



Enabling Advanced Visualization With Data Integration Services

PLM World 2006

Matt Kelly
Teamcenter Deployment & Migration



Presentation Goals

This session will focus on the configuration and deployment aspects of enabling Teamcenter advanced visualization functionality. For the most part the higher end functions require configuration of Data Integration Services (DIS) and deployment of a caching strategy. Content will include a discussion of installation options and decision criteria to develop a workable deployment plan.



Agenda

Topics

- ▶ What is Teamcenter Visualization integration?
- ▶ Benefits of configuring & using integration
- ▶ Teamcenter V9 architecture
 - ▶ Configuration example
- ▶ Teamcenter 2005 architecture
 - ▶ Configuration example
- ▶ Summary Review
- ▶ Q & A



Teamcenter Visualization Integration

Benefits

- ▶ Consistent implementation and behavior between all the various Teamcenter Visualization enabled PDM clients (Navigator, PSE, RDV, Web)
- ▶ Improved performance visualizing large assemblies with caching and high performance file delivery
- ▶ Improved UI model through direct viewer/repository interaction, e.g. saving a session automatically creates data in Teamcenter Engineering
- ▶ Increased code sharing and reuse



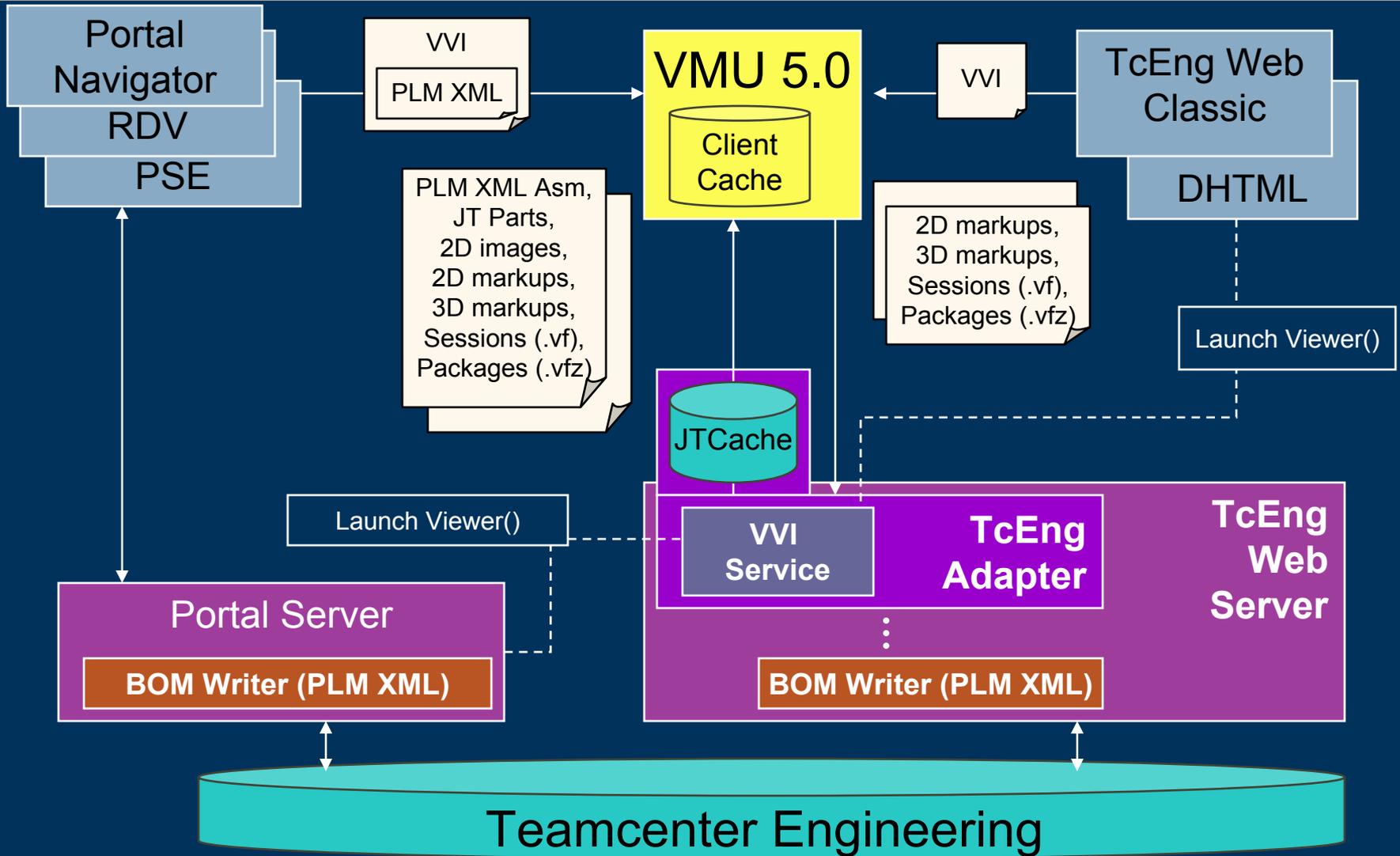
Teamcenter Visualization Integration

Features

- ▶ Mid Tier Caching
 - ▶ Caching of JT parts at the adapter to increase file download speeds in shared user environment
- ▶ JTStreaming
 - ▶ Streaming of JT part segments in lieu of complete files to increase rendering performance on initial downloads
- ▶ Client Caching
 - ▶ Caching of JT part segments at the viewer to increase performance for previously viewed parts
- ▶ FMS Integration
 - ▶ High speed file delivery based on new technology



Teamcenter V9 Functional Architecture



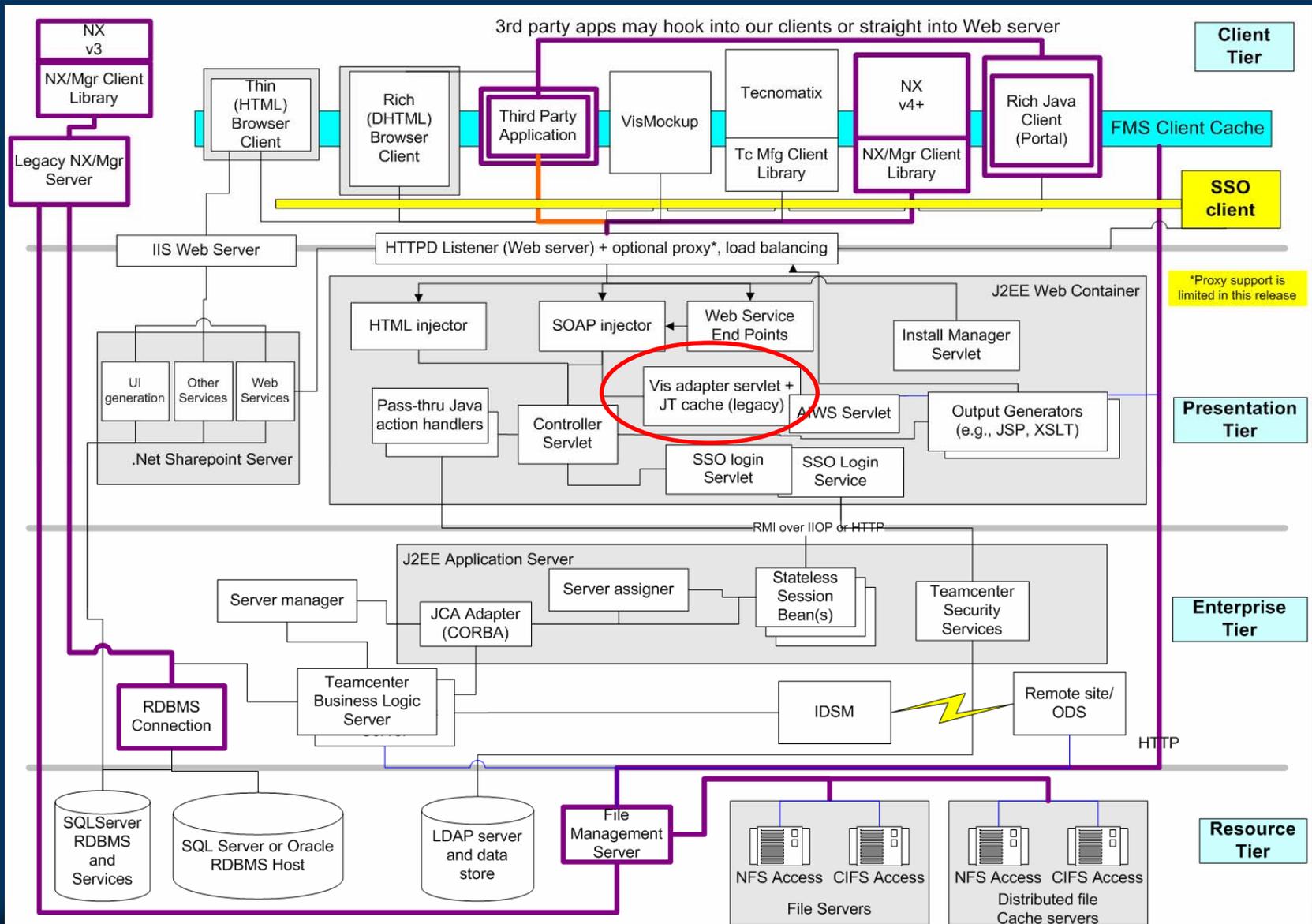


Steps to Configure TcEng Adapter in V9

- ▶ Install and configure Teamcenter base server including web access
- ▶ Install DAK adapter option from Engineering base install
- ▶ Install Apache Tomcat or your favorite web application server
- ▶ Copy IMANAdapter.war from DAK install location to application server
- ▶ Modify application server startup and DAK server.xml files to include correct paths for install locations
- ▶ Start web application server and new Teamcenter session to read modified environment files



Teamcenter 2005 Architecture





Teamcenter 2005

Align Engineering Adapter

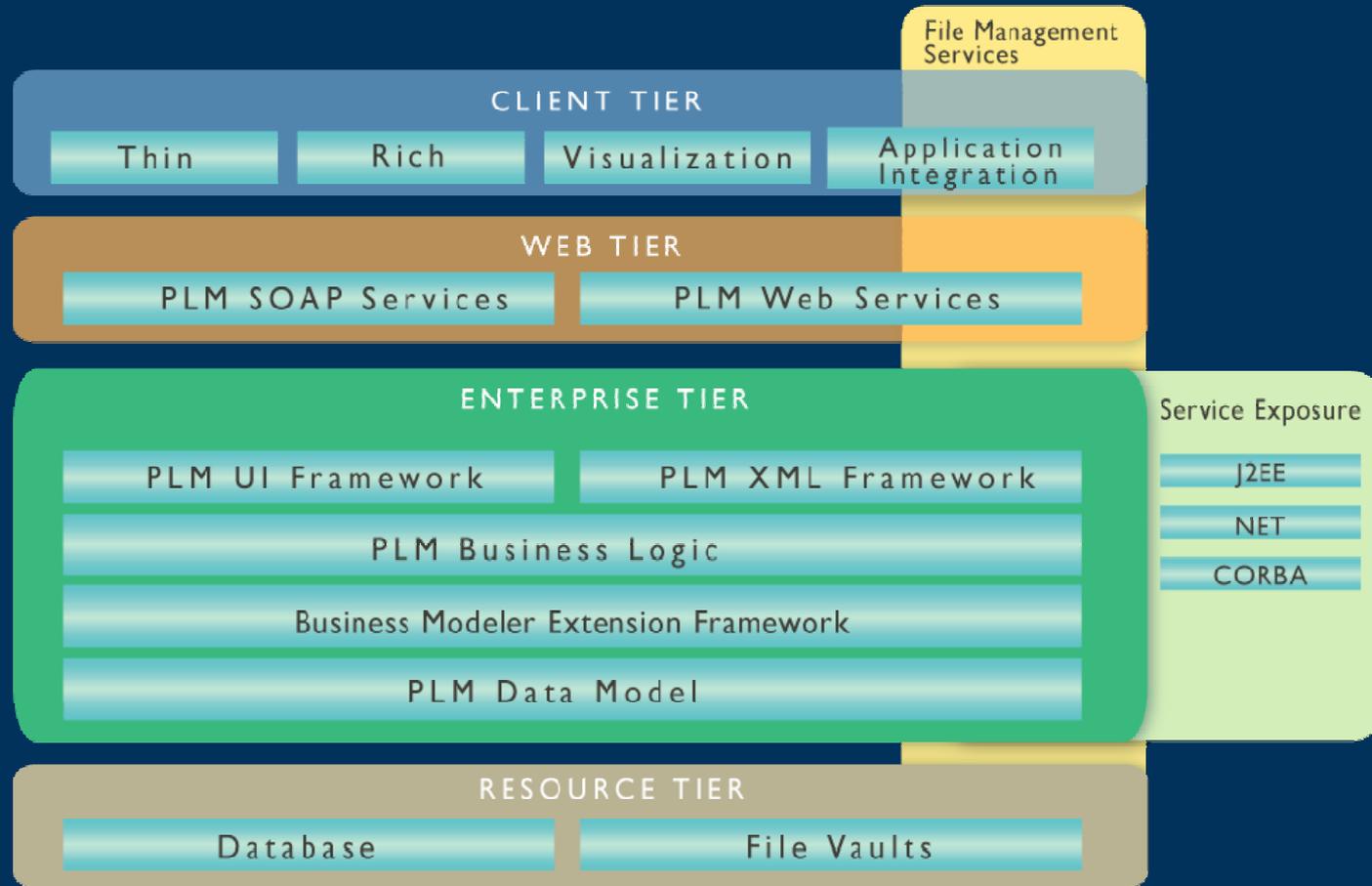
Description

- ▶ Teamcenter Engineering (DIS) adapter needs to align with the new Teamcenter Engineering architecture
- ▶ Teamcenter Engineering architecture changes
 - ▶ CGI bin program talking to supervisor is being replaced with EJB implementation in 2005 release
 - ▶ Imanscripts and ITK will be executed by this EJB implementation
 - ▶ DIS adapter will connect to EJB implementation instead of connecting to supervisor through WebIPC client
 - ▶ Actual connection will be directly to EJB, or indirectly through controller servlet
 - ▶ Imanscripts need to be converted to equivalent ITK to make business logic independent of architecture



Teamcenter 2005 Platform Technology

- All clients link to Web tier through **HTTP**
- J2EE web container manages Web tier
- J2EE app server manages **consolidated** Enterprise tier
- All file access through client cache which directly accesses **FMS**



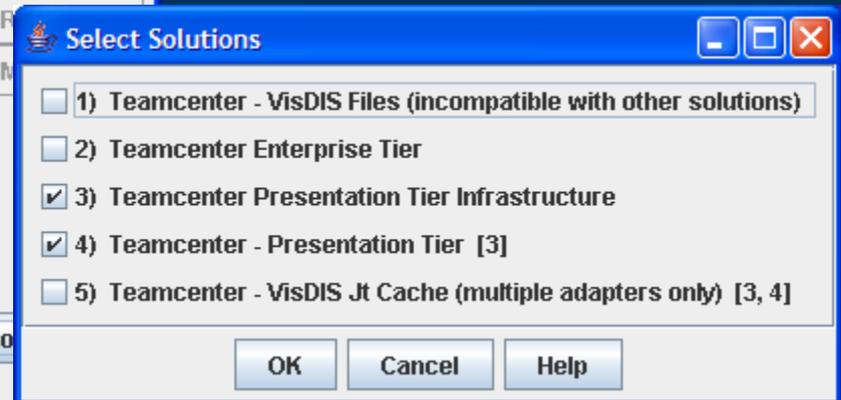
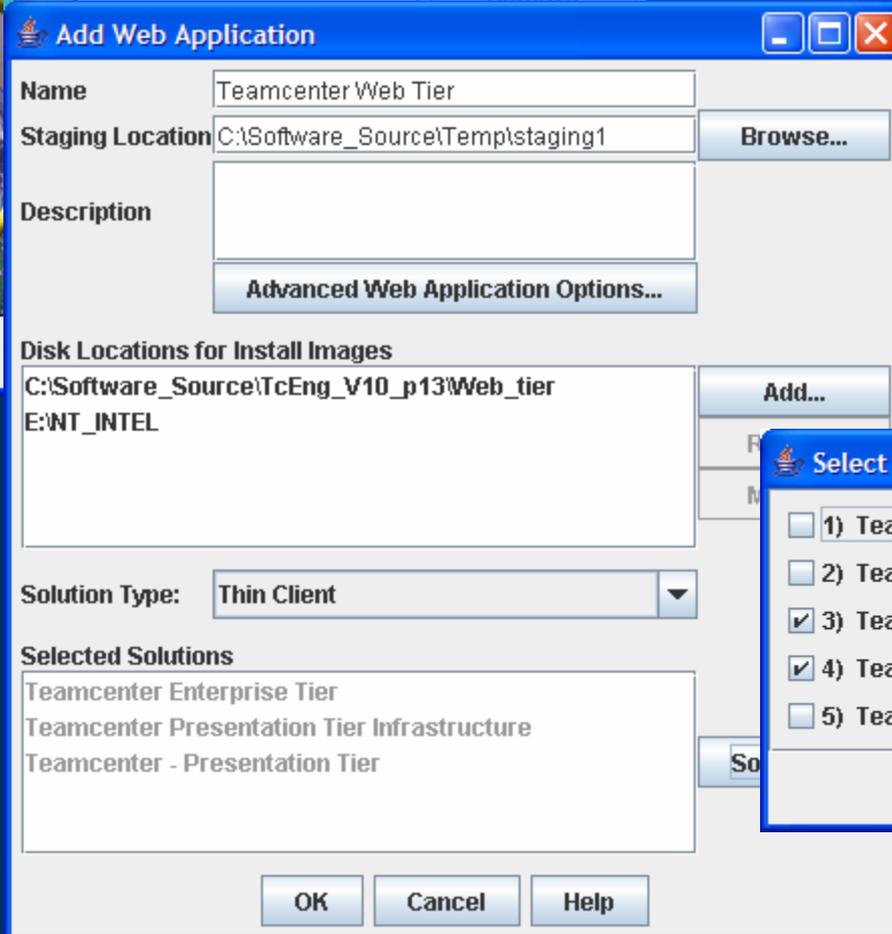
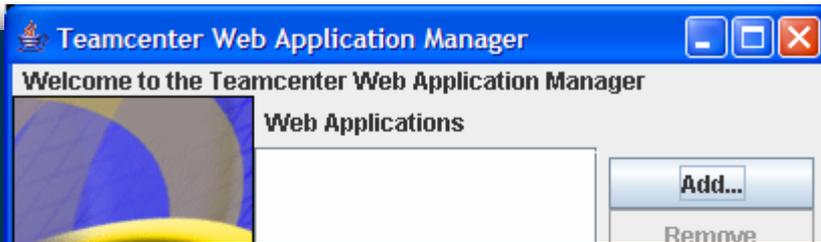


Steps to Configure Visualization Integration

- ▶ Install / Configure TcEng Corporate Server (Base)
 - ▶ Includes Enterprise and Presentation tiers
- ▶ Use Web Application Manager to deploy DIS Engineering adapter
 - ▶ Modify your application server startup script to recognize the DIS deployment
- ▶ Use WAM to create a Rich Client deployment package that includes “Teamcenter Visualization” option
- ▶ Configure TcEng preferences to identify DIS server and other options
 - ▶ IMAN_DAK_default_site_server
 - ▶ DAK...
 - ▶ VIS...
- ▶ Use Teamcenter Visualization launch methods
- ▶ *The full TcVis DIS installation is needed for TcCommunity integration, or to configure multiple data sources*



Web Application Manager



Run insweb.bat to install

- Enterprise & Presentation tier
- Rich Client Distribution Server
- Update legacy Thin Client URL's



Deploy Enterprise Archive WAM Output to Application Server

Deploy tc.ear
or
jeti.ear & tc.war

WebLogic Server Console - Microsoft Internet Explorer
Address: http://localhost:7001/console/actions/mbean/MBeanFrameSetAction?bodyFrameId=wl_console_frame_1113239018846&isView=false&frameId=wl_console_frame_1113239018847&sideBarFrameId=...
Welcome to BEA WebLogic Server Home
Connected to : localhost : 7001 | You are logged in as : weblogic | Logout
Information and Resources
Helpful Tools: Convert weblogic properties, Deploy a new Application, Recent Task Status
General Information: Read the documentation, Common Administration Task Descriptions, Set your console preferences
Domain Configurations: Network Configuration (Domain, Servers, Clusters, Machines), Services Configurations (JDBC, SNMP, JMS, Connectivity), Your Deployed Resources (Applications, EJB Modules, Web Application Modules, Connector Modules, Startup & Shutdown)
Copyright (c) 2003 BEA Systems, Inc. All rights reserved.

WebLogic Server Console - Microsoft Internet Explorer
Address: http://localhost:7001/console/actions/mbean/MBeanFrameSetAction?bodyFrameId=wl_console_frame_1113239018846&isView=false&frameId=wl_console_frame_1113239018847&sideBarFrameId=...
mydomain> Applications > tc
Configuration | Targets | Deploy | Notes
This page allows you to view the deployment status of each module in the application. You may also choose to stop and redeploy all modules within the application using the buttons at the bottom of the page. (To configure additional deployment targets for this application, click the Targets tab.)
Deployment status for EJB Modules

Module	Module Status	Target	Target Type	Status of Last Action
JETIGateway-ejb.jar	Active	myserver	Server	Success

Deployment Status for Web Application Modules

Module	Module Status	Target	Target Type	Status of Last Action
tc	Active	myserver	Server	Success

Deployment Status for Connector Modules

Module	Module Status	Target	Target Type	Status of Last Action
JETIAdapter.rar	Active	myserver	Server	Success

Stop Application | Redeploy Application

Start Server Manager
after deployment



Deploy TcEng Adapter

The screenshot shows a Windows Explorer window titled "DIS" with the address bar set to "C:\UGS\TcEng2005\DIS". The left pane shows a tree view of folders, with "DIS" selected. The right pane shows a list of files and folders:

Name	Size	Type	Date Modified	Durat
webapp_root		File Folder	10/5/2005 11:55 PM	
components.dat	1 KB	DAT File	10/5/2005 11:55 PM	
context_params.dat	0 KB	DAT File	10/5/2005 11:55 PM	
solutions.dat	1 KB	DAT File	10/5/2005 11:55 PM	
tables.dat	0 KB	DAT File	10/5/2005 11:55 PM	
webapp.dat	1 KB	DAT File	10/5/2005 11:55 PM	

Below the Explorer window is a Notepad window titled "startManagedWebLogic.cmd - Notepad". The text in the Notepad window is as follows:

```
@rem *****
@rem This script is used to start a managed WebLogic Server for the domain in
@rem the current working directory. This script reads in the SERVER_NAME and
@rem ADMIN_URL as positional parameters, sets the SERVER_NAME variable, then
@rem starts the server.
@rem
@rem Other variables that startWLS takes are:
@rem
@rem WLS_USER      - cleartext user for server startup
@rem WLS_PW       - cleartext password for server startup
@rem PRODUCTION_MODE - Set to true for production mode servers, false for
@rem                  development mode
@rem JAVA_OPTIONS  - Java command-line options for running the server. (These
@rem                  will be tagged on to the end of the JAVA_VM and MEM_ARGS)
@rem JAVA_VM      - The java arg specifying the VM to run. (i.e. -server,
@rem                  -hotspot, etc.)
@rem MEM_ARGS     - The variable to override the standard memory arguments
@rem                  passed to java
@rem
@rem For additional information, refer to the WebLogic Server Administration
@rem Guide (http://e-docs.bea.com/wls/docs81/ConsoleHelp/startstop.html).
@rem *****

echo off
SETLOCAL

set WL_HOME=C:\UGS\bea\weblogic81
@rem Set Production Mode. When this is set to true, the server starts up in
@rem production mode. When set to false, the server starts up in development
@rem mode. If it is not set, it will default to false.
set PRODUCTION_MODE=

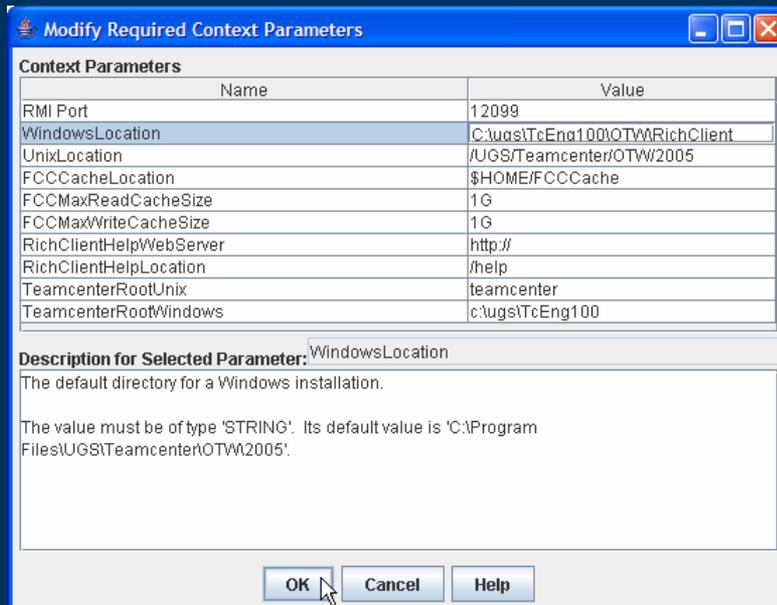
@rem Set JAVA_VENDOR to java virtual machine you want to run on server side.
set JAVA_VENDOR=Sun

@rem Set JAVA_HOME to java virtual machine you want to run on server side.
set JAVA_HOME=C:\UGS\bea\jdk142_05
```



Rich Client Installation

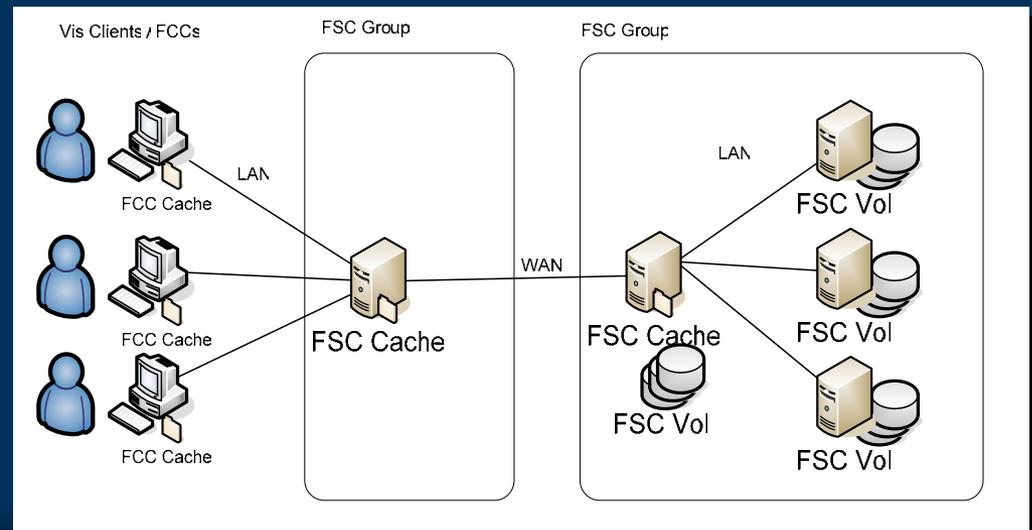
- ▶ Rich Client installations require Over The Web (OTW) deployment by URL location
- ▶ 2-tier or 4-tier support
- ▶ Deployments are pre-configured
- ▶ Product updates on startup





Teamcenter Visualization 2005 Integration Support File Mgmt. Services (FMS)

- ▶ Combine **JT streaming** capabilities with new high speed file delivery
- ▶ Leverage **client and shared server caching**
 - ▶ Shared caches amongst applications, e.g. NX / standalone visualization / rich client embedded viewer allows for fast opens between applications
- ▶ **Meet or exceed NFS file access speeds** without requiring NFS mounts
- ▶ Client access File Management services for file delivery - **eliminates multiple hops** associated with traditional PDM / Web server configuration
- ▶ Supports multiple **deployment options**
 - ▶ LAN, WAN, ...
- ▶ Minimize bandwidth requirements and cache sizes by delivering only data required, i.e. **partial files**



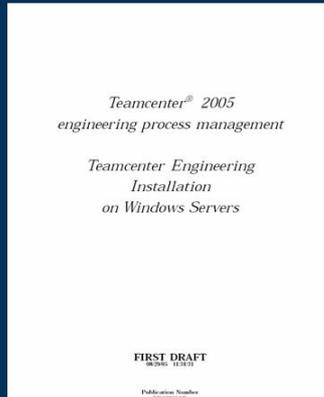


Supporting Documentation

Server Install Guide

Topics

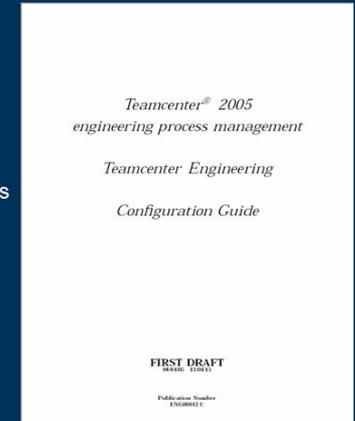
- ▶ Site Planning
- ▶ Installing
 - ▶ Database Server
 - ▶ Teamcenter Eng. Server
 - ▶ Web Application
- ▶ Deployment & Configuration
- ▶ Site Maintenance



Configuration Guide

Topics

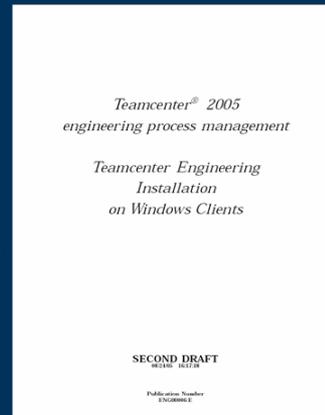
- ▶ Environment variables
- ▶ Preferences
- ▶ Configuration
 - ▶ SSO, DIS, Process Daemons
 - ▶ NX Manager
 - ▶ RDV
- ▶ Customization
- ▶ Managing Files and Volumes
 - ▶ FMS



Client Install Guide

Topics

- ▶ Software Requirements
- ▶ Installing
 - ▶ Rich Client
 - ▶ MS Application Integration
 - ▶ Teamcenter Manufacturing
 - ▶ FMS Client





Launch From Rich Client

The screenshot shows the Teamcenter Engineering 2005 Rich Client interface. The left pane displays a hierarchical file tree with several items circled in red: 'assy engine/2', 'assy engine/2-view', and 'cylinder-head'. The right pane shows the 'Contents of: assy engine/2' table.

Object	Project IDs	Type	Relation	Owner	Group ID	Date Modified
20051006-105421		SnapShotViewData	3D Snapshot	Kelly, Matt (kelly)	Enginee...	06-Oct-2005 10:54
20051006-105456		SnapShotViewData	3D Snapshot	Kelly, Matt (kelly)	Enginee...	06-Oct-2005 10:54
20051006-105513		SnapShotViewData	3D Snapshot	Kelly, Matt (kelly)	Enginee...	06-Oct-2005 10:55
assy engine/2		ItemRevision Master	ItemRevision ...	Macneil, Wendi (macneil)	Enginee...	13-Apr-2004 01:32
assy engine-2		UGMASTER	Specifications	Macneil, Wendi (macneil)	Enginee...	13-Apr-2004 01:44
assy engine/2-view		view BOMView Revision	BOM View R...	Macneil, Wendi (macneil)	Enginee...	05-Oct-2005 22:53
view			pseudo_folder			



Launch From Web Client

The screenshot shows the Teamcenter Web Client interface in a Mozilla Firefox browser window. The browser address bar shows the URL `http://cyl3p074:7001/tc/webclient`. The interface includes a search bar, a left-hand navigation pane, and a main content area displaying a list of items. A context menu is open over the 'intake' item, listing options such as 'Properties...', 'Audit...', 'Product Structure', 'Manufacturing Structure Viewer', 'Where Classified', 'Where Referenced', 'Where Used (All Revisions)', 'Where Used (Top Level)', 'Where Used (Precise)', 'Thumbnail...', 'NX/Manager', 'Teamcenter Visualization', and 'Open in Rich Client'. Two dialog boxes are overlaid on the interface: a 'Prompt' dialog for authentication and an 'Opening some60026.vvi' dialog for file opening options.

Browser Title: Teamcenter Web - navigator - Home - [] - Mozilla Firefox

Browser Address Bar: `http://cyl3p074:7001/tc/webclient`

Navigation Pane: Search, Advanced Search, Navigator, Inbox, Classification, Settings, Help

Main Content Area: Kelly, Matt - Engineering / Engineer - Latest Working - [5500-Plane]

Item ID	Type	Revision	Author	Engineering	Date	Time	
intake manifold-assy	Specifications	UGMASTER	macneil	Engineering	13-Apr-2004	01:44	
20051005-230053	3D Snapshot	SnapShotViewData	kelly	Engineering	06-Oct-2005	10:54	
20051005-230136	3D Snapshot	SnapShotViewData	kelly	Engineering	06-Oct-2005	10:54	
20051005-230112	3D Snapshot	SnapShotViewData	kelly	Engineering	06-Oct-2005	10:55	
20051005-230122	3D Snapshot	SnapShotViewData	kelly	Engineering	05-Oct-2005	23:01	
000369	view	Item	macneil	Engineering	13-Apr-2004	01:35	
intake	view	Item	macneil	Engineering	05-Oct-2005	22:57	
intake/body	Item Masters	Item Master	macneil	Engineering	13-Apr-2004	01:31	
intake/body	Revisions	ItemRevision	macneil	Engineering	05-Oct-2005	22:57	
intake/body	ItemRevision	ItemRevision	macneil	Engineering	13-Apr-2004	01:31	
intake/body	Specifications	UGMASTER	macneil	Engineering	13-Apr-2004	01:36	
intake/body	View	Renderings	DirectModel	macneil	Engineering	13-Apr-2004	01:36
hose fitting	view	Item	macneil	Engineering	13-Apr-2004	01:36	
000375	view	Item	macneil	Engineering	13-Apr-2004	01:36	
000375	view	Item	macneil	Engineering	13-Apr-2004	01:36	
000375	view	Item	macneil	Engineering	13-Apr-2004	01:36	
000392	view	Item	macneil	Engineering	13-Apr-2004	01:37	

Prompt Dialog: Enter username and password for "TcEng V10 Adapter" at `http://cyl3p074.net.plm.eds.com:7001`. User Name: kelly, Password: *****. Use Password Manager to remember this password.

Opening some60026.vvi Dialog: You have chosen to open some60026.vvi which is a: VisView INI (.vvi) from: `http://cyl3p074.net.plm.eds.com:7001`. What should Firefox do with this file? Open with: VisView (default). Do this automatically for files like this from now on.



Saving Visualization Sessions

The screenshot displays the Teamcenter Visualization Mockup 2005 interface. The main window shows a 3D visualization of an engine assembly. A 'SessionPackage' dialog box is open, asking 'Do you wish to save session before closing?' with 'Yes', 'No', and 'Cancel' buttons. Two 'Save Session As' dialog boxes are also visible. The top 'Save Session As' dialog shows the 'Look in' field set to 'Servers' and a list of server paths. The bottom 'Save Session As' dialog shows the 'Look in' field set to 'tc/FileAccess on cy3p074:7001' and a list of files, including '000411-Malt', '000414-Multi PDF Example', '000415-Office Doc', '000416-ddd', '123500-Capscrew', 'alt cabin', 'arm-16/A', and 'assy engine'. The 'File name' field is set to 'Engine_Design_Review_27' and the 'Save as type' is 'Session Files (*.vfl)'.



Product Views

My Navigator - Teamcenter Engineering 2005

File Edit View Tools Desktop Help

Search Favorites

My Navigator (Kelly, Matt (kelly) - Engineering/Engineer [5500-Plane] [IMC-1429627697])

Teamcenter Home General... (1) assy engine

My Navigator PSE DesignContext Collaboration Context

Structure Roots assy engine

Rev Name	Item Type	Seq
✓ assy engine		10
✓ intake manifold		10
✓ 000369		10
✓ intake		20
✓ hose fitting		30
✓ 000375		40
✓ 000375		50
✓ 000375		60
✓ 000392		70
✓ flat hd screw 3.5 x		10
✓ 000378		20
✓ flat hd screw 3.5 x		30
✓ 000379		40
✓ 000373		50
✓ throttle		60
✓ anti diesel		70
✓ torx screw 4 x		80
✓ torx screw 4 x		90
✓ torx screw 4 x		100
✓ torx screw 4 x		110
✓ cruise control		120
✓ spacer		130
✓ bell		140
✓ 000391		150
✓ 000385		160
✓ collar		170

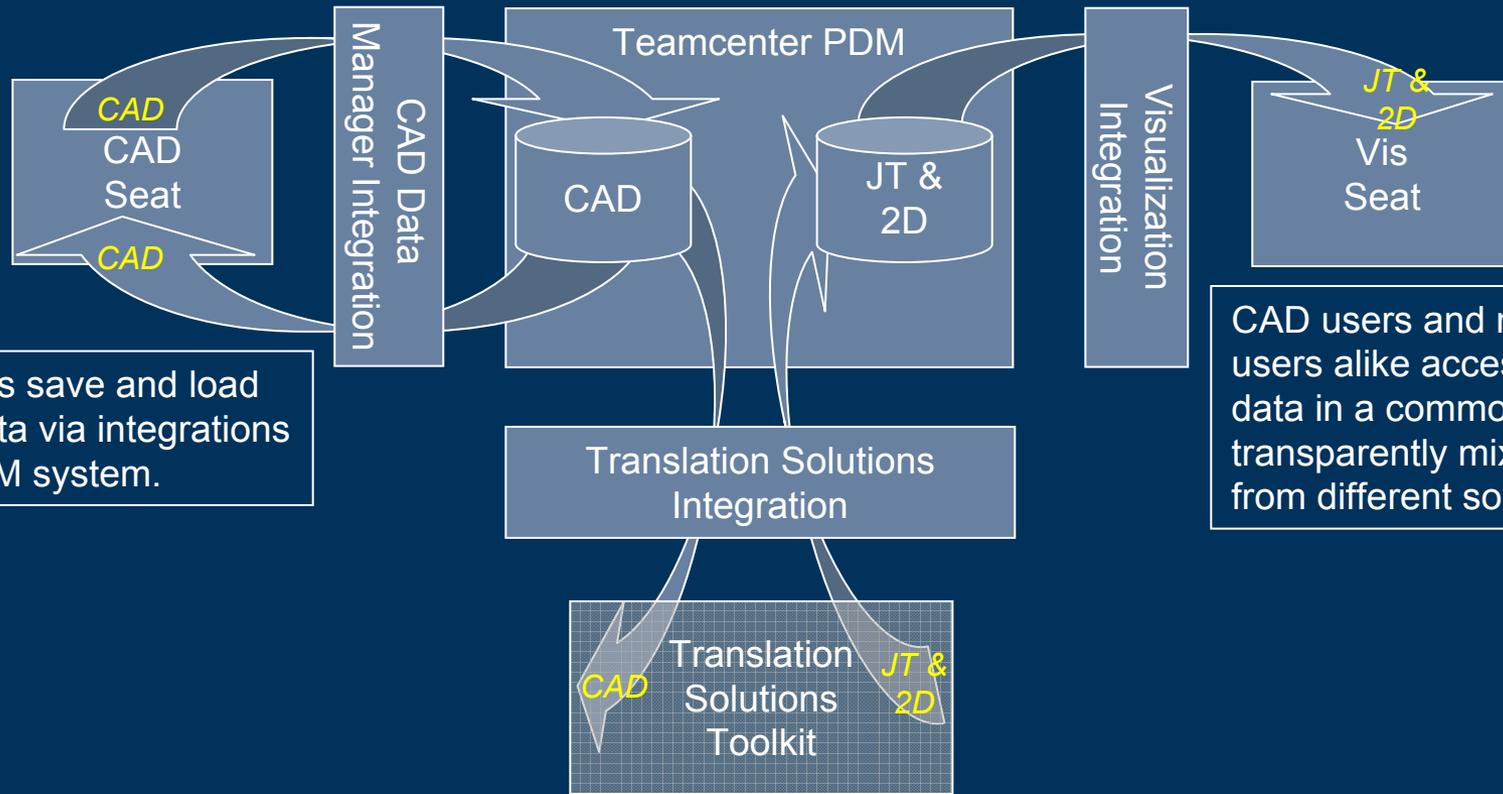
Viewer Attachments

Export... Load ProductView

Ready



From CAD data to Enterprise Visualization



CAD users save and load design data via integrations to the PDM system.

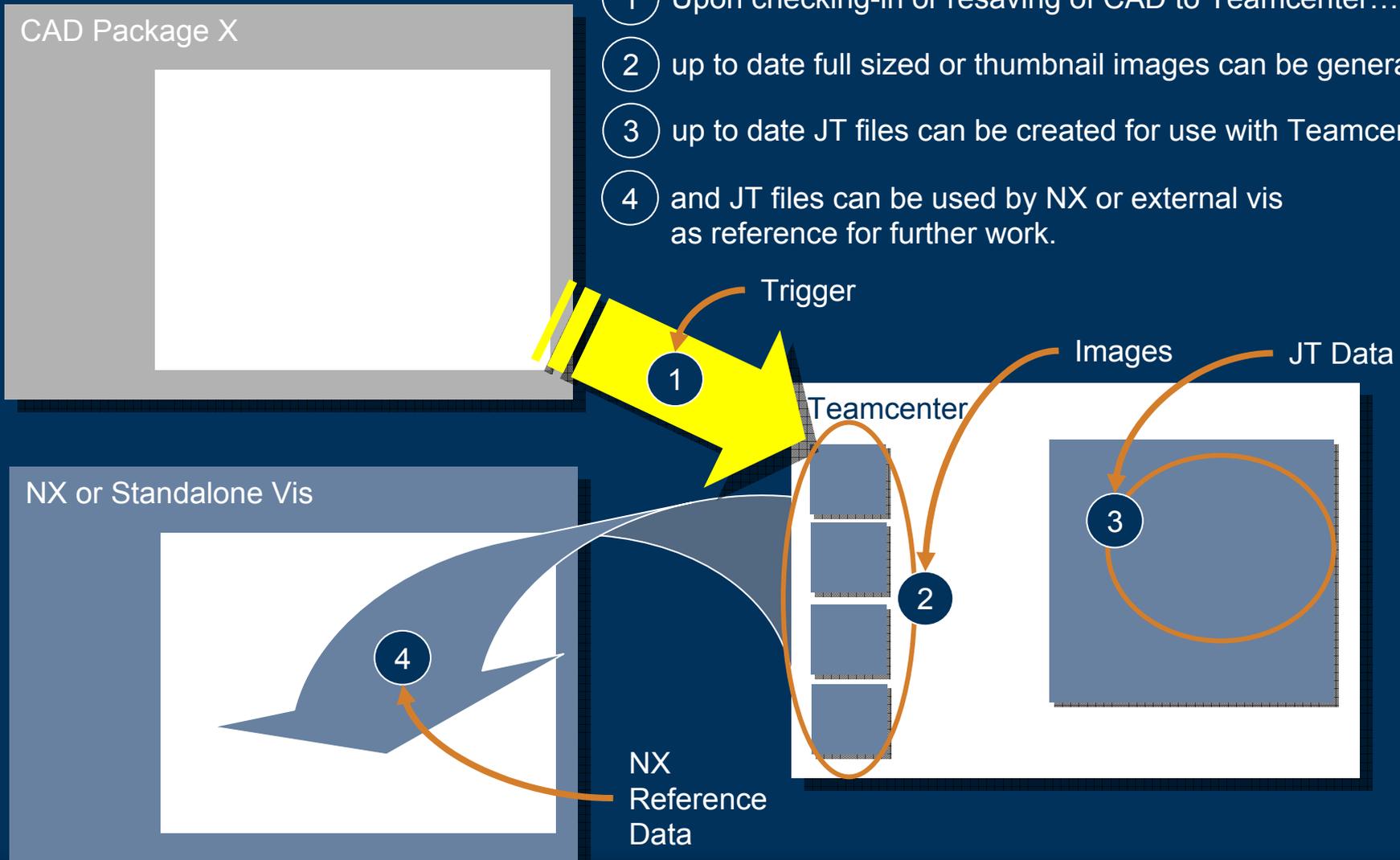
CAD users and non-CAD users alike access design data in a common format, transparently mixing data from different sources.

Newly saved or released CAD data is triggered for conversion by workflow events, resulting in JT & 2D data for use by the enterprise.



Where does Translation Solution fit in?

- 1 Upon checking-in or resaving of CAD to Teamcenter...
- 2 up to date full sized or thumbnail images can be generated,
- 3 up to date JT files can be created for use with Teamcenter...
- 4 and JT files can be used by NX or external vis as reference for further work.





Summary

Things to remember

- ▶ DIS enables best visualization performance when launching large data to VisMockup
 - ▶ Uses plmxml BOM structure format
- ▶ Enables cache sharing with Teamcenter Community
- ▶ Teamcenter V9 requires Web Application Server and Web Access deployment
- ▶ Teamcenter 2005 integrates DIS into Web-Tier
 - ▶ DIS deployment w/ 2-Tier RAC requires 4-Tier server deployment
 - ▶ Makes use of high performance FMS data transfers



UGS

*Transforming the
process of innovation*



www.ugs.com