I-deas to NX Migration Overview and Update

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Superset Functionality to Improve Customer Workflows

Traditional I-deas Strengths

Research & Development
Customer Requests
Advanced Functionality

Traditional Unigraphics Strengths

Knowledge Engine
Process Wizards
Lg Assembly Mgt
System Based Engineering
Styling & Rendering
Surfacing

Process-based Workflows & Industry Expertise
I-deas to NX Migration – Objective

- To migrate customer data from the I-deas environment into the NX environment
  - Preserving customer investment and intellectual capital held within the data
  - Maintaining continuity in the workflows and processes
Customer migration through a series of controlled data migration phases to ensure integrity and stability of the data throughout the process

- Data analysis
  - Analyse the data to determine when to migrate

- Data management migration
  - Migrate the I-deas data into Teamcenter

- Content migration
  - Migrate the I-deas data to NX data within the context of Teamcenter

All phases of the migration are to be supported by tools and services provided by UGS PLM Solutions and certified partners

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Some customers choose to start new projects or new users on NX using Teamcenter.

This happens in the case of no need for data migration from I-deas or limited interaction with groups/users or data that is still working in I-deas.

This is supported with standard UGS infrastructure and programs.
Migration Process Overview

**Discover**
- **Startup**
  - Initial Audit (est. 1-2 weeks)
    - Study scope
    - Define Standards and Systems
    - Study usage at end customer
    - Propose a draft road map for actual migration
    - Rough Resource Requirement Projections

**Define & Confirm**
- **Detailed Planning** (est. 1-3 months)
  - AS-IS - Analysis of Data & Usage pattern of the customer
  - TO-BE – Migration method and Usage process
  - Validate - Detailed plan for migration
  - new work flows of PLM with customer
  - Detailed proposal

**Deliver**
- **Migration**
  - TDM to Tc Eng migration
  - CAD Data Migration
  - OI and Program file Migration
  - Verification of Data
  - Verification and creation of new processes

**Post Migration**
- End user training
- Expert user support
- Hotline support
- Sharing of new best practices and processes
- System monitoring
Evolution of Excellence – Migration Audits

- One – Two Day on-site engagement with customer
- Performed at over 200 customers world-wide
- Analyze all TDM metadata for migration to Teamcenter
- Analyze all Parts, Drawings and Assemblies for features / entities / instances and give estimated migration success rates for NX 3 and NX 4
- Analyze all Customizations (Open I-deas and Program files)
- Give Migration Overview Presentation
- Demo Migration tools with customers data using Teamcenter Engineering and NX 4

We under went our "early adopter" I-deas to NX initial audit by UGS in August 2004. UGS came out to our company and spent two days with us, analyzing our CAD data and showing us the new products. My overall anxiety has pretty much disappeared now that I have seen the products as they relate to our CAD data. The products - both CAD NX and TDM to Teamcenter Engineering NX Manager I-deas look solid.”

Susan Despotopulous
PLM World Technical Track Chair
Micro Motion Corporation
Driving Factors for Change

Early 2003
- Server & Desktop
- Multiple Interfaces

Today

- Significantly Increased Product Offering
  - Ability to leverage existing designs
  - Improved communication and knowledge capture between teams

- New Markets
- Increased Collaboration between Design Centers
  - More robust data sharing
- Deeper Engagement with Suppliers
  - Third party data
  - Improved access model
Document Value of Moving to NX over I-deas

- CAD workflow studies
  - Usually no more the 4 hours long each
  - Most companies define 3-5 workflows each (so not everything)
    - Existing I-deas workflows are documented and new NX workflows are developed and documented
    - Productivity measures are given for each workflow (time, clicks, mouse movement…)
  - Used as basis for documenting productivity advantages of future upgrades to NX after this baseline is created

![Time Comparison Chart]

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Building a Business Case

**Business Drivers**

Why?

- **Technology Renewal**
  - I-DEAS is at end of life.

Cost Avoidance

Vendors are selling competing products to dissatisfied users:

- Currently >Z1 non-Standard licenses at Seagate (~ $XXX K)
- Extremely high cost to re-integrate unmanaged deployments

Why Now?

- **NX Productivity**
  - CAD Productivity
  - Common Parts
  - Ease of use

- **Inter-site Data Sharing**
  - Eliminate manual transfers
  - Improved quality through collaboration

- **Enterprise Processes**
  - Supplier Collaboration
  - Purchasing
  - Program Management
  - ...

Quantified

- **Labor Baseline**
  - $Y1 FTE ~ $X1 M/yr

- **CAD Workflow Benefit**
  - $X2 M/yr \(\rightarrow\) Y2 FTE

- **DMLink Transfer Eliminations**
  - $X3 M/yr \(\rightarrow\) Y3 FTE

- **Identified Process Improvements**
  - $X4 M/yr
  - Not used in FTE calculations

Unquantified

- **Commercial Parts**
- **Reduced Training**

- **Quality Impact due to lack of sharing**
- **Duplicate Parts**

- **Unmanaged Supplier Interchange**
- **Obsolete inventory**
- **PDM Integration (Quality Impact)**

I-DEAS to NX: One Company’s Journey
5/3/05
Teamcenter – First step of Migration
remove TDM

- Teamcenter Engineering
  - Preferred solution for integration with NX with manufacturing features
- MI Admin – Tool used to clean/correct data in TDM and multiple TDM’s prior to migration to Teamcenter
  - Latest enhancements support modifications useful for migration to Teamcenter Engineering and fixing I-deas 8 Drawing migration data
Sample Customer TDM Analysis

- 92 Duplicate version numbers
- 10 missing item names
- 805 multiple item names
- 4086 missing part numbers
- 1117 multiple part numbers
- 912 invalid import export lock status
- 113 migrated drawing duplicate version numbers
- 200 invalid copy of migrated drawings
- 29 multiple migrated drawings
- 21580 duplicate part numbers
- 80 Bad migrated drawing relationships
- 29 invalid migrated drawing attributes
- 31701 duplicate item name
- 16 invalid characters in item name
- 12246 item names too long
- 164 part names too long
Second Step – Data Migration Begins with NX 3

- Increased Functional Breadth and Depth by Leveraging Two Existing Highly Productive Products
  - Knowledge Driven, Open, Standards Based
- Key Ideas Functionality being Added to NX
  - Assembly Configurations, Drawings Containing Multiple Parts, Variational Sweep
- Benefit from Existing Unigraphics NX Strengths
  - Parasolids, Part Navigator, Form Features
- Combined R&D Engine Drives Further New Enhancements
- Revolutionary Tools to Preserve Data
  - Part Features, Associated Drawings, Assembly Constraints, Content Migration
- Customization Mapped to Next Generation NX Functionality
- End User Training, Help and Intuitive New User Interface
- Predictable Migration Process
  - Audit tools, Service Standards, Certified Partners
CMM – Engineering Components

- Team Center Engineering
- CMM Engineering
- Migrates
- I-deas parts, assemblies, and drawings
Content Migration Manager (CMM)

Migration Modes
- Interactive UI
- Command line/bulk tools
Select data for migration
- User may select items, item/revisions or folders
- CMM resolves dependencies

Configure Migration
- User may configure the migration operation
- Style of migration (e.g., Brep vs features)
- Success criteria
- Level of checking

Migration Reporting
- Pre-migration report
- In-migration status (dashboard)
- Post-migration summaries
- Item migration reports (persistent)
Part Migration Options

- JT file with precise data
  - Full support for design in context
  - Facet and precise measure, cross section and interference
  - Full support of PMI between JT parts and native geometry

- Boundary Representation
  - Direct Modeling Extensions (DMX) in NX will add support of modification of some geometry
  - I-deas Coincident Point Tolerance accuracy guaranteed

- Features
  - Full and partial featured models
  - I-deas Coincident Point Tolerance accuracy guaranteed
  - Partial featured models still have all parameters of all futures stored with model
    - Aids in recreation of fully featured model
    - Aids in information to modify design intent for many modifications
Migration Part Test

- Automotive Migration Part
  - Front Core Cylinder Head
  - I-deas 10 M1 Part
  - Part Version 22
  - 191 Major and Minor History Steps
- Migration Results Released Code
  - NX 3.0.1 and I-deas 11 M2
  - 97% Feature Pass Rate
  - 6 Advanced Fillet Issues
    - Rollover and stop short
    - Manual repair to get same part as I-deas took 20 minutes
  - Rebuilding all geometry from scratch in I-deas took 20 hours
Drawing Migration Results

- Example of Drawing migration test at Canon
- Drawing migration certified for fidelity and associativity
- Migration pass rate for this set of drawings in NX 4.0.0 is 92% or 193,572 entities migrated successfully
- Most conservative estimate of value of migration of these drawing compared to going to any other CAD system is **75 to 1**
Fidelity Certification of All Migrated Data

- Parts
  - Fidelity Measured at I-deas Coincident Point Tolerance (PCT) of 1e-5m
    - “/up f” Developed Originally as Joint Project with Ford
  - All Faces are Compared with the Original I-deas Faces

- Drawings
  - Pixel, vector and unique “key point” drawing entity certification tool
  - All drawing entities are certified with associativity

- Assemblies
  - Location, configurations, constraints and ACF relations all certified
Making I-deas Users Productive in NX

- I-deas On-line Job Aid
- I-deas Context Sensitive Help
- I-deas Function Mapping to NX 4 Commands
- NX and Teamcenter training classes and tutorials specifically for I-deas users
- Ability to Customize for Site Specific Use
- 100's of next generation functions from I-deas

I-deas users, click here!

Click on I-deas icon panel to find equivalent NX processes

Hands-on introductory NX tutorial

NX concepts for I-deas users

Index and Glossary map I-deas to NX terms

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Business Value

- **Requirement**
  - Provide a CAD data mgmt solution meeting or exceeding the process capabilities of I-deas TDM
  - Provide process, templates, products, and tools supporting I-deas to NX transition of customer data and processes

- **Business Value**
  - Teamcenter delivers a CAD Manager solution for management of CAD context plus extended functionality for Engineering process, Multi-CAD, and RDV
  - UGS delivers transition processes, patterns, templates, best practices, and tools to streamline the transition of TDM data into Teamcenter
**Typical TDM Environment**

**Capabilities**
- Single site / team data management for I-deas
- Basic site-site transfers (package files)
- Entry level process capabilities:
  - Team member role assignments
  - Basic item states

**Attributes**
- Easy to install and administer
- Easy to learn and use
- Well integrated with I-deas (transparent)

In TDM Environment Users go through TDM to get CAD Info
Typical TDM Environment

- Designed for I-deas data and users only
- Limited multi-site sharing
  - LAN based, not WAN or web based
- Practical limits on numbers of users
- Proprietary database
- Not tightly integrated into higher-level enterprise data management

In TDM Environment Users go through TDM to get CAD Info
Upgrade TDM to NX Manager

Users can use web interface to search, retrieve, and view CAD data

- TDM Data is preserved and migrated into single NX Manager database.

Non-Design Users

Non-Design Users

View-Only Data

I-deas Users

I-deas Users

Modifying Data

Portal w/ embedded Vis technology

Portal w/ embedded Vis technology

Portal w/ embedded Vis technology

Portal w/ embedded Vis technology

Standard Web Browser

Standard Web Browser

“fast queries”
Migration Options

- Mass migration is not recommended for larger companies (>30 users)
- Step migration is supported but need strategy to minimize need for data to be sent back to TDM as it will be manual and use package files
- Second step migration from TDM to NX Manager is supported with the migration tools
Biggest Benefits of moving to NXMI for I-deas users on TDM

- Performance of check-in and check-out is much better for over 3 users
- Use of JT data for visualization in PDM as well as check out to I-deas
  - Many customers use JT data to check out 80% of the data they used to check out fully featured parts
- Full security, scalability of a PDM system
- Multi-site
- Path of data migration to NX
Design Management

- Common platform/database for
  - Vaulting, check-in/out
- CAD management
  - Multi-CAD vaulting
  - Multi-Site Collaboration
- Visualization for consumers

Engineering Process Management

- Common Engineering Processes for
  - Workflow and lifecycle management
- Heterogeneous Multi-CAD Product Structure Management
- Visualization for all and opportunity for Digital Mockup and Validation

The Visualization Information Is Used By The CAD Tool To Represent The Non-Native Data
NX Managed Development Environment

**NX and Teamcenter are scalable and functionally rich**

**Simulation Management**
- Manage CAE data & processes
- Simulation Process Studio

**Design Collaboration**
- Rich Design Configuration Management
  - Visual Change, Revision Rules, Alternates, Options and Variants…

**Design Management**
- Vaulting
- Check in/out

**User Defined Features**
- Part Families
- Requirements
- Knowledge Fusion
- WAVE relationships
- Inter-part relationships
- PMI

**Manufacturing Mgt**
- CAM Manager
  - Process Planning
  - Factory Management

**Multi-CAD Expansion**
- Integrated multi-CAD design environment
- Cross CAD boundaries in both NX and Teamcenter

**Spatial information to check for manufacturability and maintainability**
- Compositions, occurrence groups

**Synchronized Product Data**
Summary

- Robust migration from I-deas to NX native models
  - E.g. model history, sketches, reference geometry, associative drawings, assembly constraints, PMI, ...
  - Zero CAD license cost for Xerox and suppliers with I-deas
  - Data migration tools provided at no cost
  - Migration training offered by UGS
- Teamcenter Engineering offers a managed environment for work in process, managed migration process data
- NX offers best in class capabilities for product development
  - E.g. Design / visualization, CAD creation, Large Assemblies, harness design, Knowledge Based Engineering, Simulation

Moving to NX is Low Risk, Low Cost, High Value