



# Rapid Reaction Technology Office (RRTO)

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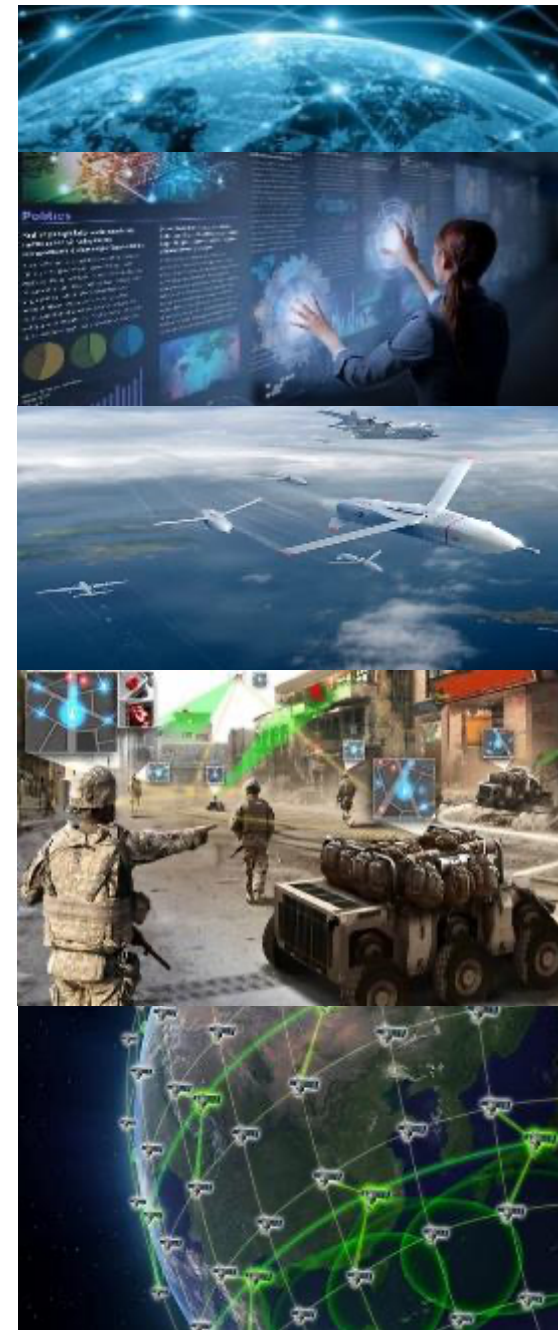
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# *Rapid Reaction Technology Office*



## **Vision**

Create accelerated pathways for new ideas to become Joint capabilities

## **Mission**

To deliver innovative, leap-ahead capabilities to the Joint Force through prototypes and experiments that accelerate, align, and evaluate Joint mission capabilities

**RRTO's strength is the ability to discover new ideas for emerging technologies and capabilities, turn them into executable programs, and accelerate capability to the warfighter**



# RRTO Programs

## Emerging Capabilities Technology Development (ECTD)

- Conceptual prototypes aligned with the “Road to Dominance” Modernization plan
  - Pursues risk-reducing technology prototypes and demonstrations of cutting-edge land, sea, air, and space systems for the Joint Warfighter
  - Rolling start during execution year **accelerates cycle of innovation**

## Quick Reaction Special Projects (QRSP)

- Operational prototypes that deliver quick wins to the joint warfighter
  - Delivers innovative prototypes to help address immediate needs; 12-18 months, < \$1M
  - Focused outreach to small businesses and non-traditional performers

## Rapid Prototyping Program (RPP)

- Operational Prototypes that accelerate innovation within Services’ programs
  - Helps bridge new technologies from Service labs and other innovation centers, across the “valley of death” to programs of record
  - 6.4 funding facilitates technology transition and development of CONOPS/TTPs



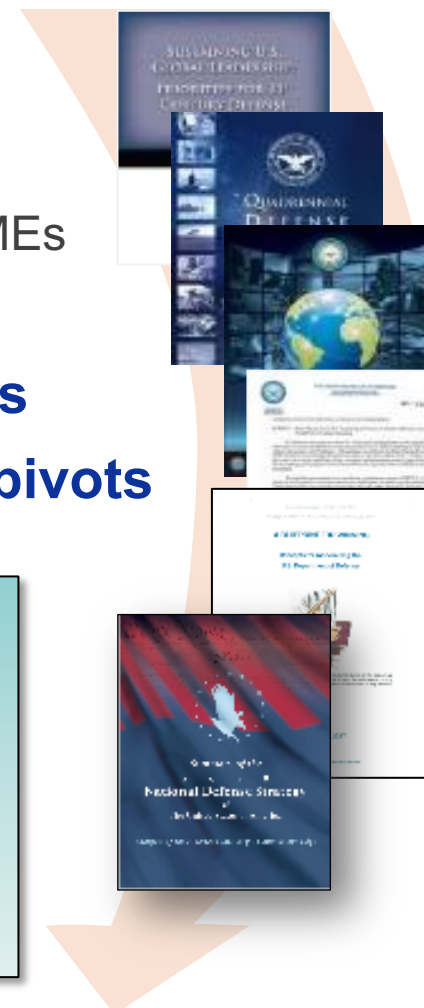
# RRTO Operating Model

- **Accept concepts from all sources**
- **Streamlined process for funding consideration**
  - Low barrier to entry; three-page white paper
  - Technical review by network of technical and operational SMEs
- **Awards made during the year of execution**
- **Execute through partnership with transition offices**
- **Minimal project tails enables immediate and total pivots**

## Guiding principles

1. Invest where others do not (seams, cracks, & fissures)
2. Co-funding from other stakeholders
3. Clear transfer/transition path
4. Open to higher risk / higher reward alternatives
5. Advance emerging technology development for the joint Warfighter
6. Mitigate risk towards future S&T development
7. Inform requirements and future acquisition decisions

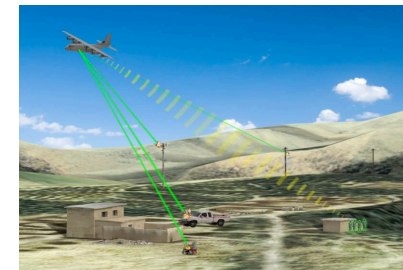
**A deep-rooted culture of agility and innovation**





# Example Prototyping Efforts

- **Persistent Aerial Recon. & Communications (PARC)**
  - 24/7 ISR via ultra-lightweight low-tension power/data wire
  - Autonomous launch, flight, and recovery
  - Transitioned to SOCOM, Army Rapid Equipping Force
  
- **High Accuracy Video Object Classification (HAVOC)**
  - Expeditionary automated target recognition for full motion video
  - New classifiers require 100s or 1000s of samples, not millions
  - End users can create new classifiers and train algorithms in the field
  - Algorithms incorporated into Project Maven
  
- **AC-130 High Energy Laser (HEL)**
  - OSD risk reduction in key technology areas
  - Work accelerates SOCOM program; foundational for other DE work
  - Overall program completes with operational system in FY 2022
  
- **Accelerated Nuclear DNA Equipment (ANDE)**
  - Processes DNA samples and matches to terrorist database
  - Replaces expeditionary lab with a fieldable laser printer size device
  - Transitioned to SOCOM, DHS, DoJ







# Demonstration/Experimentation Venues



High Speed, Electronic Keel Marine Testbed

**Stiletto** is a maritime technology demonstration platform with an “electronic keel” that enables rapid integration, demonstration, and experimentation with new technologies. The 88-foot experimental boat provides an authentic military maritime platform with easy access for small businesses and non-traditional performers. In FY 2020, Stiletto demonstrated 40 technologies, including systems from 10 small businesses.

Technical Support & Operational Analysis Activity (TSOA)



Multi-Intelligence & ISR Technology Demonstration Venue

**Thunderstorm** is an enduring technology demonstration venue open to a wide range of participants, including small businesses, military, and the interagency. New technologies can be integrated, evaluated, and assessed under real world conditions with scripted and unscripted scenarios. In FY 2020 Thunderstorm demonstrated 98 technologies, including systems from 68 small businesses.



Joint Interagency Field Experimentation (JIFX)

**JIFX** demonstrates and evaluates new technologies related to Department of Defense research in an operational field environment. JIFX also provides the operational community an opportunity to experiment with these technologies to better understand their capabilities and how to use them. Together this creates a collaborative, boundary-pushing environment to explore the implications and applications of emerging technology. In FY 2020, JIFX demonstrated 74 technologies, including systems from 32 small businesses.



Simulation Experiments (SIMEX)

**Simulation Experiments (SIMEX)** provide a high-fidelity environment to develop operational concepts for emerging technologies. Sensors, weapon systems, kill chains, and command & control with operational users are accurately modeled and simulated by MITRE’s National Security Experimentation Lab, providing data-driven results. 58 SIMEX events have been conducted since 2001, including UAS/counter-UAS, directed energy weapons, cyber warfare, and autonomous systems.

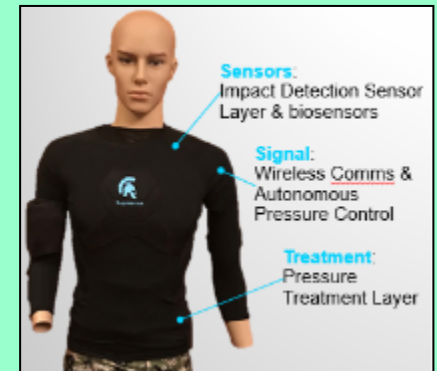


# Innovation Outreach

- Leverages innovative emerging commercial technologies, accelerating capability and reducing acquisition time, cost, and risk
- Promotes competition and field affordable capabilities by taking advantage of commercial R&D investments
- Engages with emerging nontraditional technology companies

## Autonomous Lifesaving Battlefield Trauma Care

- Embedded sensors detect location and severity of penetrating wounds and sends detailed information to the supporting medic
- Enables medical support to prioritize which victim to attend first, especially when geographically separated
- Transition: Naval Special Warfare



### 2019 Numbers

- 836 Companies applied to participate
- 94 Companies presented to the requesting government audience
- 38 companies in follow-on discussions / negotiations

### 2020 Activities

- DTEP Global Needs Statement
- Fire Support Next
- Joint Artificial Intelligence Center