DELIVERING VALUE VIA WINDCHILL PROCESS PANEL SESSION

DELIVERING VALUE

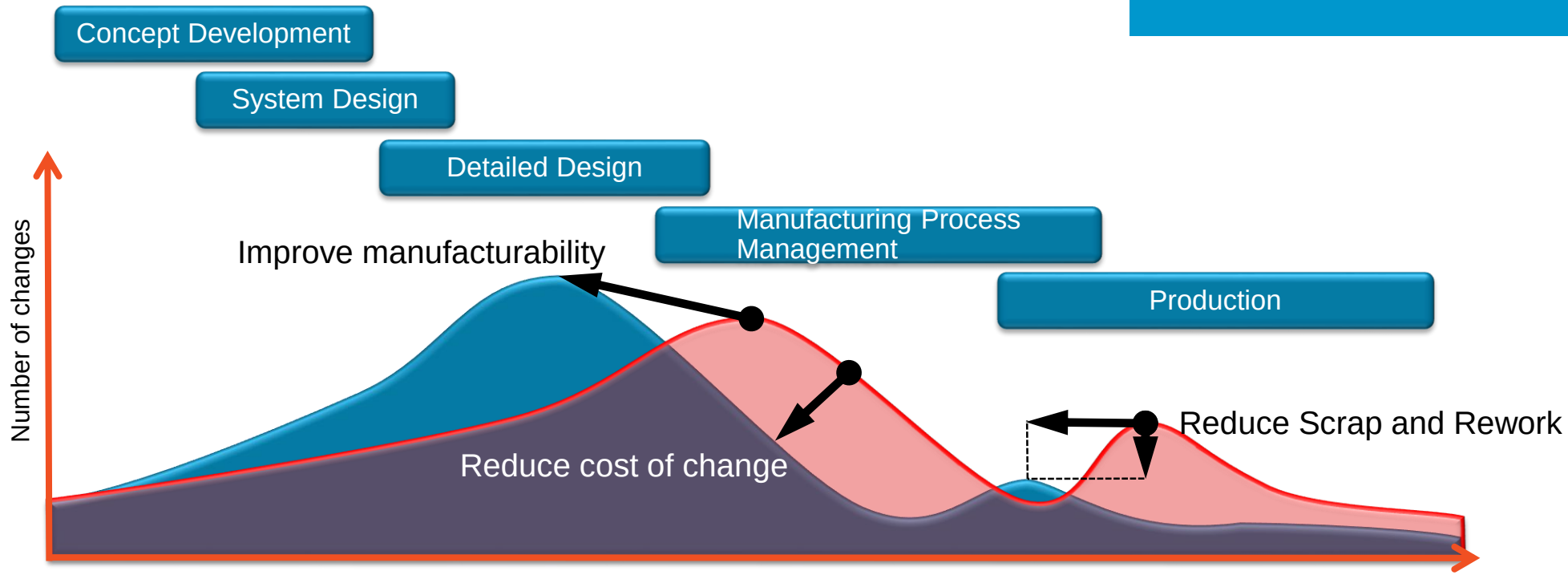
- ❑ Panel overview and Introduction
- ❑ Session discussion

DELIVERING BUSINESS VALUE

DELIVERING BUSINESS VALUE

- Increasing Value to the Enterprise – such as
  - Reduce Scrap & Rework
  - Lower Manufacturing Defects
  - Increased First Pass Yield
  - Improve Time to Market

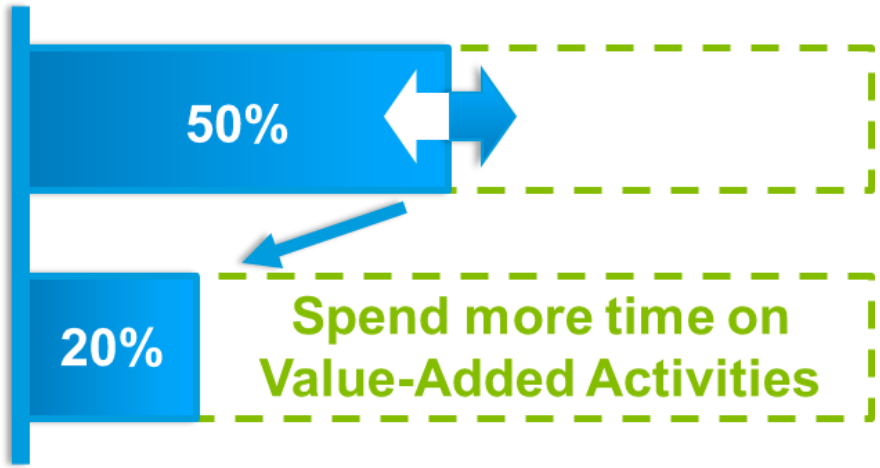
- Increased Customer satisfaction
- Market growth
- Increase profitability



DELIVERING END USER VALUE

- Increase Value added time – time to engineer, design & analyze
  - Reduce time to validate data on changes
  - Streamline enforcement of corporate standards (eg field values, right data at right time)
  - Only require users to answer questions they know
  - Reduce Revisions of Revisions

- Improve user adoption
- Increase Value-Added Time
- Reduce training



HOW ARE YOU DELIVERING AND MEASURING ON IMPROVED VALUE

- Business Value
- End User Value
- Next Steps

RAYTHEON

RAYTHEON: WHO WE ARE

- A technology and innovation leader specializing in defense, security and civil markets throughout the world
- 2015 sales: >$23 billion; 61,000 global employees
- Headquartered in Waltham, MA
- Businesses

Integrated Defense Systems (IDS) Headquarters in Tewksbury, MA

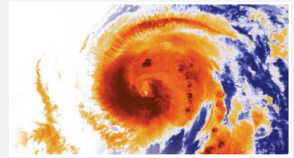
Intelligence, Information and Services (IIS) Headquarters in Dulles, VA

Missile Systems (MS) Headquarters in Tucson, AZ

Space and Airborne Systems (SAS) Headquarters in McKinney, TX

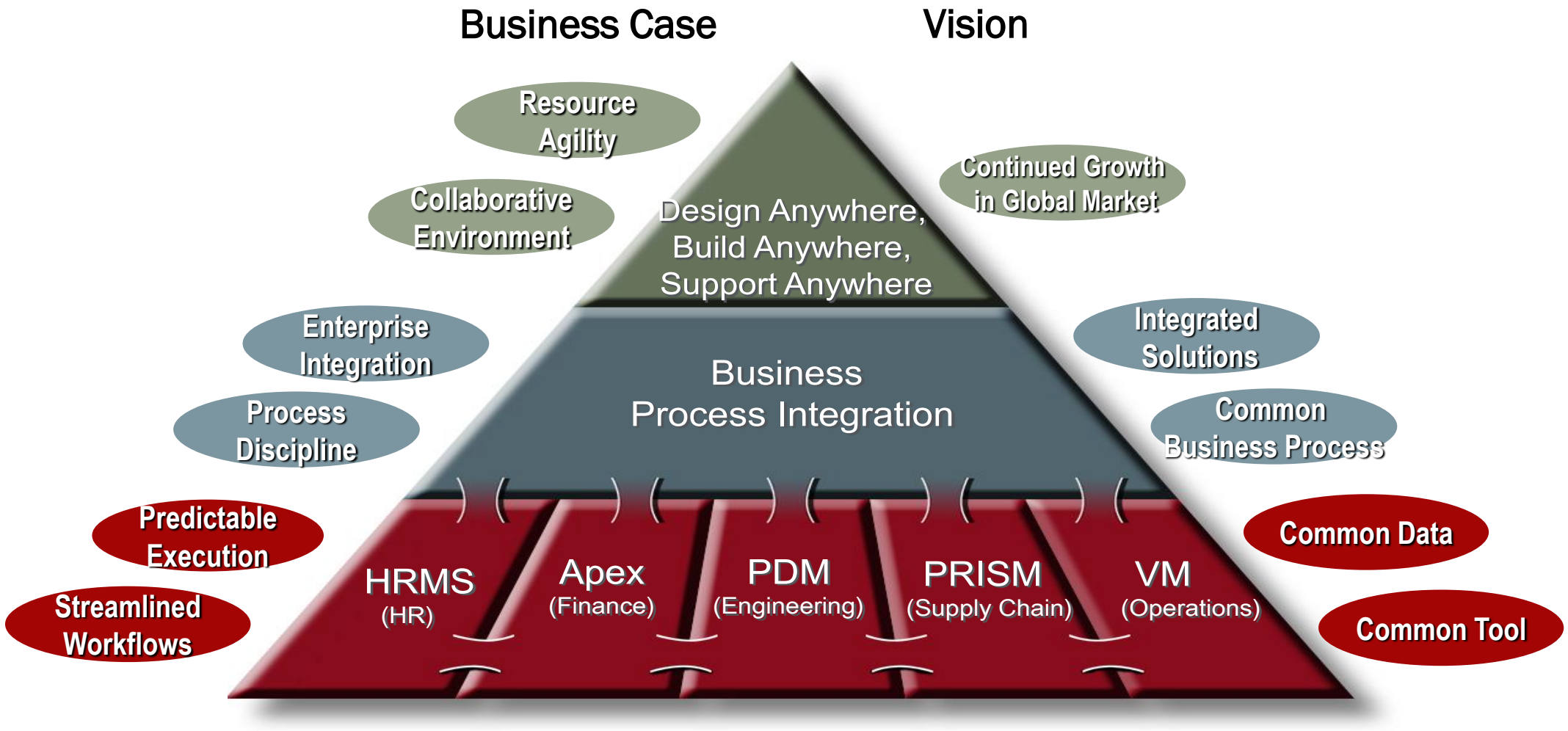
RAYTHEON: WHO WE ARE

Raytheon Company

Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems
			
			
			
			

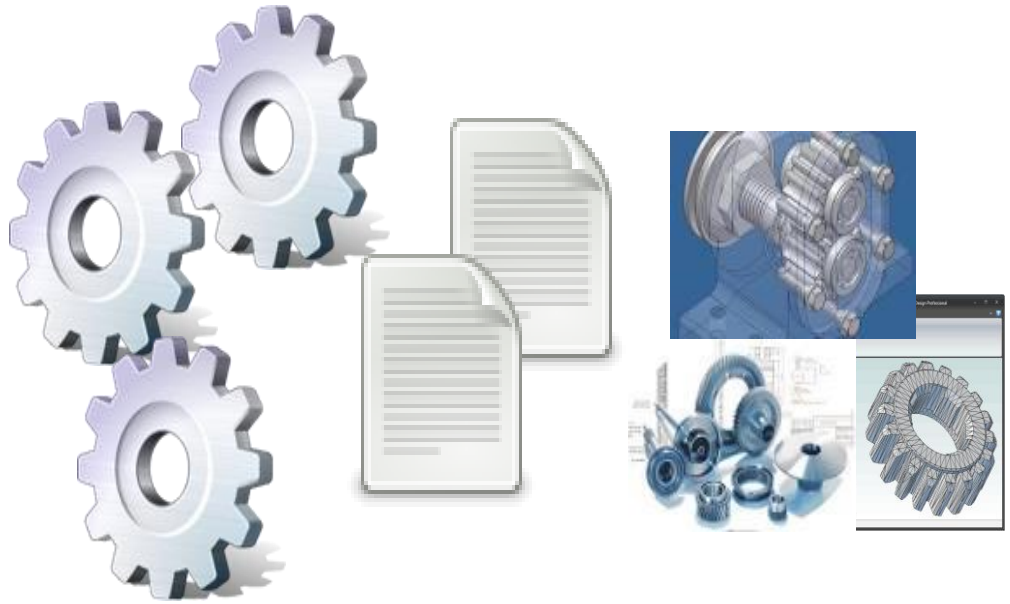
Core Markets: Missile Defense, C5I, Cyber, Electronic Warfare, Precision Weapons, Training Solutions

OUR JOURNEY: 15 YEARS IN THE MAKING



Changing the Way We Do Business

RAYTHEON'S PDM IMPLEMENTATION



- Named Users: 33,600
  - US Employees: 94%
  - US Contractors and Business Partners: 4%
  - International Employees: 1%
  - International Contractors and Business Partners: 1%

	Masters	Versions
Parts	4,010,518	11,537,972
Documents	5,084,020	8,859,578
CAD Documents	5,762,311	13,987,311
Changes	2,318,138	2,340,346
Packages	391,319	407,420

Raytheon has one of the largest single instance deployments of Windchill in the world!

DELIVERING BUSINESS VALUE

- Common software and business processes across the company
  - Shared IT costs
  - Improved utilization of employees across the company
  - Design anywhere, build anywhere, support anywhere
- Enables tracking and monitoring of Whole-Life Engineering
  - Allows teams to report on process workflows
  - Allows shared usage of sub-assemblies by other product lines
  - Process cycle involves everyone on team
    - design engineer -> product management -> materials and quality -> manufacturing floor

DELIVERING END USER VALUE

- Processes implemented to minimize non-value added tasks
  - Save time ensuring needed documents are linked, resulting data on changes are checked in
  - Confirm data is in safe states by checking for circular references, modifying already released data
  - Assist in creation and editing to ensure provided data is consistent with standards and policies

- Customization and Configuration examples
  - Workflow custom robots and task validators
  - Create and Edit UI validations
  - External system integration checks
  - Visualization and metadata stamping

TE CONNECTIVITY

TE CONNECTIVITY – WHO ARE WE ?

TE is the World Leader in Connectivity & Sensor Solutions

$170 BILLION CONNECTIVITY AND SENSOR MARKET

6%* GROWING ANNUALLY

*6% estimated annual market growth rate over the next 5 years

TE CONNECTIVITY - INNOVATION LEADERSHIP

13,500
PATENTS
granted or pending

$625M
invested in R&D and Engineering FY15

7,000+
ENGINEERS
globally

ENGINEERING CLOSE TO OUR CUSTOMERS

2015 THOMSON REUTERS
TOP100
GLOBAL INNOVATORS
5 YEARS IN A ROW

2015 BEST INNOVATION PRACTICES FROM A MULTINATIONAL COMPANY
Recognition from the Shanghai Government

OUR PROGRESS

- 5 years back we use to have 5 Pro/INTRALINKs, now we have one Windchill PDMLink Solution. Since then implementing solutions step by step.....

➢ CAD Management (Creo, Altium, AutoCAD, UnigraphicsNx, Solidworks) ➢ Work Group Manager functionality	➢ Document Management ➢ Desktop Integration	➢ Export Restrictions for three different countries ➢ Security Labels	➢ Part Management ➢ BOM Management ➢ Thumbnails ➢ Bingo ➢ Anark 3d pdf

Accelerating System performance and user experience

- ➢ Performance Advisor for Creo
- ➢ Dyntrace and PTC System Monitor
- ➢ Optimized system Architecture with reducing the Cache File servers from 50 to 21

Integrations and delivering data electronically

- ➢ Enovia Integration
- ➢ Data Warehousing Integration

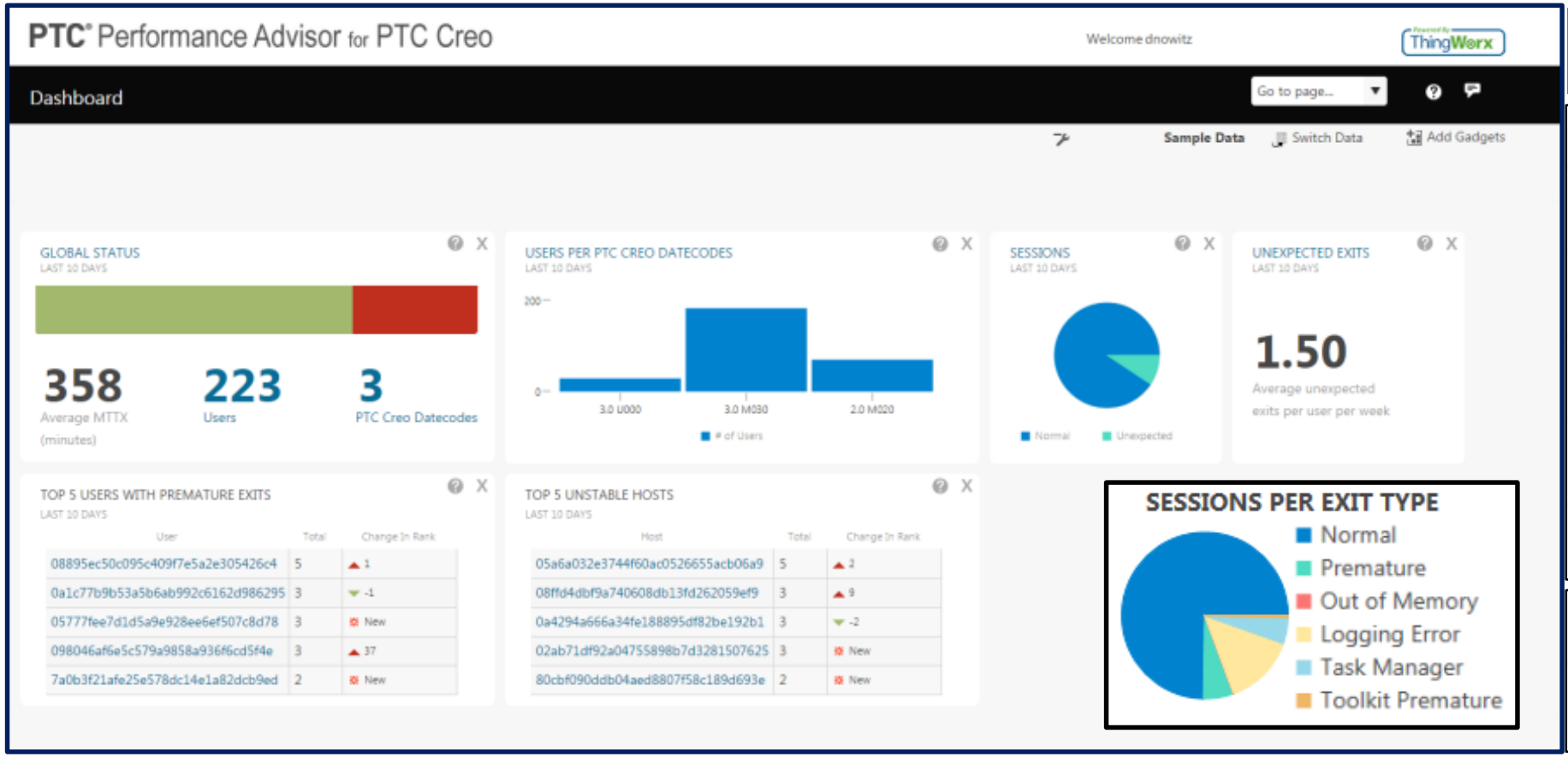
Named Users: 4,000 From 34 Countries
WTPart Master Count: 3,412,445
EPMDocument Master Count: 6,428,534
WTDocument Master Count: 619,578
TE Promotion request Count: 369,479

Next Steps

- ➢ Change Management
- ➢ Windchill 11 Upgrade
- ➢ TLM
- ➢ Product Compliance
- ➢ AML (SUMA)

DELIVERING BUSINESS VALUE

- **Performance Advisor for PTC Creo** helps to increase
  - Product development operational productivity,
  - Lower product development costs,
  - Lower the cost of IT by proactively detecting performance issues (hardware/software).



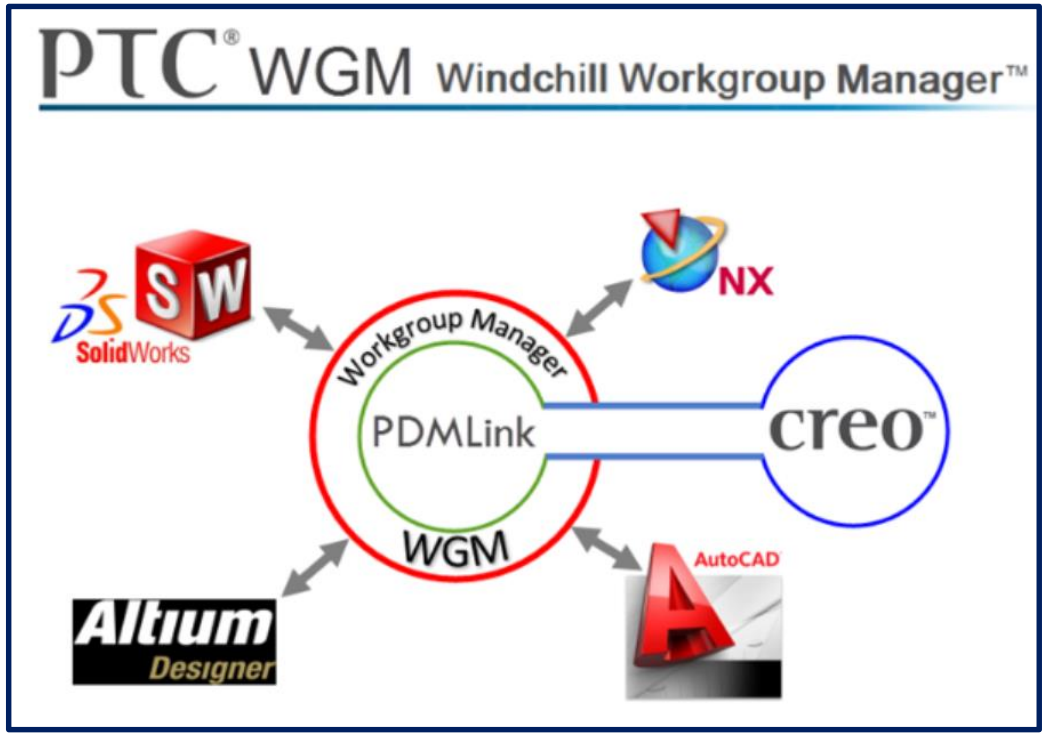
As a result Standardize

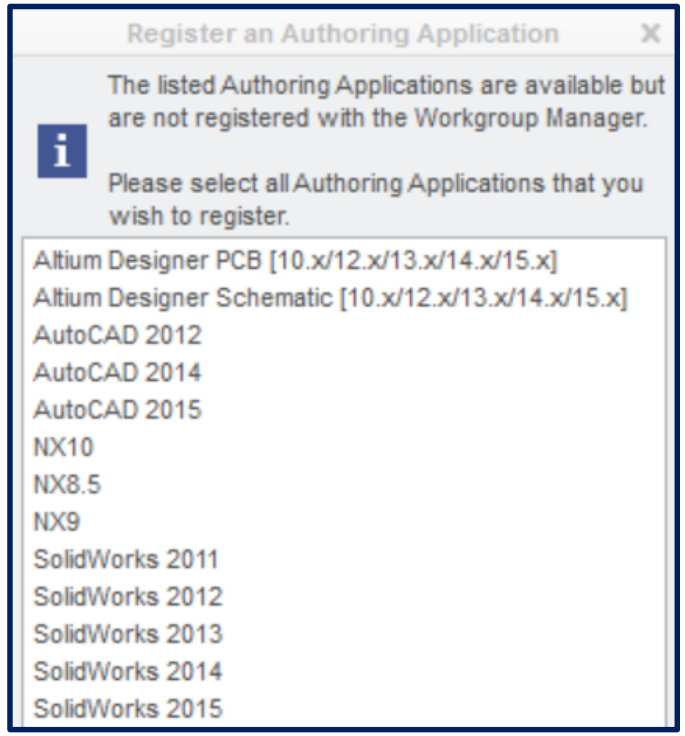
- Manufacturer
- Platform Type
- Machine Model
- Number of Cores
- RAM (in MB)
- Graphics Card
- Operating System
- JAVA Version

DELIVERING BUSINESS VALUE

A common data link between multiple CAD applications and a Windchill server

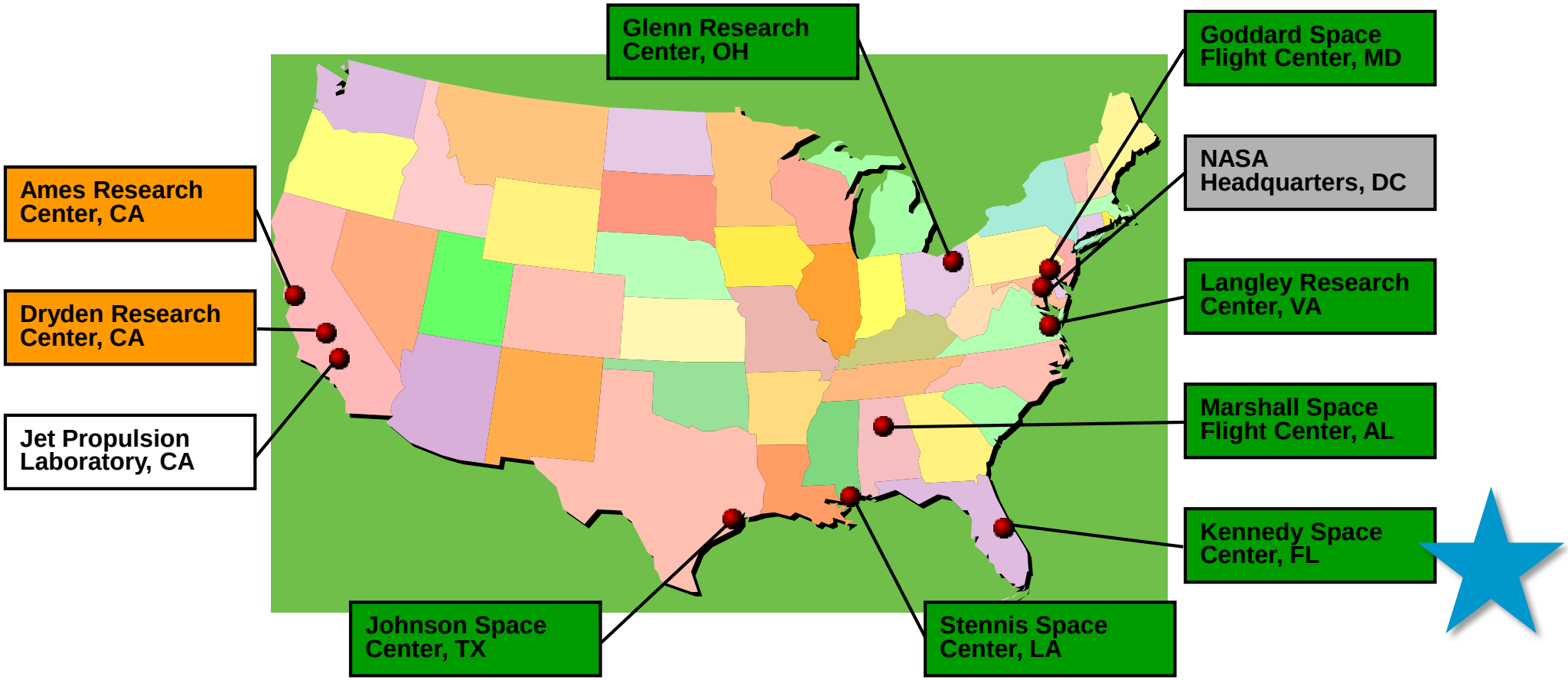
- Promotes common practices with different cad users.
- Lowers Training costs.
- Instead of multiple systems now engineer has a place holder to place Mechanical, Electrical and Software Components all in one place.





NASA

CREO AND WINDCHILL AT NASA



WHO WE ARE

- The Engineering Services Contract (ESC) at Kennedy Space Center (KSC) provides services to NASA KSC Engineering Directorate in respect to flight and ground systems design and development

WHAT WE DO

- Investigate and provide the necessary tools, aid, and best practice methodologies required for efficient, optimized design and process development
- Responsible for configuring and implementing software, along with training, documentation, and administering standards.
- Support users with the use of:
  - Windchill
  - Creo Parametric
  - NX
  - AutoCAD
  - MathCAD
  - …and more! (both design and analysis tools)

NASA KSC NE IMPLEMENTATION

- Windchill 10.2 M020
  - Implemented products: PDMLink, ProjectLink, SupplierLink, Creo View, WGM
  - Investigating: PartsLink, MPMLink, Integrity
- User Base
  - 300+ engineers and design specialists
  - 2000+ Windchill users
- Administrative Team
  - 9 Members

	Masters	Versions
Parts		
Documents		
CAD Documents		
Changes		
Packages		

DELIVERING BUSINESS VALUE

The Kennedy Design Data Management System [KDDMS] aligns directly with the 2003 NASA Strategic Plan[1], OneNASA[2], CAIB[3], The Vision for Space Exploration[4], and NASA's Direction for 2005 and Beyond[5] by:

- Establishing collaborative engineering capabilities
  - Organize and manage all of the directorate's technical data in a product lifecycle management (PLM) tool
  - Work collaboratively with engineering partners, contractors and other NASA centers
- Improving data management and control
  - Provide users with a single system to access, control and store engineering information during design
  - Automate engineering processes (KDP)
  - Implement rules and processes into the PLM tool
  - Warehousing of engineering data (long term data access)
- Providing CAD design, translation, and integration capabilities
- Providing as-designed vs. as-built product management
- Providing project metrics and management decision tools

DELIVERING BUSINESS VALUE

Footnotes

1. 2003 NASA Strategic Plan implementing strategy, IS-3 – *"implementing collaborative engineering capabilities and integrated design solutions to reduce the life-cycle cost and technical, cost, and schedule risk of major programs".*
2. OneNASA recommendation 6 – *"enhance cross-Agency collaboration by putting in place common engineering and collaborative tools and databases, processes, and knowledge-sharing structures".*
3. CAIB finding F7.4-11 – *"the Space Shuttle Program has a wealth of data tucked away in multiple databases without a convenient way to integrate and use the data for management, engineering, or safety decisions"*, finding F10.3-1 – *"the engineering drawing system contains outdated information and is paper-based rather that computer aided",* finding F10.3-2 – *"The current drawing system cannot quickly portray Shuttle sub-systems for on-orbit troubleshooting",* recommendation R10.3-2 – *"Provide adequate resources for a long-term program to upgrade the Shuttle engineering drawing system including:*
   - *Reviewing drawings for accuracy*
   - *Converting all drawings to a computer-aided drafting system*
   - *Incorporating engineering changes"*
   - The report recommended that NASA solicit expert advice in identifying and removing barriers, providing tools, training, and education, and facilitating communication processes
   - In its investigation, the Board found that the information systems that support the Shuttle program are extremely cumbersome and difficult to use in decision-making at any level
4. The Vision for Space Exploration – *"develop the innovative technologies, knowledge, and infrastructures both to explore and to support decisions about the destinations for human exploration".*
5. NASA's Direction for 2005 and Beyond, NASA's Guiding National Objective #3 – *"develop the innovative technologies, knowledge, and infrastructures both to explore and to support decisions about the destinations for human exploration".*

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