



# Technology Transition 101

~ A part of the Technology Transfer (T2) Process ~

6 January 2021

U.S. Navy corpsman sets into a defensive position in support of the Battalion Distributed Operations Course during Service Level Training Exercise 1-21 at Marine Corps Air Ground Combat Center Twentynine Palms, Calif., Oct. 28.

# Welcome

## Mr. John Dement

Technology Transfer

Defense Laboratories & Personnel

Office of the Under Secretary of Defense in Research & Engineering

## Ms. Amy LaRose

Team Lead, EPIC powered by MilTech

Marine Corps Systems Command Partnership Intermediary

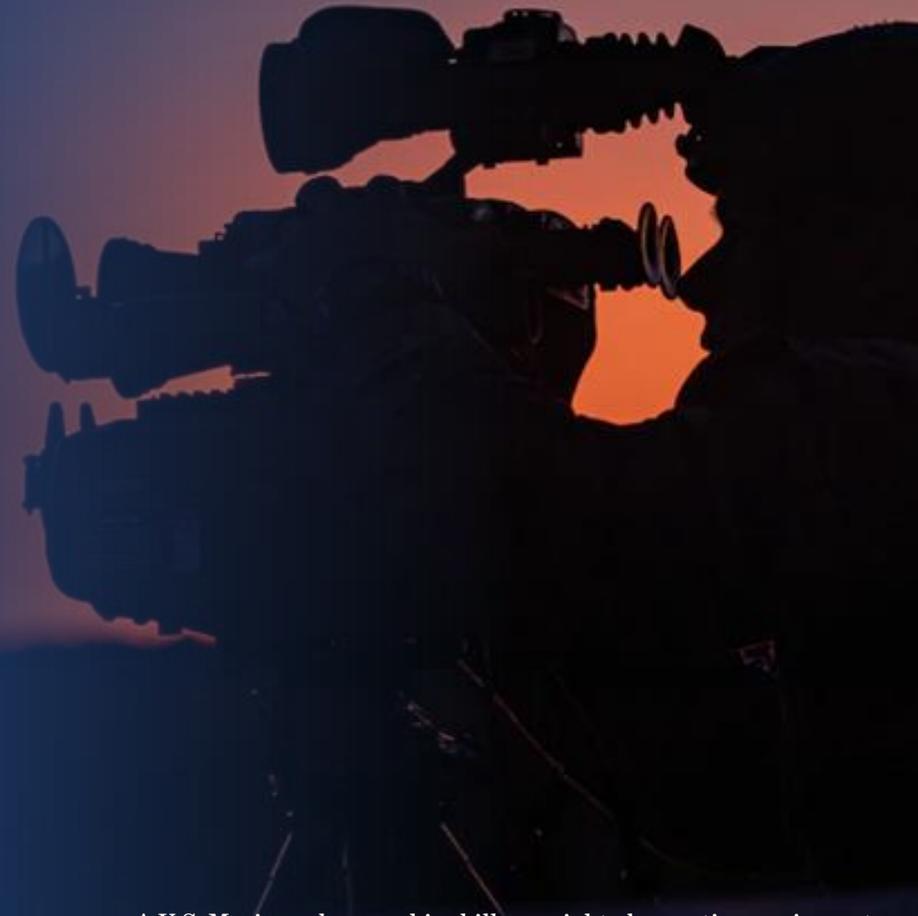
LtCol USMC (Ret)

# Meeting Etiquette

- **You don't have to worry about your audio or camera!**
- **Please Use the chat feature.**
  - Beyond asking questions at any time, the chat feature is a great place to confirm any points being made or to pose a question without interrupting the speaker.

# Disclaimer

- As we all come from different backgrounds, we may have different interpretations.
- If you don't agree with a slide, please use the chat feature to highlight it so we can discuss.
- Photos and Graphics have been pulled from multiple sources...**thank you** to anyone I pulled a slide from (you may not know it yet!)



A U.S. Marine rehearses his skills on night observation equipment during Tactical Air Control Party 1-21 on Camp Lejeune, N.C., Nov. 3.

U.S. Marine Corps photo by Lance Cpl. Jacqueline Parsons

---

# Agenda

---

- Objective
- Background
- T2 Confusion
- DODI 5535.08 Update
  - Basic Terms
  - Core T2 Mechanisms
  - Key Players
- The Valley of Death
- Building the Bridge
- The Future
- Points of Contact
- Questions

---

# Objective

Through instruction and slides attendees will be exposed to the  
policy,  
basic terms,  
core mechanisms,  
&  
tools  
supporting Technology Transition  
during the Tech Transfer Process.

---

---

# Background

- US Code(s)
- Department of Defense Instructions (DODIs)
- Studies

# US Code

## Title 5 US Code

- Sections 3371 - 3375

## Title 10 US Code

- Sections 2194, 2358, 2368, 2371, 2501, 2511, 2514, 2539b, 2563

## Title 15 US Code

- Sections 3701, 3702, 3710, 3715

## Title 35 US Code

- Section 209

# Stevenson-Wydler Technology Innovation Act of 1980

15 U.S.C. 3701, 3702, 3706, 3710(a), 3715

- The first of a continuing series of laws to define and promote technology transfer.
- Purpose: the renewal and expansion of mechanisms to foster and encourage cooperation among academia, federal laboratories, and industry in technology transfer, personnel exchanges, and joint research projects.
- Required government labs to take an active role in technical cooperation and budget for T2 activities
- Established an Office of Research & Technology Application (ORTA) in each agency that operates or directs federal laboratories to coordinate and promote technology transfer

# Federal Technology Transfer Act of 1986 (FTTA)

- FTFA is the second major piece of legislation to focus directly on technology transfer, broadening and strengthening the Stevenson-Wydler Act.
- The FTFA made technology transfer a responsibility of every federal laboratory scientist and engineer and mandated that technology transfer responsibilities be considered in laboratory employee performance evaluations.
- The FTFA empowered agencies to license patents at the laboratory level and to enter into Cooperative Research and Development Agreements (CRADAs).

# DODI 5535.08

## Technology Transfer (T2) Program

**Purpose:** Establish policy, assigns responsibilities, and prescribes procedures for implementation of T2 programs

**Current Version:** DoD Directive 5535.03 “DoD Domestic Technology Transfer Program” dated May 21, 1999 & DODI 5535.08 Technology Transfer Program.

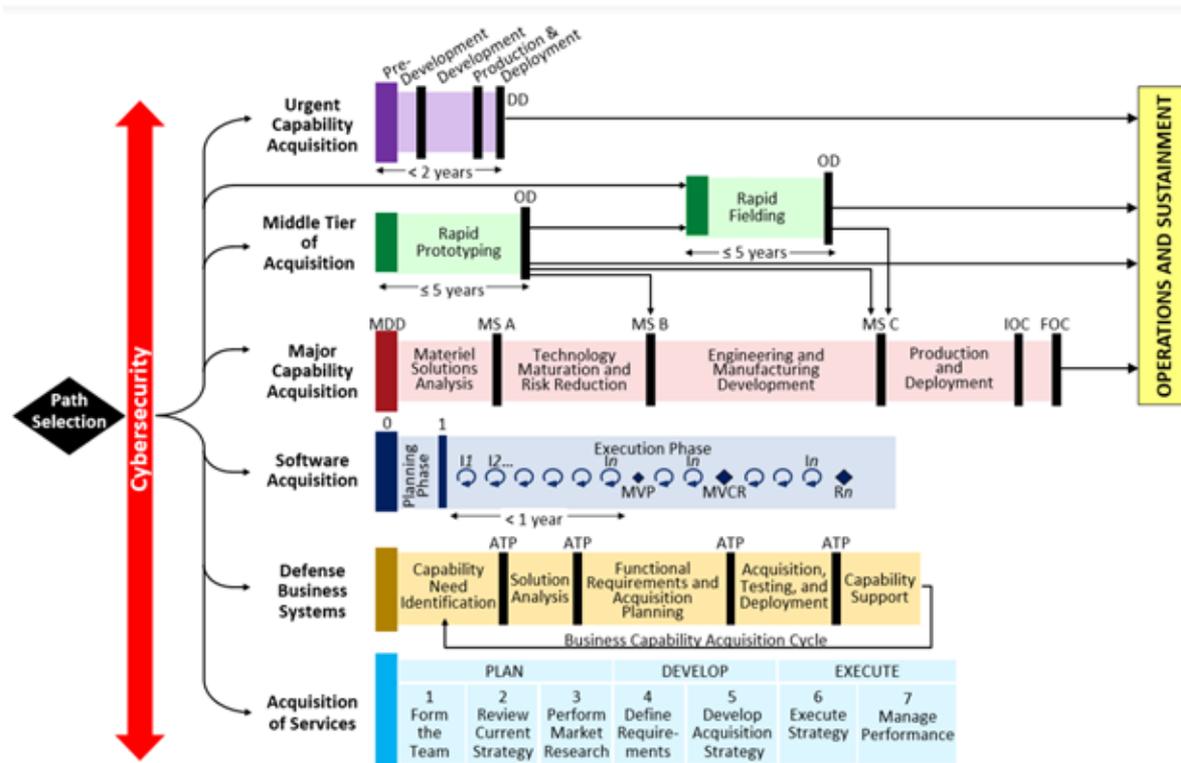
**Status of Update:** Drafted, pending final review, and approval.



# DODI 5134.01

## Operation of the Adaptive Acquisition Framework

- Signed January 2020



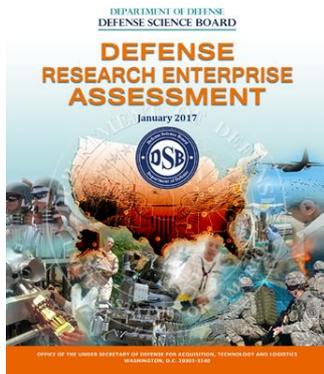
# DODI 5000.83

## Technology and Program Protection to Maintain Technological Advantage

- Signed July 2020
- Established policy, assigns responsibilities, and provides procedures for DoD science and technology managers and engineers to mitigate risks and protect critical U.S. research, military technologies, and programs.

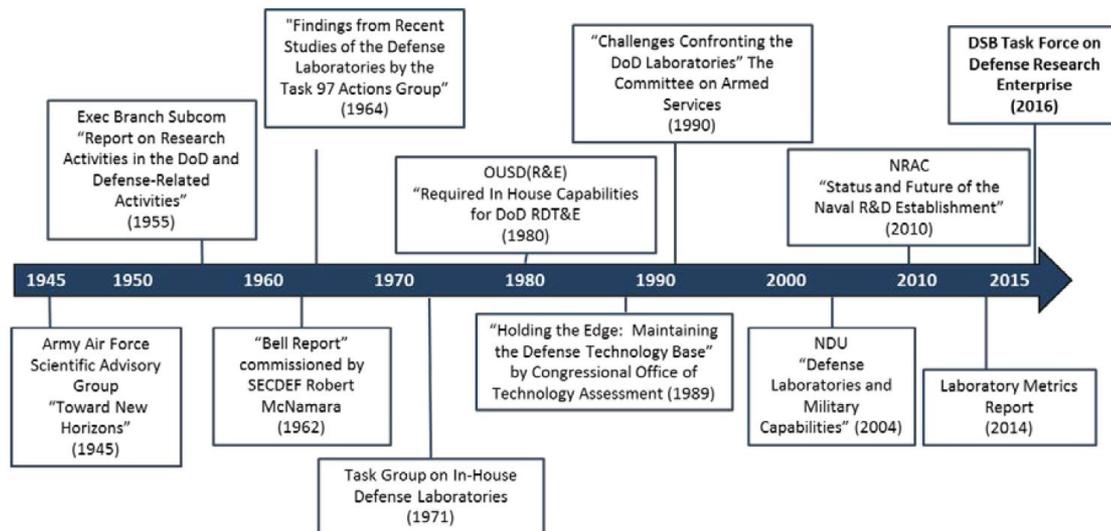
# Studies

- 2013 GAO Defense Technology Development Study
- 2017 Defense Research Enterprise Assessment



## Appendix D – Past Studies

▶ Previous studies, recommendations, actions & inaction



# 2017 Study

## Lab Evolution



Figure 2. Existing Lab Roles

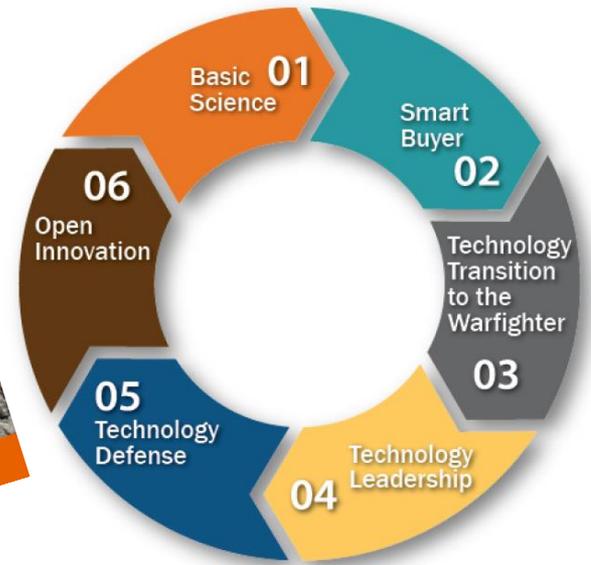


Figure 5. Evolving Lab Missions

---

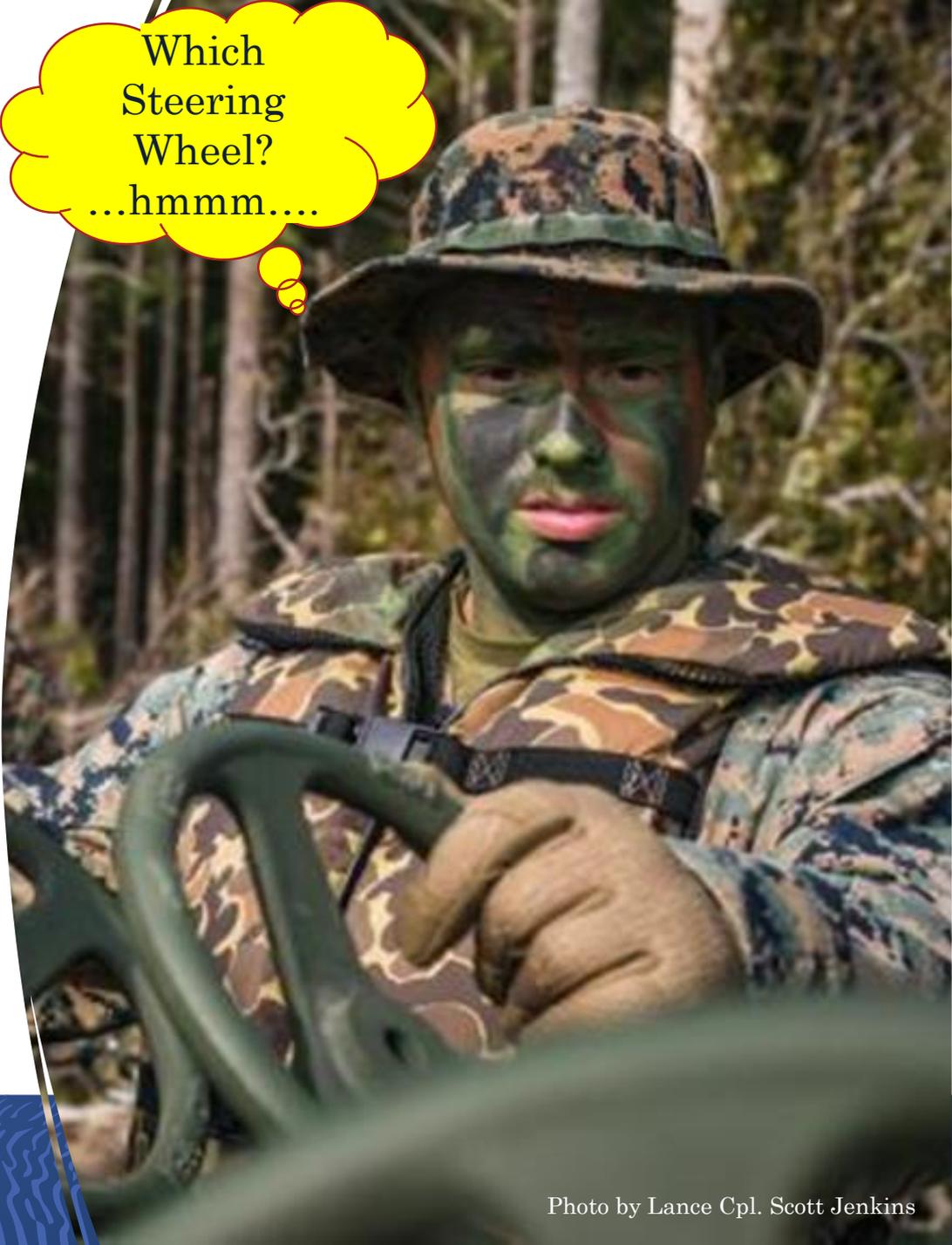
# T2 Confusion

- Interpretation
- Confusion
- Interchanging of Basic Terms

# T2 Confusion?

There are so many places to look for T2 information, from US Code to DODI.....

- How do you keep up with the changes?
- How do you know what “right” looks like?
- How do you know what terms to use?



Which  
Steering  
Wheel?  
...hmmm....

# **T2 Confusion:**

Tech Transfer vs. Tech Transition

Between annual T2 WGs and training, we have realized that the terms

**Technology Transfer**

and

**Technology Transition**

are often confused, used interchangeably, or simply misunderstood.

# T2 Confusion:

## North Carolina Military Business Center Example

- The North Carolina Military Business Center website defined these key terms as follows:

(<http://www.ncmbc.us/technology-transition/>)

- **Technical Transfer** is a partnership between government & industry by means of which technology developed by one party is transferred to the other party for development and use, often with residual rights to the transferring party. In DoD parlance, these are 6.1 (Basic Research), 6.2 (Applied Research), and 6.3 (Advanced Technical Development). These monies are typically found in the DoD Science & Technology (S&T) budget lines are frequently used to fund STTRs and Small Business Innovative Research (SBIR) Phases 1, 2, and 3 respectively. The SBA, PTAC and University Outreach offices typically assist companies and universities with these procurements.

**This isn't an official definition, but it could easily be confused as one!**

**How do we ensure that we have one definition?**

# Interchanging of Terms

The lack of formal definitions of Tech Transition and Tech Transfer has resulted in misuse and interchanging of terms.

- For example, the Jan 2017 Report by the Defense Science Board stated, in the Defense Research Enterprise Assessment, that “The Task Force understands that not all Labs are the same. The “corporate” Labs, AFRL, and ERDC focus on both **discovering and transitioning technology** to the warfighter. The Centers further down the pipeline **transform** technology into fieldable systems and deliver it into the hands of the warfighter.“.....

# Describing but not Defining

People describe the T2 process without calling it out.....

- Jan 2017 Report by the Defense Science Board, in the Defense Research Enterprise Assessment, observed that “The Task Force found opportunities for enhanced collaboration between Labs and the Centers. For example, improvement is needed to create a well-defined and managed technology pipeline, starting from basic research in the Labs and ending with the deployed system via the Centers.”

They just described the T2 Process but did not refer to Technology Transfer or Transition in the entire report.

# Room for Interpretation?

Currently, YES!

A goal of the Updated DoDI 5535.08 is to **eliminate** (or reduce) **interpretation**.

---

# DODI 5535.08

## Basic

## Terms

---

- Key Updates
- Spin Out - Transfer
- Spin In - Transition
- Dual Use

# DODI 5535.08 (draft)

## **3.3. DOD USE OF T2 MECHANISMS.**

a. The DoD Components are encouraged to use any combinations of spin out (transfer), spin in (transition), and dual-use mechanisms as defined in the Glossary to accomplish T2 and mission objectives.

# DODI 5535.08 (draft)

## Section G.2. Definitions

**Spin Out** is defined as: “**Transfer** of DoD originated technology to non-DoD activities including the private sector and other public sectors for conversion into new products and services. These activities:

- Are beneficial to US citizens in supporting the advancement of technology and industrial innovation, offering an improved standard of living, increased public and private sector productivity, creation of new industries and employment opportunities, improved public services and enhanced competitiveness of United States products in world markets.
- Are beneficial to the DoD in supporting the national technology and industrial base as well as gaining access to resulting products and services of potential interest to DoD.
- May also include making available and use of DoD technology by non-DoD entities for non-military purposes.

# DODI 5535.08 (draft)

## Section G.2. Definitions

**Spin In** is defined as: “**Transition** of technology into the DoD in support of a planned or projected capability advancement by the DoD, which may be useful in any project or effort typically involving technology selection and/or technology maturation.

These activities are typically supported by acquisition or collaboration (e.g. CRADAs).

Sources of spin in technologies are:

- Non-DoD originated technology into the DoD for its own purposes.
- DoD originated technology brought back into the DoD after additional private sector development.”

**“Spin In”**: “transition of technology into the DoD in support of a planned or projected capability advancement by the DoD, which may be useful in any project or effort typically involving technology selection and/or technology maturation.”

# “Spin In” & “Spin Out”

**“Spin Out”**: “transfer of DoD originated technology to non-DoD activities including the private sector and other public sectors for conversion into new products and services.”

Why is Technology Transfer Important?

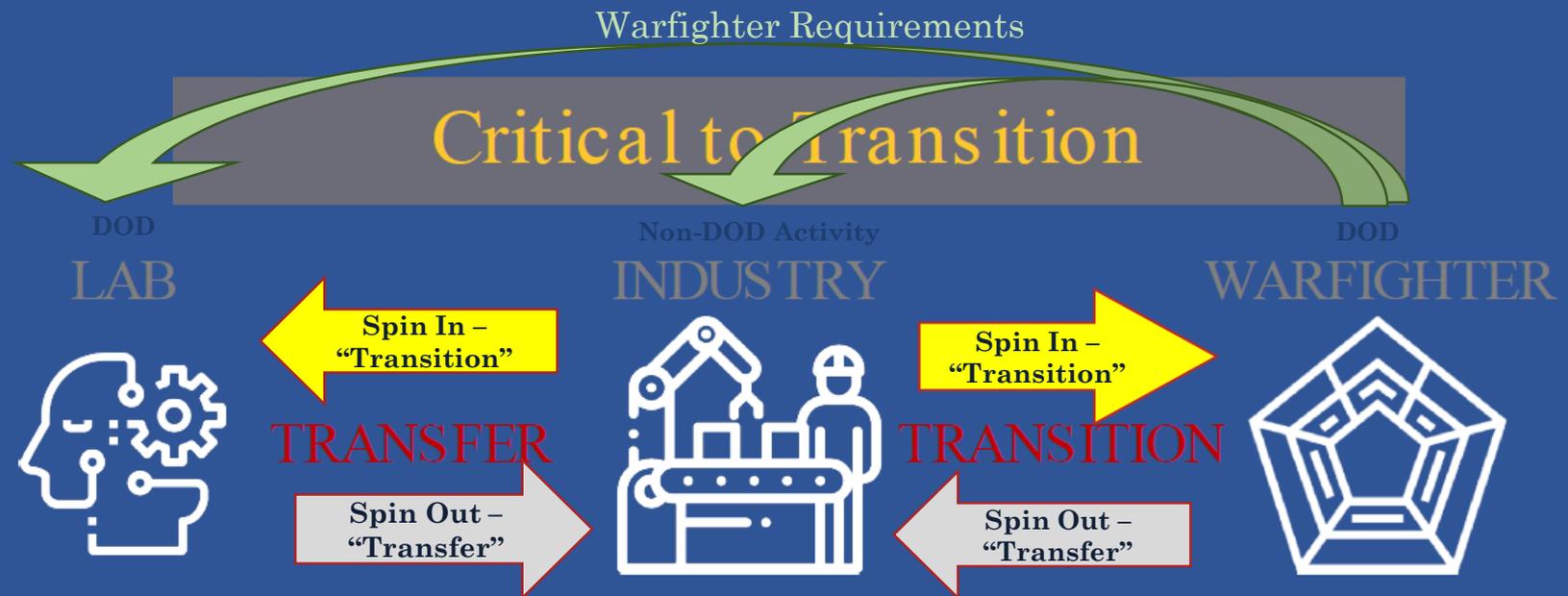


Chart taken from FLC First Timers Training (Modified by Amy)

<https://federallabs.org/learning-center/on-demand/online-courses/2020-us-department-of-defense-technology-transfer-first>

# DODI 5535.08 (draft)

## Section G.2 Definitions

**Dual-use** is technology that has both DOD and private sector applications.



CH-53E Super Stallion helicopter carries an M777A2 Howitzer during an artillery raid conducted by Charlie Battery, 1st Battalion, 12th Marine Regiment at Pohakuloa Training Area, Hawaii

**Transition  
can support  
Transfer**

**Spin-In can  
support  
Spin-Out**

**It doesn't  
have to be  
one way or  
the other.**

**Both can,  
and do,  
happen!**

---

# Core T2 Mechanisms

- What are they?
  - Why use them?
-

# Core T2 Mechanisms

- Draft DODI 5535.08, Section 3.2.a.

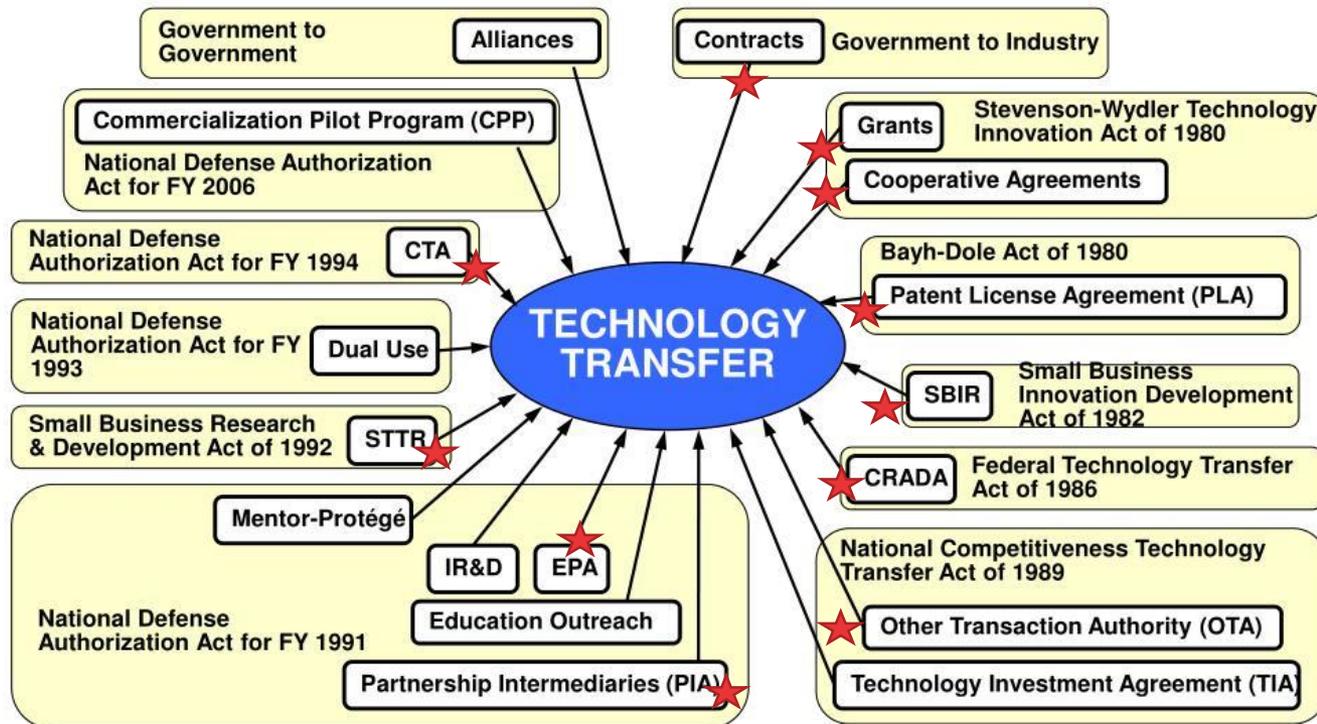
The DoD Components are encouraged to use any combinations of spin out (transfer), and spin in (transition) and dual-use mechanisms to accomplish T2 and mission objectives.

# Core T2 Mechanisms

- Section 3.2. Core DoD T2 mechanisms available to and should be part of DoD Components' strategies to accomplish their mission:
  1. Cooperative Research and Development Agreement (CRADA)
  2. Partnership Intermediaries
  3. Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR)
  4. Public Private Partnerships and Commercial test agreements
  5. Personnel Exchanges and Partnerships with Universities
  6. Technical papers, technical assistance, technology assessments
  7. Patenting & Trademarking, Licensing
  8. Educational Partnership Agreements



# Technology Transfer Mechanisms



- ★ Small Business Innovation Research (SBIR)
- ★ Public Private Partnerships
- ★ Personnel Exchanges and Partnerships with Universities
- ★ Technical papers, technical assistance, technology assessments

★ = Core T2 Mechanisms Called Out In Draft DODI 5535.08

# Cooperative Research & Development Agreement (CRADA)

- What is a CRADA (Section 3.7)
  - 15 USC §3710a(d)(1): “any agreement between one or more Federal laboratories and one or more non-Federal parties under which the Government, through its laboratories, provides personnel, services, facilities, equipment, intellectual property, or other resources, with or without reimbursement (**but not funds to the non-Federal parties**) and the non-Federal parties provide funds, personnel, services, facilities, equipment, intellectual property, or other resources toward the conduct of specified research and development efforts which are consistent with the missions of the laboratory; except that such term does not include a procurement contract or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of title 31;”
  - Draft DODI 5535.08 Section 3.7: Allows a DoD Component to collaborate in support of the laboratory’s mission and/or to **transfer** technology developed jointly or independently to enhance both defense capabilities and the civilian economy.

# Partnership Intermediary

- What is a Partnership Intermediary?  
(Section 3.9)
- Defined by Section 2368 of Title 10, U.S.C. and/or Section 3715 of Title 15.
- Encourage the establishment and use of partnership intermediaries.

# Partnership Intermediary

## 2 OSD National PIAs:

- TechLink supporting Tech Transfer
  - MilTech supporting Tech Transition
- 
- EPIC is a MilTech satellite office co-located with Marine Corps Systems Command at Quantico, Virginia. EPIC supports the daily needs of the Marine Corps ground acquisitions community.

MCSC addressed issues with its personal protective equipment and its use of innovative technologies and test trials to field updated gear during a Uniform and Equipment Engagement for senior Marine Corps leaders



U.S. Marine Corps photo by Matt Gonzales

# Support To &/or Collaboration With Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR)

- Support to and/or collaboration with SBIR/STTR may be facilitated through the use of applicable T2 mechanisms such as but not limited to CRADAs, partnership intermediaries, public or private partnerships, and mentor-protégé relationships.

**Differences Between SBIR and STTR**

	<b>SBIR</b>	<b>STTR</b>
<b>Partnering Requirement</b>	Permits partnering	Requires a non-profit research institution partner
<b>Principal Investigator</b>	Primary employment (>50%) must be with the small business	PI may be employed by either the research institution partner or small business (check solicitation)
<b>Work Requirement</b>	May subcontract up to: 33% (Phase I) 50% (Phase II)	Minimum: 40% Small Business 30% Research Institution Partner
<b>Program Size</b>	3.2% (FY19 - \$3.28B)	0.45% (FY19 - \$453M)
<b>Majority VC ownership</b>	Allowed by some agencies	Not allowed
<b>Participating Agencies</b>	11 agencies (extramural R&D budget > \$100M)	5 agencies (extramural R&D budget > \$1B)

Additional SBIR/STTR Info:

[https://www.sbir.gov/sites/default/files/SBA\\_SBIR\\_Overview\\_March2020.pdf](https://www.sbir.gov/sites/default/files/SBA_SBIR_Overview_March2020.pdf)

**The small business is ALWAYS the applicant and awardee!**

# Public Private Partnerships & Commercial Test Agreements

- Public Private Partnerships, Commercial test agreements and other forms of what is commonly referred to as “work for others” as further defined and described in DoDI 5535.11 and DoDI 4151.21.

# Personnel Exchanges and Partnerships with Universities

- Personnel exchanges and partnerships with universities, not for profits, State and local governments, etc. are encouraged as a means to expose laboratory personnel to a broader degree and scope of development, research, engineering and other activities relevant to the DoD mission.

# Technical papers, technical assistance, technology assessments

- Presentation of technical papers and providing technical assistance or technology assessments (with or without reimbursement) are encouraged and support the DoD's objectives concerning the national technology and innovation base.

# Patenting & Trademarking, Licensing

- Ensuring that technology can be transferred through patenting and trademarking when technology based, and the acceptance of copyrights from other parties is a precursor to the DoD's ability to license its intellectual property for T2 purposes.

# Educational Partnership Agreements

- Encourage the establishment of education partnership agreements with all levels of educational institutions in accordance with Section 2194 of Title 10, U.S.C.

# T2 Mechanisms & Transition

---

The DoD Components are encouraged to use any combinations of spin out (**transfer**), and spin in (**transition**) and dual-use mechanisms to accomplish T2 and mission objectives.



A U.S. Marine fires a M27 Infantry Automatic Rifle during a live fire exercise aboard amphibious assault ship USS America (LHA 6), Oct. 3.

# Transition

It is DoD's intent to align T2 with other elements of the DoD acquisition and sustainment strategy that emphasizes dual-use technology development and the **transition (spin-in)** of technologies and capabilities from the private sector.

AUG 23, 2018

Marines from I Marine Expeditionary Force learn how to operate the world's largest concrete 3D printer as it constructs a 500-square-foot barracks hut at the U.S. Army Engineer Research and Development Center in Champaign, Illinois. Marine Corps Systems Command conducted the field user evaluation in mid-August to inform future requirements for cutting-edge technology and autonomous systems.



---

# Key Players

- ORTA
  - TPOC
  - KO
  - Attorney
-

# ORTA

“The Office of Research and Technology Applications (ORTA)”

- The individual(s) who serves as the **focal point for technology transfer activities.**

---

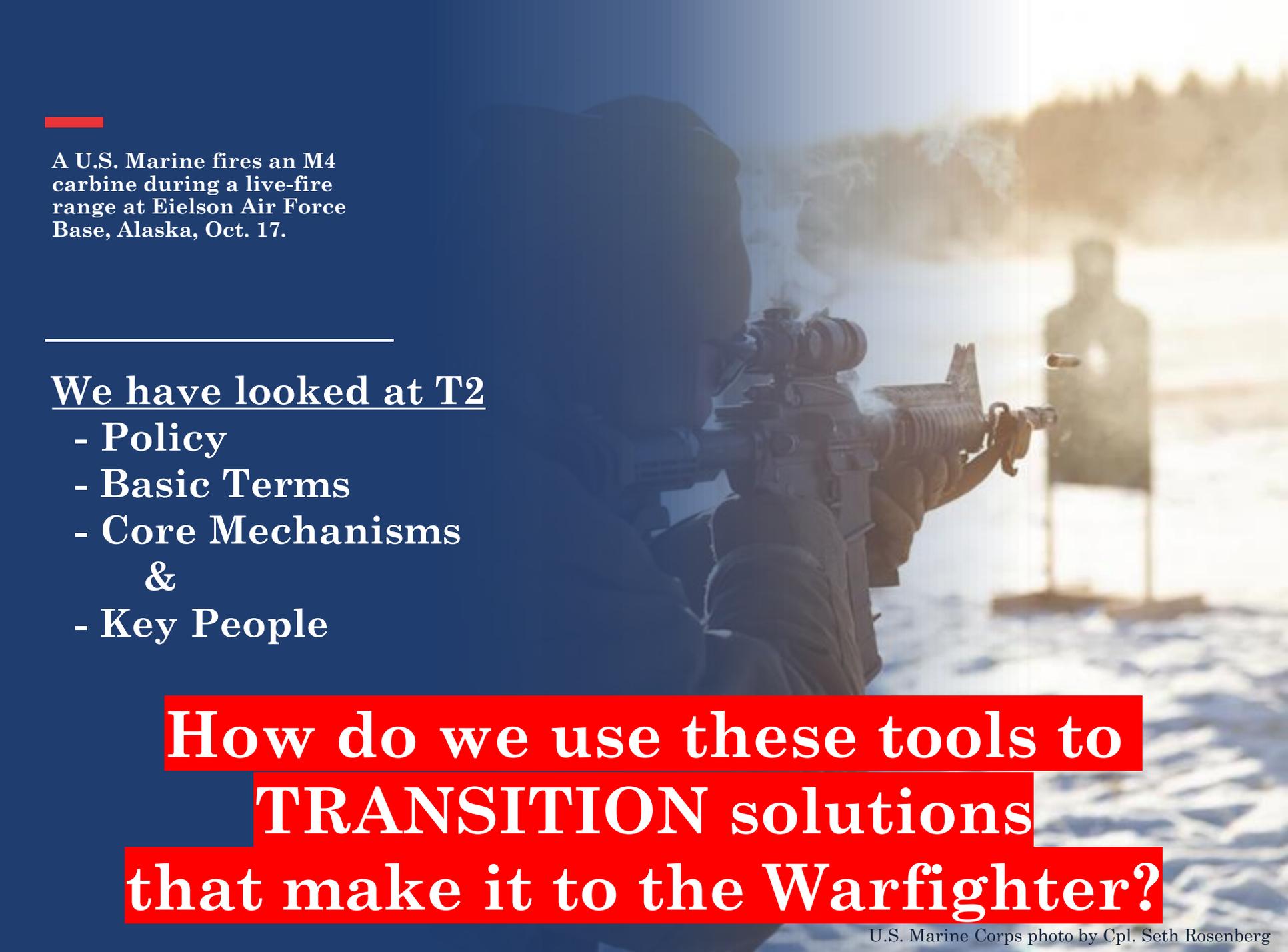
- A broker to connect people essential for effective transfer of technology.
- Per ONR, “While technology transfer does have technical components, **it also depends on person-to-person relationships that must be forged inside and outside the laboratory.**”



FIRST TO FIGHT

# Other Key Players

- Technical Point of Contact (TPOC)
- Contracting Officer (KO)
- Attorney(s)

A photograph of a U.S. Marine in a winter environment, firing an M4 carbine. The scene is set at Eielson Air Force Base, Alaska, on October 17. The background shows a snowy field with a target silhouette and a bright, hazy sky. The foreground is dominated by the silhouette of the Marine and the rifle, with a red horizontal bar above the text.

A U.S. Marine fires an M4 carbine during a live-fire range at Eielson Air Force Base, Alaska, Oct. 17.

---

## We have looked at T2

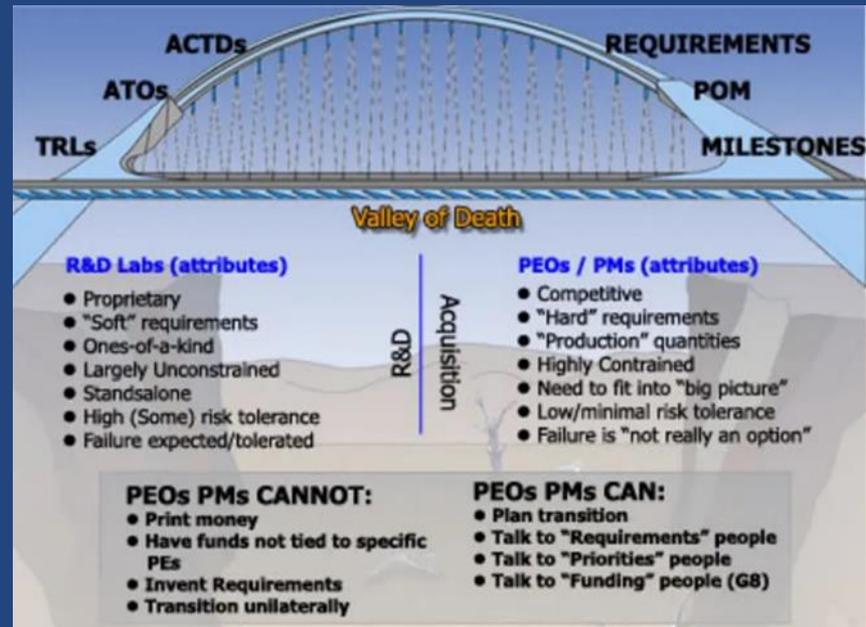
- Policy
- Basic Terms
- Core Mechanisms  
&
- Key People

**How do we use these tools to  
TRANSITION solutions  
that make it to the Warfighter?**

---

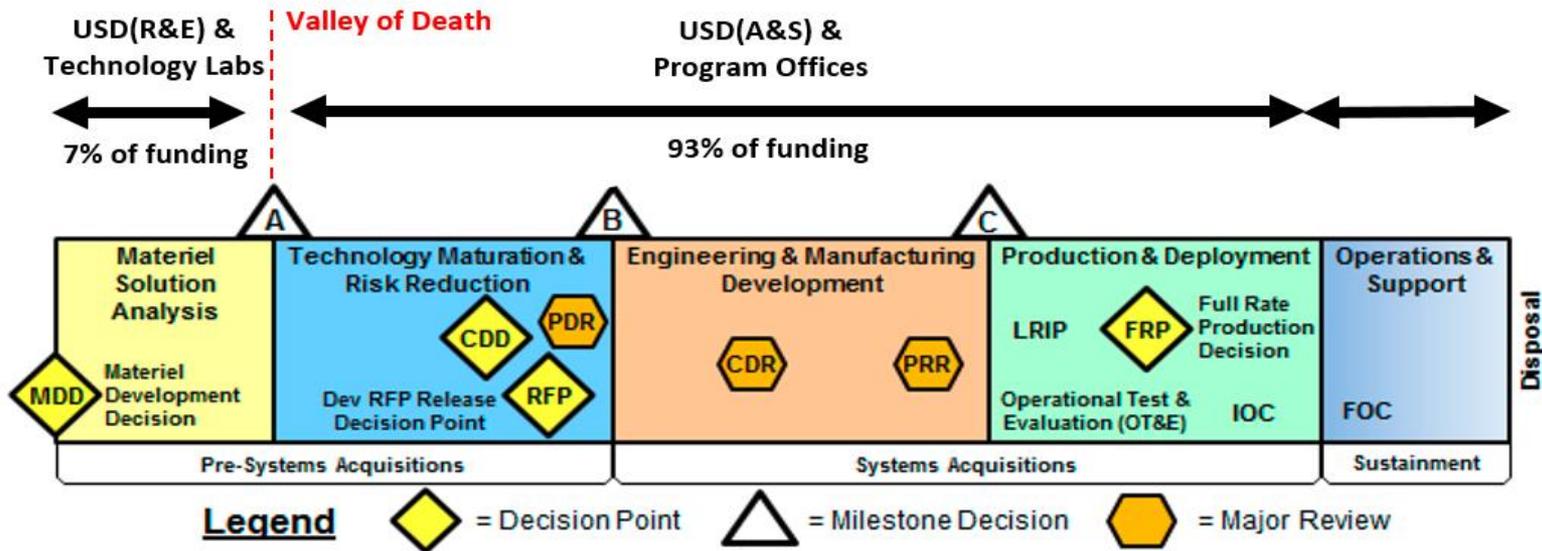
# Crossing The Valley of Death

---



# Valley of Death

in the Milestone Acquisition Process

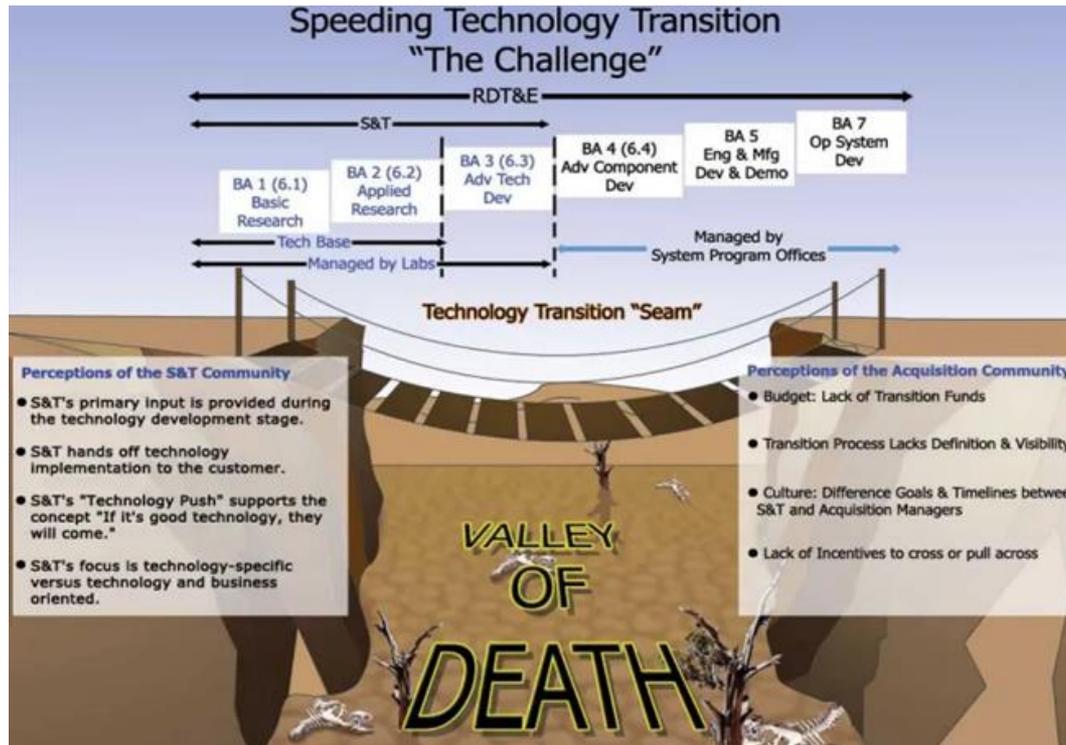


In the commercial world: the “valley of death” refers to the time between product development and consumer marketing.

In the DoD: the “valley of death” refers to the delay or failure in moving an S&T project from materiel solution analysis to Technology Maturation, normally moving from the 6.2 to 6.3 TRL.

# The View

May be different from your side



- Cannot always predict the pace of innovation two years in advance
- Desirable S&T projects may stall for 18 to 24 months, awaiting funding.

# The Reality

- The Reality:

- The majority of RDT&E Dollars are on the “Right” side (Acquisition) of the Valley of Death!
- FY2020 base budget request, S&T (6.1-6.3) was 15% of total RDT&E dollars.

- What does this mean to Technology Transition?

- It means that the majority of RDT&E is spend by the program offices and they define success differently than you do at a lab.
- Program Offices consider risk and the strategic plan...which may take years to equate to requirements and funding.

# Is there a way to minimize RISK in the Valley of Death?



**YES.... Build a Bridge (Partnership)**

---

# Building the Bridge

---



A photograph of the Golden Gate Bridge in San Francisco, California. The bridge's iconic orange-red towers and suspension cables are prominent against a blue sky with scattered white clouds. In the foreground, the dark blue water of the bay is visible. In the middle ground, the USS Bonhomme Richard (LST-1196) is docked at a pier. The ship is a large, grey, multi-decked vessel with various structures and equipment on its deck. The background shows the hilly, brownish terrain of the San Francisco Peninsula.

U.S. Marine Corps photo by Cpl. Jacob Farbo  
Golden Gate Bridge & USS Bonhomme Richard (before the fire)

## Use T2 Core Mechanisms to Build Your Bridge!

### Partnerships:

OSD National PIAs: Techlink & MilTech  
Local PIAs

### Facilitators:

NavalX (with Tech Bridges)  
Defense Innovation Unit (DIU)  
AFWERX

### DoD Program of Record:

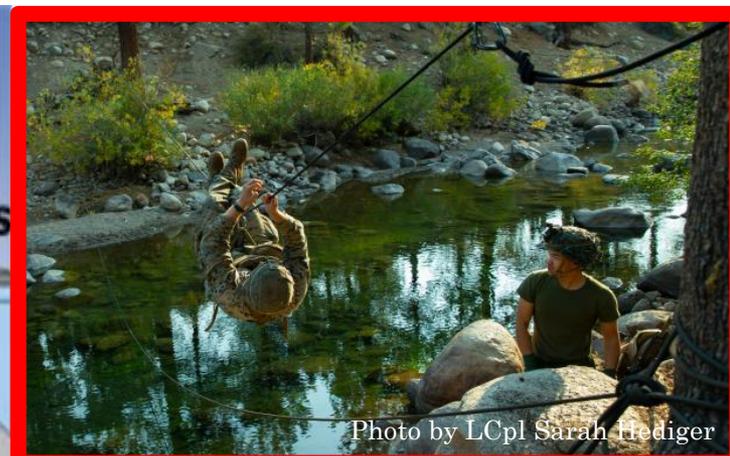
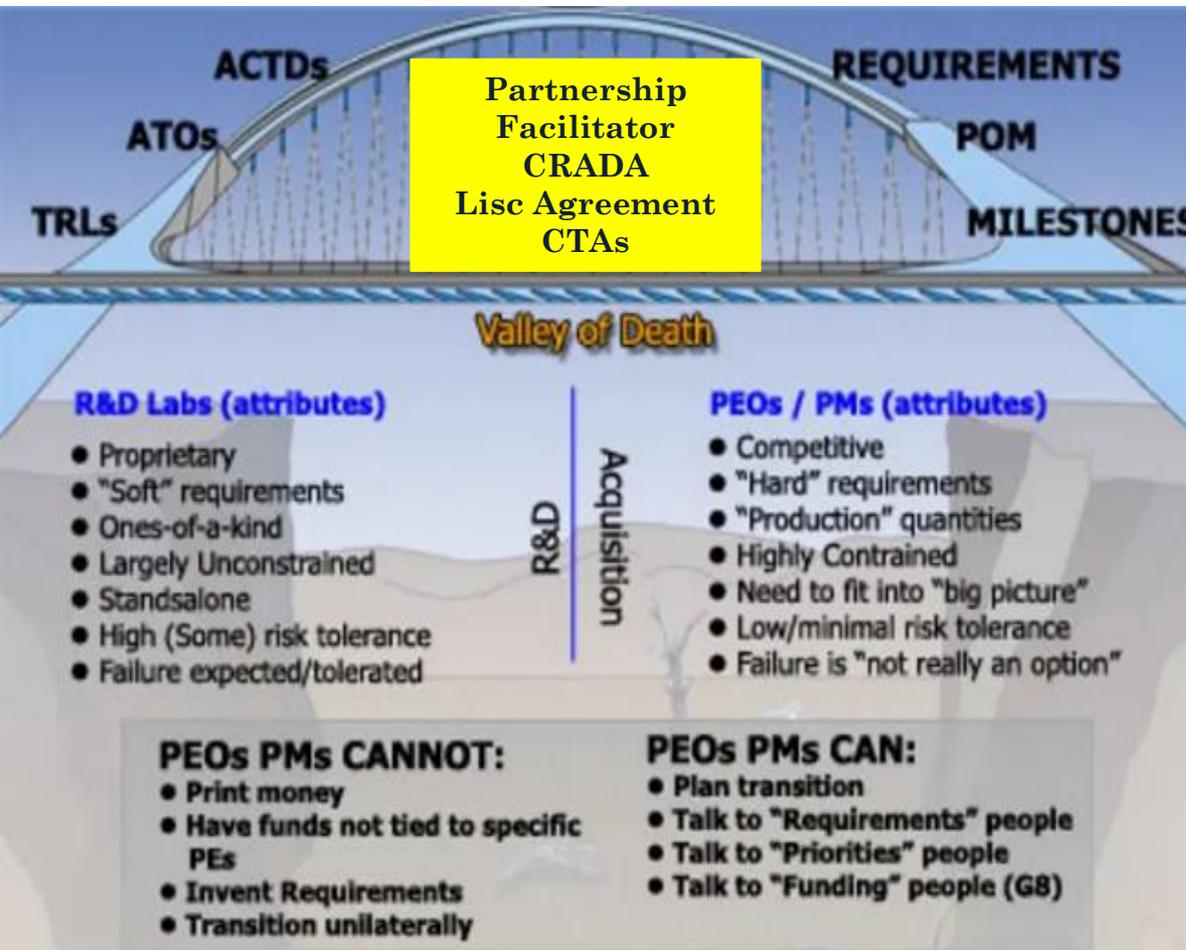
National Security Innovation Network  
(NSIN)

### Other:

CRADA

# Teamwork

## Transition In...Transfer Out



---

# The Future

- Education
  - DODI Update
-

---

# T2 Points of Contact

---

- OSD Technology Transfer
  - **John Dement**  
OSD(R&E) Laboratories and Personnel  
Email: [john.dement@navy.mil](mailto:john.dement@navy.mil)
- Professional Development Working Group Chair | DoD LQEP-T2
  - **Sabra L. Tomb**  
Attorney-Advisor , Air Force Research Laboratory  
Email: [sabra.tomb.1@us.af.mil](mailto:sabra.tomb.1@us.af.mil)

---

# T2 Points of Contact

---

- US Army Technology Transfer

- **Ellen Holthoff**

- Director for Laboratory Management  
Army Director for Technology Transfer  
Email: [ellen.l.holthoff.civ@mail.mil](mailto:ellen.l.holthoff.civ@mail.mil)

- **Zeke Topolosky**

- CCDC Army Research Laboratory  
Chief, Strategic Partnerships Office  
Email: [zeke.j.topolosky.civ@mail.mil](mailto:zeke.j.topolosky.civ@mail.mil)

- US Navy Technology Transfer

- **Kendra Meggett-Carr**

- Navy Technology Transfer Program Manager  
Office of Naval Research (ONR)  
Email: [kendra.meggett-carr@navy.mil](mailto:kendra.meggett-carr@navy.mil)

- USAF Technology Transfer

- **Joe Gordon**

- AF Technology Transfer and Transition Director  
Air Force Research Laboratory (AFRL)  
Email: [joseph.gordon.5@us.af.mil](mailto:joseph.gordon.5@us.af.mil)