E-SMART® THREAT AGENT (E-SMART® TA) NETWORK

Threat Agent sensor integration, management, analysis, and reporting

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BACKGROUND

The Air Force Research Laboratory (AFRL) and General Atomics (GA) have developed an automated sensor monitoring system, E-SMART®, for government/ commercial application. The demonstration system is currently operating at Tinker AFB, OK, with over 100 sensors and monitors, including a weather station. Smart sensor modules and digital networking technology form the backbone of the system, which works with virtually any type of sensor or transducer.

E-SMART® TA PROGRAM

Because of the threat that Chemical/Biological warfare poses to U.S. military operations at home and abroad, there is a need for rapid detection, monitoring, analysis, and reporting of threat agents via a near-real-time networked sensor system. AFRL and GA partnering with other contractors, universities, and government agencies are developing the next generation of the E-SMART® system; E-SMART® → E-SMART® TA. E-SMART® TA builds on previous success and transitions this technology to a threat agent detection, analysis, and reporting network. E-SMART® TA will provide:

- Near real-time networking of current and emerging sensors
- Flexibility to adapt to varied mission scenarios
- Independent operation or integration with other networks
- Accommodation of new sensor technologies

The E-SMART® TA system is based on the non-proprietary LONWorks network protocol which provides an open architecture for interface of sensors and other devices. The open network architecture supports connection of sensors and other devices from various manufacturers via wire, radio frequency, or fiber optics, with similar interface options for alarming and reporting. In addition to integrating government- and commercial-off-the-shelf sensors, the program is leveraging former Soviet Union (FSU) biological agent sensor technologies through the International Science and Technology Center in Moscow. Candidate sensor technologies for initial demonstration include:

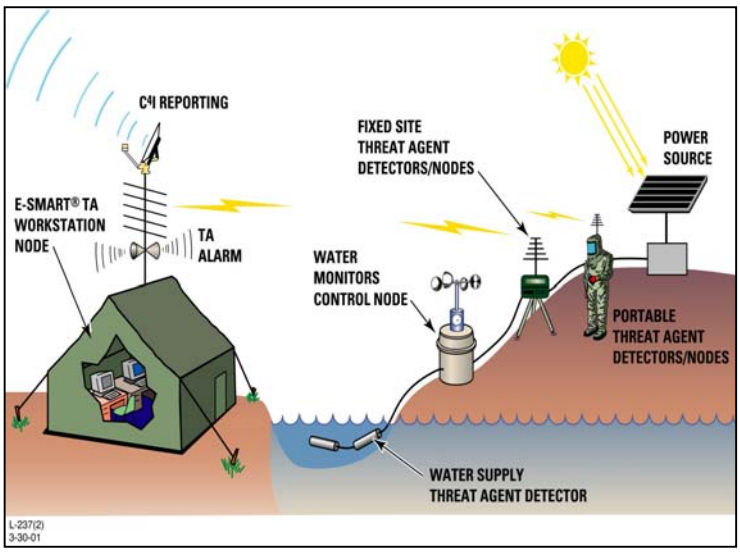
- Automatic Chemical Agent Detection and Alarm (ACADA)
- Biological Aerosol Warning System (BAWS)
- Polytron 2 XP Tox hydrogen cyanide detector
- Optical based biological agent detectors (FSU)

The E-SMART® TA program is coordinated with the Joint Chemical/Biological Defense Program through an established steering group.

THRUST AREAS

Network integration of:

- Aerosol threat agent detectors
- Rapid deployment perimeter defense and warning
- Water supply threat agent detectors
- Current and near-term sensor technology
- Deployed environmental surveillance



- Sensor interface to other warning and reporting networks

E-SMART® TA ADVANTAGES

- **Threat Response:** Peer to peer communication allows smart devices to relay critical information to any other device(s) anywhere else in the network, independent of command and control operations, dynamically prioritizing alarm activation for all threats.
- **Standardization:** Standard smart device operation and communication protocols allow interoperability and rapid adjustment to threat changes
- **Modular Design:** Modularity makes the E-SMART® TA network flexible so the system can be designed for a current application while being readily adaptable to multiple levels of analysis, modeling, and reporting.
- **Graphical User Interface:** MS Windows compatible, commercially available software allows network managers flexibility for normal day-to-day operations. Custom applications can be generated to meet specific user or command required alarms or reports.
- **Data Sharing:** Information can be accessed using Internet connections within the limitations of user defined security protocols. This allows remote data and alarm monitoring, as well as limited network management functions.

Point of Contact

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