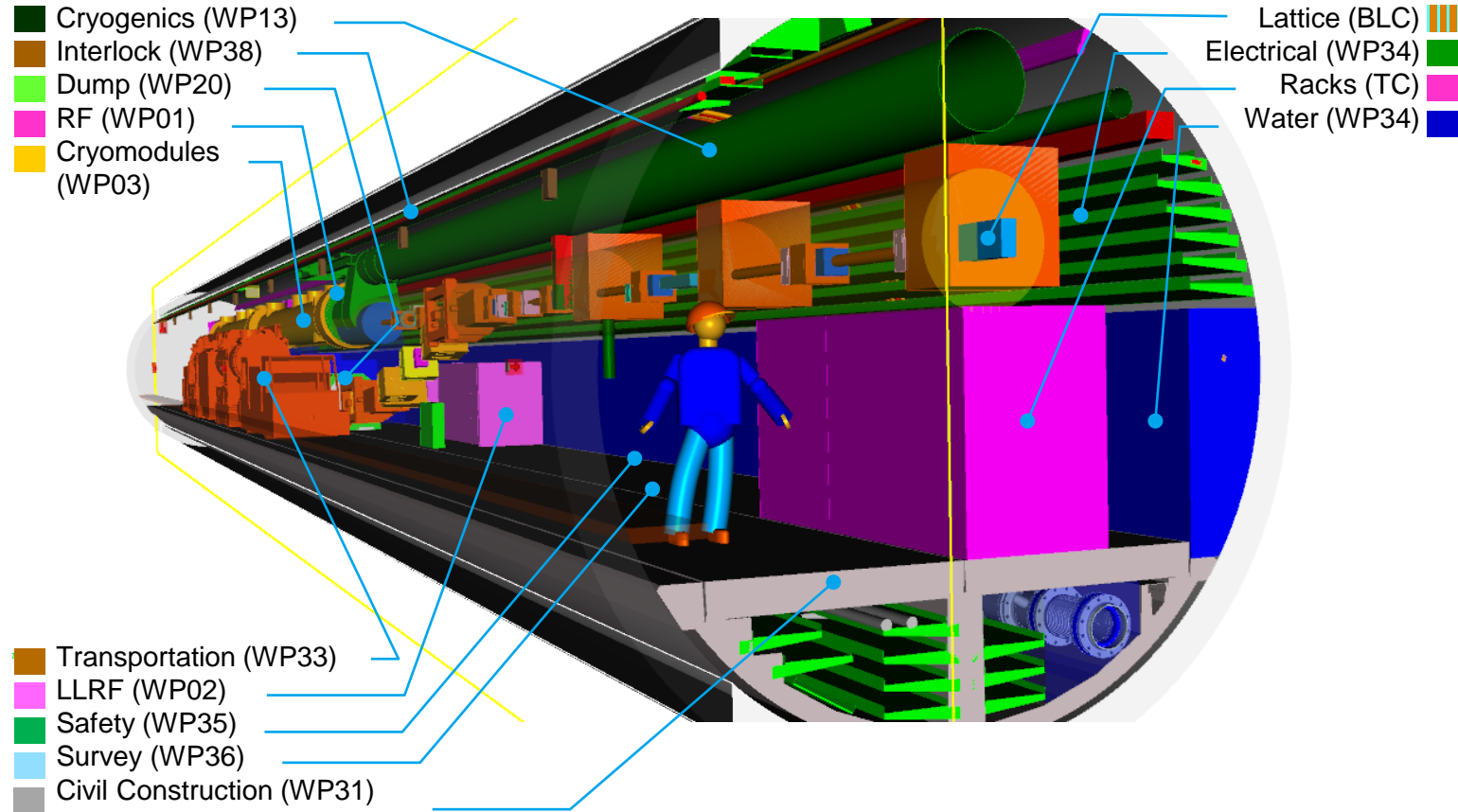
Design Integration at European XFEL



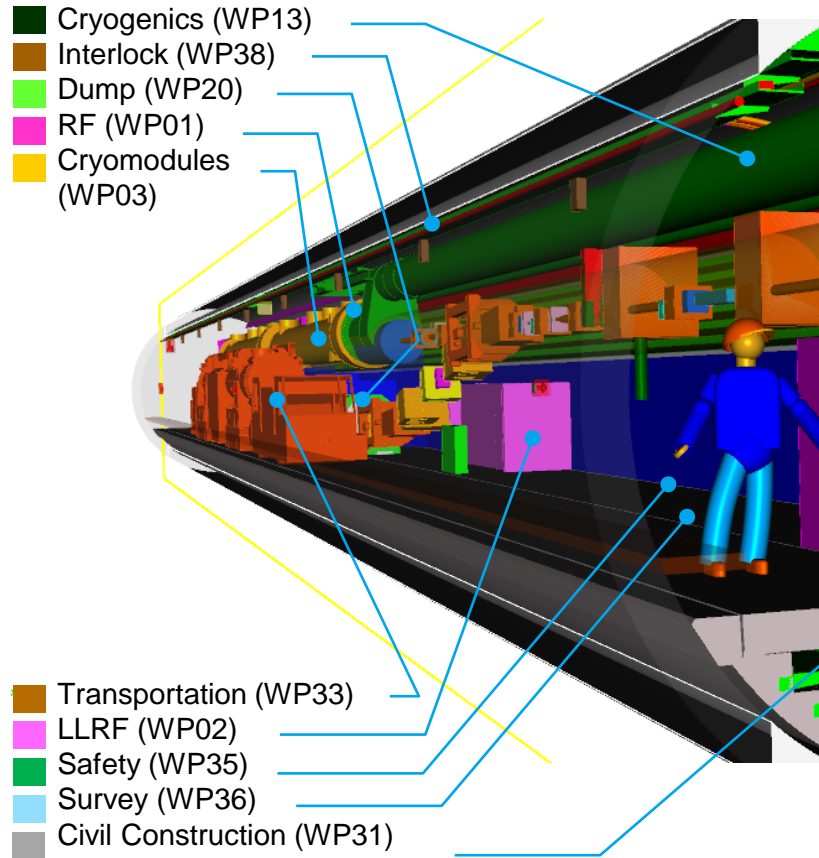
Design Integration at European XFEL



Design Integration at European XFEL



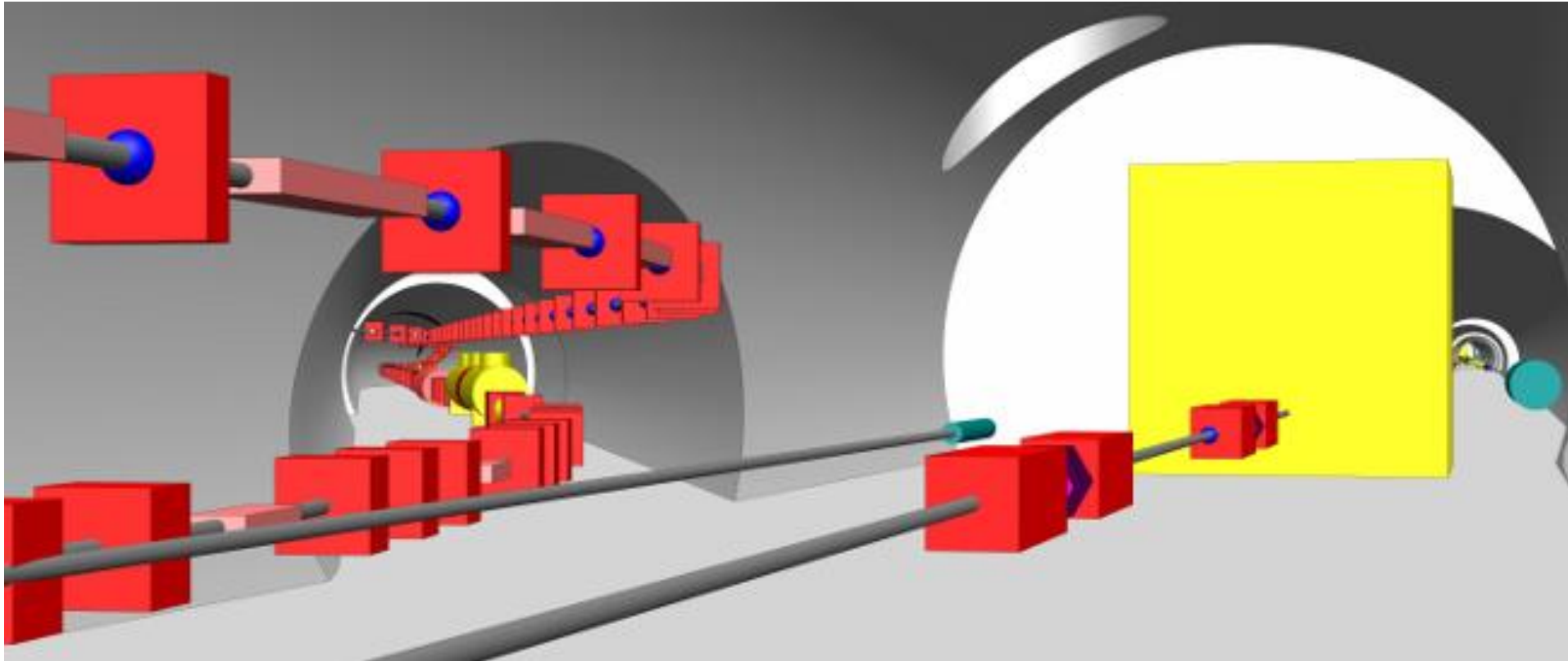
Design Integration at European XFEL



Save costs – detect and remove collisions before fabrication

Share visions, communicate better, develop faster

Provide consistent solution acceptable for all stakeholders



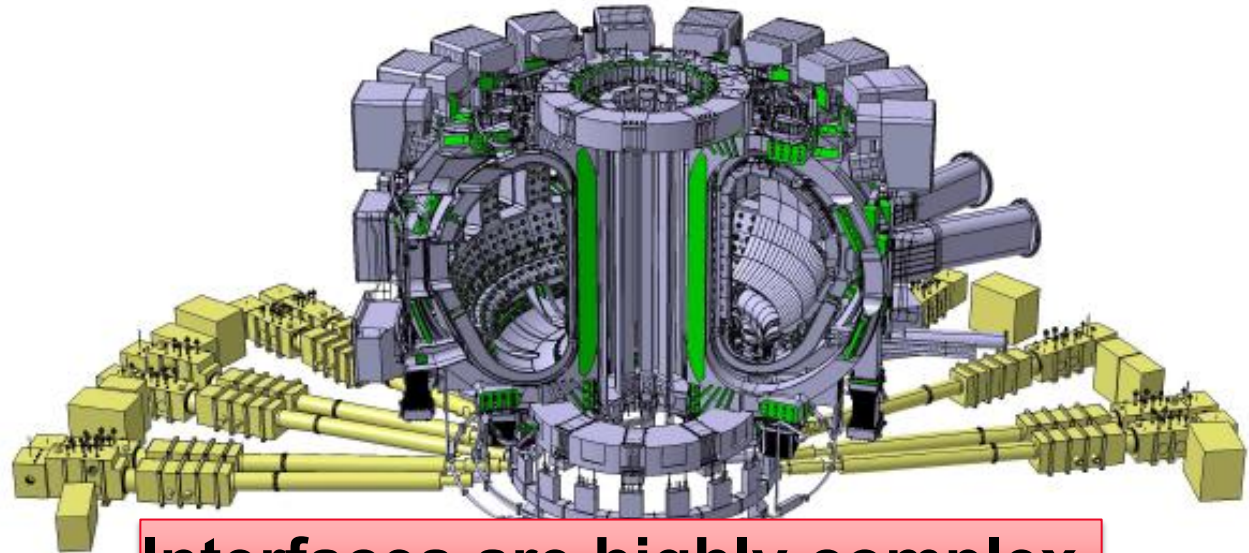
Central Region Design Integration

- Central region is highly complex
- Was partially optimized during BTR in oct. 2011 at DESY. Several issues were found. Focus was flat terrain layout. Needs repetition for mountainous site!
- Necessary input: list of equipment with special requirements from each system: sources, RTML, BDS (cryogenics, laser systems, dumps, radiation protection in hot regions...)
- **Definition of baseline ambiguous.** Tunnel configuration (Kamaboko or twin tunnels) different between drawings and some 3d models - consolidate in context of ILC-CR-0003



I. Kühn, SOFE (2009) 5226475.

Figure 1.



Interfaces are highly complex

I. Kühn, SOFE (2009) 5226475.

Figure 2. CMM of the magnet system and Vacuum Vessel

PBS	11	15	16	17	18	22	23	24	26	27	31	32	34	41	42	43	45	46	48	51	52	53	54	55	56	61	62	63	64	65	66	67	69
Magnets	11																																
Vacuum Vessel	15																																
Blanket systems	16																																
Diverter	17																																
Fuelling & wall conditioning	18																																
Machine Assembly & Tooling	22																																
Remote Handling equipment	23																																
Cryostat	24																																
Cooling Water System	26																																
Thermal Shield	27																																
Vacuum	31																																
Tritium plant	32																																
Cryoplat & cryodistribution	34																																
Coil power supply & distribution	41																																
H&CD Power supply	42																																
Steady State Electrical Power Network	43																																
CODAC	45																																
Central Interlock system	46																																
Central Safety system	48																																
Ion Cyclotron H&CD system	51																																
Electron Cyclotron H&CD system	52																																
Neutral Beam H&CD system	53																																
Lower Hybrid H&CD system	54																																
Diagnostics	55																																
Test Blanket Modules	56																																
Site	61																																
Reinforced concrete buildings	62																																
Steel frame buildings	63																																
Radiological protections	64																																
Liquid and gas distribution	65																																
Radwaste treatment and storage	66																																
Hot Cell and Radwaste Service	67																																
Access Control & Security	69																																

I. Kühn, SOFE (2009) 5226475.

Figure 4. Interface matrix for management of the Interface Control Documents at PBS level 1

From Treaty Points to Interface Requirement Documents

- **Treaty Points define only beamline Center geometry and Twiss functions**
- **Phase space (emittance, envelope), intensities, tolerances not specified**
- **Need performance guarantee (system a shall provide no more than xx intensity outside aperture yy)**
- **Specs turn into requirements for systems**
- **Input for failure mode analysis**
- **Needed for collimation, instrumentation, machine protection, dump system**
- **Needed for radiation protection analysis**

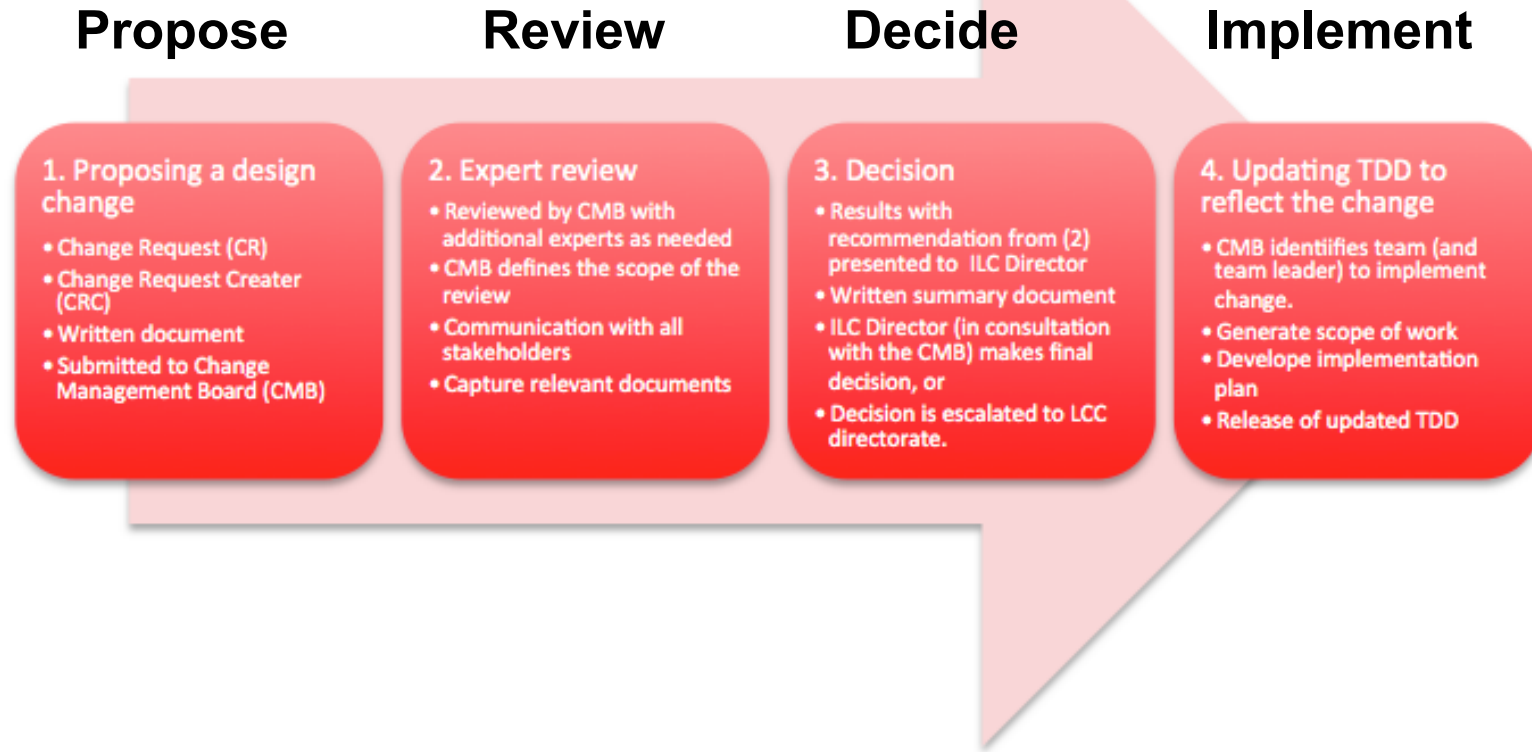
Example: positron source to damping ring

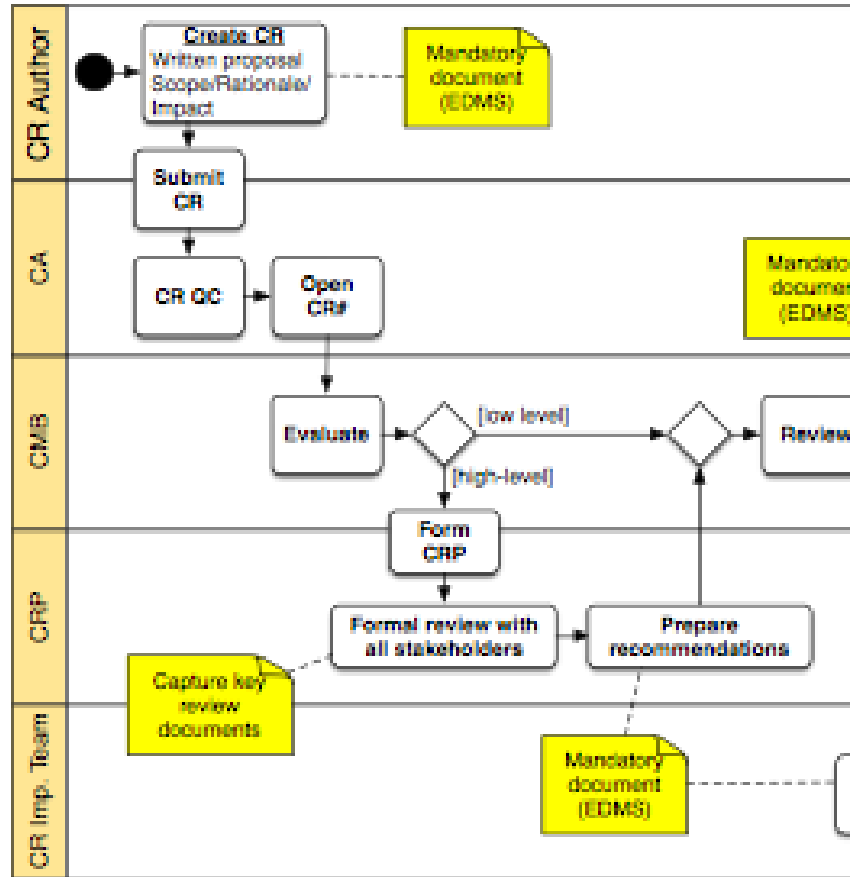
- DR parameters define accepted phase space and assumed intensity
- No definition of max. Intensity (what happens if PS delivers bunches with 3×10^{10} intensity?) or max intensity outside DR acceptance
- What are requirements for collimation, Diagnostics, beam abort, tuneability (intensity!!) of positron source?
- Cannot verify that DR and PS designs are compatible
- Cannot check whether PS needs additional collimation section, or fast (how fast?) beam abort

Maintaining the Design Integrity

- The key:
Do changes to the design baseline in a controlled fashion
- Keep all stakeholders **informed** and **involved**
- Applies equally to alterations of existing designs, and elaboration, i.e., new designs
- The goal is not more bureaucracy, it is transparency
- We are still (too) few people, but scattered around the world
- We cannot afford to waste manpower due to missing information, duplication of work, or incompatible designs

Change Management: The Basic Path





Change Management for the ILC

Release Version 1
23.01.2014

Prepared by: B. List, M. Harrison, N. Walker

EDMS: D*1057375

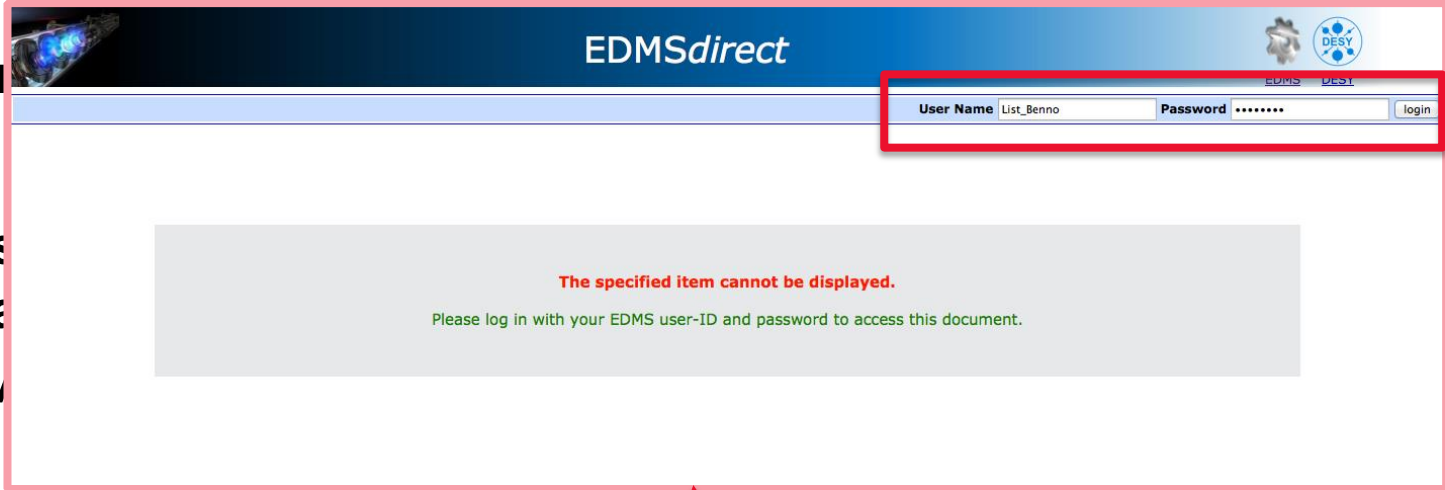
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Introduction

The Technical Design Phase II of the GDE has produced an integrated, consistent and complete design of the ILC in its 500 GeV baseline configuration. This design is described in the Technical Design Report (TDR), which is a summary of the detailed body of specifications, calculations, drawings and CAD models that form the Technical Design Documentation (TDD) stored in ILC-EDMS. The level of maturity of the TDD varies considerably, ranging from very detailed and engineering-ready drawings for the cryomodule and its sub-assemblies, to relatively conceptual (non-engineering) design schematics, in particular for the accelerator layouts and associated CFS. Irrespective of the level of detail, it is inevitable that these design elements will evolve as R&D progresses and as we move towards a site-specific design. Furthermore, not only do we expect change in the existing parameters, specifications and drawings, but we also expect that the level of detail of those design elements which remain essentially unaltered to increase. Dealing with these changes in a consistent and efficient manner requires some form of Change Management, especially with a globally distributed design team.






Website:
ilc.desy.de







- Lists in part
- Provide files to EDMS client
- Get your password (and account) from ipp-support@desy.de

Change Request documents in EDMS



The browseable tree below provides direct access to the change management related documents in EDMS.

- >  **Change Management** (0 / 3)
- >  **Change Management Board** (0 / 1)
- >  **Change Requests** (0 / 2)
 - >  ILC-CR-0001: Insertion of a dogleg in the electron side 

Insert a dogleg of ~400m long between the end of electron linac and the BDS. This should place the BDS on the extension of the electron linac line. 2014-09-23

 D*1082395,A,1,1  D*1082395,A,1,1
 - >  ILC-CR-0002: Baseline optics to provide for a single L* 

ILC-CR-0002: Baseline optics to provide for a single FFS L* (QD0 exit - IP distance) optics configuration 2014-09-23

 D*1082495,A,1,1  D*1082495,A,1,1

Last update date: Fri Sep 26
10:06:34 CEST 2014

Search << >>



The screenshot displays the EDMS Web Client interface. On the left is a sidebar with navigation menus: Lists (Work Lists, My Lists, My Teams), Create (Part, Documents, MRO Items, Others ...), Preferences (My Preferences, Change Password, Change User Data), Logs, In Service, and Help (EDMS Help, EDMS-FAQ, EDMS-Info, Downloads, DESY Imprint, Copyright 2012).

The main content area shows a document titled "ILC Document , D00000001083445,A,1,1 , Item Info : Summary". The document is in the "Released" status. A red arrow points to the "Change Request 1: Insert Dogleg,A,1,1" link in the "Is Related From Documents : 1 object" section.

The "Properties" tab is selected, showing the following details:

- Related Items:** ILC Document , D00000001083445,A,1,1 , Item Info : Summary
- Summary:** Summary, Properties, Related Items, Files, Next Steps, Classification, Reviewer/Approver, All Versions, Access
- Attaches:** Export Table As (CSV, HTML, XML), File Name (CR1-Dogleg-2014-0925-Yokoya_atampdf, CR1-Dogleg-2014-0925-Yokoya.jpg, CR1-Dogleg-2014-0925-Yokoya.pptx, CR1-Dogleg-2014-0925-Yokoya.pdf)
- Relates To Documents :** 1 object (Name: ILC-CR-0001: Insertion of a dogleg in the electron side A,1,1)
- Is In Team Folder :** 1 object (Name: ILC-CR-0001 Add return dogleg to target by-pass...)
- Is Description for :** 1 object (Name: Change Requests A,1,1)
- Is In Team Folder :** 1 object (Name: ILC-CR-0001 Add return dogleg to target by-pass...)
- Properties:** ILC Document Type: Talk, Name: Change Request 1: Insert Dogleg, Description: Presentation of ILC-CR-0001 at the 1st CMB meeting on 25.9.2014 (agenda at https://agenda.linearcollider.org/conferenceDisplay.py?confid=6513), Access Scheme In Use: Project: ILC_CM, Designated Access Scheme (Project): ILC_CM, Creator: List_Benno, Work Status: Released, Purpose: for publication
- Preview Image(s):** CR1: Insert Dogleg
- More Properties ...**

The bottom section of the document shows a "Purpose:" field with the value "for preliminary publication" and a "More Properties ..." link. Below this is a table with the following data:

REGION	
Adds an additional estimate 400 m of tunnel to the electron side of the machine. Adds an additional 400 m to the positron source and electron R.T.M.L. lattice. Displaces the existing BD 5 axis transverse by ~2m.	
COST IMPACT: EST. 30 MILCU	
Initial estimate by requestor based on cost of existing target bypass dogleg (beamline + tunnel).	
Requested and prepared by:	Kaoru Yokoya (KEK)

The bottom right corner of the document shows the date "2014/9/25 CMB Yokoya" and a small "1" in the bottom right corner.


Change Request Register (EDMS: D*1056505)

- Will be central point of information
- Lists also (possibly) upcoming CRs
- Will be updated after each CMB Meeting and when new CRs arrive

	A	B	C	D	E	F	G	H	I	J	K	L	M
	No.	Creation Date	Last Modified	Creator	Primary WG	Title	Description	State	Owner	Impact	Document	Next deadline	Remark
1				M. Harrison	ML	Adopt DKS as HLRF Scheme	The DKS (Distributed Klystron System) HLRF distribution scheme shall be the sole baseline design; KCS will not be pursued further.	In preparation	Change Requestor	Administrative			
2				N. Walker	RTML / ML	Move Bunch Compressor to Main Linac	The Bunch Compressor formally becomes a part of the Main Linac instead of the RTML.	In preparation	Change Requestor	Administrative			
3	ILC-CR-0002	02.09.14	09.09.14	G. White	BDS / MDI	Adopt equal L* for both detectors	Find solution for single L* value for BDS and both detectors.	CMB Review	Change Management Board	High	D*1082495	09.10.14	Next CMB meeting in Belgrade
4				K. Buesser	MDI / CFS	Adopt 18m shaft solution for detector hall	Consolidated solution for IR hall / layout which supports surface construction of the detectors.	In preparation	Change Requestor	High			
5				N. Walker	ADI	Update top-level parameters	Correct errors in reported luminosity for 500 GeV baseline and 1 TeV (b) parameters.	In preparation	Change Requestor	Administrative			Is this really a CR? Also questionable if this is really just administrative.
6	ILC-CR-0001	01.09.14	01.09.14	K. Yokoya	PS / BDS / RTML	Add return dogleg to target by-pass	Add additional lattice to bring BDS beamline on axis with main linac, to accommodate future >1 TeV beam energies.	CMB Review	Change Management Board	High	D*1082395	09.10.14	Next CMB meeting in Belgrade
7				H. Hayano	SRF	Adopt Saclay-like tuner as baseline	Adopt LCLS-2 tuner and associated helium tank and flange solution.	Under consideration		Low			
8				H. Hayano	SRF	Magnetic shield inside helium tank	Place magnetic shielding inside helium tank to simplify string / cryomodule assembly.	Under consideration		Low			
9				E. Paterson	PS	Add timing adjustment chicane system	Implement a timing adjustment chicane in the positron injection system to allow for fine path-length adjustment.	Under consideration		Medium			Part of global-timing task force review
10				N. Walker	BDS / MDI	Alternative FF scheme removing strong sextupoles from FD	Consider alternative FF schemes which would remove the strong sextupole magnets from the FD.	Under consideration		High			
11				B. Parker	BDS / MDI / CFS	Reduce IR crossing angle	Develop highly-compact SC FD to allow for smaller crossing angle.	Under consideration		High			
12													


CR Preparation

- Please download and fill out template (D*1082175) if you prepare a CR
- Complete and send to BL by email
- CRs can be submitted by:
 - TB members
 - WG coordinators
 - Phys&Det Representatives



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for official use only		
CHANGE REQUEST	EDMS No: D*0XXXXXX	Created: 27-08-2014
NO. ILC-CR-NNNN	Last modified: 27-08-2014	

[ADD BRIEF TITLE HERE]

[Few sentences describing the main subject of the change request]

RATIONALE

[Outline briefly as possible the main reasons for requesting the change]

SCOPE: [list of WGs or areas affected]

[Brief description of the overall scope of the modifications being proposed, including possible impact on other areas]



VALUE/SCHEDULE IMPACT

[Brief explanation of the estimated value figure if available. Also if know, impact on construction schedule. Value should also include explicit labour if possible]

Requested and prepared by:	Your name
----------------------------	-----------




- Agenda is open
- Participation limited to CMB members
- Minutes will be available
- CMB can review and decide on CRs
- CMB can also ask for more info or delegate to a Change Review Panel
- CMB members are TB members + CFS expert (Vic Kuchler) + 2 detector experts (J. List, T. Markiewicz) and Change Administrator (BL)



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Change Management Board (CMB) Members

Date: 23.09.2014
EDMS ID: 000000001083165



Name	Affiliation	Email	Role
Mike Harrison	BNL	harrison@bnl.gov	LCC Assistant Director for ILC, CMB Chairman
Vic Kuchler	FNAL	kuchler@fnal.gov	CFS Coordinator
Benno List	DESY	benno.list@desy.de	Change Administrator
Jenny List	DESY	jenny.list@desy.de	Representative for Physics & Detectors
Tom Markiewicz	SLAC	twmark@slac.stanford.edu	Representative for Physics & Detectors
Olivier Napoly	CEA	olivier.napoly@cea.fr	ILC Technical Board member
Marc Ross	SLAC	moreo@slac.stanford.edu	ILC Technical Board member
Nikolay Solyak	FNAL	solyak@fnal.gov	ILC Technical Board member
Nobuhiro Terunuma	KEK	nobuhiro.terunuma@kek.jp	ILC Technical Board member
Nicholas Walker	DESY	nicholas.walker@desy.de	ILC Technical Board member
Akira Yamamoto	KEK	akira.yamamoto@kek.jp	ILC Technical Board member
Yasuchika "Kink" Yamamoto	KEK	yasuchika.yamamoto@kek.jp	ILC Technical Board member

EDMS: D*1083165

<http://agenda.linearcollider.org/conferenceDisplay.py?confId=6513>

Summary for Change Management

- **ILC Baseline Configuration is under Change Control**
- **CRs can be submitted by TB members and WG coord's**
- **CRs will be processed by Change Management Board**
- **Change Control Process is open, your input about current change requests is welcome and needed**
- **Keep yourself informed about CRs at <http://ilc.desy.de/cm>**

Summary and Conclusions

- **The Technical Design Documentation in EDMS is the basis for the Accelerator Design and Integration activities**
- **ADI is design and engineering of a complex system: Systems Engineering**
- **Apply Systems Engineering methods where appropriate**
- **Design Integration will continue, with focus on CFS in Japan**
- **Configuration Control / Change Management is active to preserve integrity of the design**
- **Focus of CM is to be efficient: least possible amount of paper pushing, but sufficient documentation**



Additional Material

Roles and Responsibilities

Formal CM title	LCC implementation	Responsibilities
CR Author	<i>Limited to ILCTB members, WG coordinators, other approved individuals (e.g. physics and detector reps.)</i>	<i>Preparation of clear and unambiguous Change Request document. Point of contact for questions arising during review process.</i>
Change Administrator (CA)	<i>B. List (DESY, ILC-EDMS)</i>	<i>Supports and facilitates all phases of a CR. Primary recipient of a newly created CR. Provide EDMS support for CR process. Maintains Change Request Register. Monitors progress during Implementation Phase. General documentation control. Reports to the CMB.</i>
Configuration Management Board (CMB)	<i>ILC Technical Board (ILCTB), P&D representatives (2), CFS representative (1), CA (1)</i>	<i>Primary management body for change management. The Chair provides final formal decision after consultation with the board. Convenes a Charge Review Panel (and a chair) when needed (at the boards discretion). Provides clearly document assessments and decisions on all CRs.</i>
Change Review Panel (CRP)	<i>Ad hoc review team, formed by CMB when needed. Specific to each CR identified as requiring higher-level review. Membership, chair and charge at the discretion of the CMB, but generally representative of stakeholders and domain experts.</i>	<i>Review in a timely fashion (defined by ILCTB) the change request, as specified in the charge provided by the CMB. Provide a written consensus report on its findings and recommendations, to be submitted to the CMB.</i>
Change Request Implementation Team (CRIT)	<i>Identified team (and team leader) who will implement the changes to the design documentation. ILC-EDMS support provided by the CA.</i>	<i>Prepare (with the help of the CA) a plan for implementing all necessary modifications to the technical design documentation, including milestones. Implement the plan.</i>

CRR Status Flags

	Status	Meaning
Informal pre-CR	Under consideration	<u>Place-holder</u> / capture for upcoming ideas being discussed by ad hoc groups.
	In preparation	In transition to a formal CR (i.e. CR document being prepared for submission)
Formal CR	Submitted	CA has formally received mandatory CR document and assigned a number.
	CMB Review	Formally being discussed by CMB
	Deferred to Review Panel	CRP formed by CMB and charged to review CR.
	Accepted / Deferred	Accepted but implementation deferred until a more convenient time.
	Accepted / Implementing	Accepted and change is to be immediately implemented.
	Rejected	Assumed closed.
	Completed	If accepted, change has been fully implemented.

