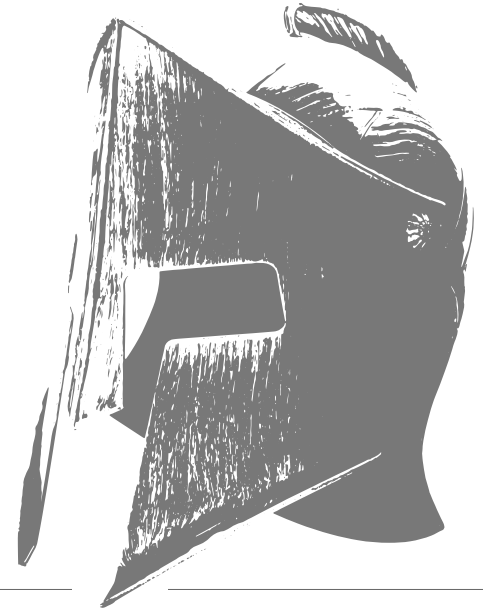


# LC/LPD

## LOW-COST / LOW PROBABILITY OF DETECTION



### BACKGROUND ON THE PROBLEM

The security of wireless communications could literally be the difference between life or death for Soldiers. The waveforms they use to communicate typically exhibit cyclic properties, and have increasingly become more susceptible to detection — and even classification — by expert signal identification systems that use techniques such as cyclostationary detection. This problem is amplified by battlefields that are increasingly contested and urbanized.

To overcome this impairment, waveforms must exhibit featureless properties under extremely low signal-to-noise-ratio (SNR) conditions in the time and frequency domain for resilient Low Probability of Detection (LPD). Additionally, a low-cost waveform is important to the Army, as this LPD waveform will be paired with existing directional communications systems and must be affordable to the Army as a secondary or tertiary system.

### DETAILS ON THE OPPORTUNITY

The Army is looking to develop a waveform with featureless properties that results in reduced susceptibility of detection and enables operation under extremely low SNR conditions in both the time and frequency domain.

#### This LPD waveform should serve two primary functions:

- (1) Low data-rate control functions to be paired with existing Army high data-rate directional system(s).
- (2) Terrestrial transport for low data-rate applications such as text, chat, and position location information.

### HOW IT WORKS

This SPARTN project can provide combined contracts of up to \$1.95 million.

In Phase I, up to six businesses may be selected to receive \$200,000 each for a three-month period of performance. In Phase II, up to three businesses may be selected to receive \$1.7 million each for an 18-month period of performance.

Within the period of performance, businesses will deliver prototypes in a relevant environment. Businesses will also have the opportunity to interact with Army stakeholders, including technology end users, modernization experts, and buyers of technology.



#### WHAT IS A POINT CHALLENGE?

“The Army needs a specific capability that is tailored to a detailed problem statement.”

#### A FOCUSED APPROACH

Supports up to six businesses in Phase I to develop technology tailored to a specific problem

Supports up to three businesses in Phase II, once the feasibility of the technology is proven

Interaction with relevant Army stakeholders enables targeted creation of technology

# Learn more about current problems we're solving through SPARTN and how you can get involved at [aal.army/spartn](http://aal.army/spartn).

The Army is interested in LC/LPD technologies with features that include, but are not limited to, the following:

CHARACTERISTICS	RANGE
Range (km)	10-20
End-to-End Latency (ms)	30-2
Simultaneous Nodes/Users	50-150
Throughput (aggregate network) (kbps)	100   750 adjustable/adaptive (ideal)
System Final Cost (ROM) (\$/radio)	\$2,000-\$5,000
SWAP	Vehicle-mounted   Handheld (ideal)
Directionality	Omni-directional   Omni-hemispherical (ideal)
Spectrum Emissions	Government   Unlicensed bands (ideal)
Communications Types Supported	PLI, chat, data   PLI, chat, data, voice (ideal)
Network Function	No hopping   Multi-hop capable (ideal)
Network Type	Decentralized   No single point of failure and no infrastructure (ideal)
Data Interface	10/100 Ethernet   10/100/1000 Ethernet & USB (ideal)
Mobility	On the move up to 50 mph

## BRINGING THE SPARTN PROGRAM TO LIFE

Special Program Awards for Required Technology Needs (SPARTN) is a different program for the Army — and for the small businesses who want to work with us. SPARTN is 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 and collaborative whole-of-Army approach to solution innovation built on Army SBIR. The result: we can solve Army problems faster and accelerate the process by which businesses sell successful technology to the Army.

The SPARTN program features challenging and important problem statements from problem owners across the Army. These statements represent some of the Army's biggest problems — ones we want to work with innovative businesses 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 to have businesses on contract as soon as possible (vs. hundreds of days)
3. Ability to connect with Army stakeholders and end users (Soldiers) for deeper insight into the problem
4. If selected, potential for a high-value contract to build a prototype related to the specific problem
5. Work with Army acquisition teams from the outset to ease transition and build 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](http://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](http://aal.army).

