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Model Based Test and Evaluation Master Plan: Applying Digital Transformation to T&E Strategy for Major Acquisition Programs

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Outline

TEMP Definition/Purpose

Benefits of MBTEMP

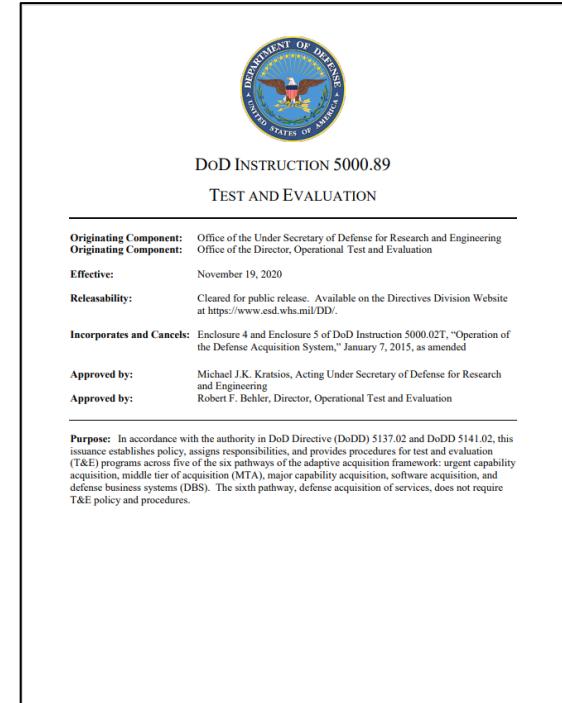
IDSK

Data Centric Structure

Mapping to document for staffing
and signature

What is a TEMP?

- US Department of Defense (DoD) major acquisition programs are required to develop a Test and Evaluation Master Plan (TEMP)
- Two primary audiences
 - Acquisition leadership
 - Test and Evaluation (T&E) leadership
- Contains
 - T&E Strategy & objectives
 - Decisions and data requirements
 - Test phase entry and exit criteria
 - Resources
 - Schedule
 - Funding



Difficult to get approved and seldom utilized by executing test teams

Model Based Test & Evaluation Master Plan (MBTEMP)

Objective: To revolutionize a method for capturing a program's Test & Evaluation strategy by creating a living, digital, model-based TEMP that:

ACDM 1000-02 Template
Test and Evaluation Master Plan

- Aligns with Office of the Secretary of Defense (OSD) Digital Transformation goals
- Embraces program's "Digital Born" philosophy
- Is accessible and easy to understand by all stakeholders
- Fulfills current requirements of TEMP
- Captures data maximizing usefulness later in program lifecycle stages
- Is Digitally Threaded to
 - Other Acquisition Artifacts & References
 - Government Reference Architecture
 - Government Reference Model
 - Mission Model
 - System Model
 - Model Based T&E Planning, Execution, and Analysis models

OSD Director Operational T&E (DOT&E) Efforts

- Apply Digital Engineering methods and tools to traditional SE and T&E practices to improve and accelerate acquisition processes.
- Integrated Decision Support Key (IDSK) ties test data to acquisition decisions & program milestones
 - Core element of OSD digital TEMP efforts
- MBTEMP
 - Utilizes DOT&E's MBTEMP Profile developed by JHU/APL
 - Implements IDSK framework
 - Captures data contained in document-based TEMP



Model-Based IDSK Manages Data Complexity, Enables Agility in T&E and Decision-Support

Model Based TEMP Technical Improvements

TRACEABILITY

- Up-to-date program data and system design via model connectivity
- Traceability & linkage between integrated Developmental and Operational T&E efforts

IMPACT ANALYSIS

- Analytical model for evaluating test planning impacts
- T&E stakeholders' tailored viewpoints at their fingertips

DATA CENTRIC

- Agility and streamlining the update of this governing document
- Machine readable, queryable content

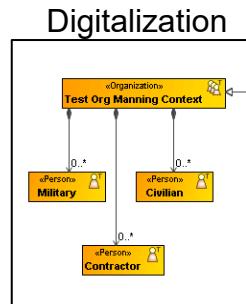
INFORMED DECISIONS

- Continuous & dynamic T&E planning & execution situational awareness
- Facilitates discussions with industry on combined test effort

Digital Transformation

TECHNICAL LIMITATIONS

- Some program ASOT digitized vs digitalized (i.e. digital document instead of data centric model)



- Digitized ASOT content not accessible by automated extraction code

ADOPTION OF BEST PRACTICES

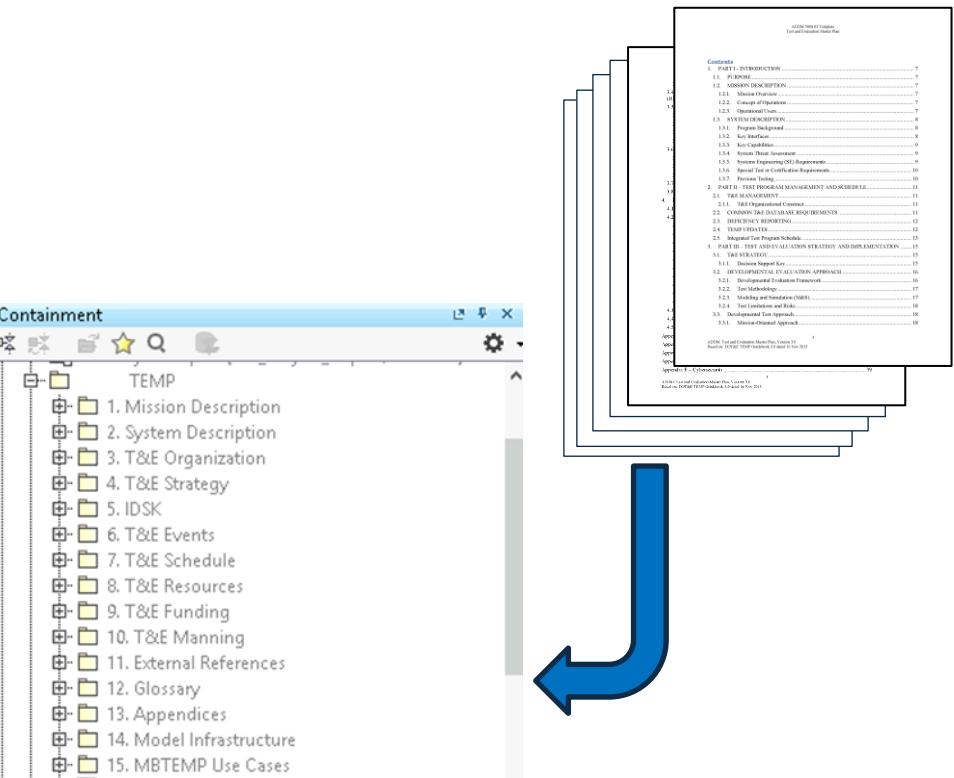
- Eliminate Copy-Paste-Engineering
- Link to Digital ASOT where available
- Digital ASOT ensures traceability to latest version
- Establishing a Digital ASOT isn't just about better data management; it's about
 - reducing program risk
 - controlling costs
 - accelerating delivery of critical capabilities

Digital Transformation requires cultural shift to accompany technical implementation.

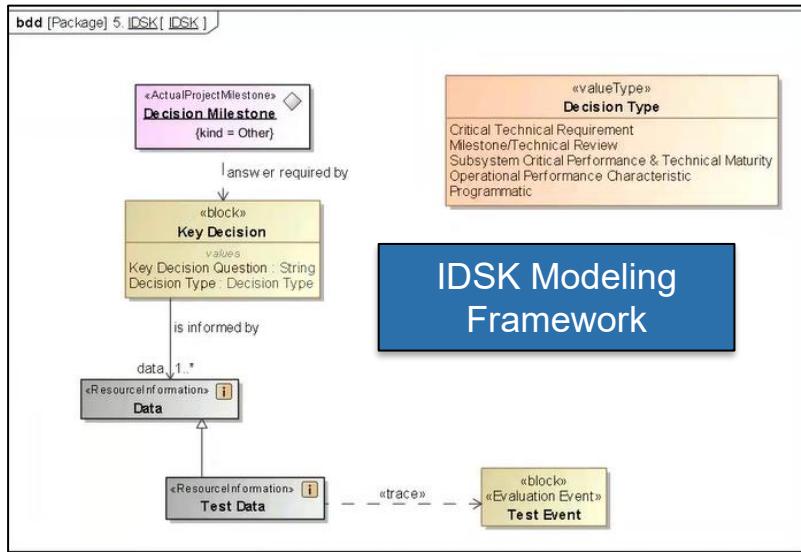
Because we are embracing the principles of Digital Engineering you will not see replicated information from other sources, we will reference its ASOT. Many of which are still being digitalized.

MBTEMP Structure

- TEMP document data restructured in a SysML model
 - Why SysML?
 - Utilization of DOT&E MBTEMP Profile
 - Standardized format for most programs (only need Cameo)
 - Allows linkage to system architecture models and detailed test plan MBTE models
 - Model does not mirror document structure, but organized around data elements
 - Links to/imports ASOTs defined elsewhere in program (e.g., Mission Description, System Description, Schedule)



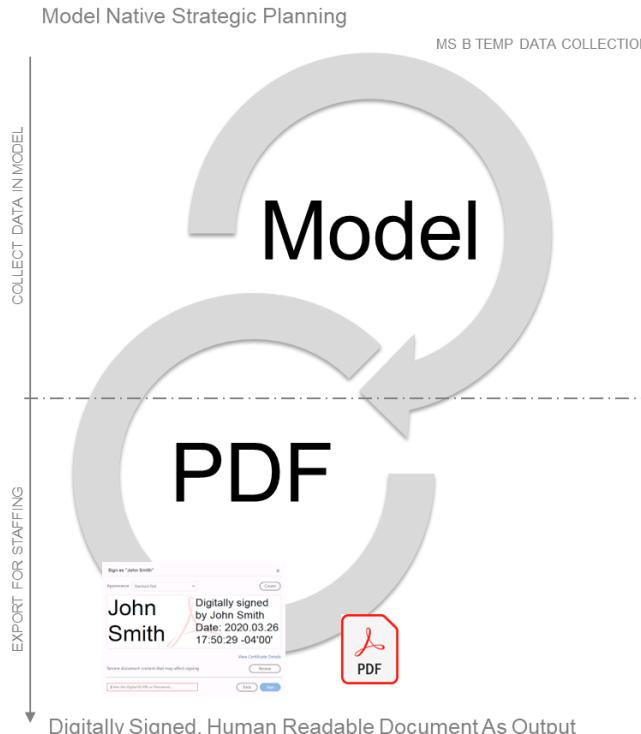
IDS K



- MBTEMP includes the program IDS K framework
- Traces decisions to data to test events
- Test Events trace to one or more MBTE Detailed Test Plan models

Model Element Linkage can allow data centric dashboarding for up-to-date strategic level T&E oversight!

Staffing Approach



- Content owners will update data in the MBTEMP model
- Model content scripted back to standard document formatting for coordination and approval
 - More human readable
 - Easier to submit through current staffing processes
 - Allows for digital signatures
- Will make document as close as possible to traditional TEMP
 - Underlying data has been restructured for model use
 - Possible the scripted output may be a 90% solution

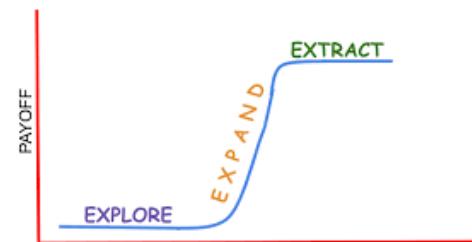
MBTEMP is the TEMP, document is just a view of it.

Differences from TEMP Documents

- Model structure is data centric, section ordering will differ
 - Retrofitted to document structure for export/staffing
 - Primary source of differences from traditional document centric TEMPs
- Only contains test-specific content
 - Non-test content being brought in from their Authoritative Source of Truth (e.g., mission description, system description, program background, threat assessment)
- Model diagrams exported to document
 - Includes explanations of diagram and SysML symbology

Key Takeaways

- TEMP Artifact undergoing digital transformation
- There is no standard established for MBTEMP
- Current iteration is a hybrid approach with automated document output for convenience of traditional review and staffing processes
- Should be familiar enough to not induce confusion
- Future iterations
 - Explore model only implementation
 - Expand into Test Planning & Execution
 - Extract information for decisions





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