CAD Model Upload to EDMS

Benno List   DESY –IPP–

20.1.2012

ILC ML & SCRF BTR
Tsukuba, KEK, 19.-20.1.2012

Global Design Effort

Technical Design Report (TDR)

Documents primary TDR deliverables

1. Results and status of Risk Mitigating R&D
2. Updated Reference Design
3. Updated VALUE estimate
4. Project Implementation Plan
5. Technical risk assessment and future R&D

Readable

6–9 months to write

TD Phase Deliverables

Supports

Summarises

TDR

TDD

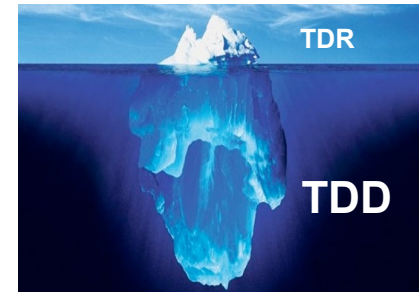**Technical Design Documentation (TDD)**

Reference Documentation

Structured and linked

Basic design documentation
- Parameter tables
- Requirements
- Specifications
- Design documents
- Drawings (2D)
- CAD-3D models
- ...

ILC–EDMS

Cost information

Schedule

ICET

Important goal to consolidate all technical documentation in EDMS in a structured fashion

TDR and TDD

- Technical Design Documentation (TDD) is the comprehensive source of information about all design work performed in TDP-II

- TDR is a human-readable synopsis of the TDD

- The TDD is stored in the DESY EDMS

- Central part of TDD: 3D CAD models

- In EDMS, CAD models are linked together with accompanying information to provide explanations and ensure **traceability** of the design

WBS PS Undulator

Global Design Effort

WBS PS Undulator

Explore Related Items

Example: Traceability

Helical Undulator → **1** *is-used-by* → **Undulator Section** → **2** *depends-on* → **Lattice** → **3** *is-described-by* → **Lattice Design Description**

- Traceability is the foundation for making documents **consistent**, and for **capturing rationale**

All CAD models: Norbert Collomb, STFC

3D Models in a Nutshell

- Use **Placeholder** models for facility planning
- Use **Detailed Models** for component design
- Avoid clashes by ensuring **Placeholder > Detailed Model**

- Note: Facility planning and component design are decoupled
  → **need no sequencing**

1 Lattice

2 Facility Planning

3 Component Design
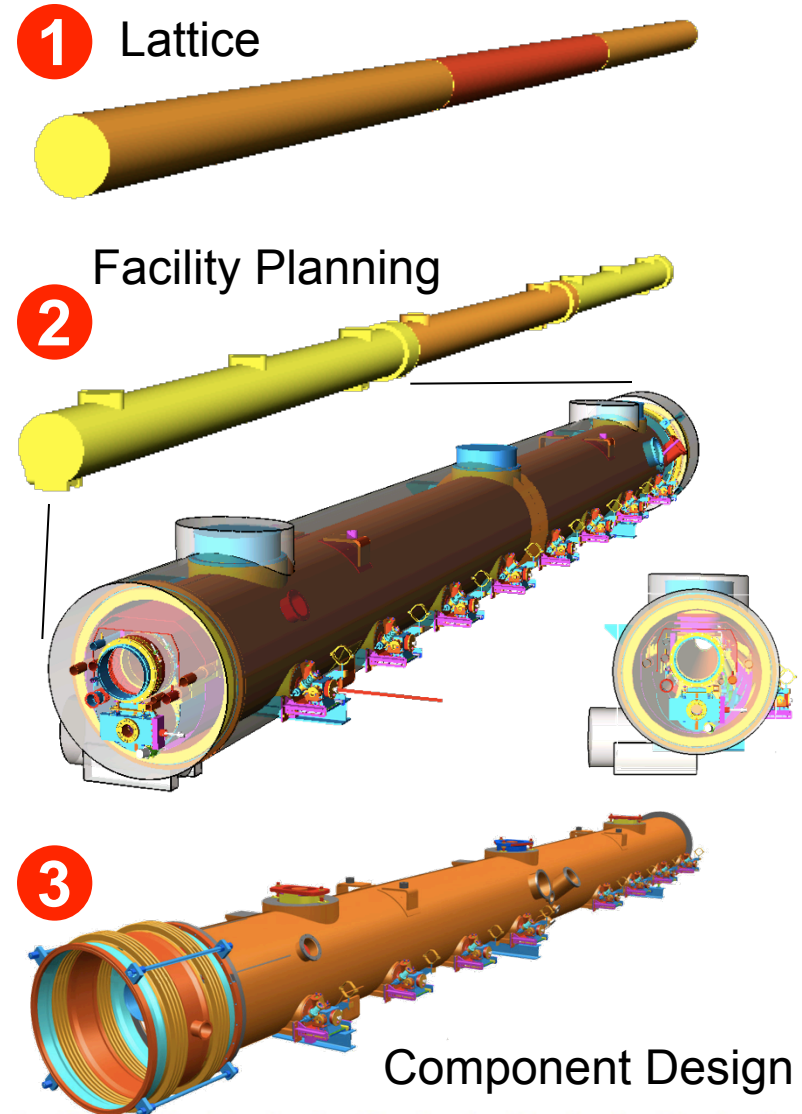
Example: Compare Undulator Placeholder and Detailed Design

Undulator Placeholder …

… is colored green in comparison:

Undulator Detailed Design …
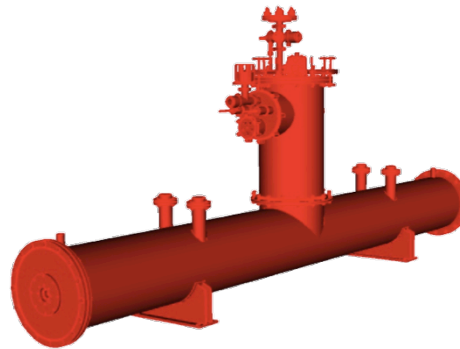
… is colored red in comparison:
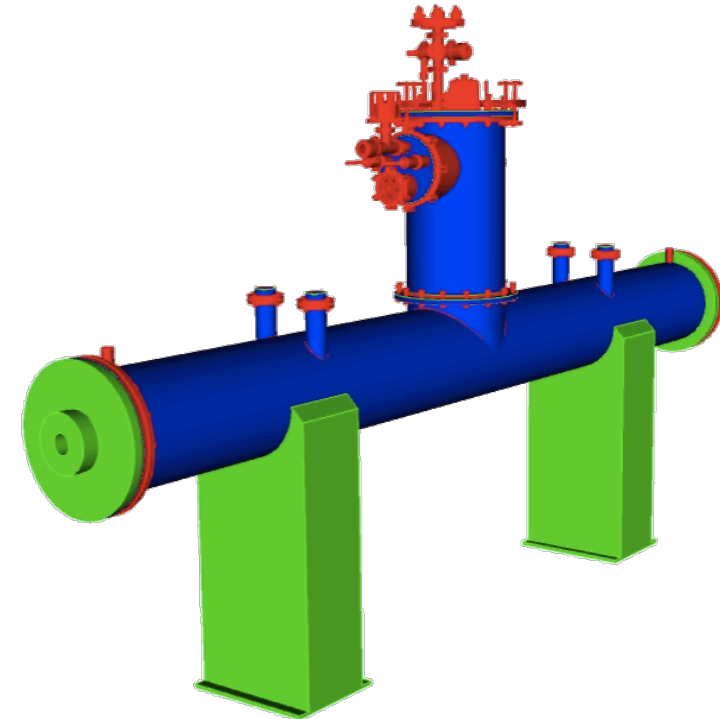
Comparison:
Blue = common geometry
Red / green geometry only in respective model

3D Models in EDMS

- Models created outside DESY are imported via STEP files into I-DEAS and stored in EDMS

- EDMS provides JT-files for efficient visualization
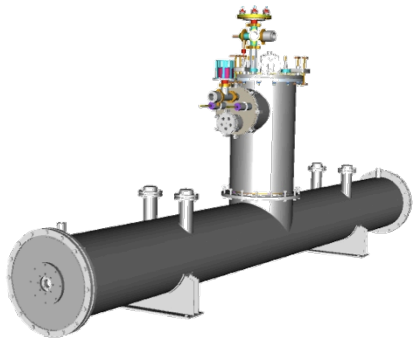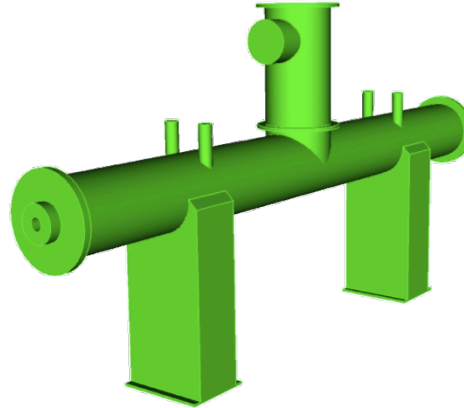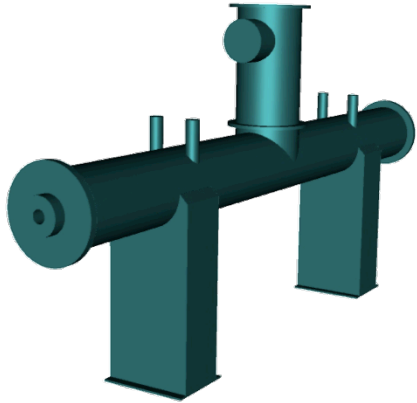
- Native CAD files are not stored (except for I-DEAS)

- Purpose of CAD model storage in EDMS:

  – **Reference of existing designs**

  – **Visualization, verification, analysis of models using VisView JT viewer or free tool JT2Go: http://www.plm.automation.siemens.com/en_us/products/teamcenter/lifecycle-visualization/jt2go/ (available in English and Japanese, for Windows)**

  – **VisView is a professional tool, allows to measure, cut, compare models, and visualize extremely large models (complete XFEL!)**

Design evolution

Question raised by Paolo yesterday

- EDMS: Import new ZIP files

- EDMS does not host the native CAD files

- For XFEL, complete CAD models of buildings are updated (imported), integrated and released biweekly → it works

- Exchange of native-format CAD files would require additional effort → is this needed?

Questions to be answered today

- Which models are available? From whom?

- What are the native formats?

- Any access restrictions / confidentiality issues?

- Which EDMS Teams are needed?
  - **Currently: ILC_Cryomodule_CAD_Team**
  - **Create an ILC_Cavity_CAD_Team?**
  - **Create ILC_Cryogenics_CAD_Team?**
  - **Separate teams for Asia / America wanted?**

- How is the plug compatible interface documented / specified?

How to proceed

- Send me (Benno.List@desy.de) zipped STEP files
  - **Email: limit: 8MB for attachment**
  - **URL (ftp server, web server)**
  - **Dropbox**
- At the same time, provide a description:
  - **Name of the model**
  - **Description (about 2 sentences)**
  - **Author(s), Institute**
  - **Date**
- Files will be imported at DESY
- Coordinate system: vertical axis is y, beam axis is z
- Some iterations may be required (colors, hierarchy) → contact with our engineers (N. Welle, S. Sühl) can be provided

CAD models

- S1-Global CAD model?
- Is the T4CM model up to date?
- Quad package design from FNAL
- Dedicated models of Cavities, tuners?

- Can we prepare a complete CAD model of a piece of tunnel