

TechBriefs

Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

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At a glance

- > Small size
- > Connects to variety of gas, environmental and radiation sensors
- > Tracks personnel or sensors in real time
- > Wireless backhaul network detects anywhere
- > U. S. Patent #9,019,096

Contact Information

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SAV-EM™

The ability to track sensors and personnel anywhere in real time

Researchers at the Savannah River National Laboratory (SRNL) have developed a system that tracks sensors or personnel in real time anywhere on earth. The system is designed to connect to a variety of gas, environmental and radiation sensors. It contains three major components; man wearable location sensor, wireless backhaul network and a central command computer with software to detect and calculate the appropriate response and alert individuals of hazards.

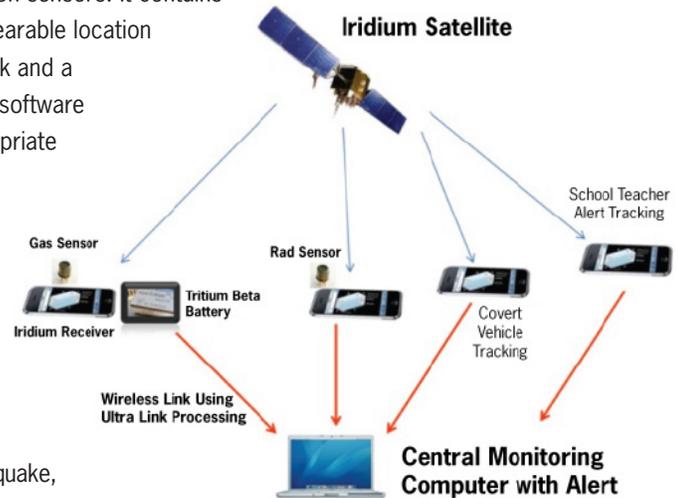
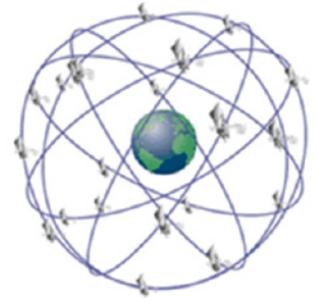
Background

The need to deploy a remote sensor array in the event of a natural or man-made disaster was recognized during the last decade.

From 9-11 to the Fukushima earthquake, existing technology fell short of addressing key requirements. This system addresses limitations of known tracking and alert systems by combining a location technology and a wireless back haul not requiring existing infrastructure which can operate anywhere on earth. In addition, the system takes advantage of this hardware combined with software algorithms to provide an early warning alert. To address battery life, a tritium beta battery with a 20-year lifetime has been added to keep a trickle charge on a lithium battery.

How it works

The design includes an Iridium satellite receiver which can receive geolocation information anywhere on earth. It allows the receiver to pick up signals deep inside buildings, in heavily



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Technology transfer

The Savannah River National Laboratory (SRNL) is the U.S. Department of Energy's (DOE) applied research and development laboratory at the Savannah River Site (SRS).

With its wide spectrum of expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC. SRNS is responsible for transferring its technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

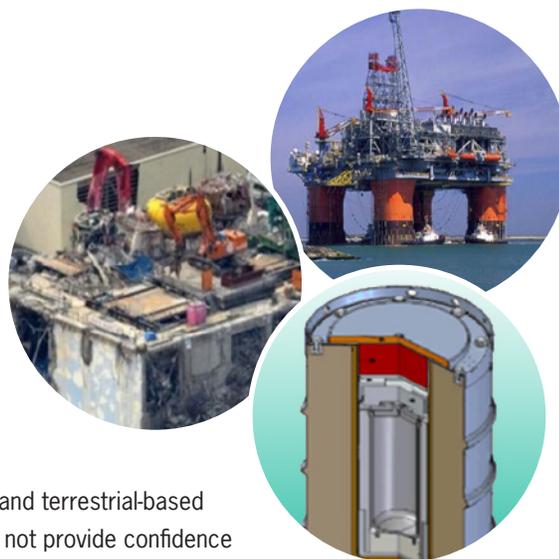
wooded areas and on oil and gas drilling platforms, unlike GPS receivers that will not work in these locations. The Iridium receiver alone does not have a robust back haul network to communicate bi-directionally with the central control computer without cell towers and WiFi networks. The SAV-EM solves this problem by using a long range robust back haul network independent of cell towers and WiFi. To achieve the required small size and low power of the sensor package, the system combines a low power/low voltage Nano Proportional Counter (Patent 9,075,148) for radiation detection. This detector can operate below 9 volts and still detect radiation using the avalanche effect used on large high voltage standard proportional counters.

Stage of Development

Prototype hardware tested and current contract in place for pre-production version.

Possible Uses

- Military, FBI and law enforcement
- Monitoring hazardous gas on oil and gas drilling rigs
- Worldwide nuclear material tracking
- Spill response team
- Forest wild fire fighting
- VIP and other "persons of interest" tracking
- Any application where GPS performance and terrestrial-based communication infrastructure alone does not provide confidence of coverage



Partnering opportunities

SRNS invites interested companies with proven capabilities in this area of expertise to develop commercial applications for this process under a cooperative research and development agreement (CRADA) or licensing agreement. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

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