



A soldier adjusts a radio frequency identification reader.

Military RFID evolves to include mesh networks

DOD mixes old and new technologies to speed logistics, provide better inventory knowledge

BY JOHN EDWARDS

After playing a pivotal role in developing and popularizing radio-frequency identification (RFID) systems, the Defense Department is looking to take the inventory tracking and monitoring technology to the next stage through mesh networks and other cutting-edge systems. DOD is leveraging existing and emerging RFID location technologies to give logistics personnel across all services greater knowledge about where specific items are located.

Mark Lieberman, automatic identification technology program manager for the Defense Logistics Agency, headquartered at Fort Belvoir, Va., said his organization is building on past RFID successes and the technology has already generated substantial benefits in inventory visibility and streamlined management processes. "It's more efficient because we're reducing

errors, we're streamlining the business process," he said.

Relying on conventional passive tag RFID technology, which requires no internal power source, DOD already gives logistics personnel anywhere in the world the ability to electronically peek inside pallet and container shipments to pinpoint specific items. "This requires applying the passive RFID tags to each case or item and then applying a 'parent' RFID tag to the entire pallet [or container]," said Mary Ann Wagner, president of Cubic Global Tracking Solutions, a company that supplies a variety of RFID technologies to DOD. "This grouping of tags is associated with the TCN [transportation control number] of the shipments, which provides a detailed description of the items that's then displayed in the information system of the organization," she said.

To make RFID faster, less expensive

and easier to deploy in a wide range of environments, DOD is looking toward next-generation wireless solutions, such as mesh technology, in which individual tags are networked together. "Mesh technology supports self-forming and self-healing networks for applications such as yard management and sensor networks," Wagner said. "The tags become a network and report their position and state back to an information system."

Although conventional RFID systems require fixed readers positioned at strategic locations, such as at yard gates, a mesh network provides continuous asset visibility from any location within the system's range. "For management of vehicles in a yard, the data provides better information for the planning and staging of vehicles," Wagner said. "In all cases, the data provides asset visibility for uniforms, vehicles, engine components and so on, and that data helps logistics specialists and others make real-life daily decisions on what material is to be stored, utilized or moved," Wagner said.

Mesh networks will supplement, not replace, existing RFID technologies, which will continue generating valuable monitoring and tracking data. "DOD is using the data it receives from passive and active RFID tags to perform both real-time decision making as well as life-cycle analysis," Wagner said. "It helps with our demand planning," Lieberman said.

Lieberman said RFID has been a boon to military logistics efficiency on both ends of the supply chain. "Now that vendors are tagging the materials coming to us, and we can read them at the door, we know exactly when material is arriving," he said. "There's no more waiting for human data entry."

Such efficiency helps speed the fulfillment of back orders and gets materials to users in the field, up to the tactical edge, much more quickly than in the past when it was easy for shipment arrivals to go unrecorded for several days or more. "We can expedite material because we know when it came in the door and we can alert people to take action on that material," Lieberman said. ■