



Distributed Micro Sensors Assessment Event

Overview

The following assessment criteria is provided with the goal of offering amplifying clarity to interested industry partners to assist in their respective self-selection for submission of sought, relevant solutions to further engender our continuing meaningful engagement and collaboration.

Problem Context & Operational Use Case

Help Industry understand why this capability is needed and how it may be used.

This capability is to be built upon novel, inexpensive and small (supports employability and clandestine distribution), passive radio frequency (RF), seismic, acoustic, magnetic, Electro-Optical/Infrared, ground surveillance radar (GSR) and / or hazardous environmental contaminant (radiological, nuclear, chemical or biological) sensors that can be distributed in mass quantity over an operational zone to gather relevant Situational Awareness (SA) data to inform an operating force of adversary presence, adversary sensor presence and/ or naturally or artificially occurring hazardous environmental contaminant presence.

This capability focuses on 'sensor payloads' and not sensor delivery platforms. As such capabilities need to be interoperable with and support any number of emplacement/employment methods from physical to remote (vehicle (ground/air/manned or unmanned), weapon system launched, or otherwise able to be scattered).

This capability is not seen as recoverable and once employed; sensors would expect to be attritable – left behind, lost to hostile engagement or discontinue operation through end of system life/durability/power cycle.

This capability is not intended to be employed by specialist users and is intended to support broad ground combat operations by maneuver combat and combat support forces, to include Special Operations, mechanized, armored Infantry and other combat and combat support units. Although this is intended to be employed across all terrestrial land environments (urban, wooded, rural, littoral), it is not intended to be employed in maritime or seagoing (surface or subsurface) environments/applications.

This capability is intended to support prototyping, introduction into experimentation, and potential for near-term incremental acquisition and fielding.

Target Technology Focus Area(s)

Clearly communicate the domains or technology area(s) of interest.

Technology domains / sensor modalities of interest include, but are not limited to:



- Passive radio frequency (RF)
- Seismic
- Acoustic
- Magnetic
- Electro-Optical/Infrared
- Ground Surveillance Radar (GSR) and / or
- Hazardous environmental contaminants (radiological, nuclear, chemical or biological)

Technology Readiness Level (TRL)

Set expectations for solution maturity.

Minimum TRL: TRL 5 is the lowest acceptable TRL-level of interest.

Desired TRL: TRL 7 is the preferred TRL-level of desired maturity.

Technology of interest is not intended to be introduced into protected industry-government developmental relationships. Technology approaches of interest need to be of developed maturity to support near-term (12-18 months) prototyping, introduction into experimentation and/or near-term (FY27/28) incremental acquisition and fielding.

Performance Characteristics (SWaP & Technical Attributes)

Define practical constraints without over-prescribing solutions.

Size, Weight, and Power (SWaP)

- Size constraints: Hand-held sizing (think soda can through tennis ball or smaller)/ **(desired)**.
- Weight limits: 1.5 pounds/680 grams (**minimum**)/≤ 1 pound ~ 400-453 grams **(desired)**.
- Power requirements (battery life, input voltage, recharge method): Long lasting power is desired. Operational duration is desired to be extended through cyclable active/passive operational modes with an 8-hour operational duration (**minimum**). Employment of a power-aware management system and programmable power modes (active/passive) is sought to maximally extend power consistent with operational necessity, extendable up to 3-weeks duration (**desired**). Indefinite operation is sought through rechargeability (**desired**).

Technical Performance

- What level of accuracy, range, latency, throughput, or endurance is required?
 - For chemical weapon/Toxic Industrial Chemical/Material (TiC/TiM) sensors should be able to detect to LEL, AEGL-3 10 min (**minimum**) AEGL-1 (**desired**).





- Sensor detection frequencies for non-chemical weapon/Toxic Industrial Chemical/Material (TiC/TiM) sensors should range from 0.1 Hz to 500 Hz (**minimum**) and 0.1 Hz to 6GHz (**desired**).
- Sensor detection time (time to detect threat) should be within 2-minutes (**minimum**)/30-seconds (**desired**).
- All sensors should have Geolocation accuracy in an A2AD environment (**minimum**).
- Are there environmental constraints (temperature, dust, water, shock, EMI)?
 - Sensors should be able to operate across extended environmental ranges of - 10-120 F, up to 85% RH (**minimum**). Sensors should conform to MIL-STD-810H (**desired**).
 - Sensors should withstand a 25-ft drop (**minimum**). Sensors should have ability of operating in a high-altitude environment (>50,000ft AGL) and survive air drops from that altitude and lower (**desired**).
- Are there interoperability requirements with existing systems?
 - Sensors should be Non-Bluetooth mesh (**minimum**). Sensors should be ISA-compliant and able to integrate data with ATAK (**desired**).

Integration & Interoperability

Clarify how the solution may need to connect or coexist with other systems.

- Integrated with existing platforms, networks, or software?
 - Sensors should be ISA-compliant and able to integrate data with ATAK (**desired**).
 - If sensors are intended to be delivered from sUAS/UAS or UGV or weapons system, they need to be able to mate with existing fielded systems and not require a specialized, unique, new, or proprietary delivery system (**minimum**).
- Are open architectures, APIs, or modular designs preferred? Open architecture systems are sought (**minimum**). Modular designs and ability to interchange differing sensor components on a/common sensor platforms/form-factor is sought (**desired**).

Data, Cyber, and Security Considerations

Set expectations early without creating compliance barriers.

- Will the solution eventually handle sensitive or classified data? The sensors are intended to convey operationally sensitive adversary information, that is not expected to be classified across the collection and transmission pathway. The information could inform downstream classified assessments developed on the basis of collected information.
- Are there cybersecurity, encryption, or data handling expectations? Sensors should embody secure, low probability of intercept data exfiltration methodologies (**minimum**). They should be able to leverage emerging Internet of Things (IoT) protocols (or





comparable performing waveforms) for data retrieval to meet the low cost and SWaP objectives (**desired**).

Evaluation Approach (High-Level)

Provide transparency **without** formal scoring rubrics.

Example Evaluation Factors (as applicable):

- Relevance to the problem statement – Size, weight and broad operational environmental applicability assessed
- Technical maturity and feasibility – TRL5 – TRL7 sought
- Innovation and differentiation – Novel, configurable, modular and scalable solutions most compelling
- Operational suitability – Operationally relevant and militarily useful approaches sought
- Ability to mature or transition – Seeking approaches capable of maturing in near-term (12-18 months) to support prototyping, introduction into experimentation and/or near-term (FY27/28) incremental acquisition and fielding
- Sensor cost (per unit/sensor) – Compelling unit cost $\leq$ \$200 at assessment, reduceable to $\leq$ \$100 at full maturity

