Conferences, Workshops & Symposia

ARMY NEWS SERVICE (APRIL 4, 2005)

SCIENCE ON THE BATTLEFIELD

Staff Sgt. Lorie Jewell, USA

Armed robots, liquid body armor, bendable computer screens, and uniforms with virtual-reality capabilities—what once could have been fodder for science fiction novels is now shaping how future soldiers will fight.

Many of the ideas and technologies already being used on today's battlefield or due to arrive soon were being displayed and discussed at this year's Army Science Conference.

One such system, the Special Weapons Observation Reconnaissance Detection System, or SWORDS, will be joining Stryker Brigade Soldiers in Iraq after final testing, said Army Staff Sgt. Santiago Tordillos of the Explosive Ordnance Disposal Technology Directorate of the Army's Armament Research, Development and Engineering Center at Picatinny Arsenal, N.J.

"We're hoping to have these systems in Iraq by early 2005," Tordillos said. "The soldiers I've talked to want them yesterday."

A New Robot Fighter

The SWORDS system consists of a weapon system mounted on a Talon robot, a product of the engineering and technology development firm Foster-Miller. The Talon began helping with military operations in Bosnia in 2000, deployed to Afghanistan in early 2002, and has been in Iraq since the war started, assisting with improvised explosive device detection and removal. Talon robots have been used in about 20,000 missions in Iraq and Afghanistan, according to Foster-Miller reports.

"It's not a new invention, it's just bringing together existing systems," said Tordillos, who has been involved with the project since its inception about a year and a half ago.

Different weapons can be interchanged on the system—the M-16, the M-2, M-240, and M-249 machine guns, or the M-202A1 with a 66mm rocket launcher. Soldiers operate the SWORDS by remote control from up to 1,000 meters away.

With a weapons platform mounted on a Talon robot, the SWORDS system allows soldiers to fire small arms by remote control from as far away as 1,000 meters. The system may soon be used in Iraq.

U.S. Army photographs by Staff Sgt. Lorie Jewell, USA.

"In testing, it's hit bulls eyes from as far as 2,000 meters away. The only margin of error has been in sighting," Tordillos said.

The system uses AC power, lithium batteries, or SINCGARS rechargeable batteries. The control box weighs about 30 pounds, and has a daylight-viewable screen and two joysticks that control the robot platform and the weapon.

Four SWORDS currently exist and 18 have been requested for service in Iraq, Tordillos said. Each system costs about $230,000 to produce, said Bob Quinn, lead integrator for the project. When they go into production, Quinn estimates the cost per unit will drop to $150,000 to $180,000.

Tordillos fielded a variety of questions while showing off the system at the conference. Soldiers wanted to know

what MOS they need in order to work with the system. There is no specific MOS for it, Tordillos said.

Others asked if Tordillos envisions a time when armed robots will outnumber humans on the battlefield.

"You'll never be able to eliminate the soldier on the ground," he said. "There will be a mix, but there will certainly always be soldiers out there."

Sensor-based Soldiers

Thermal sensors woven into the fabric of the uniform control its temperature, based on the soldier's environment. An on-board respirator, tethered to the soldier's back, provides a continuous supply of fresh air—eliminating the need for a protective mask. Should the soldier have the visor up or the helmet off and breathe in some kind of harmful agent, the uniform sensor would immediately detect it, release tiny embedded capsules to counter it, and inject treatment into the soldier's body.

From the waist down, a skeletal system will allow soldiers to carry two or three times their body weight.

Shear thickening fluid, sometimes known as liquid body armor, is made of tiny glass particles and polyethylene glycol.

Liquid Armor Protection

The uniform might be made out of fabric treated with another technology featured during the conference—shear thickening fluid. Unofficially referred to by some as liquid body armor, STF is made of equal parts polyethylene glycol (an inert, nontoxic thickening agent used in a variety of common products, including ice cream) and miniscule glass particles, said Eric Wetzel, who heads the STF project team in the Weapons and Materials Research Directorate of the U.S. Army Research Laboratory.

In a small glass vial, the light blue liquid is easily stirred with a small plastic stick, as long as the stick is moving in slow, easy motion. When rapid or forceful motion is applied, the liquid instantly hardens, preventing any movement.

STF has been applied to regular Kevlar material, Wetzel said. The fabric's texture doesn't change; it looks and feels the same as if it hadn't been treated. Using a test swatch of four layers of untreated Kevlar—the normal thickness of body armor—Wetzel is able to stab an ice pick through the fabric. But when stabbing a treated section of fabric with all the force he can muster, the ice pick dents the fabric but can't penetrate it.

Research is being done into whether STF can be of use to the Army, Wetzel said. If it is, soldiers may start getting gear treated with it in about two years.

Warriors in 2025?

Army Staff Sgt. Raul Lopez, an infantryman stationed at the Natick Soldier Center in Massachusetts, spent four days during the conference in what could be the Army uniform of the future.

Dressed in black and wearing a helmet that allowed barely a glimpse of his face, Lopez looked like something from a science-fiction movie.

He explained that the fabric of the form-fitting suit would be made through the wonder of nanotechnology, which involves manipulating atoms and molecules to create things at a scale about 50,000 times smaller than the diameter of a strand of hair. Soldiers wearing the suit would have the ability to blend into any environment, like chameleons.

The helmet he wore is envisioned as the main hub of the uniform, where "all of the action happens," Lopez said. A tiny video camera on the helmet provides 360-degree situational awareness. A series of sensors gives the soldier three-dimensional hearing and the ability to amplify specific sounds, while lowering the volume of others.

Complete voice translation is also provided for what soldiers hear and say. Night-vision sensors, minimized to the size of pencil erasers, are also in the helmet. Maps and other situational-awareness information are projected on the inside of the visor, while everything the soldier sees and hears is sent in real time up to higher headquarters.

"It's all voice activated," Lopez said. "I can tell it to show me where my buddies are, and it projects the information on the visor."

Excellence in Research

Representatives from 31 countries—including Canada, the United Kingdom, Argentina, South Korea, Australia, and Singapore—attended the conference for the first time.

Brig. Gen. Peter Holt of Canada's Defence Research and Development agency believes the working relationship among scientists, engineers, and researchers has been beneficial to all concerned, and that the benefits of collaboration are already on the battlefield.

ARMY NEWS SERVICE (APRIL 7, 2005)
INDUSTRY LEADERS PLAN TO HELP ARMY BUILD MORE, FASTER

Lt. Col. Stan Heath, USA

WASHINGTON—With $1.7 billion slated for the construction of barracks and other stateside Army facilities next year, the Corps of Engineers completed the first of five forums April 6 with architects and construction firm representatives.

About 145 industry officials, including small business reps, attended the event to provide market research and insight into streamlining the military construction processes.

"We are going to change the way we do business," said Don Basham, chief, Engineering and Construction for the Corps. "We have to turn dirt the same year as our appropriations to meet the Army's upcoming construction demand."

The Corps is charged with developing a construction strategy to decrease the time it takes to plan, program, design, and build military facilities.

Coined the "perfect storm," a large construction demand is imminent as the Army moves units from Germany, Korea, Iraq, and Afghanistan, while it restructures its forces into modular units, and simultaneously executes Base Realignment and Closure decisions, Corps officials said.

"We're going to provide quality facilities faster, at a reduced cost," Basham explained. "We know that this is going to be a minimum of a $2 billion project for several years."

In 2004, the command leveraged private industry to provide rapidly deployed relocatable barracks to housing units of the 3rd Infantry Division at Fort Stewart, Ga. The Corps used this same approach to solve soldier housing issues at Fort Hood, Texas.

The primary purpose of the April forums, officials said, is to gather information as to how to construct permanent facilities for brigade-size units, not temporary facilities.

The overall military construction program will involve installations in the contiguous U.S states, officials said, as well as Alaska and Hawaii over the next few years.

Military construction is about $3.4 billion of the estimated $12.1 billion fiscal 2006 military programs budget. This consists of $1.7 billion for Army Military Construction (Army, Army Family Housing, Army Reserve);

Barracks for trainees are shown here under construction at Fort Jackson, S.C., last summer. As many installations prepare to build facilities for brigade-sized units of action, Corps of Engineers officials are working with industry representatives in an effort to cut the time it takes for military construction. U.S. Army photograph.

$1.3 billion for Air Force Military Construction (Air Force, Air Force Family Housing, Air Force Reserve); and $370 million for Department of Defense programs (medical, Defense Logistics Agency, Special Operations Forces, chemical demilitarization).

Heath is the deputy public affairs officer for the Army Corps of Engineers.

U.S. JOINT FORCES COMMAND PUBLIC AFFAIRS (MAY 10, 2005)

NEW TECHNOLOGY TRANSFER AUTHORITY HELPS PUT TRANSFORMATION ON THE FAST TRACK

Journalist 1st Class (SW/AW) Chris Hoffpauir, USN

NORFOLK, Va.—Secretary of Defense Donald Rumsfeld recently delegated technology transfer authority to U.S. Joint Forces Command (USJFCOM), allowing it to share technology with academia and industry for the purpose of research and development.

USJFCOM can use this authority to speed the research and development process. The result is new ideas from academic, industrial, national, and international research laboratories can be developed into integrated capabilities for the joint warfighter quicker.

"We are not a national laboratory, but the Department of Defense recognizes that so much of what we do has national laboratory-like implications, processes, and the rest, which is why we were given this technology transfer authority," USJFCOM commander Navy Adm. Edmund Giambastiani said at a net-centric warfare conference in Norfolk, Va., March 22.

While USJFCOM is not a national laboratory, the new authority gives the command many of the same authorities national laboratories use to structure partnerships with industry to exchange personnel and technical data, make technology assessments, and collaborate on research and development efforts.

The command can now enter into core technology transfer agreements with private industrial and academic partners. For USJFCOM, technology transfer provides a new avenue for developing collaborative and cooperative relationships with both.

Technology transfer allows partners to share costs by entering into Cooperative Research and Development Agreements (CRADA) with private companies and other entities. They provide the government use of the intellectual property while protecting the rights of the company to guard its patents.

According to command officials, the objective of a CRADA is cooperative research that will enhance the mission of the command and benefit the other party. CRADAs define the individual responsibilities of each party toward achieving that objective, as well as rights to intellectual property developed under the CRADA.

USJFCOM may provide personnel, facilities, and equipment to perform the cooperative research, but may not provide funds to support the CRADA. The other party may provide personnel, facilities, equipment, and funding.

Under federal law, CRADAs can be established with industrial organizations, industrial development organizations, non-profit organizations, universities, state and local governments, licensees of inventions owned by federal agencies, and other federal agencies.

As a result, USJFCOM may not always pay for the services or products it needs to develop technologies. In fact, some projects may produce income for USJFCOM. Newly developed technologies and concepts will immediately be applied to support the operational warfighter.

Command officials see the process as a win-win situation, for the both command and its partners. USJFCOM Director of Experimentation Army Maj. Gen Bob Wood spoke about the potential of technology transfer authority on April 5 during the command's 2005 Industry Symposium in Portsmouth, Va. "With the expanded authority," Wood said, "we can start to transfer better technologies out or in, depending upon the technologies, and break new ground with traditional defense contractors along that path. In the areas of research and development, it will give us new flexibility to structure partnerships with industry."

USJFCOM's focal point for technology transfer is the command's newly formed Office of Research and Technology Applications (ORTA). It will oversee partnership agreements between USJFCOM and industry. It will also identify new technologies that will help fulfill warfighter requirements

By law, any government organization using technology transfer authority must have an ORTA for offering ad-

vice and assisting the command with CRADAs, intellectual property agreements, patent licensing agreements, personnel exchange, and research grants.

Dr. Russell Richards of USJFCOM's Joint Experimentation directorate heads the new office. "Our job is to use these mechanisms in a way that makes it easier to work with industry," he said. "These agreements give us more timely access to new technologies while protecting the property rights of the inventors, whether they are government or industry." During the Industry symposium, he outlined three principal ways for technology transfer to take place at USJFCOM.

The first involves the classic model of spinning off technology developed in federal labs and transferred to industry partners for commercial development. "That's the way traditional technology transfer works for most federal laboratories," Richards said. The second consists of what Richards calls "spin-on."

"Our industry partners may have good capabilities and technologies that we need to embrace to enhance the warfighter's effectiveness," he said. "That will probably be prevalent here."

The third form of transfer would be what he termed "spin-over," where technology and capabilities are shared among USJFCOM's various subordinate organizations like the Joint Systems Integration Command, the Joint Futures Laboratory, and the Joint Advanced Training Technology Laboratory, all in Suffolk, Va.

While research and development has always been an important part of the command's mission, all those activities are there to support the joint warfighter. USJFCOM will remain first and foremost a combatant command focused on transforming the U.S. military.

"These new technology transfer authorities are but a means to an end—not the end itself," Giambastiani said. "The whole point of these authorities is to speed the process of turning the best ideas from industry and academia and other national and international research laboratories into integrated capabilities."

INTERNATIONAL CONFERENCE ON ENTERPRISE TRANSFORMATION (ICET)

The Association for Enterprise Integration (AFEI) will host its 2005 International Conference on Enterprise Transformation (ICET) Sept. 13–14 in Washington, D.C. The theme of the conference is "Going Live with Service Oriented Architecture (SOA)." The conference will address two key aspects of federal agency transformation: SOA for Federal Agencies, and Protecting Shared Information Assets. Details and registration are available at: <http://www.afei.org/brochure/5AF3/index.cfm>.

2005 ANNUAL ITEA SYMPOSIUM (SEPT.26–29, 2005)

The International Test and Evaluation (ITEA) Symposium 2005 will be held Sept. 26–29, 2005, at the Albuquerque Convention Center in Albuquerque, N.M. This year's event will provide a forum for addressing the issue of transformational test and evaluation, examining the topic from three perspectives:

- **Programs** that are or will be testing in the Joint Force and Coalition Battlespace
- **Methodologies**, processes, resources, tools, and limitations that enable or hinder our testing in the Joint Force and Coalition Battlespace
- **Lessons Learned**, including recommendations for the way ahead.

For more information on this event, check the ITEA Web site: <http://www.itea.org> or call (703) 631-6220.

DEFENSE LOGISTICS INFORMATION SERVICE (MARCH 21, 2005) ONLINE REGISTRATION AVAILABLE FOR NATO SYMPOSIUM

BATTLE CREEK, Mich.—Organizers have established an online registration system to help interested parties sign up for the 10th International Symposium on Codification, Oct. 10–13 in Edinburgh, Scotland.

Members of the Defense Logistics Information Service will join international logisticians, business leaders, trade associations, and other interested individuals gathering from around the world for the symposium. The meetings are conducted every few years to review the current state of the NATO Codification System and discuss future development.

"Logistics continues to change and is becoming more complex. Accordingly, the logisticians' need for standard, accurate information at their fingertips is growing," said Richard Maison, the DLIS executive director, who also serves as the chairman of the NATO Group of National Directors of Codification (Allied Committee 135).

The committee sponsors the meetings to continue the advancement of the NCS, based on the U.S. cataloging system, as the world's standard language of government supply chain logistics. Originally adopted for NATO, the system is now used by more than 50 nations. It is also becoming a standard for e-commerce.

According to Maison, supporters of the NCS are reaching out to industry to build a common language between government and business. Countries are improving their information products and focusing on accuracy and relevancy, and National Codification Bureaus in participating countries seek to build synergy in the logistics chain from the factory to foxhole.

The symposium agenda includes speakers from around the world discussing a range of supply chain and codification issues as well as a number of social events planned for both before and during the main conference. Anyone interested in supply chain management, codification (cataloging), logistics and engineering support, international standards for data management, and related topics—whether within a military, government, industrial, or commercial enterprise or organization—should attend. All spoken and written material will be presented in English and French.

Those who would like to register online for the symposium can log on to <https://registration.meetingmakers.co.uk/dev-cgi/nato_2005/register?short_conference_name=nato_2005> or use the online tool at <www.codification2005.org> to learn about exhibition or sponsorship opportunities for the symposium.

2005 PEO/SYSCOM COMMANDERS' CONFERENCE (OCT. 18–19, 2005)

The 2005 Program Executive Officer/Systems Command (PEO/SYSCOM) Commanders' Conference will be held at the Defense Acquisition University, Fort Belvoir, Va., Oct. 18–19, 2005. The PEO/SYSCOM Conferences and Workshops are a series of senior-level, invitation-only, non-attribution events that host approximately 400 Department of Defense and industry participants at each event. They provide senior leadership from the Department of Defense and Industry an excellent opportunity to meet and share their views and priorities.

As the agenda is finalized, information on the 2005 conference will be posted to the conference Web site at <http://www.peosyscom.com>.

U.S. ARMY ACQUISITION CORPS ANNUAL AWARDS CEREMONY ARLINGTON, VA. (OCT. 2, 2005)

Watch for details of this upcoming event on the Army Acquisition Support Center Web site at <http://asc.army.mil/public/news/events/default.cfm>.

8TH ANNUAL SYSTEMS ENGINEERING CONFERENCE (OCT. 24–27, 2005)

The 8th Annual Systems Engineering Conference will be held Oct. 24–27, 2005, at the Hyatt Regency Islandia, San Diego, Calif. The call for papers and the conference announcement will be mailed and will be available at <http://register.ndia.org/interview/register.ndia?PID=Brochure&SID=_1D00RC2RA&MID=6870>. If you would like to add your information to the mailing list, please contact Phyllis Edmonson at (703) 247-2588 or pedmonson@ndia.org.

2005 FALL NATIONAL SBIR/STTR CONFERENCE

The 2005 Fall National Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Conference will be held Nov. 14–17, 2005, in Albany, N.Y. This conference will give participants the tools they need to obtain part of the $2 billion plus available to small business innovators. This conference will also provide participants with multiple opportunities to meet and network with SBIR and STTR program managers and fellow attendees including SBIR/STTR award winners, speakers, and experts from business and the government. For additional information, please visit the conference Web site at: <http://www.pmi-cpm.org/public/pages/news_events/news_events.html>.

17TH ANNUAL INTERNATIONAL INTEGRATED PROGRAM MANAGEMENT CONFERENCE

The 17th annual International Integrated Program Management Conference will be held Nov. 6–9, 2005, in Tysons Corner, Va. The conference will feature seminars, workshops, and symposia providing the latest information on Earned Value Management tools, best practices, and current trends. For more information, please visit the conference Web site at <http://www.pmi-cpm.org/public/pages/news_events/news_events.html>.