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## How Defense Research Is Making Troops More Effective in Wartime

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By Walter Pincus  
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When Army patrol leaders in Iraq prepare to go out on missions in Baghdad, their last stop at headquarters is a computerized map on which they outline the area where they will operate. Then they watch as icons emerge, showing, in grim detail, the lurking dangers.

By clicking on those, they can bring up not only sites of past hostile action but also photos and background on local leaders -- some to see and others to avoid -- videos of hostile and safe places, and reports from previous patrols, says Brian Slaughter, a retired Army first lieutenant who served as an armored platoon leader in Iraq in 2004. Slaughter took part in developing the computerized Tactical Ground Reporting System (TIGR).

Before TIGR, patrol leaders had only intelligence passed down from higher commands, primarily the locations of previous attacks. "Soldiers love it," Slaughter said. "TIGR picks up everything. Now they have their own tool at company level that pulls up a wealth of information that helps determine their safest route."

When the troops return from patrols, they feed information back into the system, adding to the data available to the next patrol leader, he said.

Mari Maeda, a project manager for TIGR, said the system also allows departing units to transfer tactical information to their replacements. The changeover to new groups in the past required PowerPoint files, spreadsheets and many bound volumes of data, she said.

"Now, with TIGR, they can do a virtual tour of the neighborhoods," Maeda said, and quickly pass along "15 months of knowledge."

The TIGR software package is part of a networking technology developed by the Defense Advanced Research Projects Agency (DARPA) that about 2,000 patrol leaders in Iraq are now using.

DARPA's proposed \$3.3 billion budget for fiscal 2009, now before Congress, is the largest in its history. Almost all DARPA projects are long-range efforts, and those that come to fruition often are not used by the military until years later. But some research initiated well before the Iraq war began was designed to be used in just the type of urban conflict that has emerged in Baghdad and other Iraqi cities.

The Advanced Soldier Sensor Information System and Technology (ASSIST) networking program was outlined by DARPA's director, Tony Tether, in March for a House Armed Services subcommittee. Troops in Iraq also have been given a computerized language translation system, called GALE, which converts Arabic media reports, both print and electronic, into English "and alerts the warfighter to events of interest and other potentially mission-critical information," Tether said.

Because there are not enough translators in Iraq for each patrol or checkpoint, Tether told the House subcommittee, his agency is at work on another system, called TransTac, which will provide "on-the-

spot speech translation." It will convert spoken Arabic into English and vice versa, Tether said, making it "indispensable for our troops as they interact with the local population and coalition partners."

DARPA also developed the Wasp, a small unmanned aerial vehicle that weighs two-thirds of a pound, can be carried in a backpack and can fly reconnaissance missions for as long as two hours. Its sensors provide imagery to small military units on the ground, operating in urban areas.

The operator throws the battery-powered device into the air after the propeller is spinning and controls it with a hand-held device that has a seven-inch color screen. It provides real-time pictures for U.S. Marine units, which have been testing it since last October. Hundreds are now in use in Iraq.

Another DARPA gadget tested successfully last year and now deployed with troops is Radar Scope, which allows U.S. troops to peer through concrete walls to determine whether someone is hiding inside a building. Teams pursuing enemy forces into structures are using the Radar Scope, which weighs less than 1.5 pounds and works on AA batteries.

Additional sensors are under development, including a radar called Fopen, which last year was successful in penetrating heavy tree foliage and locating vehicles and enemy fighters in Iraq. After it is placed inside a Black Hawk helicopter, "operators onboard the aircraft could detect people walking under foliage in and around concealed encampments," Tether said.

*National security and intelligence reporter Walter Pincus pores over the speeches, reports, transcripts and other documents that flood Washington and every week uncovers the fine print that rarely makes headlines -- but should. If you have any items that fit the bill, please send them to [fineprint@washpost.com](mailto:fineprint@washpost.com).*

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