



Small Business Innovation

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Rapid Reaction Technology Office (RRTO)

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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, deliver, and transition Joint 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



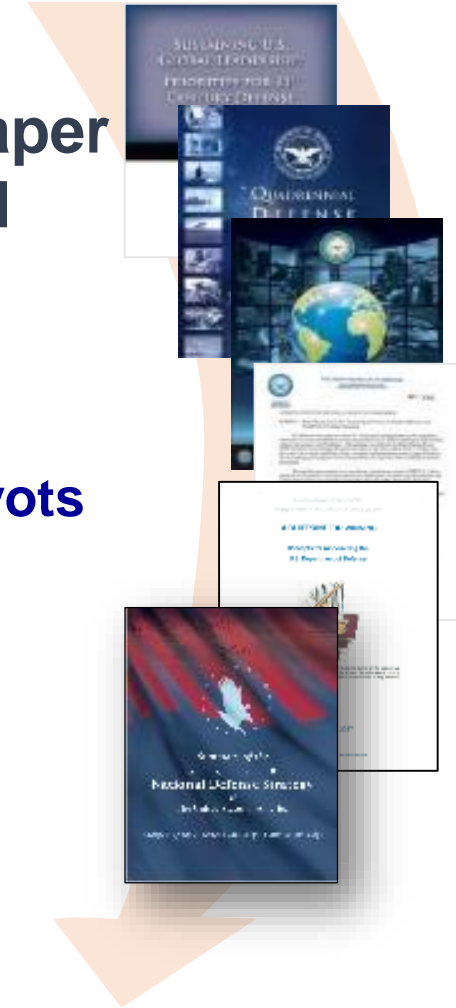
RRTO Operating Model

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

Guiding principles

1. Emphasis on innovative, **leap-ahead** capabilities
2. **Co-funding** from other 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





RRTO Prototyping Programs



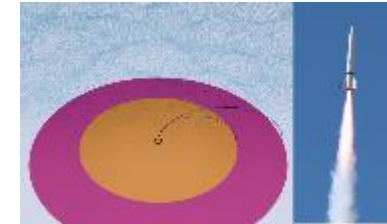
	QRSP	ECTD	RPP	RPF
Funding Type	Advanced Tech. Development (6.3)	Advanced Technology Development (6.3)	Demonstration and Validation (6.4)	Non-appropriated 6.3 and 6.4 funds
Focus	Innovation Outreach to small businesses and non-traditional performers	Rapidly explores and onramps emerging technologies	Moves technologies across "Valley of Death" and into Service programs	Advances Modernization in priority areas
Key Features	<p>Operational prototypes that focus on small businesses and non-traditional sources of innovation</p> <p>Provides quick wins for joint warfighter</p> <p>Risk tolerant: small investments allow pursuit of needle-movers</p> <p>Projects average 12 months and <\$1M</p> <p>Transitioned 39 of 45 completed projects in FY20 (87%)</p>	<p>Proof-of-principle prototypes in emerging technologies and explore the art of the possible</p> <p>Delivers mission-focused capabilities during the year of execution</p> <p>Projects historically average 1-3 years and <\$6 million</p> <p>FY20 selections avg \$35M</p> <p>Transitioned 2 of 2 completed projects in FY20 (100%)</p>	<p>Operational prototypes that deliver Joint Modernization capabilities in partnership with Service programs of record</p> <p>Projects historically average <\$15M across 1 year</p> <p>FY20 selections averaged \$150M across 5-6 years</p> <p>Transitioned 3 of 5 completed projects in FY20 (60%)</p>	<p>Operational prototypes that accelerate DoD modernization priorities</p> <p>Streamlined and risk-tolerant approach to invest in high pay-off projects that provide a residual capability within 5 years</p> <p>Average project 3 years with a single year of funding <\$20M</p>
Key Program Beneficiaries	<ul style="list-style-type: none"> - Joint Staff / CCMDs - Services - Joint operational units 	<ul style="list-style-type: none"> - Joint Staff / CCMDs - Services - Joint operational units 	<ul style="list-style-type: none"> - Joint Staff / CCMDs - Services 	<ul style="list-style-type: none"> - Joint Staff / CCMDs - Services



Example Prototyping Efforts

■ 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
- Transitions to U.S. Army in FY 2022



■ Tactical Grade Inertial Measurement Unit (IMU)

- A single-chip, millimeter-scale, tactical grade IMU with a total power requirement of <math><150 \mu\text{W}</math> and capability of surviving in a >20,000 g shock environment
- Partnered with StethX Microsystems, a start-up incubated through Georgia Tech's Advanced Technology Development Center
- Transitions to U.S. Army in FY 2022



■ Diamond Unclonable Security Tag (DUST)

- A diamond-based nano-material to mark, scan, and catalog critical military components to ensure components have not been altered or tampered within custody chains
- Partnered with DUST Identity, a small business focusing on solving critical problems in supply chain security
- Transitions to U.S. Navy and U.S. Marine Corps in FY 2022



■ Canine Head Mounted Display

- Augmented reality system built for canine morphology where handlers can provide visual clues to direct military working dogs to investigate specific locations
- Partnered with Command Sight, a small business specializing in bridging human and animal communication



- Transitions to U.S. Army and U.S. Navy in FY 2021

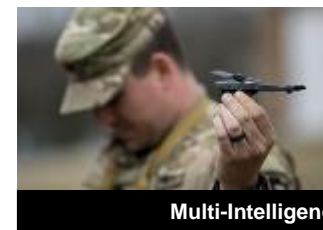


Demonstration/Experimentation Venues



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.



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.

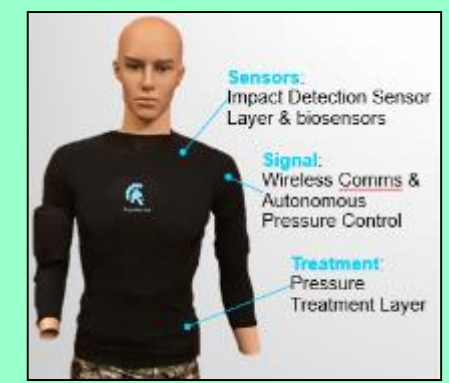


Innovation Outreach

- 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: Special Operations Command



<u>2020 Numbers</u>
<ul style="list-style-type: none">• 1,616 Companies applied to participate• 65 Companies presented to the requesting government audience• 14 companies in follow-on discussions/negotiations

<u>2021 Activities</u>
<ul style="list-style-type: none">• AFWIC/AFRL Just-in-Time Multi-Mission Warfighter• PMS 408 Tech Review• Global Solutions Meeting



RRTO Points of Contact



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DoD SBIR/STTR Program Goals



- Stimulate technological innovation for DoD to maintain technological superiority and military readiness to deter military operations from U.S. adversaries.
- Increase private sector commercialization of Federal R&D to increase competition, productivity, and economic growth.
- Stimulate a partnership of ideas and technologies between innovative small businesses and research institutions (STTR).
- Through a competitive awards-based program, SBIR/STTR enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization.
- By including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated and the United States gains entrepreneurial spirit as it meets its specific R&D needs.





OSD SBIR/STTR Management Functions




SBTP oversees the DoD SBIR and STTR programs, and provides an OSD point of contact for Congress, the Small Business Administration, Government Accountability Office, and the interagency SBIR/STTR community. In addition, SBTP seeks technology partnership opportunities within DoD and with other Federal agencies.

Responsibilities include but are not limited to:

- **AUTOMATION/WEBSITE:** Oversee development, maintenance, and enhancement of the Defense SBIR/STTR Innovation Portal (DSIP) in collaboration with the participating DoD Components. Establish and maintain a web presence for DoD, Federal, industry, and academia to find useful and relevant information regarding the DoD SBIR/STTR Programs.
- **LEGISLATION/POLICY:** Influence and implement legislation, policy and regulations – to include drafting responses to RFIs, meeting with staffers upon request, and developing legislative proposals.
- **FINANCIAL MANAGEMENT:** Manage execution of OSD SBIR/STTR Extramural and Admin Budgets
- **PROGRAM MANAGEMENT:** Assemble SBIR/STTR Topics from across DoD, publish Broad Agency Announcements (BAAs), manage OSD-level Transition and Commercialization Program, submit quarterly and annual reports and metrics to SBA for DoD SBIR/STTR, coordinate with Services and Components to conduct program outreach/in-reach,
- **LEADERSHIP:** SBTP is the leader of the DoD SBIR/STTR Programs and strives to establish and maintain relationships with participating DoD Services and Components that unifies, and conveys an environment of transparency and trust.




DoD SBIR/STTR Process and Components

Topic Development



Broad Agency Announcement



Proposal Submission



Proposal Evaluation/Selection



Contract Award



[Department of the Army](#)



[Department of the Navy](#)



[Department of the Air Force](#)



[Defense Advanced Research Projects Agency](#)



[Defense Health Agency](#)



[Defense Logistics Agency](#)



[Defense Microelectronics Activity](#)



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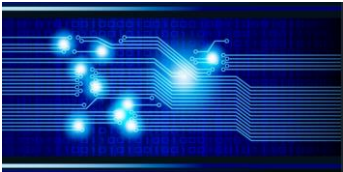
[Space Development Agency](#)



[United States Special Operations Command](#)



Modernization Technology Priorities



Artificial Intelligence (AI)

The DoD will leverage AI to enable U.S. forces to operate more effectively and efficiently. As a Department, we are evaluating which of our processes and procedures can be enabled via adoption of AI technology to meet warfighter needs and Defense priorities.



Biotechnology

Biotechnology is an engineering discipline that utilizes or exploits living systems to produce a wide range of technologies and products. Future advances in biotechnology will provide new operational capabilities to the Department of Defense across multiple domains, spanning material & systems, military medicine, warfighter performance, and chem-bio defense.



Autonomy

Autonomy extends and complements human capabilities. Advantages include persistence, size, speed, maneuverability, and reduced risk to human life. The DoD targets seamless integration of diverse unmanned/mixed team capabilities that provide flexible options for the Joint Force.



Cyber

Cyber is a unique operational domain with significant security challenges and potential leap-ahead capabilities for military operations requiring enhanced command, control and situational awareness, and autonomous operations. Ability to gain and maintain the U.S. technological edge in cyberspace in the face of rapid evolution is essential to maintaining mission readiness.



Directed Energy

When directed energy matures to a deployable capability, our armed forces will have the potential to defend against several types of threats with great precision and minimal collateral damage, at minimal cost per engagement. High Energy Laser (HEL) technology development and advancements in hardware are making laser weapon systems increasingly viable.



Fully Networked Command, Control, and Communications

Fully Networked Command, Control, and Communications technology encompasses the capability to acquire, process, and disseminate information across force elements. DoD requires a clear path to robust C4I with multiply redundant fully-networked "Comms." Existing capabilities require sufficient protection against an increasing threat, in pervasiveness and effectiveness.



Hypersonics

Hypersonic weapons travel five or more times the speed of sound. There is a focus on the tactical capability that these sorts of weapons bring to theater conflicts or regional conflicts. Very quick response, high speed, highly maneuverable, difficult to find and track and kill. We are modernizing our offensive and defensive force structure to both utilize and deter this capability.



Microelectronics

Microelectronics have been rapidly evolving as the demand for inexpensive and lightweight equipment has increased, and have been incorporated into countless DoD systems. Our modernization ability is jeopardized by foreign microelectronics (ME) production, actions, and investments. We must develop and deliver next generation microelectronic technologies to enhance lethality, ensure critical infrastructure, and achieve economic competitiveness..



Quantum Science

Quantum computers pose an impending threat to secure communications. Continued US dominance in quantum information science will keep us ahead of these risks, and NSA crypto-modernization will protect our most sensitive communications against a quantum computer attack. Quantum sensing will deliver new and assured precision position, navigation, and timing capabilities, keeping our forces safe in GPS-denied theaters. Quantum networks will deliver drastically enhanced sensors for finding and fixing elusive targets, and will deliver resource multiplying effects for commercially developed quantum computers to solve DoD's hardest analytical problems.



Space

The U.S. way of war, across all domains, is dependent on timely and assured space effects. Adversary capabilities and advancements require us to move quickly to a more defensible and resilient space posture. Added protection and resiliency to our current spacecraft fleet is essential.



5G

5G will bring about wireless, ubiquitous connectivity across humans, machines, and the Internet of Things. DOD will adapt 5G and next generation technologies to "operate through" congested and contested spectrum and in spite of compromised networks to ensure maximum readiness, lethality, and partnering among allies. 5G prototyping and experimentation will be conducted in collaboration with the defense industry and commercial suppliers to accelerate U.S. prominence in the 5G global ecosystem.



Broad Agency Announcement (BAA) Schedule



A DoD Agency-wide announcement includes:

- DoD Instructions
- Service/Component Unique Instructions
- Topics
 - Not all Components participate in each solicitation.
 - Multiple solicitations provide opportunities to participate throughout the fiscal year.

**SBIR 21.2
STTR 21.B**

Pre-Release
04/21/21

Open
05/19/21

Close
06/17/21

**SBIR 21.3
STTR 21.C**

Pre-Release
8/25/21

Open
9/23/21

Close
10/22/21

**SBIR 22.1
STTR 22.B**

Pre-Release
11/23/21

Open
01/05/22

Close
02/10/22

Note: Dates are subject to change.

Out-of-cycle BAAs are released when a component needs to solicit topics outside of the three DoD SBIR/STTR BAA cycles shown.



Defense SBIR / STTR Innovation Portal (DSIP)



- DSIP is the official proposal submission website for the Department of Defense.
- Proposal Submission
 - SBIR/STTR Phase I, Direct to Phase II, or Phase II proposals to any DoD Component must be submitted through the DSIP.
- Topic Search
- Topics Q&A

<https://www.dodsbirsttr.mil/submissions/login>

DSIP Defense SBIR/STTR Innovation Portal
Proposal Submissions

The DoD Small Business and Technology Partnerships Office is pleased to announce the Defense SBIR/STTR Innovation Portal (DSIP), the new Website for DoD SBIR/STTR Proposal Submissions.

In the coming weeks, the current DoD SBIR/STTR Submissions Website will be decommissioned, and the new Defense SBIR/STTR Innovation Portal (DSIP) will take its place. DSIP features a new look and feel and will provide new and more user-friendly functionality. This announcement is the first of several communications to keep you informed of the changes and the impact this transition will have on the DoD SBIR/STTR proposal submission process. Please read the below information for details and training opportunities.

Dashboard showing proposal submission progress and options:

- File Information: 100% (2/2)
- 100% (2/2)
- 100% (2/2)
- 100% (2/2)
- Recent Activity: PROPOSAL CERTIFICATION FORM, PROPOSAL SUMMARY FORM
- Open BMAs: Phase I Proposals, Archived Proposals
- 000-2023-2: 2 Proposals | Due 11/20/23 | Ready to Create | Submitted | START NEW PROPOSAL
- 000-2023-3: 3 Proposals | Due 11/20/23 | Ready to Create | Submitted | START NEW PROPOSAL
- 000-2023-4: 4 Proposals | Due 11/20/23 | Ready to Create | Submitted | START NEW PROPOSAL

DSIP is an SBIR Phase III success story that originated with NASA!

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Get in Touch

Visit: <https://rt.cto.mil/rtl-small-business-resources/> for more information.

Visit: <https://www.dodsbirsttr.mil/submissions/login> to subscribe to our ListServ.

Questions? Contact us!



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Q&A

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Department of Defense Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR) Program Overview

*Ms. Susan Celis
DoD SBIR/STTR Program Manager*