

THROUGH *the* WALL

SENSORS ADVANCE

Tactical Awareness

By Becky Lewis

Superman's X-Ray vision remains the stuff of comic books, but the past few years have seen advances in through-the-wall sensor (TTWS) technology, improving law enforcement's capability to detect the presence of individuals inside a building from a distance.

The Sensor, Surveillance and Biometric Technologies Center of Excellence (SSBT CoE) recently concluded the second and third segments of a three-part research effort on the technology on behalf of the National Institute of Justice (NIJ). The CoE has produced two companion pieces to *Through-the-Wall Sensors for Law Enforcement: Market Survey* (October 2012, <https://www.justnet.org/pdf/00-WallSensorReport-508.pdf>).

Through-the-Wall Sensors for Law Enforcement: Best Practices, posted





on JUSTNET in April 2014 (<https://www.justnet.org/pdf/ThroughWallSensorBestPractices-508.pdf>), targets the end user, while *Through the Wall Sensors for Law Enforcement: Test and Evaluation*, available through the National Criminal Justice Reference Service (<https://www.ncjrs.gov/pdffiles1/nij/grants/245944.pdf>), includes information that is more technical in nature. (TTWS uses radar to detect even slight motions through building walls, thus providing public safety professionals with increased situational awareness in tactical and rescue situations.)

SSBT CoE Director Lars Ericson says NIJ's Sensors and Surveillance Technology Working Group determined several years ago that tactical teams had a priority need for this type of technology to inform their approach to the challenges and threats they face in the execution of their duties.





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“This research has been a valuable effort that will provide important information to the law enforcement community and further enhance the tools at their disposal,” Ericson says.

Best Practices collects lessons learned and advice from practitioners around the country who are using TTWS technology in the field, and leverages information on technical, tactical and functional considerations from a parallel evaluation effort conducted by the U.S. Department of Homeland Security SAVER program. The U.S. Marshals Service and the Gwinnett County (Ga.) Sheriff’s Office also contributed to the effort.

“Combined with the market survey, this document helps provide a complete picture for practitioners who are considering implementing the technology,” Ericson says.



Best Practices makes four key points, which Ericson says “may seem like common sense, but sometimes it’s important to reemphasize this type of information in context.”

They are as follows:

1 *Practice with the device and learn how to use it. TTWS contain miniaturized high-technology radar systems, and it’s important to understand the technical nuances in order to create confidence in the information gathered and incorporated into tactics.*

2 *Think of TTWS as a tool, but not as a substitute for tactical training. Because of their complexity, TTWS provide good information that should not be considered foolproof. Use the information to inform operations, but not to dictate a course of action.*

3 *Take multiple measurements at different places along a given wall. The composition of a wall is not uniform. Studs, water pipes and other structural variances can all contribute to skewed results.*

4 *Solid metal can block radar signatures; structures such as rebar or chicken wire can interfere with results. Users need to be aware that although TTWS functions through a wide range of building materials, there are some places where it just cannot be used.*

In contrast to the other two reports, *Test and Evaluation* focuses on the capabilities of an NIJ-funded prototype device, AKELA’s ASTIR, testing and evaluating it against commercially available devices. This process took place in a controlled, real-world environment, not in a laboratory, and was the first of its kind for this type of technology in criminal justice applications. Overall, every device tested generally performed well, with each having different strengths and weaknesses, Ericson says; all of them could prove useful in different circumstances.

“It all depends on an agency’s needs, and of course on budget constraints,” Ericson says, noting that the ASTIR, which is not yet commercially available, performed well overall and functioned at the farthest distance from a wall of any device (70 meters).

Test and Evaluation is not geared toward field officers or SWAT members, but rather toward engineers, vendors and criminal justice technologists.

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