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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

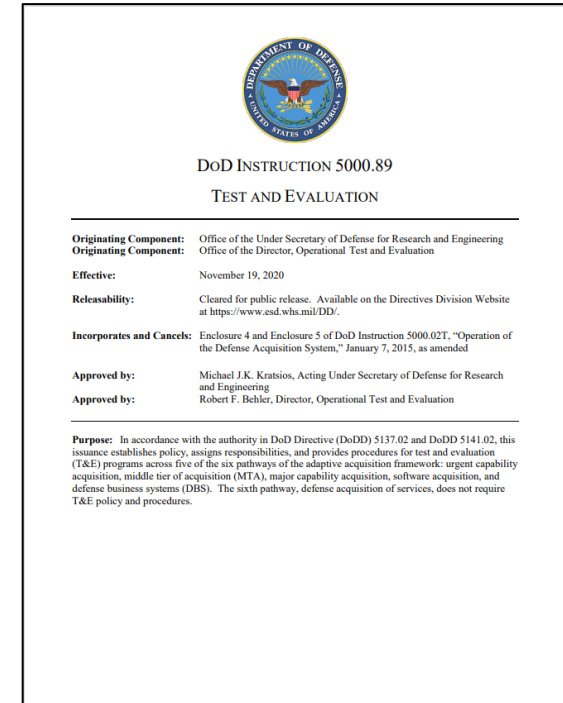
IDSK

Data Centric Structure

Mapping to document for staffing  
and signature

# What is a TEMP?

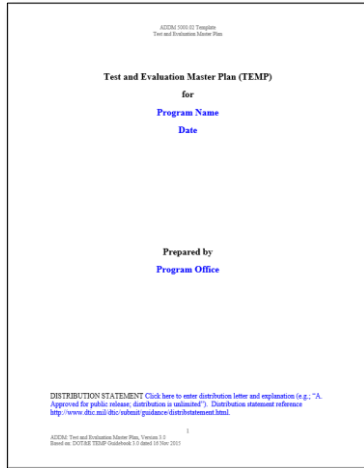
- US Department of Defense (DoD) major acquisition programs are required to develop a Test and Evaluation Master Plan (TEMP)
- Two primary audiences
  - Acquisition leadership
  - Test and Evaluation (T&E) leadership
- Contains
  - T&E Strategy & objectives
    - Decisions and data requirements
    -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



ASCEM 1000.01 Template  
Test and Evaluation Master Plan

Test and Evaluation Master Plan (TEMP)  
for  
Program Name  
Date

Prepared by  
Program Office

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ASCEM Test and Evaluation Master Plan, Version 3.0  
Based on DDT&E TEMP Guidelines 1.0 dated 10 Nov 2017

- 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

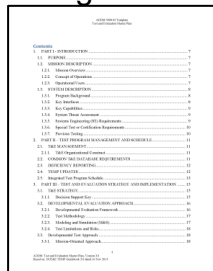
- Continuous & dynamic T&E planning & execution situational awareness
- Facilitates discussions with industry on combined test effort

# Digital Transformation

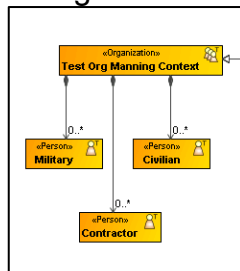
## TECHNICAL LIMITATIONS

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

### Digitization



### Digitalization



- Digitized ASOT content not accessible by automated extraction code

## ADOPTION OF BEST PRACTICES

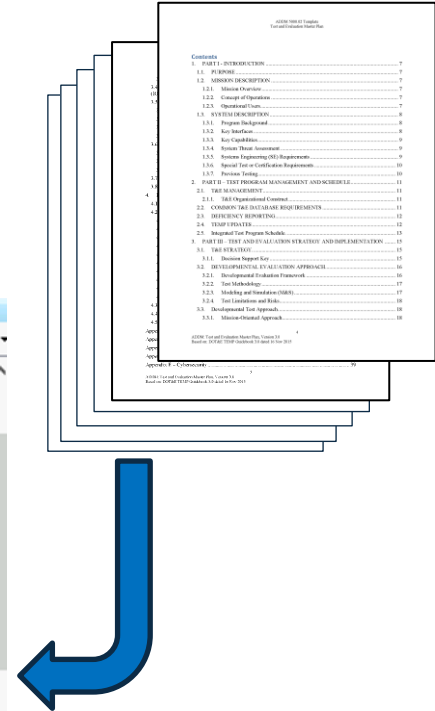
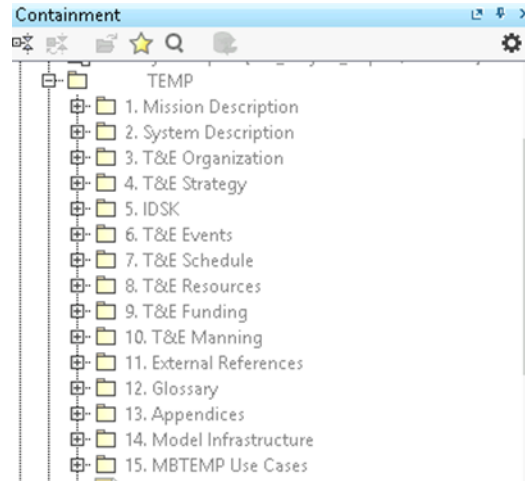
- Eliminate Copy-Paste-Engineering
- Link to Digital ASOT where available
- Digital ASOT ensures traceability to latest version
- Establishing a Digital ASOT isn't just about better data management; it's about
  - reducing program risk
  - controlling costs
  - accelerating delivery of critical capabilities

**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.**

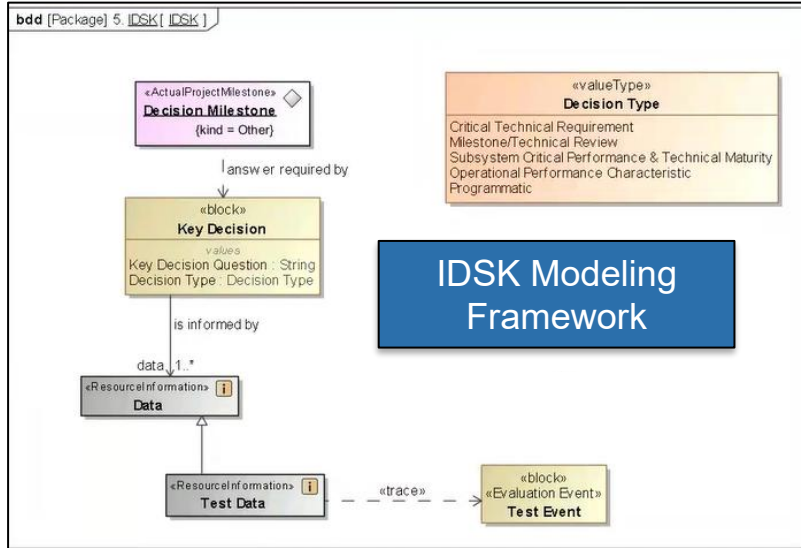
# MBTEMP Structure

- 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)





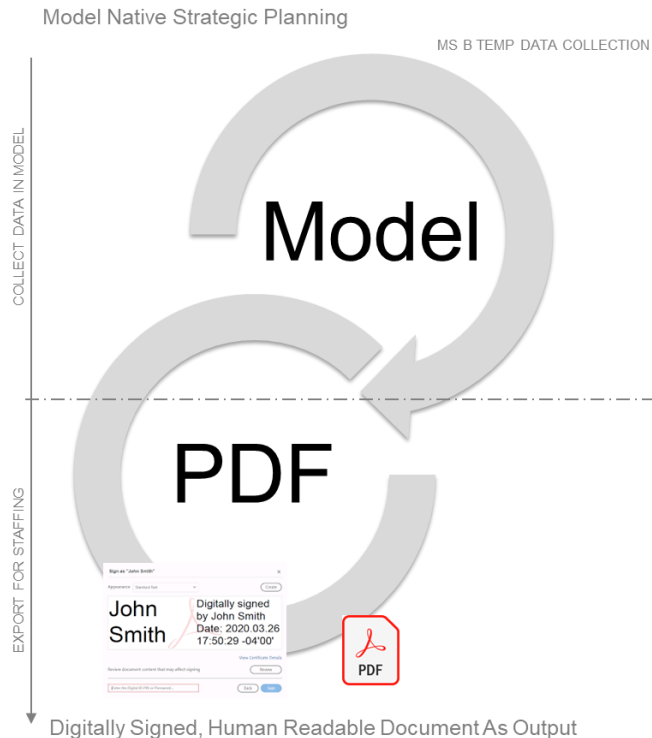
# IDSK



- MBTEMP includes the program IDSK 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

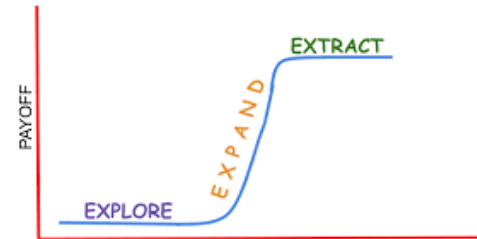
**MBTEMP is the TEMP, document is just a view of it.**

# 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





# 35<sup>th</sup> Annual **INCOSE** international symposium

hybrid event

**Ottawa, Canada**  
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