United States Air Force: USAF Product Lifecycle Management (PLM) for Integrating Program Requirements through an Asset’s Lifecycle

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Problem Statement

• USAF needs to own and manage the Technical Baseline for new and ongoing Weapon System Acquisitions

• To accomplish this, the Air Force needs to establish Configuration Management (CM) of program data with links to requirements, legacy product data, and new design and build data to support cost tradeoffs, impact analysis and trade studies early in acquisition
Digital Thread for the Asset Life Cycle

- **ID Key R&M Cost Drivers**
- **Failure Definition/Scoring Criteria**
- **Reliability Allocations**
- **Feasibility Analysis**

**RAM Requirements**
- Operational Mode Summary & Mission Profile
- Failure Definition & Scoring Criteria

**Material Solution Analysis**
- Requirements
- Logical Models
- Analytics
- Reporting
- Documents
- CDRLs
- Parts/systems
- Supporting Technical Data

**Technology Development**

**Engineering & Manufacturing Development**

**Production & Deployment**

**Operations & Support**

*Acquire Technical Baseline here... Rather than here...*
Technology Deployment

• In October 2016, the US Air Force, NCMS, and Siemens Government Technologies (Siemens) entered into a collaborative agreement to perform work for the Ground Based Strategic Deterrent (GBSD) Program, located at Hill AFB, UT and managed by NCMS.

• Value Proposition
  – Teamcenter provides a single view of program information from “Requirements to Retirement”
  – Early acquisition information in a single location leveraged for later acquisition stages (e.g., AOA, LCSP, RAM-C data)
  – Drive Technology Dev, Manufacturing/Development, and sustainment phases through a single source of program engineering data (e.g., models, supporting documentation, requirements)
## Overall Benefits

### Business Initiatives

- Provide a single Integrated Intellectual Property (IP) Backbone.
- Introduce consistency and improve accuracy of information to reduce time spent looking for information.
- Reduce total Document, Requirements and Data management costs by improving access to information at the right time and in the right form.

### Process Improvements

- Integrate design data management within a PLM Solution.
- Incorporate authors, Engineer, and Approvers in product development lifecycle where knowledge and processes are common.
- Optimise process for authoring and managing documents, requirements, and data. – reduce button clicks.
- Standardise authoring process for engineering and pure document management authors.
Technical Approach

Siemens uses their commercial expertise and practices, such as the AdvantEdge Delivery methodology, to:

• Provide a Teamcenter template solution, “PLM-in-a-Box – Early Acquisition Edition”

• Deliver a virtual machine application copy and supporting documentation to enable deployment to a host environment for PLM on-boarding and Program Management Office

The Early Acquisition PLM Solution is being modeled on the Ground Based Strategic Deterrent Program (GBSD) program office and select Enterprise PLM-CI Defense Business System (DBS) artifacts.
Technical Approach

Affirm Value

- Establish project scope
- Outline solution and define value
- Configure & integrate solutions into single view (Big-Block)

Validate Solution Definition

- Validate (or define*) the solution through an integrated review of characteristics, process, business use cases, capabilities and scenarios
- Confirm and freeze scope & business requirements

Iterative Configuration & Verification

- Define configuration points with process experts
- Verify (test) subset of requirements as solution matures through scenario-based maturity reviews

Key User Exposure

- Key Users to execute scenario-based verification activities
- Gain further understanding of solution and prepare for adoption

Business Adoption & Readiness

- Execute final user acceptance
- Ensure users and system readiness for production deployment
- Complete learning delivery, and document process impacts

Deploy

- Maintain the solution
- Support users
- Monitor system health
- Verify the value delivered to the business

Sustain

AdvantEdge Delivery

- Secure stakeholder support
- Define and communicate business value
- Assess business impact and ensure user readiness
Entire spec including body text
Spec with Headings Only
Spec Only Derived from SOW Table A

Not imported

Links to Paragraphs
Para Titles and links derived from "Requirements Traceability with Dist D"

Links to Specs
Creation of Specs and mapping derived from SOW Table A
Links To the SOW

- The SOW has both defining and complying links
Links Between CDD-WSS

- Links between CDD-WSS were derived from “Requirements Traceability with Dist D”
Solution: Document & Change Management

From This:

To This:
Initiate a Workflow

Change Management is controlled by a series of Workflows covering all Approvals and changes.
Workflow Visualization

The Workflow continues to run until all Tasks are completed.
Thank you

Questions?
Comments?

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