Lockheed Martin Advanced Technology Center Demonstrates Versatile Advanced Monitoring System (VAMS) For Perimeter Security

Scientists and engineers at the Lockheed MartinSpace Systems Company's (LMSSC) Advanced Technology Center (ATC) have demonstrated an innovative perimeter security system for government and commercial applications. VAMS uses commercial off-the-shelf hardware and software from Intelleflex of Santa Clara, Calif., with proprietary Lockheed Martin-developed elements that include modified firmware, modified interrogation protocols, new detection and tracking algorithms, and real-time operator response.

"We developed this system in response to needs articulated by the US Government," said Dr. Vibeke Libby, principal scientist at the ATC and inventor of VAMS. "Our goal was to create a robust and versatile system that offers an affordable solution to new challenges for perimeter security. Our close partnership with Intelleflex is ideal. We have been able to combine our companies' proprietary technologies resulting in an unprecedented range of new capabilities. For example, VAMS will detect stationary objects, single or multiple intruders, air-dropped items, left-behind items, and even intruders who vault perimeter fences or drop by parachute. As an intrusion is detected, a camera is automatically cued and pointed at the intrusion coordinates for operator alarm and verification."

"The Advanced Technology Center at Lockheed Martin has developed a truly innovative security application that leverages the unique capabilities of Intelleflex's new XC3 products," said Peter Mehring, president and CEO of Intelleflex. "It has been a pleasure to work with Dr. Libby and her team, as their development fully realized the potential of the XC3's robust RF capabilities, which include 100-meter response range while adhering to the new ISO 18000-6 Class 3 Standard."

Due to a complex mix of possible emergencies, including terrorist attacks, accidents, and natural disasters, security protection of borders and critical infrastructures is a major imperative for the US Government. Increased security can be achieved through a layered approach of prevention, protection and preparedness. The VAMS security system provides one such layer.

The automated wireless VAMS alarm system can be rapidly deployed as a stand-alone long-life, greater than two years, battery-supported security system. It comprises a field of sensors that exchange information with a power source. The signal quality is persistent and predictable in an unperturbed environment and when perturbed convincingly produces a recognizable signature.

By exploiting Commercial Off-The-Shelf (COTS) technology from Intelleflex, VAMS is able to achieve a high level of security by providing volumetric protection at a competitive performance to cost ratio. The system is extremely difficult to spoof or defeat, unlike fence-based security systems, which can be circumvented by jumping, bridging, or digging. VAMS can detect intrusions in three dimensions as well as accurately locate moving and stationary objects. The long-life sensors can be placed anywhere in the field with little or no geometrical constraints.

A human intruder will affect one or more communication channels in the vicinity of an intrusion point. An object or a human does not need to be in the direct communication path to affect the communication of a sensor. In fact, the disturbance is likely to affect several sensors in a protected area to varying degrees dependent on the relative position of intruder and sensors. This variation is used to determine the number of intrusions and their location.

VAMS can also be used indoors. Testing has confirmed that the system can detect nightly movements, room entries, including small robotic devices, and left behind items in should-be-closed areas. In protection of a soldiers' camp, sensors can be placed in a 325-foot radius around the antennas. As movements take place, the sensors report the movement to the camp command center. For other applications, the detection range can be extended by increasing the antenna output power above the one-watt required for FCC compliance.

In a field demonstration, the RF system integrated seamlessly with a field camera with slew and zoom capability. The demonstration showed that data can be analyzed in real-time and alarms issued only 1-2 seconds after an intrusion was initiated. In a control room-like setting, the participants could follow the activities in the field, switch to manual mode for intrusion verification, and check system status.

VAMS can detect both stationary and slow moving persons regardless of clothing or protective gear. Compared to current security systems, the VAMS-camera combination can detect and verify intrusions designed to spoof traditional technologies, like motion, infrared, pressure, or security cameras. VAMS therefore poses a serious challenge to sophisticated intruders.

Intelleflex <www.intelleflex.com> is the leader in Extended Capability RFID solutions, products, and technologies. Intelleflex's passive XC1 and battery assisted passive XC3 technologies enable solutions for asset tracking, cold chain management, vehicle/yard management, manufacturing WIP control, supply chain automation, parts maintenance, access control, and other applications.

The ATC is the research and development organization of Lockheed Martin Space Systems Company (LMSSC). LMSSC, a major operating unit of Lockheed Martin Corporation, designs and develops, tests, manufactures and operates a full spectrum of advanced-technology systems for national security and military, civil government and commercial customers. Chief products include human space flight systems; a full range of remote sensing, navigation, meteorological and communications satellites and instruments; space observatories and interplanetary spacecraft; laser radar; ballistic missiles; missile defense systems; and nanotechnology research and development.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 136,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation's 2009 sales from continuing operations were $44.5 billion.

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