LA-UR-15-21460
Approved for public release; distribution is unlimited.

Title: Fall 2014 MBIT Working Group

Author(s): Volz, Peggy Sue

Intended for: MBIT Working Group Meeting, 2014-10-28 (Livermore, California, United States)

Issued: 2015-02-26

MODEL BASED INTEGRATED TOOLS
Est. 1996

35th Biannual Meeting

Fall 2014
MBIT Working Group
10/28/2014

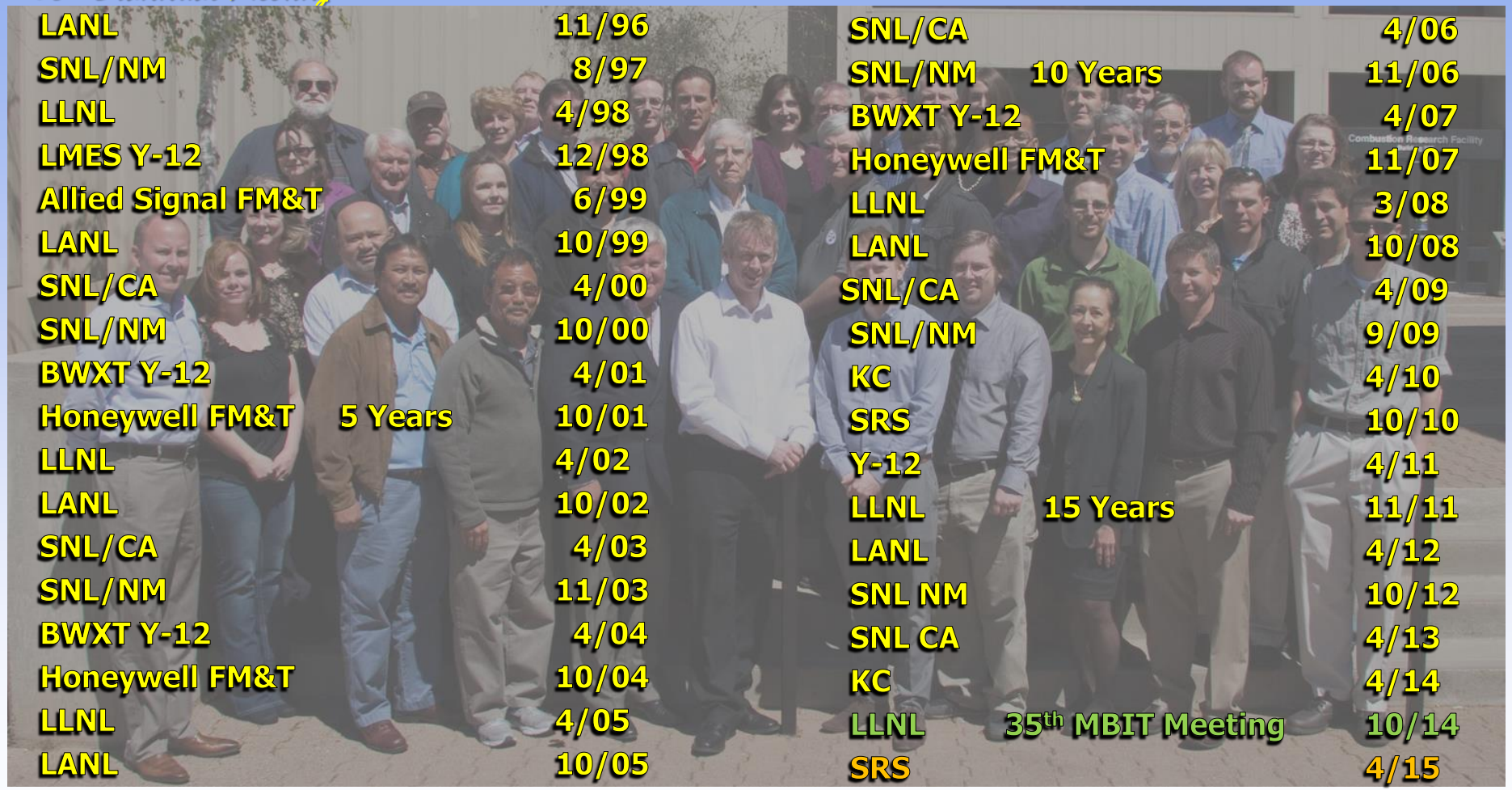
This document deemed Unclassified by

Peggy Volz, R&D Engineer
(DC)

MODEL BASED INTEGRATED TOOLS

MBIT WG Meetings

35th Biannual Meeting



LANL		11/96
SNL/NM		8/97
LLNL		4/98
LMES Y-12		12/98
Allied Signal FM&T		6/99
LANL		10/99
SNL/CA		4/00
SNL/NM		10/00
BWXT Y-12		4/01
Honeywell FM&T	5 Years	10/01
LLNL		4/02
LANL		10/02
SNL/CA		4/03
SNL/NM		11/03
BWXT Y-12		4/04
Honeywell FM&T		10/04
LLNL		4/05
LANL		10/05
SNL/CA		4/06
SNL/NM	10 Years	11/06
BWXT Y-12		4/07
Honeywell FM&T		11/07
LLNL		3/08
LANL		10/08
SNL/CA		4/09
SNL/NM		9/09
KC		4/10
SRS		10/10
Y-12		4/11
LLNL	15 Years	11/11
LANL		4/12
SNL NM		10/12
SNL CA		4/13
KC		4/14
LLNL	35th MBIT Meeting	10/14
SRS		4/15

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

The Beginning

November 8, 1996

Agenda Los Alamos National Laboratory

Revised

Nuclear Weapons Complex Pro/E Workshop
Los Alamos National Laboratory
Lawrence Livermore National Laboratory
Pantex
Sandia National Laboratory
Savannah River
Sandia National Laboratory
Allied Signal
Y-12

November 19, 1996

8:00 - 8:30	Meet visitors at the Hilltop House Hotel, escort to TA-16, Bldg. 200, Basement Conference Room	Peggy S. Vigil
8:30 - 8:45	Welcome/Laboratory Overview	John J. Ruminer
8:45 - 9:15	Solid Model Product Realization • Product Definition and Design Intent • Manufacturing • Analysis • Collaboration with PTC for Product Realization	Carmelo A. Spirio
9:15 - 9:30	Break	
Current State of Methods and Tools		**Discussion Leaders**
9:30 - 9:45	Pro/E Enhancements • Customization • Automation	Manuel A. Garcia
9:45 - 10:15	Engineering and Analysis • Model Creation and Analysis • Interfaces to Analysis	Darryl P. Gardner
10:15 - 11:00	Manufacturing and Inspection • Model Definition for Manufacturing • Post Processing • Part Verification	Gene J. Maes
11:00 - 11:30	Assembly/Disassembly • Stockpile and Hydros • Animation	Darryl P. Gardner
11:30 - 12:00	Product Data Management • Software • Shared Information	Scott D. Parkinson
12:00 - 12:30	*Working Lunch (continued discussions)	
12:30 - 12:45	Break	
Plans for Future Directions		**Discussion Leader(s)**
12:45 - 1:10	Engineering Process/Paperless	LANL
1:10 - 1:35	Model Verification for Manufacturing	LLNL
1:35 - 2:00	Assembly/Disassembly	Pantex
2:00 - 2:25	PDM/Networking	SNL
2:25 - 2:50	Software QA	Allied Signal
2:50 - 3:15	Manufacturing/Inspection	Y-12
3:15 - 3:30	Action Items/Closing	Carmelo A. Spirio
3:30 - 4:00	Transport visitors to Hilltop House for departure	Peggy S. Vigil

Technical Host: John J. Ruminer, ESA-DO
Co-Host: Manuel A. Garcia, ESA-DE
Visit Planner: Peggy S. Vigil, PAO/CVM
*Food Service: ARAMARK

Tech Host: John J. Ruminer, ESA-DO
Co-Host: Manuel A. Garcia, ESA-DE
Visit Planner: Peggy S. Vigil, PAO/CVM
*Food Service: ARAMARK

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

MBIT Structure

PRIDE
RMI
PTC

Steering

Chris Scully (Chair)
Terry Domm (Co-Chair)

Standards Role

Design

Joan Funkhouser (Chair)
Gayle Alley (Co-Chair)

Task Teams:

Product Definition Task Team (Lead: Rex DeVilbiss)
T041 Task Team (Lead: Joan Funkhouser)

PLM

Henry Rodarte (Chair)
Denise Welch (Co-Chair)

Task Teams:

PDMLink 10.0 Upgrade (Lead: Henry Rodarte)

Manufacturing Forum

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

DOE Representation

PTC®

AWE

NASA

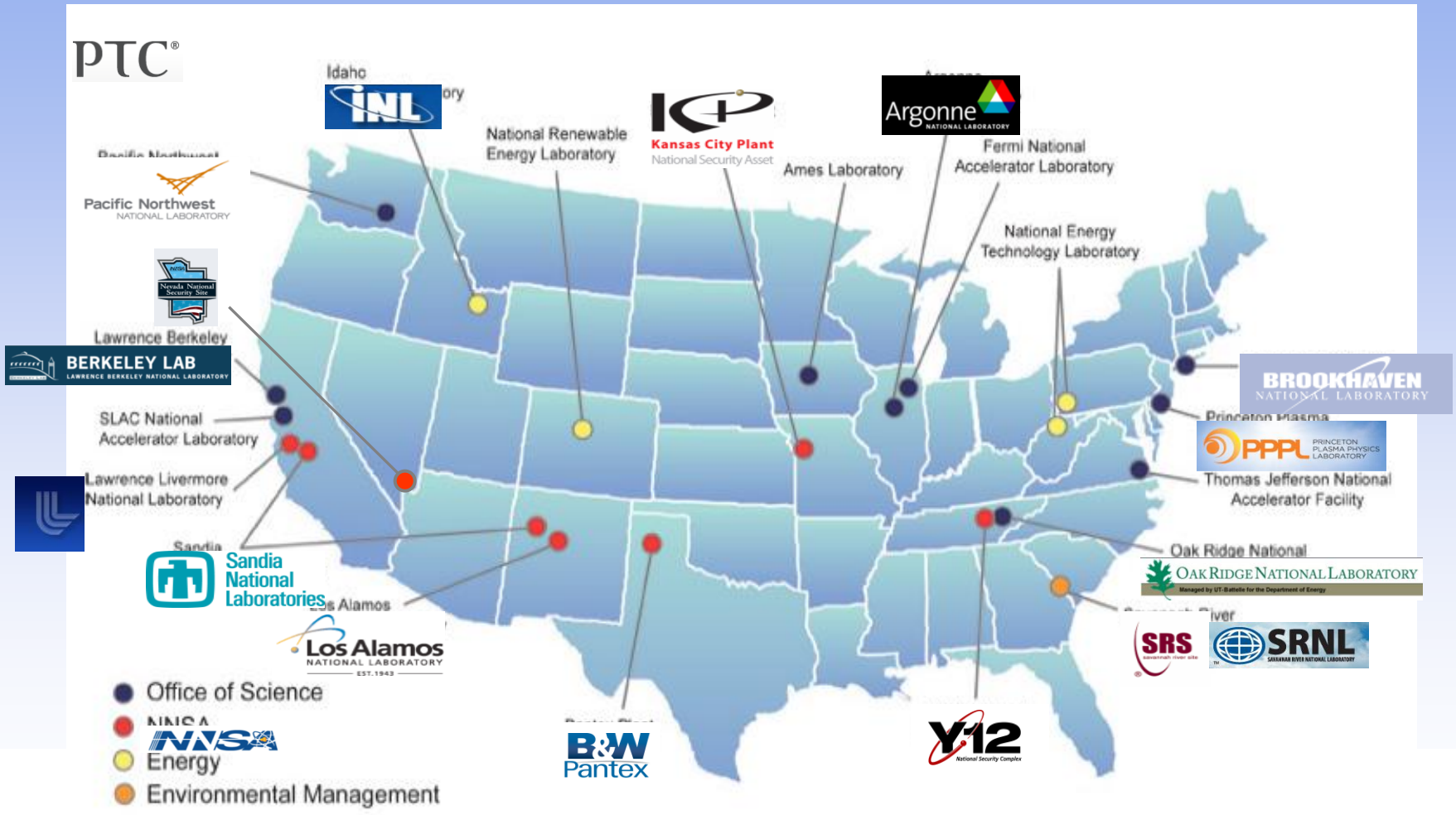
PRIDE

UNCLASSIFIED

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Geographic Representation



CDI Corporation

U.S. DEPARTMENT OF ENERGY

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Frogger Chart

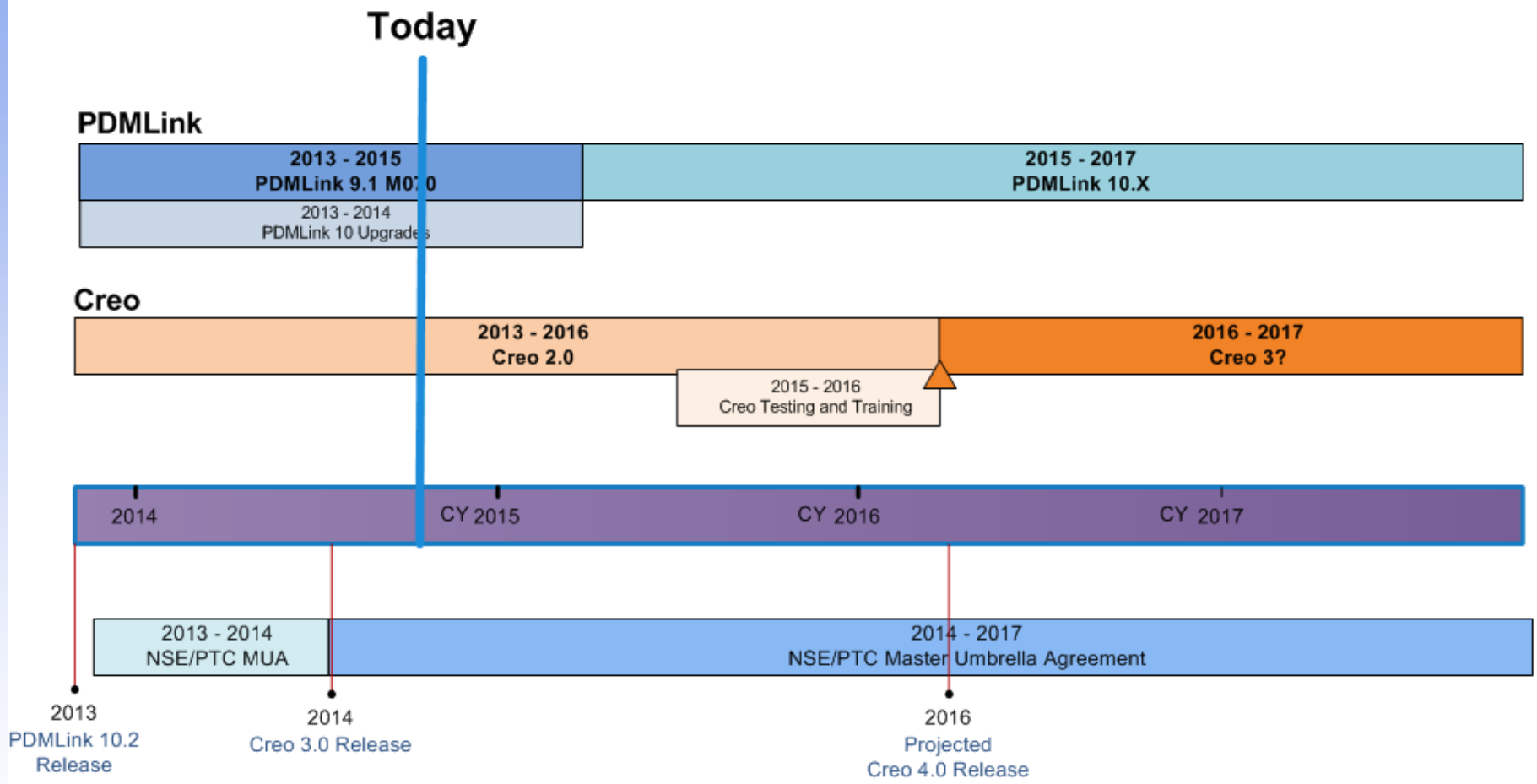
(Creo Data Management Compatibility Roadmap)

	PTC Windchill 8.0 Click here for details	PTC Windchill 9.0 Click here for details	PTC Windchill 9.1 Click here for details	PTC Windchill 10.0 Click here for details	PTC Windchill 10.1 Click here for details	PTC Windchill 10.2 Click here for details
Pro/E Wildfire 3.0	Compatible	Compatible	Compatible	Not Compatible	Not Compatible	Not Compatible
Pro/E Wildfire 4.0	Compatible	Compatible	Compatible	Compatible *with Wildfire 4.0 M190*	Not Compatible	Not Compatible
Creo Elements/Pro 5.0 (Pro/E Wildfire 5.0)	Not Compatible	Not Compatible	Compatible *with Wildfire 5.0 F000*	Compatible *Creo Elements/Pro 5.0 M080 & 10.0 F000 Creo Elements/Pro 5.0 M090+ & 10.0 M010*	Compatible *with Creo Elements/Pro 5.0 M130*	Compatibility Planned *with Creo Elements/Pro 5.0 M200 & 10.2 F000*
PTC Creo 1.0[1]	Not Compatible	Not Compatible	Compatible *with 9.1 M060*	Compatible *with 10.0 M010*	Not Compatible	Not Compatible
PTC Creo 2.0[1]	Not Compatible	Not Compatible	Compatible *PTC Creo 2.0 F000 & 9.1 M070 and PTC Creo 2.0 M050 & 9.1 M060*	Compatible *PTC Creo 2.0 F000 & 10.0 M030*	Compatible *with PTC Creo 2.0 F000*	Compatibility *with PTC Creo 2.0 M070 & 10.2 F000* ?
PTC Creo 3.0[1]	Not Compatible	Not Compatible	Not Compatible	Not Compatible	Compatibility *with PTC Creo 3.0 F000 & 10.1 M040*	Compatibility *with PTC Creo 3.0 F000 & 10.2 M020*

MBIT PDMLink/Creo Timeline

10/2014

MODEL BASED INTEGRATED TOOLS



Notes:

- Production Agencies using design definition from DA's can use higher versions of Creo unless they are doing maintenance on design definition.
- This chart will be reviewed bi annually at the spring and fall MBIT working group meetings.

UNCLASSIFIED

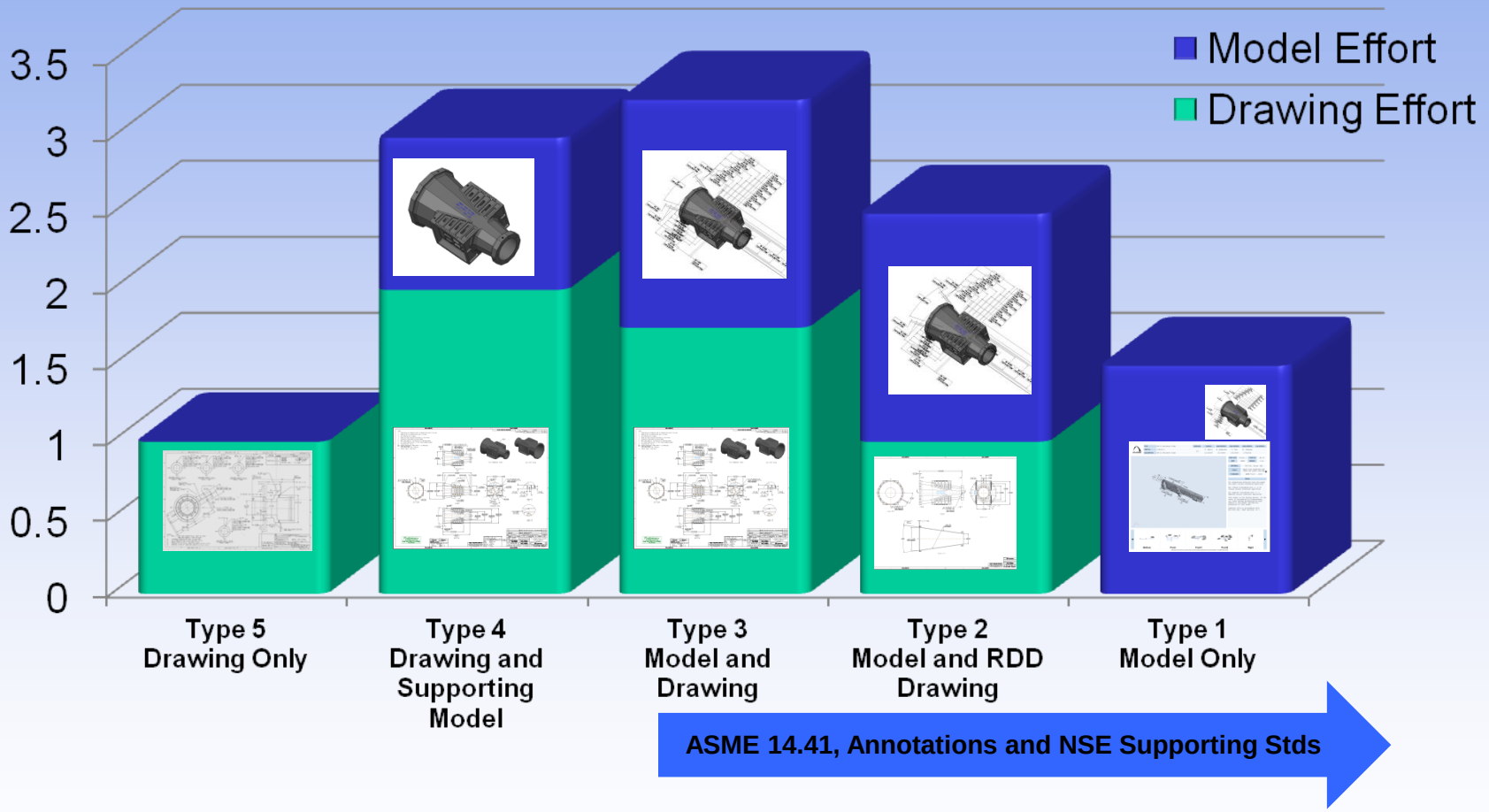
Definitions:

Update – A maintence build update within a version of Windchill.
Upgrade – A major version change in Windchill requiring the use of the upgrade manager.
Version change – A change in the version of Creo installed on client machines.

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Models Based Definition



MUA Lessons Learned

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

DOE/PTC Agreements

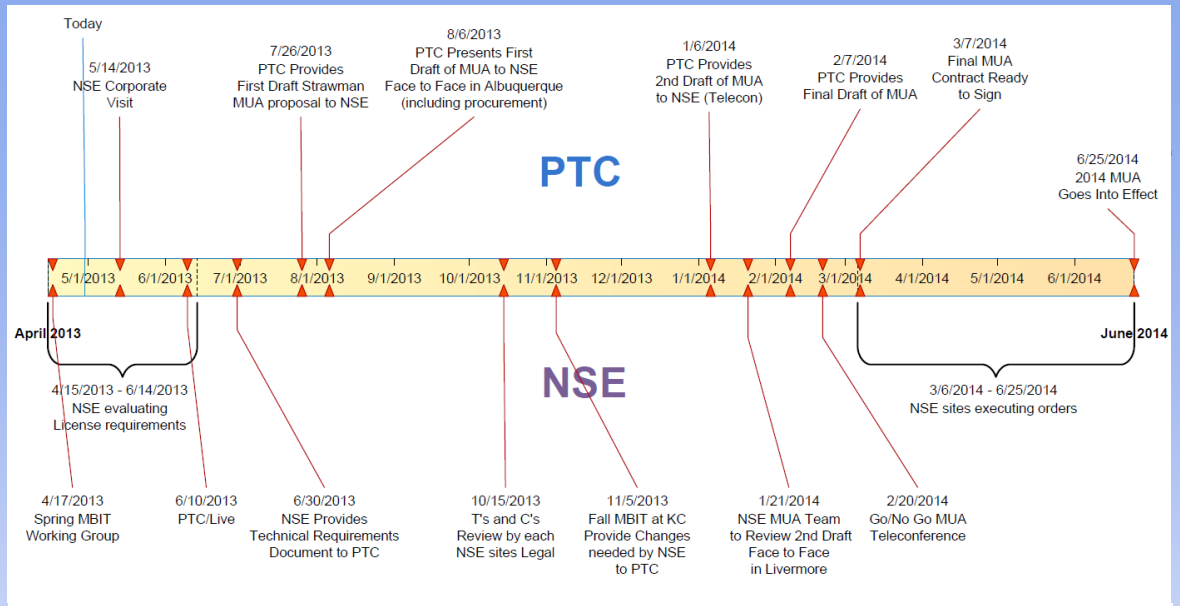
Year	Agreement	Sites	Bundles	Contract Price	Savings over GSA	Savings over List
1991	ACCORD Contract - AOA #A0025	3				
2000	3 year Volume Pricing Agreement (VPA)					
2003	3.5 year VPA	9	734	$9.7M		
2007	4 year Special Pricing Agreement (SPA)	11	932	$13.6		
2011	3 year Master Umbrella Agreement (MUA)	14	983	$14.6M	$13.5M	$24.5M
2014	3 year MUA	16	991	$17.6M	$37.9M	$54.2M

- 20+ Years of Price Collaborations with PTC
- Win/Win for the DOE and PTC
  - DOE gets more software at a big discount
  - PTC gets more exposure to the software and shows more software sales

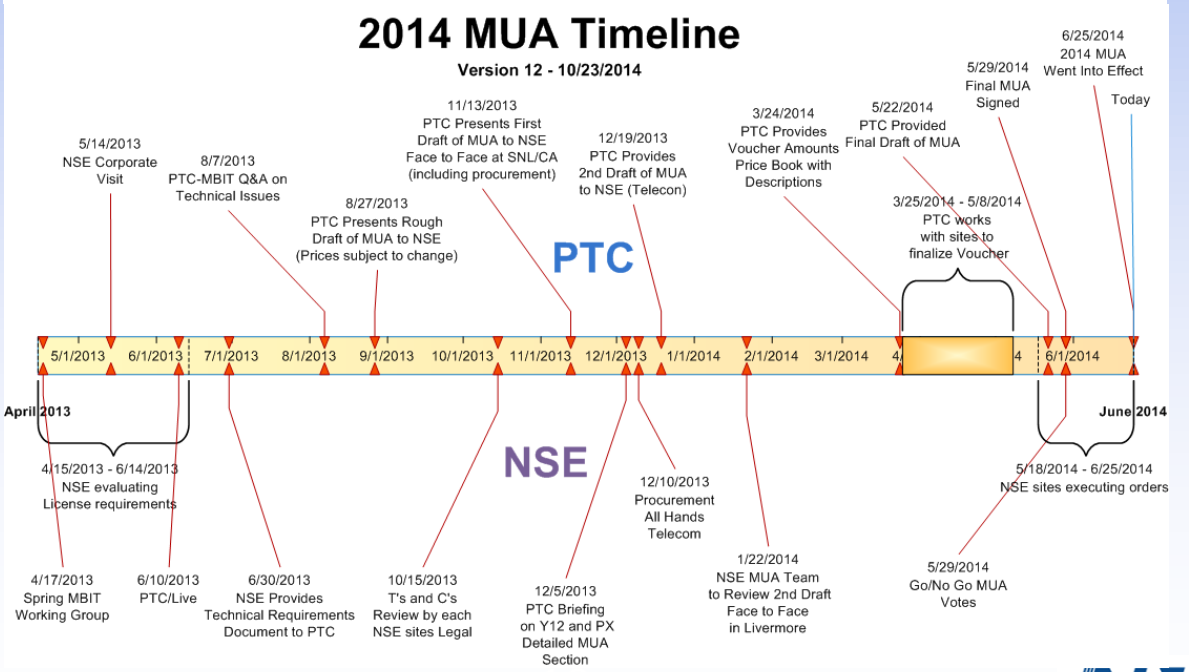
MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Planned



Actual



Lawrence Livermore National Laboratory · Sandia National Laboratories · Los Alamos National Laboratory · B&W Pantex · Kansas City Plant · Y12 · SRS · INL · SRNL · Argonne · Berkeley Lab · PPPL · Oak Ridge · Pacific Northwest · Brookhaven National Laboratory · PRIDE · NNSA

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Lessons Learned

- Steering Committee is holding a Lessons Learned discussion with PTC during the Tuesday Breakout.
- The goal is to improve the process for everyone so the next MUA is as smooth a process as possible.

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

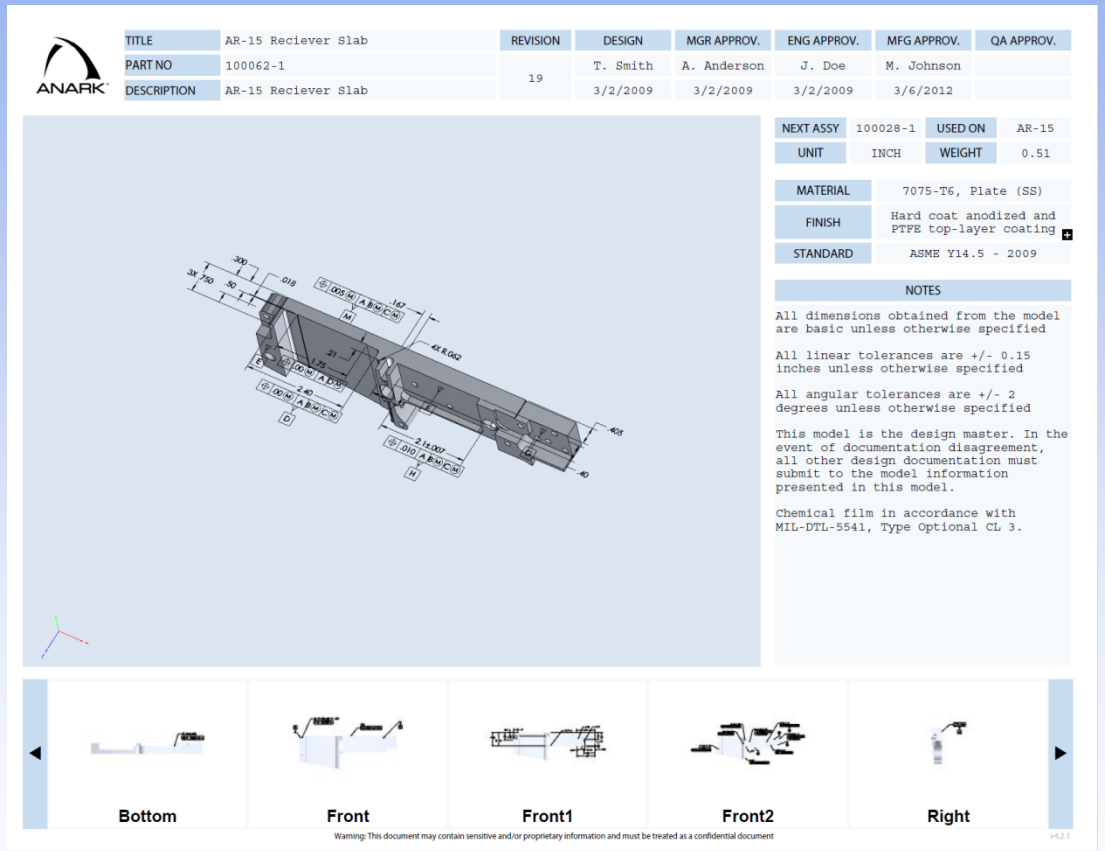
Backup Slides

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

PRC 3D PDF

- PRC stands for Product Representation Compact
- Along with the new penalty free annotation functionality in Creo 2 and publishing to templated 3D pdfs, sending 3D product definition to practically ANYONE in the world is now possible.



MBIT MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

Models Based Enterprise

NIST		NSE	
Level 0	• Drawing Centric • Disconnected Manufacturing - Disconnected Enterprise • Primary Deliverable: 2D Drawing	PD Type 5	• Drawing is Definition • No Model Exists
Level 1	• Model Centric • Neutral Model CAM - Disconnected Enterprise • Primary Deliverable: 2D Drawing and Neutral CAD Model	PD Type 4	• Drawing is Definition • Model drives drawing geometry
Level 2	• Model Centric • Native Model CAM - Disconnected Enterprise • Primary Deliverable: 2D drawing and Native CAD Model		
Level 3	• Model Based Definition • Native Model CAM - Disconnected Enterprise • Primary Deliverable: 3D Annotated Model and LightWeight viewable	PD Type 3	• Model and Drawing are both Definition • Data in Model and Drawing should not conflict
Level 4	• Model Based Definition • Integrated Manufacturing - Disconnected Enterprise • Primary Deliverable: 3D Annotated Model and LightWeight viewable via PLM	PD Type 2	• Model and Reduced Dimension Drawing are both Definition • Data in Model and Drawing should not conflict
Level 5	• Model Based Enterprise • Integrated Manufacturing - Integrated Internal Enterprise • Primary Deliverable: Digital Product Definition Package and TDP		
Level 6	• Model Based Enterprise • Integrated Manufacturing - Integrated Extended Enterprise • Primary Deliverable: Digital Product Definition Package and TDP via the web	PD Type1	• Model is Definition • No drawing exists

Lawrence Livermore National Laboratory · Sandia National Laboratories · Los Alamos National Laboratory · B&W Pantex · Kansas City Plant · Y12 · SRS · INL · SRNL · Argonne · Berkeley Lab · PPPL · Oak Ridge · Pacific Northwest · Brookhaven National Laboratory · PRIDE · NNSA

MODEL BASED INTEGRATED TOOLS

35th Biannual Meeting

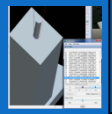
NSE PDMLink PLM Capabilities

Capability
Content Management

R&D & Admin Data
Administrative Document Data, Records, Project Collaboration and Archiving

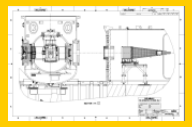
Capability - Post Production Data
Weapons Response data
Legacy build and surveillance data
SFI/SFN data and enhanced surveillance data

Capability - Manufacturing Definition Data(MBOM)
PA Weapons Product Structures and Configurations
Work Instructions, Process Plans, Tool Paths
Serialized Part Data, Inspection data



Capability- Product Definition Data (EBOM)
DA Product Structures, Baselines and Configurations
OOTB CMII based Change Control
Engineering Authorizations

Capability - CAD Definition Data
Weapons Product Definition Models and Drawings
Non Creo CAD data management
Product Data Management for CAD



Lawrence Livermore National Laboratory · Sandia National Laboratories · Los Alamos National Laboratory · B&W Pantex · Kansas City Plant · Y-12 · SRS · INL · SRNL · Argonne National Laboratory · Berkeley Lab · PPPL · Oak Ridge National Laboratory · Pacific Northwest National Laboratory · Brookhaven National Laboratory · PRIDE · NNSA