

SSC PACIFIC SPOTLIGHT

February 2015 NEWSLETTER

**NOW YOU SEE IT.
NOW YOU DON'T.**

Camouflaged robots

and leave-behind surveillance sensors are desirable in intelligence, surveillance, and reconnaissance operations to minimize the chances of detection by the enemy. Today's camouflaging techniques involve nets and painted patterns that are fixed in color and geometry, limiting their use to specific environments, a fact illustrated by numerous changes in military uniforms designed to fit the latest operating environment. *(Continued on page 2)*



Conceptual Illustration.

Anti-Terrorism/ Force Protection in **Italy**

Violent incidents have plagued high-visibility government sites in the past few years; examples include the occurrences at the Washington Navy Yard and Fort Hood.

SSC Pacific's Anti-Terrorism/Force Protection (ATFP) Engineering Support Integrated Process Team (IPT) is working to diminish these types of incidents. This IPT is part of the ATFP sub-portfolio group within the Security Systems Branch (Code 41180). This IPT supports Naval Facilities Engineering Command's ATFP Ashore Program and enhances execution of the ATFP mission. The team recently conducted a Wide Area Alert and Notification-Giant Voice (WAAN-GV) system upgrade and system operational verification and testing (SOVT) at Naval Support Activity (NSA) Naples, in Italy, Oct. 7 through Nov. 14, 2014.

The WAAN-GV system provides initial alert and follow-on directions to personnel not located in a building during these types of events, and installed across the base, providing siren signals and pre-recorded and live voice messages. System control options include autonomous system control or manual system control by authorized personnel.

During the recent trip, the team upgraded the system and replaced both hardware and software components in buildings and areas without WAAN-GV capabilities; more than 65 speakers and more than 35 panels were enhanced during this visit. IPT members worked closely with base personnel on this effort.

SIREN SIGNALS

LIVE VOICE MESSAGES

PRE-RECORDED MESSAGES



SSC Pacific is working to develop the Adaptive Electronics Camouflage (AEC) system, which will utilize the effective camouflage technique of **automatically adapting surface patterns and colors to match the environment**, as is done by several species in nature. This can lead to the development of new and more effective robotic behaviors in surveillance missions and stealth operations. This biologically-inspired adaptive camouflage can be achieved by sampling the environment with a camera, synthesizing a camouflage image, and reproducing it on color displays. These color displays are part of the outer enclosure surface of the robot or device with shrouded or embedded color electronic paper, which is thin, reflective, conformal, and requires minimal power for operation.

Future development of exotic textiles will allow the robot or device to simply be draped with fabric-like electrophoretic displays.

Knowing what camouflage pattern to display is equally as important as the display technology itself. Developers at SSC Pacific are currently seeking collaboration with academic researchers.



A virtual robot outfitted with the AEC system, both without camouflage (left images) and with it (right images). The camouflage pattern used in the simulation is produced using the color-camouflage-synthesis method developed at SPAWAR. Images are conceptual illustrations.

Mike Melechinsky, a technician in the ATFP Engineering Support IPT, optimizes directional speakers at Joint Base Pearl Harbor; a similar optimization took place at NSA Naples, Italy, during the team's visit.