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**An Actionable Framework & Interactive Web Application
for Transitioning Technology to the Warfighter: The
Transition Maturity Framework (TMaF) and
Tech2PEO/PAE**

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ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF ACQUISITION, FINANCE, AND MANPOWER
NAVAL POSTGRADUATE SCHOOL

An Actionable Framework & Interactive Web Application for Transitioning Technology to the Warfighter: The Transition Maturity Framework (TMaF) and Tech2PEO/PAE

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Abstract

MITRE developed the Transition Maturity Framework (TMaF) and Tech2PEO/PAE in partnership with the Operational Energy-Innovation Directorate (OE-I) within the Office of the Under Secretary of War for Acquisition and Sustainment (OUSW(A&S)). The TMaF offers program managers a standardized means to evaluate, balance, and monitor transition maturity. For innovators, it provides actionable guidance to inform strategic resourcing/execution of critical activities needed to navigate transition. Starting with its FY25 call for proposals, OE-I fully integrated the TMaF into its proposal solicitation, selection, and execution management processes. As OE-I’s FY25 cohort executes their projects, periodically reporting progress via TMaF assessments, they are creating a longitudinal, technology maturation data set. This TMaF data stands to be a key resource to inform decision-makers on how best to invest in maturing technologies to increase the likelihood of their successful transition to warfighters. As OE-I’s TMaF rollout continues, it is working with MITRE to create complementary transition tools, such as Tech2PEO/PAE. Tech2PEO/PAE is designed to help innovators work through a common barrier to transition: identifying and connecting with a relevant program. Both the TMaF and Tech2PEO/PAE are available via MITRE’s Acquisition in the Digital Age site at <https://aida.mitre.org/tmaf>.

Keywords: technology transition; readiness; partnerships; acquisition; industrial base; assessment; risk; small business participation; acquiring emerging technologies; commercial integration



Paper

The Department of War (DoW) invests billions of Research, Development, Test and Evaluation (RDT&E) dollars into emerging technologies to maintain U.S. military superiority over our adversaries. This funding supports technology development and transition out of the laboratory, into an acquisition program, and on to warfighter use. Too often, however, groundbreaking DoW technologies fail to advance to full-scale deployment because navigating transition requires DoW domain knowledge often outside the strengths of a typical Science and Technology (S&T) project team (e.g., manufacturing, cost estimation, defense acquisition, requirements, and operator training). This knowledge gap increases an S&T project's risk of falling in to the "Valley of Death" because they underestimate the time and resourcing necessary to execute critical activities to meet the technology acceptance criteria of essential transition stakeholders (e.g., acquisition program managers, the requirements community, and warfighters). Effective technology transition management therefore is critical to rapidly and cost-effectively delivering advanced capabilities to the warfighter.

Here we present two transition management tools created by a multidisciplinary team of warfighters and subject matter experts in defense acquisition and technology research and development: the Technology Maturity Framework (TMaF) and the Technology-to-Program Executive Office/Portfolio Acquisition Executive (Tech2PEO/PAE) application, both accessible at aida.mitre.org/tmaf.

MITRE developed the TMaF and Tech2PEO/PAE in partnership with the Office of the Under Secretary of War for Acquisition and Sustainment's (OUSW(A&S)) Operational Energy-Innovation Directorate (OE-I; Jackson, 2025; Zides et al., 2025). OE-I invests in the development and transition of innovative operational energy solutions to meet joint requirements (OUSW(A&S) Operational Energy-Innovation Directorate, 2026). OE-I recognizes that the challenge of transitioning their technologies requires more than technical and manufacturing readiness. As a result, the TMaF is designed to provide an actionable toolkit to ensure a technology is not only technically proven and manufacturable, but also favorably positioned for acquisition, aligned to a funded requirement/operational problem, and progressing toward a state where warfighters are both willing and able to adopt it.

The TMaF (see Figure 1) consists of five dimensions, each measured on a 1–9 scale, that align with the technology acceptance criteria of key defense acquisition stakeholders: joint/service innovation execution organizations, industrial base production, defense acquisition program offices, the defense requirements/operational problems community, and warfighters. Of the five TMaF dimensions, Technology Readiness Level (TRL), Manufacturing Readiness Level (MRL), and Transition Confidence Level (TCL) were preexisting. TRL, MRL, and TCL primarily account for the priorities of innovation execution organizations, industrial base production, and acquisition programs, respectively, but do not fully capture the priorities of the requirements community and warfighters. To close this gap, MITRE and OE-I developed the Requirements and Warfighter Readiness Levels (RRL and WRL). RRL assesses a technology's alignment to a validated/funded requirement or key operational problem. WRL measures the extent that warfighters are willing and able to adopt a technology. It evaluates solution adoption in a manner aligned with the fundamental tenants of Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) analysis. Together, the TMaF dimensions provide a standardized means to think "beyond TRL" and manage transition holistically through thoughtful alignment with requirements/key operational problems and early, meaningful engagements with warfighters and acquisition programs.



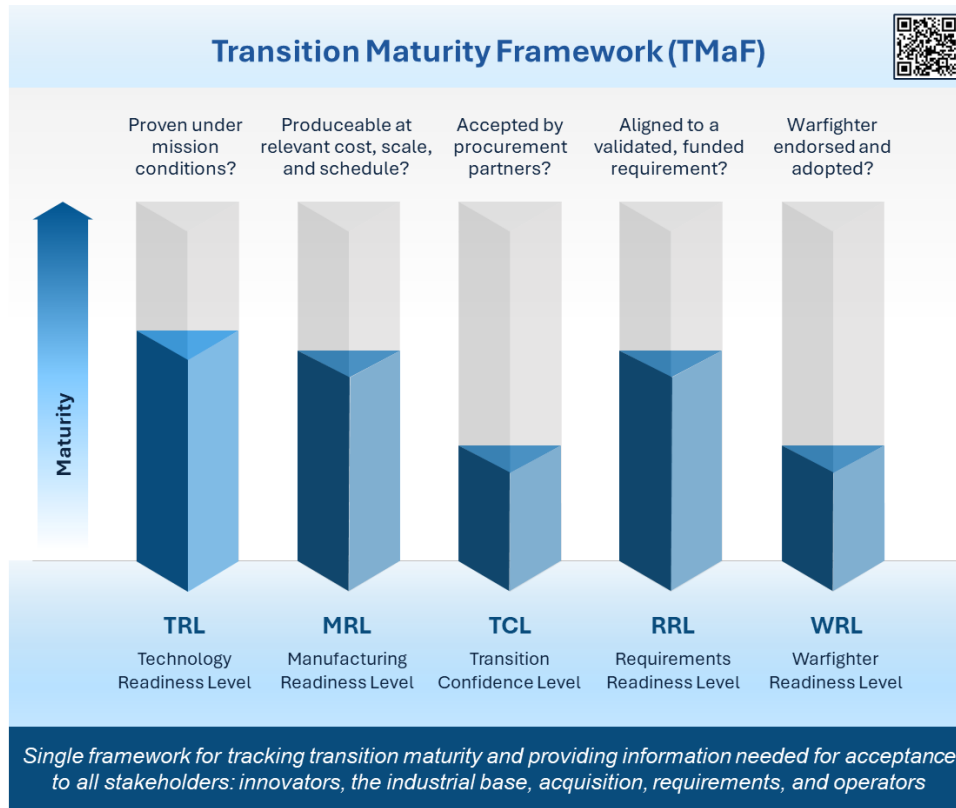


Figure 1. The Transition Maturity Framework

Throughout its development, OE-I emphasized the importance of the TMaF being actionable. Thus, for each TMaF readiness dimension and level, the framework provides representative critical activities needed to progress to the next level. These activities offer innovators a starting point to develop a strategic roadmap for navigating their project through the transition milestones captured by the TMaF levels. For example, to progress from WRL 5 to WRL 6, the TMaF provides four critical activities, including “involve warfighters in shaping policies and procedures to ensure practicality and acceptance.” This example exhibits the three essential elements of TMAF critical activities. It indicates which stakeholder to engage (“warfighters”), when to engage them (“when shaping policies and procedures”), and the engagement’s goal (“ensure practicality and acceptance”). Through its combination of levels and critical activities, the TMaF provides a standardized means to baseline, act upon, track, and certify a technology’s maturation that enables innovators and RDT&E portfolio managers to understand a technology’s maturity level and strategically allocate resources to manage its transition. Tables detailing TMaF levels and critical activities are available via MITRE’s Acquisition in the Digital Age website’s TMaF page (<https://aida.mitre.org/tmaf>).

Starting with its FY25 call for proposals, OE-I established TMaF entry/exit levels for their programs and fully integrated the TMaF into its proposal solicitation, selection, and execution management processes. Funded project teams use the TMaF to communicate transition progress to OE-I and to advance their technology’s transition through execution of critical activities such as targeted stakeholder outreach, partnerships (e.g., with the industrial base), and warfighter engagements/demonstrations. OE-I uses the TMaF data generated by project teams for Congressional reporting in the Operational Energy Management and Innovation (OMNI) tool, an NDAA-mandated database for tracking transition of OE technologies across the DoW.



As OE-I continues to integrate the TMaF into its organizational processes, it is proactively working with MITRE to collect/address user feedback and to develop complementary tools for reducing transition barriers, such as Tech2PEO/PAE. Tech2PEO/PAE is an interactive web application that helps technology developers connect with acquisition organizations. Users input a short description of the technology and, if desired, their technology's corresponding TMaF assessment. The software then generates a curated list of PEOs, and soon, Portfolio Acquisition Executives (PAEs), their associated contact information, and relevant funding opportunities. Interested users can register for a Tech2PEO/PAE account by emailing tech2peo@mitre.org. The TMaF stands apart from earlier technology readiness frameworks with holistic, actionable guidance for transition management, incorporating two new readiness dimensions, and integrating complementary tools such as Tech2PEO/PAE to reduce transition barriers.

As the first OE-I cohort using TMaF executes their projects, periodically reporting progress via TMaF assessments, they are creating a longitudinal data set. Already, OE-I is establishing the analytic infrastructure necessary to capture and fully leverage this data. This kind of data could be a key resource to RDT&E portfolio managers and the broader defense acquisition ecosystem. It offers the opportunity for analysis of, for example, a program manager's return on investment (based on the resourcing required to execute TMaF critical activities); transition management at portfolio and project levels; and key determinants of transition success, which can inform/motivate the development of complementary tools like Tech2PEO/PAE to address transition barriers. These TMaF-enabled analytics have the potential to inform decision-makers on how best to invest in maturing emerging technologies to increase the likelihood of successful transition to warfighters.

Get started with the TMaF and Tech2PEO/PAE today via the resources linked in Figure 2 and connect with questions/feedback by emailing tmaf@mitre.org!



Access TMaF and Tech2PEO/PAE through MITRE's Acquisition in the Digital Age (AiDA) website

Listen to a Federal News Network Interview on TMaF with MITRE MNS SVP & GM, Keoki Jackson

Read our Defense Acquisition Magazine Article

Figure 2. Engage with the TMaF and Tech2PEO/PAE via Resources Hosted at <https://aida.mitre.org/tmaf>

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