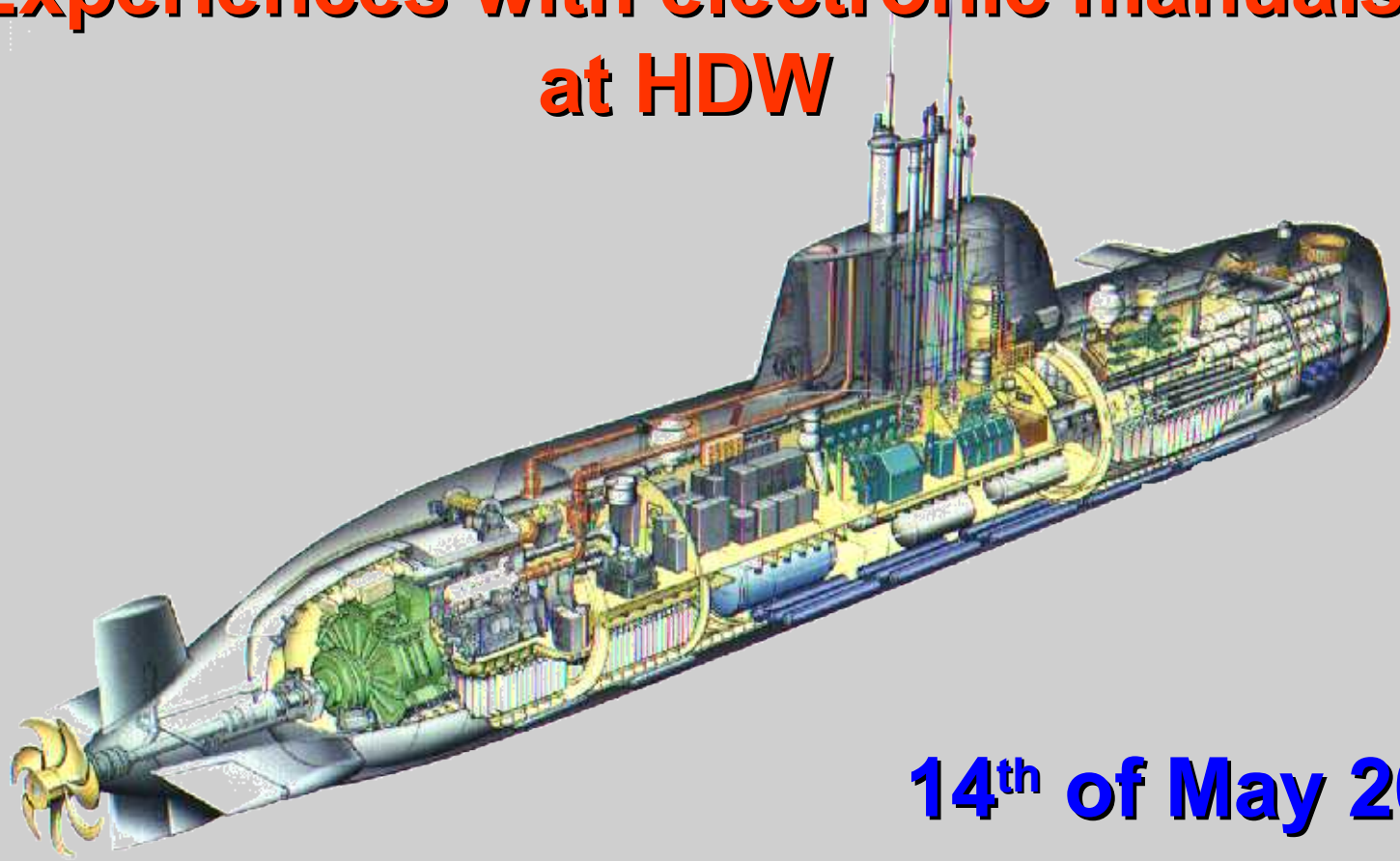
Experiences with electronic manuals at HDW



14th of May 2008

A Business Unit of ThyssenKrupp Technologies

ThyssenKrupp Marine Systems
Howaldtswerke-Deutsche Werft GmbH

ThyssenKrupp

Experiences with electronic manuals at HDW

Kay-Michael Goertz

Head of Logistic Procedures & IT

Diploma in information science (University Dresden)

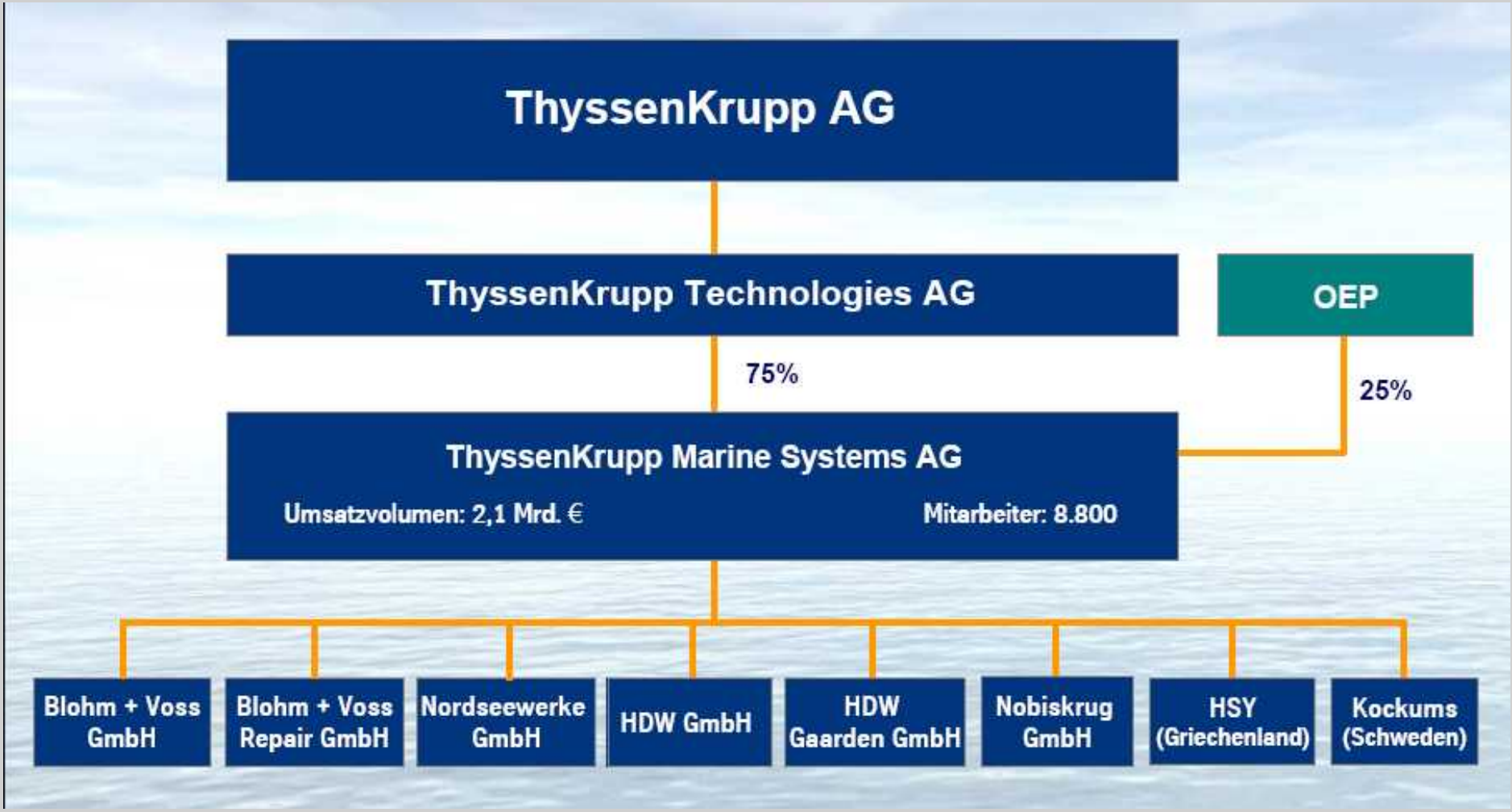
6 years at debis (Professional)
6 years at HDW

Experiences with electronic manuals at HDW

- HDW - a member of ThyssenKrupp Marine Systems
- Printed documentation
- Interactive Electronic Technical Documentation (IETD)
- Creating IETD as main contractor
- Ship Logistic Information System™ (SLIS)
- Experiences

Experiences with electronic manuals at HDW

Company



Experiences with electronic manuals at HDW

Products

- Submarines
  - U212A – German / Italian Navy
  - U214 – export
  - U209 – export
- World leader for non-nuclear submarines
- 65% of free contract in more than 30 years

Experiences with electronic manuals at HDW

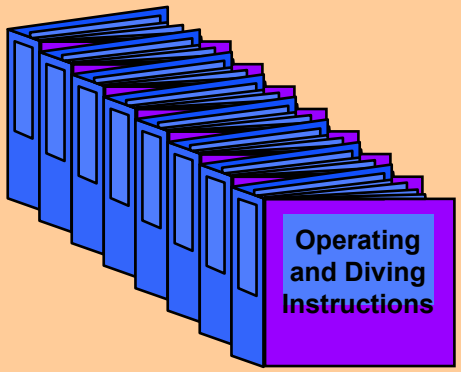
Printed documentation

- More than 100 technical manuals
- More than 200 folders
- More than 15 meters in a shelf
- More than 1 m^3 space – on a submarine !!!
- History:
  Submarine could only take parts of manuals!

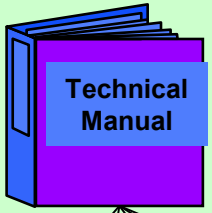
Experiences with electronic manuals at HDW

Printed documentation

Ship Management Documentation



System / Equipment Documentation



- Part 1 Technical Description
- Part 2 Operating Instructions
- Part 3 On-Board Maintenance / Repair Instructions
- Part 4 Depot Maintenance / Repair Instructions
- Part 5 Illustrated Parts Catalogue

Experiences with electronic manuals at HDW

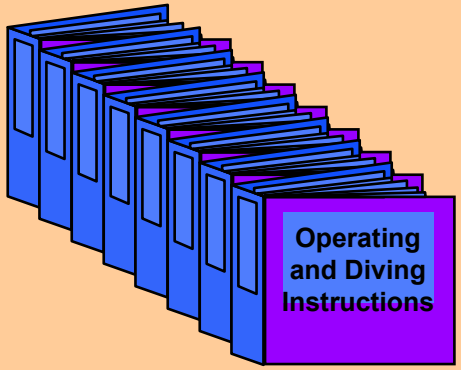
IETD

- Restructured, still more than 100 technical manuals
- More than 15 GB for one submarine
- Modules each manuals
  - 500 or less – 20%
  - 2000 modules or more – 10%
  - biggest over 6000 modules
- Big amount of illustrations (inline, part 5, appendix)

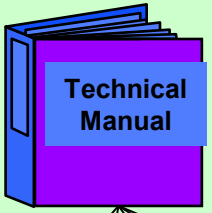
Experiences with electronic manuals at HDW

IETD

Ship Management Documentation

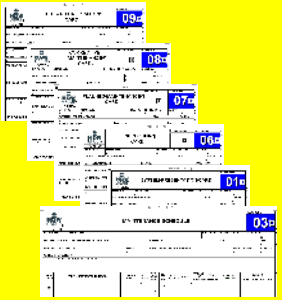


System / Equipment Documentation



Maintenance and Material Documentation

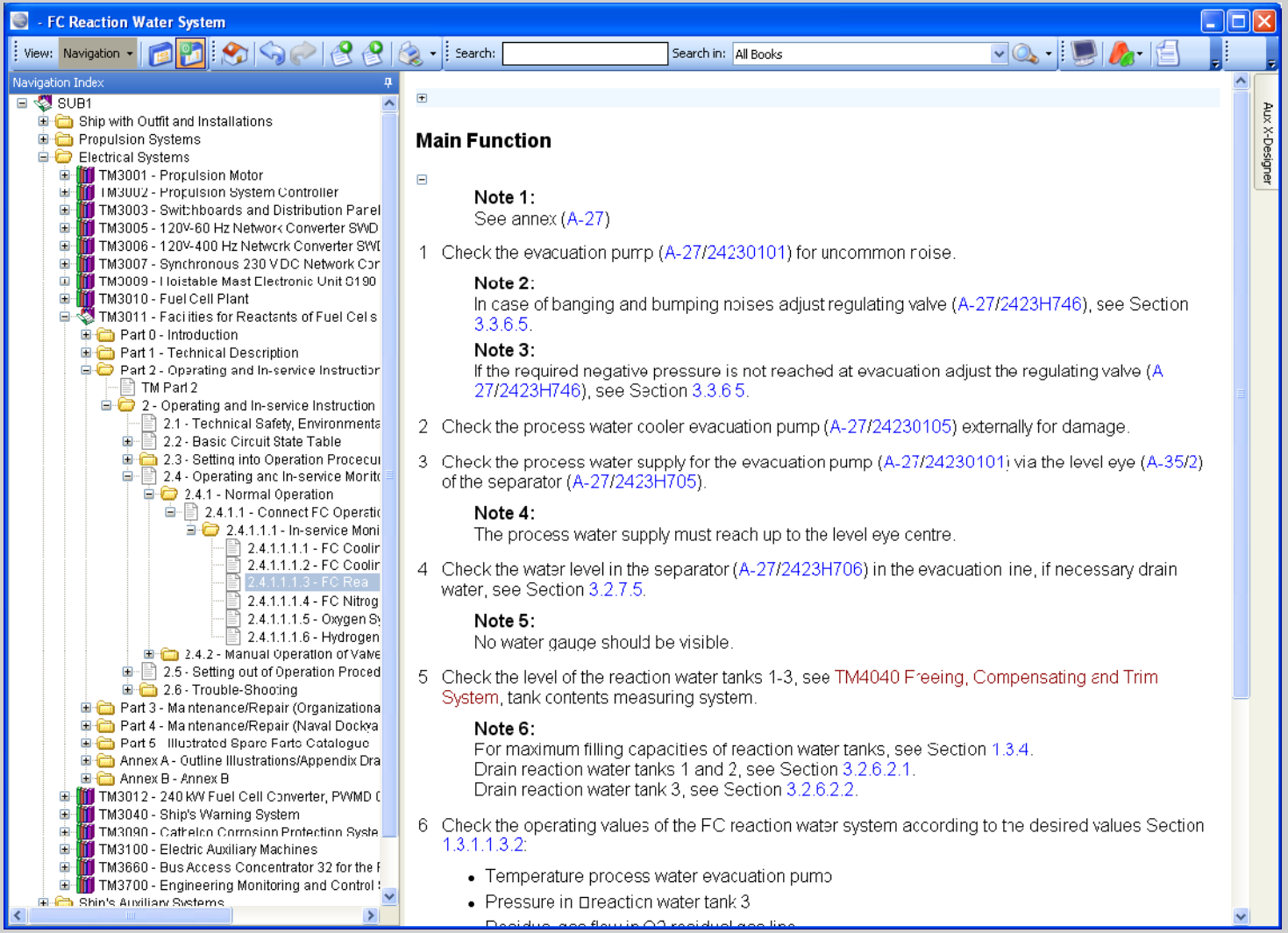
C- MRS Card System



- **Part 1 Technical Description**
- **Part 2 Operating Instructions**
- **Part 3 On-Board Maintenance / Repair Instructions**
- **Part 4 Depot Maintenance / Repair Instructions**
- **Part 5 Illustrated Parts Catalogue**

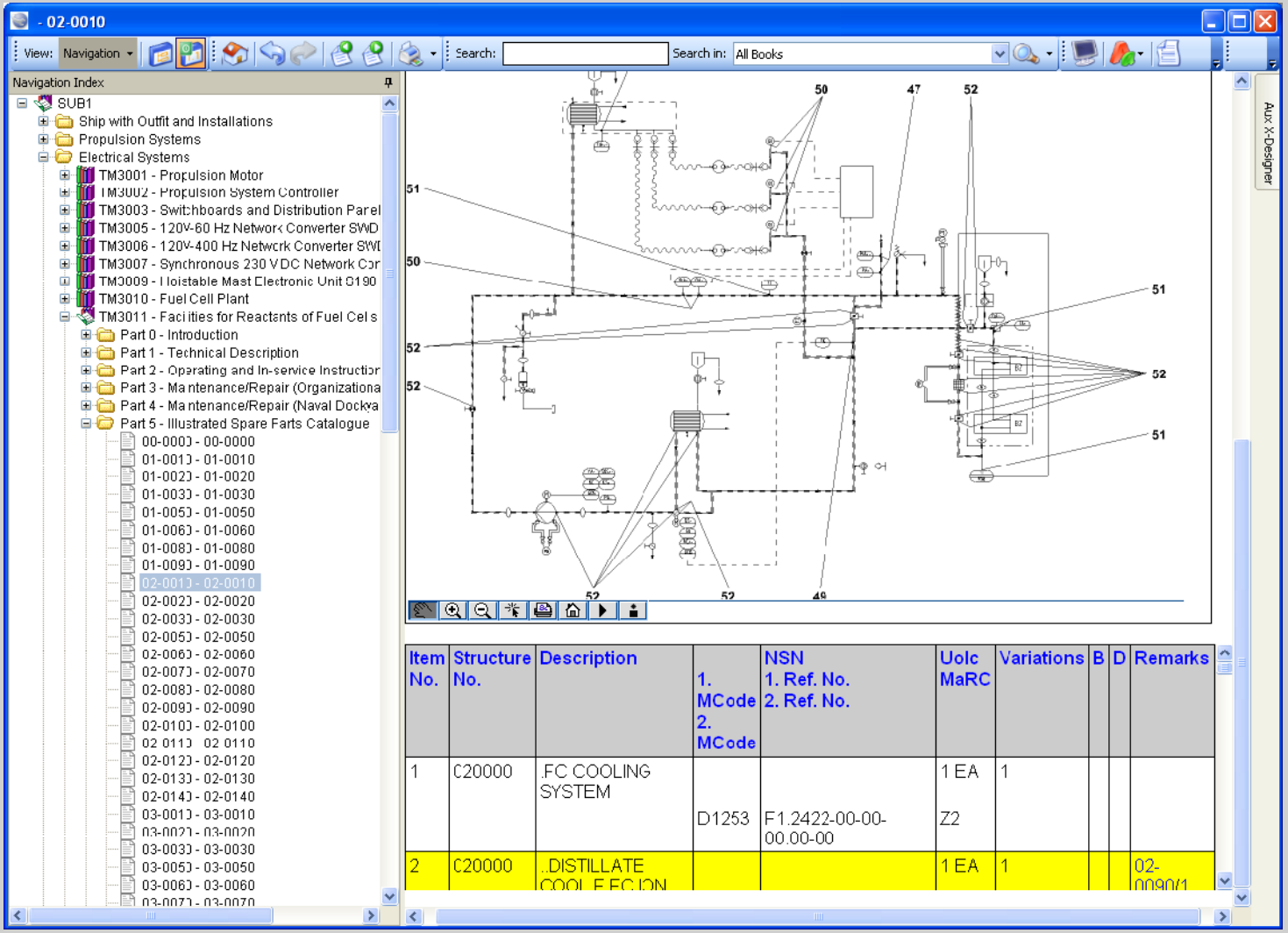
Experiences with electronic manuals at HDW

IETD



Experiences with electronic manuals at HDW

IETD



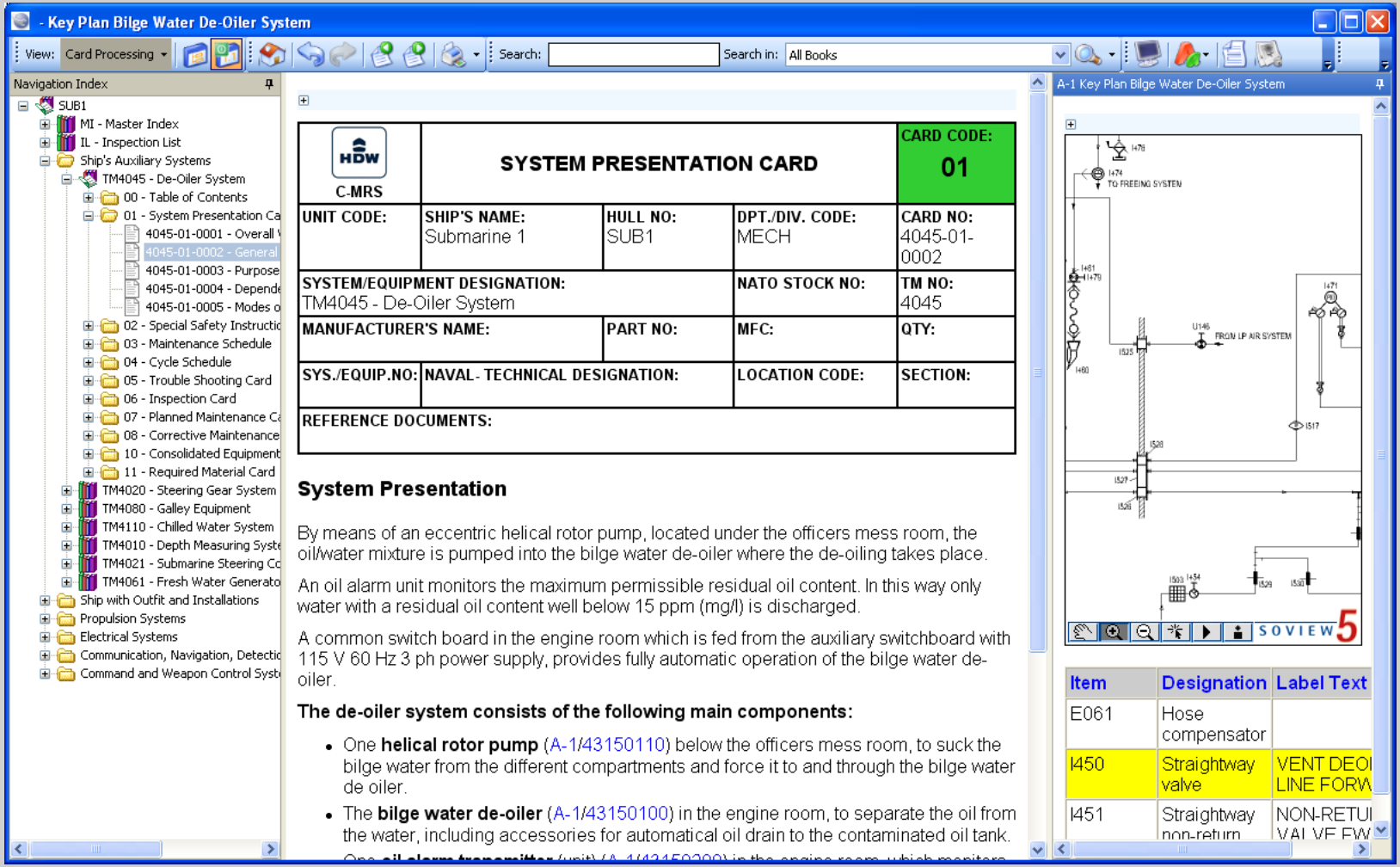
Experiences with electronic manuals at HDW

CMRS Cards

- Generation fully automated – no authoring of cards!
- Additional information stored in CSDB
  - ships name, departments, … (customer information)
  - equipment number, designation, …
  - material data (spares, POL, S/C-TMT, …)
- Links between cards
- Links into the „normal“ IETD Teil 1-4

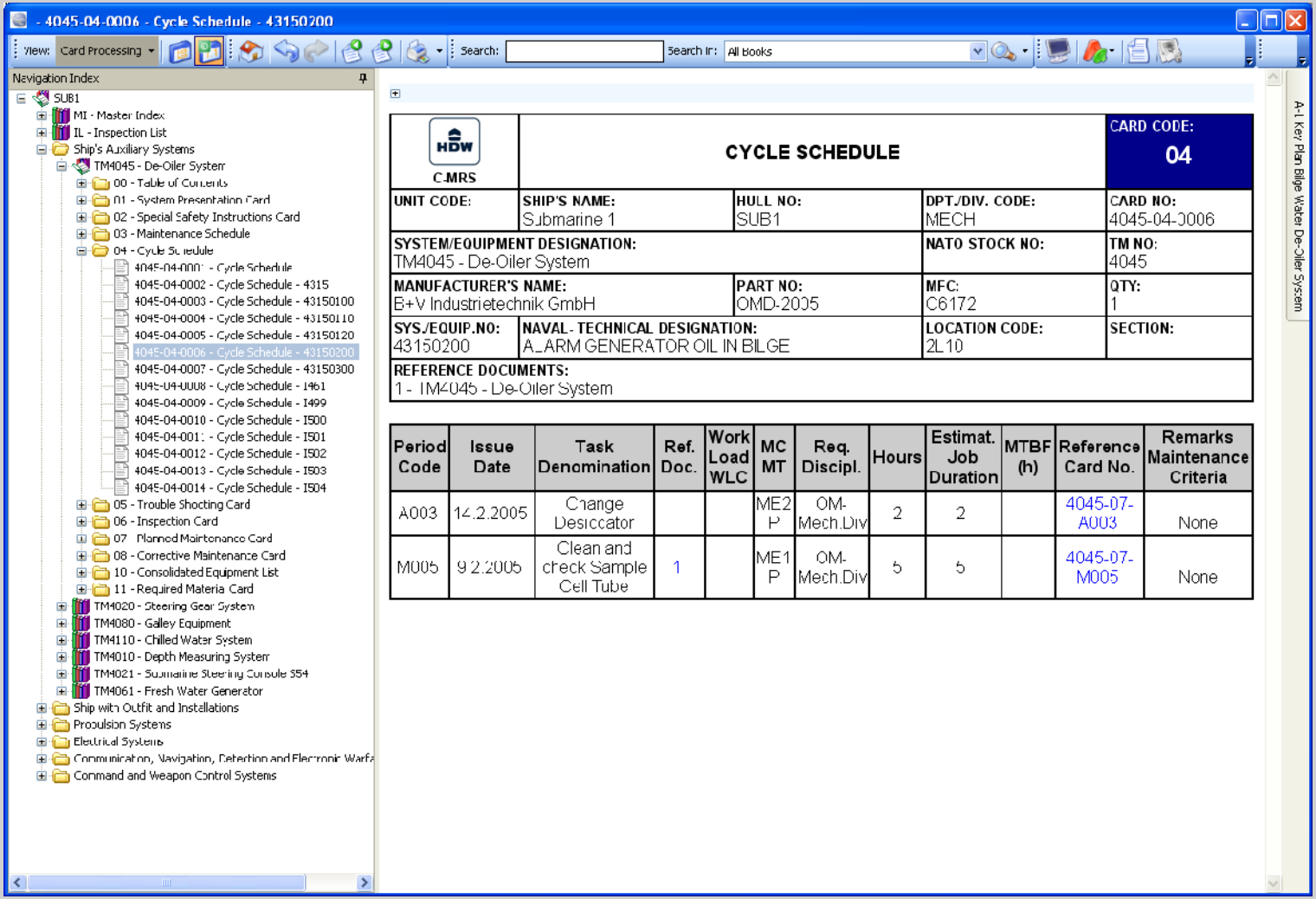
Experiences with electronic manuals at HDW

CMRS Cards



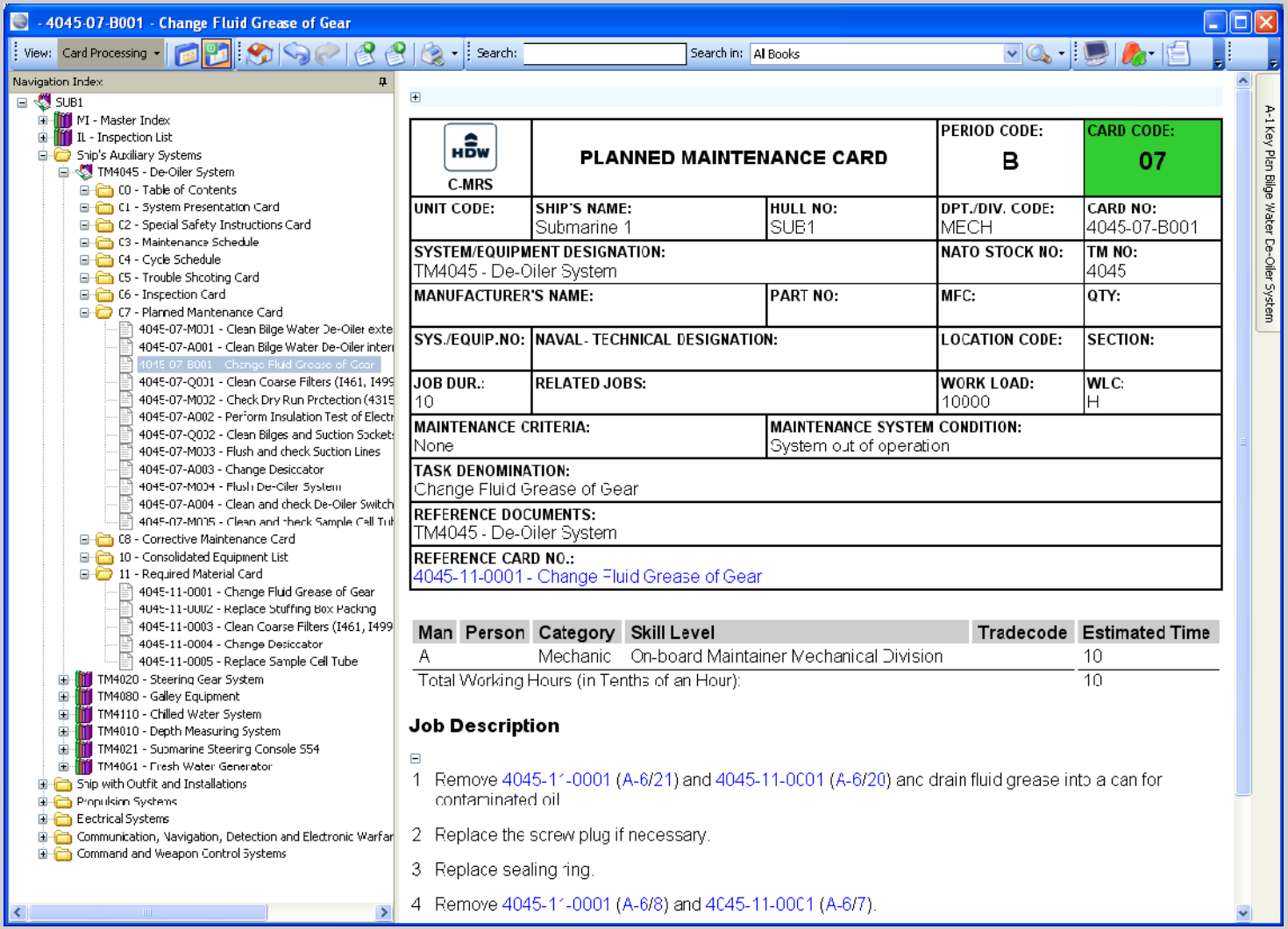
Experiences with electronic manuals at HDW

CMRS Cards



Experiences with electronic manuals at HDW

CMRS Cards

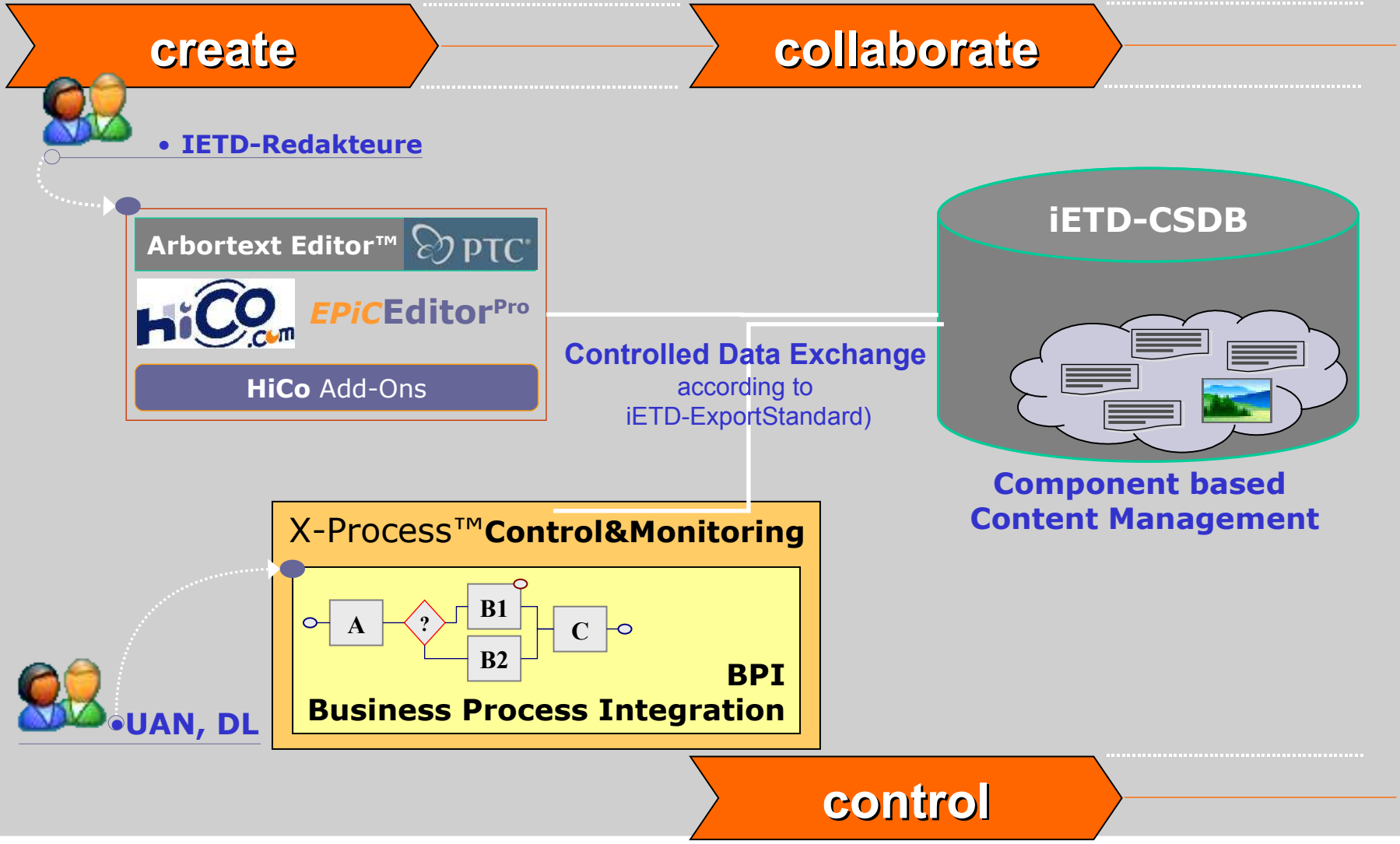


Experiences with electronic manuals at HDW

Creating IETD as main contractor

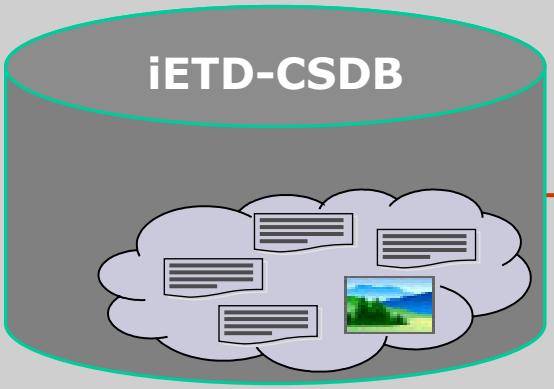
- 20% of Technical Manuals – done by submarine div.
- 80% of Technical Manuals - Subcontractor
- Subcontractor delivers regarding requirements – 15%
- 65% - conversion to IETD by external companies
- TASK
  Management of the process

Experiences with electronic manuals at HDW

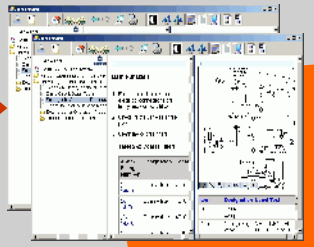


Experiences with electronic manuals at HDW

Publishing



Publikationssystem



HiCo X-Browser™
<XML> - <HTML>

PDF 4 Print

PDF 4 Interactive

Word

ThyssenKrupp

Experiences with electronic manuals at HDW

Test processes

- Check of structure of manual (SPSL – better DMSL) (Excel)
- Check of delivery
  - structure and modules
  - links
  - illustration entities
  - validity, completeness
  - illustration (layer, format,…)

Experiences with electronic manuals at HDW

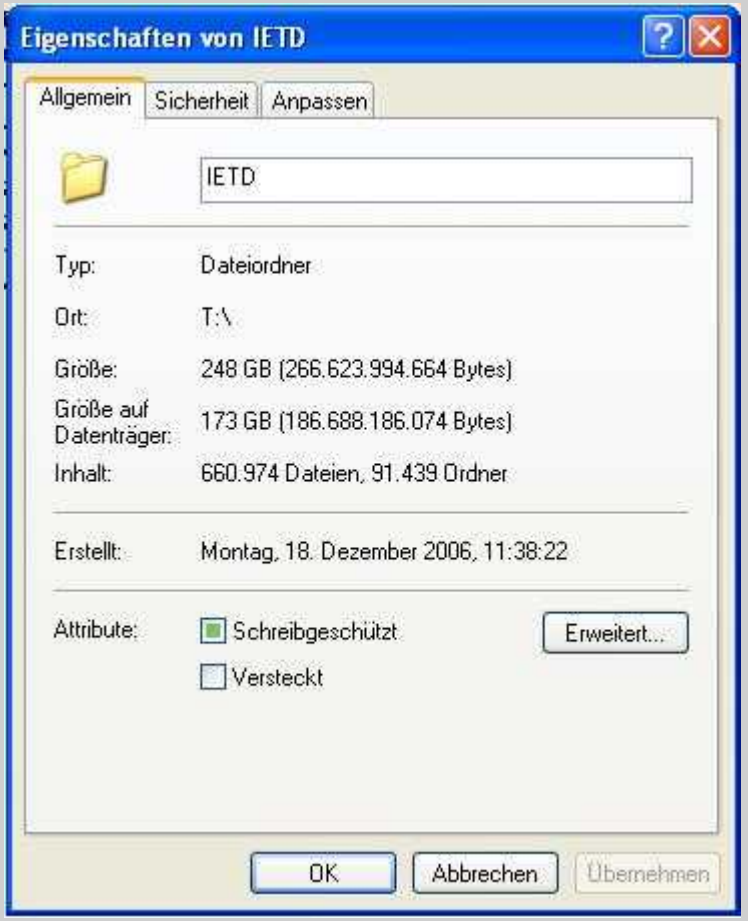
Import process

- only after successful check
- import of structure --> generation of modules
- import of a complete delivery
  - import of structure
  - import of modules
  - import of illustrations including legends

Experiences with electronic manuals at HDW

Amount of Data

- for 3 contracts in work
  - Folder: 91,439
  - Files: 660,974
  - Space: 248 GB

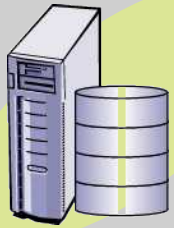


Experiences with electronic manuals at HDW

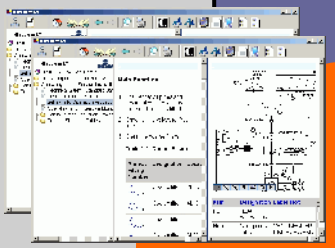
S L I S
Ship Logistic Information System

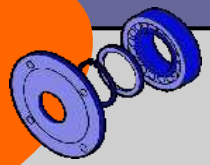
C-MRS
Computerised Maintenance, Repair and Supply Support System
C-MRS Application and Data

IETD
Interactive Electronic Technical Documentation
TM´s & CMRS-Cards



AMOS
SpecTec





iETM - Browser
HiCo X-Browser™
XML> - <HTML>

fully integrated maintenance information system

Experiences with electronic manuals at HDW

Experiences

- IETD is the future, higher usability
- Electronic data – different scenarios of use
- Newer version of ASD S1000D – suitable
- Write once – use often
- Production of IETD – cheaper (but initial investment)

Experiences with electronic manuals at HDW

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Head of Logistic Procedures & IT

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