Teamcenter Enterprise Rich Client Update

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Teamcenter Product Management

PLM World 2006
Topics

- Barriers to Success in Product Design
- Web Client Strategy
- Rich Client Overview
- New Features
- Summary
Barriers to Success in Product Design

- Difficulty managing supplier design data
  - May use different CAD products
  - Usually delivered just in time for design reviews
- Enterprise users can’t review design until late in the design cycle
- Remote engineers have difficulty collaborating with local design teams.
- New programs may require training on new CAD applications
Rich Client Characteristics

- **Synchronization** of CAD, PDM and Visualization product structures
- **CAD Connectors** provide management of heterogeneous design data
  - Single consistent data model (CDS) for heterogeneous CAD product definition
- **Embedded Visualization** provides view & markup and digital mockup capability
  - Enabled by automatic JT file generation from CAD data
- **Thin Client Interoperability** provides access to all Enterprise functionality
Teamcenter for Multi-CAD
Rich Client PLM Functionality

- Simplicity of operation
  - Reduced need for training – single UI for all CAD applications
- Focus on core data management commands
  - Check-out / Check-in, Revise
  - Synchronize / Cancel / Release
- Attribute Mapping
  - Create/Edit product structure
  - Resolve Key Collisions
  - Get Latest version from PDM
- Managed CAD Data
  - Parts, Assemblies, Drawings
- Mixed CAD product structure
- Embedded JT visualization
  - Avoid opening CAD

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Teamcenter for Multi-CAD
Rich Client CAD Connectors - Functionality

- Drag & Drop CAD Models to PDM
- CAD files cached locally
  - Users may work off-line
  - Data may be synchronized with PDM
- Support Multi-CAD product structure
- CAD Tool Specific Features
  - Inter-part relations (NX, I-deas, CATIA V5)
    - Wave, CWA, MML
  - Pro/E Family Tables
  - CATIA Design Tables
- Design in Context
- Use JT for non-native CAD
  - NX
  - I-deas
  - CATIA V5
Product Structure Driven Visualization

- Embedded Visualization in PDM Rich Client
- View assemblies with applied effectivity
- A single synchronized product structure for CAD, PDM and Visualization
- Complete OOTB automated JT data management
- Scalable Translation Server for JT translations
- Caching of JT for performance
- Integrated Product Views for marking up and communicating issues (tied to assembly context)
Advantages of Rich Client over Classic Client

- Embedded product structure driven visualization
- Management of heterogeneous CAD data
- Rich user interface
  - Enhanced usability, reduced training
- Firewall friendly communication
  - SOAP running on HTTP(S)
- Eliminates workstation specific administration
  - Automated download and install
    - User controlled, administrator action not required
- Unmanaged host
Challenges

- Additional infrastructure
  - New rich client web application deployed with thin client application
  - Translation Server(s)
- Expose custom classes and attributes in the rich client
- Migrate server side customizations to new CDS data model
- Migration necessary for classic client CAD data
Designs and manufactures big electrical motors for special use in different industries like Oil & Gas, Steel, Chemical, and Power Utilities.

Every product is unique and adapted for each customer.

Market Driver - “Decreasing prices and the market demand for faster delivery forced us to reduce engineering design costs, to improve engineering cycle time and to improve the output of products.”

Solution:

1. Find commonality & variations of unique products and standardize those designs

2. Automate process based on standardization

3. Parameterize each variation and develop a procedure to convert customer requirements into technical specifications

4. Siemens and UGS implemented a fully automated engineering process where the technical specifications generate a parameter-set, managed by Teamcenter and NX
SIEMENS A&D LDS

Design to Order process

1. Find commonality & variations of unique products and standardize those designs

2. Parameterize each variation and develop a procedure to convert customer requirements into technical specifications

3. Siemens and UGS implemented a fully automated engineering process where the technical specifications generate a parameter-set, managed by Teamcenter and NX

4. The engineering process consumes the parameters and then creates the complete product in 3D, generates the 2D-drawings for manufacturing and manages the generated data through the Teamcenter Enterprise rich client.

Results

- Automated design-process requiring zero designer interaction
- Engineering Cycle Time improvement by 100 %
- Engineering Cost reduction by 30 %
For more information see PLMWorld CD:

- Design To Order - Competitive Excellence with Teamcenter and NX
  - *Volker Lucass & EriK Weigard, Siemens AG*
Developed common processes and data models that enable the designer to take a design task from authorization to the beginning of the review process (Off-Board), including:

- CAD File Management
- Links Management
- EBOM management, including Effectivity
- CAD Neutral Files (JT files)
- Change notice business rules
- Definition of Key Reports: Change Notice and Parts List
- Collaboration across all phases of the product definition process

The tight integration of CAD structure and Enterprise BOM eliminates manual/dual entry of BOM data, reducing data entry errors and enabling the change process to cross into many different business areas.
For more information see:

- Developing and Deploying a Standard TcE Configuration to the Enterprise
  - Timothy Krantz, Northrop Grumman Corp.
- When: Thursday @ 3:45PM
Teamcenter Enterprise Rich Client

New Features
Enterprise 2005 SR1 - Rich Client

2005 (5.0)
- Increased Usability
- Expose Thin Client Summary & Revise Actions
- Attribute Validation
- BOM Unit of Measure
- Non-CAD Parts (mastics)
- Copy/Paste as New (non-cad)
- Effectivity Improvements
- ADS Auto Numbering and Domain support
- Intelligent Purge of Versions
- Pro/E: Family Table Enhancements

2005 SR1
- PR Reduction
- Performance & Stability
- Translation during check-in
- Enhanced GTR navigation
- Workspace filtering
- Smart check In
- Native revise action
Performance Improvements

- SR1 will improve performance during the following actions:
  - Drag to Workspace/Get Latest
  - Open to CAD
  - Save to Teamcenter
  - Check-In
  - UnCheck-Out
Areas Targeted

- Performance and Stability
  - Use of ZIP data streams and multi-threaded data transfer between client and web server
  - Set based data transfer (from/to) between web server and Enterprise server

- Usability
  - Display status during long operations
  - Progress bar fixes during CAD operations
TcEnt 2005
- JT & CGM files are saved on the client before uploading to the server
- Designer can’t check-in until translation is complete

TcEnt 2005 SR1
- File transfers for translation only occur between servers
- Allows designer to continue work on next task
- JTs available for download after full translation
New relationship browser will display Part to Part relationships for General Tracking (GTRs) and Family Table relationships.
Workspace Filtering

- New Toolbar to filter items in the workspace and team folders by class.
- Simplifies navigation of large amounts of design data
Native Revise

- Revise exposed as native action in the rich client
- New revision saved directly to Team Folder and optionally checked-out
- Automatically refreshes the Part object in the workspace
Check In (Keep for Modify) of top level assemblies will only check in modified components and sub-assemblies.

Metadata and geometry changes will trigger the creation of a new version during check in.
Enterprise 2007 - Rich Client

- 2005 SR1
  - Jul
- 2007
  - Oct
  - Apr
  - Jul

2007
- Team enhancements
- Installation improvements
- FMS Support
- Bookmarks
- Structured document relationships
Team enhancements
Version Management

- Align sequence increment behavior between Team and Vault
- Version attribute only updated by CAD applications

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<th>Action</th>
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<th>Seq</th>
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<tr>
<td>Check in to vault</td>
<td>A</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Check out to team</td>
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<td>2</td>
<td>1</td>
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<tr>
<td>Check out from team</td>
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<td>1</td>
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<tr>
<td>Modify CAD data</td>
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<tr>
<td>Check in to team</td>
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<tr>
<td>Check out from team</td>
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<td>Release to Enterprise</td>
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<tr>
<td>Revise</td>
<td>B</td>
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Team enhancements

Moving Data

- Treat multiple versions of same Part as indivisible group
- Move/Release all object versions to new team folder or Vault
Team Enhancements
Team Leader Un-Reserve Action

- Gives team leader more control over reserved CAD data.
- Allow reassignment of unfinished parts from busy or unavailable designers to free teammates.
Modularized Installation

- Give administrators the flexibility to pick and choose which rich client binary executables to install in the final web application file
  - Minimizes size of war file
  - Simplifies installation of rich client patches
Installation Improvements

- Specify Version information on install page and Help → About info page

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<thead>
<tr>
<th>Teamcenter Rich Client Applications</th>
<th>Action</th>
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<td>Teamcenter Rich Client *</td>
<td>Install 2007 MP1</td>
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<th>Teamcenter Rich Client CAD Connectors</th>
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<td>Connector for NX</td>
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<td>Connector for Pro/ENGINEER</td>
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<tr>
<td>Common CAD Connector *</td>
<td>Install 2007 MP1</td>
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* = Required Install
File Management Services – Rich Client Support

- Reduces latency between client and server
- Spreads load across more servers
Bookmarks

- Expose bookmarks in the rich client Nav Tree
- Drag and Drop Parts from workspace onto “My Bookmarks” to create a link
- New bookmark links are also displayed in the thin client Bookmark list
Structured Docs

- Display Structured Doc relationships in the rich client workspace
- Includes Part to Doc and Doc to Doc relationship
CAD Data & Effectivity

- Allow designers to **update** assemblies while applying a structural or revision effectivity.

- Out of context parts will still be displayed in the CAD assembly navigator, but they will be **unloaded** and suppressed from the 3D view.

  - This allows designers to modify the structure without breaking inter-part relationships (MMLs and WAVE)
CAD Connectors

- **NX**
  - NX3 / NX4 / NX5

- **I-deas NX Series**
  - 11 / 12 / 13

- **Solid Edge**
  - 18 / 19 / 20

- **SolidWorks**
  - 2005

- **Pro/ENGINEER**
  - Wildfire 2 & 3

- **Catia V4**
  - 4.2.0 – 4.2.4

- **Catia V5**
  - R15/R16

- **Inventor**
  - 9 / 10

- **JT & STEP import**
  - AP203/214
CATIA v5 Catalog Support

- Teamcenter will recognize Teamcenter managed parts stored inside Catia v5 Catalogs.
  - All catalog parts used in an assembly will automatically be converted to the internal Teamcenter part when saved to Teamcenter.
Teamcenter Enterprise Rich Client
Summary

Value Proposition
- Communicate designs and issues to shorten design cycles
- Manage enterprise data in a heterogeneous design environment
- Enable early access to product information beyond the engineering workgroup
- Reduce Cost and Time To Market by fully leveraging the supply chain
- Remove geographic constraints to collaboration

Capability
- Heterogeneous CAD Data Management
- Product structure driven visualization
- OOTB visualization file generation and maintenance
- Visual validation, clearance analysis, cross sectioning…
- Issue tracking with dynamic markup
- Secure, web-access to data
- Usable, robust “rich” client