



Technical Data Package Lifecycle Management

Presentation for
NIST

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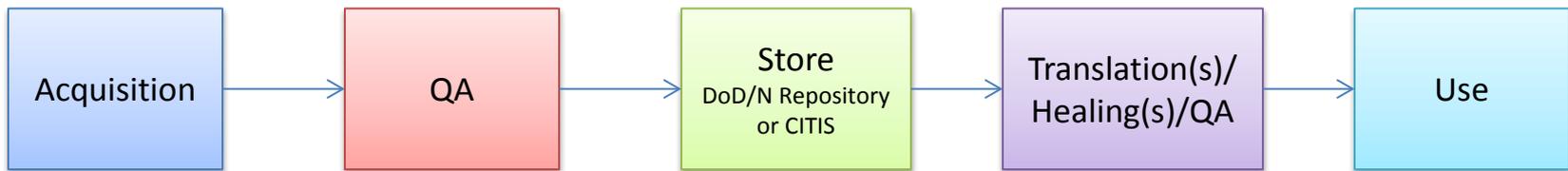
Agenda

- Purpose
- TDP Lifecycle Management Issues/Risks
 - Magnitude of the Problem
- What are we doing?
 - Enterprise IPT
 - PLM Projects/Pilots

Purpose

- Provide summary of Technical Data Package (TDP) Lifecycle Management issues and risks
- Advise leadership of current efforts with Technical Data Package Lifecycle management
 - Enterprise IPT established and chartered as a result of risk associated with native 3D models
 - Product Lifecycle Management (PLM) pilots and projects initiated

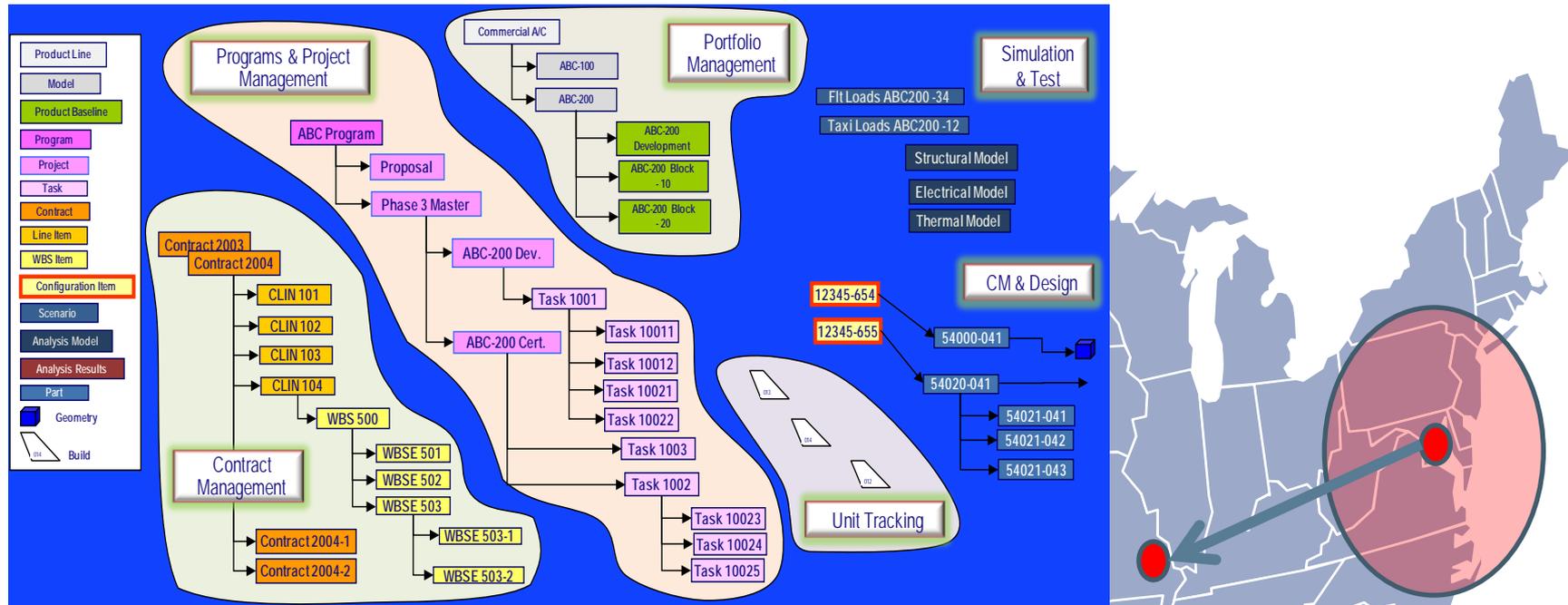
TDP Lifecycle Management Issues and Risks



- Acquisition Requirements non-standardized
 - Inadequate exit strategies from OEM PLMs
 - New acquisition programs (e.g. BAMS, UCLASS, H-53K) looking for enterprise PLM/repository solution
- QA - No standardized 3D model acceptance criteria
- Storage - No central repository /workflow tool
- Multiple online CITIS/IDE solutions
 - OEM Managed & Owned
- Static/Baseline Deliveries via Hard Drive
- Multi CAD translation - lack of software, hardware, connectivity, and training
 - No standardized 3D Model validation criteria for translated/healed models
 - Creates potential void in first article testing/air worthiness item compliance
- Digital file availability and lack of control may compromise design agency
- Model defects not recognized until used
 - Model often does not match OEM “As Built” or “As Delivered” requiring reverse engineering efforts
 - Item cannot be correctly manufactured or re-procured from the model delivered

TDP Lifecycle Management Issues and Risks

Millions Spent Annually on IDE's to Maintain Data That is Disconnected and Controlled by OEM's



- Status Quo:**
- Core Data & TDP on OEM Server
 - Data is organized in Silos
 - Data is static (no real time collaboration),
 - Data Format may not be compatible for our tools
 - Uses non nmci approved software. etc

What are we doing?

- **Enterprise Cross Competency IPT chartered:**
 - **Project Sponsor:** Dan Nega (SES) AIR 6.8
 - **Process stakeholders:** Dennis West COMFRC (SES), Stu Young AIR 4.1 (SES), Jack Summers (SES), AIR-00-CIO, Anthony Manich, AIR 1.0A Deputy Assistant Commander for Acquisition
- **Goal Statement:**
 - Standardize the acquisition and sustainment of TDPs
 - Provide our work force with the tools, training, infrastructure, and processes required to be successful.
- **Problem statements:**
 - NAVAIR Engineering remains disconnected from OEM/Vendor Engineering environment, leading to continued lengthy development cycles, late discovery of deficiencies, and misinterpretation of requirements, perpetual engineering approval loops, and overall poor communication
 - Current acquisition environment emphasizes the need for the government to act as the Lead Systems Integrator (LSI), but it does not emphasize the procurement of the TDP.
 - NAVAIR logistics, engineering, and production information systems used for sustainment are not integrated, lack standardization throughout the enterprise, and were not designed to handle CAD/CAM/CAE data used for 21st century platforms.

NAVAIR 3D Enterprise IPT

3D EIPT Leadership:

- Dan Nega AIR-6.8, Dennis West COMFRC, Stu Young AIR-4.1

3D EIPT Membership includes:

- 1.1.3 Configuration Management
 - 2.5.1.6 A/C Support Contracts, Logistics & In-Service Support Centers Contracting Br
 - 4.1.9 Systems Engineering, Manufacturing & Quality Div
 - 4.5.8.2 Air Traffic Control Systems, Approach Systems Br
 - 5.4.3.1 Battlespace Simulation & Test, Enterprise Operations Br
 - 6.0H COMFRC
 - 6.6 DPMLs
 - 6.8.4 Aviation Readiness & Resource Analysis, Logistics & Maintenance Information Systems & Technology Div
 - 6.8.5 Aviation Readiness & Resource Analysis, Logistics Product Data Div
 - 7.1F Command Operations and leadership Support , Office of Small Business Programs
 - 7.2. Information Technology /Information Management Dept
 - NAWCAD Lakehurst
 - FRCE Cherry Point/FRCSW North Island/FRCSE Jacksonville
 - NAWCTSD Orlando
 - Army
 - Air Force
 - DLA
 - DCMA
 - OSD
- Extended Team Members
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ACQUISITION RISK: NOT IMPLEMENTING CORRECT TECHNICAL DATA ACQUISITION

Issues:

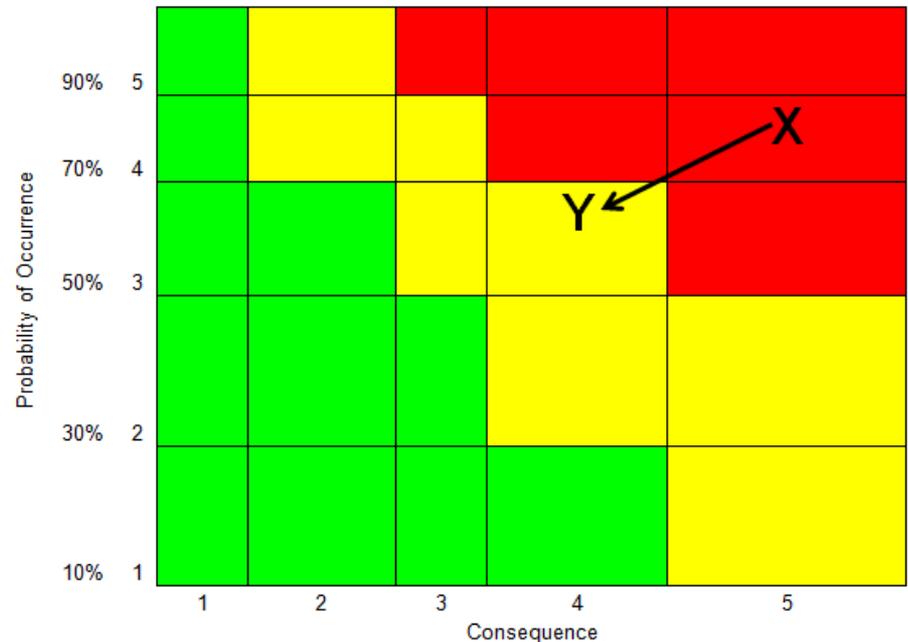
- Contract Language does not adequately define TDP requirements, Product Data Delivery Requirements and TDP acceptance.
- Insufficient TDP Acquisition Training.
- No resources for TDP management positions.

Consequence:

- Buying unusable data.
- Waste of Funds
- Significant Rework of existing Parts/Data
- Readiness Impacts

Mitigations:

- **Develop Comprehensive Data Rights Management Policy**
- **Identify appropriate contract language**
- **Develop Training Curriculum/Certification for TDP LEM in conjunction with Engineering Requirements.**



PLM/PDM System

- The quest to find pertinent solutions to the specific problems encountered keeps returning to a PLM/PDM system for the following reasons:
 - Serves as the Single Source/access point for authoritative Product and Process design information as well as other authoritative product and process data/information
 - Establishes the authoritative source for product configuration management, configuration relationships and end item data and as the single access point to other authoritative data/information sources
 - Utilizes standardized/standards-based data information exchange capabilities between systems and/or technology environments at various sites
 - Facilitates data re-use within and across organizations as well as across products/commodities/sites

What are we doing?

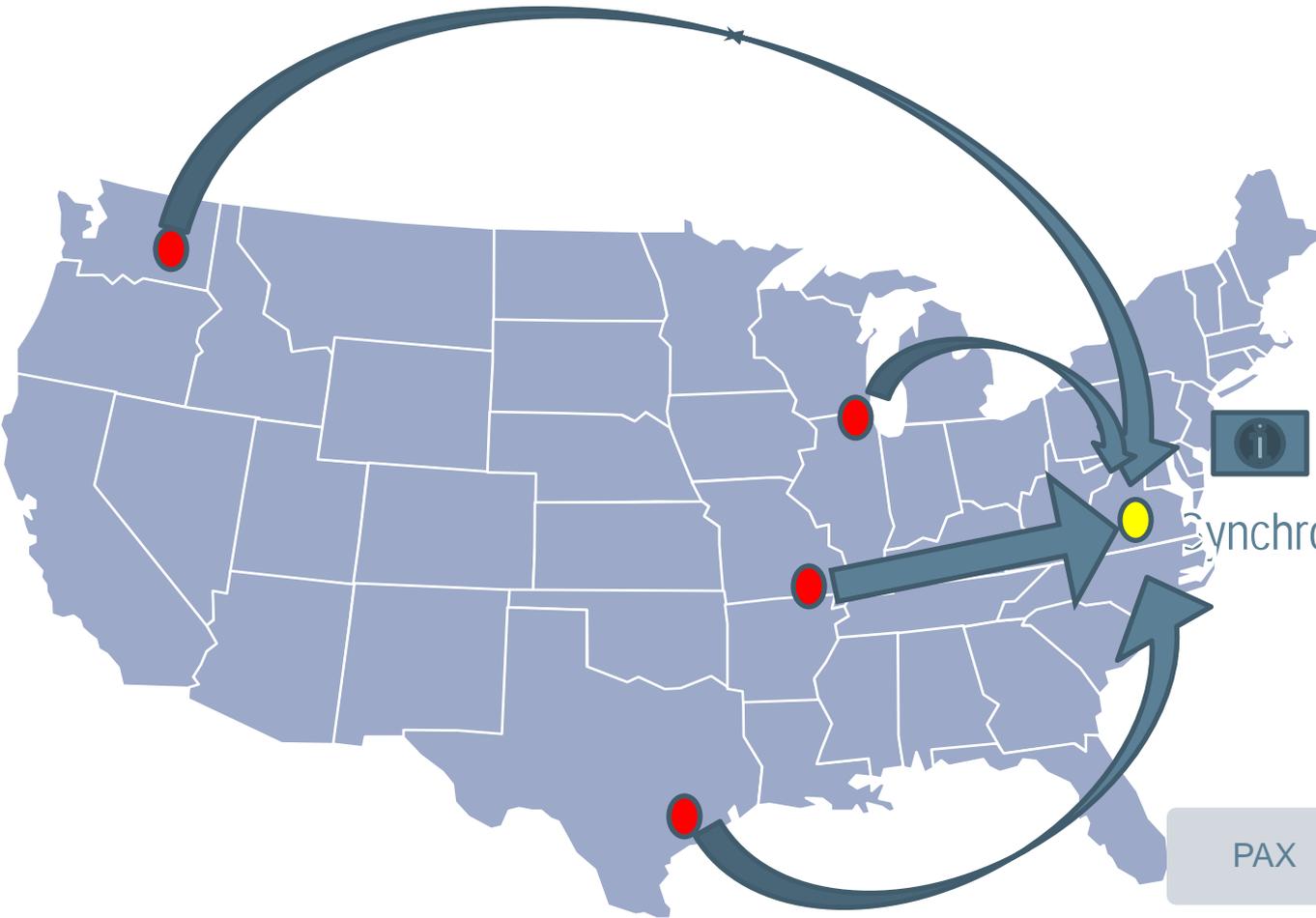
Initiating PLM Pilots/Projects

How can we gain more insight, buying power and process acceleration?

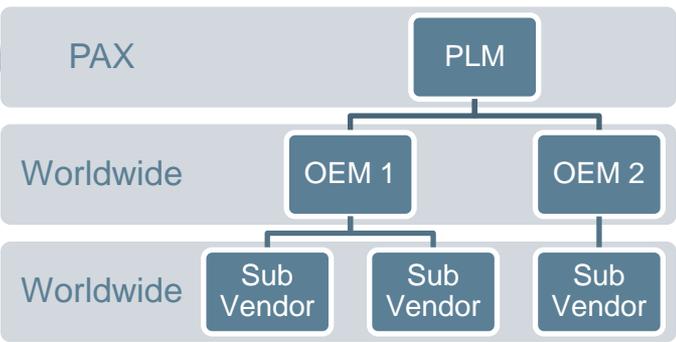
- ▶ IDE
 - ▷ Functions as a document management vault
 - ▷ Basic workflow
 - ▷ Does not drive process
 - ▷ Not intuitive to navigate
 - ▷ Cannot collaborate in real time
 - ▷ Only contains select, released data and documentation
- ▶ PLM
 - ▷ Enables dynamic interaction and process execution
 - ▶ Includes enterprise Workflow Management
 - ▶ Project management tools
 - ▷ Can use 3D graphics to aid navigation
 - ▷ Enables real-time collaboration in 3D context .
 - ▷ Enables full traceability from Requirements to Function to Logical definition to 3D Physical models, simulation and engineering analysis

PLM can bring fundamental transformation of our acquisition process

From IDE to PLM



Synchronized Data Environment located at PAX



PLM Benefits

- PLM is “relational” environment that ties all of the program data to the product structure and vice versa
- By implementing a PLM suite on the government side we will have the ability to take a targeted approach at TDP acquisition.
- PLM accelerates communication between stakeholders and greatly reduces the time to develop and acquire the system. (Future Brief)
- PLM will allow the PMA to execute LSI functions and ensure implementation of open architecture.
- PLM will allow open and broad competition to rapidly add capability at lower cost for the life of the program.

Current Initiatives

- OSD /DoD Engineering Drawing & Modeling Working Group (DEDMWG)
 - Digital Depot Project focused on transition of Methods and Technology to MBE in DoD maintenance and manufacturing facilities.
 - MIL-STD-31000 Project to update the standard for 3D Modeling and MB Enterprise activities.
- OPTICAM Pilot Projects through OSD with National Center for Manufacturing Sciences (NCMS)
 - OptiCAM is a collection of COTS hardware and software applications tied together with custom integration. Its core differentiator is based on a 3-D Imaging system (VZX Imaging) developed by SIS, and industry leading PLM software (NX with Teamcenter Unified) from Siemens.
- NAVAIR
 - AIR-4.1.9 led effort to implement a pilot Model-Based Systems Engineering solution utilizing a IBM/ Dassault Systems software suite to manage/collaborate PMA activities in an enterprise context.
 - COMFRC Technology Investment Team working with FRCs to develop BCA for implementation of Industrial COI for FRCs and an enterprise PLM/PDM Solution; each FRC documenting requirements.

Integration of initiatives required to achieve holistic approach.

Problem Summary

- Evolution of technology has enabled programs to leverage 3D Models in acquisition
- Technology advances have out-paced update/development of ASME and DOD 3D Model standards and Service/SYSCOM policies, processes, tools, and infrastructure
- Multiple initiatives without a NAVAIR focal point and cohesive IPT approach
- Scope of 3D Model issues includes Acquisition, Quality Assurance, Configuration Management, repository management, and use.