



Army Test and Evaluation:

*Shifting Operational Insights to the Left,
Increasing Impact to the Right*

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Agenda



Background & Challenges

Acquisition Pathways

Middle Tier of Acquisition (MTA)

T&E Enablers for MTA Success

Proposal for all Acquisition Pathways: Risk-Based T&E

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Potential Risk Assessment Tool

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Background & Challenges



National Defense Strategy: Deliver performance at the speed of relevance.

Army Futures Command: Continuous transformation of Army modernization

- Providing concepts, capabilities, and organizational structures

Middle-Tier of Acquisition (NDAA FY16 – Section 804)

- Rapid Prototyping or Fielding within 5 years
- Not subject to JCIDS, DODD 5000.01, or DODI 5000.02

SecDevOps: Targets

Product delivery Quality testing Feature development Maintenance releases
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in order to

Improve reliability & security Faster development & deployment cycles
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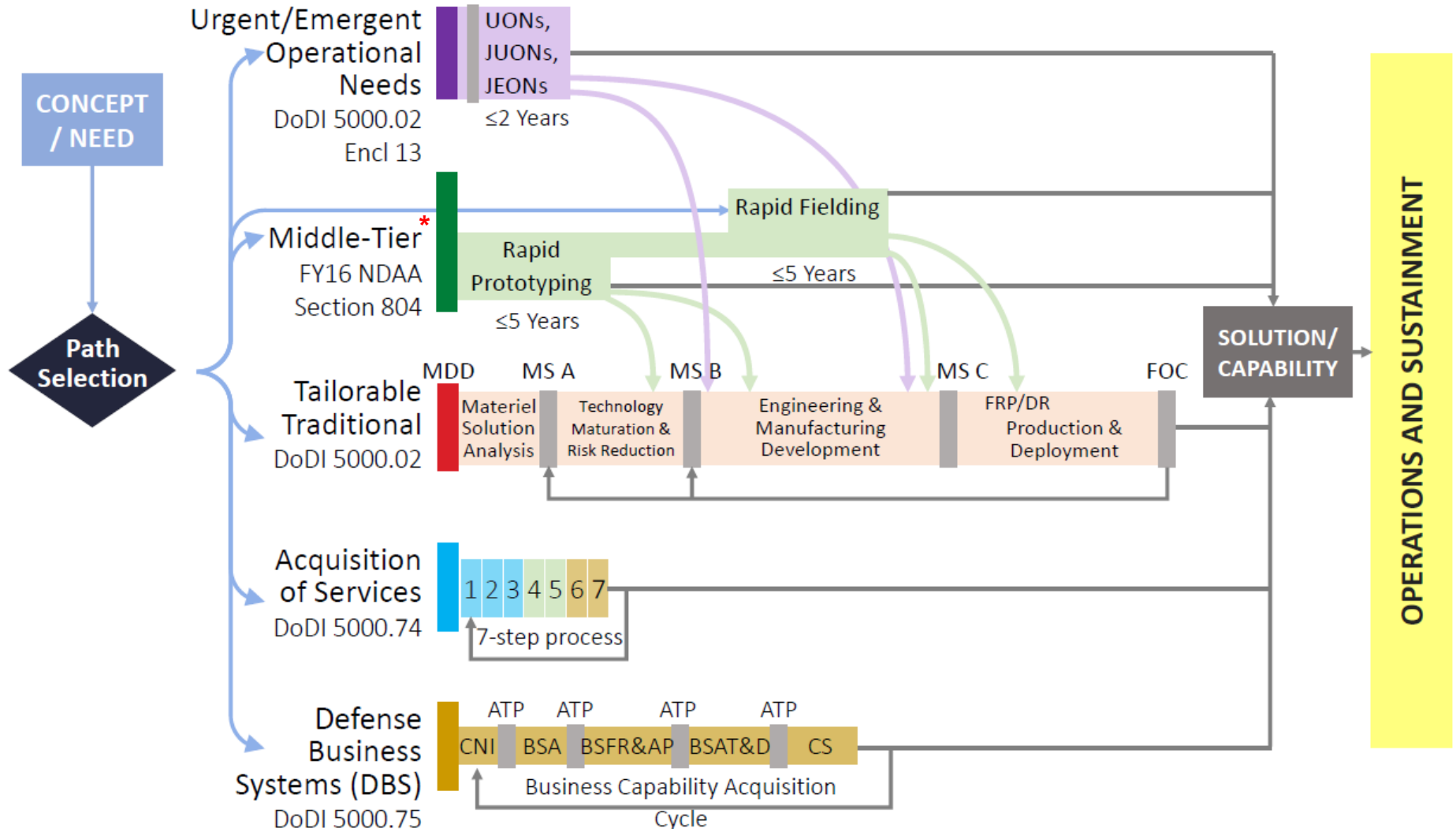
Current T&E policy is rooted in DOD 5000 guidance

- Encourages dependency on “the way we have always done it”
- Lacks direction for tailoring of T&E

Army T&E must help evolve the acquisition process to support decisions.
 * Early integration * appropriate test scope * timely data/analysis



Acquisition Pathways



OPERATIONS AND SUSTAINMENT

Source: Defense Acquisition University, Adaptive Acquisition Framework, Version 2.0, 7 December 2018

* Discussed on slides 5-7



Middle Tier of Acquisition (MTA) Governance



Public Law 114-92: NDAA for FY2016, Section 804: MTA for Rapid Prototyping and Rapid Fielding

- Intended to be completed in two to five years
- Approved requirement for each program in a period of not more than 6 months from process initiation
- Not subject to JCIDS Manual or DODD 5000.01
- Process to expeditiously seek a waiver from any statutory or regulatory requirement that adds little or no value to the management of the program

USD(A&S) Memo: MTA (Rapid Prototyping/Rapid Fielding) Interim Authority and Guidance, 16 Apr 2018

- Authority to implement Section 804 on an interim basis until 20 Sep 2019
- The CAEs are accountable for the management and delegation of the authority

ASA(ALT) Memo: MTA Policy, 25 Sep 2018

- Requests for MTA authority will be submitted through the DASM to the AAE for approval
- Program strategy includes threat, operational gap, why/how MTA is appropriate, lifecycle costs, risk management, cost, schedule, performance metrics
- In coordination with the users of the equipment and the test community, the PM will make trade-offs among life-cycle costs, requirements and schedules to meet the goals of the effort

USD(A&S) Memo: MTA (Rapid Prototyping/Rapid Fielding) Interim Governance, 9 Oct 2018

- CAE must provide notice of programs being approved as MTA NLT 30 days before any funding is released
- OSD can disagree and direct program to follow traditional acquisition authorities under DODI 5000.02
- No mention of T&E



Policy Directive for T&E of MTA Programs (28 Feb 2019)



1. Formal TEMP not required. T&E Strategy required to define the appropriate scope and resources required for T&E
 - Approved by AAE (or designee), T&E organization, and capability proponent (equivalent grade as Decision Authority)
 - T&E Strategy includes integrated test program schedule; any technical, developmental, operational, or integrated test events and objectives; a technical and operational evaluation framework; and a test resource summary.
2. Maximize use of flexible and innovative T&E approaches.
 - Use all credible data
 - Periodic independent assessments to support knowledge points and decision reviews
 - Use of new methods for reliability assessments, M&S, mission-based T&E, and rapid design improvement/characterization tools.
 - Continuous learning environment that mitigates or informs risk
3. Delivery of contractor test data in the materiel developer's contracting actions
4. Safety Release/Confirmation required.
5. Waiver from statutes for "major systems" (per Title 10 U.S.C. §2302) permitted (Title 10 U.S.C. §2302 - Survivability and lethality testing; Title 10 U.S.C. §2399 – OT&E).



T&E Enablers for MTA Program Success



...requires culture shift from entire acquisition community

- We must scope requirements to those that are affordable and achievable at the time
 - ✓ Achieve Speed of Relevance
 - ✓ Keep up with technological pace
 - ✓ Embed mission-based increments based on First Unit Equipped
- We cannot test everything
 - ✓ Gain insights in early tests
 - ✓ Accept risk by leveraging early credible data vice repeating tests
 - ✓ Tailor OT to operational data gaps only as much as possible
- We need users involved up front and continually
 - ✓ Warfighters know what works for their missions
 - ✓ Warfighters should drive system design and data needs

A tailorable/risk-based approach to T&E will enable agile and responsive acquisition outcomes



Embrace calculated risk in MTA T&E Strategies.

Risk must be considered and used as a main driver for weighing performance in mission context for all acquisition pathways.



Proposed Solution for all Acquisition Pathways: Risk-Based T&E Process



- T&E Scope determined by Early Risk Assessment & Determination for DT & OT
 - Integrates T&E planning and execution with requirements development and systems engineering
 - Considers existing credible data, system maturity, operator complexity, integration with other systems, impact on unit mission, and sustainment needs
 - Programs with elevated risk require more comprehensive T&E strategies
- User defined requirements for FUE and beyond based on mission tasks
- Codify periodic assessments and other innovative approaches to support
 - Data-informed and concurrent systems engineering, analysis, and requirements formulation
 - Test-Analyze-Test-Fix cycle with reported emerging results
- Demonstrated system performance accepted by User prior to progressing to OT

Early focus on CFT Demonstrations, Soldier Excursions,
User Feedback, and operationally relevant DT



Risk-Based T&E Highlights

Pre-Testing Phase

- CFTs oversee MATDEV solution analysis
- CFTs base requirements on achievability and affordability
- High priority requirements based on what is required now
- T&E is key advisor to decompose requirements, structure early tests with systems engineering, and use early data to reduce future testing
- FUE or other unit identified for continuous User Assessments

Risk Assessment & Determination

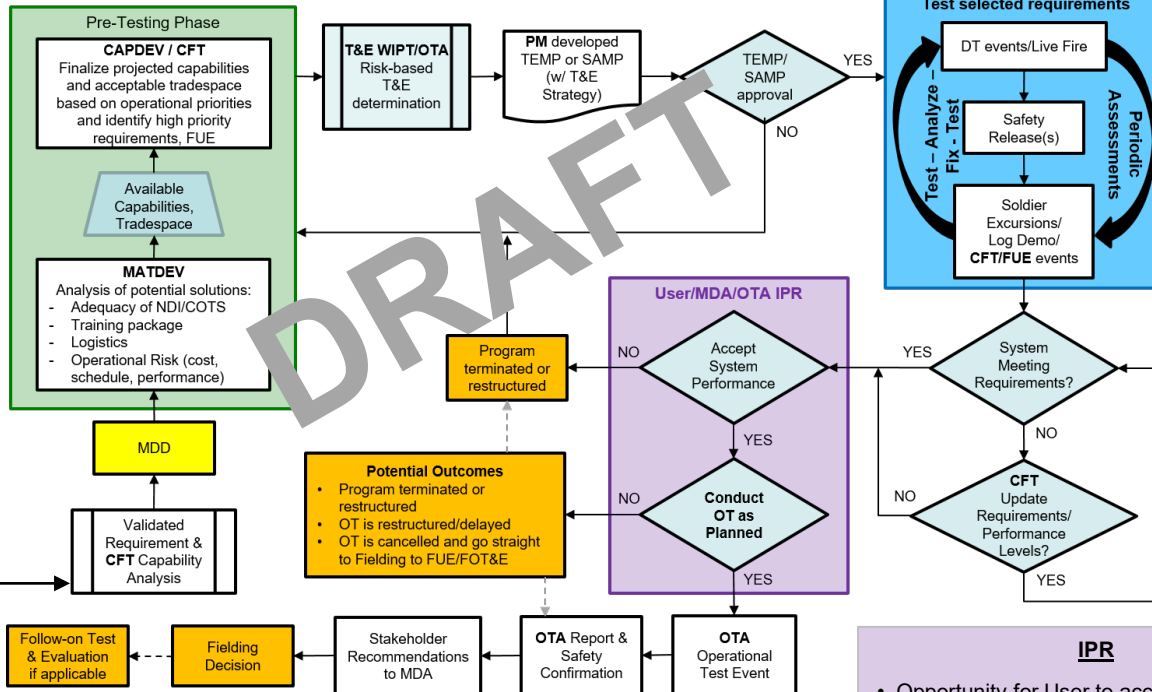
- Based on existing credible data, system maturity, operator complexity, integration with other systems, impact on unit mission, & sustainment needs
- Higher risk equates more comprehensive T&E strategy
- Determines required testing and what not to test; where to accept risk or defer test/requirements

Test & Assess/Evaluate

- Conduct iterative assessments
- Analytical rigor applied to T&E planning to appropriately scope system testing and sample sizes
- Major focus on DT with User involvement and continuous analysis of emerging results

Requirements Formulation & CFT Capability Analysis

- CFT Portfolio analysis drives identification of mission gaps
- CFTs incorporate S&T and user feedback to inform requirements
- CFTs initiate POR planning and oversee early technical testing



CFT Review

- Opportunity for CFT to modify/defer requirements, incrementalizing capability development and fielding

IPR

- Opportunity for User to accept risk in system performance or not
- Decision made based on T&E conducted to date that a stand alone OT is still necessary

OT & Reporting

- OT Scope based outcome of the risk assessment & determination and findings of T&E conducted to date
- Report scoped to appropriate level of detail for timely delivery to decision makers





Expected Outcomes

- Unit identified early, trained and ready to support Soldier Touch Points, User Assessments, and other DT events with Soldiers
- Single database: Contractor data, Experiment data, DT data, Systems Engineering data [all data]
- Eliminate unnecessary and time consuming/unwieldy documentation, staffing, and approvals
- Weeks vice months responsiveness in reporting emerging results
- Improved leadership awareness to expedite decisions
- Technological risks identified and addressed/fixed earlier at lower cost

Expand Integrated Testing from data sharing & linked events to integrating T&E across:

- * *requirements decomposition*
- * *systems engineering*
- * *creative prototyping*
- * *acquisition risk acceptance and mitigation*
- * *industry and government*



Potential Risk Assessment Tool

Procedure: Review each of the factors and sub-factors below and choose the applicable characteristic that best fits the system. Identify the corresponding point value for each characteristic and total the points over the six sub-factors.

Factor	Description	Severity/ Points	Characteristics
1. Data Available		High = 4	No data
		Moderate = 3	Contractor DT data
		Low = 2	Field data on an analogous system and contractor DT data
		Negligible = 1	Field data available from same system used in previous application/other service and contractor DT data
2. System Type			
a. System Maturity	Proven historical performance and/or TRL assessment	High = 4	Completely new design, unproven
		Moderate = 3	Existing/proven design with modifications affecting operational effectiveness, operational suitability, or survivability
		Low = 2	Existing/proven design with modifications that do not affect operational effectiveness, operational suitability, or survivability
		Negligible = 1	Proven design from the Army, other Service, or currently fielded
b. Operator Complexity	Level of operator understanding and effort required to use the system	High = 4	Changes to doctrine, organization or training AND system operational suitability, operational survivability, or impact on mission effectiveness are <i>not</i> established
		Moderate = 3	Impacts on cognitive and/or physical workload <i>not</i> understood AND system operational suitability, and impact on mission effectiveness are <i>not</i> established
		Low = 2	Impacts on cognitive and/or physical workload understood BUT system operational suitability, and impact on mission effectiveness are <i>not</i> established
		Negligible = 1	System operational suitability, operational survivability, and impact on mission effectiveness are established
3. System Use in the Field			
a. Linkage to other Systems	Dependency or interoperability with other systems, direct interfaces with other systems (electronic, physical and/or software)	High = 4	Critical to operation of other "major system" (non-major system can work without it) or interoperate with more than one system
		Moderate = 3	Supports operation of a "major system" (non-major system can work without it) or interoperate with more than one system
		Low = 2	Supports operation of a non-"major system" (non-major system can work without it) or interoperate with one system
		Negligible = 1	No interoperability with or reliance on another system
b. Impact on Unit Mission	Ability of a unit to successfully complete its mission if the system fails to address the operational issues	High = 4	System critical to unit mission success; the unit cannot perform mission without the system
		Moderate = 3	Unit mission completed but degraded
		Low = 2	Unit mission completed but with workarounds
		Negligible = 1	No direct impact on mission success
c. Support or Sustainment Strategy	Level of organic resources needed to operate and maintain the system	High = 4	System is only operated and maintained by Soldiers
		Moderate = 3	System is operated by Soldiers but maintained under contract logistic support (or equivalent)
		Low = 2	System is operated and maintained by contractors
		Negligible = 1	System does not require maintenance



Total Points	Risk Acceptance			
	Negligible	Low	Moderate	High
19 – 24	OT + FOT&E	OT	Limited OT + FOT&E	Limited OT
14 – 18	OT	Limited OT + FOT&E	Limited OT	No OT, only DT/Ex w/ Soldiers
8 – 13	Limited OT + FOT&E	Limited OT	No OT, only DT/Ex w/ Soldiers	No OT, only limited DT/Ex w/ Soldiers
0 – 7	Limited OT	No OT, only DT/Ex w/ Soldiers	No OT, only limited DT/Ex w/ Soldiers	No OT and no DT/Ex w/ Soldiers



Way ahead

- Issue directives from the Army T&E Executive supporting immediate implementation of T&E reform.
 - ✓ Implementing T&E Strategies in SAMPs (7 August 2018)
 - ✓ T&E of MTA Programs by Dr. Jette (28 February 2019)
 - Risk-Based T&E Methodology & Tool
 - Implement a standard test language, metrics, data dictionary, data methods, and database structure to enable data reuse
- ASA(ALT) MILDEP requested “road-show” to all PEOs, PMs, AFC, CFTs, others as required.
- Draft and finalize policy changes.
 - Update to DA Pamphlet 73-1 ongoing
 - Near term update to AR 73-1 (current is 8 June 2018)
- Monitor CFTs and other program activities to refine policy, regulation, and/or statute changes.
- Notify and train the acquisition workforce.