



Teamcenter for Multi-CAD

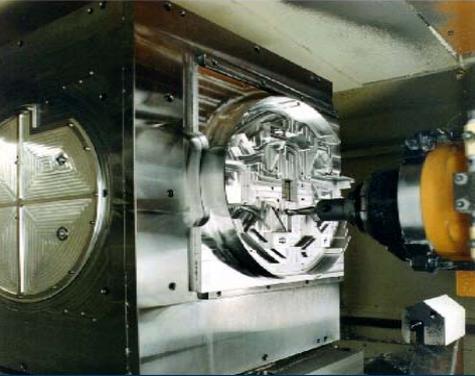
UGS, CATIA, Pro/ENGINEER, SolidWorks and AutoDesk

PLM World 2006

Troy Banitt
Teamcenter Product Management
Troy.Banitt@ugs.com



Agenda



UGS Multi-CAD

Engineering and Enterprise

Overview

Solutions

UGS (NX, I-Deas, SolidEdge)

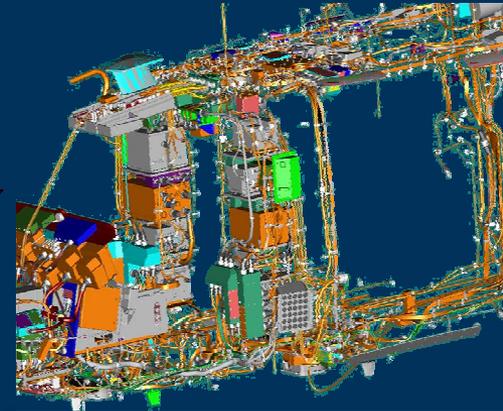
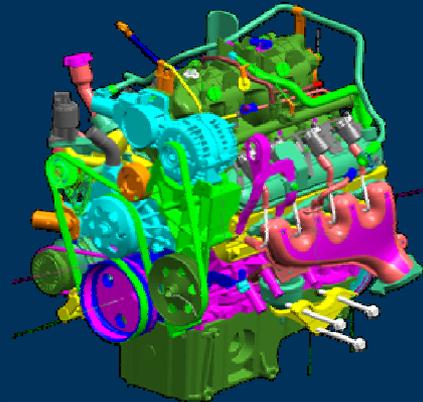
CATIA

Pro/ENGINEER

SolidWorks

AutoDesk

Conclusion

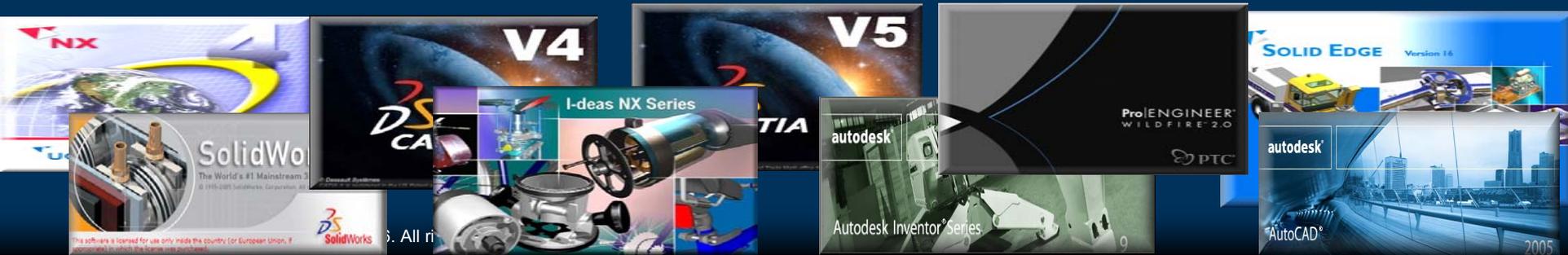




What is Multi-CAD?

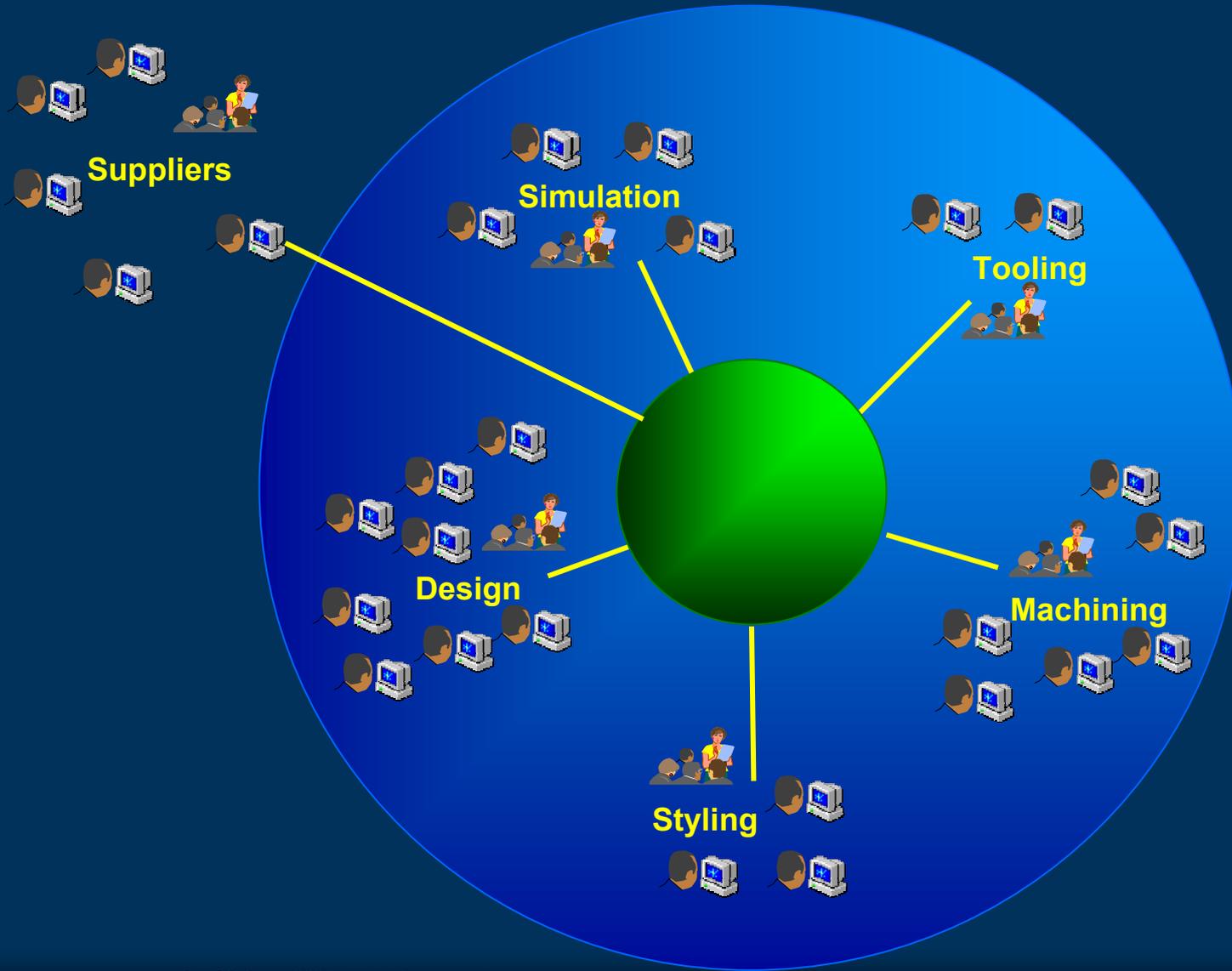


- ▶ The use of software tools from multiple vendors, multiple software tools from a single vendor or a combination of the above as a part of a **managed development environment** supporting a **master model approach**





Managed Development Environment





Product Design Engineering

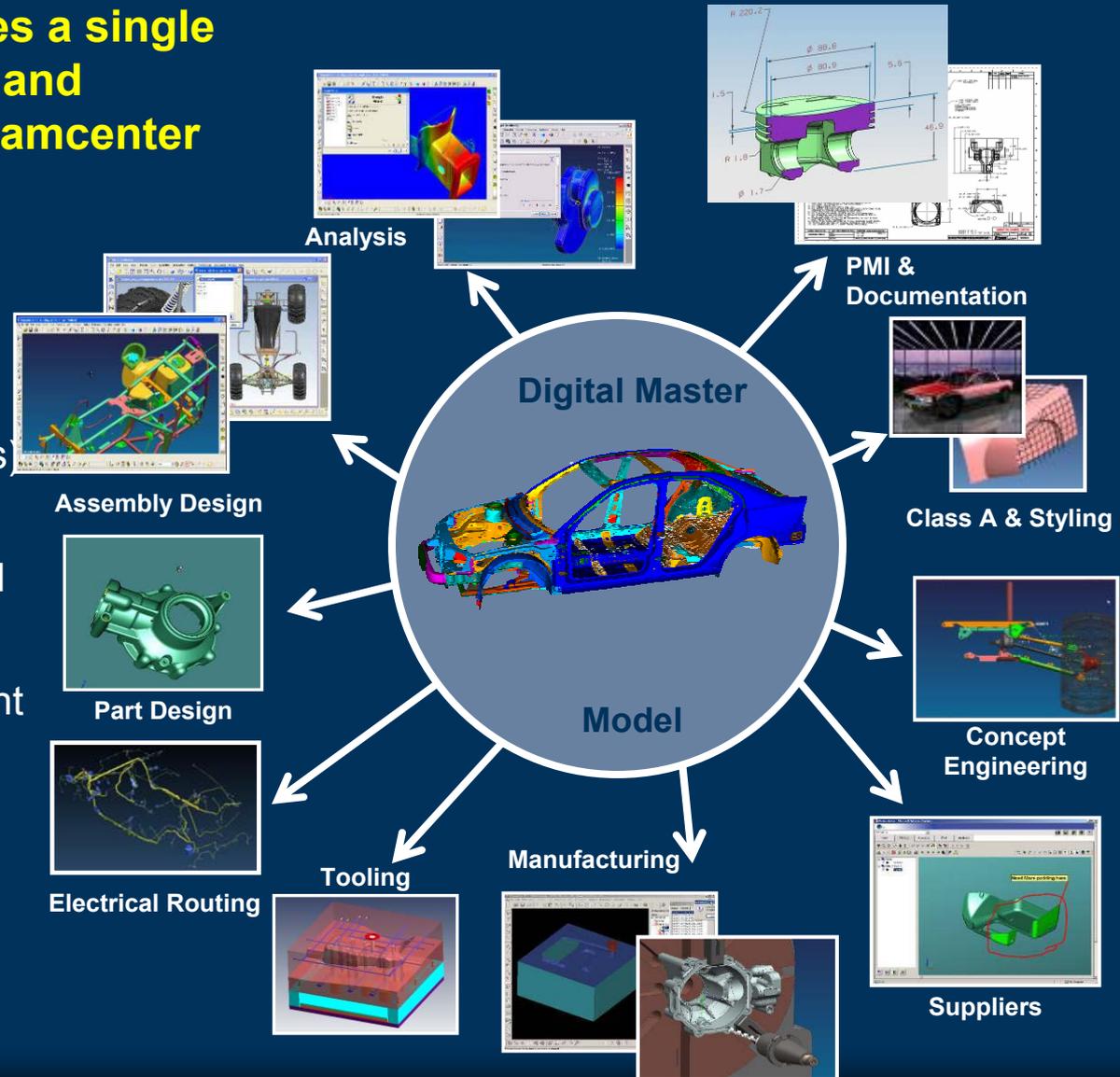
Master Model Approach



Engineering creates and uses a single Product definition ... stored and managed centrally within Teamcenter

Value to Teamcenter Customers

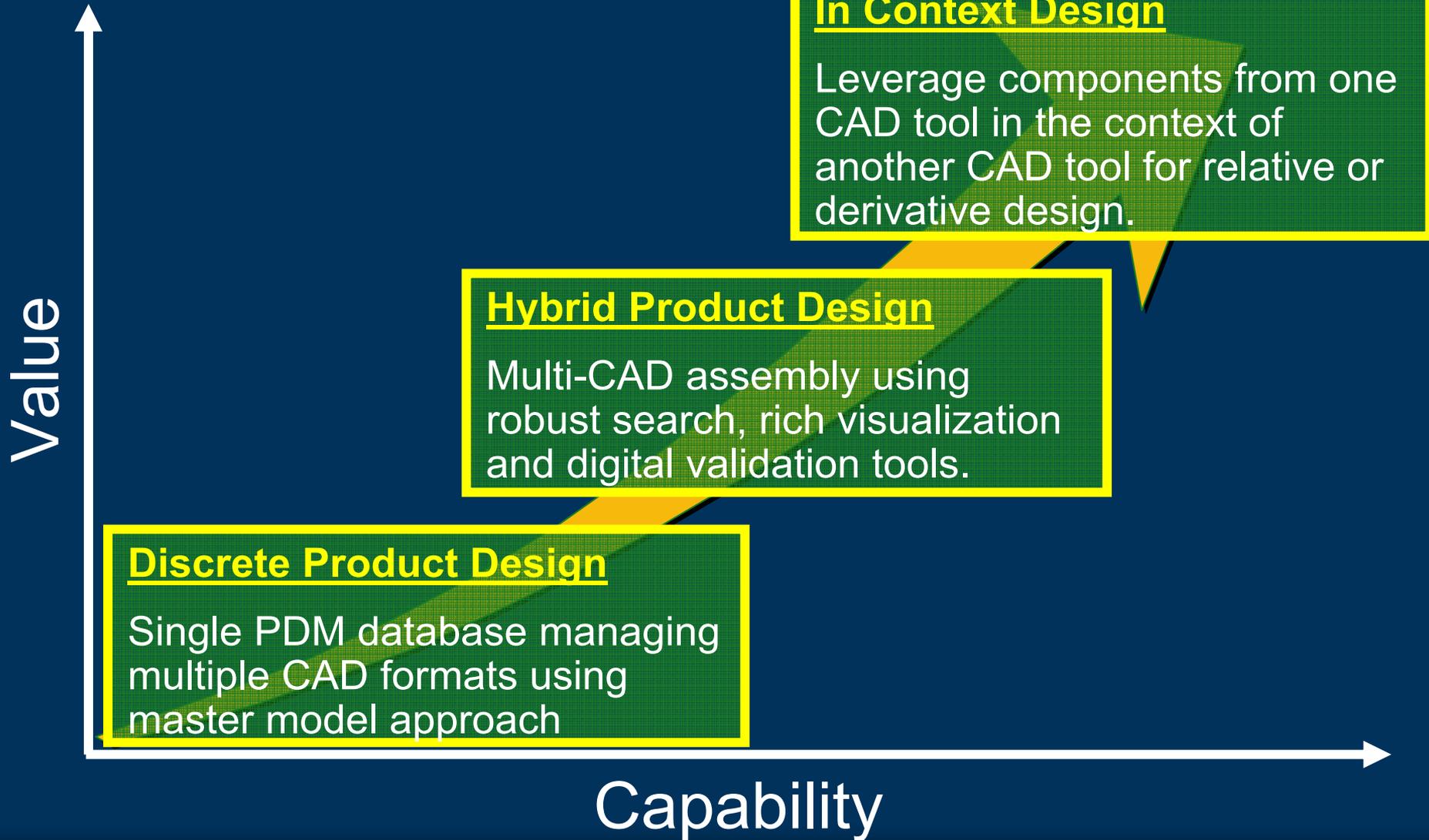
- ▶ Supporting global innovation networks (Integration of geographically dispersed teams)
- ▶ Improves re-use and validity of information (Single source of all product information)
- ▶ Improve Cycle Time (Concurrent development across multiple engineering disciplines)
- ▶ Improved time to market (early involvement by marketing, finance, manufacturing using visualization)





Multi-CAD Scenarios

Value Chain





Teamcenter for Multi-CAD

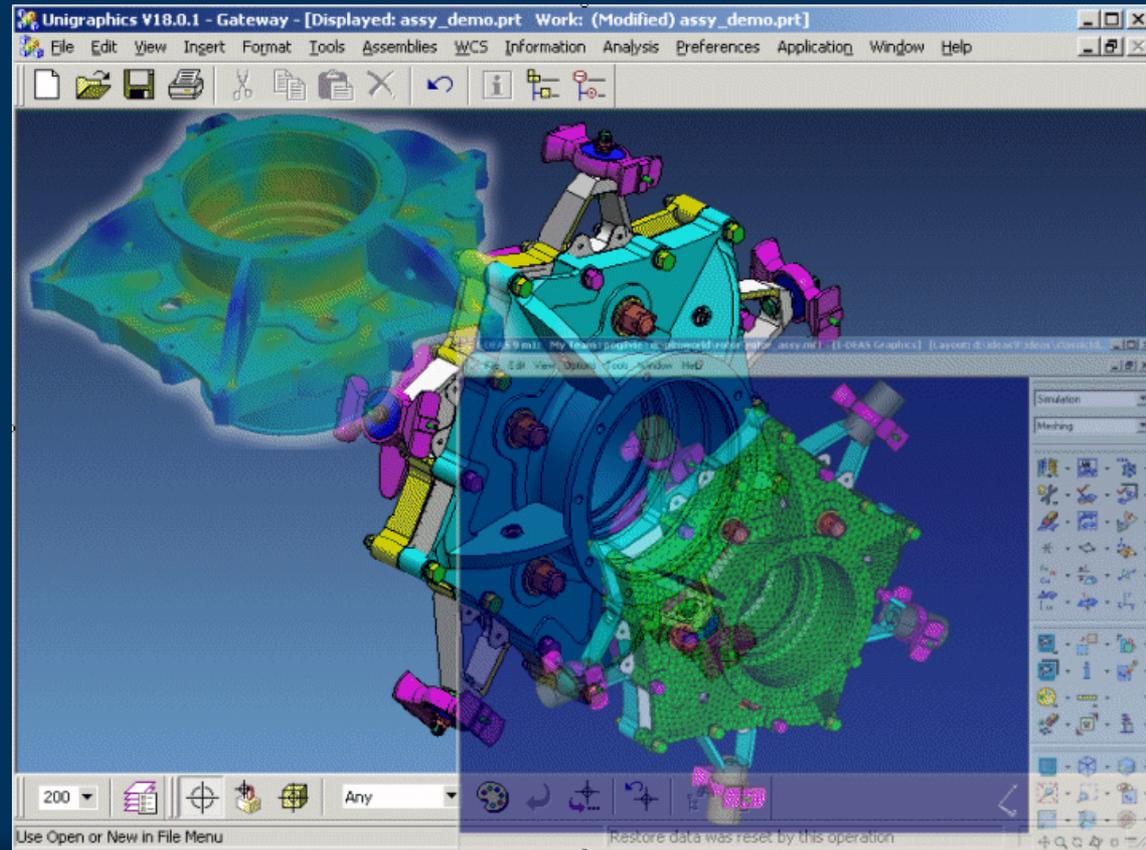
Engineering



Teamcenter for Multi-CAD Engineering



- ▶ Where **Engineering Process Management** is the focus enabling Work-in-Process and Pre-Released Configuration control
 - ▶ Supporting *deep, rich* MCAD integration to get the most out of the CAD system



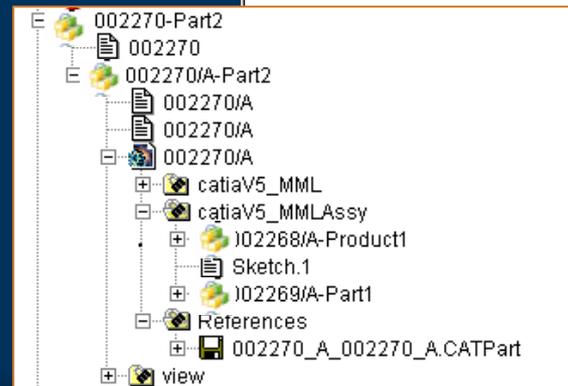
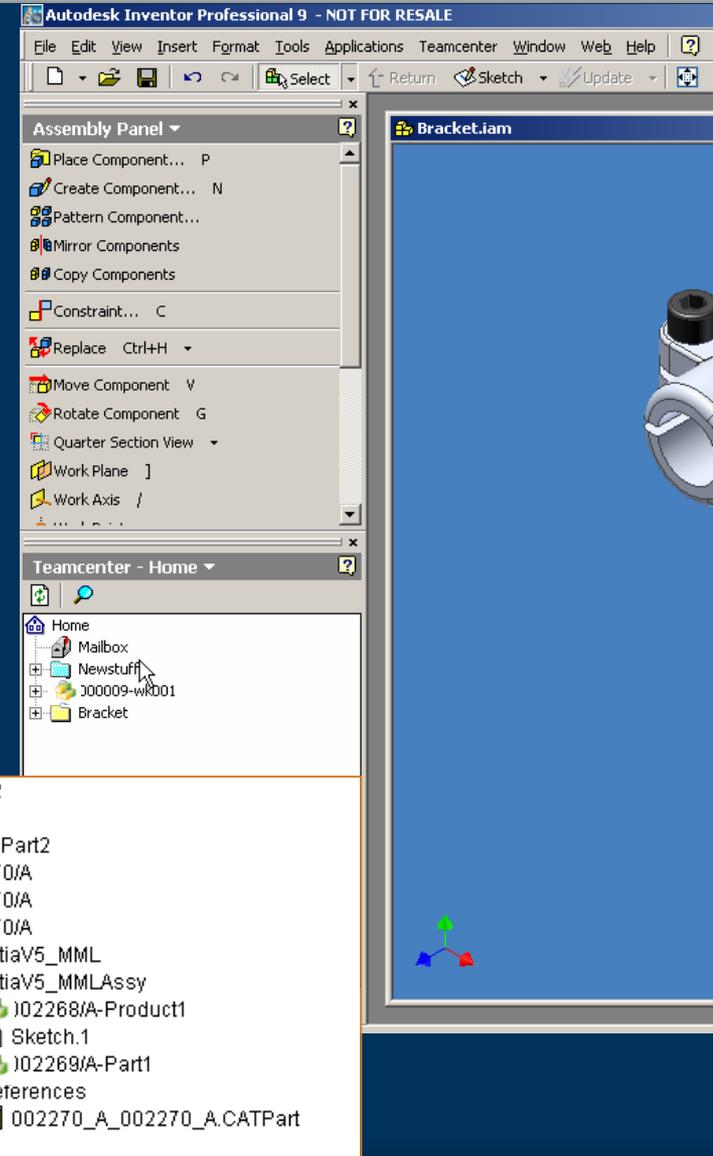


Teamcenter for Multi-CAD

Engineering - Overview



- ▶ Work in progress CAD support
 - ▶ Embedded and Rich Client interaction with Teamcenter
 - ▶ Familiar CAD User Interface
 - ▶ Extended CAD management
 - ▶ Open, Save, Check-out / Check-in
 - ▶ Synchronize / Cancel / Release
 - ▶ Attribute Mapping
 - ▶ Create/Edit product structure
 - ▶ Get Latest version from PDM
 - ▶ Revise
 - ▶ User Settings
 - ▶ Import / Export
 - ▶ Granular CAD relation support
 - ▶ Support CAD Objects
 - ▶ Parts, Assemblies, Drawings
 - ▶ Application specific



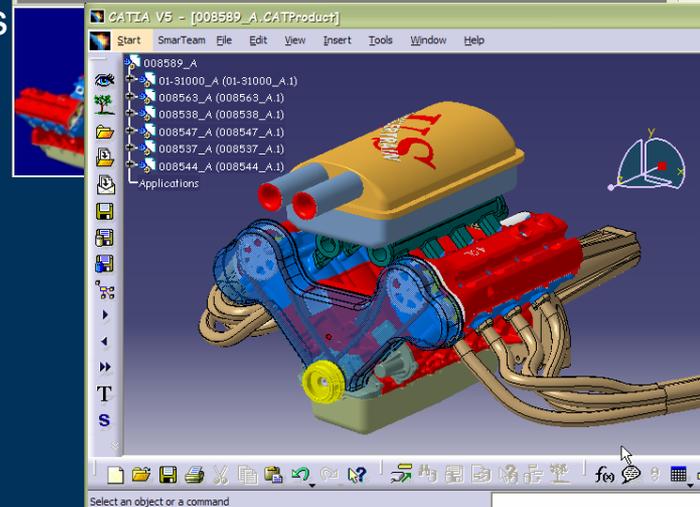
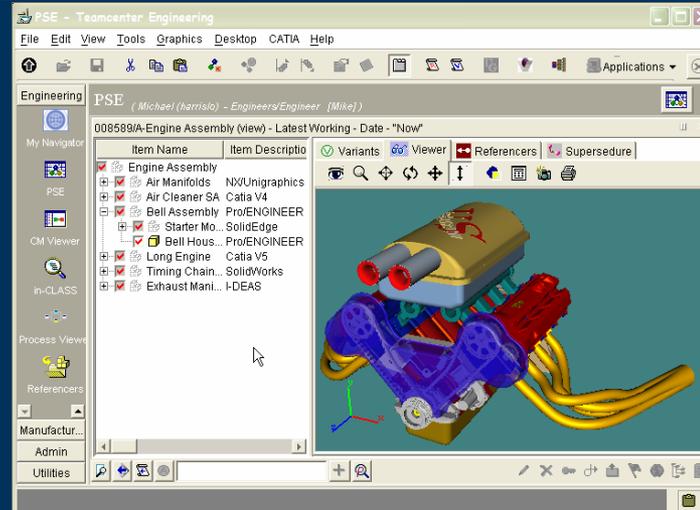


Teamcenter for Multi-CAD

Engineering - Value Overview



- ▶ Multi-CAD product structure
 - ▶ Embedded Visualization
 - ▶ Digital Validation
- ▶ CAD Tool Specific Features
 - ▶ Inter-part relations
 - ▶ Wave, CWA, MML
 - ▶ CATIA Published Elements
 - ▶ Pro/E Family Tables
 - ▶ CATIA/SolidWorks Design Tables
 - ▶ NX Part Families
- ▶ Design in Context
 - ▶ Use JT for non-native CAD
 - ▶ NX
 - ▶ I-deas
 - ▶ CATIA V5

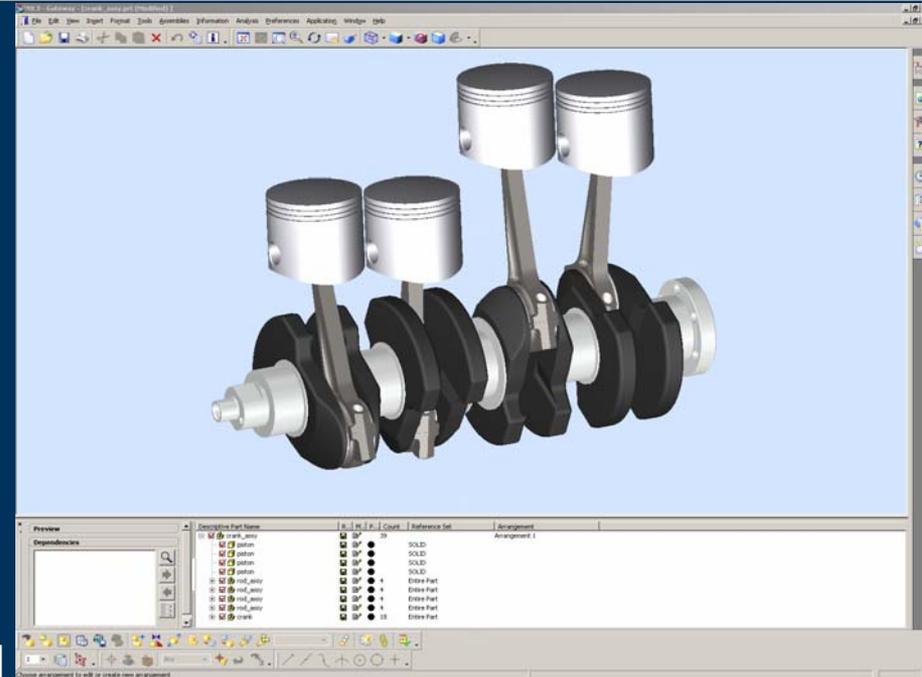




Engineering for NX Overview



- ▶ Attribute Mapping
- ▶ Add part from PDM
- ▶ Check-in/Check-out
 - ▶ Implicit / Explicit
- ▶ UDF Management
- ▶ Part number assignment
 - ▶ Naming Rules
- ▶ Where Used, Where Referenced
- ▶ Teamcenter Visualization support
- ▶ Part Family support
- ▶ Partial Load
- ▶ Extensive PSE support for Top-down design
- ▶ Import/Export



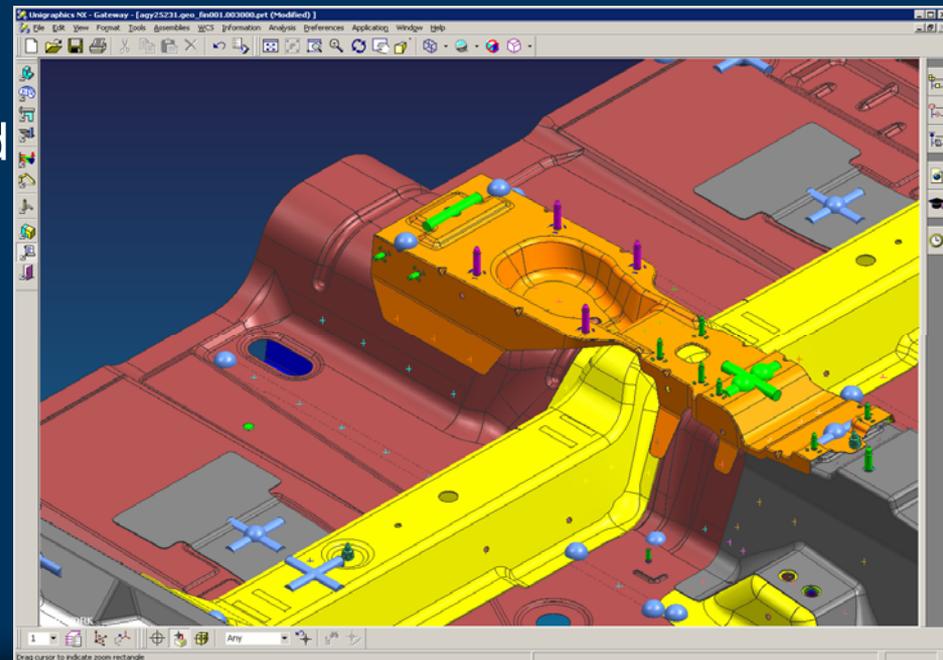


Engineering for NX

Recent Enhancements



- ▶ Design In Context
 - ▶ Load I-deas and Solid Edge assemblies
 - ▶ Load JT (parts and assemblies)
- ▶ Welds
 - ▶ Published as connections in Teamcenter
 - ▶ Allows parts joined by the weld to be visualized in the Viewer
 - ▶ Allows Welds to be consumed by Teamcenter Manufacturing



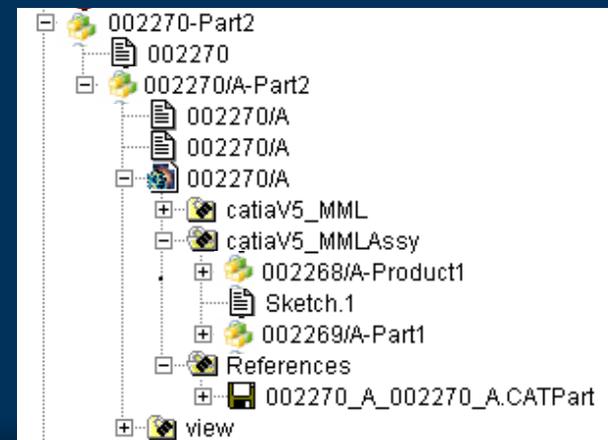
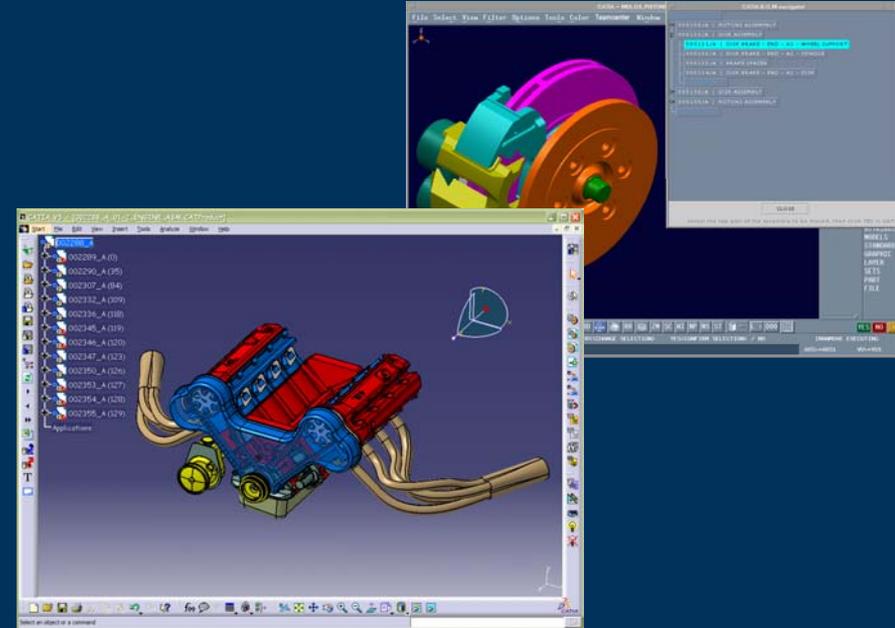


Engineering for CATIA V4/V5

Functional Highlights



- ▶ V4 Lightup in CATIA or PSE
- ▶ Save Assembly transformations
- ▶ JT creation and vaulting
- ▶ Mechanical Properties
 - ▶ Extract to Teamcenter
 - ▶ Compute for Assemblies in Teamcenter
- ▶ Create structures in Teamcenter or CATIA
 - ▶ Load to CATIA / Save to Teamcenter
- ▶ Add or remove parts in Teamcenter or CATIA
 - ▶ Teamcenter synchronized
 - ▶ CATIA synchronized
- ▶ Design Table Support
- ▶ Multi-CAD Foreign File Support
 - ▶ JT, VRML...
- ▶ Multi-Model Links Support
 - ▶ Save to and Navigate in Teamcenter
 - ▶ Leverage from CATIA



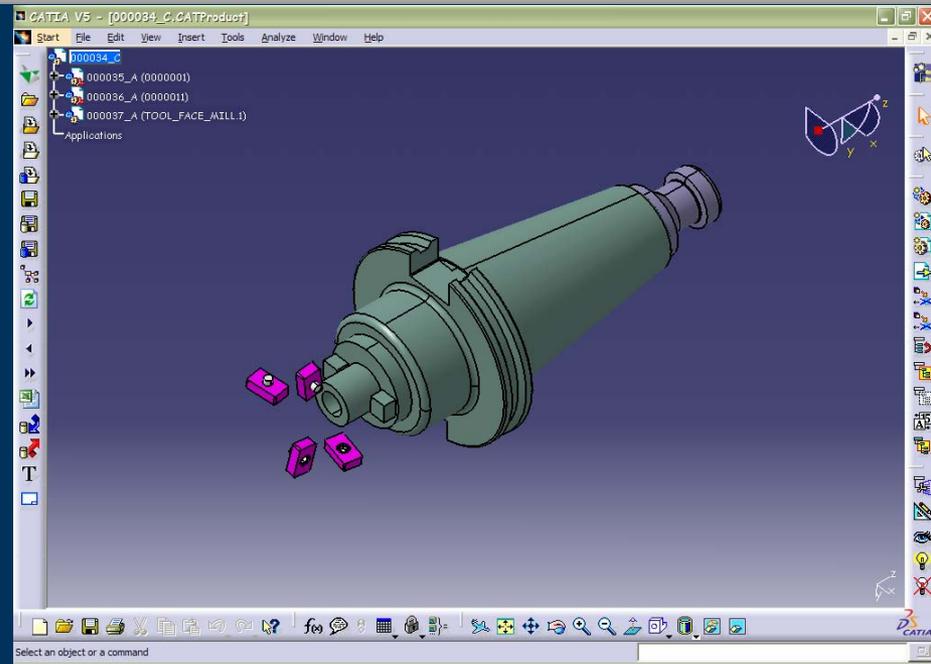


Engineering for CATIA

Recent Enhancements



- ▶ Graphic Synchronize
 - ▶ Partial Load
 - ▶ Variant Assemblies
- ▶ Refresh in session
 - ▶ Version/Revision
- ▶ Supplier Import / Export
 - ▶ Save/Restore OEM characteristics
- ▶ CGR Time-Stamp
 - ▶ Avoid CATIA re-tesselation
- ▶ Attribute Mapping
 - ▶ To/From CATIA Properties
- ▶ CGM creation
 - ▶ Single/Multiple sheets
- ▶ Save Management
 - ▶ Save what is checked out and modified
- ▶ Multi-Model link Browsing
- ▶ Revision conflict





Teamcenter for CATIA Sample Customers



Air International



COMAU

NORTHROP GRUMMAN



JOHNSON
CONTROLS



TATA MOTORS



BAE SYSTEMS

Subros
AUTO AIRCONDITIONING SYSTEMS



Sukhoi



DAHER
SERVING INDUSTRIAL PROGRESS



MAGNETI
MARELLI

ALSTOM

TAI
TUSAŞ AEROSPACE INDUSTRIES INC.



IAI
ISRAEL AIRCRAFT INDUSTRIES



DAIMLERCHRYSLER

LOCKHEED MARTIN

We never forget who we're working for™



DELPHI

Gamesa

EDAG

DENSO



Ford

Teamcenter and the CAD Managers



- ▶ More than 18,000 seats of Teamcenter
- ▶ I-DEAS Manager
 - ▶ Currently deployed and in the process of replacing TDMs.
- ▶ CATIA Manager
 - ▶ 3400 seats sold to Ford
 - ▶ 346 CATIA Manager (portal clients) sold to suppliers
 - ▶ Currently developing tools to migrate Volvo and Land Rover from VPM to Teamcenter
- ▶ NX Manager
 - ▶ Planned deployment for movement of Powertrain to NX





Ford - Multi-CAD Interoperability

Visualization and Design in Context



Teamcenter Engineering

Description

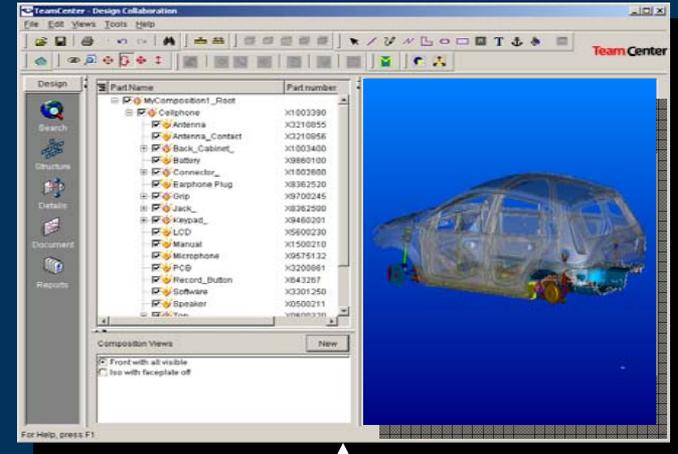
- ▶ Multi-CAD / Single PDM Environment
- ▶ JT Generation via Engineering Translation Services
- ▶ JT Read Capabilities in CATIA V5 and IDEAS

History

- ▶ Began Development in 2001
- ▶ Initial Production in 2003
- ▶ Currently Deployed World-wide

Next Frontiers

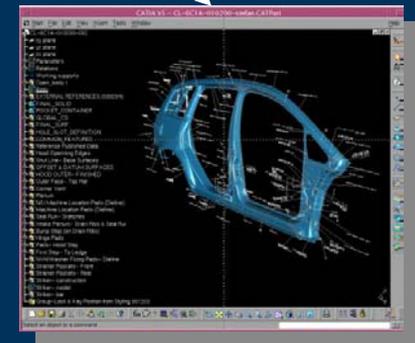
- ▶ Cross-CAD Associativity
- ▶ Raising the bar on large assembly performance



JT Read/Write



IDEAS



CATIA V5

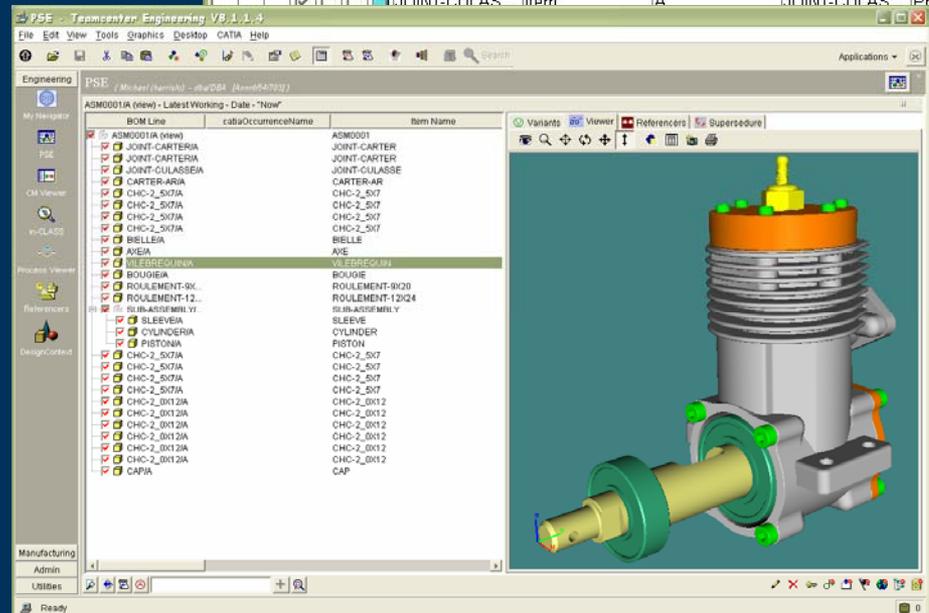
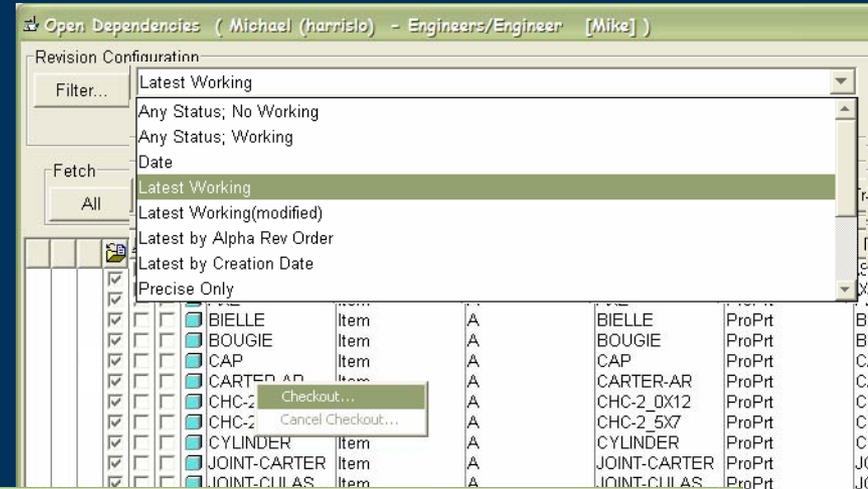


Engineering for Pro/ENGINEER

Functional Highlights



- ▶ Search and Load
 - ▶ Load Filters
- ▶ Configuration Rule Support
- ▶ Bi-directional attribute sharing
- ▶ Rename Support
- ▶ Check-out and check-in
 - ▶ Selective checkout of dependencies
- ▶ Revision control
- ▶ Family Table support
- ▶ Auxiliary File Management
- ▶ Bulk Import / Export
- ▶ Save Assembly transformations
- ▶ JT creation and vaulting
- ▶ Available Data Migration Tools
 - ▶ Pro/Intralink and Pro/PDM
- ▶ Pro/ENGINEER Type Support
 - ▶ Parts, Assemblies, Drawings, Manufacturing, Layouts, Section, Diagrams, Formats



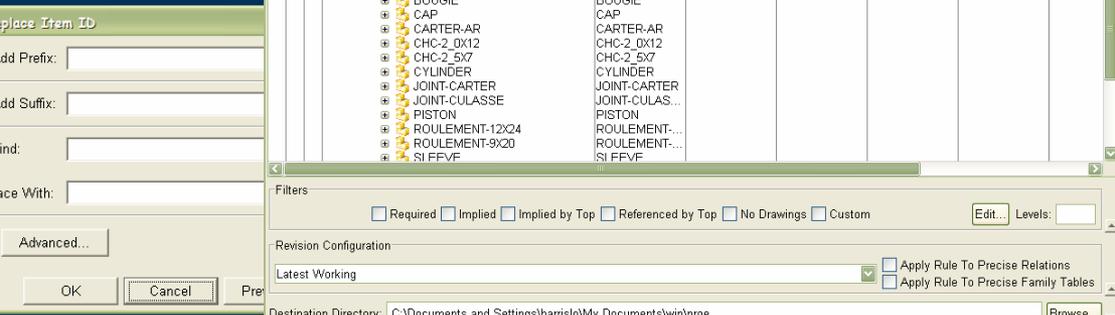
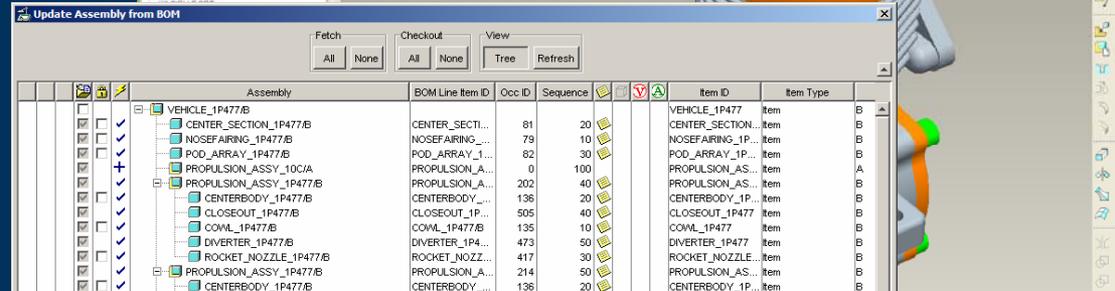


Engineering for Pro/ENGINEER

Recent Enhancements



- ▶ Accelerator file support
- ▶ Update Revision
- ▶ Load Conflict Resolution
- ▶ Load Selective Revision
- ▶ Save Packed BOM Lines
- ▶ Open to Window or Session
- ▶ Independent Auxiliary file/plot save
- ▶ ProE Type mapping
 - ▶ Instance, Generic, Skeleton...
- ▶ 2-Way BOM Synch
- ▶ Map to BVR Occurrence Notes
- ▶ ID Assignment rules
- ▶ Browse and search performance
- ▶ Recall search/open state





Teamcenter for Pro/ENGINEER Sample Customers



Emerson Climate Technologies

Copeland

CATERPILLAR

PYUNGHWA INDUSTRY CO.LTD
www.pyunghwaind.com

GOODRICH

BOEING



TIMKEN

OTIS

SAMSUNG

RAUCH
Wir realisieren's
genau.

BAE SYSTEMS

DELPHI

KNORR-BREMSE

Perkins



Tefal
Ideas you can't live without.

BRIGGS & STRATTON

MERCURY
#1 On The Water

TATA MOTORS

MBDA
MISSILE SYSTEMS

STUDER
KÖRPER
SCHLEIFRING

NORTHROP GRUMMAN

DANA

ATK

DELTA

LG
Life's Good

Thomas
BUILT BUSES

FOTON >> BEIJI FOTON MOTOR CO.,LTD.

ST. JUDE MEDICAL

Lam
RESEARCH
Changing the Value Equation™

Visteon



Copeland Corporation

Multi-Site Deployment





Teamcenter for Multi-CAD

Teamcenter Engineering 2005



NX	✓
I-deas NX Series	✓
Solid Edge	✓
SolidWorks	✓
AutoCAD	✓
Pro/ENGINEER	✓
Catia V4	✓
Catia V5	✓
Inventor	✓

NX3 / NX4
11 / 12
19
2004 / 2005 / 2006
2005 / 2006 (AutoCAD & ADT)
Wildfire 1 / Wildfire 2
4.2.0 – 4.2.4
R14 / R15 / R16
I9 / I10



Teamcenter for Multi-CAD

Enterprise

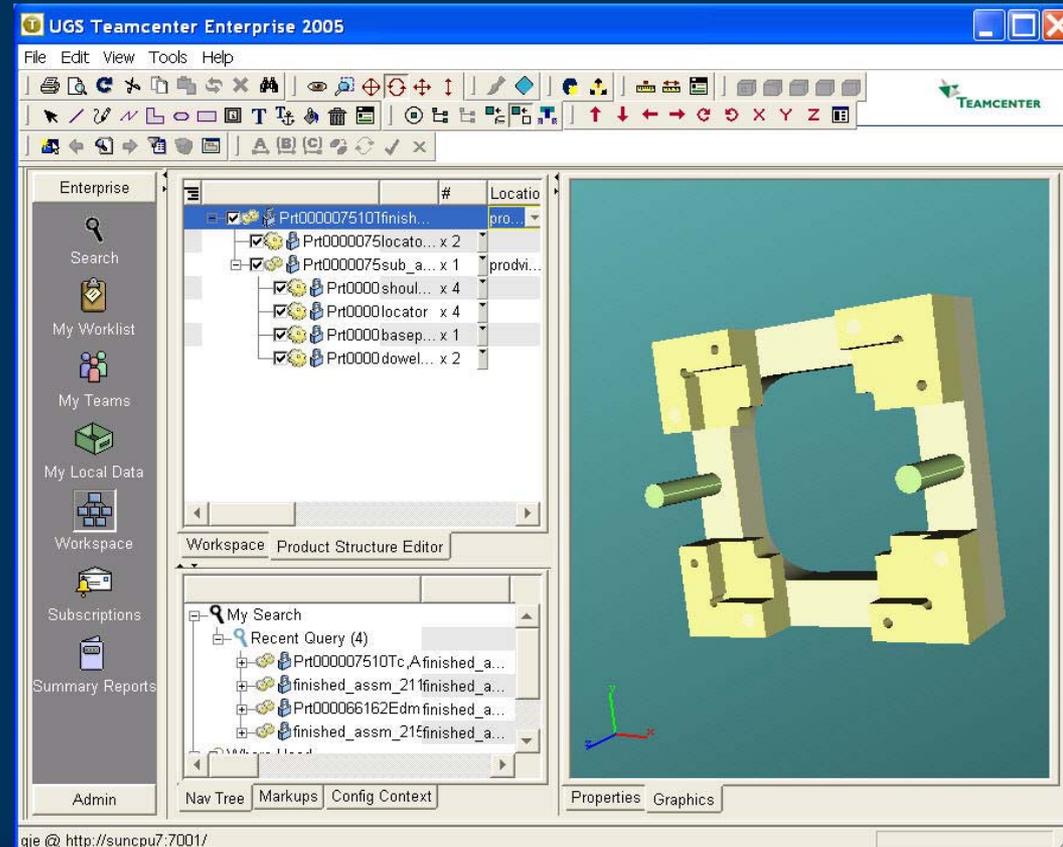


Teamcenter for Multi-CAD

Enterprise Rich Client CAD Connectors



- ▶ Where **Enterprise Knowledge Management** is the focus enabling collaboration throughout the extended enterprise
 - ▶ *Enabling users to author MCAD data in support of enterprise-wide processes*



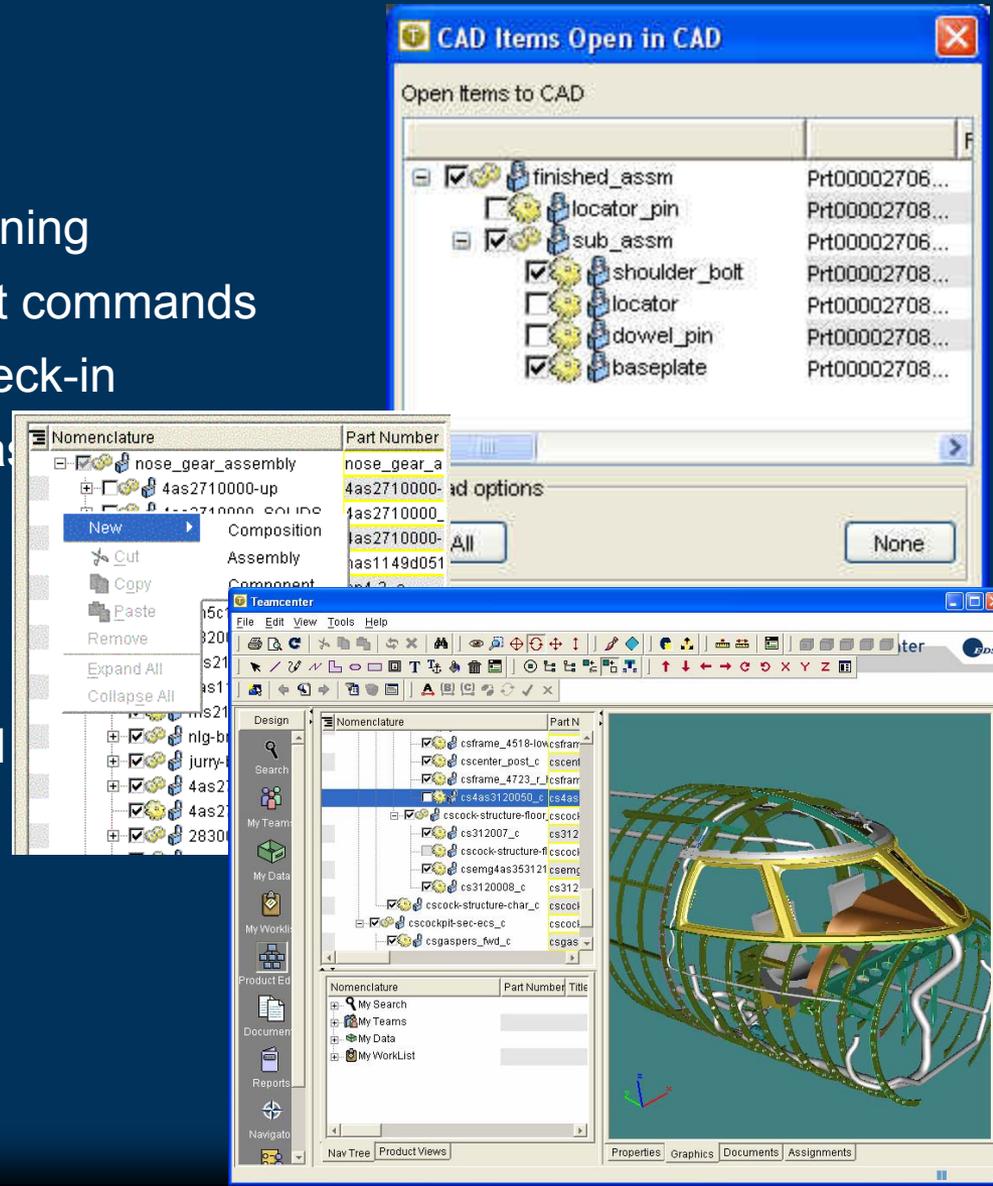


Teamcenter for Multi-CAD

Enterprise Rich Client - Overview



- ▶ PDM Centric
 - ▶ Simplicity of operation
 - ▶ Reduced requirement for training
 - ▶ Focus on core data management commands
 - ▶ Open, Save, Check-out / Check-in
 - ▶ Synchronize / Cancel / Release
 - ▶ Attribute Mapping
 - ▶ Create/Edit product structure
 - ▶ Resolve Key Collisions
 - ▶ Get Latest version from PDM
 - ▶ Support CAD Objects
 - ▶ Parts, Assemblies, Drawings
 - ▶ Embedded Visualization



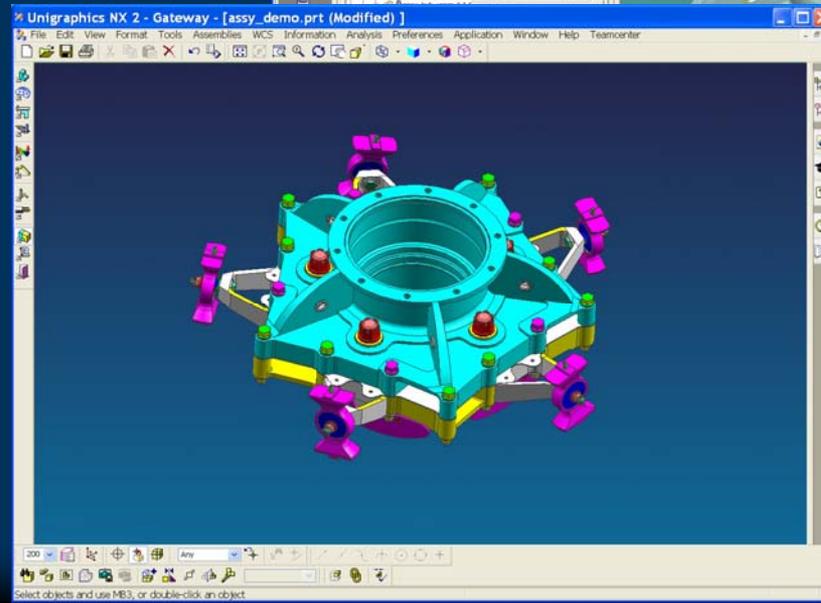
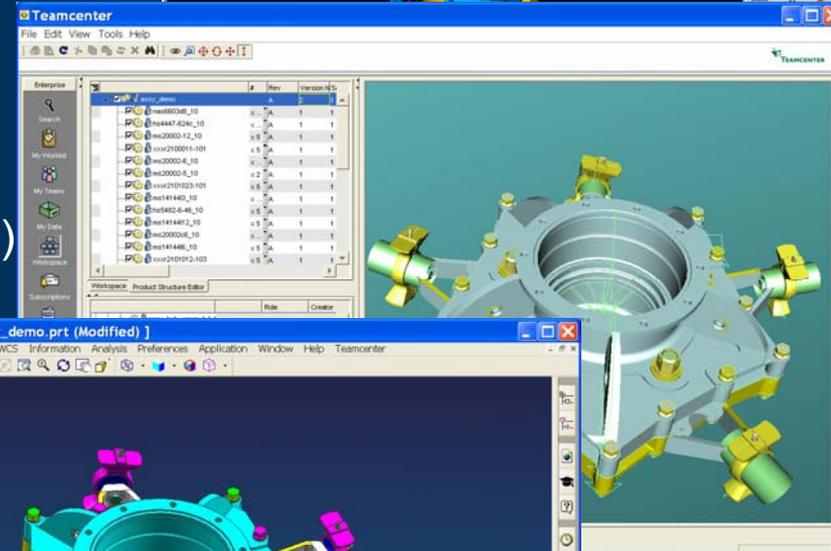
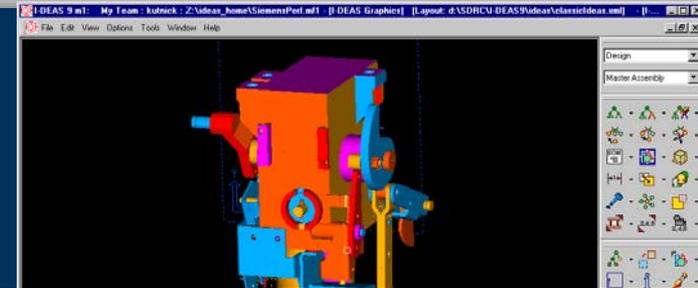


Teamcenter for Multi-CAD

Enterprise Rich Client - Overview



- ▶ 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





Teamcenter for Multi-CAD

Teamcenter Enterprise 2005 (Rich Client)



	NX	✓	NX2 / NX3
	I-deas NX Series	✓	10 / 11
	Solid Edge	✓	15 / 16 / 17
	SolidWorks	✓	2004 / 2005
	Pro/ENGINEER	✓	Wildfire 1 / Wildfire 2
	Catia V4	✓	4.2.0 – 4.2.4
	Catia V5	✓	R14 / R15 / R16
	Inventor	✓	I9 / I10



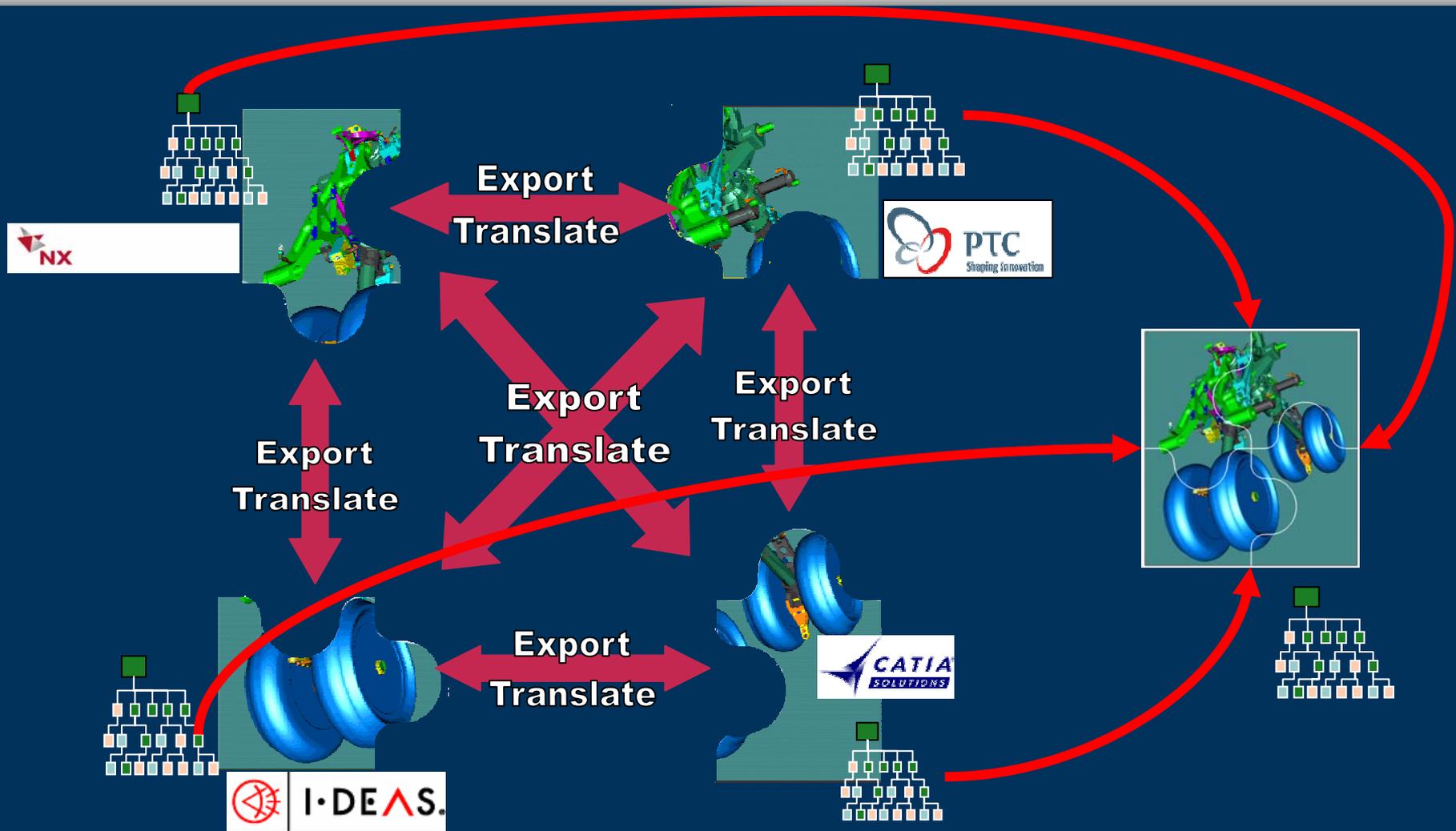
Teamcenter for Multi-CAD

Conclusion



Summary

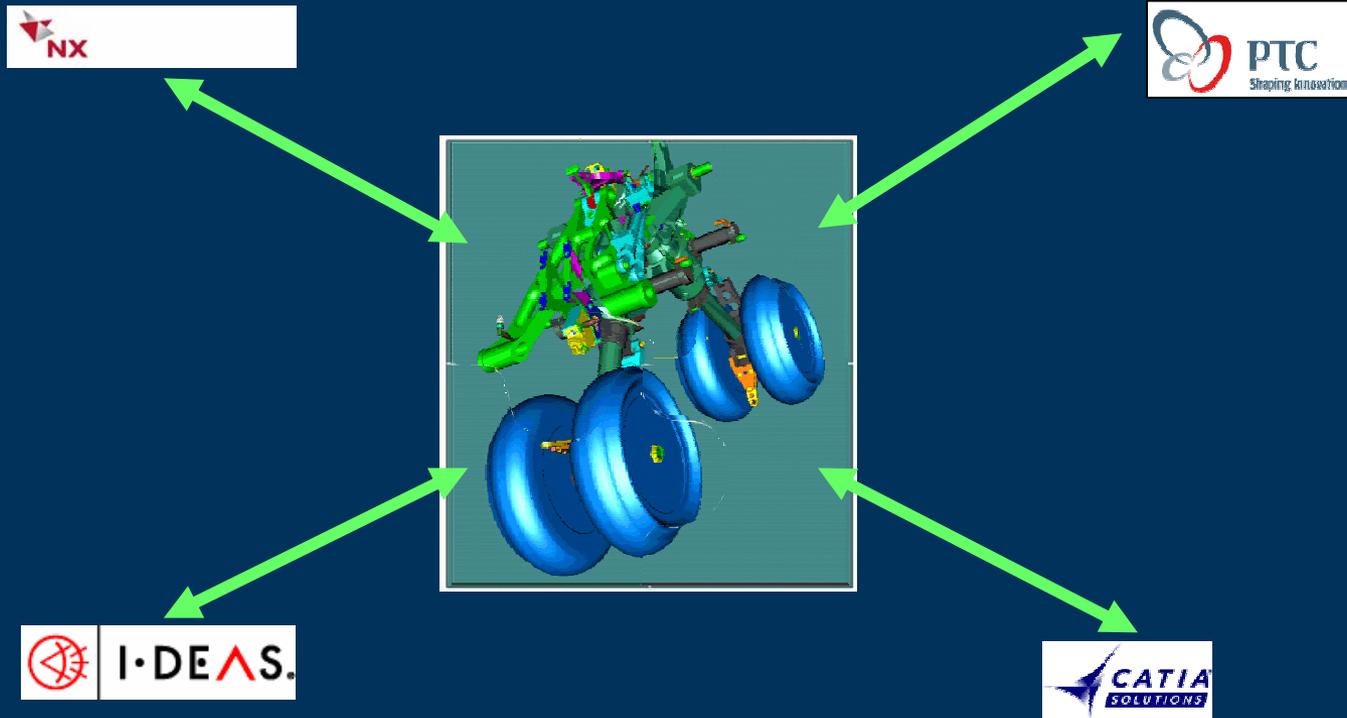
Multi-CAD – Multi-PDM





Summary

Teamcenter for Multi-CAD





Teamcenter Value



- ▶ Establishes common procedures to **improve** efficiency, reduce development time and lower costs
- ▶ Enables **collaboration** across a range of CAD tools, organizational disciplines and geographic locations
- ▶ **Consistent** tools making it easier to **find** existing designs and eliminate duplication
- ▶ Preserves **integrity**, reduces error, improves **quality** through change and configuration management
- ▶ Is a **scaleable** solution from Engineering Process through Enterprise Knowledge lifecycle management



Teamcenter for Multi-CAD Collateral



Teamcenter Engineering: SolidWorks
Multi-site engineering collaboration for any size team

Teamcenter Engineering: NX Manager Unigraphics
Multi-site engineering collaboration for any size team

Teamcenter Engineering: NX Manager
Multi-site engineering collaboration for any size team

Teamcenter Engineering: CATIA Integration
Multi-site engineering collaboration for any size team

Teamcenter Engineering: Pro/E Integration
Multi-site engineering collaboration for any size team

Teamcenter Engineering: Solid Edge Manager
Enhancing your Solid Edge environment with a full range of product development processes

Teamcenter Engineering: Integration for AutoCAD
Multi-site engineering collaboration for any size team using AutoCAD

SolidWorks

NX

I-DEAS NX series

CATIA

Pro/E

Solid Edge

AutoCAD

<http://www.ugs.com/products/teamcenter/library.shtml>



Other Sessions of Interest



- ▶ Teamcenter for Pro/ENGINEER users SIG
Wednesday 5:15pm ball room B



UGS

*Transforming the
process of innovation*



Thank You