

EDMS Introduction for ILD

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ILD MDI Workshop
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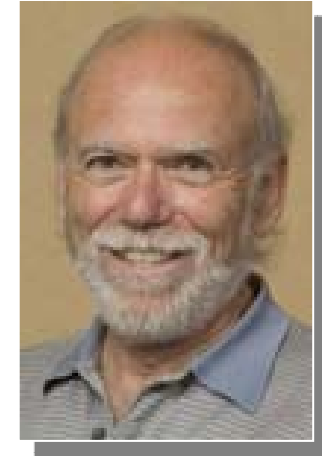
Agenda

- > **What is an EDMS?**
- > What does it look like?
- > What does it do?
- > When to use it?
- > EDMS needs structure
- > EDMS needs process
- > What we offer



But EDMS is More Than Just That ...

- > In a generic sense, EDMS stands for “**Electronic Document Management System**”, and it is used for software systems that provide an orderly way of organizing a large number of documents over the lifespan of a project, providing mechanisms for revisions, traceability, searching, etc.
- > In a more specific sense, this acronym means “**Engineering Data Management System**”. In this sense, such a system also provides the basic design tool environment (CAD/CAM etc.), document management system, and work flow that are needed to conduct and carry out a complex project design and implementation like the ILC.



Taken from: Barry Barish, ILC Director's Corner, September 8, 2005
<http://www.linearcollider.org/cms/?pid=1000082>



Example: Document in EDMS, Look & Feel

The screenshot shows a web browser window displaying an EDMS interface. The main content area is titled 'Publications, D00000001388241,A,1,5, Item Info : Summary'. It features a navigation menu with options like 'Main Menu', 'Explorer', 'Submit', 'History', 'Bookmark', 'Subscribe', 'Make Available To Team', and 'More Actions...'. The document's metadata is displayed in a table-like format, including fields for Name, Description, Access, Designated Access, Scheme, Creator, and Work Status. A preview of the document is visible on the right side, showing the title 'Organizing Civil Construction of the European XFEL' and a 3D architectural rendering of the facility. The interface also includes a search bar, a user profile 'Lars Hagge', and a footer with copyright information.

Unique Identifier
(Number und Revision)

Multiple Formats
(Native, PDF, stamped PDF)

Links (Relations)
(e.g. Dependencies, References)

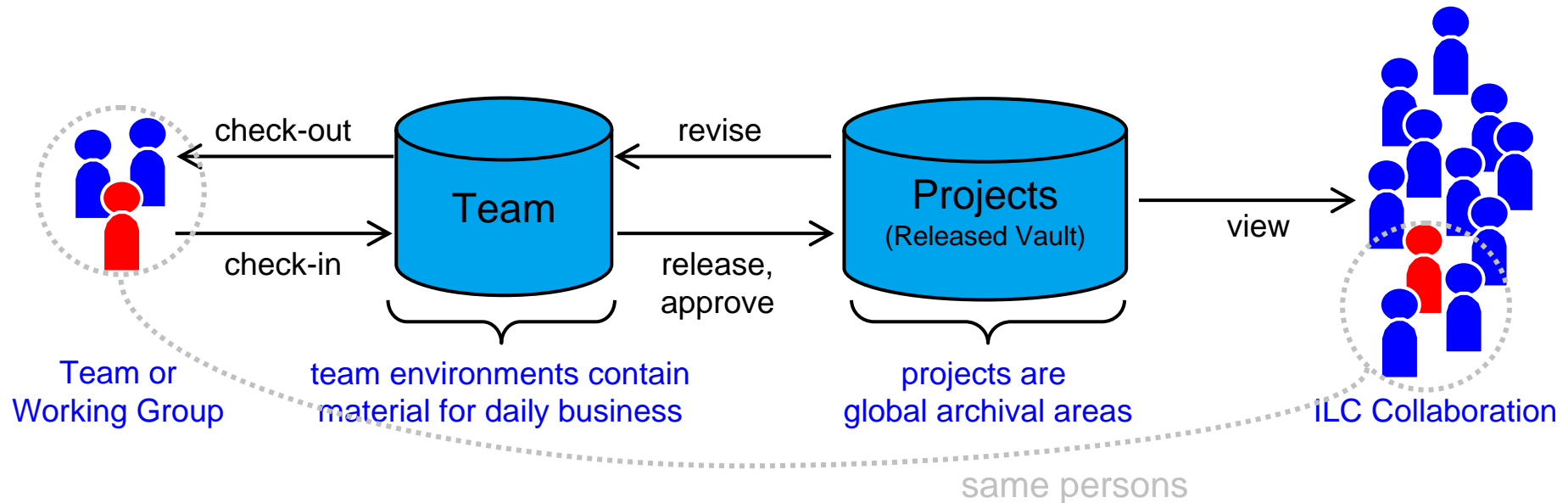
Object Metadata
(Properties, Reviewer, History ...)

Object Status
(e.g. Working, Approved ...)

Preview



“Private” and “Project-Wide” Items in EDMS

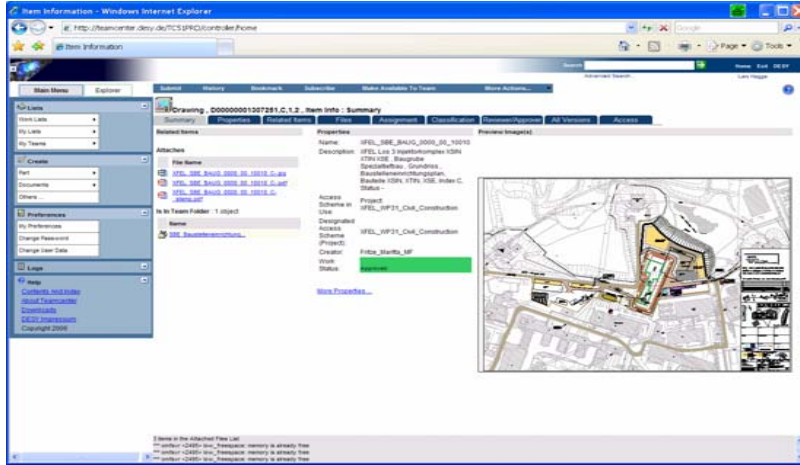


- > team environments offer “private” workspace for working groups – similar to shared folders in file system
- > projects are “project-wide” archival areas with specific access policies – similar to web access by search engines
- > workflows transfer items between teams and projects – and assign tasks (e.g. sign-offs) to EDMS users accordingly

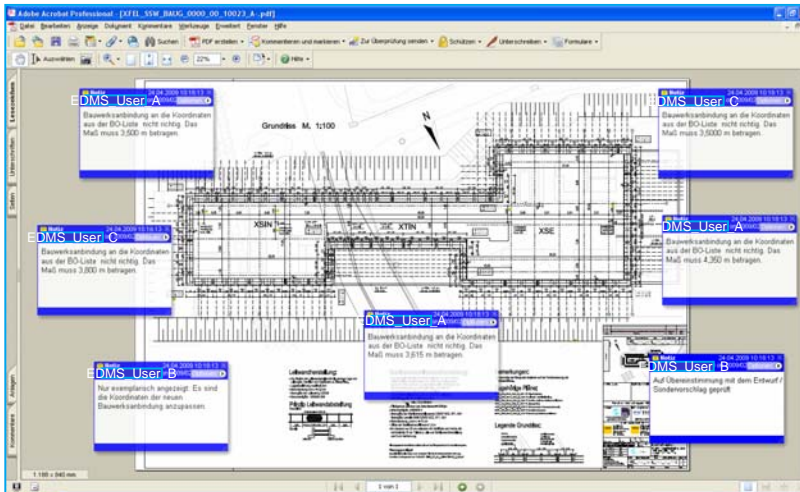
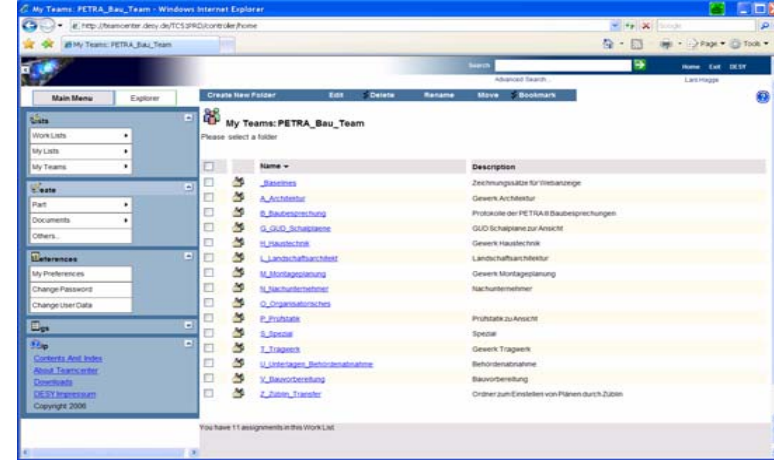


Impressions from EDMS Document Management

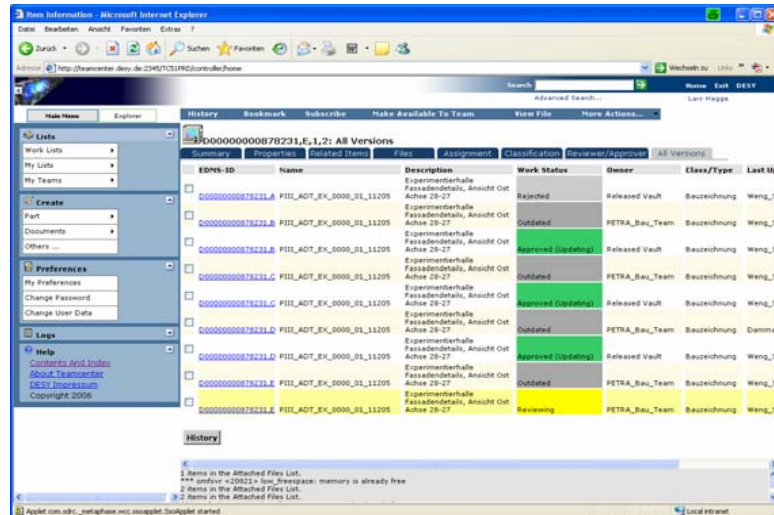
Technical Drawing



Folders in Team Workspace



Several Reviewers acting in parallel



Complete History



What Does EDMS Do?

- > EDMS is meant to be the project's central web site for engineering data and (more fashionable 😊) knowledge management, i.e.
 - manage design, project and general documentation, including 3D CAD data management → provide stable and reliable reference documentation
 - track decisions and record & keep full history
 - maintain global structures for managing the project, e.g. work breakdown, product design & fabrication ...
 - provide workflows e.g., approvals, changes, version control ...
- > EDMS helps managing the complexity in large scientific collaborations



When to Use EDMS?

- > EDM systems are nowadays called Product Lifecycle Management systems – and the acronym PLM describes best when to use such systems:
- > Information is **relevant for the product**
 - relevant information includes e.g. design specification, fabrication process description, parameter set, inspection certificates, manuals and instructions, simulation results, technical publications ...
 - less relevant information could include meeting minutes, presentations, personal notes and opinions
- > Information is **required throughout the lifecycle**
 - e.g. design decisions are relevant for upgrade planning, drawings for fabrication and maintenance, manuals for operation
- > Information has to be **formally managed**
 - e.g. define responsible persons, formal sign-off (release, review, approve), track revision history, manage dependencies



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Example: Work Breakdown Structure in EDMS

Item Information - Windows Internet Explorer
 http://ppedmstea.8090/TC70TEALC/controler/home

international linear collider
 Teaching Environment (TEA)

Generic Part, D0000000518377,A,1,1 . Item Info : Assembly Structure

EDMS-ID	Name	Work Status	Quantity	Unit	P/N	Ref Designators	Remark	Precise Revision Operat
D0000000518377,A,1,1	XFEL	Working	1	ea	0			
D0000000518157,A,1,1	WPG1 Cold Linac	Working	1	ea	0			
D0000000518247,A,1,1	Accelerator Modules	Working	1	ea	0			
D0000000518797,A,1,1	RF System	Working	1	ea	0			
D0000000518797,A,1,1	LLRF System	Working	1	ea	0			
D0000000518917,A,1,1	Power Couplers	Working	1	ea	0			
D0000000518977,A,1,1	HOM Couplers	Working	1	ea	0			
D0000000519037,A,1,1	Frequency Tuner	Working	1	ea	0			
D0000000519097,A,1,1	Cold Vacuum	Working	1	ea	0			
D0000000519187,A,1,1	Cold Magnets	Working	1	ea	0			
D0000000519217,A,1,1	Cavity String Assembly	Working	1	ea	0			
D0000000519277,A,1,1	3.9 GHz System	Working	1	ea	0			
D0000000518317,A,1,1	WPG2 Accelerator Sub-Systems	Working	1	ea	0			
D0000000518437,A,1,1	WPG3 Photon Beam Systems	Working	1	ea	0			
D0000000518497,A,1,1	WPG4 Control & Operations	Working	1	ea	0			
D0000000518557,A,1,1	WPG5 Infrastructure	Working	1	ea	0			
D0000000518617,A,1,1	WPG6 Sites & Buildings	Working	1	ea	0			
D0000000518677,A,1,1	Project Management	Working	1	ea	0			
D0000000518737,A,1,1	Systems Engineering	Working	1	ea	0			

EDMS-ID	Name
D0000000518377,A,1,1	XFEL
D0000000518157,A,1,1	WPG1 Cold Linac
D0000000518247,A,1,1	Accelerator Modules
D0000000518797,A,1,1	RF System
D0000000518797,A,1,1	LLRF System
D0000000518917,A,1,1	Power Couplers
D0000000518977,A,1,1	HOM Couplers
D0000000519037,A,1,1	Frequency Tuner
D0000000519097,A,1,1	Cold Vacuum
D0000000519157,A,1,1	Cold Magnets
D0000000519217,A,1,1	Cavity String Assembly
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D0000000518497,A,1,1	WPG4 Control & Operations
D0000000518557,A,1,1	WPG5 Infrastructure
D0000000518617,A,1,1	WPG6 Sites & Buildings
D0000000518677,A,1,1	Project Management
D0000000518737,A,1,1	Systems Engineering



Example: WBS Element Aggregates Documentation

The screenshot displays a web browser window titled 'Item Information - Windows Internet Explorer' with the URL <http://appedmstea:8090/TC70TEALC/controller/home>. The page header includes the 'international linear collider' logo and a search bar. The main navigation bar contains 'Main Menu', 'Classification', and 'Check Out From Team'. The central content area is titled 'Generic Part, D00000000518077,A,1,2, Item Info : Summary' and features several tabs: 'Summary', 'Assembly Structure', 'Properties', 'Related Items', 'Files', 'Assignment', 'Classification', 'Reviewer/Approver', and 'All Versions'. The 'Properties' tab is active, showing details such as Name (Cavity), Sub Type (Assembly), Team (XFEL_BOM_Team), and Status (Working). A 'Preview Image(s)' section on the right shows a photograph of a long, cylindrical particle accelerator component in a cleanroom environment. The left sidebar contains navigation menus for 'Lists', 'Create', 'Preferences', 'Logs', and 'Help'. The status bar at the bottom indicates '1 items in the Attached Files List' and 'The Attach Relation was created.'



Example: CAD Model for WBS Element

The screenshot shows a web browser window displaying the 'Item Information' page for an assembly. The browser address bar shows the URL: `http://appedmstea:8090/TC70TEALC/controller/home`. The page title is 'international linear collider'. The main content area is titled 'Assembly , D0000000628133,A,1,2 , Item Info : Summary'. The page has a navigation menu with options like 'Main Menu', 'Classification', 'Check Out From Team', 'Submit', 'Item Reports', 'Bookmark', 'History', and 'More Actions...'. The 'Properties' tab is selected, showing details for the assembly: Name: Cavity, Access Scheme in Use: XFEL_Cavity_Team, Designated Access Scheme (Project): Welle_Norbert, and Work Status: Working. A 3D CAD model of a vertical assembly of orange cylindrical components is displayed on the right. The left sidebar contains sections for 'Lists', 'Create', 'Preferences', 'Logs', and 'Help'. The bottom status bar indicates '8 rows returned. 1 items in the Attached Files List. 6 rows returned. Query successful. 2 rows returned.'



Example: Technical Drawing Derived from CAD Model

The screenshot displays a web application interface for the International Linear Collider (ILC) project, titled "Teaching Environment (TEA)". The browser window shows the URL <http://appedmstea:8090/TC70TEALC/controller/home>. The main content area is titled "CAD Drawing , D0000000816635,A,1,2 , Item Info : Summary".

The interface includes a navigation menu on the left with sections for Lists, Create, Preferences, Logs, and Help. The main content area is divided into several sections:

- Summary:** Shows the item name and various tabs for navigation.
- Properties:** Lists key attributes:
 - Name: Cavity
 - Description: Cavity
 - Access Scheme in Use: XFEL_Cavity_Team
 - Designated Access Scheme (Project):
 - Creator: Welle_Norbert
 - Work Status: Working
- Related Items:** Lists items related to the current drawing, including "Cavity_A.1.2" and "XFEL_1.3 GHz Cavity Drawings_A.1.1".
- Preview Image(s):** Displays a 3D technical drawing of a cavity structure, showing a series of cylindrical segments arranged in a row, with a smaller detail view to the right.

The bottom of the page shows a status bar with information about the attached files list.

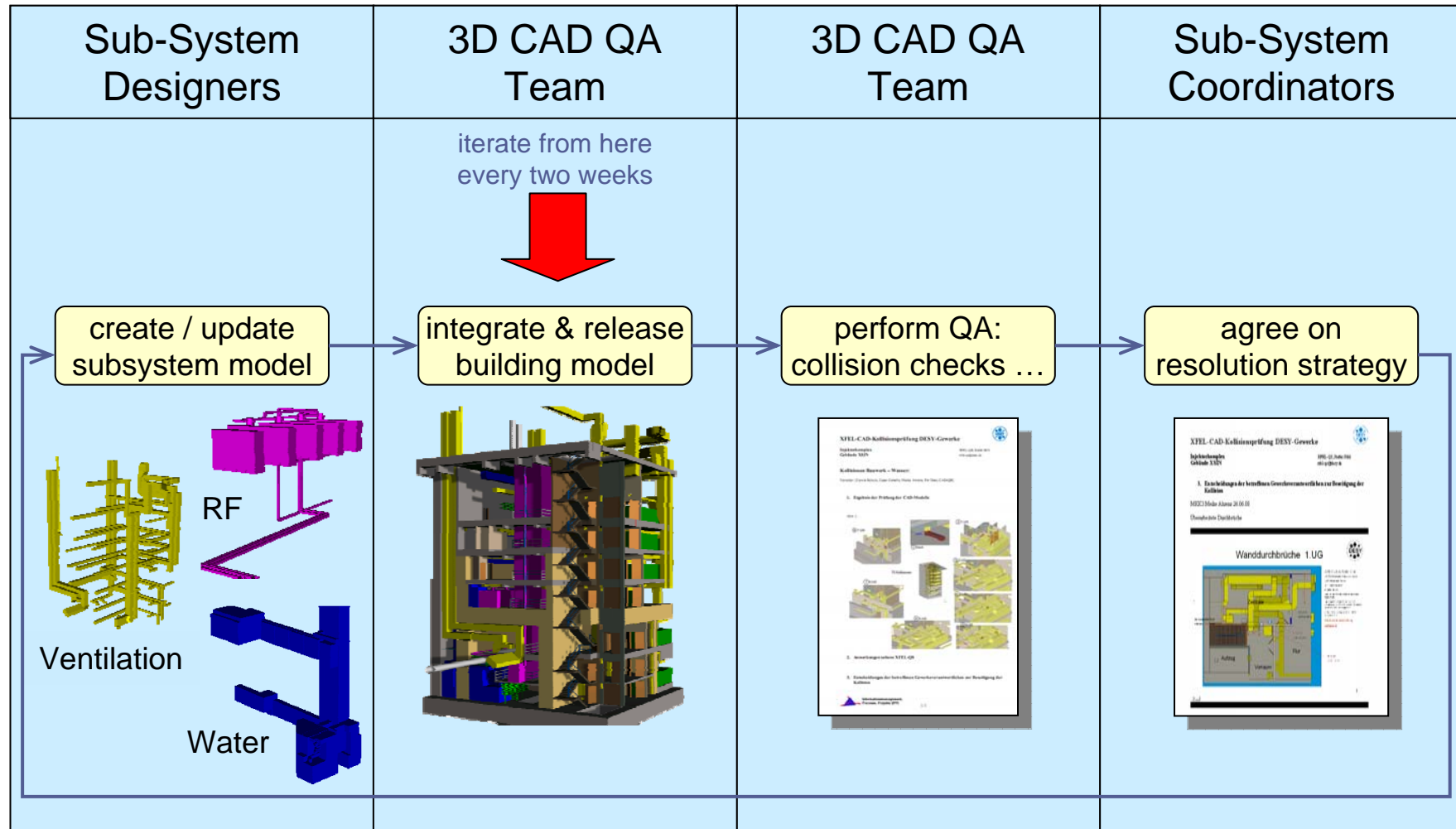


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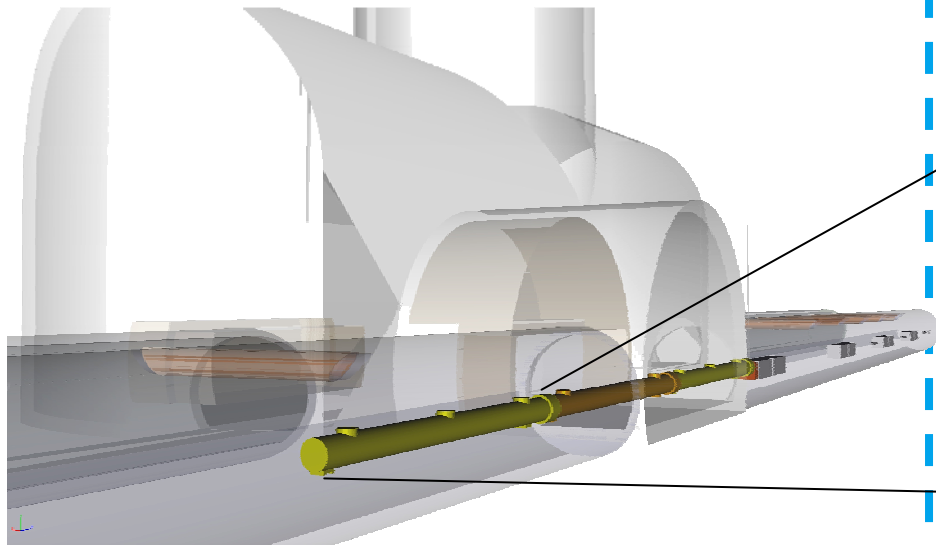
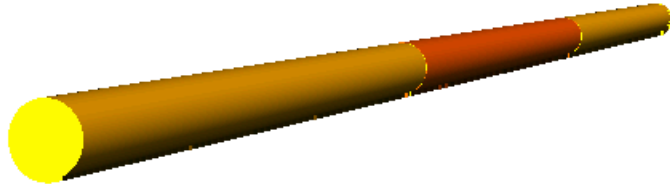


3D CAD collaboration at XFEL



Example: Disentangling Facility Planning from Detailed Design

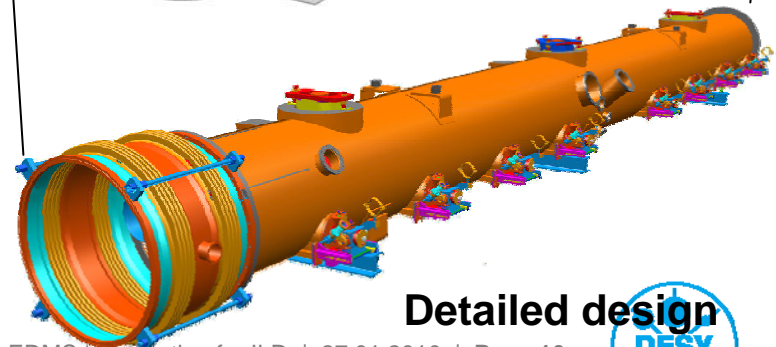
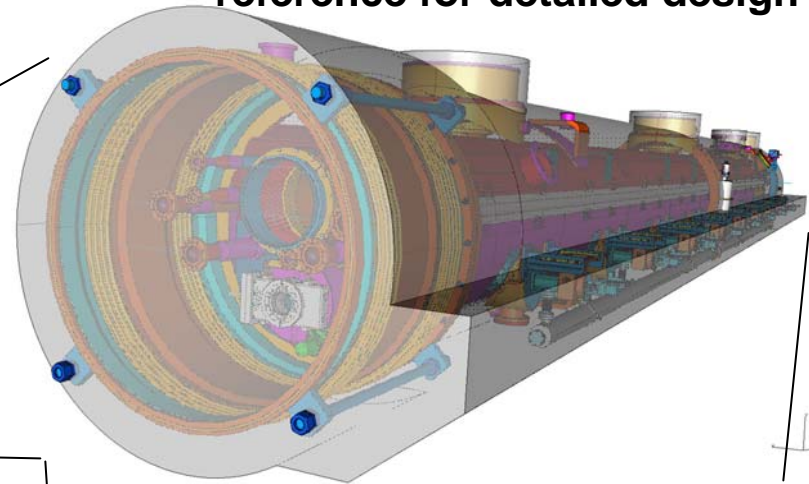
Accelerator Definition as Lattice



Facility Planning using Placeholders

Detailed Design

Placeholder acts as reference for detailed design

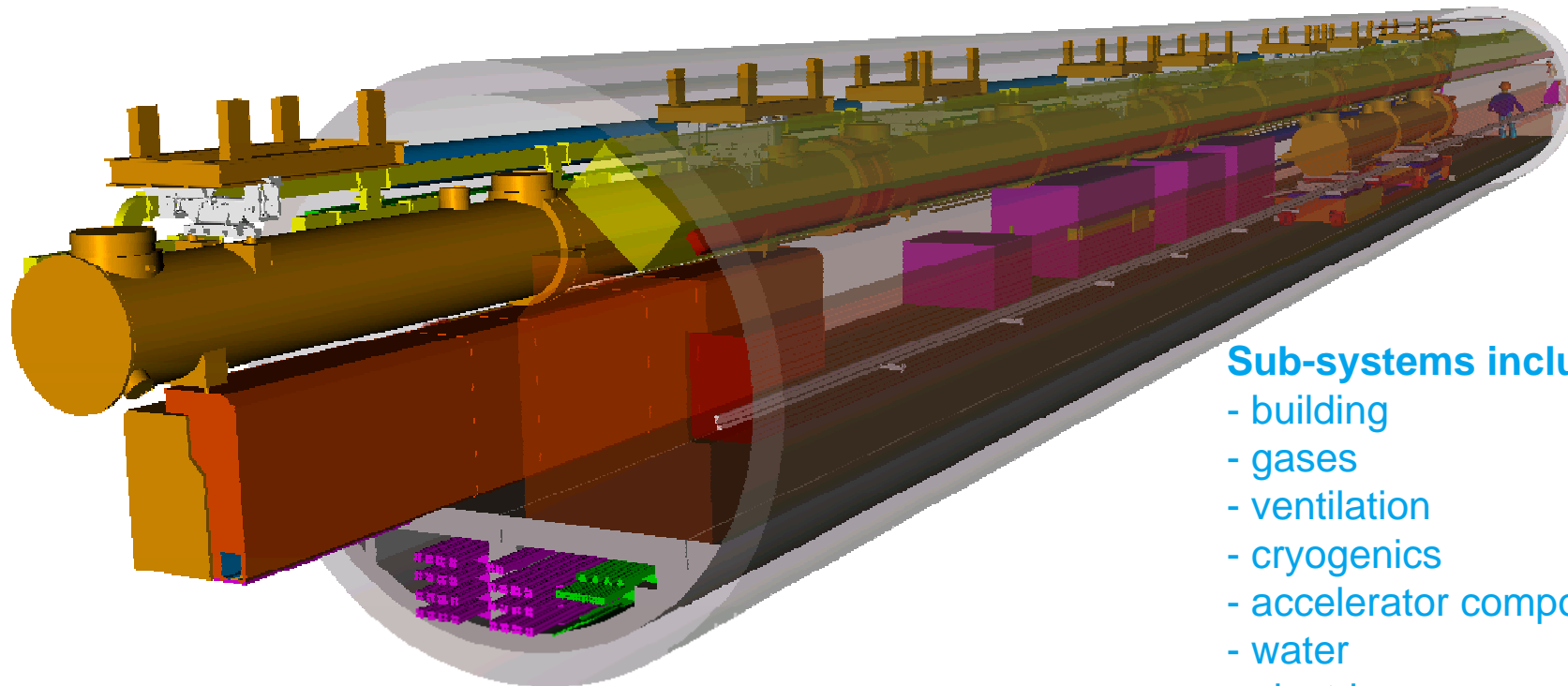


Detailed design

Facility Planning



Example: 3D Model of XFEL Tunnel Segment



Geometry includes

- component placeholders
- placeholders for supply lines
- emergency escape routes
- reserved spaces for survey, transportation, tools, installation ...

Sub-systems include:

- building
- gases
- ventilation
- cryogenics
- accelerator components
- water
- electrics
- rf distribution
- survey
- safety
- transportation
- radiation safety
- diagnostics & controls

What we Offer (to some Extent)

- > We can provide the DESY/ILC EDMS to the ILD collaboration as is
- > We can help establishing global structures and processes
- > We can provide trainings and help uploading and organizing your engineering data
- > We can travel and attend workshops if they are (somehow) dedicated to collaborative design efforts

