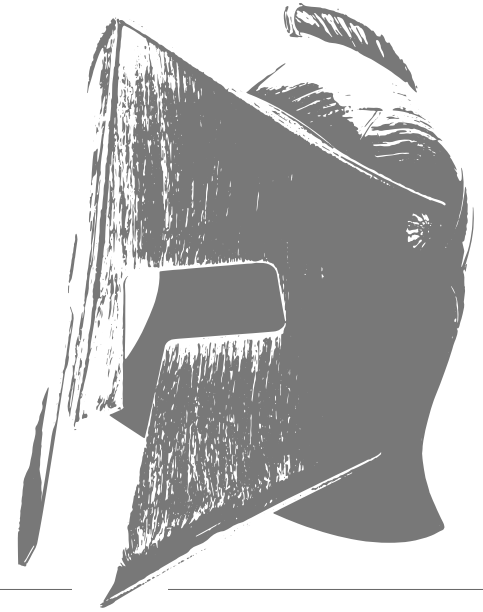


# EXOSENSE

## EXOSKELETON SENSOR DATA FUSION AND INSIGHT SYSTEM



### BACKGROUND ON THE PROBLEM

Exoskeletons are coming to future battlefields, but we don't yet know what to do with all of the data they'll collect. So the Army Applications Laboratory (AAL) is looking for creative solutions to develop a system that interprets and delivers exoskeleton sensor data into an open-architecture handheld radio device.

This system should perform computations that incorporate sensor fusion with data processing, insight, and aggregation. It must have the ability to:

- Visualize real-time monitoring of biological, human performance, and safety statuses
- Provide actionable insights on movements, health, and location to individual Soldiers (e.g., sensors separately monitoring a Soldier's heart rate, oxygen levels, and coordinates might warn them they are gaining elevation at an unsustainable rate)
- Aggregate data from multiple Soldiers' movement, health, and location to provide a dashboard of insights to leaders
- Interpret data regardless of sensor type (sensor agnostic)

### HOW IT WORKS

For this topic, companies can apply for either a Phase 1 award or a Direct to Phase 2 Award. The Phase I award option provides up to \$150,000 and a 3-month effort in which to deliver a proof of concept solution, while the Direct to Phase 2 option provides up to \$1 million and a 12-month period of performance to deliver a prototype system.

Companies selected for a Direct to Phase 2 award can take advantage of the SBIR enhancement program. If you bring \$500,000 in non-SBIR funds, the SBIR program will match them, leading to a total contract value of \$2 million.

### DETAILS ON THE OPPORTUNITY

We're looking for applications across a range of areas and expertise. If you work on sensor fusion, human performance, AI and machine learning, data science, or Android development, you probably have an idea or technology that we can use.

Ultimately, this project will try to integrate data from a variety of sensor types into a single solution. Here are some examples of the types of sensors (and related data) we use:

- Electro (ECG, EMG, EEG, EOG, EKG)
- Motion (Encoders, IMU)
- Position (GPS)
- Temperature (Thermometers)
- Imaging (Cameras, LiDAR)



#### WHAT IS AN AREA CHALLENGE?

"The Army isn't exactly sure what we want, but we know that we need something in this area."

#### AN OPEN APPROACH

Supports up to eight businesses that are each tasked to develop technology to solve a wide-ranging problem

Direct interactions with Army stakeholders and end users (Soldiers) help better shape the solution

Can invest across different technology levels, and both Phase I and Direct to Phase II awards are possible

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



### 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 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](http://aal.army/spartn).

### ABOUT THE ARMY APPLICATIONS LABORATORY

HUHRWDODERUDWRULWKHWUDGLWLRDOHHRWIKHRUGWKHUPRLYDWLRLWHGRWPDNHWKL

HPDNHWKLSRLEOHKHUPSSOLDWLRDERUDWRULIGDPHWDOOUHKDSLKRWKHUPRUNLWK

LGWUWRUHLWHPHULDRLYDWLRDGDWLRDOHULWRHWKHUHTHWLR

h w w    i t a t [aa.a.y](http://aa.a.y).

why a    i    what if. L a



[WWW.AAL.ARMY](http://WWW.AAL.ARMY)