# An Actionable Framework & Interactive Web Application for Transitioning Technology to the Warfighter

## The Transition Maturity Framework (TMaF) & Tech2PEO/PAE

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Panel 6: Guarding the Machine: Preserving Human Agency and Market Integrity in the AI Era

https://aida.mitre.org/tmaf

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# Outline

- Overview of the Transition Maturity Framework (TMaF)
- Removing Transition Barriers
  - Tech2PEO/PAE
- Opportunity: TMaF in the AI Era
  - Accountable, Transparent, Interpretable & Efficient/Effective
- Resources to Get Started with TMaF & Tech2PEO/PAE

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# Overview of the Transition Maturity Framework (TMaF)

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# The Challenge

## Breakthrough technologies fail to reach the field.

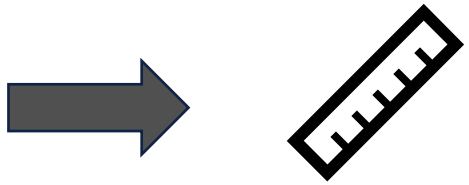
## Common Barriers:

- Lacking clear alignment to operational problem
- System and program integration challenges
- Lacking warfighter endorsement


**MITRE & the Operational Energy-Innovation Directorate (OE-I) developed the Transition Maturity Framework (TMaF) to empower programs & innovators to overcome these barriers.**

# Motivation for the Transition Maturity Framework (TMaF)

- Track maturation from applied research to transition to use



***standardized maturity scales***

- Provide information needed by all stakeholders for technology acceptance

***Aligned to transition stakeholder technology acceptance criteria***

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**For Program Managers:**
Offers a standardized means to evaluate, balance, and monitor transition maturity

**For Innovators:**
Informs strategic evaluation of partnerships as well as resourcing and execution of critical activities needed to navigate past transition "ditches of death"

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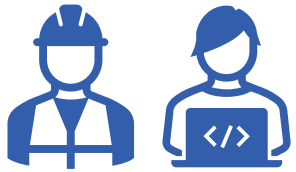
# *Innovation is just the first step*

**To achieve successful technology transition, innovators must understand / meet technology acceptance criteria of multiple stakeholders**

**Will you be a partner to transition this technology?**

**Tech Innovator**

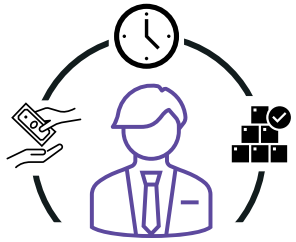


*Yes, if you have a customer*

**Industrial Base Production**

*Yes, if it can work under mission conditions*

**Joint/Service Innovation Execution Organization (R&D)**



*Yes, if you can deliver it affordably, at scale and on time*

**Defense Acquisition Program Office**

*Yes, if it solves a key operational problem*

**Defense Requirements / Operational Problems**

*Yes, if it helps me do my job*

**Warfighter**

*Inability to meet these stakeholder criteria risks the technology falling into a "ditch of death"*

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# What Actually Drives Transition?

## Five Key Readiness Areas:

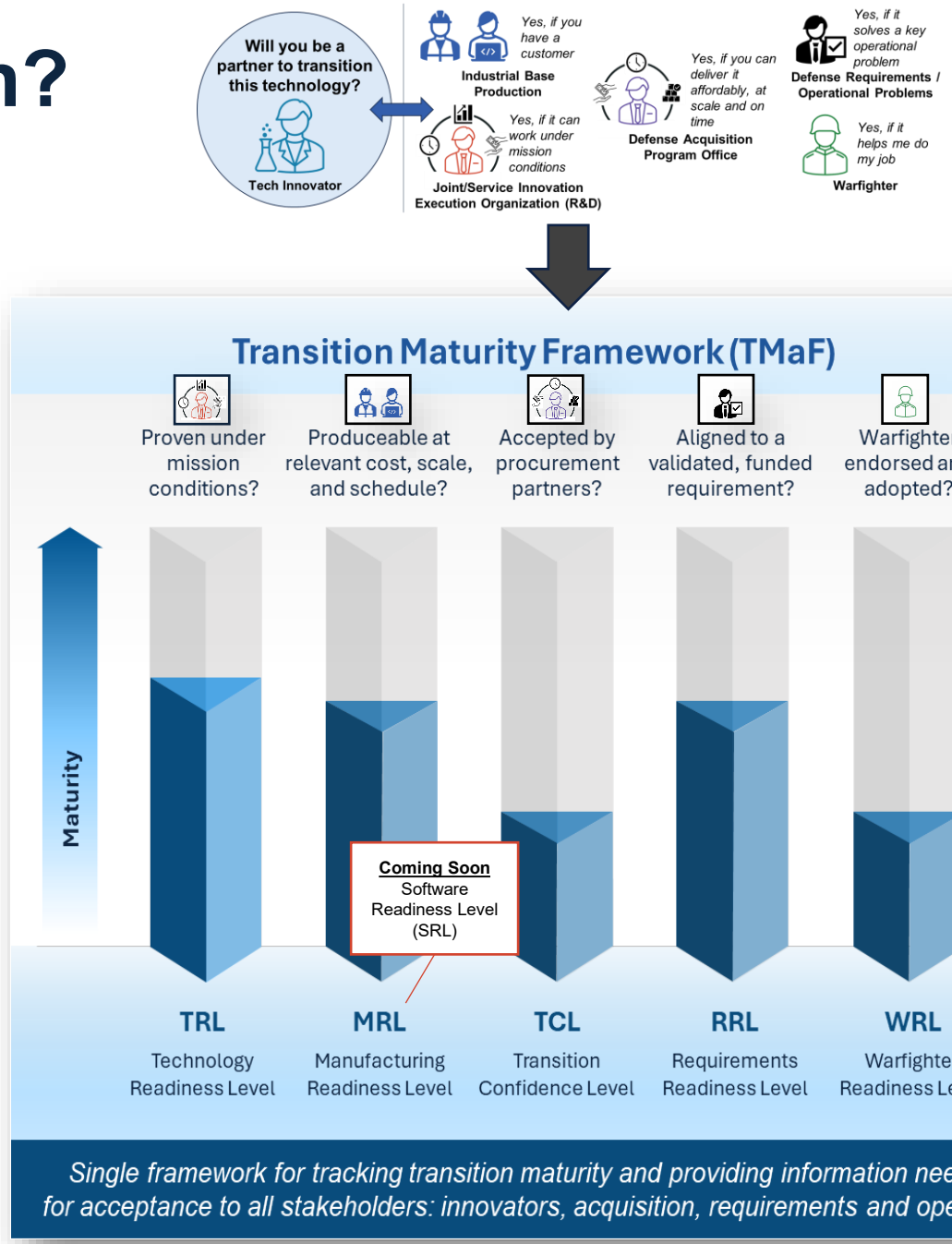
*Pre-existing*

1. **Technology Readiness (TRL)**
   - ✓ Does the capability (reliably) work in a relevant environment?
2. **Manufacturing Readiness (MRL)**
   - ✓ Can it be produced / implemented at scale?
3. **Transition Confidence (TCL)**
   - ✓ Is there an acquisition partner prepared to accept it?

*Developed by MITRE & OE-I*

4. **Requirements Readiness (RRL)**
   - ✓ Does the capability meet a validated, operational need?
5. **Warfighter Readiness (WRL)**
   - ✓ Are warfighters willing and able to use the technology (DOTMLPFP)?

- ***Note:*** **Software Readiness Level (SRL) Coming Soon!**

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# An Actionable Framework

***Example:***
***Warfighter Readiness Level Table***

| Scale | Warfighter Readiness Level (WRL): Warfighter endorsed and adopted? | OE-I Critical Activities |
|---|---|---|
| 9 | **Deployment and Cultural Integration**<br>• The project is fielded to operational units and becomes an integral part of the military culture. Warfighters endorse its use, and it is fully embedded in Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P). This ensures the technology is fully embraced and operationally effective. | • Conduct comprehensive training sessions to ensure warfighters are fully proficient with the technology<br>• Gather and document warfighter endorsements and testimonials to support cultural integration<br>• Review and update DOTMLPF-P to reflect the technology's integration |
| 8 | **Training and Warfighter Integration**<br>• Training programs are developed to familiarize warfighters with the technology. Projects with a warfighter on the development team progress quicker, as they provide input from the end-user perspective during the design phase. This ensures warfighters have the necessary skills and knowledge to effectively use the technology. | • Develop training programs and workshops to familiarize warfighters with the technology<br>• Include warfighters on the development team to provide input from the end-user perspective<br>• Conduct simulations and exercises to explore the technology's capabilities and gather feedback<br>• Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises (https://cristlgov.com/auth/signup) |
| 7 | **Operational Trials and Commitment to POM**<br>• The technology is deployed in limited operational trials, with warfighters providing feedback on usability and effectiveness. Money is allocated to purchase the project at scale, supporting the warfighter's ability to execute the mission. This involves warfighters in the evaluation process to ensure the technology meets their needs. | • Organize limited operational trials with warfighters to gather feedback on usability, training, and effectiveness<br>• Secure funding commitments for full-scale deployment by demonstrating value and impact<br>• Document and analyze feedback to refine the technology, improve training TTP's and ensure it meets operational needs<br>• Consider leveraging the OSD Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises ((https://cristlgov.com/auth/signup) |
| 6 | **Adoption/Training Development**<br>• The technology is adopted across relevant units, with continuous adaptation and support to address emerging challenges. Project developers coordinate with educational institutions to develop and mature training packages, ranging from "on the job training" to curriculum development for new career fields. This ensures the necessary infrastructure and training are in place to support widespread use. | • Develop, mature, and distribute detailed training packages in collaboration with CCMDs, SEOs, and educational institutions<br>• Establish a support system for continuous adaptation and troubleshooting to address emerging challenges<br>• Ensure infrastructure is in place to support widespread use, including facilities and logistics<br>• Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises [illegible] |
| 5 | **Policy Development and Field Demonstration**<br>• Policies and procedures are developed to support the technology's integration, with warfighters involved in shaping guidelines and training. This shaping includes deployment, employment, and disposition policies as well as the affiliated initial design and development of the Mission Essential Task List (METL) inputs. The project is inserted into a collective training event under operational conditions to understand its fit within doctrine and Tactics, Techniques, Procedures (TTPs). Feedback is captured for senior leaders making acquisition decisions. | • Involve warfighters in shaping policies and procedures to ensure practicality and acceptance<br>• Conduct field demonstrations under operational conditions to validate the technology's fit within doctrine<br>• Capture and analyze feedback from demonstrations to inform policy & training development and support acquisition decision-making in concert with CCMD and SEO POCs<br>• Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises (https://cristlgov.com/auth/signup) |
| 4 | **Leadership Advocacy and Endorsement**<br>• Leadership and education efforts focus on building advocacy among key personnel. Leaders are trained to understand and communicate the technology's benefits. This is a critical step to transition from a science and technology project to a program of record, indicating support by end-users for adoption and purchase at scale. | • Train leaders to understand and advocate the technology, emphasizing benefits and applications<br>• Secure endorsements from key leadership, CCMDs, and SEOs to support transition to a program of record<br>• Develop communication materials to effectively convey the technology's value to users and stakeholders<br>• Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises (https://cristlgov.com/auth/signup) |
| 3 | **Lab/Field Integration**<br>• The technology is assessed for its fit within existing organizational structures, with adjustments made to align with current processes. Tests allow developers to gather diagnostic data, with warfighter participation critical for replicating realistic conditions and offering operationally informed feedback. | • Conduct lab and field tests with warfighter participation to gather diagnostic data and feedback<br>• Assess the technology's fit within existing organizational structures and make necessary adjustments<br>• Begin planning with CCMD and SEO POCs for integrating the technology into existing inventory and logistics systems<br>• Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises (https://cristlgov.com/auth/signup) |
| 2 | **Initial Engagement**<br>• Warfighter consultation and validate end user requirements. Warfighters engage in discussions about the technology's implications for Doctrine and Organization. Service labs and industry must gain support from Combatant Commands (CCMDs) and/or Service Energy Offices (SEOs), demonstrated by a letter of support. This assesses how the technology fits within existing command structures and roles. | • Engage warfighters in discussions about the technology's implications for Doctrine and Organization<br>• Validate requirements the S&T project team has curated during RRL research activities<br>• Secure letters of support and POCs from CCMDs and/or Service Energy Offices to demonstrate stakeholder backing<br>• Assess how the technology fits within existing command structures and roles |
| 1 | **Awareness and Alignment with Requirements**<br>• Warfighters are introduced to the technology concept, with initial discussions and briefings raising awareness and gauging interest. DOD innovation investments are aligned with warfighter needs, ensuring the technology aligns with current and future operational concepts. This could be a "technology pull" if Warfighter has an existing requirement the technology solves or could be a "technology push" if there is not a codified, existing requirement. | • Engage Warfighters from both the CCMDs and the Services' Supporting Commands to ensure joint mission execution and Organize/Train/Equip (O/T/E) presentation of forces perspectives<br>• Conduct initial briefings and discussions to raise awareness and gauge interest in the technology<br>• Align technology development with DOD innovation investments and warfighter needs<br>• Explore how the technology aligns with current and future operational concepts<br>• Leverage this information to conduct RRL research to identify initial requirements as possible |

## *WRL 5 Definition*

**5**

- Policies and procedures are developed to support the technology's integration, with warfighters involved in shaping guidelines and training. This shaping includes deployment, employment, and disposition policies as well as the affiliated initial design and development of the Mission Essential Task List (METL) inputs. The project is inserted into a collective training event under operational conditions to understand its fit within doctrine and Tactics, Techniques, Procedures (TTPs). Feedback is captured for senior leaders making acquisition decisions.

## *WRL 5 Critical Activities*

- Involve warfighters in shaping policies and procedures to ensure practicality and acceptance
- Conduct field demonstrations under operational conditions to validate the technology's fit within doctrine
- Capture and analyze feedback from demonstrations to inform policy & training development and support acquisition decision-making in concert with CCMD and SEO POCs
- Consider leveraging OSD the Warfighter Touchpoint Tool for collecting feedback at demos/experiments/exercises (https://cristlgov.com/auth/signup)

**The TMaF levels provide project teams with a set of transition milestones.**

**Critical activities offer them a starting point to develop a plan to strategically address transition challenges as they move through those milestones.**

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# Transition Maturity Framework in Practice

**Sponsor Use & Impact:**

FY25, Operational Energy—Innovation Directorate (OUSW(A&S)), fully integrated TMaF into proposal solicitation, selection, and execution management processes

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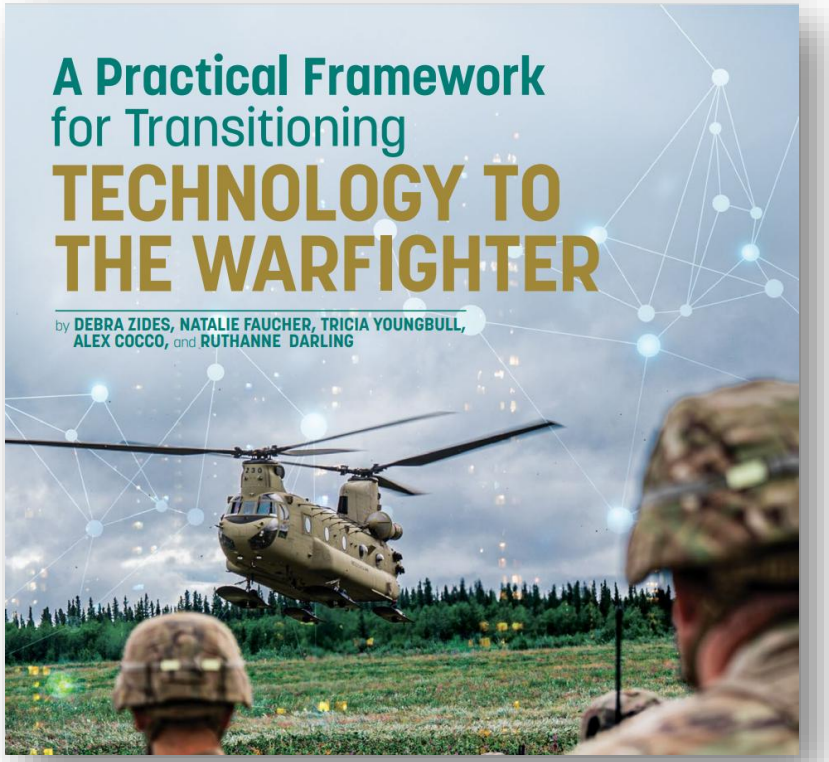
*"It takes a team effort to succeed and the TMaF provides a consistent and actionable way to move forward. It puts the power of DoW, its people and processes, not only on the same page, but the right page and allows everyone to coordinate and move projects forward successfully…* ***The TMaF clarifies and simplifies the processes and moves everyone collaboratively toward the common objective*** *– state of the art, fielded technology that assists the warfighter in achieving deterrence and battlefield overmatch."*

***– Ms. RuthAnne Darling, OE-I Director***




Sept.-Oct. 2025 Defense Acquisition Magazine
https://www.dau.edu/library/damag/september-october2025/practical-framework

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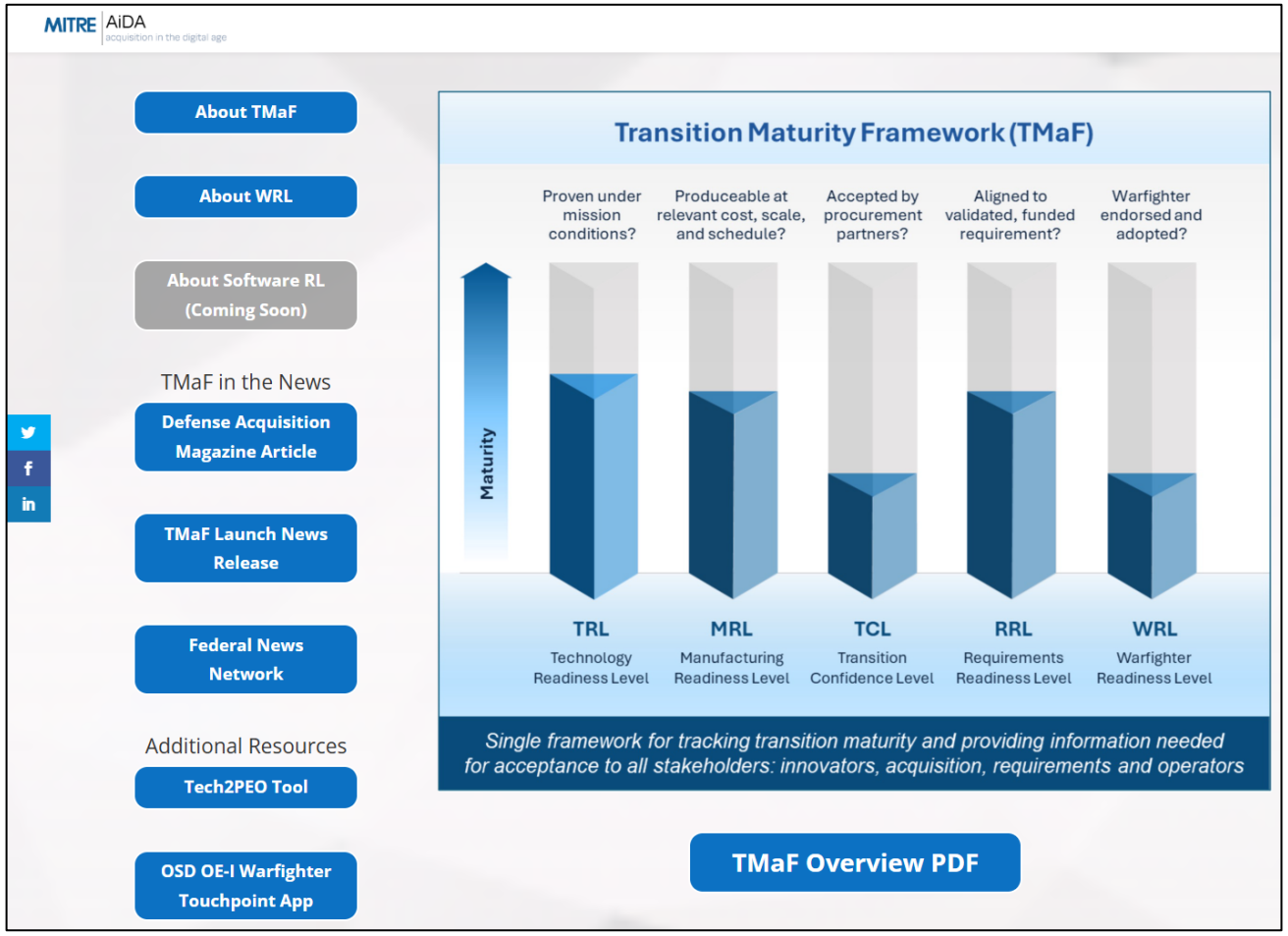
# TMaF: aida.mitre.org/tmaf



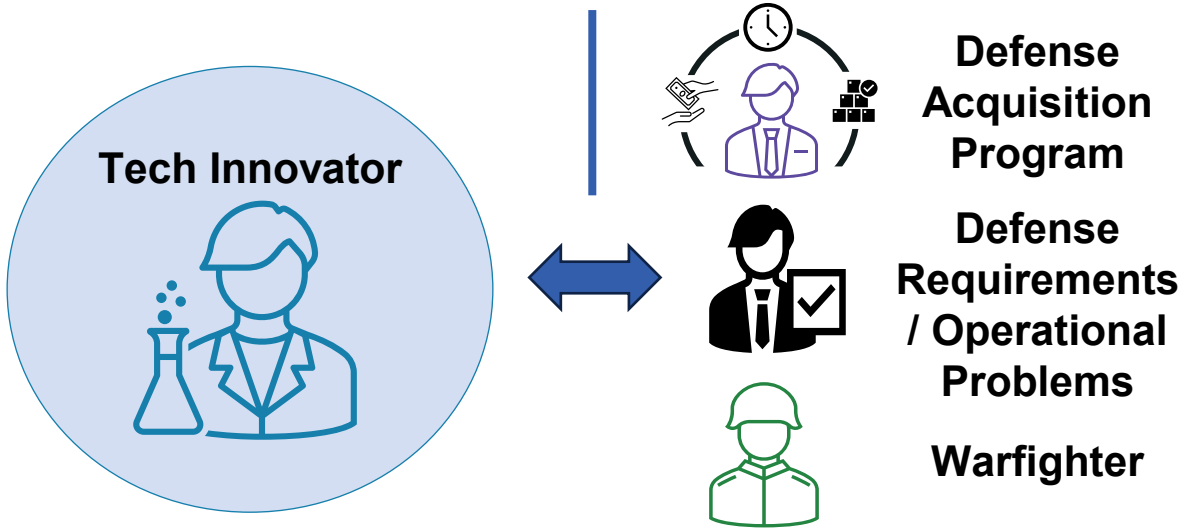
# Removing Transition Barriers

# Complementary Tools to Remove Transition Barriers

## Common acquisition barriers:

1. Connecting to programs:
   - **Tech2PEO/PAE (live):** input tech details, outputs curated list of programs with contacts
2. Identifying requirements:
   - **Tech2Req (MVP live):** input tech details, outputs list of relevant DoW requirements
3. Communicating mission impact:
   - **M&S (in progress):** low barrier-to-entry, flexible mission-level modeling

***Tech2PEO/PAE,Tech2Req, M&S***




**Complementary tools are designed to support effective engagement with transition stakeholders to support strategic transition management**

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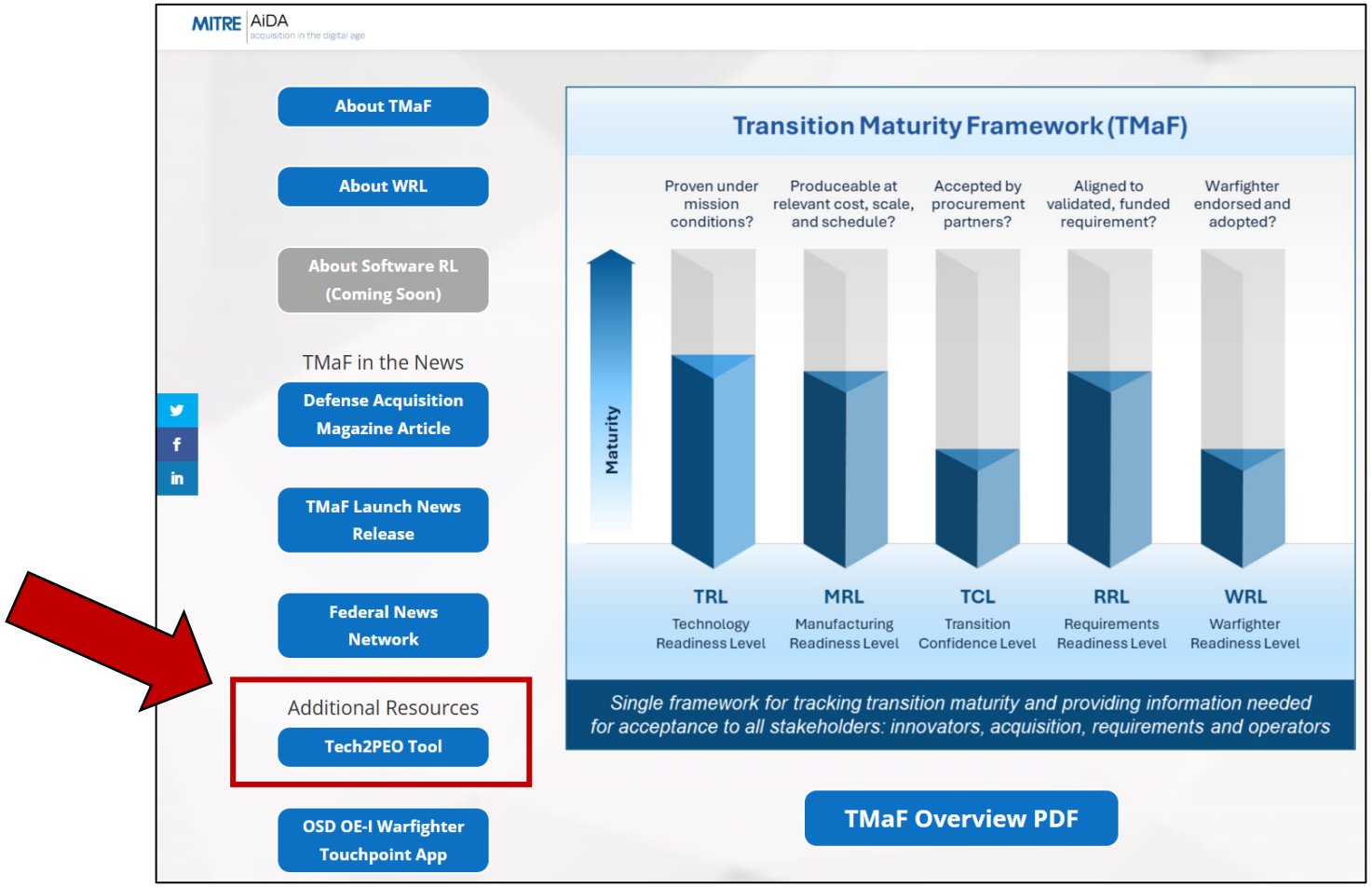
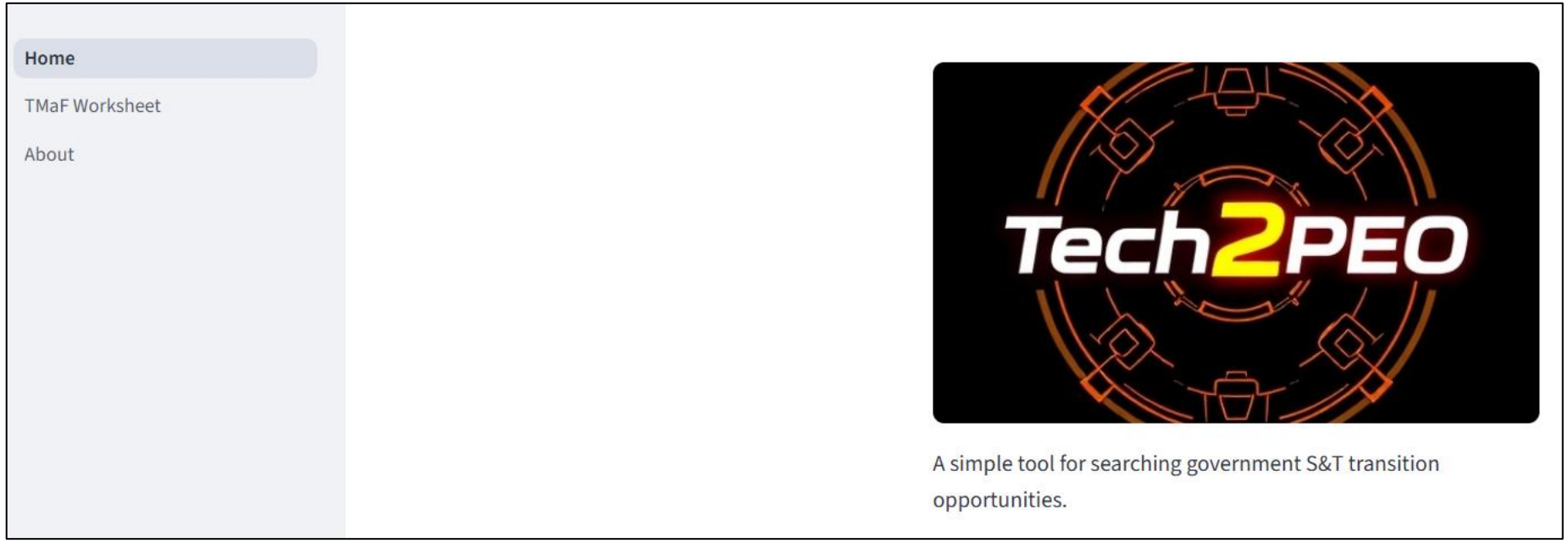
# Tech2PEO/PAE: aida.mitre.org/tmaf



# Tech2PEO/PAE Demo: aida.mitre.org/tmaf

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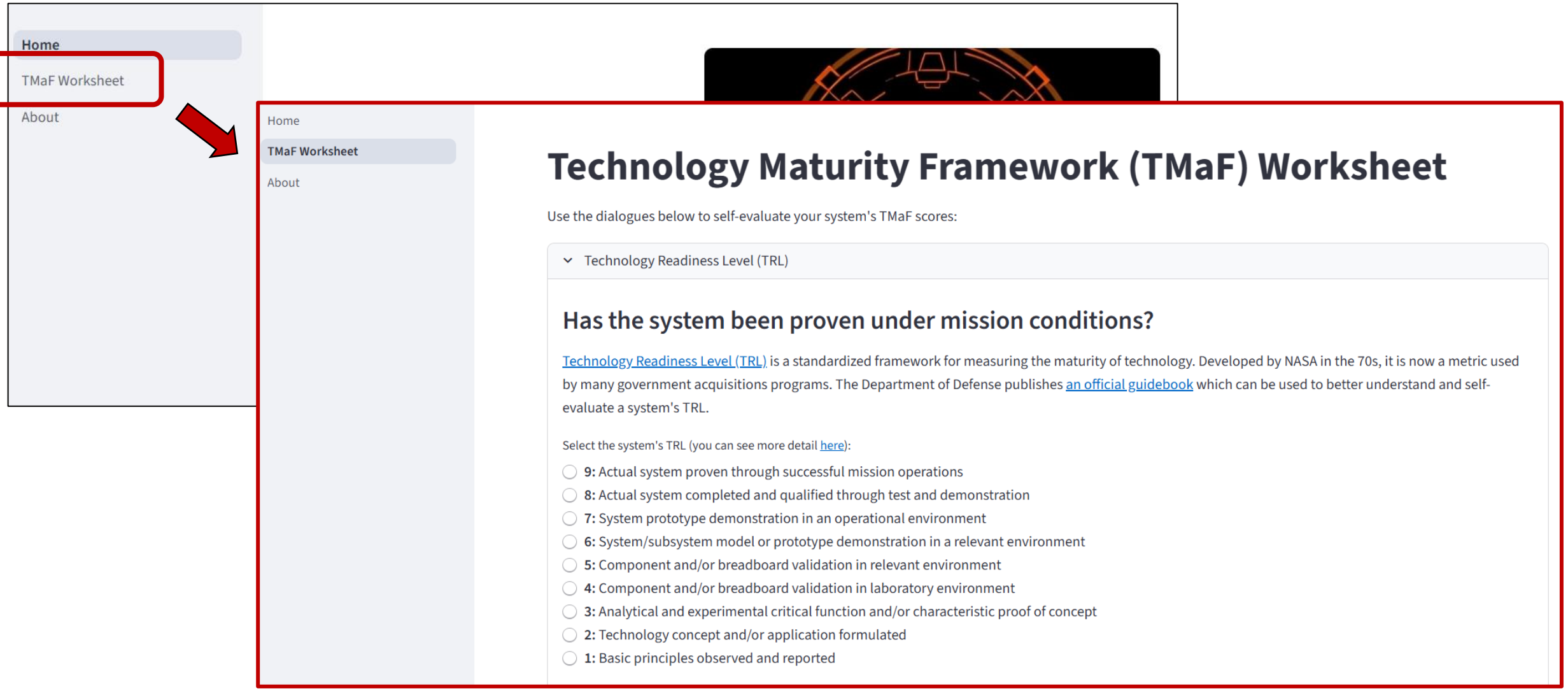


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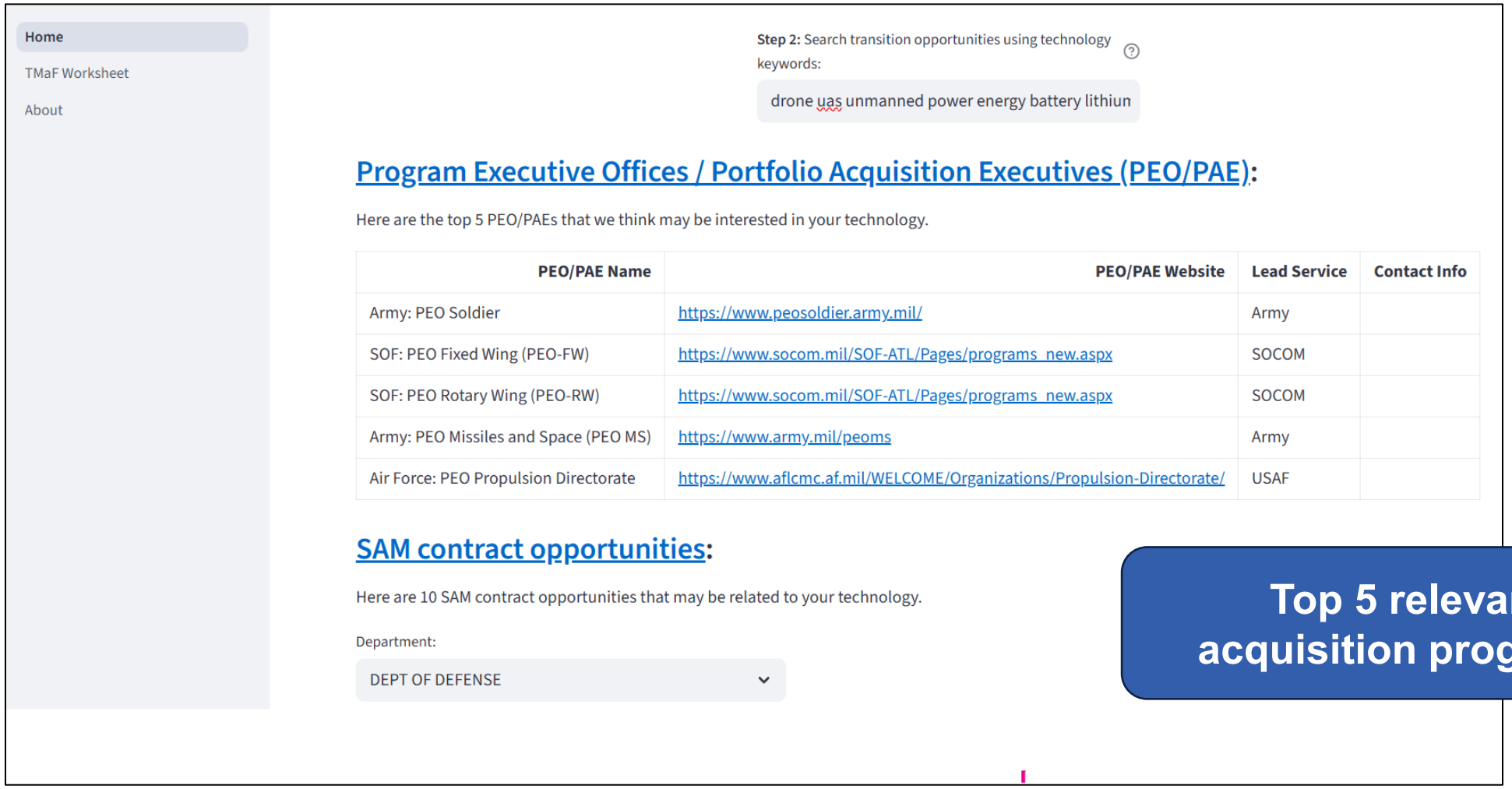
# Tech2PEO/PAE: aida.mitre.org/tmaf

**Search:** “drone uas unmanned power energy battery lithium ion li-ion”




**Top 5 relevant acquisition programs**

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# Tech2PEO/PAE: aida.mitre.org/tmaf

**Search:** “drone uas unmanned power energy battery lithium ion li-ion”

## SAM contract opportunities:

Here are 10 SAM contract opportunities that may be related to your technology.

Department:

DEPT OF DEFENSE

**Recent relevant contracts to get a POC**

| Title | Department | Subtier | Office | POC Name | POC Email | POC Phone |
|---|---|---|---|---|---|---|
| Drones | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Karen Williams | karen.h.williams.civ@army.mil | 5026241174 |
| Battery | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Leon Funches | leon.p.funches.civ@army.mil | 5735635113 |
| Drone | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Pamela Dansby | pamela.dansby.civ@army.mil | 5026241044 |
| Drone | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Teresa Gibney | teresa.m.gibney.civ@army.mil | 8459386210 |
| UAS | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Kimberley Lawrence | kimberley.m.lawrence.civ@army.mil | 3157728281 |
| Drone components | DEPT OF DEFENSE | DEPT OF THE ARMY | W6QM MICC-FT DRUM | Darren Jackson | darren.a.jackson16.mil@army.mil | +15806476887 |

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# Tech2PEO/PAE: aida.mitre.org/tmaf

**Search:** “drone uas unmanned power energy battery lithium ion li-ion”

## Program Elements:

Here are 5 Program Elements (PEs) that we think may be most relevant to your technology.

To use R&D Funding Sources information effectively, find the Program Elements (PEs) that align with your t
funding amounts, funding growth, and project titles within a PE to understand the objectives and scale of e
understand a project's technology maturity, where higher BAs are generally more technologically mature. With these insights, you can strategically connect with the right PEOs, tailor your pitch to their specific needs and available funding, and align your development timeline with their acquisition schedule to increase your chances of successfully transitioning your technology into procurement.

**Relevant PE lines for initial assessment of funding opportunity**

| PE Title | PE Number | BA Number | Organization | FY25 Project List | FY26 Project List | FY25 Amount (millions) | FY26 Amount (millions) |
|---|---|---|---|---|---|---|---|
| Department of Defense (DoD) Unmanned Systems Common Development | 0604400D8Z | 4 | OSD | Unmanned Systems Integration \| Unmanned Systems Integration Support \| Unmanned Systems Development | Unmanned Systems Development \| Unmanned Systems Integration \| Unmanned Systems Integration Support | 9.527 | 2.142 |
| Soldier Systems - Warrior Dem/Val | 0604827A | 5 | Army | Lethal Semi-Autonomous Aerial Unmanned Sys-Eng Dev \| Platoon Power Generator \| Integrated Soldier Power Data System - Core \| Soldier Borne Sensor (SBS) \| Universal Battery | Integrated Soldier Power Data System - Core \| Universal Battery Charger \| Soldier Borne Sensor (SBS) \| Lethal Semi-Autonomous Aerial Unmanned Sys-Eng Dev \| Platoon Power | 29.132 | 4.137 |

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# Tech2PEO/PAE: aida.mitre.org/tmaf


**Tech2PEO/PAE helps innovators:**

1. **Identify relevant acquisition programs**
2. **Obtain contact information**
3. **Make an initial assessment of funding opportunity**

**Email tech2peo@mitre.org to get started**

# Opportunity: TMaF in the AI Era

# TMaF Attributes:

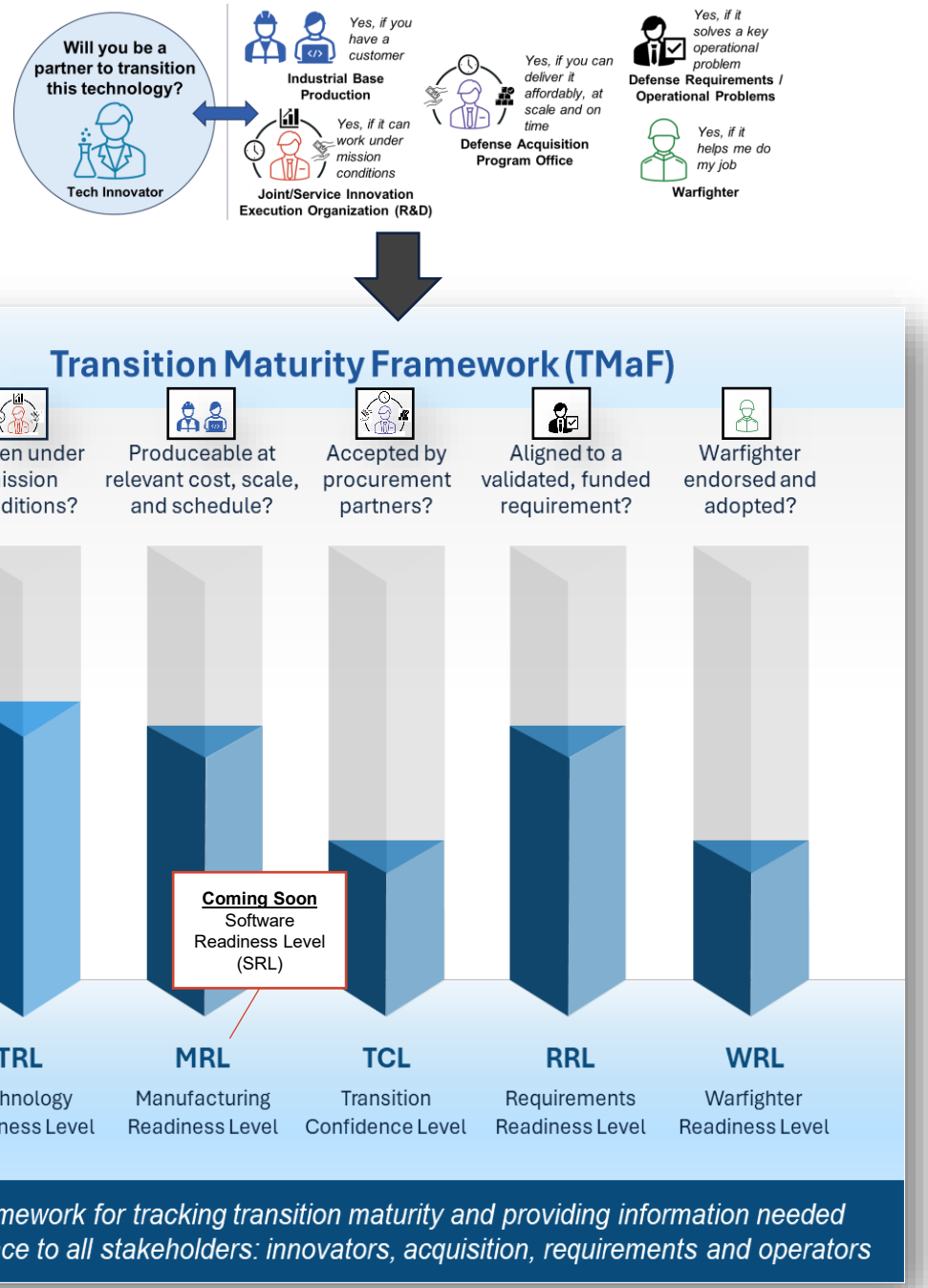
***standardized maturity scales***

***Aligned to transition stakeholder technology acceptance criteria***

# TMaF Opportunity:

**For Program Managers:**
Offers a standardized means to evaluate, balance, and monitor transition maturity

**Integrate TMaF Data with Human-in-the-Loop AI**

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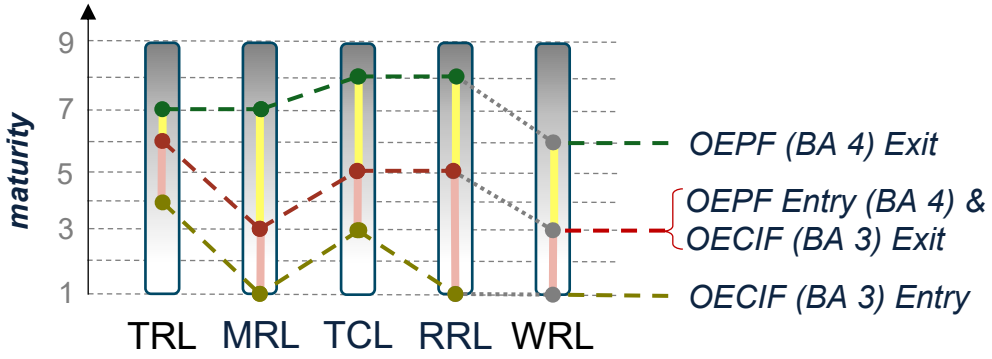
# Opportunity: TMaF as Acquisition Decision Support Tool in AI Era

- Accountability & Transparency




OE-I manages a BA 3 & a BA 4 innovation fund (OECIF & OEPF). By defining TMaF entry & exit criteria, OE-I fosters accountability by transparently communicates transition expectations to project teams & ensures proper budget activity alignment.

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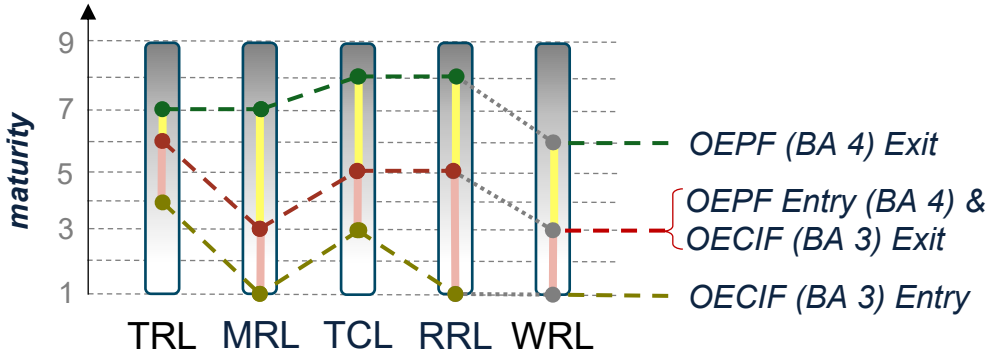


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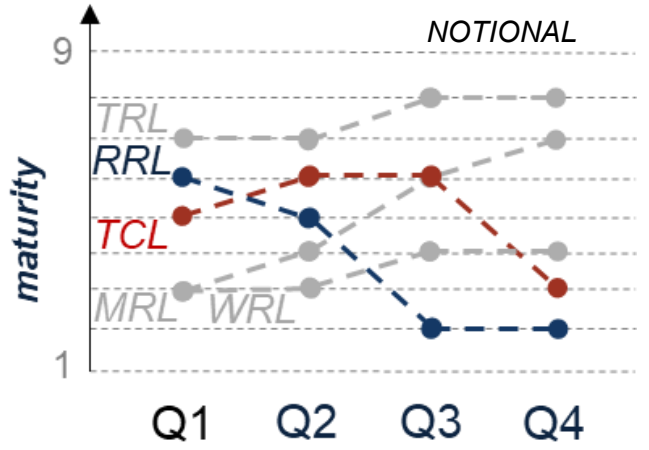
- Interpretability




The chart shows a notional progression of TMaF levels assessed quarterly over the course of a year. It indicates increasing technical and manufacturing maturity (TRL and MRL). However, a precipitous drop in RRL due to, e.g., a change in operational conditions/priorities, leads to a loss of program interest (dropping TCL) and plateaued warfighter engagement (WRL). Here TMaF data quickly communicates a holistic, interpretable transition story.

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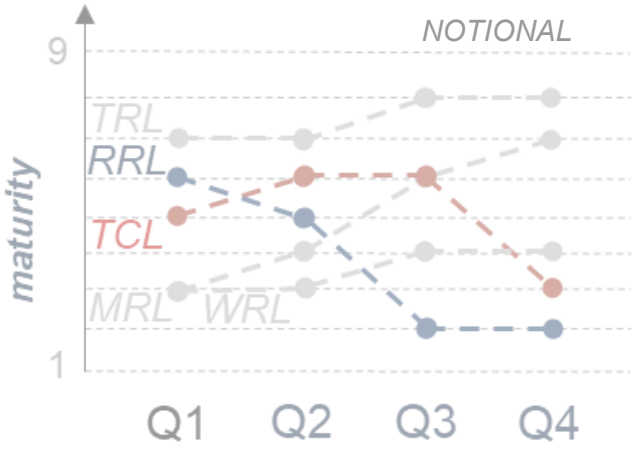
# Opportunity: TMaF as Acquisition Decision Support Tool in AI Era

- Interpretability

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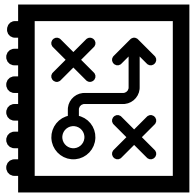
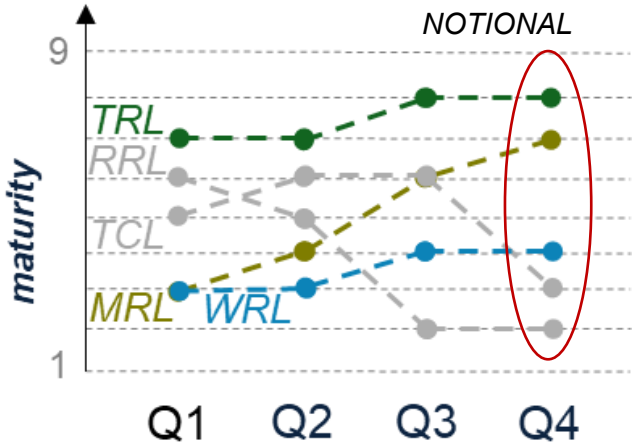
- Efficiency / Effectiveness






This transition story shows a technology that did not transition because the requirement changed mid-development. In the future, however, the requirement could change again in a way that aligns with the technology, which would restore program interest (increase RRL and TCL). Here TMaF provides an efficient shorthand to document the state of the technology and support efficient re-investment. Further, the transition story documented via TMaF permits identifying good transition practices and common pitfalls to support effective transition strategy.

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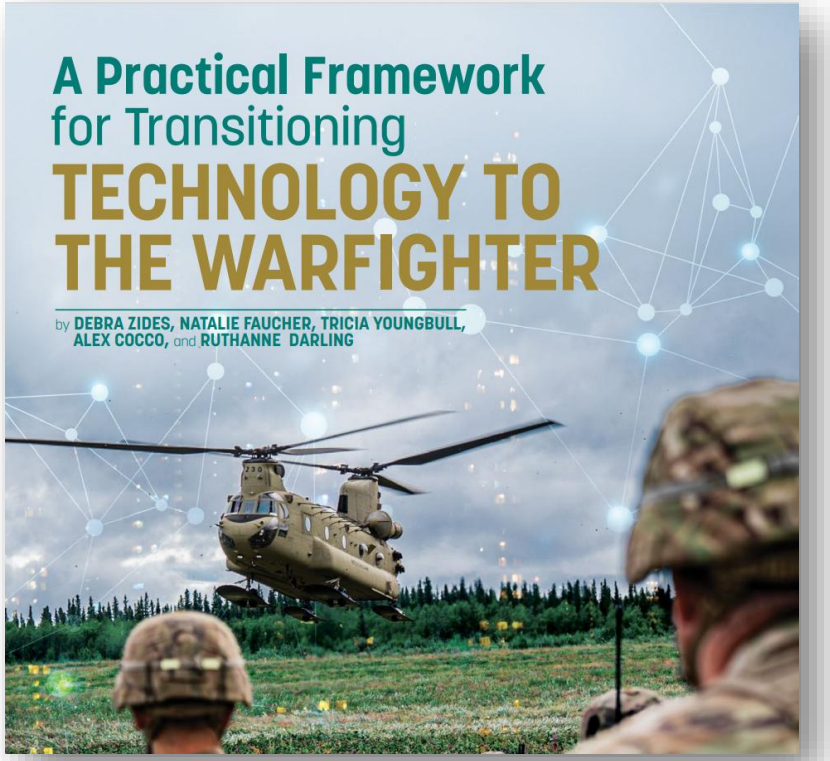
# Resources to Get Started with TMaF & Tech2PEO/PAE

# Engage with the Transition Maturity Framework

- **Access** TMaF and Tech2PEO/PAE through MITRE's Acquisition in the Digital Age (AiDA) website:
  - https://aida.mitre.org/tmaf & https://aida.mitre.org/the-mitre-tech2peo-tool
- **Listen** to MITRE MNS SVP & GM, Keoki Jackson, discuss TMaF on the Federal News Network's Federal Drive podcast:
  - A new framework aims to build a bridge across the defense acquisition valley of death
- **Read** our Defense Acquisition Magazine article:
  - A Practical Framework for Transitioning Technology to the Warfighter | www.dau.edu
- **Connect** with the TMaF and Tech2PEO/PAE teams via email:
  - tmaf@mitre.org & tech2peo@mitre.org

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