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AMERICAS 2008



Siemens PLM Software

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NX3 to NX5.0.4 Migration - Lessons Learned

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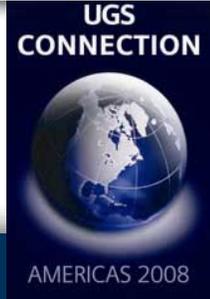


Personal Info



- ▶ Kempabyraiah S N (Applied Materials, Bangalore)
 - ▶ 10+ years of experience in the field of CAD (7 years with UGNX) with expertise in Design and Drafting
- ▶ Shankar J P (Applied Materials, Bangalore)
 - ▶ 7+ years of experience in the field of PLM and CAD automation (TCE and NX 6+ years)

Applied Materials Overview



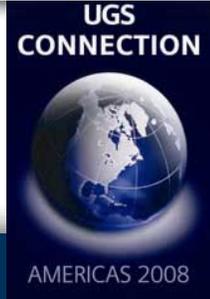
- ▶ Applied Materials, Inc. (*Nasdaq: AMAT) is the global leader in nanomanufacturing technology solutions with a broad portfolio of innovative equipment, service and software products for the fabrication of semiconductor chips, flat panel displays, solar photovoltaic cells, flexible electronics and energy efficient glass.
- ▶ Applied Materials employs approximately 14,500 people throughout the world. In fiscal year 2007, Applied Materials recorded revenues of approximately U.S. \$9.73 billion.

Current Environment



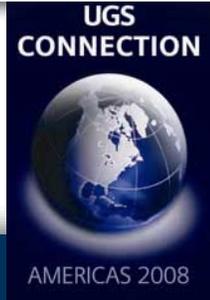
- ▶ Using NX3 for the past ~2 years
- ▶ Approximately 2000 NX users mostly using Modeling, Drafting, Assembly, Sheet Metal and Routing
- ▶ All user launch NX in TCE mode only
 - ▶ Across 5 sites in 3 countries
- ▶ High end workstations – 2GB RAM, Dual core processors mostly

NX3 Issues in Current Environment



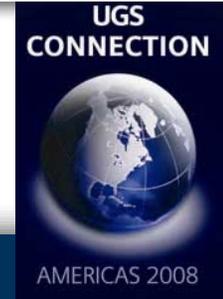
- ▶ Large Assembly handling
 - ▶ NX crash, Long loading time
 - ▶ Constraints hard to navigate and edit
- ▶ Translators
 - ▶ Long time to STEP214 conversion
 - ▶ DWG and DXF translators not functioning
- ▶ SHEETMETAL
 - ▶ Need to be able to convert parts from modeling to Sheet Metal
- ▶ SKETCH
 - ▶ Need to be able to access parameters table from within sketch environment

Continued...



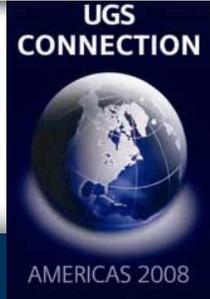
- ▶ DRAFTING
 - ▶ Ordinate dimensioning is very cumbersome
- ▶ NX3 usability
 - ▶ Command finder, GUIs
- ▶ TCE integration
 - ▶ Ability to perform search

NX5 Preparation



- ▶ NX5 showcased in PLM World 2007 lead to SME evaluation of features in August 07
- ▶ Reviewed the PR fixed in NX5 ~ 4300
 - ▶ Determined the impact of these fixes to our Business
- ▶ Reviewed the Applied user issues ~ 319
 - ▶ Determined 53 issues are resolved in NX5
- ▶ Reviewed all the new features in NX5 ~ 318
 - ▶ Identified key features that could be useful for Applied like Command finder, roles, rail, dialog consistency, JT Facet
- ▶ Comparative Study of NX3 and NX5
 - ▶ Performance Evaluation on 3 Production assemblies identified by Phase 1 - Pilot users
 - ▶ Number of Steps required to perform a specific operation

NX5 benefits



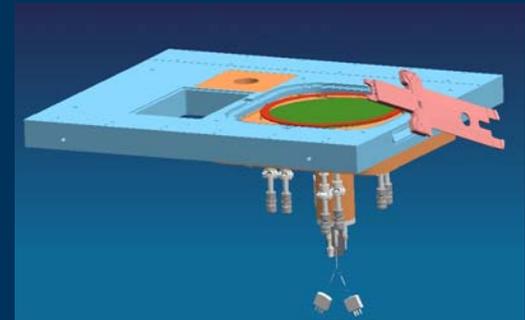
- ▶ NX Viewer
 - ▶ No license required to view NX part files
- ▶ JT facet enhancement
 - ▶ Assembly load time impact, PMI enhancements
- ▶ Material library integration with attributes
- ▶ Site level locking of customer defaults
- ▶ Translator enhancements

Performance evaluation–NX5 Vs. NX3

Assembly 1 and Assembly 2 load time in TCE mode

Site	TC#	# Components	Reference Set	Loading Time (Sec)		Remarks
				NX3	NX5	
PROD_BL	TC1-0392074	457	SOLID	165	-	
			FACET	150	-	
DEV_TX	TC2-0005473	457	SOLID	68	68	W/O Refiling
			FACET	60	57	W/O Refiling
DEV_TX	TC2-0014844	457	SOLID	-	48	After Refiling
			FACET	-	43	After Refiling
Site	TC#	# Components	Reference Set	Loading Time (Sec)		Remarks
				NX3	NX5	
PROD_BL	TC1-0440341	1764	SOLID	803	-	
			FACET	907	-	
DEV_TX	TC2-0016663	1764	SOLID	338	360	W/O Refiling
			FACET	240	267	W/O Refiling
DEV_TX	TC2-0017280	1764	SOLID	-	235	After Refiling
			FACET	-	210	After Refiling

~30% decrease in loading time after refiling in NX5



Business case usability comparison- NX5 Vs. NX3



NX Version	Modeling			Assembly	Assy Drafting	Total
	Housing	Bolt Captive	Spring			
NX3-Clicks	55	33	26	35	26	175
NX5-Clicks	38	27	25	22	26	138

Housing Features	No. of clicks
Datum CYCS	2//1
Sketch	2//2
Revolve	5//5
Chamfer	5//3
Hole1	5//2
Hole2	5//2
Hole3	5//2
Blend	3//3
Chamfer	5//3
Chamfer	4//2
Extrude	5//4
Instance Array	9//9
55//38	

Bolt Features	No. of clicks
Datum CYCS	2//1
Sketch	2//2
Revolve	5//5
Chamfer	7//4
Chamfer	5//3
Blend	4//4
Polygon	4//4
Extrude	4//4
33//27	

Spring Features	No. of clicks
Datum CY	2//1
Helix	2//2
Tube	2//2
Datum Pla	2//2
Trim1	4//4
Trim2	5//5
Deform	9//9
26//25	

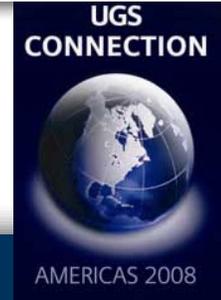
Assy Draw	No. of clicks
Base view	2//2
Section View	3//3
Part List	1//1
Auto Baloon	3//3
Base View	2//2
Section View	2//2
Hide Compo	4//4
Base view	6//6
Ortho view	1//1
Section View	2//2
26//26	

**LEGEND - Number of NX3 Clicks //
Number of NX5 Clicks**

%age reduction

21

Initial Setbacks

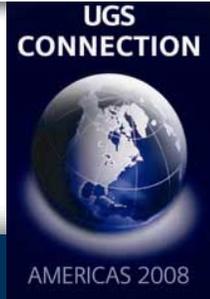


- ▶ NX5 was not compatible with TCE V9.1.x
 - ▶ Teamcenter upgrade wasn't in AMAT roadmap and taking the NX5 benefits to the user community was at risk.
 - ▶ Later Siemens PLM made NX5 compatible with TCE 9.1.3.x clearing the road for NX upgrade
- ▶ User community acceptance
 - ▶ Resistance to change – new learning, lost time in production, funding of the project
 - ▶ A pilot environment was setup to get end user recommendation (go/no-go) as a basis for upgrade
- ▶ Benchmarking data from other companies was difficult

NX5 rollout challenges



- ▶ **First major version change in Applied**
 - ▶ Refile
 - ▶ Silent installation (uninstall of older version)
 - ▶ Seedfile to Template file changes
 - ▶ Site level configuration, JT config setup
 - ▶ TCE – NX5 pilot setup – end user machines cannot connect to 2 NX versions simultaneously
 - ▶ Frequent IRMs from Siemens – repeated evaluations
 - ▶ Training



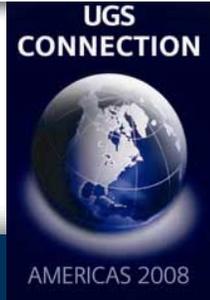
Roadblocks during evaluation

- ▶ Default container issue – Default value Home:Newstuff has to be changed (PR 5860438)
- ▶ Auto numbering upon file->new (ER 5880310 to be fixed in NX6)
- ▶ Wrong template selection (ER 5859993)
- ▶ UGPart only added in TCE – not able to open in NX (PR5853972 fixed in 5.0.4.1)
- ▶ Refile utility – mismatch b/w JT and UGMaster (PR5923813)
- ▶ KBE – Storedvalue function impact (PR 5953929)

Rollout plan

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- ▶ SME Evaluation
 - ▶ Pilot phase 1 – 50 users – native mode
 - ▶ Pilot phase 1.1 – 10 users in TCE mode
 - ▶ Pilot Phase 2 - 30 users in native mode
 - ▶ Training lab
 - ▶ Testing – Staging Environment
 - ▶ Testing – IQA Environment
 - ▶ UAT
 - ▶ Scheduled Go Live

Road Ahead



- ▶ TCE 2007.1.x integration – to utilize enhanced NXManager functionalities
 - ▶ Reuse Library
 - ▶ Query
 - ▶ TCE like usage within NX

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Thank You

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