

www.midwestbusiness.com

Indiana High-Tech Communication Network Transforms Military, Civilian Operations

By Michael Snyder

FORT WAYNE (Indiana) – The 9/11 terrorist attack, the aftermath of Hurricane Katrina and military urban operations in Iraq all manifested critical lessons. Key among these was this: when military and civilian authorities can't talk to each other and execute a coordinated response, bad things happen. Really bad things.

When authorities can actually talk to each other, the delivery of bad or incomplete information can be just as deadly as an undetected truckload of propane tanks in a raging fire or a division of hidden hostile troops.



Sitting in Raytheon's Mission Systems Integration Capabilities Center [<http://www.raytheon.com/businesses/ncs/c2s/index.html>] and surrounded by three high-res projectors and six plasma screens serving up real-time satellite and simulated data, it was obvious to this author that someone – in this case Raytheon's integrated technology senior staffers in

Fort Wayne – had taken these lessons very, very seriously.

Simply put, Raytheon in Indiana is now deep into developing a new gold standard for high-tech combat communications and coordination.

Beginning in 2005, Tim Morris of Raytheon put together a technology team that would truly break the mold. Adopting the modest moniker of the "Networked Urban Operations Test Bed" (universally referred to as NUOTB) [<http://www.jfcom.mil/newslink/storyarchive/2006/pa110806.html>], Morris and his team assembled a highly complex network of radio, video, digital, and other communications systems to instantly span the spectrum and deliver up real-time critical communication to decision-makers.

"Millions of people use cell phones every day without the slightest knowledge of the technology that makes those phones work," said Morris in an on-site interview with *MidwestBusiness.com*.

"What was needed was a similar technology that worked in complex hostile environments, where split-second decisions depend on solid information," he continued.

Old legacy communication systems and different operating frequencies create a near-insurmountable challenge. Couple that with the fact that new generation military radios driven by software often don't link easily with civilian authorities, and you have the makings of a disaster made worse by the very people trying to help.

"People in emergency or combat environments don't have the time to find out how to connect or make different kinds of radios or computers talk to each other," he continued. "It just needs to happen and happen fast."

Thus, NUOTB was born in the Hoosier state.

The "Test Bed" acronym in NUOTB refers to Raytheon's commitment that this communication network technology must be 100% reliable and work in extremely hostile conditions before it will ever be delivered to what Raytheon calls "the customer." Technology deployed in the battlefield or raging disaster can't be theoretical – it has to work and work well, night or day, storm or calm.

To ensure reliability, Raytheon works in real-life training routines, called colloquially "the valley of death" because of their harsh conditions, to perfect its technology products.

Why is this necessary? Consider the fact that the three "Cs" in operations – command, control and communications – have long been the bedrock for which military and civilian response must rest if lives are to be saved and victories won. A breakdown in any of the three "Cs" can quickly result in defeat, or worse, major loss of life.

Morris' team at Raytheon resolves this challenge by capturing raw data at multiple critical points and folding it back through complex high-tech channels to present actionable information.

"A forward observer in a combat or disaster zone has long been a key link in meeting difficult challenges," Morris explained.

In earlier times, this observer would typically send a courier back to the command post or describe conditions by radio, which could be intercepted by unfriendly parties.



What NUOTB does is add live encrypted video, voice and environmental data, all of which is fed real-time and electronically digested through classified network protocols. This data is paired with available assets – such as fire-fighting teams or stand-by weapons systems -- and projected or presented to experienced officers or civil disaster experts.

Instead of drinking out of the proverbial fire hose of too much raw and largely incomprehensible data, commanders in charge of dealing with the situation – whether military or civilian – have a far better idea of what’s really happening, together with options for instant or considered action by the troops or personnel in the field.

The Raytheon NUOTB is a distributed system backed up by multiple redundancy, which means (among other things) that if one center is knocked out by fire, loss of power or an unexpected attack, other centers – or “nodes” – can instantly pick up the slack and continue the mission.

So where is the “Test Bed” being tested? The Center for Complex Urban Operations at Muscatatuck

[<http://www.indianaeconomicdigest.net/main.asp?SectionID=31&SubSectionID=193&ArticleID=33469>] in southern Indiana offers up the perfect hostile environment to separate theory from useful strategic assets.

“Military doctrine has long and rightly said that armies need to stay in the open field away from urban environments,” said Morris. An urban environment represents a highly complex and dangerous place, with many



places to hide or buildings that could collapse or impend rescue/defense efforts.

When the Joint Services Command ran Ardent Sentry – a simulated terrorist incident involving nuclear weapons – at Muscatatuck (a former multi-acre Indiana state-owned health facility) last year, it pulled together more than 5,000 soldiers, state officials, police and

emergency personnel from three states. As they checked in, the exercise seemed compromised from the start – the radios alone used by the participants operated on 42 different frequencies and the units all had different types of equipment.

Happily, NUOTB rose to the challenge, unifying the massive group as it conducted simulated rescue and response operations across hundreds of square miles.

The success of Fort Wayne’s NUOTB now attracts national and international attention, as when fully built-out, it promises to transform military and civilian emergency operations.

Why isn't NUOTB already deployed across the world? "We have the technology, but now we have to deal with the intellectual property and training issues," Morris explained. "Next generation applications take time to get fully integrated, but as we achieve that, Indiana is the place to watch."

With big plans from the Northeast Indiana Regional Partnership [<http://www.chooseneindiana.com/>] to grow its \$1 billion-plus commercial defense industry, we'll look further next week to see exactly what's on deck in the Hoosier state.

For past coverage of the Indiana Defense Industry on Midwest Business in Chicago, click on a link below:

[BRAC Outcome Promises New Technology Growth Across Midwest, Indiana](#)

(6/12/2008)

[Indiana's Second-Largest City Moves to Seize \\$1 Billion Defense Growth Pie](#)

(3/27/2008)

[\\$2 Billion Indiana Military Center Taps World-Class University Firepower](#)

(2/28/2008)

[Big Changes Under Way For \\$6 Billion Defense Industry in Indiana](#) (9/13/2007)

[State of Indiana's Defense Business: \\$4.6 Billion and Growing](#) (7/5/2007)

[Indiana Defense Muscle Grows With West Gate Tech Park Expansion](#) (2/1/2007)

For any questions or concerns, please contact The MEK Group [here](#).