



# Innovation & Modernization

*[formerly the Rapid Reaction Technology Office]*

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<https://ac.cto.mil/pe/IM>



# Innovation & Modernization (I&M)

## Our Mission

**Accelerate defense innovation through prototyping to rapidly mature and transition capabilities aligned to DoD's strategic imperatives**

## Vision

**Be an innovation leader for DoD modernization**

**Established in 2003 as the Rapid Reaction Technology Office (RRTO), our strength is the ability to discover innovative and emerging ideas, turn them into executable projects, and quickly transition them to the Services and warfighter**



# I&M Innovation Activities



## Innovative Prototyping Investments

Prototyping programs that emphasize lightweight processes and agile execution to **develop novel capabilities and transition them to acquisition markets**

Annual Program Numbers

- FY23:
- 80+ active projects
  - 93% transition rate to Service or warfighter
  - \$80M in prototyping investments



## Innovation Outreach

Business-friendly matchmaking service that **helps DoD find innovative solutions**. Discovers new technologies, and connects performers with Services and others with technology needs

- FY23:
- 495 companies or universities
  - 83 tech presentations
  - 25+ follow-on negotiations



## Innovation Discovery Venues

Three agile venues that **discover new technologies**, and enable innovators through hands-on understanding of DoD needs

- FY23:
- 14 multi-day events
  - 830 technologies showcased
  - 110+ transitions/transfers
  - 281 small/non-traditional performers

Multiple opportunities for innovative performers to mature their ideas and transition their capabilities



# Operating Model Encourages Innovation

- **Emphasis on innovative concepts, particularly from small businesses and non-traditional performers**
- **Iterative proposal review and selection process**
- **Low barrier to entry; three-page white paper and quad**
- **Streamlined process for accelerated decisions**
- **Awards made in the year of execution**
- **Execute through partnership with transition offices**

## Guiding principles

1. Emphasis on **innovative**, leap-ahead capabilities
2. **Co-funding** from other government stakeholders
3. Clear **transition** path to programs or people
4. **Jointness**
5. Closely aligned with the Department's **strategic guidance**



**A deep-rooted culture of agility and innovation**



# Example Prototypes

## NIGHT

- An advanced scramjet engine that can exploit targeted energy deposition with novel plasma techniques to improve performance and operability of air-breathing hypersonic missiles
- Partnered with Spectre Aerospace, formerly FGC Plasma, a small business looking to build the next generation of hypersonic vehicles
- Transitions to the Air Force Life Cycle Management Center (AFLCMC) Armament Directorate, the acquisition office for the Hypersonic Attack Cruise Missile



## Chariot

- A novel DevOps approach to AI/ML that reduces the time and cost to build, deploy, retrain, and redeploy models, delivering agile AI/ML capabilities that can quickly flex in response to changing operational conditions
- Partnered with Striveworks Inc., a small business transforming data by building and deploying models rapidly at scale
- Transitioned to five USSOCOM applications in FY 2022



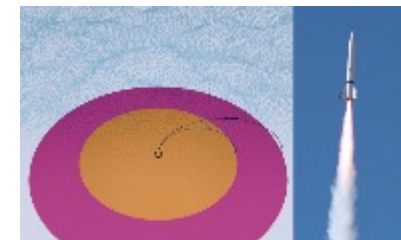
## Vanilla

- A low-cost, ultra-long endurance unmanned aerial vehicle supporting multiple payloads
- Partnered with Vanilla Unmanned, a small business challenging the vendor lock of special-use, high-cost UAVs developed by traditional industry aerospace giants
- Vanilla successfully demonstrated world-record endurance and is capable of multi-mission beyond visual line of sight operations providing days of time-on-target or thousands of miles of search capacity on a single flight



## ALITEC: High Performance Solid Rocket Propellant

- Novel solid rocket propellant formulation incorporating Al-Li alloy to provide significantly higher performance than traditional state-of-the-art solid rocket propellants
- Partnered with Adranos, Inc., the winner of the U.S. Army's inaugural xTechSearch Competition
- Transitioned to Industry and JPEO(A&A) in FY 2022





# Innovation Outreach

- Innovation Outreach engages widely across the innovation ecosystem to quickly find innovative solutions relevant to DoD
- 3-4 topics per year posted as SAM.gov “Solutions Meeting”
- Ultra-lightweight process fosters high levels of industry participation through 100-word applications and a network of 70 venture capitalists

<u>2023 Numbers</u>	<u>2023 Activities</u>	<u>2024 Activities</u>
<ul style="list-style-type: none"> <li>• <u>495</u> Companies applied to participate</li> <li>• <u>83</u> Companies presented to the requesting government audience</li> <li>• <u>25+</u> companies in follow-on discussions/ negotiations</li> </ul>	<ul style="list-style-type: none"> <li>• Fog and Edge Computing</li> <li>• Commanding Energy</li> <li>• Counter AI/Autonomy Enhanced Multi-Domain Uncrewed Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Unleashing Data at Speed &amp; Scale</li> <li>• Disruptive Technologies</li> <li>• AI/ML Enhanced Battlespace</li> <li>• TBD Q4 FY24</li> </ul>

## Diamond Unclonable Security Tag (DUST)

- DUST Identity, a small business, originally focused on preventing counterfeiting of luxury commercial goods (e.g., watches)
- Received DoD funding to develop their nano-material to mark, scan, and catalog critical military components to detect tampering
- In FY23, DUST Identity transitioned their solution to the Navy, and partnered with Parker Aerospace to explore incorporating DUST on the F-35







# Innovation Discovery Venues



## Multi-Intelligence & ISR Technology Discovery Venue

**Thunderstorm** is a campaign of land-based innovation discovery events that provides performers the opportunity to showcase new technologies in the field and collaborate with DoD stakeholders and other businesses. Prototypes are showcased in various settings depending on the technology focus area, such as autonomy and persistent sensing. In FY 2023, Thunderstorm showcased 653 technologies, including systems from 185 small businesses.



## Multi-domain Technology Discovery Venue

**Joint Prototyping & Experimentation - Multidomain (JPEM)** enables rapid integration of technologies on an authentic military maritime platform. JPEM's mobility enables showcasing joint and multi-domain technologies that are difficult to observe outside of DoD test ranges or laboratories, including electronic warfare, communications systems, and novel sensors. In FY 2023, JPEM showcased 72 technologies for DoD representatives, including prototypes developed by 19 small businesses.



## Joint Interagency Technology Discovery

**JIFX** leverages its rich Naval Postgraduate School academic expertise and west coast location to extend the ID program's reach to more small businesses and non-traditional performers. In partnership with the CA National Guard at Camp Roberts, JIFX provides a flexible flight range for unmanned aerial systems. Recent events focused on autonomous systems and data visualization. In FY 2023, JIFX introduced the DoD to 105 prototype technologies, including 77 from small businesses.

<b>FY23:</b>	<b>110+</b>	<b>Technologies Transitioned</b>	<b>281</b>	<b>Small Businesses Mentored</b>	<b>830</b>	<b>Technologies Showcased</b>	<b>950+</b>	<b>DoD/Government Attendees</b>
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# I&M Opportunities for Engagement

## Upcoming FY 2024 Events

February 2024: Outreach and Discovery Industry Meeting, Virtual

March 2024: SXSW 2024 outreach to small businesses and non-traditional performers

April 2024: 'Unleashing Data at Speed and Scale' Solutions Meeting

April 2024: Thunderstorm SOF Lethality

May 2024: Mission Capabilities Industry Technical Exchange Meeting

May 2024: JIFX C5ISR and Countermeasures

May 2024: 'Disruptive Technologies' Solutions Meeting

June 2024: JPEM Maritime Security, Pax River MD

July 2024: Thunderstorm 'Persistent Sensing', Fort Huachuca AZ

August 2024: Fed SuperNova, Austin TX

August 2024: JIFX Non-Standard Communications and Navigation

August 2024: TIDE 2024 'Anticipating Tech Surprise'

September 2024: Thunderstorm 'Human Machine Teaming'

**Visit our Innovation & Modernization  
website <https://ac.cto.mil/pe/IM> for the  
latest schedule or to join our mailing list**





# I&M Opportunities for Engagement

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Industry Engagement Campaign			★ PSU-ARL	★ AFRL	★ JHU-APL	★ NRL	★ MIT-LL	★ GTRI	★ PSU-ARL	★ JHU-APL	★ Nebraska	★ "Boston" Pitch Day	★ GTRI
	● CES	● Military Sensing Symposium	● SxSW		● MC Ind TEM	● SOF Week	● Modern Day Marine	● NDIA ETI	● Fed SuperNova		● AUSA		
				◆ Solutions Meeting 24-1			◆ Solutions Meeting 24-2	◆ Solutions Meeting 24-3	◆ Solutions Meeting 24-4			◆ Solutions Meeting 25-1	
				◆ Thunderstorm 24-1		◆ Thunderstorm 24-2	◆ TIDE 2024	◆ Thunderstorm 24-3					
		◆ JIFX 24-2			◆ JIFX 24-3		◆ JIFX 24-4				◆ JIFX 25-1		
	◆ JPEM 24-1						◆ JPEM CD 24-2		◆ JPEM CD 24-3			◆ JPEM 25-1	

Legend



Pitch Days



Industry Events



Discovery and Outreach Events

Visit our Innovation & Modernization website <https://ac.cto.mil/pe/IM> for the latest schedule or to join our mailing list



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