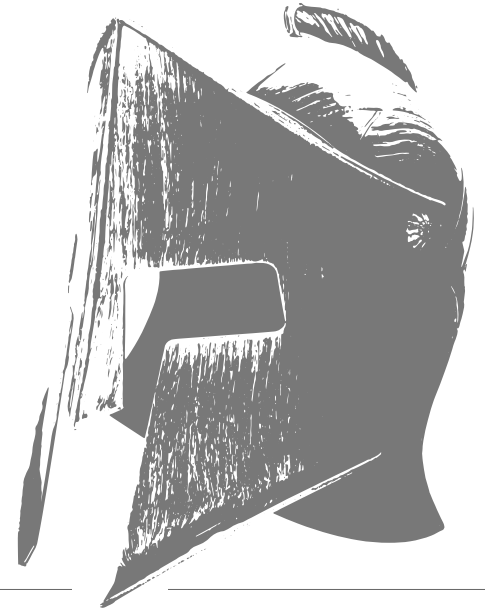


SF-STAR

SAME FREQUENCY SIMULTANEOUS TRANSMIT AND RECEIVE



BACKGROUND ON THE PROBLEM

Soldiers need to share mission-critical information across radio waves - including voice, video, and data - in tactical environments. But the frequency spectrum, the bandwidth available for radio communication, can be limited, especially when operating overseas.

Full-duplex capability has been a major promise in next-gen telecommunications systems, but the current state of the technology is not yet mature. That creates serious risk and challenges for Soldiers.

Same Frequency Simultaneous Transmit and Receive (SF-STAR) technology can increase efficiency by enabling Soldiers to both send and receive information at the same time, on the same channel. But SF-STAR technology needs improvement, because current methods introduce self-interference — the two-way radio waves meddle with each other — which offsets potential advantages.

DETAILS ON THE OPPORTUNITY

The Army Applications Laboratory (AAL) is looking for radio technology that uses SF-STAR to improve spectrum efficiency, reduce interference, and operate across environments. This technology must work even when radio waves are congested, contested, and exposed to electromagnetic interference.

Through this SPARTN opportunity, we want to develop innovative radio handheld or manpack prototypes that can perform SF-STAR functions when operating in tactical environments. The prototypes should be able to operate in high-interference environments, even when exposed to intended interference.

HOW IT WORKS

This SPARTN project can provide a contract of up to \$1.5 million for a 2 year period of work, during which you will deliver 4 prototypes in a relevant environment.

Companies selected for this Direct to Phase 2 award are able to take advantage of the SBIR enhancement program. If they bring \$500,000 in non-SBIR funds, the SBIR program will match them, leading to a total contract value of \$2.5 million. In addition, companies will interact with the people in the Army who buy these systems, and those working to modernize them.



WHAT IS A POINT CHALLENGE?

“We need something that does a specific thing and is tailored to a detailed problem statement.”

A FOCUSED APPROACH

Supports up to five businesses that are each tasked to develop technology tailored to a specific problem

Direct to Phase 2 awards possible when the feasibility of the technology is already proven.

Two years to help mature the technology so it can be demonstrated in a relevant environment

Learn more about current problems we're solving through SPARTN and how you can get involved at aal.army/spartn.

The Army is interested in SF-STAR technologies with features that include, but are not limited to, the following:

CHARACTERISTICS	RANGE
TX/RS Isolation [dB]	100-120
Latency [ms]	30-10
Range [km]	1-10
Simultaneous Nodes	50-150
System Final Cost Per Radio [\$]	\$2,000-\$5,000
SWaP	Vehicle-mounted or handheld (ideal)
Interference cancellation	Static or dynamic (ideal)
Power scalability (W)	2-5
Network type	MANET or no infrastructure (ideal)
Ability to operate	Multiple bands (e.g., HF, UHF, L, S, C, Ka, Ku, mmWave)
Ability to support	Multiple bandwidths (e.g., 1, 2, 5, 10, 20, 250, 500, 1000 MHz)
Anti-jam	Resilience from high power jammer at 3km

BRINGING THE SPARTN PROGRAM TO LIFE

Special Program Awards for Required Technology Needs (or simply SPARTN) is a different program for the Army – and for the small businesses that want to work with us – supported by Small Business Innovation Research (SBIR) and bolstered by AAL models and outreach.

SPARTN blends government and industry best practices to introduce a new whole-of-Army, collaborative approach to solution innovation. This novel approach is made possible by tapping funding through the SBIR program. The result is a way to solve Army problems faster and accelerate the process by which successful technology is purchased by the Army.

The SPARTN program features challenging and important problem statements from problem owners across the Army. These represent some of our biggest problems and the ones we want to work closely with the commercial industry to solve.

Here's what makes SPARTN different:

1. Problems released through SPARTN are tied to the Army's critical needs and to other focused modernization efforts
2. Faster contracting speed, with the goal of having companies on contract as soon as possible (vs. up to 180 days)
3. Ability to connect with Army stakeholders and end users (Soldiers) for deeper insight into the problem
4. If selected, potential for \$2.5 million total value contract to build a prototype related to the specific problem
5. Acquisition teams included early with the goal of easing transition & building new tech into recurring Army budgets

Learn more about the problems we are solving through SPARTN and how you can get involved at aal.army/spartn.

ABOUT THE ARMY APPLICATIONS LABORATORY

We're not a laboratory in the traditional sense of the word. As the U.S. Army's innovation unit, we don't make things – we make things possible. The Army Applications Laboratory (AAL) is fundamentally reshaping how the Army works with industry to reunite American innovation and national security. Together, we question *why* and deliver *what if*. Learn how we do it at aal.army.



WWW.AAL.ARMY