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## **UM to Develop 21<sup>st</sup> Century Interactive Supply Chain for Military**

COLLEGE PARK, Md. – Researchers at the University of Maryland are taking the first steps to develop a 21<sup>st</sup> century interactive supply chain system for the U.S. military – one which will get repairable military equipment back into battle sooner and at less cost, for example beginning the process while a plane is still in flight. The work represents the first effort to implement the “Sense and Respond Logistics” concept envisioned by the Department of Defense as part of its Force Transformation effort.

With a new \$2.1 million grant competitively awarded by the Office of the Secretary of Defense, an interdisciplinary team led by the University of Maryland’s Center for Public Policy and Private Enterprise will conduct a 12-month project to develop a prototype Web-based supply network using the most advanced technologies to acquire and deliver replacement parts quickly on an as-needed basis. The center will partner with Maryland’s A. James Clark School of Engineering on the project.

The demonstration project will involve maintenance of F/A -18 navy fighter jets, and will link together a series of advanced technologies -- prognostics that can diagnose supply needs while equipment is still in combat, novel wireless communications to relay these needs to maintenance officers and automatic identification techniques (RFID is the most common current example) to locate parts in the supply chain – all integrated through a secure Web portal.

“This is an unprecedented experiment, and it’s critical for the military to move in this direction,” says Jacques Gansler, under secretary of defense for acquisition, technology and logistics during the Clinton administration who now directs Maryland’s Center for Public Policy and Private Enterprise. “Pulling all these technologies together in the military context can add efficiency, flexibility and maneuverability to U.S. forces.”

While the corporate world has adopted some of these techniques, Gansler says the military has been slower to move away from traditional approaches of pushing supplies forward and building up “iron mountains” – huge caches of supplies to meet any contingency.

“We’re going to build an end-to-end system that starts in combat and seamlessly links up with the industrial world,” says Kenneth Gabriel, the engineer and policy expert serving as principal investigator on the project, who is also a senior research scholar at the Maryland Center for Public Policy and Private Enterprise. “We need to integrate available resources with emerging technologies to pull this off. There are substantial challenges linking all these technologies, especially connections between government and industrial databases, but it’s entirely feasible.”

One of the unique elements in the proposed system’s technological chain is the use of prognostics – the warning systems built into the F18s and other advanced military assets that can detect unusual mechanical performance and analyze the likely cause.

“We hope eventually to have a system where an airborne jet can signal the aircraft carrier with an indication of what the problem is so the parts can be located and ordered even before the plane has touched down,” Gabriel says. “It’s like an ambulance carrying a heart attack victim calling ahead to the hospital. The medical team is all set and waiting when the patient arrives.”

The Office of the Secretary of Defense has been exploring the concept of “Sense and Respond Logistics” in recent years, but the researchers say this will be the first effort to implement the system.

“If we get smarter about what we put into the supply chain, we can help transform the way military units operate,” says William Lucyshyn, co-investigator on the project and director of research at the Center for Public Policy and Private Enterprise. “With the F/A18s the goal is to reduce the down time and maximize the fighting force – while still reducing the support costs. This can make a significant difference in military effectiveness.”

With this demonstration project, the researchers plan to develop a Web portal and an implementation roadmap that can eventually be put into practice on a wide scale – for F/A 18s as well as other planes and weapon systems.

“The beauty of the concept is that it pairs speed and precision,” Gabriel says. “If you don’t know exactly what you have or where it is, it’s lost – so you order it again to be safe. This new approach offers the kind of efficiency that is vital in an era of tightening budgets.” He says the savings could run to tens of billions of dollars.

The Center for Public Policy and Private Enterprise strengthens connections among government, business, academic and nonprofit sectors in order to address complex public policy problems and speed improvements in the management and delivery of public services. It is based in the University of Maryland School of Public Policy.

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