

# **Working with Multi-CAD Data in NX using JT**

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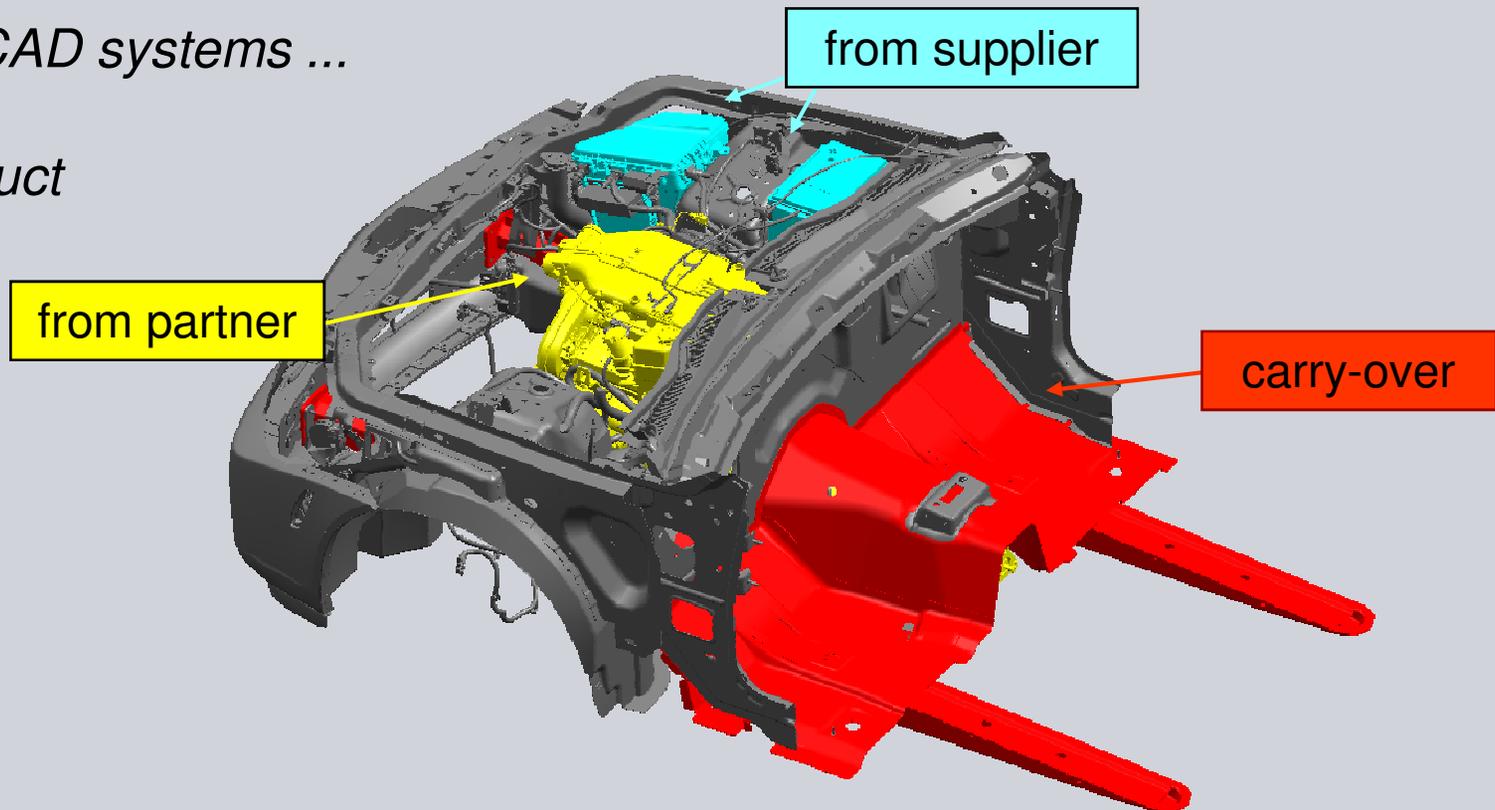
## The need for Multi-CAD

*Different design teams*

*Different locations*

*Different CAD systems ...*

*ONE product*



## When is Multi-CAD support important?

### Collaboration

Product design & manufacture has become increasingly collaborative & distributed

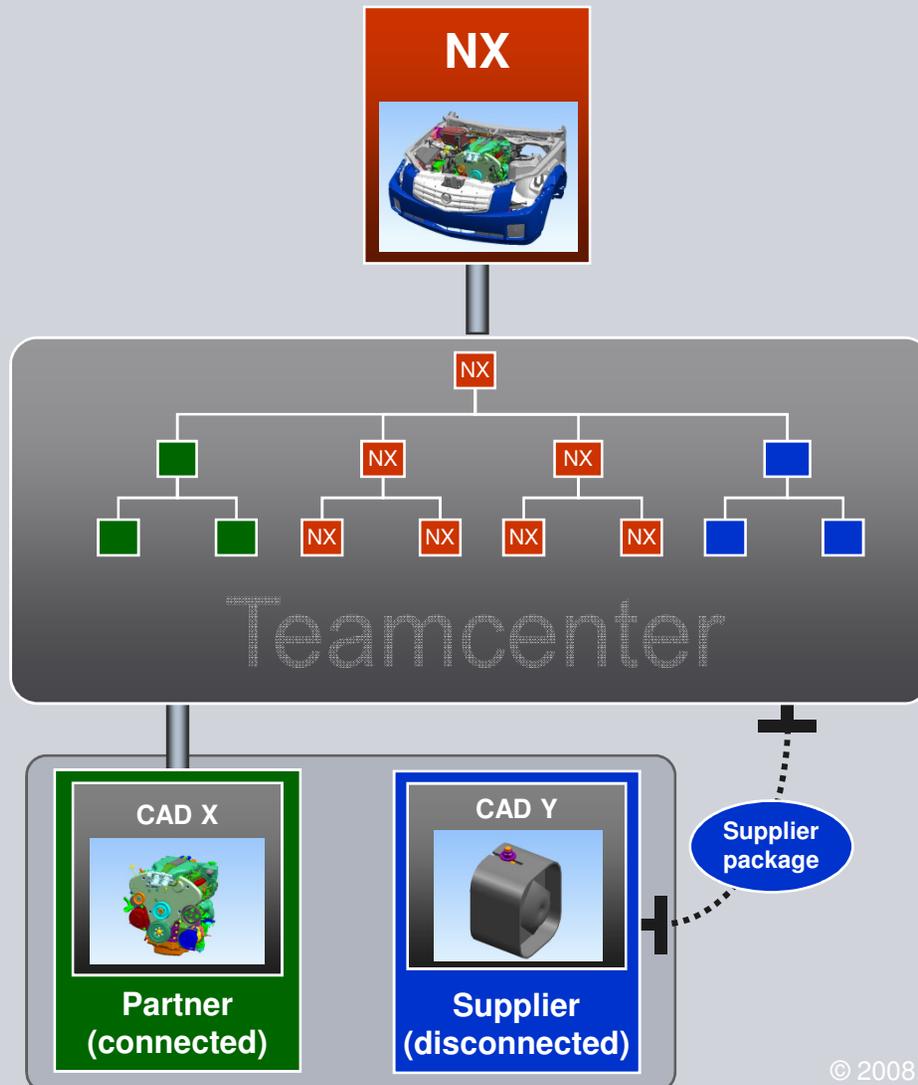
- Partnerships
- Suppliers
- Mergers & acquisitions

***Different CAD Systems***

Need to incorporate subassemblies and parts from other CAD systems into NX design environment



## When is Multi-CAD support important?



## Collaboration

Design data supplied by groups using other CAD systems

- Internal teams
- Partners
- Suppliers

## When is Multi-CAD support important?

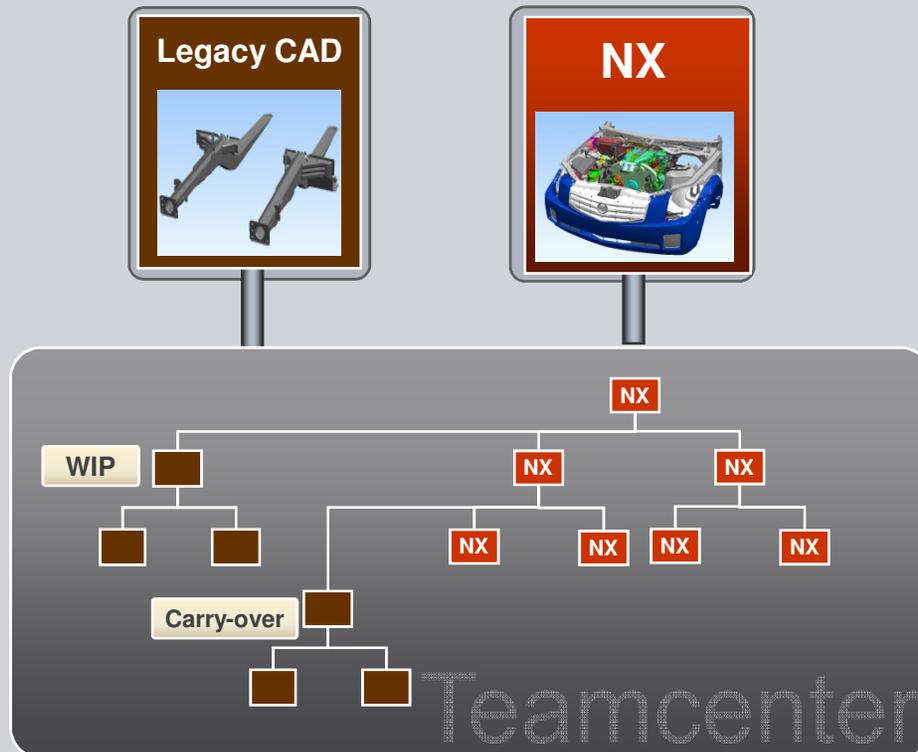
### CAD Transition

Company/group is moving to NX, replacing a legacy CAD system

Need smooth transition process

- NX works alongside legacy system during transition
- avoid bulk data migration

## When is Multi-CAD support important?



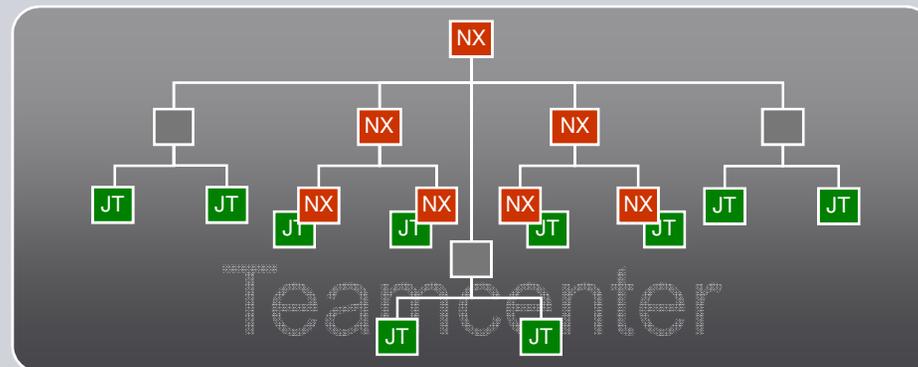
### CAD Transition

NX is replacing another CAD system

- Carry-over data from legacy CAD system
- Live projects still using legacy CAD system

# Solving Multi-CAD with NX, Teamcenter, and JT

-  Teamcenter represents structure
-  JT represents Multi-CAD geometry



Structure & JT

Teamcenter CAD integrations

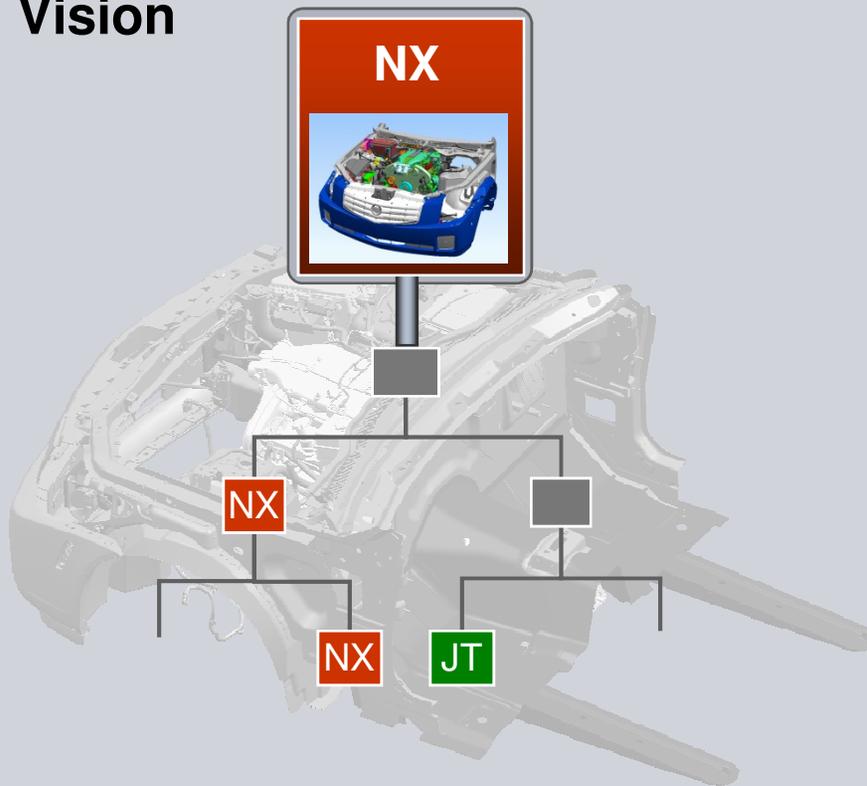
Classic multi-site

Global multi-site

Teamcenter Import

# Solving Multi-CAD with NX, Teamcenter, and JT

## Vision

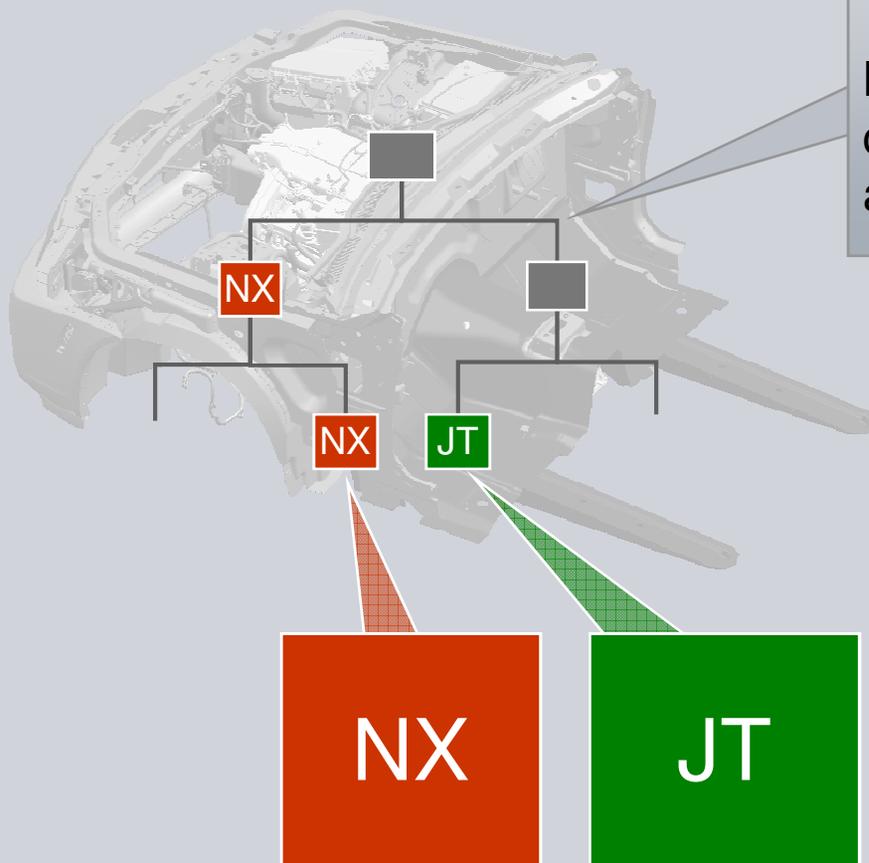


NX will load and handle Multi-CAD data (represented as JT in Teamcenter) in the same way that it loads and handles NX data

Same: performance  
 user interaction  
 content coverage  
 functional behavior

## Solving Multi-CAD with NX, Teamcenter, and JT

### NX Architectural Advantage



### Teamcenter Integration

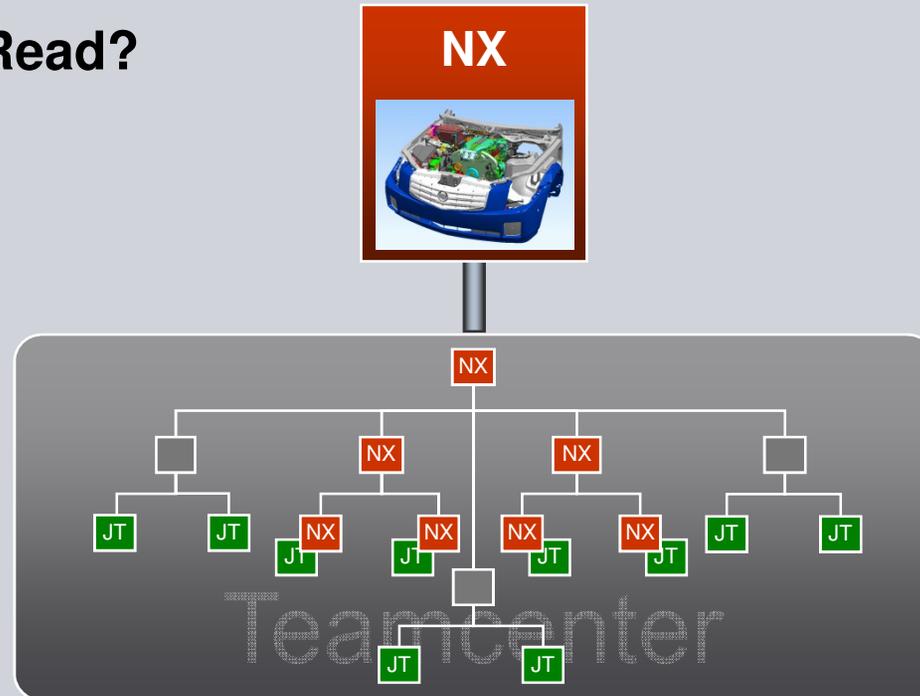
NX synchronizes with Teamcenter configured structure ... and has done so for many years

### Geometry Compatibility with JT

Same B-rep and facet format enables fast, reliable reading of solid and lightweight geometry

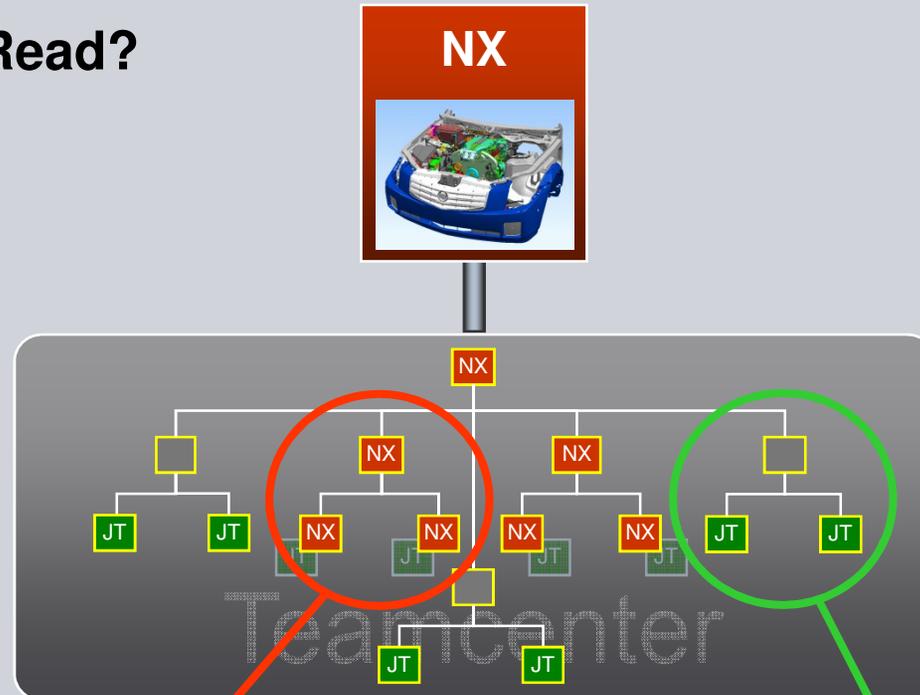
# Solving Multi-CAD with NX, Teamcenter, and JT

What Does NX Read?



# Solving Multi-CAD with NX, Teamcenter, and JT

## What Does NX Read?



**NX Data**

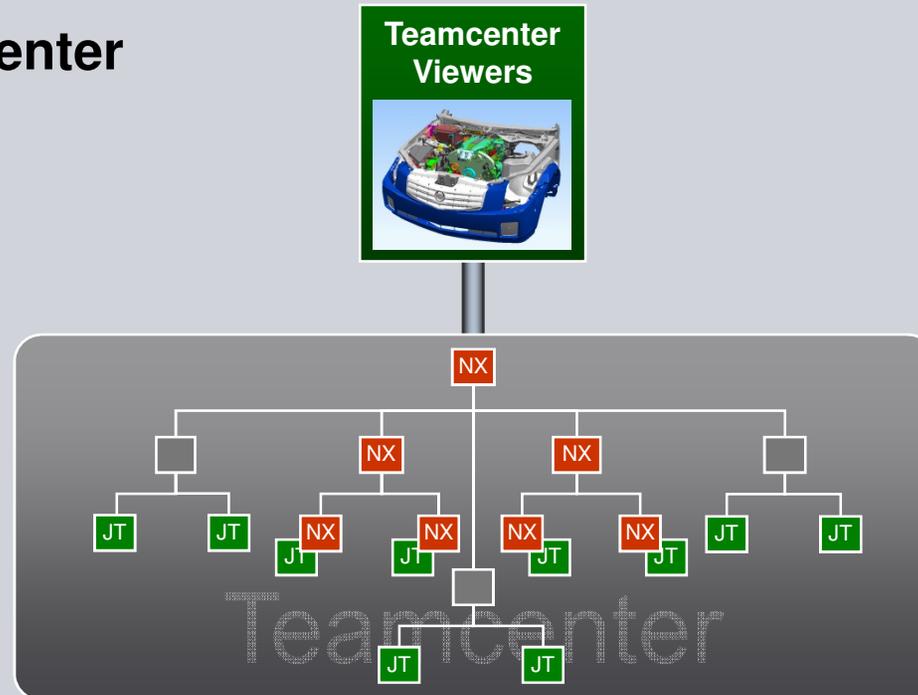
**Reads NX datasets  
as normal**

**Multi-CAD Data**

**Builds structure on load  
Reads JT Geometry**

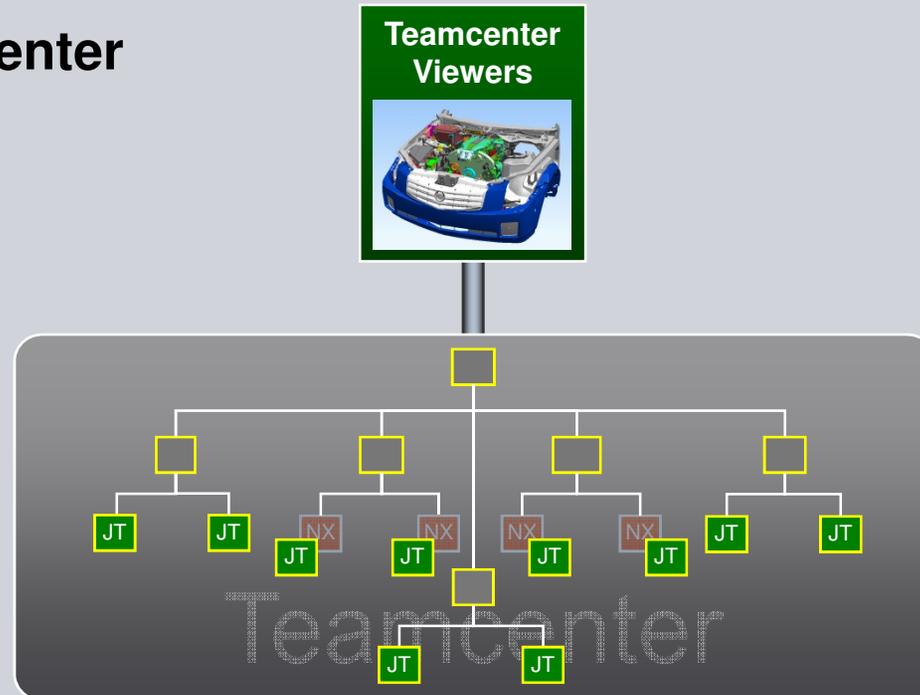
# Solving Multi-CAD with NX, Teamcenter, and JT

What Do Teamcenter Viewers Read?



# Solving Multi-CAD with NX, Teamcenter, and JT

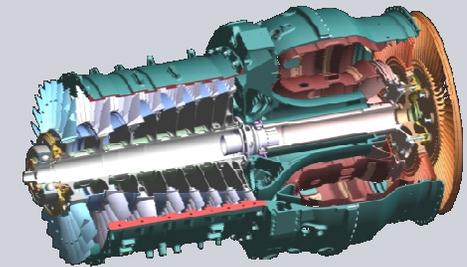
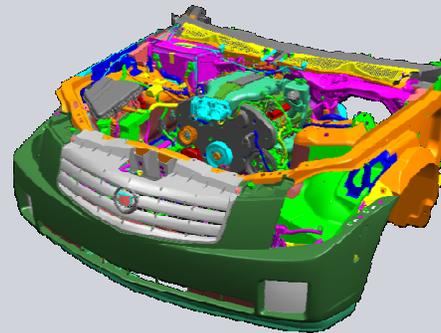
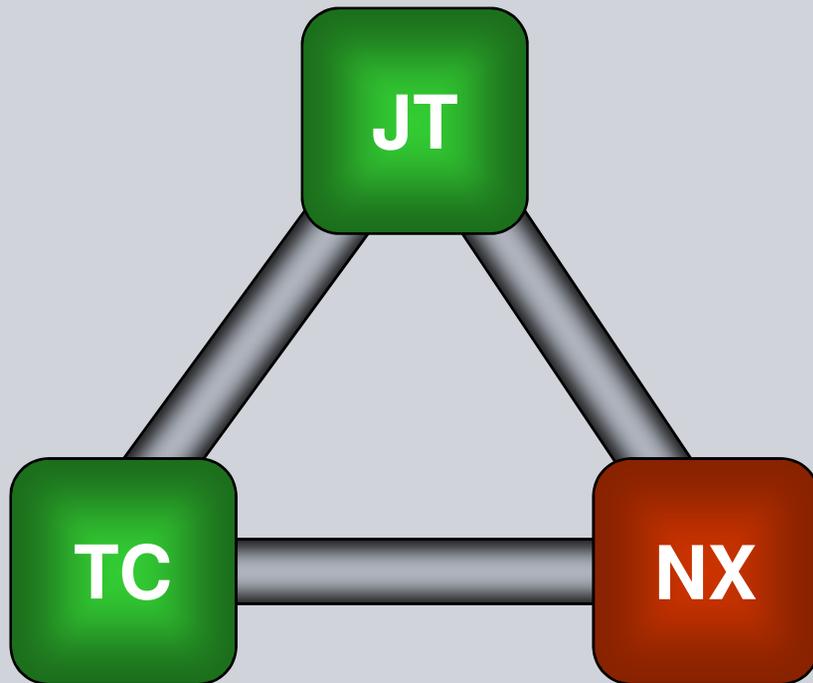
What Do Teamcenter Viewers Read?



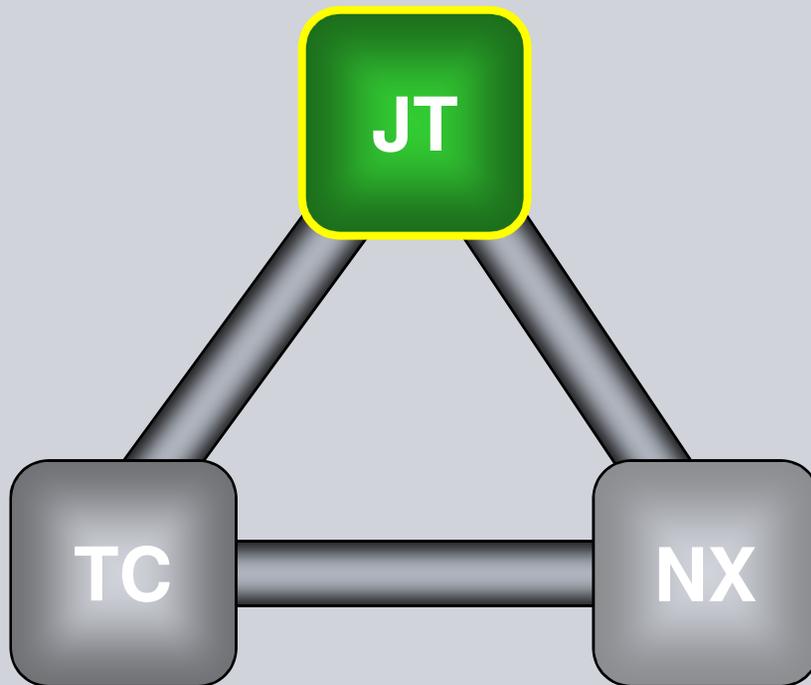
No change

Structure from Teamcenter  
Geometry from JT

## The strength of our solution



## The strength of our solution



### JT Geometry Format

Widely adopted visualization format

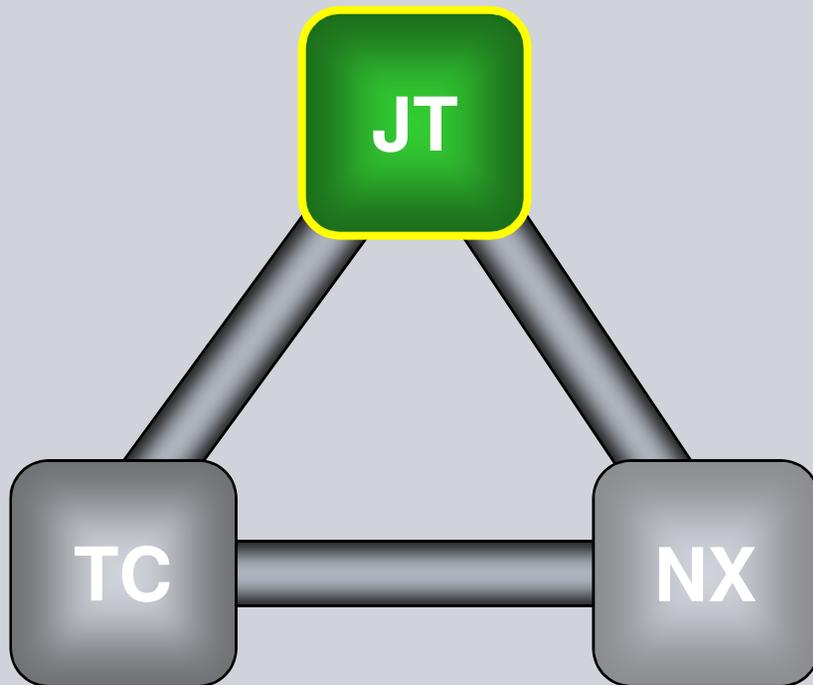
Open format with integration toolkit

Supports large assembly visualization

Hide proprietary model intelligence

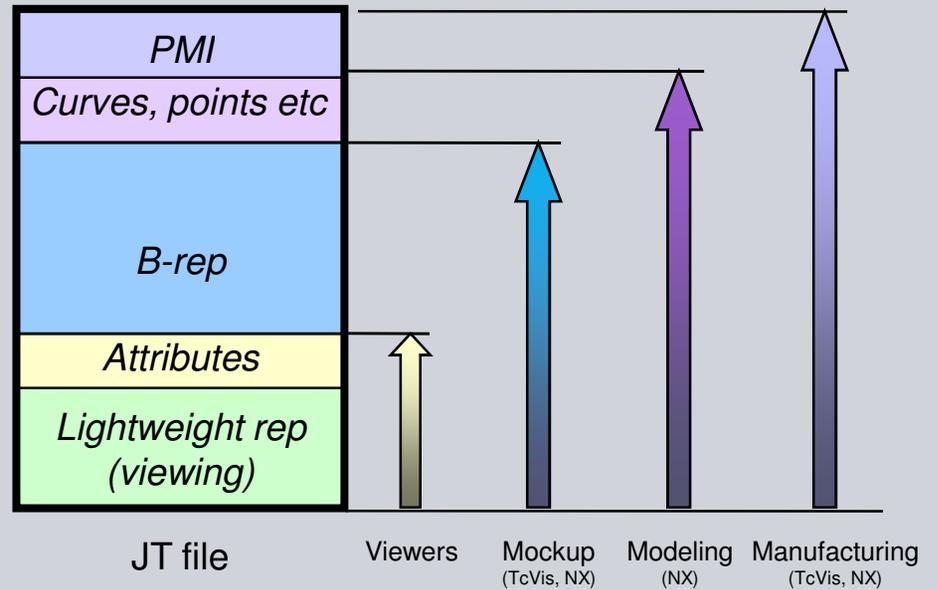
- Strips feature data

**The strength of our solution**

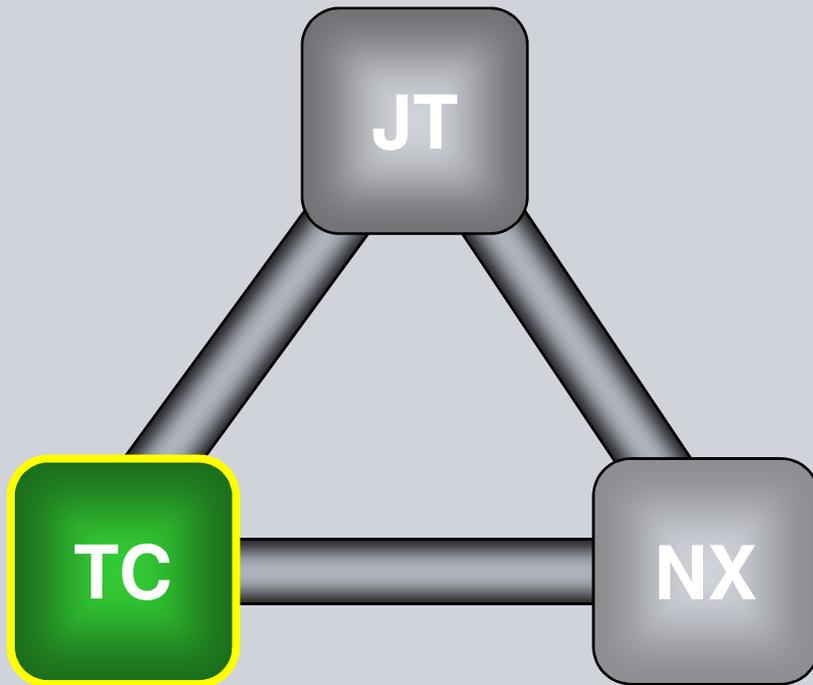


**JT Geometry Format**

Supports data required for wide range of consumers



## The strength of our solution



### Teamcenter PLM

Industry-leading solution

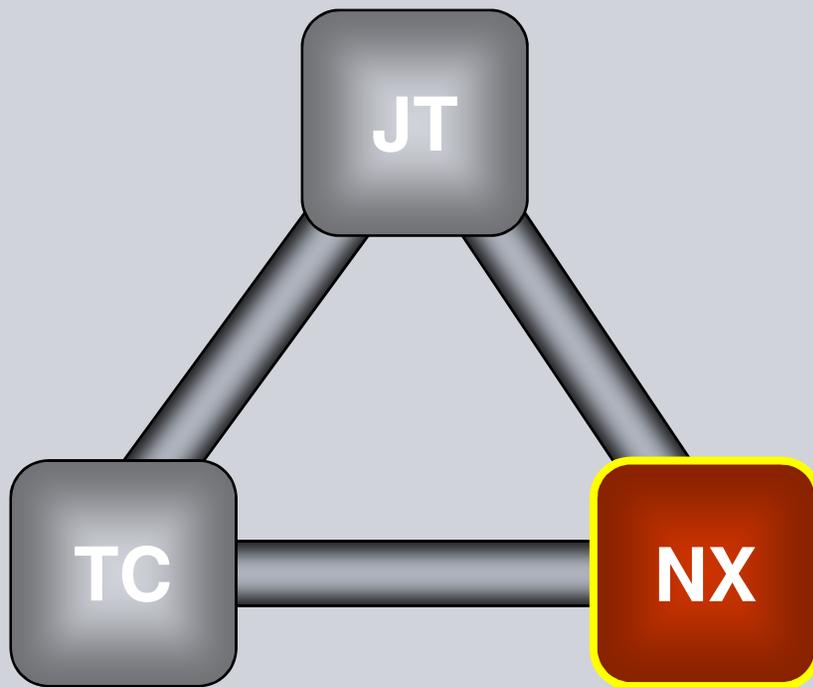
Uses JT as native geometry format

Wide range of engineering, manufacturing & enterprise applications

CAD-independent with wide range of CAD integrations

Support for distributed environment

## The strength of our solution



### **NX CAD**

Established high-end CAD system

Deep integration with Teamcenter

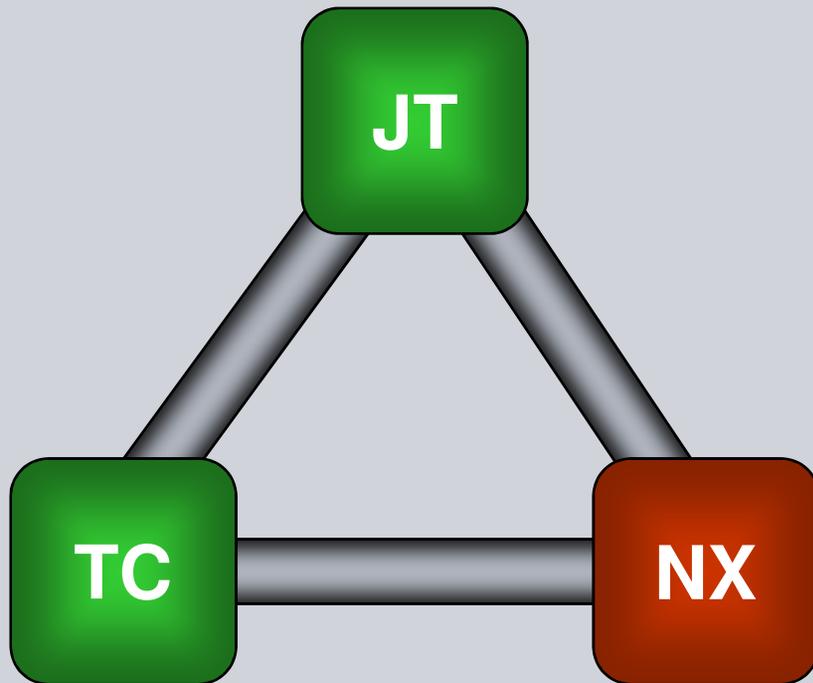
Same geometry format as JT

- Parasolid XT B-rep
- JT facet format

Reads Teamcenter structure  
& JT geometry directly

Direct editing of featureless models  
(Design Freedom)

## The strength of our solution



### ***The combination***

*Large scale viewing & mockup*

*CAD authoring in a Multi-CAD context*

*Product data management*

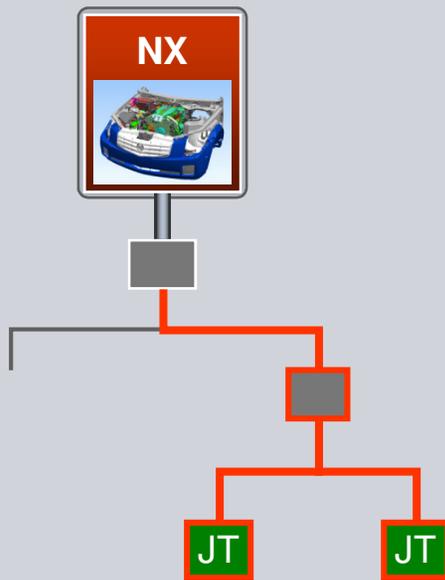
*Enterprise-wide lightweight viewing*

*Distributed design environment*

*IP protection*

## How it works in NX 5

### Loading a Multi-CAD assembly



NX creates assembly structure during load (structure synch)

Loads geometry from JT file

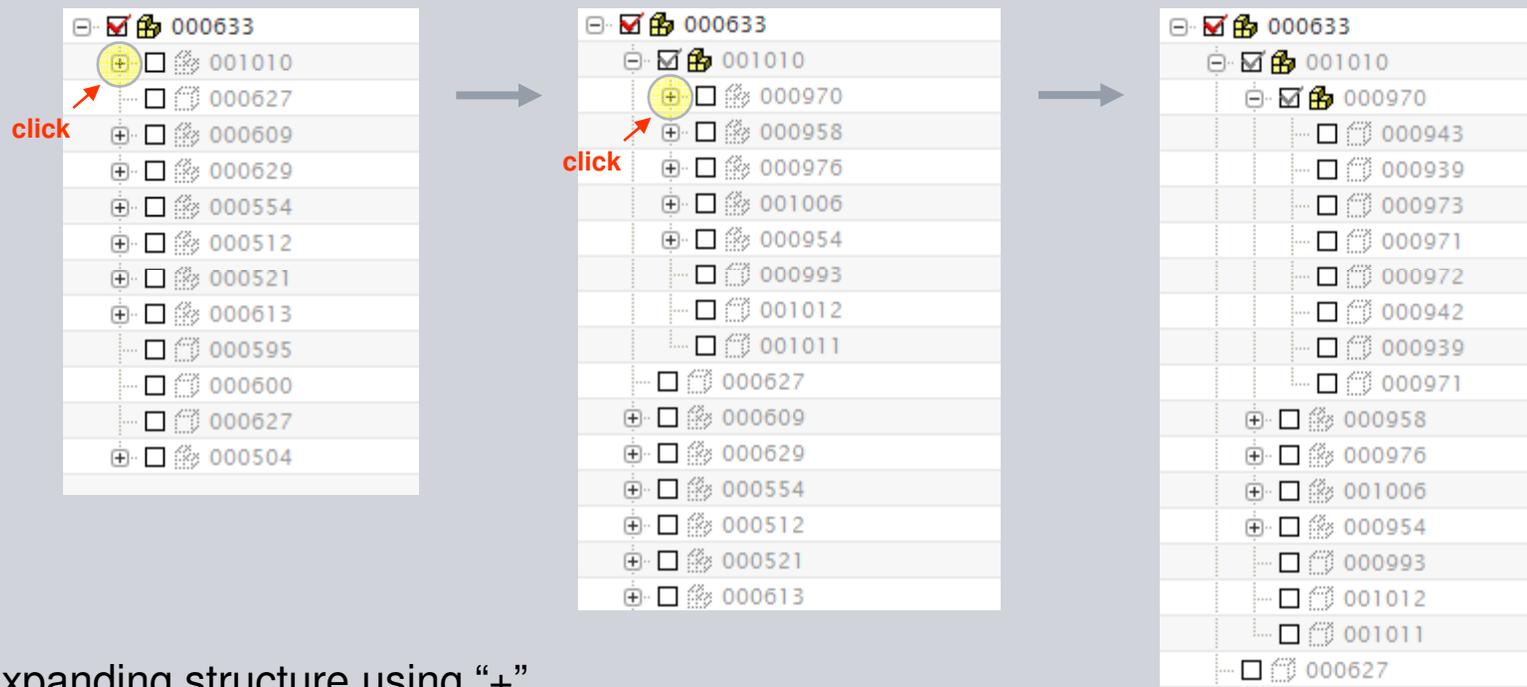
Creates & populates MODEL & FACET ref set

Sets reference set according to load options

Number	R...	Reference Set
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000633	A	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 001010	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000970	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000971	A	Lightweight ("FACET")
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000939	A	Lightweight ("FACET")
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000942	A	Lightweight ("FACET")
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<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000971	A	Lightweight ("FACET")
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<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000958	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000976	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 001006	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000954	A	Entire Part
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 000993	A	Lightweight ("FACET")
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 001012	A	Lightweight ("FACET")
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 001011	A	Lightweight ("FACET")

## How it works in NX 5

### Browsing the unloaded structure of Multi-CAD assembly



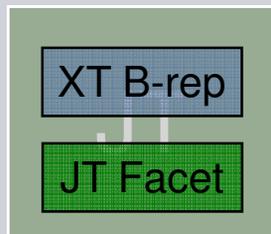
Expanding structure using “+”

- Requires “Update Structure on Expand” preference
- Loads & hides parent node

## Implementation considerations

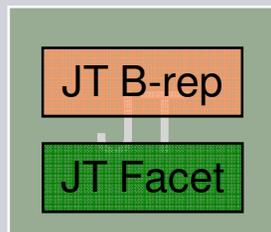
### Solid model format: JT B-rep v XT B-rep

Two possible formats for B-rep in JT file



XT B-rep performs ***much better*** than JT B-rep in NX

- Direct read of Parasolid body
- Fast and 100% accurate



JT B-rep consists of NURBS sheet bodies

- Requires translation
- Options to sew into solid & simplify geometry on load

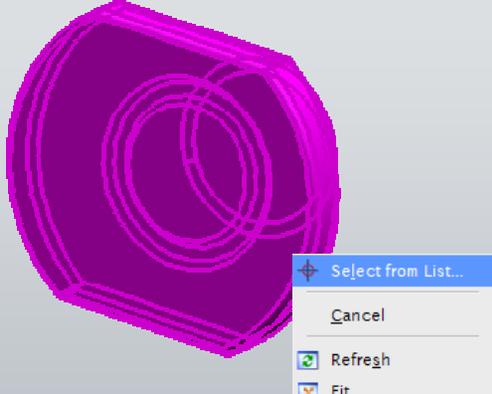


## Implementation considerations

### Faceted model format: JT v8 v JT v9

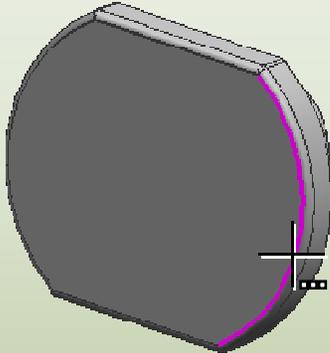
JT v9 contains extra topology information for reliable selection of faces, edges, vertices

JT v8



Topology selection uses  
inferencing (like Tc Vis 2005.1)  
Pre-select using *Select from List*

JT v9



Faces, edges, & vertices  
easily & reliably selected  
Pre-selection same as NX data