

VISION

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# Geospatial intelligence

**+ MILITARY DEVELOPMENTS PARALLEL UTILITY INDUSTRY NEEDS**  
By Matt Ball

➤ **UTILITIES HAVE MADE CONSIDERABLE INVESTMENTS** in geospatial technology over the past 30 years, but are rarely early adopters, instead waiting for proven solutions. The wars in Iraq and Afghanistan have spurred massive military spending on geospatial technology research and development, which have opened up new frontiers for gathering intelligence and aiding decision makers. The mission-critical nature of military campaigns has many parallels to the needs of large utilities to manage assets and personnel across broad geographies.

Many of these geospatial intelligence technologies are ripe for broader adoption and utilities can reap bottom-line benefits by considering these technologies to manage their networks. Such advancements include harnessing webs of smart sensors, further integrating geospatial capability in the enterprise and deploying data-collection devices more broadly to gather better information from the field.

## GEOSPATIAL

### NEXT-GENERATION SENSORS

While electric utilities have long deployed supervisory control and data acquisition (SCADA) sensor systems to monitor power generation, these devices have typically been networked in closed systems with proprietary communications protocols. A new generation of sensors is network-ready in order to be chained across broad geographies to form a sensor web. The inputs from different webs of sensors that each monitor different inputs can be discovered and integrated via the Internet to provide what the military terms as situational awareness.

Utilities are already starting to harness a new generation of smart meters to measure power usage per customer over time, effectively combining electric transmission systems with communications systems. This new communications capability of utilities can now be integrated with other networked sensors for greater security and quicker response to the impacts of unplanned events such as natural disasters.

Sensor networks exist to gather information on weather, traffic, chemicals, radiation and biohazards, as well as imagery from satellites and airplanes, and



In this article, Matt Ball looks at how current military geospatial efforts could translate to the utility industry. In the next issue, three authors will delve deeper to study the strategy and reality of better leveraging geospatial information for utilities and their mobile workforces.





▲ U.S. Air Force Joint Terminal Attack Controllers review map data using the MVRIII (Mini Rover) while participating in Atlantic Strike VII on June 16, 2008. (U.S. Air Force photo by Staff Sgt. Stephen J. Otero)

◀ A utility worker performs the difficult mission of taking an accurate reading for an underground pipe next to moving traffic. Image courtesy of Trimble.

video from security cameras. Work is well under way to standardize data outputs and discovery protocols so that this information can be quickly combined and harnessed to save lives and improve response time to rapidly evolving situations.

### ADDED INTELLIGENCE

While utilities have been effectively integrating their geographic information systems (GIS) with other

enterprise systems, such as workforce management and outage management, the growing trend is to integrate more real-time information from many systems into a combined and centralized view that the military terms the common operational picture (COP).

The primary aim of COP is to normalize data between different operations centers so that everyone throughout the organization is looking at a standardized picture that incorporates all specialized knowledge for greater combined intelligence. The military vision of a fused COP is laid out in the U.S. Department of Defense Joint Vision 2020, which promotes technological innovation in information gathering as a key tactical priority.

The military investments that are being made to bring together many different data sources into one view will assist utilities in their own integration challenges by promoting standards and the development of middleware tools to greatly speed and ease the pains of integration. A concerted priority on data interoperability has encouraged software companies to work together to solve common pain points for customers.

### COMMANDING THE FIELD

Utilities have realized the benefits of providing field workers with desktop-class geospatial tools when they're away from the office and have harnessed their field forces to collect more and better data about their assets. Similarly, the military has deployed GPS-enabled mobile devices to provide location information to commanders and troops that the military calls Blue Force Tracking, with the primary aim of identifying the location of friendly forces.

The need of the military to monitor troops and to provide more and better information to fighting units has led to considerable advancements in communication and visualization capabilities, including the ability to combine and display information from sensors and "over-the-horizon" technology. Among the technical advancements are compression and data handling tools that make it possible to send large and detailed images through low-bandwidth networks, effectively solving an issue that plagues remote and rural operations. The large military investments in thousands of rugged computers has also led to faster and cheaper machines that meet rugged mil-spec standards, making these devices more attractive to equip utility field crews.

A connected workforce is a safer and more efficient workforce. While utility workers may not need the same level of connectivity given the lower urgency and danger of their tasks, they benefit from the communications technology that makes it easier to move data and intelligence among their coworkers and back to the office.

Geospatial technology benefits from a broad user base, and considerable investment in research and development from a number of sectors that seem to follow a cyclical pattern. From the mid-1980s through the mid-1990s, large investments in geospatial technologies were made by utilities and natural resource organizations. Military investment has been a predominant force for expanded capabilities from the early 2000s through today, and the large and one-client contracts involved here have been an incredible incubator for innovation.

Geospatial technologies have reached a new level of integration with military operations in the current conflicts, creating a more efficient, disciplined and intelligent force. A utility can consider one or more of these maturing technologies to have dramatic impacts on their own efficiency.

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