



Teamcenter Enterprise Rich Client Update

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Teamcenter Product Management

PLM World 2006



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



Barriers to Success in Product Design



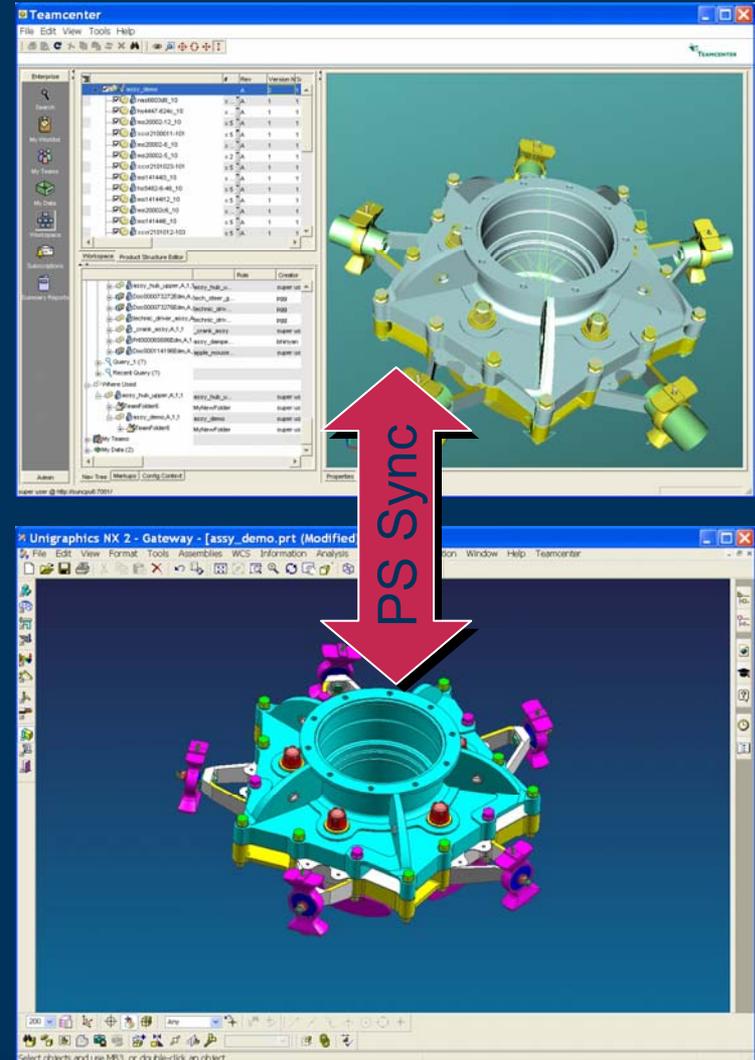
- ▶ Difficulty managing supplier design data
 - ▶ May use different CAD products
 - ▶ Usually delivered just in time for design reviews
- ▶ Enterprise users can't review design until late in the design cycle
- ▶ Remote engineers have difficulty collaborating with local design teams.
- ▶ New programs 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



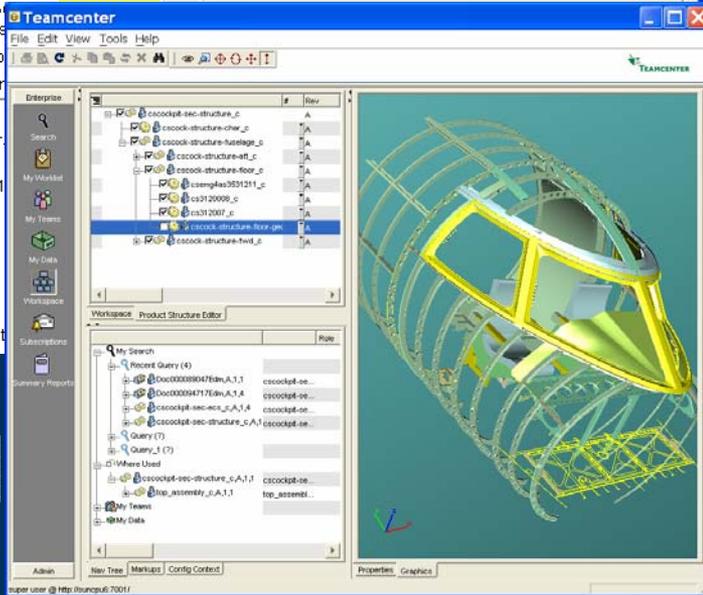
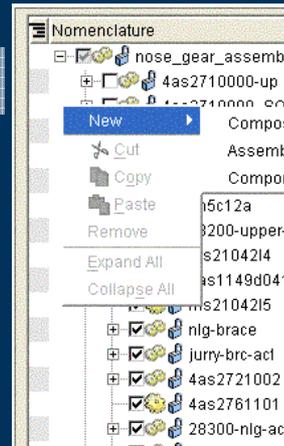
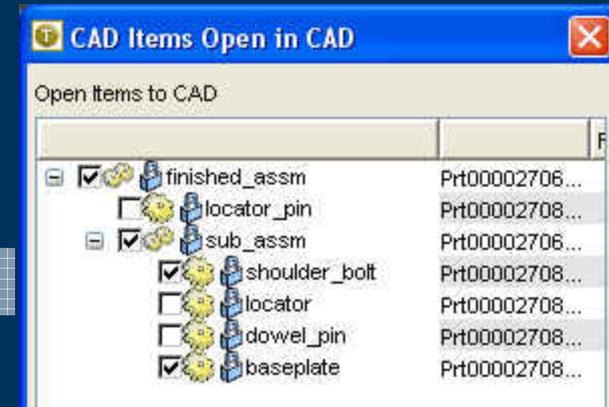


Teamcenter for Multi-CAD

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

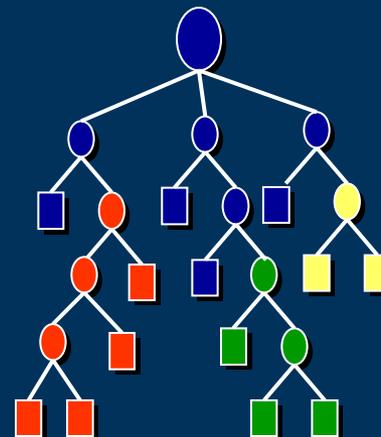
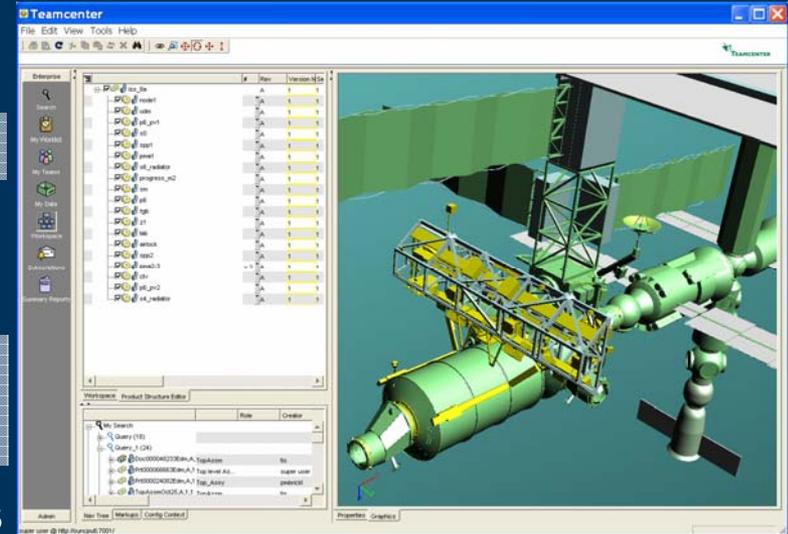




Product Structure Driven Visualization



- ▶ 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)

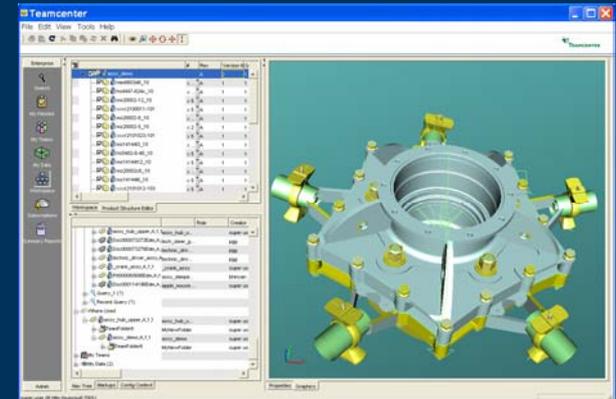




Advantages of Rich Client over Classic Client



- ▶ 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



Customer Success Stories

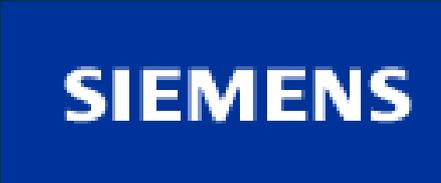


SIEMENS A&D LDS

Design to Order process



- ▶ 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





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



SIEMENS A&D LDS

Design to Order process



- ▶ For more information see PLMWorld CD:
 - ▶ **Design To Order - Competitive Excellence with Teamcenter and NX**
 - ▶ *Volker Lucass & Erik Weigard, Siemens AG*

SIEMENS



- ▶ 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



NORTHROP GRUMMAN

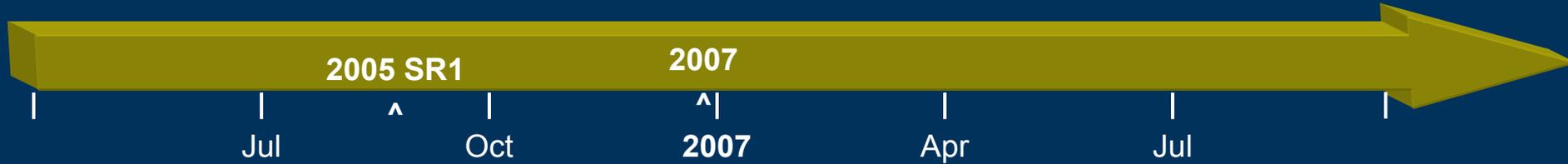


Teamcenter Enterprise Rich Client

New Features



Enterprise 2005 SR1 - Rich Client



2005 (5.0)

Released

- ✓ *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

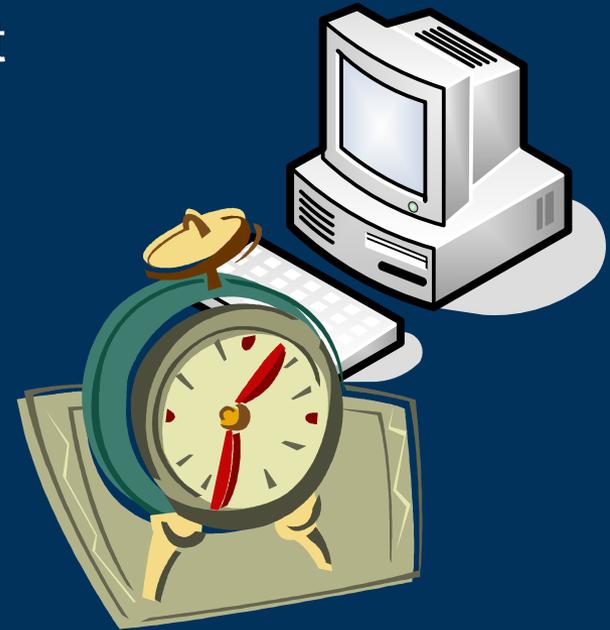
- ✓ *PR Reduction*
- ✓ *Performance & Stability*
- ✓ *Translation during check-in*
- ✓ *Enhanced GTR navigation*
- ✓ *Workspace filtering*
- ✓ *Smart check In*
- ✓ *Native revise action*



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



2D & 3D Translations

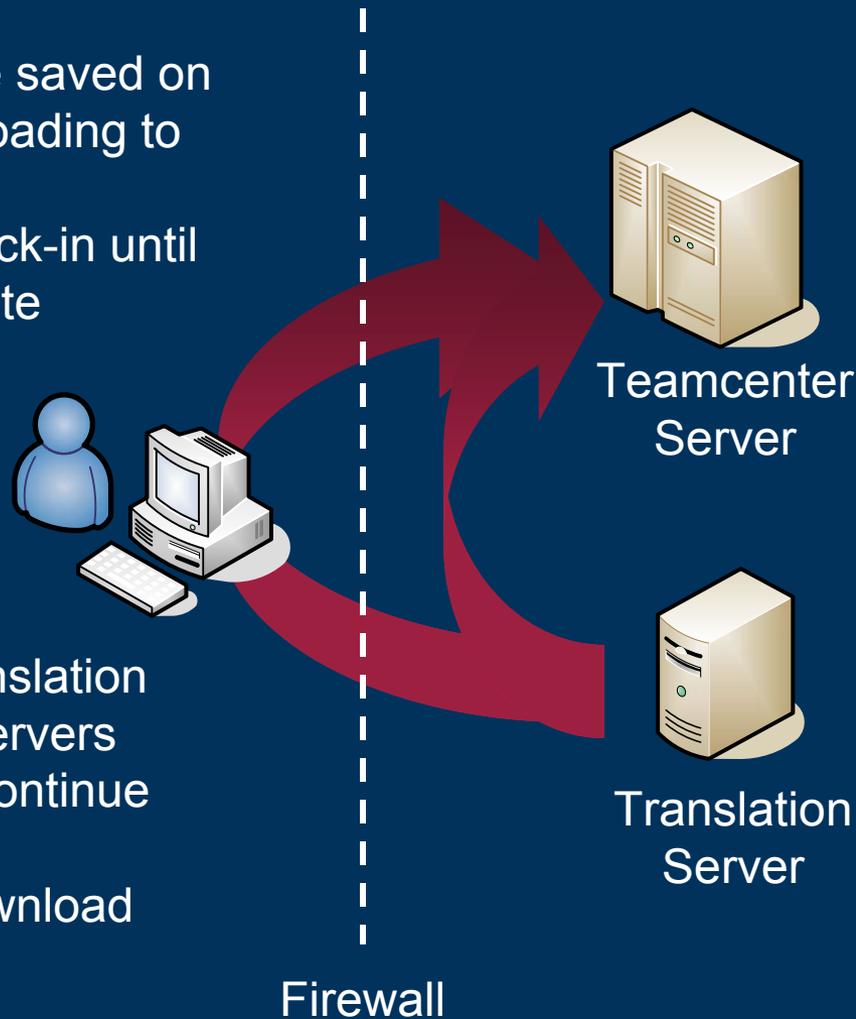


TcEnt 2005

- ▶ 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

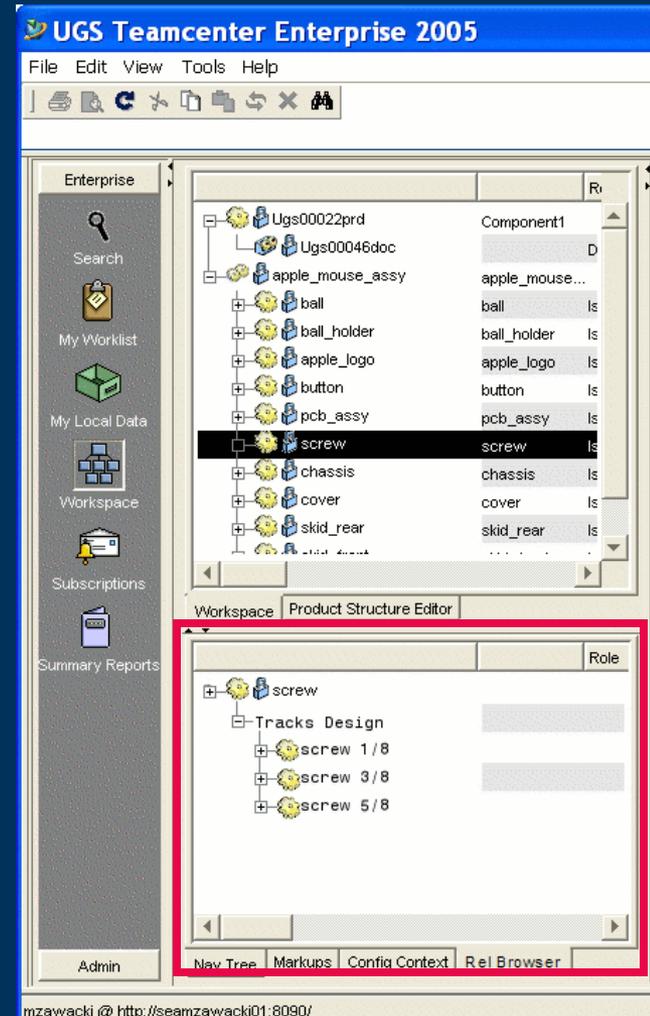




Relationship Browser



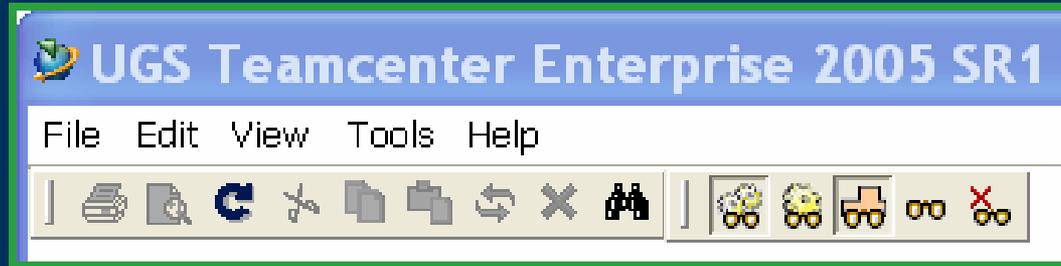
New relationship browser will display Part to Part relationships for General Tracking (GTRs) and Family Table relationships.



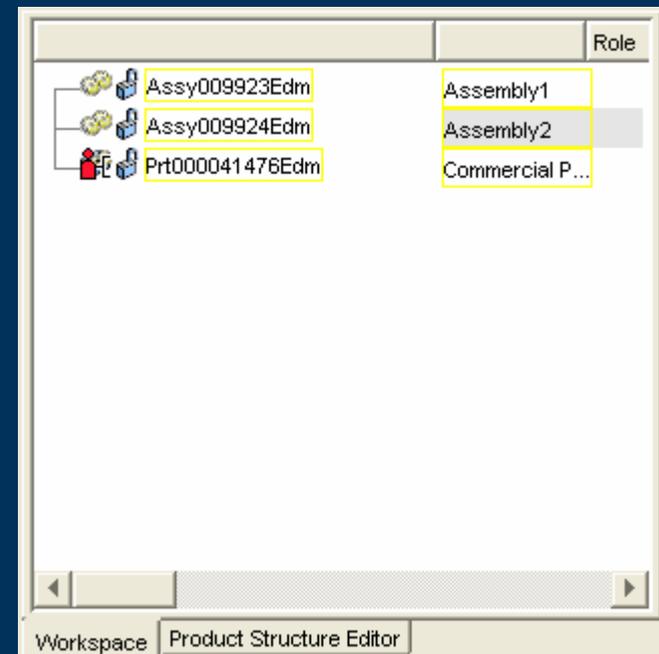
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Workspace Filtering



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

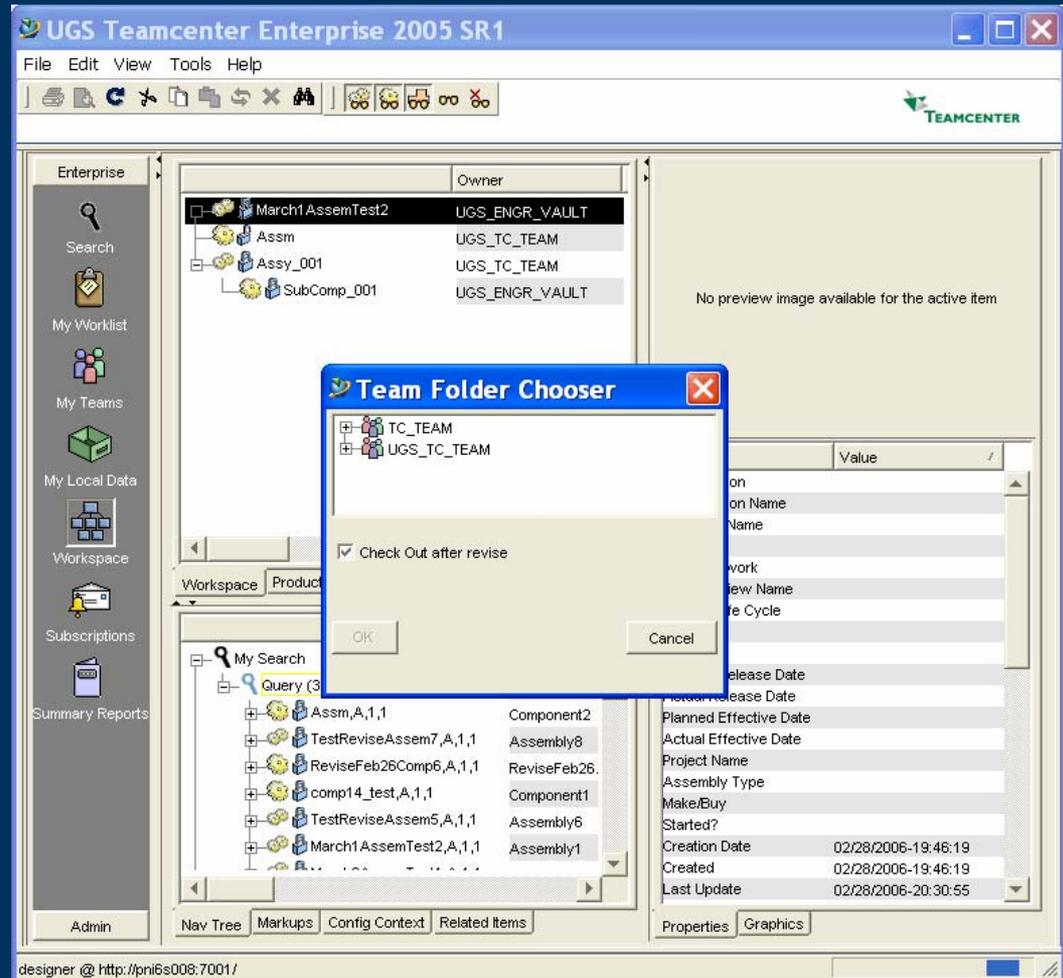




Native Revise

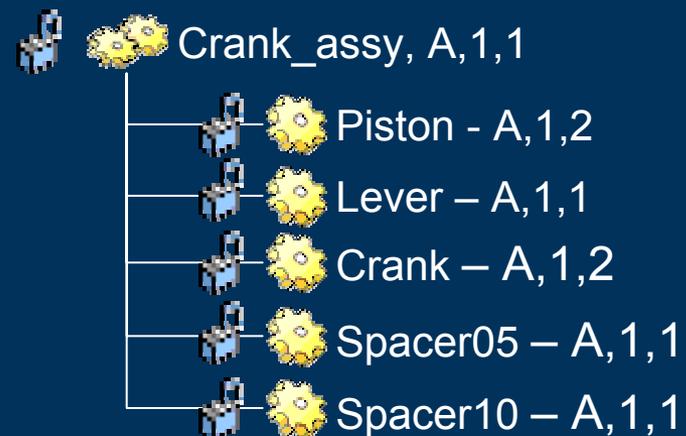
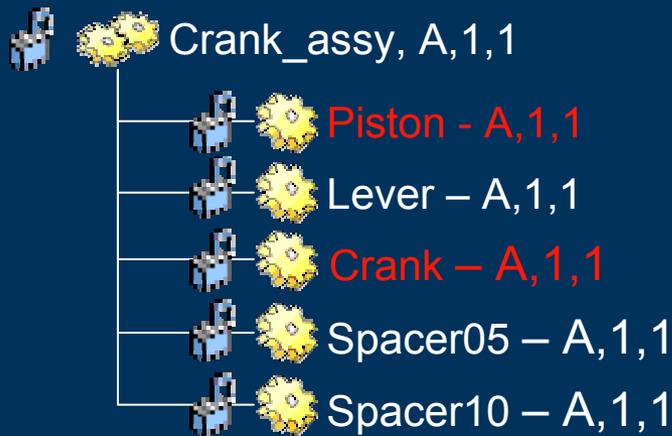


- ▶ Revise exposed as native action in the rich client
- ▶ New revision saved directly to Team Folder and optionally checked-out
- ▶ Automatically refreshes the Part object in the workspace





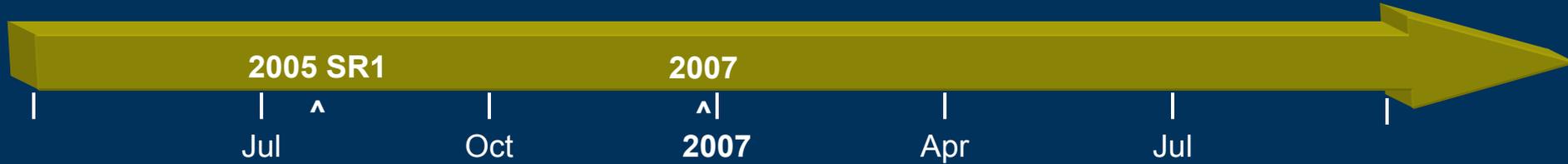
Check In (Keep for Modify) of top level assemblies will only check in modified components and sub-assemblies.



Metadata and geometry changes will trigger the creation of a new version during check in



Enterprise 2007 - Rich Client



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

Action	Rev	Seq	Ver
Create object	A	1	1
Check in to vault	A	1	1
Check out to team	A	2	1
Check out from team	A	3	1
Modify CAD data	A	3	2
Check in to team	A	3	2
Check out from team	A	4	2
Check in to team	A	4	2
Release to Enterprise	A	4	2
Revise	B	1	2



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

The screenshot shows the TEAMCENTER software interface. At the top, there is a navigation bar with 'Home' and 'Exit' buttons. Below this is a menu bar with 'Open', 'Check Out', 'History', 'Submit', and 'Item Reports'. A 'More Actions...' menu is open, displaying a list of actions: 'Subscribe', 'Check Out to Team', 'Undo Check Out to Team', 'Make Available To Team', 'Undo Make Available', 'Release to Enterprise', 'Check Out From Team', 'Assign To View Network', 'View File', 'Edit File', 'Undo Check Out', 'Delete', and 'Copy'. The 'Undo Check Out' option is circled in red. On the left side, there is a tree view titled 'My Teams: Structures: WIP' with a table of parts. The table has columns for 'Name' and 'Title'. The parts listed are:

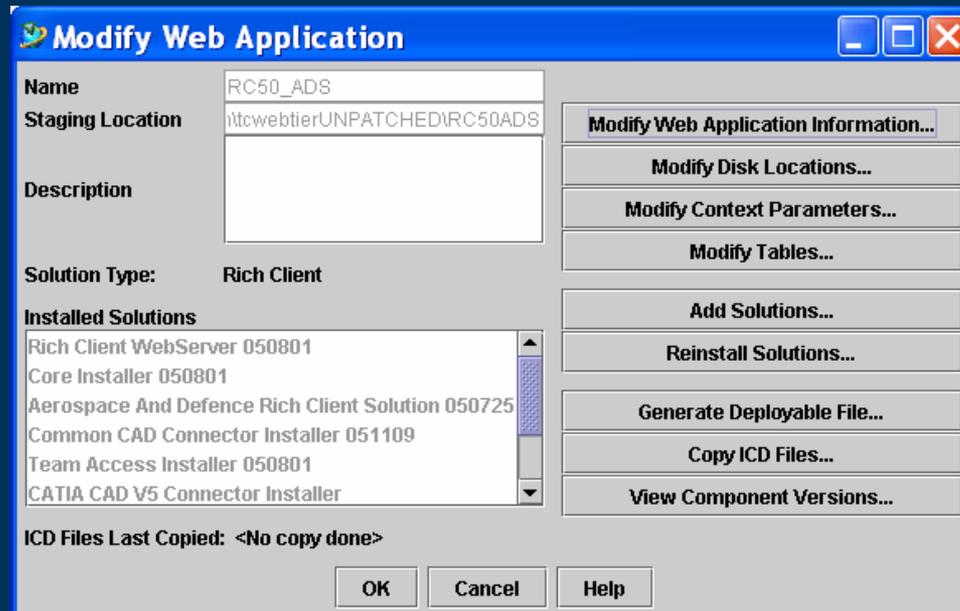
Name	Title
<input type="checkbox"/> technic driver helmet p,A,1.1	
<input type="checkbox"/> technic driver helmet p,A,1.2	
<input type="checkbox"/> technic driver hip joint p,A,1	
<input checked="" type="checkbox"/> technic driver hip joint p,A,1	
<input checked="" type="checkbox"/> technic driver seat p,A,1.1	
<input type="checkbox"/> technic driver seat p,A,1.2	
<input type="checkbox"/> technic driver shin p,A,1.1	
<input type="checkbox"/> technic driver shin p,A,1.2	



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

The screenshot shows the Teamcenter installation interface. At the top is the Teamcenter logo and a banner with a globe and a yellow ring, with the text "enterprise knowledge management". Below this is a table with three columns: Component, Action, and Status.

	<u>Action</u>	<u>Status</u>
Teamcenter Rich Client Applications		
<input checked="" type="checkbox"/> Teamcenter Rich Client *	Install 2007 MP1	Installed
Teamcenter Rich Client CAD Connectors		
<input checked="" type="checkbox"/> Connector for NX	Install 2007 MP1	Installed
<input checked="" type="checkbox"/> Connector for Pro/ENGINEER	None	Installed
<input checked="" type="checkbox"/> Common CAD Connector *	Install 2007 MP1	Installed

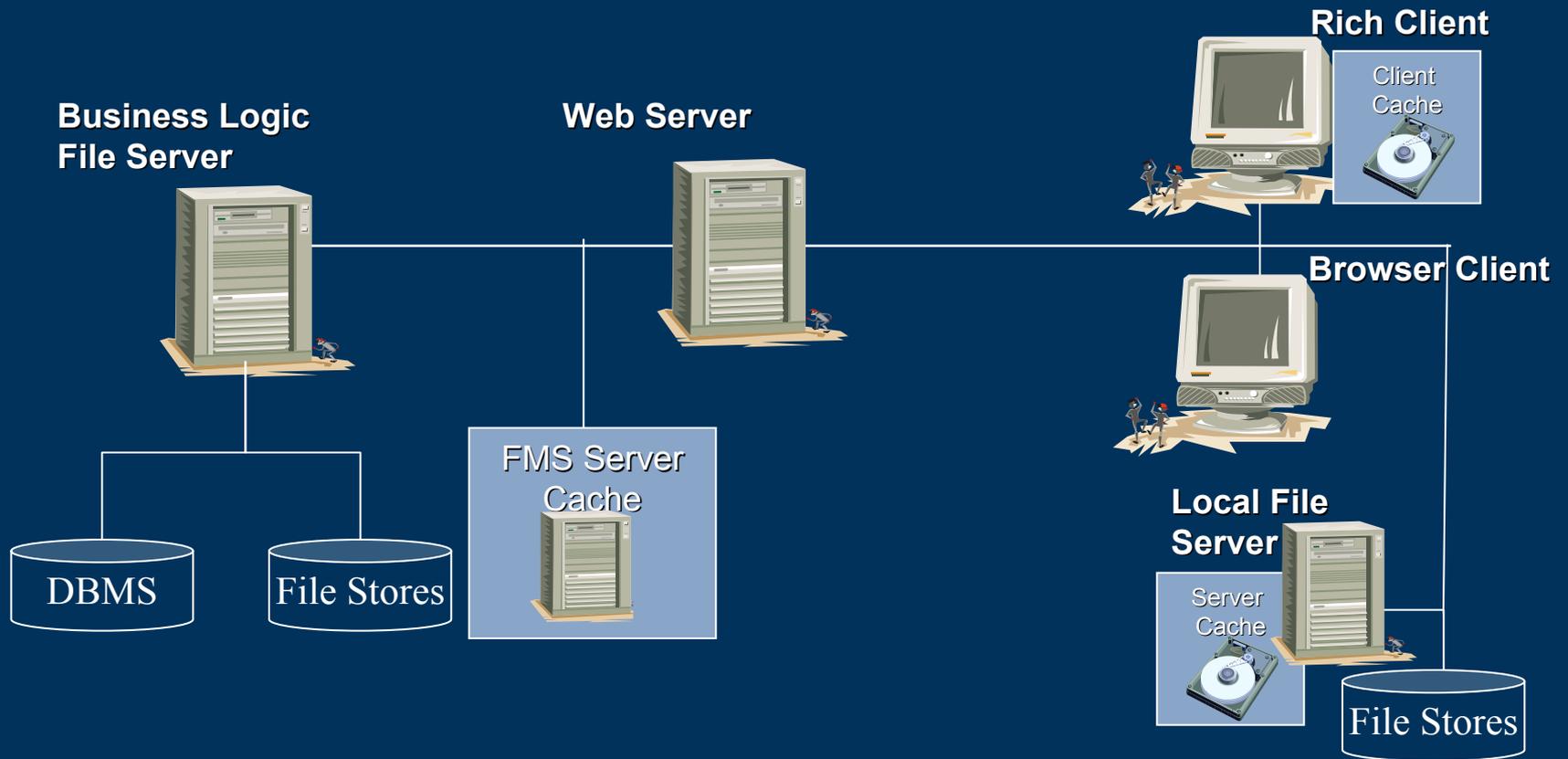
* = Required Install



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

The screenshot displays the UGS Teamcenter Enterprise 2005 interface. The main window is titled "UGS Teamcenter Enterprise 2005" and has a menu bar (File, Edit, View, Tools, Help) and a toolbar. The interface is divided into several panes:

- Enterprise Admin Panel (Left):** Contains icons for Admin, Team Management, My Preferences, Change Password, and Change Profile.
- Product Structure Editor (Top Right):** Shows a hierarchical tree of parts. A table below the tree lists the parts and their revision numbers.
- Workspace (Bottom Right):** Shows a search bar and a list of items under "My Bookmarks".
- Nav Tree (Bottom Left):** Shows a navigation tree with "My Bookmarks" expanded.

Part Name	Rev
CRANK	CRANK A
END_1	END_1 A
CYL_3	CYL_3 A
CYL_1	CYL_1 A
LEVER	LEVER A
CYL_2	CYL_2 A
END_2	END_2 A

Workspace: Product Structure Editor

Nav Tree: My Search, Where Used, My Teams, My Bookmarks (expanded), My Local Data

My Bookmarks list:

- ASSY_HUB_LOWER,A,1,1
- ASSY_HUB_UPPER,A,1,1
- BEARING_CTR,A,1,1
- BEARING_CTR_MAIN_ROTOR,A,1,1
- CRANK,A,2,2
- EC:N00254 Affected Items

Nav Tree: Markups, Config Context

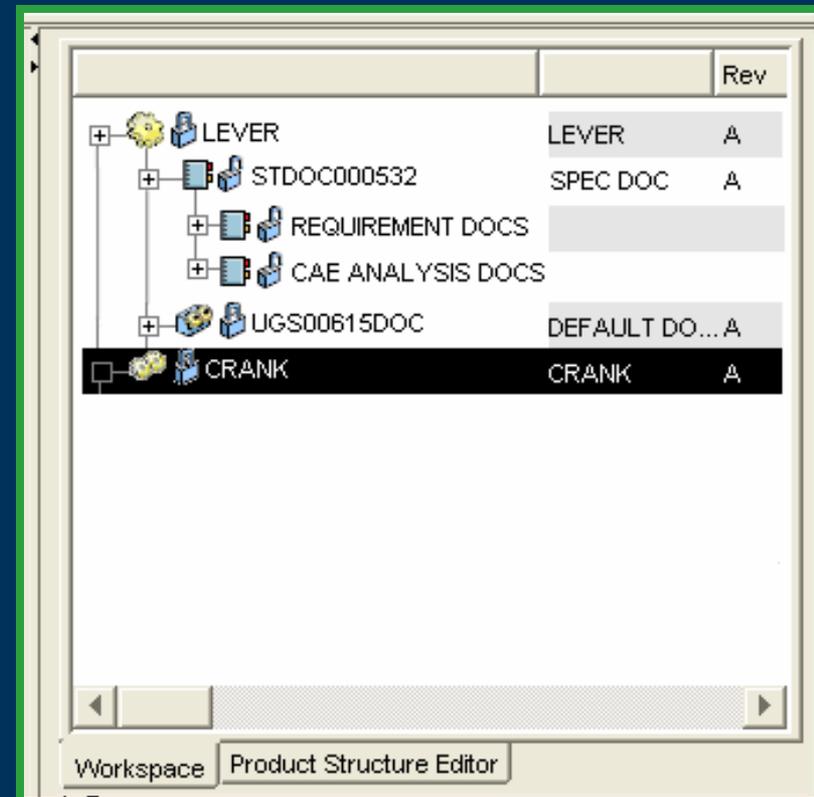
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Structured Docs



- ▶ Display Structured Doc relationships in the rich client workspace
- ▶ Includes Part to Doc and Doc to Doc relationship

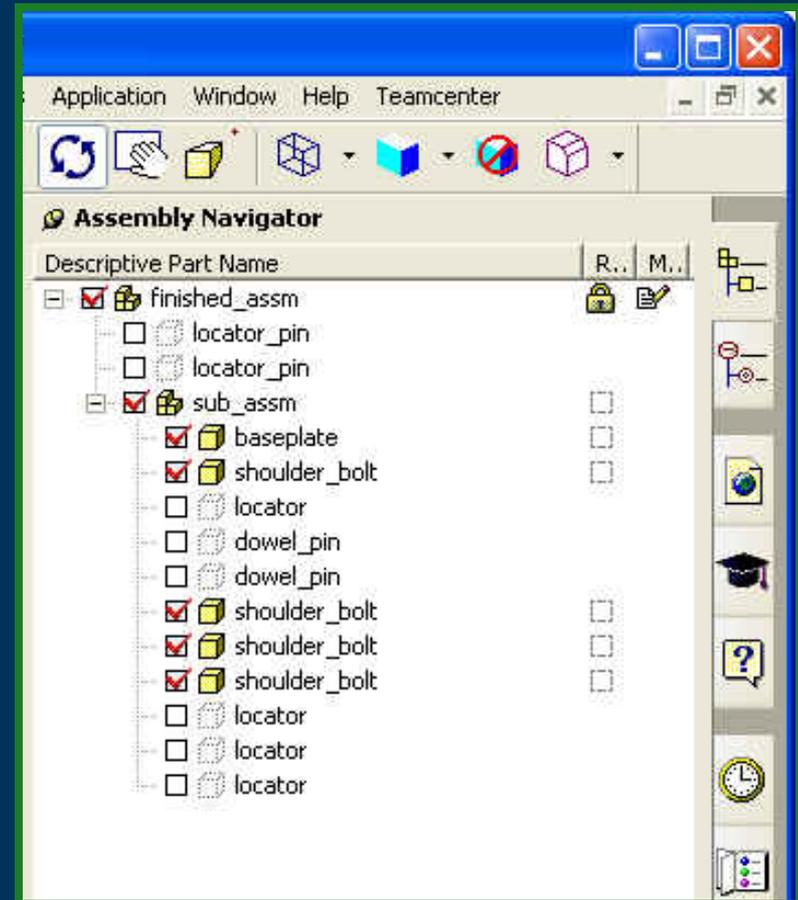




CAD Data & Effectivity



- ▶ 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



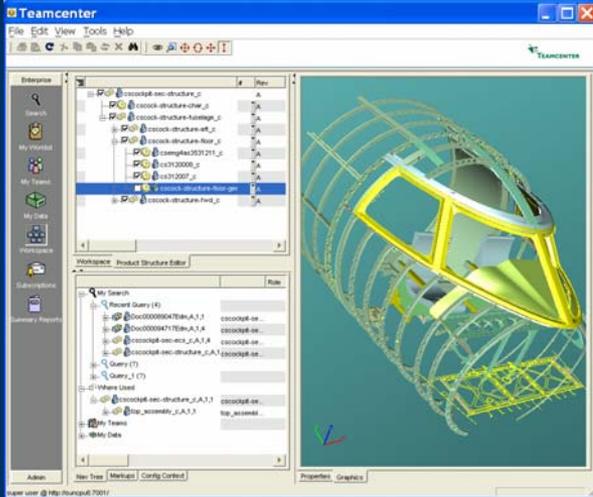


Teamcenter Enterprise Rich Client Summary



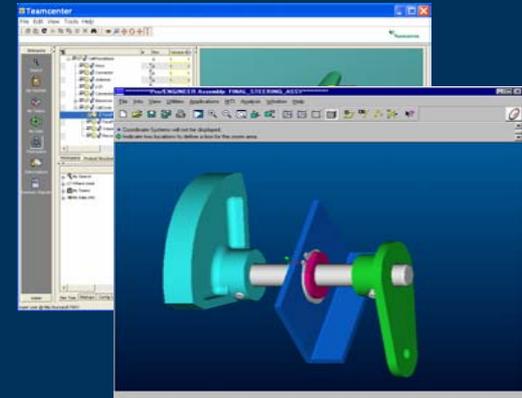
Value Proposition

- 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





UGS

*Transforming the
process of innovation*



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