

Students get first-hand look at future technology

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Two Bucknell college students talk to one of the vendors during the Robotics Day demonstration Feb. 19 in the Root Hall Gym. Robotics Day was the finale for a three-day technology exploration designed to orient Army War College students to the Future Combat Systems, robotic technology, and expert speakers in the field of civilian and military technology development. Photo by Spc. Jennifer Rick.

Feb. 19, 2009 – The Root Hall gymnasium looked like a Sci-Fi geek's dream on Feb. 19 as it was teeming with robots of all shapes and sizes as part of the Robotics day demonstration.

Robotics Day was the finale for a three-day technology exploration designed to orient Army War College students to the Future Combat Systems, robotic technology, and expert speakers in the field of civilian and military technology development.

The three-day program is an important learning opportunity for the students, according to **Maj. Gen. Robert Williams**, USAWC commandant.

"We hope to create a better understanding of the vital relationship between government and industry in providing capabilities to our warfighters," said Williams. "Our goal is that the knowledge you gain here will assist you in the role of advisor to senior leaders on how to best support our warfighters while balancing things like cost, schedule, performance and risk."

· Feb. 17 filled the campus with the Future Combat Systems, ranging from the NLOS, the Nonline-of-Sight Cannon to the MULE, the Multifunction Utility/Logistics and Equipment Vehicle

· Feb. 18 featured a panel discussion and discussion with students about acquisition and industry challenges and opportunities

· Feb. 19 brought mechanical creations large and small and with varying tasks, most of which are designed to perform dangerous in-theater tasks that put may Soldiers at risk. War College students were joined by local college and high school students who watched the future technologies in action and asked questions about the engineering and about application of these tools in support of Soldiers.

"Robotics Day introduces the students to technology they will see on the battlefield," said **Bill Waddell**, director of the Command and Control Group. "It provides an educational opportunity for them to learn about some of the things they will be helping to make decisions about when they leave here."



Local high school and college

students were also invited to the event. Photo by Spc. Jennifer Rick.



"We want to show the students some of the advances in technologies that the Army and civilian companies are coming up with to make their jobs easier," said Bob Barnes, who helped manage the demo event.

"There is a good chance these students will encounter some of these types of machines in the near future." Highlights included --

- MDARS security robot – Currently deployed protecting Army Ammunition depots in the western U.S., it will operate autonomously on Indian Field

- T- Hawk flyable vertical takeoff and landing UAV now in use as the FCS Tier One UAV.

iRobot demonstrated the PackBot, a Small Unmanned Ground Vehicle, that has been used to detect bombs and conduct dangerous military operations while keeping our troops safe in Iraq and Afghanistan. The robots are controlled remotely and allow for the safe detonation of IEDs according to **Jeff Ostaszewski**, of iRobot.

"It's important that we learn about the new technology and what is possible now and in the future," said **Marine Lt. Col. Robert Sofge**, student. "We are seeing an increase in the use of robotic tools. It's good to be able to take it off the slides and be able to really see it and put our hands on it."

While some of the robots are still new, and their potential not fully realized, some of them are already being used every day in Iraq and Afghanistan to save the lives of U.S. servicemembers.

One new technology is the Chemical and Biological Agent Detector by ChemImage. This robot shines a light on a sample, and based on the light pattern that bounces back, tells exactly what the agent is, explained **Dr. Chuck Gardner**, vice president of engineering at ChemImage. It was originally developed to test the area around casualties to see if it is contaminated, keeping other Soldiers from being put at risk.



An Army War College student talks to one of the FCS personnel in the Root Hall Gym Feb. 17. Photo by Thomas Zimmerman.

Another new project is a portable Intensive Care Unit, which takes a casualty's vital signs, so that a doctor can help a patient remotely, said.

Dr. Sylvain Cardin, senior medical science and technology consultant at the Army Medical Research and Materiel Command. She described efforts to incorporate other technologies into the robot, to go as far as treating the casualty. Supported by ultrasound, for example, it can stop

and cauterize internal bleeding, said Cardin.

In use on the battlefield today is the TALON SWORDS (Special Weapons Observation Reconnaissance Direct-action

System). This robot has the ability to disarm and disable unexploded ordnance, move it to a safer location, blow it up in place, and more. It is controlled by a small control system that can be worn in conjunction with a Soldier's other equipment, said **Jake Warren**, representative for Foster-Miller.

Industry Day

On Wed. Feb 18, Industry Day brought together civilian partners and two leaders from FCS for a panel discussion in Bliss Hall.

"All the speakers came from very unique acquisition backgrounds," said student **Dennis Haag**, who introduced the panel. "All involved in getting capabilities from new systems out to the end users. Three different backgrounds but all three are needed to get you that final product."

The keynote speaker was **Charles Hall**, Executive Vice President of Combat Systems Business, General Dynamics. He spoke about the American defense industry, the relationship between the government and industry and thanked the students for the service to their country.

"It inspiring to know that the future of our country is in such capable hands," he said.

Speaker **Helen Greiner**, co-founder of iRobot and Droid Works, discussed the ways that technology can improve the lives of Soldiers and even save lives. She pointed out that some of the technology already ha have real-world uses.

"The U.S. is leading the world in all unmanned systems," she said. "They have been credited to saving the lives of hundreds of Soldiers and thousands of civilians."

She felt this was just a glimpse of what may come.

"The capabilities you see today are just the tip of the iceberg," said Grainer.

Scott Davis, deputy program manager for platforms at Future Combat Systems, spoke about the good and bad of FCS and what the future holds for the program.

"The Future Combat Systems is the cornerstone of Army Modernization," said Davis. "FCS is the Army's promise to provide Soldiers the best equipment and technology available as soon as practical."

Col. Michael Williamson, project manager of Future Combat Systems Integration, spoke about the importance of the integration of the different elements of FCS.

"We have to maintain interoperability. There are some amazing things out there but we need to make sure it can work in all environments."

FCS is not just a technology development program-it is the development of new Brigade Combat Teams-these new brigades, with more infantry, better equipment, unmatched situational awareness and communications allowing complete domination in asymmetric ground warfare while allowing the Army to build a force that can sustain itself in remote areas.

"FCS is the core of the Army's modernization program," said Williams. "The capabilities they provide are the most demanded by commanders in the field today."

FCS background

The FCS program consists of eight new Manned Ground Vehicles (MGVs), a family of unmanned air and ground vehicles, the Non Line of Sight-Launch System, and advanced tactical and urban sensors that are all connected by a state-of-the-art network. Working together, these systems will help Soldiers share real-time information across the battlefield. Overall, FCS will provide Soldiers vastly increased situational awareness, survivability, and lethality-ensuring they can take the fight to the enemy before the enemy has time to react.

Fielding for the first full FCS Brigade is slated for fiscal year 2015, but FCS technology is being accelerated to the Army's modular brigades through Spin Outs. These Spin Outs will allow Soldiers to utilize FCS equipment and technology as it becomes available. Spin Out 1 consisting of FCS (BCT) Battle Command capability, JTRS (GMR/HMS), Unattended Ground Sensors, the Non Line of Sight-Launch System, the small unmanned ground vehicle (SUGV) and the Class I Block O Unmanned Air Vehicle is currently being evaluated by Soldiers of the Army's Evaluation Task Force (AETF).

FCS has moved from concept to reality. Today, there are currently 75 FCS hardware tests and evaluations ongoing across the country. Equipment is in the hands of Soldiers with successes such as movement of images from FCS sensors across the battlefield using the network, field tests of FCS unmanned systems at Fort Bliss, Texas, and delivery of the first FCS Manned Ground Vehicle (MGV) prototype, the Non Line of Sight-Cannon (NLOS-C) for evaluations to prove full system viability.