EDMS Introduction for ILD

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HELMHOLTZ GEMEINSCHAFT

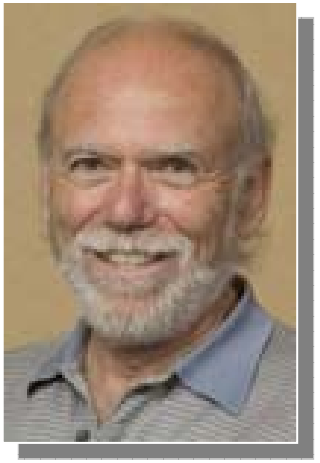
DESY
Informationsmanagement, Prozesse, Projekte (IPP)

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

Unique Identifier
(Number und Revision)

Multiple Formats
(Native, PDF, stamped PDF)

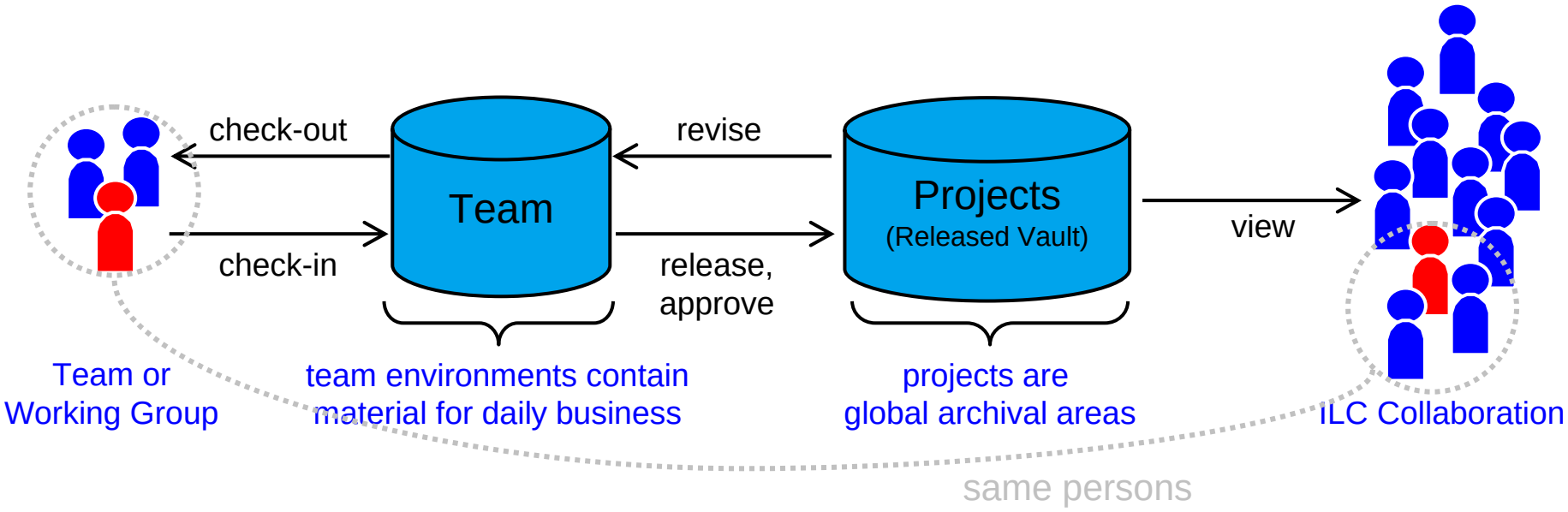
Links (Relations)
(e.g. Dependencies, References)

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

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

Preview

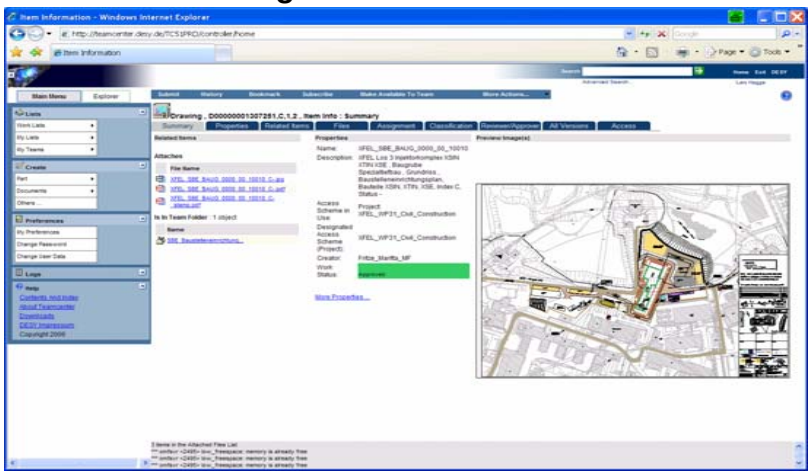
“Private” and “Project-Wide” Items in EDMS



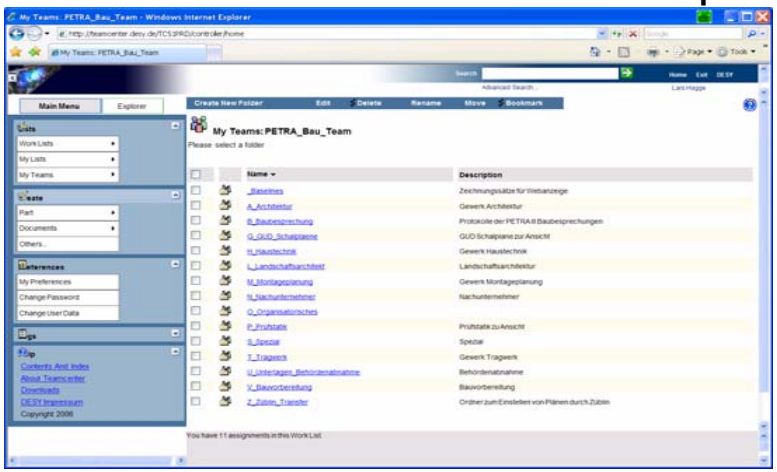
- team environments offer “private” workspace for working groups – similar to shared folders in file system
- projects are “project-wide” archival areas with specific access policies – similar to web access by search engines
- workflows transfer items between teams and projects – and assign tasks (e.g.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

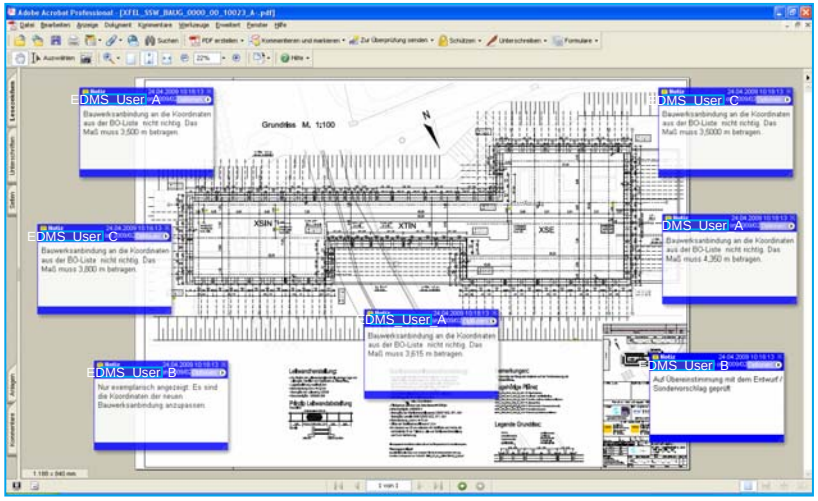
Impressions from EDMS Document Management

Technical Drawing

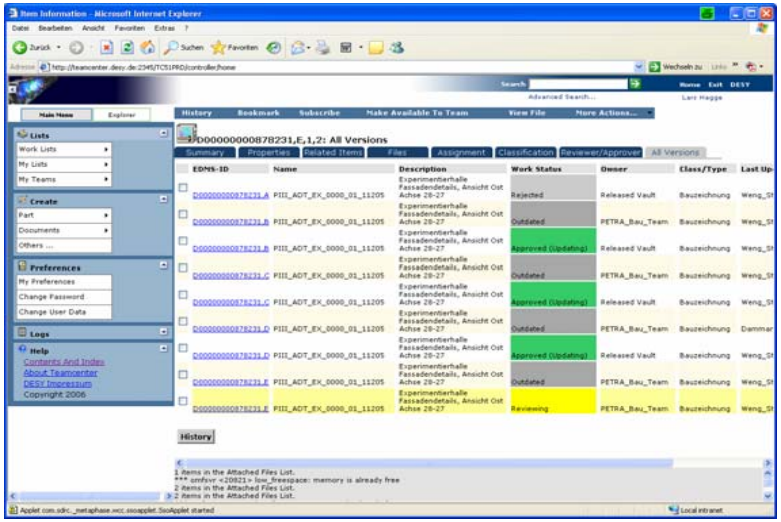


Folders in Team Workspace





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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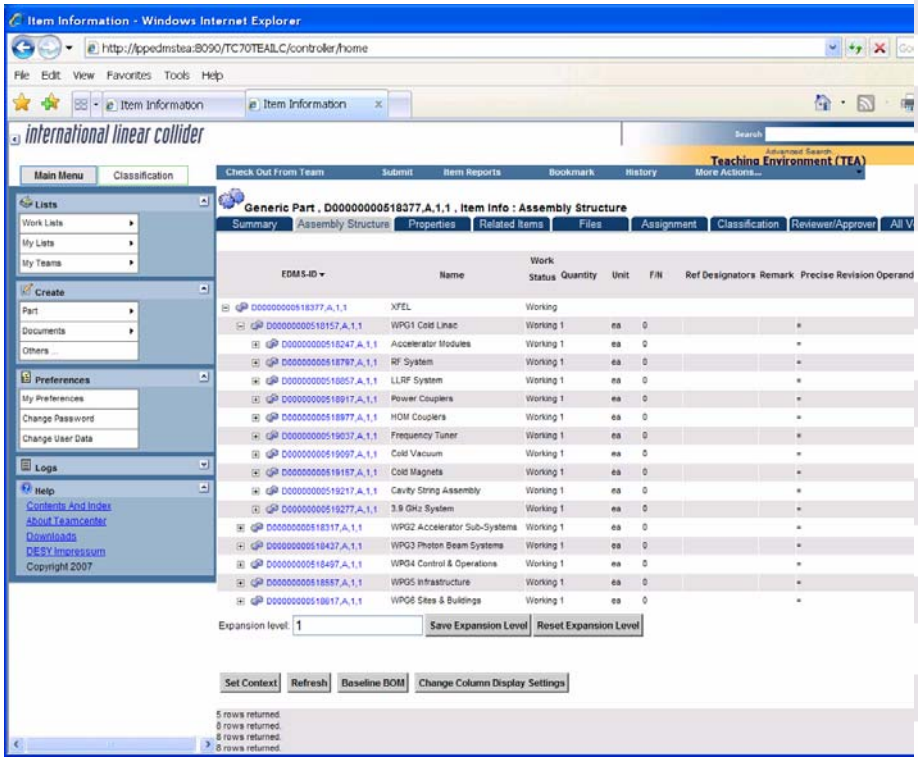
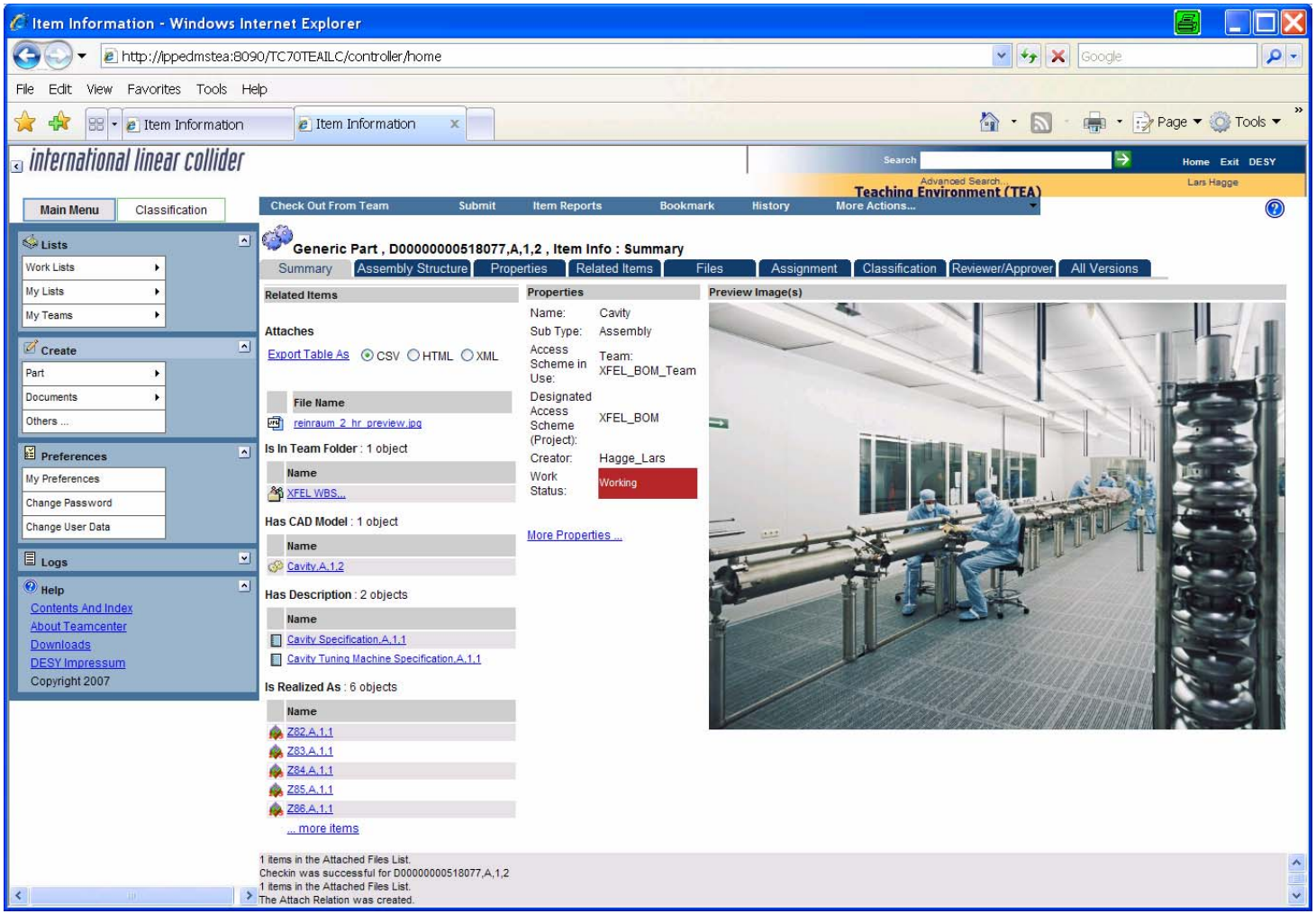
Example: Work Breakdown Structure in EDMS

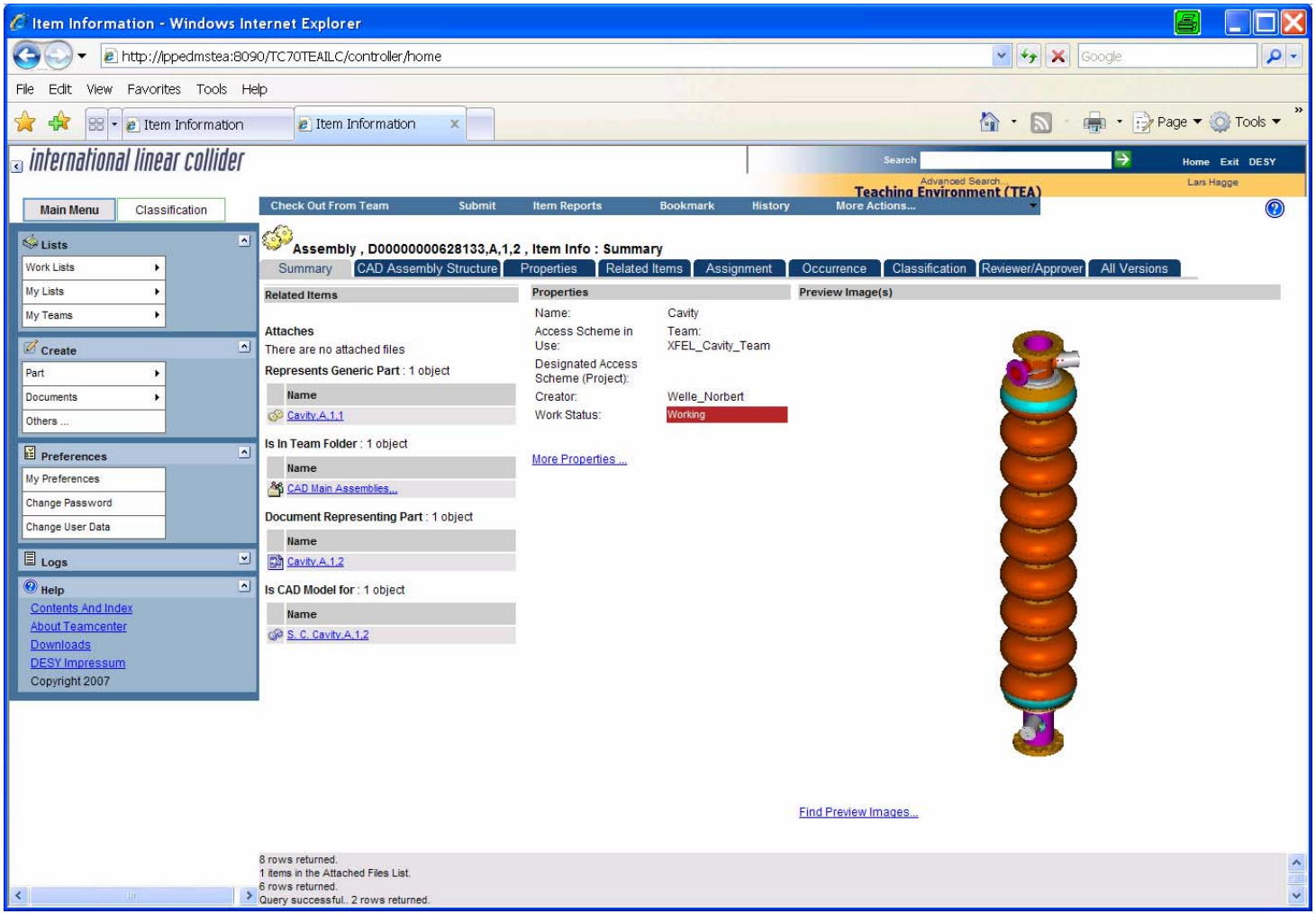


EDMS-ID	Name
D000000000518377,A,1,1	XFEL
D000000000518157,A,1,1	WPG1 Cold Linac
D000000000518247,A,1,1	Accelerator Modules
D000000000518797,A,1,1	RF System
D000000000518857,A,1,1	LLRF System
D000000000518917,A,1,1	Power Couplers
D000000000518977,A,1,1	HOM Couplers
D000000000519037,A,1,1	Frequency Tuner
D000000000519097,A,1,1	Cold Vacuum
D000000000519157,A,1,1	Cold Magnets
D000000000519217,A,1,1	Cavity String Assembly
D000000000519277,A,1,1	3.9 GHz System
D000000000518317,A,1,1	WPG2 Accelerator Sub-Systems
D000000000518437,A,1,1	WPG3 Photon Beam Systems
D000000000518497,A,1,1	WPG4 Control & Operations
D000000000518557,A,1,1	WPG5 Infrastructure
D000000000518617,A,1,1	WPG6 Sites & Buildings
D000000000518677,A,1,1	Project Management
D000000000518737,A,1,1	Systems Engineering

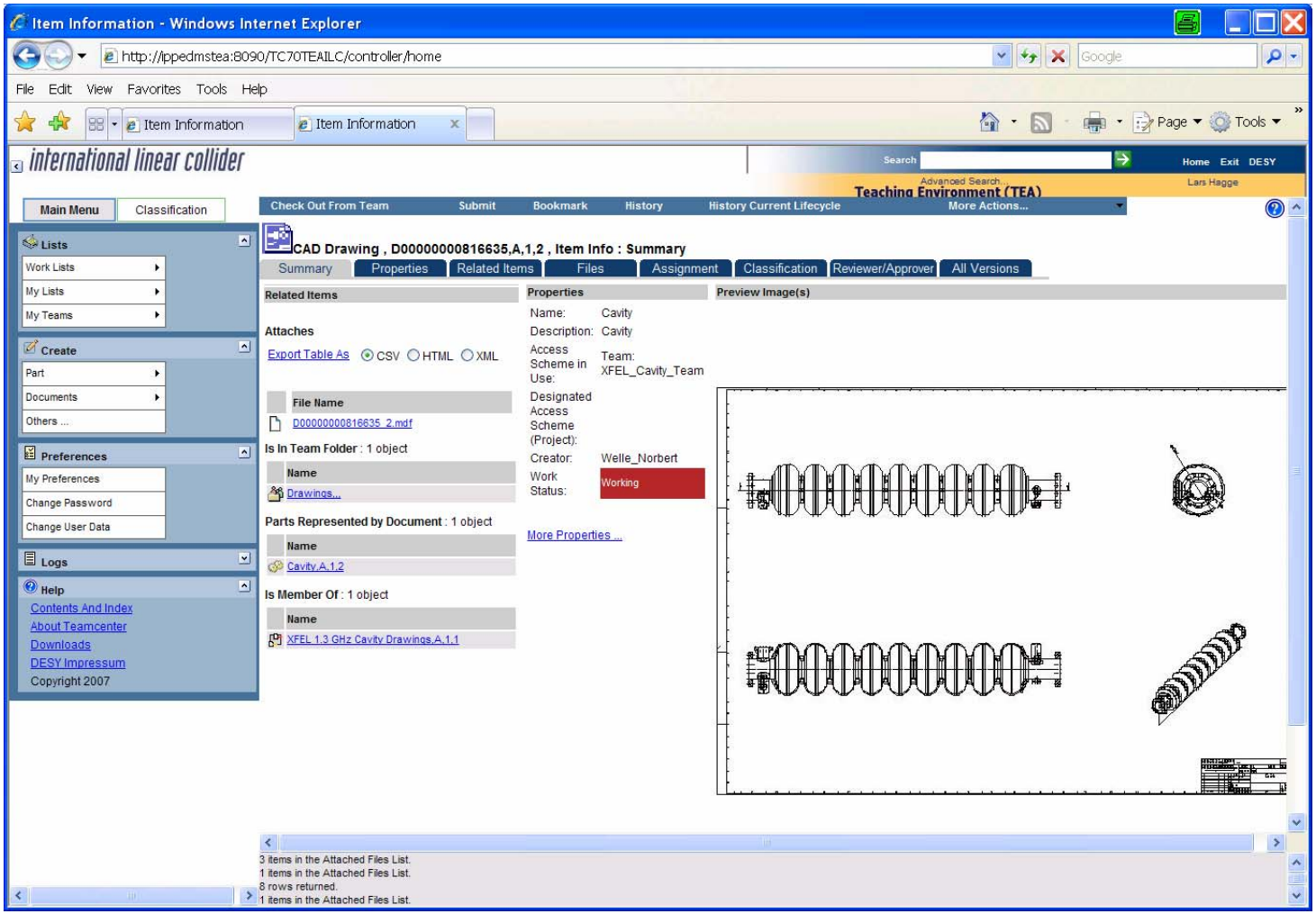
Example: WBS Element Aggregates Documentation



Example: CAD Model for WBS Element



Example: Technical Drawing Derived from CAD Model



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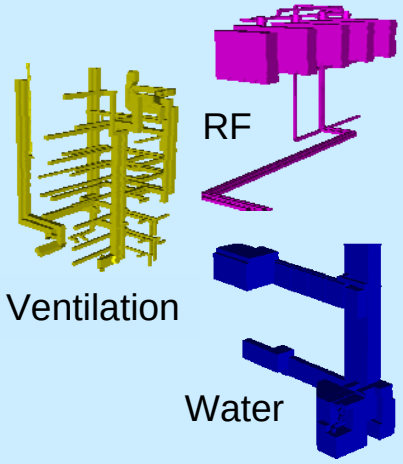
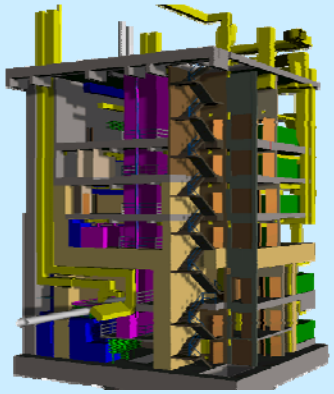
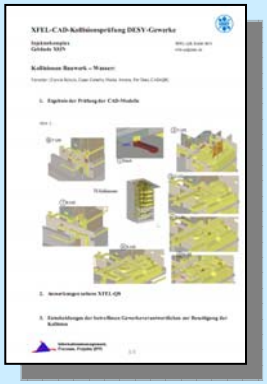
3D CAD collaboration at XFEL

Sub-System Designers	3D CAD QA Team	3D CAD QA Team	Sub-System Coordinators
create / update subsystem model	integrate & release building model	perform QA: collision checks …	agree on resolution strategy

iterate from here every two weeks

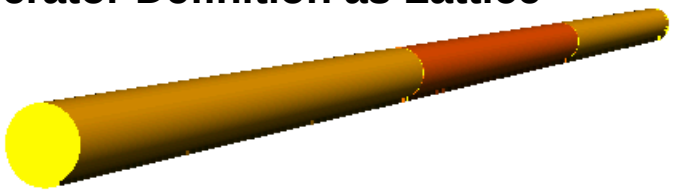






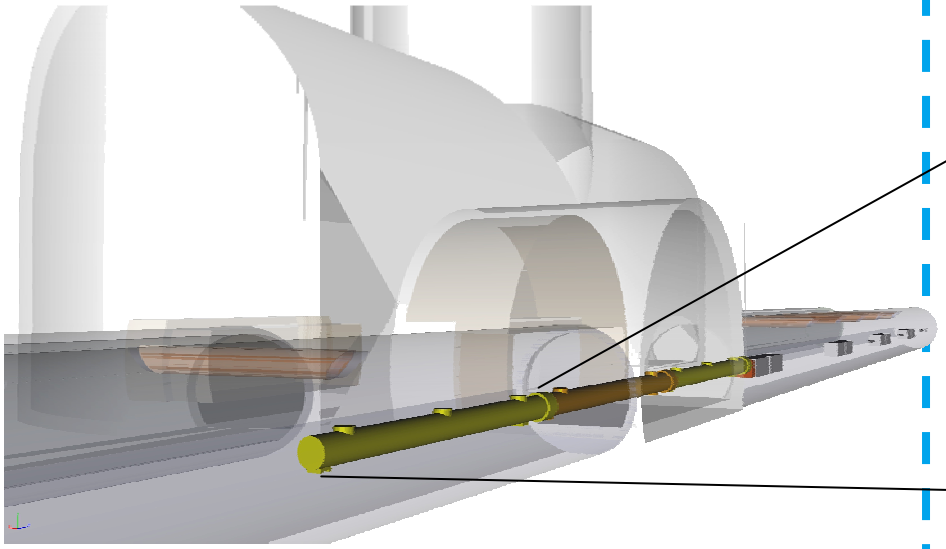
Example: Disentangling Facility Planning from Detailed Design

Accelerator Definition as Lattice

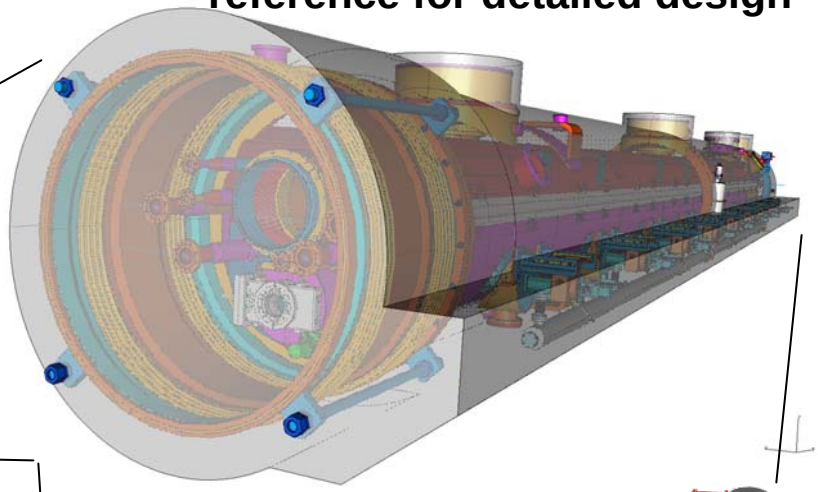


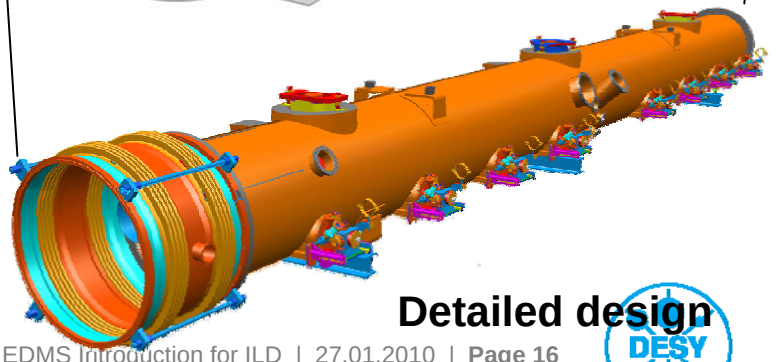
Detailed Design

Placeholder acts as reference for detailed design



Facility Planning using Placeholders

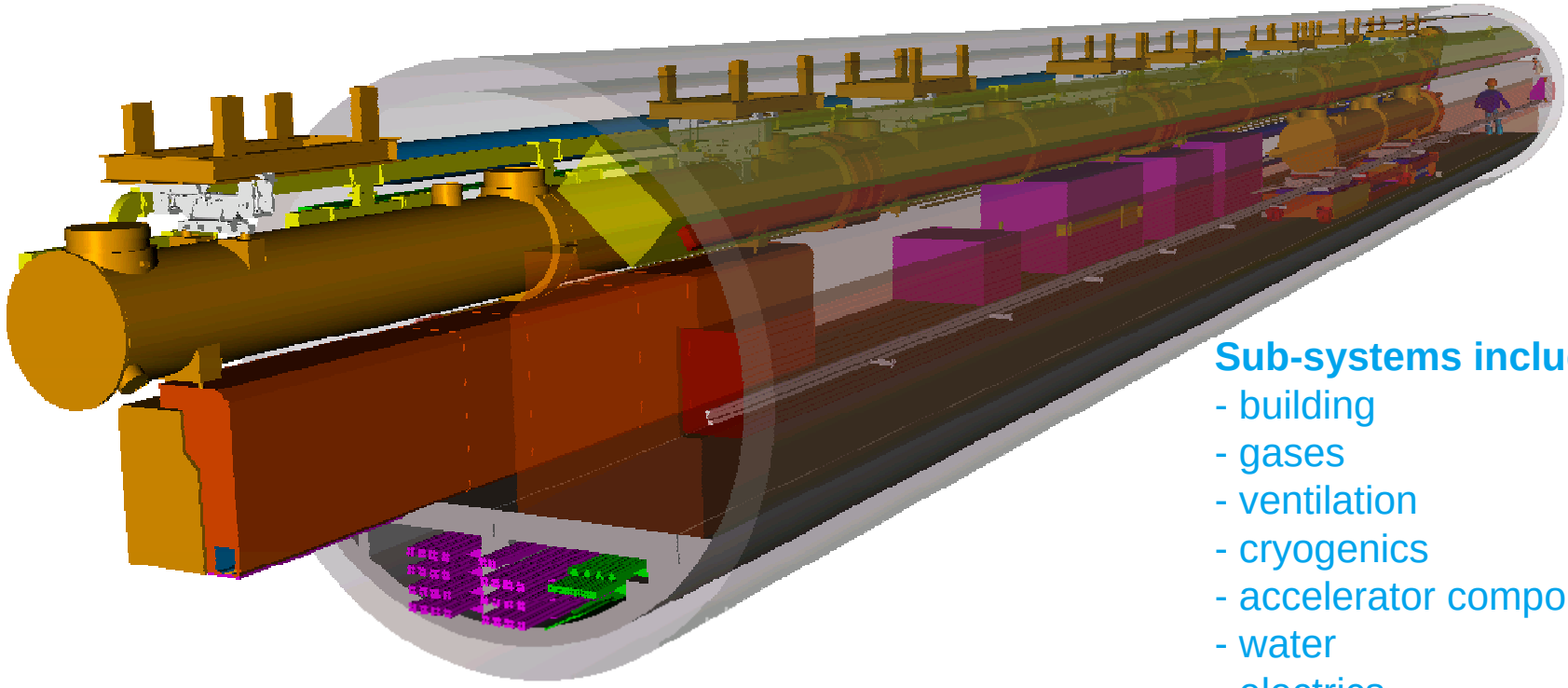




Detailed design

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