Tribon 의장 데이터의 STEP AP227 파일로 변환

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Outline

- Introduction & Motivation
- Problem Definition
- A Proposed Approach
- Implementation & Result
- Conclusion & Future Work
Introduction & Motivation
Heterogeneous CAD Systems in Shipbuilding

- Tribon
- CATIA
- SM3D
- AutoCAD
STEP Standards for Shipbuilding

System Engineering : AP233
Product Configuration : AP203
Mechanical and Assembly Design : AP203/AP214
Structural Analysis : AP209
Cable Harness Design : AP212
Ship Arrangement : AP215
Ship Moulded Forms : AP216
Ship Structures : AP218
Furniture : AP236
Process Plant : AP227 Ed.2
PLCS : AP239

ISO 13584 PLIB, AP238: STEP-NC

System  Product  Definition  Analysis/Simulation  Results and Delivery
AP227 Plant Spatial Configuration Ed.2

- Connectivity
  - assembly
  - penetrations
  - ports

- 2-D and 3-D Shape Representation
  - Diagrammatic Presentation
  - Solid Model Presentation
  - Interference Analysis

- Configuration Management of Product Structure
- Versioning and Change Tracking
- Bill of Materials
Problem Definition
Characteristics of Shipbuilding CAD System

- Huge size model data

- Modeling based on reference library
CAD Data Archiving

- Currently, we preserve CAD data...

Hardware + OS + CAD System + CAD data must be preserved collectively
(from www.mosla.org)
Goal

Improve Design Efficiency

- Long Term Data Archiving
  - Retain Knowledge
  - Reusability
  - Data Migration

- Tribon – PDMS Data Exchange
  - Interface based on IS
  - Tribon Hull Data Processing
## Comparison Table - Related research

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<thead>
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<tbody>
<tr>
<td><strong>Domain</strong></td>
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<td>Shipbuilding</td>
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<tr>
<td><strong>Scope</strong></td>
<td>Marine Equipment</td>
<td>Ship Structure</td>
<td>3D Geometry</td>
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<td>Ship Arrangement</td>
<td>Product Structure Etc.</td>
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<td>Ship Moulded Forms Etc.</td>
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<td><strong>Objective</strong></td>
<td>Data Exchange</td>
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<tr>
<td><strong>Technology/Tool</strong></td>
<td>STEP, MACRO, PLIB, XML</td>
<td>STEP, PLIB, XML</td>
<td>STEP, ISO15926, OAIS</td>
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A Proposed Approach
DSME Scenario

Interface based on International Standard

Repository

Data upload

Viewer

Next Generation CAD

Tribon ↔ PDS

Tribon ↔ PDMS

Tribon ↔ AutoCAD 3D
Product Data Relationship
Tribon Data Relationship

Diagram:
- Part
  - SpecName
  - CompName
- Spec
  - CompName
- Component
  - VolumeName
- Volume
Tribon XML Data Example
External Reference Relationship in AP 227
Architecture of Tribon -> AP227 Translator

Tribon XML Data → Parser → Parsed Data → AP227 Class → Stp Writer → STEP File

AP 227 schema
Implementation & Result
Implementation Environment

- Implementation Environment
  - Tribon M3
  - Visual Studio 6.0
  - ST-developer ver.10

- Test Case
  - Real model of DSME
  - Partial piping system of H6044
Tribon to Neutral Format

AP227 ➔ Spec ➔ ISO15926 ➔ Shape DB


XML File

Reference relationship

Data Extraction

Tribon Browser

DSME-X3D Browser
Conclusion & Future Work
Conclusion & Future Work

- **Conclusion**
  - Apply international standard to real problem of shipyard.
  - Reusability of the product data model.

- **Remaining Works**
  - Extend data range.
  - Applied in other application client.