TEST AND EVALUATION CHAPTER 2: URGENT CAPABILITY ACQUISTION

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1. Urgent Capability Acquisition (UCA) Pathway Overview

1.1. Introduction

In accordance with DoDI 5000.02, the DoDI 5000.81 establishes policy and prescribes procedures for acquisition programs that provide capabilities to fulfill urgent operational needs and other quick-reaction capabilities that can be fielded in less than two years. The guidance provided here supports policy established in the DoDI 5000.89 and DoDI 5000.81. In the event of conflict, the reader should defer to policy documentation.

The Executive Director of the Joint Rapid Acquisition Cell (JRAC) assigns responsibilities to the DoD component head for rapid resolution of joint urgent operational needs (JUON), joint emergent operational needs (JEONs), and Warfighter Senior Integration Group (SIG) identified urgent issues. The solution must be capable of being fielded within two years of the validation of the urgent need, in a manner that resolves or substantially mitigates the underlying need. The fielding of an interim solution, even if it provides less-than-full capability, will not be delayed, to enable extended development of immature technology. The estimated cost for any single solution must not exceed $525 million in research, development, and T&E, or $3.065 billion for procurements in FY2020 constant dollars. Urgent capability activities are not necessarily intended to be enduring programs.

The Program Manager (PM) should involve the T&E organizations with the UCA program as soon as the Urgent Operational Need (UON) is identified to support the program decisions and delivery timeline. Contractor testing (CT), government developmental test and evaluation (DT&E), live fire test and evaluation (LFT&E), and operational test and evaluation (OT&E) should be integrated, streamlined, and tailored to the maximum extent practicable to enable efficient use of data and resources across the test program and evaluation of system operational effectiveness, suitability, survivability, and lethality to inform the decision authorities. Test and certification organizations should strive for maximum sharing, reciprocity, availability, and reuse of test results and artifacts. Collaboration between all organizations may lead to the development of digital system models, simulations, and test environments for common use across the spectrum of system test that may produce necessary data or information.

This chapter describes T&E community involvement throughout the UCA pathway lifecycle.

1.2. Urgent Capability Acquisition Pathway Description

The activities for the UCA Pathway, including T&E, are highly tailored to expedite the fielding of capability by streamlining the documentation and reviews normally required as part of the deliberate acquisition process. Figure 1 illustrates the four major phases (often conducted in parallel) within the UCA Pathway: 1) Pre-development, 2) Development, 3) Production and deployment (P&D), and 4) Operations and support (O&S). Details of T&E Community involvement during each phase are discussed in Section 3.

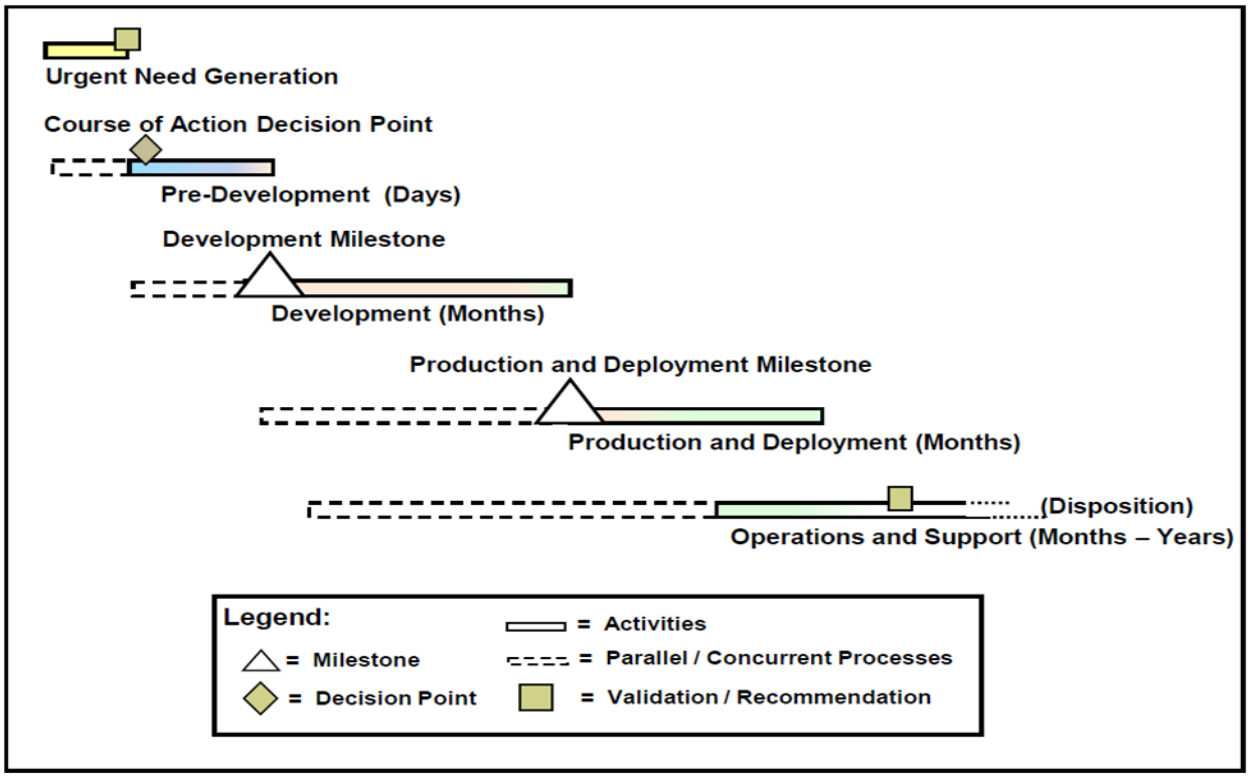

Figure 1. Urgent Capability Acquisition Model[4]

1.2.1. Pre-Development

The purpose of the pre-development phase is to assess and select a course or courses of action to field a quick reaction capability. The PM accomplishes this by developing an Acquisition Strategy. The phase begins upon receipt of either a validated UON, approval of a critical warfighter issue statement by the co-chairs of the Warfighter SIG per DoD Directive 5000.71, or a Secretary of Defense or Deputy Secretary of Defense Rapid Acquisition Authority determination document. During this phase, the Component Acquisition Executive (CAE) appoints a PM and a Milestone Decision Authority (MDA) for JUONs and JEONs assigned to the Component by the Executive Director, JRAC.

The PM identifies a Chief Developmental Tester (CDT) and charters a T&E Working-level Integrated Product Team (WIPT) or equivalent entity responsible for defining the T&E activities and data requirements needed to support the fielding of the urgent capability.[5] The CDT and the T&E WIPT should assist the PM in developing a T&E Strategy, to be documented in the Acquisition Strategy, and later, operational and live fire test plans for assessing how system concepts should be evaluated against operational mission requirements. Government test teams should be involved during this phase to assess the testability of the requirements, if possible, and

[4] 5000.81, December 31, 2019, pg. 10

[5] Different naming convention for the T&E WIPT such as Integrated Test Team are common and acceptable. This document will refer to any of these as the T&E WIPT.

document how testing will be accomplished to adequately demonstrate performance consistent with the UON. Government testers should request that PMs include provisions for sharing possible T&E data sources (e.g., contractor designs and test results, and any artifacts associated with prior testing) in the Request for Proposal (RFP), Statement of Work (SOO), or other contractual material.

Embedding OT&E early in the program helps achieve an efficient test program and should start with OT&E awareness and participation in the pre-development phase. This includes monitoring any contractor or government developmental tests that occur and understanding the pedigree and applicability of the results from developmental testing and any other prior testing that may be usable for operational evaluations. The test community should also identify any gaps in data that will inform test planning for post-deployment assessments.

1.2.2. Development

The MDA approves entry into the development phase. The purpose of the development phase is to evaluate the technical maturity of the preferred solutions and assess any associated risks to performance, safety, suitability, survivability, supportability (including software), and lethality (if appropriate) to determine if the fielding of the capability can be accomplished in the required timelines. The PM will provide the Acquisition Strategy and program baseline, to include the program requirements, schedule, activities, program funding, assessment approach, and intermediate decision points and criteria as the basis for this decision. A tailored T&E Strategy should be included as a part of the Acquisition Strategy. For programs on T&E oversight, operational and live fire test plans should be submitted to DOT&E for approval at this milestone. For programs not on oversight, these documents are approved at the Service level. The role of T&E during this phase is to:

- Assess whether key technologies and subsystems can deliver needed capabilities to reduce the urgent capability gap
- Help ensure that risks (technology, engineering, cyber, integration, safety, etc.) are understood and have been identified, documented, and communicated to the user

Close collaboration with the T&E community during this phase may help to increase the T&E program efficiency.

1.2.3. Production and Deployment

The MDA approves entry into the production and deployment phase. As required, the Services and PMs should conduct OT&E and LFT&E of production-representative systems. The MDA, in consultation with the supporting developmental, operational, and live fire test organizations, and with the concurrence of DOT&E, for programs on T&E oversight, will determine whether the capability has been adequately reviewed, performs satisfactorily, is supportable, and is ready for production and deployment, as well as when assessments of fielded capabilities are required.[6] The MDA will, in consultation with the user and the requirements validation authority, determine which deficiencies must be resolved and what risks can be accepted. The purpose of

[6] DoDI 5000.81, pg. 16

the production and deployment phase is to deliver a system to military units that fills the needed operational capability and satisfies mission needs as informed by the T&E program. For programs on T&E oversight, post-deployment assessment plans should be submitted to DOT&E for approval at this milestone.[7] For programs not on oversight, these documents are approved at the Service level. During this phase:

- The acquiring organization provides the warfighter with the needed capability, to include any required training, spares, technical data, solutions capabilities and limitations, temporary or permanent facilities or infrastructure, support equipment, maintenance, or logistics support necessary for operation
- DoD components coordinate with each other to verify number of items required
- The PM resolves previously identified deficiencies, as necessary

1.2.4. Operations and Sustainment

During the operations and sustainment phase, the PM executes a supportability strategy that meets materiel readiness and operational support performance requirements and sustains the capability in the most cost-effective manner over its anticipated total life cycle. Planning for operations and sustainment phase begins during pre-development and is documented in the Acquisition Strategy. The PM will conduct a post-deployment assessment in coordination with the OTA. No later than one year after the program enters this phase, the DoD component will appoint an official to conduct a disposition analysis which could include termination (demilitarization or disposal), sustainment for current contingency, or transition to a Program of Record.

1.3. Urgent Capability Acquisition Pathway T&E Overview

Figure 2 summarizes the T&E events and associated products as the program progresses through the major phases and milestones of the UCA Pathway. For a UCA, these events and products do not have to happen in sequence but may occur simultaneously to the extent necessary.

[7] DoDI 5000.81, pg. 17

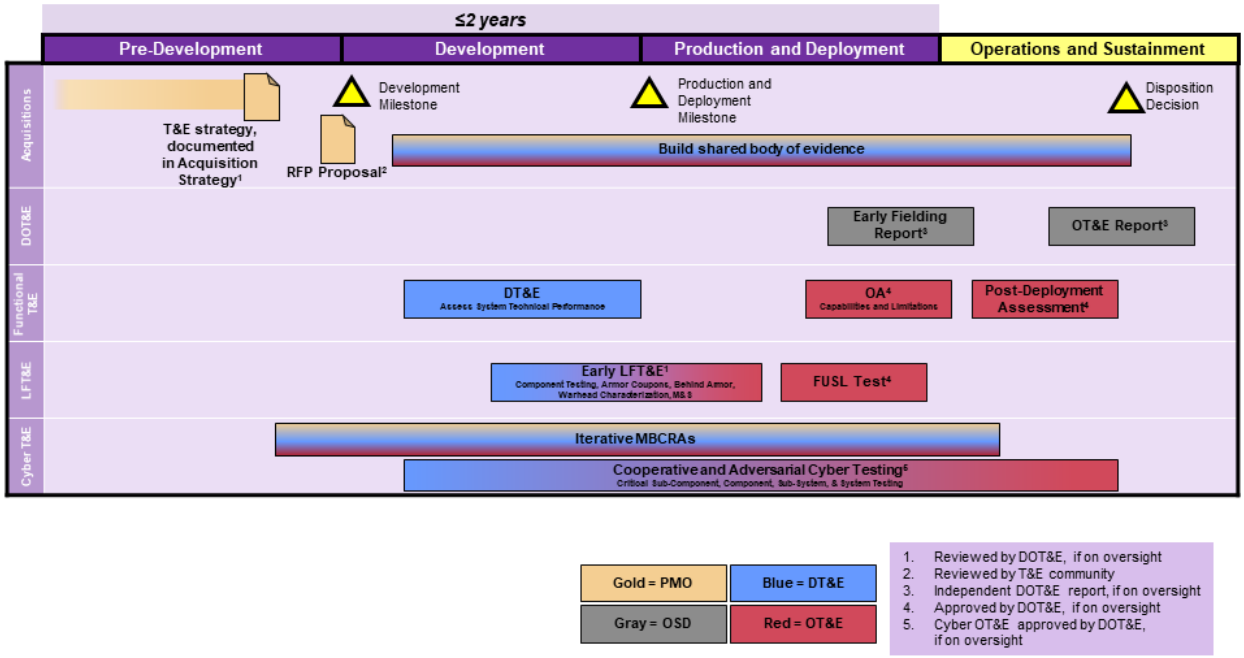

Figure 2. T&E Aligned with UCA Pathway

Test and Evaluation Working-level Integrated Product Team (WIPT)

The T&E WIPT should coordinate top-level planning for all products and test events shown in Figure 2 and the integrated schedule. The T&E WIPT defines the data requirements and T&E resources needed to adequately plan and execute the T&E program. The PM, in coordination with the T&E WIPT, should ensure the T&E requirements are included in RFPs and then the acquisition contract to support the availability and access to data needed to mitigate risk to the T&E program. In addition to contracts, when appropriate, the T&E WIPT should participate in acquisition program requirements refinement to ensure their measurability, testability, achievability, and relevancy to the operational mission. The T&E WIPT may request clarity from the requirements authority for any requirements found untestable.

The T&E WIPT includes representatives from all organizations responsible for providing or overseeing the T&E program development and its execution. In particular, the T&E WIPT should include representatives of test data stakeholders such as systems engineering, DT&E, OT&E, LFT&E, the user, product support, the Intelligence Community, and applicable certification authorities. The T&E WIPT should enable collaboration among stakeholders to maximize efficiency by planning and executing an integrated T&E program that leverages all test events for the purposes of meeting developmental, live fire, and operational evaluation objectives. The PM should ensure that results from all test events are captured in a shared data repository and available for all parties to use for independent assessment.

- Government test teams should strive to maintain a tempo for testing that supports the required decisions using various tools (e.g., digital engineering, sequential testing, automation).
- Government test teams should develop a tailored T&E program consistent with filling the urgent need with end-to-end mission threads and actual users.

- OT&E and LFT&E should concentrate on appropriately scoped, dedicated tests while integrating usable data and information that meet stakeholder needs, support operational evaluations, and inform decisions
- T&E WIPT should develop collaborative test data scoring to evaluate available test data for potential, to include in any OT&E and LFT&E assessments

2. Test and Evaluation Planning for Urgent Capability Acquisition Pathway

The purpose of T&E planning is to develop an approach to credibly demonstrate the extent to which the technical, functional, and operational capability meets the urgent need. As the planning process is critical and sets the conditions for success, all test teams should be involved early in the program to establish and document how testing and modeling and simulation (M&S) will support the analysis and evaluation of the system performance. The T&E WIPT should identify the measures to be used to evaluate the system as a part of the planning process, and then the data needed and conditions under which those data will be collected.

T&E planning should be digitized and automated as much as possible to support continuous development, integration, and delivery of system capabilities. Digital test management tools automate the process of test planning, scheduling, tracking, and reporting test events.

During the planning process, various stakeholders are developing documentation, summarized and defined in Table 1, to include the associated testing resources, tools, and infrastructure. This section explains the role of T&E in this process.

Table 1. Planning Documents

Artifact	Description	Developed by
Requirements Document	Specifies the validated operational requirements for the system to deliver the capability that meets operational performance criteria. Documents the need for a materiel approach to close a specific capability gap.	Sponsor
Acquisition Strategy, including T&E Strategy	Contains only essential information such as resourcing needs and sources, key deliverables, performance parameters, key risks and mitigation approaches, a production schedule and fielding schedule; contracting methodology and key terms; and preliminary plans for performance assessment of the capability and its supportability, to include software.	Program Manager with support from T&E WIPT
Request for Proposals	A document used in negotiated acquisitions to communicate government requirements, including those for T&E, to prospective contractors and to solicit proposals.	Program Manager
Tailored Test Plans	Defines the processes by which technical, functional, and operational performance will be tested and evaluated to satisfy developmental test and evaluation criteria, and to demonstrate operational effectiveness, suitability, survivability, and lethality.	T&E WIPT

2.1. T&E Content and Interests in Planning Documents

The success of T&E relies heavily on each of the documents outlined in Table 1. The T&E community should work with the acquisition community on these documents, especially the

acquisition strategy, to incorporate needed T&E information. This section highlights T&E content and involvement of test teams in the development of each of these documents.

2.1.1. Requirements Document

The T&E WIPT should be involved with the requirements documentation early, and determine whether the capability requirements from the UONs/JUONs/JEONs documents are defined sufficiently to assess testability and are relevant to the operational mission. The T&E WIPT should, if possible, ensure the clarity and measurability of requirements, that the measurements to establish technical feasibility are incorporated, and that requirements traceability exists from the capability-level requirements to the test events. These requirements may be further informed by supporting information found in the Validated Online Lifecycle Threat Report (VOLT) or theater intelligence assessments. Test teams should:

- Understand what constitutes the required mission effectiveness, suitability, survivability, and lethality and how that will be measured
- Determine whether cyber and interoperability needs are clearly defined in the requirements document

2.1.2. Acquisition Strategy

The Acquisition Strategy includes a tailored T&E Strategy, production and fielding schedule, contracting methodology and key terms, and an initial concept for operations and support, including support funding. To support the development of the Acquisition Strategy, the T&E community should collaborate on a tailored T&E Strategy with the PM. Early coordination of the strategy with the developmental, operational, and live fire test organizations is crucial to a streamlined process. The Acquisition Strategy should describe the development and decisions sufficiently to convey what information/data testing needs to provide, and when to adequately support the acquisition decisions and evaluate the technical, functional, and operational performance. The Acquisition Strategy should account for T&E when identifying resource needs. Test teams should:

- Ensure that T&E requirements and data delivery for the contractor are described at a high level and included with more detail in the RFP
- Ensure that time is allotted in the program schedule for independent government T&E
- Ensure that the Acquisition Strategy addresses a robust T&E program, to include a cyber T&E program
- Describe how data will be accumulated to build a shared body of evidence
- Include a tailored integrated decision support key (IDSK) that outlines the acquisition, technical, and program decisions and the data (e.g., CT, DT, LFT, OT, M&S) necessary to support those decisions (the IDSK may produce efficiencies across the T&E lifecycle by integrating DT, CT, and OT)

Early briefings of the T&E Strategy contained in the Acquisition Strategy by the Program Office and the OTA to Service stakeholders, the Under Secretary of Defense for Research and Engineering (USD(R&E)), and DOT&E for programs on the T&E Oversight List are required to

facilitate cross-organizational alignment and subsequent approval of operational and live fire test plans.

2.1.3. Request for Proposals (RFP)

The RFP defines what the government expects from the contractor. T&E expectations should be stated in the RFP and the acquisition contract. The Acquisition Strategy is a source document for the RFP and should be generated in time to support RFP development. The PM should consult with government test teams to ensure that the RFP supports data collection for government T&E. The test teams should ensure that the following items and activities are included as contract deliverables:

- Government access to contractor test events, test tools, test data repositories, and test environments
- Delivery of contractor-provided M&S tools to be used by government test organizations; these may include initial digital system models, component level reliability and availability models, or other M&S tools
- Contractor test plans, procedures, reports, and data
- Contractor support for government testing, including early live fire testing

2.1.4. Tailored Test Plans

2.1.4.1. Developmental Test Plans

For a UCA program, key elements of DT test planning are the tailoring of the plan and the synchronization of parallel test activities that support the urgency of the pathway. The key elements to be addressed are:

- Confirming the needed development and availability of existing technologies
- Characterizing performance, safety, suitability, survivability (including cybersecurity), supportability (including software), and lethality (if required), to support the MDA's production decision
- Supporting T&E, as appropriate, to facilitate transition to an enduring capability
- Maximum integrated T&E to the extent possible, to include cyber T&E to share data and resources

In general, this will involve increased embedding of T&E personnel on the development team to both tailor the activities and ensure the key elements are addressed.

2.1.4.2. Operational and Live Fire Test Plans

The T&E WIPT should ensure the operational and live fire test plans are tailored, streamlined, feasible, and support the UCA timeline and Acquisition Strategy. These plans serve as an agreement between the PM and the T&E stakeholders for T&E resources, and roles and responsibilities. The plans should capture the data requirements and processes by which the system will be tested and evaluated to enable the evaluation of the missions the system is intended to perform while considering relevant interfacing systems, threats, and operational environments. For a UCA program, test plans should focus the collection and analysis of data on only those T&E activities directly related to the theater of employment, mission context (types of

operations, threats, environments, users, and tactical employment), and technical requirements identified in the Urgent Operational Needs. Testing should include collaboration among all relevant stakeholders.

The T&E WIPT should ensure the operational and live fire test plans are executable and align with the T&E Strategy as defined in the Acquisition Strategy, T&E policy (DoDI 5000.89), and relevant T&E focus area chapters in the T&E Enterprise Guidebook. The operational and live fire test plans should define the conditions under which required data will be collected, and any tools required to manage the data and perform the testing. OT should consider informing the DT community of their OT data requirements and plans to meet their evaluation objectives, and vice versa. As such, DT should consider the operational relevance of the developmental tests to identify operationally representative deficiencies.

The Services will develop the LFT&E strategy that identifies the data elements and test events required to evaluate the survivability and/or lethality of a system. For programs under T&E oversight, operational and live fire test plans will be submitted to DOT&E for approval at the Development Milestone; post-deployment assessment plans will be submitted to DOT&E for approval at the Production and Deployment Milestone. DOT&E will ensure that testing is rigorous enough to rapidly evaluate critical operational issues. Test plans submitted for DOT&E approval are required to be delivered 60 days before the start of testing. For programs on OSD T&E oversight, DOT&E is the final approver for the operational and live fire test plans.[8]

2.1.5. Full-Up System-Level (FUSL) Waiver Process

Programs that intend to field urgent capabilities must still meet the requirements of 10 U.S.C. §§ 4172 to conduct "realistic survivability testing" or "realistic lethality testing" before proceeding to a fielding decision. The term "realistic survivability testing" means testing for vulnerability of the system in combat by firing munitions likely to be encountered in combat (or munitions with similar capabilities) at the system configured for combat. The DoD normally considers FUSL testing that meets the requirements of 10 U.S.C. §§ 4172 unless a waiver from FUSL is granted by DOT&E. Likewise, the term "realistic lethality testing" means firing production-representative munitions or missiles at targets, or classes of targets, under conditions sufficiently realistic to demonstrate the lethality effects the weapon is designed to produce. This is commonly referred to as end-to-end testing.

The Live Fire Test Law contains provisions for a waiver from the requirement for FUSL testing. The law states that any waiver must be approved as soon as is practicable after program initiation depending on the specifics of the acquisition schedule for a given system. The waiver package sent to Congress consists of two parts: certification that the waiver is needed (on the basis of both cost and practicality), and an alternative LFT&E plan for evaluating survivability or lethality. These two parts require coordination between the acquisition executive and DOT&E. Technically, there is no waiver from LFT&E, only from the requirement for FUSL or end-to-end testing.

The Live Fire Test Law requires that the alternative LFT&E plan has a basis in testing. Paragraph (c)(2) states that "the Secretary may waive the application of the survivability and

lethality tests…and instead allow testing of the system or program in combat by firing munitions likely to be encountered in combat at components, subsystems, and subassemblies…" Thus, the alternative LFT&E cannot be based solely on M&S and other kinds of analyses. The law names the following as potential data sources in addition to testing: design analyses, M&S, and analysis of combat data.

The Live Fire Test Law states, "At the conclusion of survivability or lethality testing, the Secretary of Defense shall submit a report on the testing to the congressional defense committees. Each report shall describe the results of the survivability or lethality testing and shall give the Secretary's overall assessment of the testing." Per DoD Directive 5141.02, the Secretary of Defense has delegated this responsibility to DOT&E.

2.2. T&E Resources

The operational and live fire test plans should document the T&E resources required to support DT&E, OT&E, and LFT&E. Programs should identify one-of-a-kind T&E resources and long-lead items early in the acquisition process, if they are necessary, to allocate adequate funding for development and use. The PM should coordinate with the T&E stakeholders for all test infrastructure and tools (e.g., models, simulations, automated tools, synthetic environments) that support acquisition decisions to be verified and validated, if possible, by the intended user or appropriate agency.

These resources include, but are not limited to:

2.2.1 Test articles (e.g., the system under test, test targets and expendables, threats)

The environments used to conduct testing for OT&E should represent the operationally realistic environment as closely as possible, including threats and realistic system use. This requires the interfacing systems that form the system of systems with the program of record.

2.2.2. Test facilities, infrastructure, instrumentation and ranges, to include cyber ranges and test team, software integration laboratories

Programs should use government T&E capabilities unless an exception can be justified as cost-effective to the government. PMs should conduct a cost-benefit analysis for exceptions to this policy and obtain approval through the operational or live fire test plan approval process before acquiring or using non-government test facilities or resources.

The test plans should also include any proposed use or application of embedded instrumentation, including for use to gather post-deployment data. The intent of embedded instrumentation is to facilitate data collection and system diagnostics without modifying the system's operational configuration. The PM should work with the T&E WIPT and other stakeholders to plan for the use of embedded instrumentation to collect system performance and diagnostic data whenever feasible, and should document a plan to obtain independent accreditation and certification in the operational or live fire test plans prior to use in assessments, if possible. This may include adding requirements for these embedded instrumentation in program RFPs, and other resourcing provisions.

2.2.3. Automated testing tools

Automated test execution tools may be part of the process of executing test cases or procedures on the system under test. The T&E WIPT and PM should work with the contractor to understand the contractor's tools, specifically their verification and validation plans, and the credibility of those tools for the intended use. It is encouraged for government test teams to be trained with these tools so they can use their outputs to inform evaluations. Such expectations should be clarified in the appropriate contractual provisions. In some cases, government test teams may become experts in the tools used by both the contractor and government. The automated tools should also provide visibility into any continuous testing so that stakeholders can gain confidence on the quality of the data received.

2.2.4. M&S, and their verification and validation plans

The test plans should document any planned M&S with the strategy and schedule, including the using organization, intended use, and the commitment to provide a verification and validation plan for each tool or test infrastructure asset. The PM should coordinate with the T&E WIPT to ensure the program RFPs include a requirement to deliver system M&S tools for use by government test organizations, if available. These may include initial digital system models, component level reliability and availability models, or other M&S tools.

2.2.5. Manpower and personnel

The test plans should include information about friendly and threat operational forces, data collectors, and subject matter experts that will be required to execute the T&E program.

2.2.6. Federal/State/local requirements, range requirements, and any special requirements

This may include requirements for explosive ordnance disposal, corrosion prevention and control, or frequency management and control.

2.2.7. Shared Body of Evidence and Data Repository

During the Pre-Development Phase, the PM should establish a shared data repository to store data and provide access to all test teams so that they can review, use, and input these test data to meet their objectives. This should enable the use of sequential testing, big data analytics, and other adaptive methods in support of T&E efficiencies. Throughout system development, T&E should be building a shared body of test evidence to support efficient technical, functional, and operational performance evaluations and adaptive T&E. Relevant test data gathered through all testing should be included in this test data repository. To enable adequate use of sequential testing and similar T&E planning and analysis methods, the T&E WIPT may leverage existing or develop collaborative test data scoring boards to evaluate integrated test data for potential to meet OT&E or LFT&E requirements. The OTA should maintain the authoritative record for these test data that meet OT&E or LFT&E requirements and will be considered in the operational evaluation.

2.2.8. Projected and actual level of funding

T&E funding in the resources section should be consistent with the cost estimate and budget submissions.

3. T&E During Urgent Capability Acquisition Pathway Phases

3.1. Pre-Development Phase

Specific T&E activities within the Pre-Development Phase include:

- Coordinate the T&E Strategy
- Actively participate in the development of the requirements and RFPs, as appropriate
- Inform the Development Milestone Decision

3.1.1. Coordinate the T&E Strategy

In coordination with the PM, the T&E WIPT should develop the T&E Strategy before progressing to the Development Phase. The T&E Strategy should plan for the major resources required for adequate T&E in accordance with the requirements, intended use of the system, and given the operationally relevant threat as outlined in the VOLT. The T&E Strategy should document any risks and describe how the PM will mitigate these risks. Documentation should be tailored, included in the Acquisition Strategy and relevant developmental, operational and live fire test plans, and consider:

- An integrated program schedule aligning T&E events and reporting requirements to the broader Acquisition Strategy and accounting for report generation timelines
- A tailored IDSK that links DT&E, OT&E, and LFT&E information to critical decisions
- Evaluation focus areas for DT&E, OT&E, and LFT&E
- Evaluation frameworks that present the overarching approach to DT&E, OT&E, and LFT&E, and identify opportunities for integrated testing
- Brief descriptions and objectives of individual test phases and events, and test limitations or constraints that could degrade or prevent evaluations tied to the operational need, safety, or mission capability
- Resources and test support requirements needed for all test phases and events, and funding sources for all test resources

3.1.2. Inform the Development Decision

The MDA approves the Acquisition Strategy, including the T&E Strategy, to inform the Development Milestone Decision. The PM provides the Acquisition Strategy and program baseline, to include the program requirements, schedule, program funding, assessment approach, test strategy, and intermediate decision points and criteria. The MDA reviews the information to determine that the capability can be fielded within two years, does not require substantial developmental effort, is based on proven and available technologies, and identifies any exceptions to these preferred conditions. The MDA approves the tailored acquisition baseline and testing approach, and initial quantities to be produced and assessed (DoDI 5000.81, December 31, 2019, Section 4.3). At the development milestone, if the system is on T&E oversight, the operational and live fire test plans should also be provided to DOT&E for approval.

3.2. Development Phase

Major T&E activities in the development phase include:

- Review the Logistics Risk Assessment
- Conduct government T&E, to include developmental tests in collaboration with Operational Test Agencies and LFT&E to:
    - Demonstrate that preferred technology is feasible, affordable, supportable, and satisfies requirements in a mission context, to the maximum extent possible
    - Confirm maturity, as needed, of technologies identified by the MDA at entry into development
    - Gain user feedback by integrating operational users as soon as possible
    - Conduct cyber testing
    - Obtain authorization for IT systems in accordance with DoDI 8510.01, Risk Management Framework for DoD Information Technology
- Coordinate VV&A plans, if necessary
- Coordinate operational and live fire test plans, including the OA
- Inform the Production and Decision point

3.2.1. Review the Logistics Risk Assessment

A logistics risk assessment is an analysis of a program's product support strategy across the system lifecycle, including sustainment costs. During this phase, the PM, supported by the T&E community (and when practical, an independent and impartial team of Subject Matter Experts) should conduct an abbreviated logistics risk assessment as part of life cycle considerations. The PM finalizes sustainment requirements and decomposes sustainment requirements for use during the logistics risk assessment.

3.2.2. Conduct Government T&E

Developmental T&E. Government testers should continue to leverage contractor-conducted DT&E when appropriate to supplement government DT&E. Involving users in government-conducted DT&E also encourages integrated T&E activities by increasing the relevance of the data to the OT&E stakeholders. The OTAs should participate in the planning and execution of developmental T&E to adequately leverage the data and inform the operational T&E.

DT&E activities should be streamlined and focused on assessing the technical performance of the system to reduce the capability gap. Initially, this focuses on reducing uncertainty and risk concerning the maturity and availability of components and technologies planned for the system. Much of this will be testing at the component level, yet it is still essential that this be done in a mission-informed context. That is, components should be tested under the technically stressing conditions likely to be imposed by operations. Similarly, system-level developmental testing, when possible, should be conducted in an environment similar to the one in which the system will be employed, and in a mission-oriented context using service members from the user community who will operate the system once fielded. This should include testing the system in its expected cyber-contested environment. Early integration of both component and system

testing in this fashion are essential because of the compressed acquisition timeline. The early integration of operational users should be resourced-for in the Acquisition Strategy.

Early integration of operational considerations and, where possible, operational users in T&E activities, is critical in reducing the amount of time required to find and fix system/performance deficiencies and safety concerns and then retest, capturing immediate feedback and recommendations from the user, and reducing overall program risk. Additionally, multiple and iterative T&E events may be necessary to ensure the user and developer can substantiate that a proposed solution is feasible and supportable, satisfies validated urgent capability requirements, and identifies and mitigates operational and accidental risk factors.

Representatives from the operational and developmental T&E community should be fully embedded and participate in these events, with access to all records and data to ensure shared understanding of test results, as well as reduce the amount of time required for dissemination of information and data. The T&E WIPT should codify responsibilities and data-sharing obligations as well as implement program protection measures to prevent disclosure of critical information.

Live Fire Test and Evaluation. LFT&E generates information that supports the evaluation of a system's operational effectiveness, suitability, survivability and lethality. The DOT&E approves LFT&E test plans (including survivability and lethality test plans) for covered systems as defined in 10 U.S.C. §§ 4172. DOT&E also approves the quantity of test articles procured for all LFT&E test events for any system under LFT&E oversight. During this phase, LFT&E activities should be narrowly scoped and focused on the new capability defined in the UONS, and the threats likely to be encountered. Testing may include testing of components and subsystem as well as early M&S assessments of survivability or lethality to provide a baseline from which system improvements to survivability or lethality can be made or measured.

3.2.3. Inform the Production and Deployment Decision

At the Production and Deployment milestone, the PM informs the MDA of the results of development activities, pre-deployment performance, and the program assessment to-date. The PM will present plans to transport, deploy, and sustain the capability, conduct post-deployment assessments, and train maintenance and operating personnel to the MDA for approval. The MDA, in consultation with the supporting developmental and operational and/or live fire test organization, and with input from DOT&E for programs under DOT&E oversight, will determine:

- Whether the capability has been adequately reviewed, meets the desired capabilities in the UONS, performs satisfactorily, is supportable, and is ready for production and deployment
- When assessments of fielded capabilities are required

Using the provided information, the MDA decides whether to produce and, in coordination with the requester/user, field the capability, approves the updated Acquisition Strategy, and documents the production decision in an Acquisition Decision Memorandum (ADM). MDAs may authorize production at the same time development is approved.

3.3. Production and Deployment Phase

Major T&E activities within the Production and Deployment phase may include:

- Testing the mitigation of critical deficiencies
- Update VV&A plans, if necessary
- Coordinate post-deployment assessment plans
- Complete Government T&E Testing, to include the Operational Assessment (with a cybersecurity assessment) and LFT&E (to include FUSL) informed by the most recent intelligence, threat, and concept of operations/operational mode summary/mission profile documents for changes that may affect the validity of the characterization
- Deliver the OA and LFT&E reports

3.3.1. Complete Government T&E

Operational Test and Evaluation. The Service OTA conducts the Operational Assessment (OA) in accordance with an approved test plan. OAs include trained military users employing the system in operationally representative conditions, in a mission-ready system configuration against representative threats. Because of the accelerated timeline, OA execution will likely differ from other acquisition pathways in the following ways:

- Testing may occur simultaneously in overlapping phases (Development and Production and Deployment)
- Testing focuses on the necessary testing for the specific theater of employment, anticipated threats, and mission set to meet the urgent operational need
- First unit equipped is the test unit

For programs on T&E oversight for operational and live fire testing, after test completion, DOT&E will produce an OA report.

Live Fire Test and Evaluation. The Production and Deployment Phase of LFT&E typically includes system-level and FUSL tests, unless a waiver from FUSL has been approved. Live Fire Testing and M&S are used to support an evaluation of the survivability in a contested environment, to include susceptibility to attack, vulnerability to a hit, the effect(s) of those vulnerabilities on residual mission capability and crew casualties, and recoverability from the hit.

Because of the UCA accelerated timeline, LFT&E execution will likely differ from other acquisition pathways in the following ways:

- Testing may occur simultaneously in overlapping phases (Development and Production and Deployment)
- Testing focuses on the necessary testing for the specific theater of employment and mission set to meet the urgent operational need
- Waiver of FUSL or end-to-end testing may allow production and deployment of systems to occur prior to completion of LFT&E

3.3.2. Deliver OA and LFT&E Reports

At decision points identified in the acquisition strategies, a report will be provided to the decision maker. For interim assessments, the report should document the status of the system's capability to meet operational effectiveness, suitability, survivability, and lethality requirements. The report should also highlight observed capabilities and deficiencies. If the system proceeds to operational use at this stage, DOT&E will provide an Early Fielding Report, which will report on whether the T&E results confirm that the system is operationally effective, suitable, survivable, and lethal, if applicable. Reports will be required by the Service from both the lead developmental test organization and the OTA. For programs on T&E oversight, DOT&E will submit an independent OA (typically an Early Fielding Report) and live fire reports to the Secretary of Defense, the Office of the Under Secretary of Defense for Acquisition and Sustainment, congressional defense committees, and Military Service secretaries, as well as the Service acquisition executives. The Service OTA provides an independent report assessing the capabilities and limitations of the required system to meet the urgent operational need. For T&E oversight programs, the Service OTA provides the report to DOT&E (DoDI 5000.89, November 19, 2020 Section 6.4.c).

3.4. Operations and Support Phase

Planning for O&S begins during pre-development and is documented in the Acquisition Strategy. Major T&E activities within the O&S phase may include:

- Post-deployment assessment
- Capability improvements
- Disposition analysis

3.4.1. Post-Deployment Assessment

A post-deployment assessment should be conducted by the OTA after deployment. If practical, the OTA will conduct the assessment in the field using representatives from the supporting operational test organization. If not, the OTA may use alternate means such as surveys to collect user feedback or other DoD component feedback. DOT&E will independently review and approve all post-deployment assessment approaches for all programs under T&E oversight for operational and live fire testing following submission at the Production and Deployment milestone. For programs not on T&E oversight, these plans should be approved at the Service level.[9]

[9] 5000.81, pg. 13

3.4.2. Capability Improvements

The PM or user community may propose urgently needed capability improvements to address deficiencies identified during the OA. If the recommended improvements fall within the scope of the initial requirement, the procedures stated in DoDI 5000.81 may be used by the PM to acquire the improvement. If the recommended improvement falls outside the scope of the initial requirement, a new or amended requirement document from the PM may be needed. For programs on DOT&E oversight, a test plan may be required.

3.4.3. Disposition Analysis

Post-deployment arrangements are known as the disposition of the capability. The disposition analysis considers the performance of the fielded capability, mishap data, long-term operational needs, and the relationship of the capability to the component's current and planned inventory of equipment. The analysis will also consider the continuation of non-materiel initiatives, the extension of science and technology developments related to the fielded capability, and the completion of MDA-approved and funded materiel improvements. Based on the analysis, a disposition official, appointed by the DoD component, will recommend that the capability be demilitarized and disposed of, will continue for the current contingency, or serves an enduring purpose and may be transitioned to a program of record.