

## Kendall Visits TechShop for National Manufacturing Day

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY  
(OCT. 3, 2014)

Cheryl Pellerin

WASHINGTON—The Defense Department's top acquisition official today toured a TechShop in Arlington, Va., one of several membership-based, do-it-yourself workshops and fabrication studios that partners with the Defense Advanced Research Projects Agency and the Department of Veterans Affairs to promote technology and manufacturing innovation.

DARPA and the VA launched their collaboration in 2012 in part to provide a space for innovators to access the industrial tools, training, and equipment needed to pursue their own unique ideas and inventions without the need for affiliation with a large manufacturer.

"It's National Manufacturing Day and it's really great to see the innovation here—it's a terrific facility," said Frank Kendall, undersecretary of defense for acquisition, technology and logistics, during his tour.

### Manufacturing-Technology Connection

"I'd like to find ways for us to take more advantage of things like this," he added. "There's a strong connection between the ability to manufacture products, and the technology base and the engineering side of what we do [at the DoD]."

TechShop, with eight locations nationwide, provides access to more than \$1 million worth of professional equipment and software to members, who can join by the month or by the day.

Through a partnership with the VA's Center for Innovation and General Electric, TechShop offers veterans of all eras a limited number of free one-year memberships and \$350 worth of training.

Each facility includes laser cutters, plastics and electronics labs, a machine shop, a wood shop, a metal working shop, a textiles department, welding stations, and a water jet cutter. Members have open access to design software, featuring the entire Autodesk Design Suite, and large project areas and work tables are available for completing projects and collaborating with others.

### National Manufacturing Day

In a statement proclaiming Oct. 3 National Manufacturing Day, President Barack Obama said that, with ingenuity and a determined spirit, hardworking Americans are creating

products and unlocking new technologies that will shape the nation and grow its economy. "Ensuring that America is at the forefront of 21st century manufacturing requires research, investment, and a workforce with high-tech skills," the president wrote.

"That is why my administration is investing in regional manufacturing hubs that bring together private industry, leading universities, and public agencies to solve technology challenges too significant for any one firm," Obama added.

### Manufacturing Hubs

The president called these manufacturing hubs—with more to be built in the future—the National Network for Manufacturing Innovation. The aim is to accelerate development and adoption of cutting-edge manufacturing technologies for making new, globally competitive products.

Today, after his tour, Kendall likened the TechShop idea to the Institutes for Manufacturing Innovation, or IMIs, announced beginning in February.

At that time Obama announced the establishment of two new institutes and launched a competition for a new manufacturing innovation institute to build U.S. strength in manufacturing advanced composites. It was the first of four new competitions to be launched this year.

### Specific Areas of Technology

Kendall said the IMIs are focused on specific areas of technology, like three-dimensional printing.

"They're similar in a way, in that they give people an opportunity to come in, develop products, develop technology—manufacturing technology in particular—that then can get wider use," he said.

The pilot project, launched in August 2012, was the National Additive Manufacturing Innovation Institute. Additive manufacturing is often called 3-D printing.

NAMII, headquartered in Youngstown, Ohio, is a consortium of manufacturing firms, universities, community colleges, and nonprofit organizations mainly from the Ohio-Pennsylvania-West Virginia technology belt.

### DoD Collaboration with Universities, Businesses

The next two institutes announced are led by the Defense Department and supported by a \$140 million federal commitment combined with more than \$140 million in nonfederal resources.



On Oct. 3, 2014, the same day President Barack Obama proclaimed National Manufacturing Day, Frank Kendall, undersecretary of defense for acquisition, technology and logistics, toured the TechShop facility in Arlington, Va. TechShop, with eight locations nationwide, provides access to more than \$1 million worth of professional equipment and software to members who join by the month or by the day. Through a partnership with the Department of Veterans Affairs Center for Innovation and General Electric, TechShop offers veterans of all eras a limited number of free one-year memberships and \$350 worth of training.

DoD photo by Cheryl Pellerin

One is a Detroit-area-headquartered consortium of businesses and universities that focus on lightweight and modern metals manufacturing. The second is a Chicago-headquartered consortium of businesses and universities focusing on digital manufacturing and design technologies.

“We’ve had great success with the first one, which was 3-D printing. That’s still growing [and] doing well,” Kendall said. “We started two more—lightweight metals and digital manufacturing—and they’re both off to a pretty good start.”

Today, Kendall added, the president announced a competition to create another IMI that will focus on photonics, or the science and engineering applications of light.

“We’re still researching which one to do after that,” the acquisition chief said. “But we’re very excited about the prospect of all these institutes.”

### **Navy Realigns Critical Support Workload to ‘Specialized and Proven Aircraft’ Program Office**

NAVAL AIR SYSTEMS COMMAND PUBLIC AFFAIRS (OCT. 6, 2014)  
NAVAL AIR SYSTEMS COMMAND, PATUXENT RIVER, Md.—The Navy’s Specialized and Proven Aircraft Program Office (PMA-226) has expanded its mission, taking over

management of the F-5 N/F and F-16 A/B adversary aircraft as well as the acquisition of Contracted Air Services (CAS), a move that became effective Oct. 1, naval officials said.

The realignment of the two programs, which were previously executed by Naval Air Systems Command (NAVAIR)’s Tactical Airlift Program Office (PMA-207), will allow PMA-207 to focus on its mission supporting C/KC-130J and seven other logistics and fleet transport aircraft, officials said.

“Our commitment to excellence, coupled with our history of sustained support for the fleet, will continue as we transition the people and the workload from PMA-207 to PMA-226,” said Cmdr. Anthony Jaramillo, who leads PMA-226 from Marine Corps Air Station (MCAS) Cherry Point, N.C. “I am confident we will continue to provide this critical support for the warfighter.”

CAS provides commercial aircraft to fly missions in support of naval requirements. The CAS program coordinates airworthiness, or flight safety assessments of contract aircraft and crew, ensuring safe, timely, and efficient support to the Navy and Marine Corps. The support missions range from adversary training to testing and aerial refueling.

The seven CAS contracts managed by NAVAIR provide more than 15,000 flight hours of support to the Navy and Marine Corps for fleet exercise support, training, and testing, Jaramillo said.

The F-5 adversary program consists of 44 F-5N/Fs operating from Naval Air Station (NAS) Fallon, Nev.; NAS Key West, Fla.; and MCAS Yuma, Ariz. The F-16 program includes 14 F-16 A/Bs attached to Naval Strike and Air Warfare Center, (NSAWC) NAS Fallon.

The adversary mission supports Red Air Carrier Air Wing Training and Graduate Level Air Combat Training support.

The PMA-226 team manages total life cycle support for adversary aircraft, including a maintenance labor contract for the three F-5 squadrons, an F-5 depot maintenance contract, and a maintenance contract supporting NSAWC's multiple aircraft platform organization.

"A program office with experience in sustainment can focus on extending the service life of the F-5 and F-16s in support of naval training missions," Jaramillo said. "We also have the experience with nonstandard platform aircraft."

After more than two decades supporting the retiring H-46 "Sea Knight" helicopter, PMA-226 broadened its mission in November 2011, assuming responsibility for several aircraft at the U.S. Naval Test Pilot School (USNTPS), the U.S. Naval Postgraduate School (NPS) and out-of-inventory Foreign Military Sales (FMS).

PMA-226 FMS teams support more than six different fixed and rotary-wing aircraft providing critical capability to allied and coalition armed forces.

The office also manages five types of fixed and rotary-wing aircraft at USNTPS, including T-38 Talons, UH-72 Lakotas, U-6A Beavers, an NU-1-B Otter, and X-26 Frigates. Supporting NPS' Center for Interdisciplinary Remotely Piloted Aircraft Studies, PMA-226 also oversees O-2A Pelicans, UV-18A Twin Otters, and Sentry Unmanned Aerial Vehicles.

Though headquartered at MCAS Cherry Point, PMA-226 also has teams at NAS Jacksonville, Fla., and NAS Patuxent River.

For more news from Naval Air Systems Command, visit <http://www.navy.mil/local/navair/>.

## DoD Seeks Next-generation Technologies, Kendall Says

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY  
(OCT. 7, 2014)

Claudette Roulo

WASHINGTON—The Defense Department is starting a long-range research and development initiative intended specifically to deliver technologies capable of providing the next generation of dominance on the battlefield, the undersecretary of defense for acquisition, technology and logistics said today.

The study is modeled after a similar one conducted in the 1970s that ultimately led to many of the technologies being used today, Frank Kendall told an audience at the International Test and Evaluation Symposium in Crystal City, Va.

"It's time to kind of rethink what's going to give us dominance in the future," he said, adding that he expects the program will inform next year's budget cycle.

Individual technology programs have had a strategic emphasis over the years, Kendall said, but it's time to have that same emphasis at the DoD level.

"We need to think about what's going to give us the next generation of dominance on the battlefield and make sure we're focused on the things that have that potential," he said.

The undersecretary noted the initiative will be overseen by the department's best technical minds, including Stephen Welby, deputy assistant secretary of defense for systems engineering; Alan Shaffer, principal deputy to the assistant secretary of defense for research and engineering; Dr. Arati Prabhakar, director of the Defense Advanced Research Projects Agency; and Katrina McFarland, assistant secretary of defense for acquisition.

### A Revolution in Military Affairs

The 1970s study did a thorough job, Kendall said, noting that it yielded the idea for smart munitions and smart seekers for missile defense systems.

"With one or two exceptions, the technologies that were identified as the ones we should be focusing on were pursued and were pursued successfully," he added. "It did the same thing, basically, in communications and in [the] electronic warfare side of communications in terms of protecting data links and so on."

Kendall credited the initiative with "sowing the seeds" for today's capabilities and revolutionizing the efficiency of bat-

tlefield performance—meaning fewer troops were needed to meet particular objectives.

This new efficiency was demonstrated dramatically in the first Gulf War, he said.

“We had a suite of things that included stealth—and even the classified version of this study doesn’t talk about stealth, because at the time, it was completely under wraps—but smart munitions, wide-area sensors, networking, and stealth combined are ... the revolution that we unleashed on the world in the first Gulf War,” Kendall said.

Other countries took note of the effect technology had on the battlefields of Kuwait, he said.

“We were expected to have about 10,000 casualties in the first Gulf War and we had a few hundred. ... We demonstrated the ability to take out a relatively modern conventional force very, very efficiently, very, very quickly,” Kendall said. “Nobody watched that more than the Chinese.”

Russia was watching, too, the undersecretary noted. A lot of theories were generated about what the quick victory and the successful employment of the new technologies portended, he said.

“We have ridden that set of capabilities ever since,” Kendall said. “We used it in Serbia, very effectively. We used it when we went into Afghanistan, went into Iraq, used it in Libya, we’re using it right now. But a lot of time has gone by since 1991, and people have had a chance to respond. They’ve also had a chance to build similar capabilities.”

Nations are building smarter weapons, the undersecretary said, and those weapons are proliferating around the world.

“Nobody has a monopoly on technology,” Kendall said. “It never stands still. And once you’ve seen that someone else has solved the problem and knows how to do something, it’s not hard for you to do the same thing as well.”

### **Pentagon Official Reviews Success in Counter-WMD Program**

*DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY*

*(OCT. 9, 2014)*

*Cheryl Pellerin*

WASHINGTON—The Defense Department is like no other agency on the planet in terms of its capacity to get things done and to lead around the world, Andrew C. Weber, assistant secretary of defense for nuclear, chemical and biological defense programs, said this week.

During an Oct. 7 media roundtable at the Pentagon, Weber reviewed the success of the international effort to destroy Syrian chemical agents.

Weber is leaving the department this month after 18 years to support the State Department’s Ebola response effort as deputy to Ambassador Nancy Powell, who last month was named to lead State’s Ebola Coordination Unit. The current principal deputy assistant secretary of defense, Arthur “Tom” Hopkins, will be the office’s acting assistant secretary.

In the area of countering and reducing the threat of chemical weapons around the world, Weber cited successes in Libya and Syria.

“Some of the things we’ve been involved in [include] the destruction of Libya’s chemical weapons—517 artillery shells filled with mustard that are gone and will never fall into the hands of terrorists,” he said.

“In Syria, we’ve been involved in a major effort since 2011, anticipating and preparing for problems associated with the Syrian chemical weapons stockpile,” Weber added, “and now a massive effort to destroy 1,300 tons of Syria’s chemical weapons agents has been completed.”

### **Strategic Threat from Syrian Chemical Agents is Eliminated**

The strategic threat of Syria’s chemical agents has been eliminated, the assistant secretary said. “For me,” he added, “the best evidence of that is a decision earlier this year by the government of Israel to stop the distribution of gas masks to its public.”

Though the Syrian regime may not have declared some small tactical chemical stockpiles, Weber said, “there’s a system in place, led by the Nobel Prize-winning Organization for the Prohibition of Chemical Weapons, the OPCW, to work with the Syrian regime and the international community under the United Nations Security Council resolution to resolve any lingering discrepancies.”

On Oct. 1, the OPCW announced that the OPCW-U.N. Joint Mission on eliminating Syrian chemical weapons had completed its mandate and that its operations drew to a close Sept. 30. In the same statement, the OPCW said it has signed an agreement with the U.N. Office for Project Services to provide safety, security, and logistical support for the OPCW’s continuing operations in Syria.

“The OPCW mission in Syria will continue to deal with the destruction of chemical weapon production facilities and



An escort ship pulls next to the U.S. ship *MV Cape Ray* in the Mediterranean Sea, July 5, 2014. The escort was part of an international task force to protect the ship, which was modified to dispose of Syrian chemical agents according to terms Syria accepted in late 2013. U.S. Navy photo by Seaman Desmond Parks

clarification of certain aspects of the Syrian initial declaration,” the statement said.

### Confidential Discussions

Weber said the department had confidential discussions about the chemical agent problem in Syria for a year before the Syrian attacks in August 2013. Experts, under the auspices of the U.S. National Security Council staff and the Russian security council, met on a confidential basis over the course of a year and developed the universal matrix—a detailed plan for destroying Syria’s chemical agents, the assistant secretary explained.

Intelligence on the Syrian chemical agent stockpile was exquisite, he added, allowing the Defense Department to tailor a technology called the field deployable hydrolysis system, specifically to the Syrian chemical agent stockpile, which was mostly in bulk liquid.

The advance work and planning made it easy when Secretary of State John F. Kerry and Russian Foreign Minister Sergey Lavrov met in Geneva in September 2013, Weber said.

“They had the plan off the shelf. They knew that we could remove these chemicals from Syria and destroy them outside Syria,” he added.

Weber said Defense Department experts had “done the math early, in 2012, and determined that the entire [Syrian] stockpile would fit on fewer than 200 trucks and could be loaded up and driven across the border.”

At the time, he added, “we were thinking perhaps of having a chemical weapons destruction capability available in Jordan.”

### Specific Neutralization Technology

The Syrian modus operandi was not to fill the munitions until just before use, Weber said, so most of it was in large one- and two-ton liquid containers, and that took a specific neutralization technology, called hydrolysis, that DoD designed to be usable anywhere in the world.

The field-deployable hydrolysis system was built in five months, beginning with a process from the former Aberdeen Chemical Demilitarization Facility that had been used a decade ago to neutralize 1,700 tons of mustard agents—part of the destruction of the United States’ own chemical stockpile.

“The heart of the system fits in two standard shipping containers,” Weber said, “and we weren’t sure when we invested in the capability whether it would be used inside Syria or in a neighboring country like Jordan.

In November 2013, according to a chemical engineer with the U.S. Army Edgewood Chemical Biological Center, the decision was made to use two of the systems at sea aboard the 648-foot Cape Ray research vessel.

On Aug. 19, the *Cape Ray* teams completed destruction of 600 metric tons of Syrian chemical agents and precursor chemicals. The OPCW announced that the ship would transport the resulting low-level chemical waste to Finland and Germany for disposal at land-based facilities.

### **Working with Partners to Solve a Problem**

From the Syria experience, Weber said, “we learned the value of working with multilateral organizations, working with international partners, to solve a problem. This was a huge security problem to the region, and the world came together after Syrian leader Bashar Assad killed over 1,000 innocent men, women, and children.”

Having the capability to move and destroy the stockpiles was critical in convincing the global community that removal from Syria was an option, he said.

Most people thought it was impossible to move 1,300 tons of chemical agents and that it would have to be done at the sites inside Syria, and in the middle of a civil war, and it would take many years to accomplish and be a very dangerous process,” Weber said.

The 1,300 tons of sarin and mustard, about half destroyed aboard the *Cape Ray*, will never be used by the Syrian regime again against its own people or its neighbors, and will never fall into the hands of organizations like ISIL, the assistant secretary said.

“That’s a huge accomplishment,” he added, “and this department had a big role in contributing to the international effort that made that happen.”

### **Kendall Encouraged by U.S.-India Defense Trade Progress**

*DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY (OCT. 10, 2014)*

*Jim Garamone*

WASHINGTON—The Defense Department’s undersecretary for acquisition, technology and logistics yesterday discussed the Defense Trade and Technology Initiative and how it relates to U.S.-India military-to-military relations.

The initiative, part of a broader effort to build the United States’ relationship with India, is making progress and aids

the U.S. rebalance to the Asia-Pacific region, Frank Kendall told the U.S.-India Business Council at the organization’s gala in Washington, D.C.

### **U.S.-India Cooperation**

At the beginning of the initiative, DoD approached the Indian Ministry of Defense with programs where the two nations could work together, Kendall said.

“These offers included some traditional sales of American equipment as well as a number of what we called co-production and co-development opportunities,” he said.

At its core, the initiative is an effort to streamline the approval process for release of technology to India, Kendall said. An example of this, he said, is the co-production and co-development of the Javelin missile.

“These suggestions for cooperative programs are still available for consideration,” the undersecretary said. “And, I believe, are under active consideration by the Indian government.”

The initiative also looks to more broadly based research, he said.

### **Progress Has Resumed**

During the Indian elections there was a time-out on the initiative, Kendall said. Now, he said, progress has resumed. Defense Secretary Chuck Hagel and Kendall journeyed to India in August and both men came back excited over the possibilities of the initiative with India.

“It was very clear to Secretary Hagel and to myself that a new wind was blowing in India—the monsoon had changed direction and intensity,” Kendall said. “Everyone we met, at all levels, was highly interested in opportunities for cooperation. The desire we felt to inject new momentum into this relationship and into DTTI was echoed by everyone whom we met.”

And now, there has been movement. Kendall said he and his Indian counterpart will meet in-person every six months. India will work to finalize approval of the renewal of the Research, Development, Test and Evaluation Memorandum of Agreement so it can be signed next month.

### **Opportunities to Develop Science and Technology Projects**

The two nations agreed “to identify specific co-development and co-production opportunities,” and to develop specific science and technology projects, Kendall said.

"I'm excited and encouraged about these developments, but I know there is a lot of work still to be done," the undersecretary said. "Both India and the United States have bureaucracies that can be equal parts engines for change and impediments to progress. But both of us can move when the leadership and motivation exist to do so."

Kendall said both sides must keep pushing.

"Good intentions must lead to tangible results, or the momentum we have built is going to fade," he said. In that spirit, the United States has set aside \$20 million for strategic cooperative science and technology projects with India.

Kendall emphasized that the initiative is not just an attempt to sell U.S. defense products to India. It is, he said, one facet "to build a deeper, closer, and broader relationship with one of the most important countries on earth."

### **Navy Demonstrates New Autonomous Ground Vehicle With Modular Mission Capability**

NAVAL SURFACE WARFARE CENTER PANAMA CITY

DIVISION PUBLIC AFFAIRS (OCT. 28, 2014)

Dan Broadstreet

PANAMA CITY, Fla.—The Naval Surface Warfare Center Panama City Division (NSWC PCD) and Space and Naval Warfare Systems Command (SPAWAR) Systems Center Pacific (SSC Pacific) Reconnaissance and Detection Expendable Rover (RaDER) team recently demonstrated the autonomous operation of the first RaDER prototype.

The successful demonstration was conducted at SPAWAR's Point Loma Test Facility in San Diego.

"This was our first opportunity to show all the stakeholders what we have been working on for the past two years," said NSWC PCD RaDER Project Engineer Jeff Dinges. "It is extremely exciting to see a concept demonstrated two years after the project was conceptualized."

The RaDER concept was developed at NSWC PCD and initially funded as a Naval Innovative Science and Engineering (NISE) effort for 2013. The RaDER is designed to provide a low-cost, autonomous, modular-vehicle capability for fielding numerous explosive hazard defeat (EHD) and counter-tactical surveillance and targeting (CST) mission packages.

"I believe this is what the NSWC PCD NISE efforts are all about," said Dinges. "The RaDER analysis team performed



Reconnaissance and Detection Expendable Rover (RaDER) pictured after vehicle's completion of the project's autonomous test run.

U.S. Navy courtesy photo

the research to identify gaps in the Marine Corps' strategic objectives and developed the RaDER concept to fill a gap. The NISE committee believed in our concept and funded us to develop it into a functional prototype."

As the NISE effort progressed, the NSWC PCD team began working closely with Product Manager Engineer Systems (PdM ES) Joe Klocek's team at Marine Corps Systems Command (MCSC).

"We were able to develop requirements with a target transition organization during the engineering process," said Dinges. "This team effort between MCSC, the PdM ES, and NSWC PCD helped refine the requirements for the platform and future mission capabilities."

As fiscal year 2013 was coming to an end, MCSC, PdM ES funded the RaDER effort to allow for the integration of the Office of Naval Research (ONR) Expeditionary Maneuver Warfare and Combating Terrorism Department (Code 30) advanced ground system autonomy technology onto the RaDER platform.

"The ONR Code 30 developed ground system autonomy technology met all of the requirements we had for our platform", said Dinges. "Cost was a large focus of our effort.

The low-cost ground system autonomy technology was a perfect match.”

As fiscal year 2014 began, the NSWC PCD team was in the fabrication stages of the project.

“Many long hours were spent completing the mechanical and electrical design”, said Dustin Bride, NSWC PCD lead mechanical engineer. “We performed all the modeling and analysis on the computer before we started cutting metal. We made every effort to minimize fabrication time and cost through the process.”

Once the mechanical design was complete, NSWC PCD and SSC Pacific teams worked to integrate the autonomy kit onto the vehicle.

“It was a challenge to adapt the ONR 30 autonomy system to the RaDER platform without access to the vehicle, but the two teams worked closely with one another and pulled it all together,” said Mike Bruch, chief engineer for robotics at SSC Pacific.

“The RaDER is a low-cost platform with an autonomous navigation package,” said Dinges. “The platform uses a number of commercial-off-the-shelf [COTS] parts to keep costs low while also decreasing the logistics footprint. RaDER has a unique chassis design to meet multi-mode transportation, quick deployment, and modular mission capability requirements.”

According to Dinges, some of these missions include route reconnaissance and clearance detection, proofing, and situational awareness.

“We analyzed over 13 different mission packages to integrate onto RaDER,” said Dinges. “Even with a modular mission capability platform producing 750 watts of sensor power, RaDER maintains an all-terrain capability with four-wheel drive and a fuel-efficient three-cylinder diesel capable of over 150 miles of range.”

Although RaDER development is still underway, Joe Klocek indicated he would prefer to get the platform in front of the Marines for their feedback.

“I certainly see a need for this type of system,” said Klocek. “It’s gone from concept to reality in a short period of time. We need to continue the development of the RaDER and let the operating forces utilize the system in a tactical environment to help generate the concept of operations for this unique capability.”

According to Dinges, the RaDER effort shows how NSWC PCD NISE efforts and creative teaming combine to achieve successful science and technology efforts.

“In today’s cost and time-constrained environment, we demonstrated how a small investment can foster innovative thinking,” said Dinges. “The technical teams from NSWC PCD and SSC Pacific achieved great success in transforming RaDER from concept to reality.”

For more news from Naval Surface Warfare Center Panama City Division, visit <http://www.navy.mil/local/NSWC/>.

### Technological Dominance Threatened by Fiscal Uncertainty

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY  
(OCT. 28, 2014)

*Claudette Roulo*

WASHINGTON—The Defense Department is passionate about technological superiority, but this longtime advantage is now being challenged by factors including budget uncertainty and complacency, the assistant secretary of defense for acquisition said today.

“Our superiority has been eroding, because the world has been studying us. And it’s adapted to what we have delivered or are developing,” Katrina McFarland told an audience at the TechAmerica Foundation’s Vision Forecast Conference here.

Ongoing budget uncertainty is threatening research and development programs that might find new ways of technological dominance, she said. “Our superiority is directly related to the level of R&D in our investment pipeline,” McFarland explained, and the current budget climate makes it difficult to keep this pipeline open.

The nation’s technological superiority is not assured if R&D is treated as a variable cost and more time is lost to budgetary delays, the assistant secretary told the audience. “Time is not recoverable,” she added.

### A Global Competition

The United States is now in a global technological competition for human resources, financial resources, and basic research resources, McFarland said—a climate fraught with incredible challenges in this area of technology.

“We’ve become complacent and risk-averse,” she said. “We rely on history, and we believe that ... we’re okay because we’ve been dominant for decades. The problem is that is no longer factual, and we are seeing clear evidence that we

have a challenge in front of us, [and] what we must do is meet it head-on.”

The country relies on offset strategies—technological solutions to challenges that might otherwise be overwhelming, McFarland said. In the 1950s, the Eisenhower administration relied on nuclear weapons and long-range airpower instead of trying to match the Soviets weapon for weapon and troop for troop. More recently, precision-guided munitions, stealth aircraft, and GPS have shaped conflicts from the Gulf War to today’s campaigns in Iraq and Syria.

“So what’s our next offset strategy?” she asked. “How are we going to address this future?”

At the same time the nation’s technological dominance is being threatened, budgets are increasingly restricted, McFarland said.

“We’re in a period of uncertainty, and it’s reflected everywhere around us,” the assistant secretary said, noting that sequestration spending cuts will resume in fiscal year 2016 unless Congress changes the law.

“Sequestration for us is horrendous. ... This isn’t rhetoric. This is real for us. Funding for the accounts that exercise our design engineers [has] declined nearly 50 percent in the last five years. That’s not trivial. That’s engineers—that’s the basic foundation of innovation.”

### **Invest to Survive**

History has shown that investment in the future during lean times—in R&D, specifically—is a predictor of who will best survive a budgetary downturn, McFarland said. So to guarantee the nation is prepared when the world emerges from the current period of fiscal uncertainty, she added, the Defense Department must first address the existing challenges to national security, “or we will not be [technologically dominant] in the future—they will be.”

Then, she said, “we need to address affordability in current and future systems, and we must develop a technological surprise.”

The eight focus areas of the Defense Department’s Better Buying Power 3.0 initiative have technological dominance as a common goal, McFarland said. BBP 3.0 seeks to develop technical excellence and innovation, she added.

“It doesn’t eliminate 1.0 or 2.0—it builds upon it, narrowing its scope to focus on our future,” the assistant secretary said.

The acquisition community is concentrated on the future in addition to today, she said. “Our defense markets are cyclical, but we must have an upturn. It’s eventual, but it will happen. History has shown us.

“This country is renowned throughout the world for [its innovation],” the assistant secretary continued, “and we need to continue that in order to retain where we are and our freedoms.”

And that includes taking more research risks, McFarland said.

“If we want to continue to be the superior force, we need to take chances, and taking risks is not optional,” she added.

### **Technology Gap Closing, Top Acquisition Official Warns**

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY

(NOV. 5, 2014)

*Claudette Roulo*

WASHINGTON—The technological dominance enjoyed by the U.S. military force that fought the first Gulf War a quarter century ago is threatened today, the undersecretary of defense for acquisition, technology and logistics said today.

Speaking at a Navy League special topics breakfast in Arlington, Va., Frank Kendall said he reviews defense intelligence data, particularly technical intelligence, every morning.

“I look at weapons systems that others are developing and try to make some determination as to what impact they’re going to have on our abilities on the battlefields of the future—or the present, in some cases,” the undersecretary said.

When he came back to work at the Pentagon four and a half years ago, Kendall said, it wasn’t long before he realized the United States had a problem.

“The problem was the modernization rate of other powers, in particular of China,” the undersecretary said. “China has been investing for a long time in a number of systems, which are essentially focused on keeping the United States out of the part of the world that’s closest to China.”

### **The Challenge of China**

The Chinese are able to benefit from a number of factors, Kendall said, acquiring commercial technology and building an organic capability to develop technology. “And they’re benefiting from the technology that they can obtain from the Internet without other people’s permission,” he noted.

China's investments are strategic, Kendall said. "They're designed to present us with a very difficult problem if we want to operate in the vicinity of China," he added. "And it's structured in a way that they can, perhaps, control escalation, so they can force us to back down."

While he doesn't envision a war with China, the undersecretary said he does envision a time when China's military plays an important role in its regional influence.

"I also envision that whatever systems China develops, they will put onto the international marketplace—and they may very well show up in other places that we might be more likely to engage in conflict," Kendall said.

### **Budget, Complacency Drive Decline**

The situation hasn't improved in the time he's been watching, the undersecretary said. "It continues to deteriorate," he said. "It deteriorates in large part because of our budget situation."

Sequestration—which is scheduled to return in fiscal year 2016—and other budget uncertainties have made it difficult to maintain efficient, forward-looking acquisition programs, Kendall said. "We've worked very, very hard to get as much as we can for the money," he added, "and we've gotten to a point through a series of political events, really, which have put our budget in a place where it's really inadequate."

The narrowing of the technological superiority gap also is due, in part, to complacency, the undersecretary said.

"When I talk to people on the Hill and I mention that I'm concerned about technological superiority, ... I get a reaction that is a sort of surprise, first of all, and disbelief. ... I think we have gotten so accustomed to our technological superiority militarily that it's just a given, and it's one of the things I kind of fight against when I try to have these conversations," Kendall said.

### **Under a Microscope**

The United States tends to rely on a small number of very expensive, but very capable assets, the undersecretary said, and that makes the military vulnerable once an enemy learns how to attack those assets, noting that no one has a monopoly on technology, warfighting power, or doctrinal and operational concepts.

"People have been studying us," the undersecretary said, "and no one's studied us more—including immediately after the first Gulf War—than the Chinese. And they have been

building systems since then designed to counteract some of the things that we have."

While the United States is cutting its defense budget, China's budget is growing at about 12 percent a year, Kendall said. And while China's budget is not yet as large as that of the United States, "at the rate that it's going, it will be before too many years go by," he said.

"So I'm worried about whether we're keeping up or not," Kendall added.

### **Army Focuses on Autonomous System Development**

*U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING  
COMMAND PUBLIC AFFAIRS (NOV. 10, 2014)*

*David McNally*

ABERDEEN PROVING GROUND, Md.—The U.S. Army has invested in robotics technology for many years, and the focus is ever increasing toward autonomous system development.

Matt Donohue is the science and technology ground maneuver technology portfolio director for the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

"My vision is for Army vehicles to have scalable autonomous capabilities," Donohue said. "For Army tactical vehicles, this means scalable autonomy from leader-follower to fully autonomous capable, including the ability to be loaded and unloaded by autonomous material handling equipment."

In Donohue's vision of the future, combat vehicles will have similar scalable autonomy for movement and maneuver, but restricted engagement capabilities.

"Armed robots may be technically feasible, but policy, legal and safety concerns may limit the Army's ability to deploy armed robots in tactical roles," he said.

Although there is still a lot to be done in development, testing, and engineering, Donohue is optimistic about the current pace of innovation.

"For certain mission sets, most of the technologies we need for autonomous ground systems are mature and, in some cases, are being offered commercially by the automotive industry," he said. "These include the sensors and cameras used to enable active safety in vehicles, such as self-parking cars, blind spot detection, lane departure warning and lane keeping, backup cameras, adaptive cruise control, and active braking."



Seven unmanned military trucks cruise by at speeds up to 40 mph during a test of the Autonomous Mobility Appliqué System Joint Capability Technology Demonstrator, known as AMAS.

U.S. Army photo

As these individual technologies mature and gain acceptance, autonomy will evolve layer-by-layer, he said.

“The ability to logically link all of these technologies to enable autonomy for ground applications is one future for the Army,” Donohue said. “The near-term application is most likely related to using these technologies for active safety and to enable a convoy leader-follower capability.”

Active safety implementations will have a dramatic effect on saving lives and money.

“A significant amount of dollars could be saved annually if we get this right,” he said. “Active safety is step one, and it will have a significant impact on drivers. It will save lives.”

Donohue noted that retrofitting current Army truck designs with autonomous systems may be like a “MacGyver-like” solution, but it shows the potential for future vehicle designs.

The Army, in its partnership with industry, successfully tested the Autonomous Mobility Appliqué System Joint Capability Technology Demonstrator, known as AMAS.

“The success of the [Joint Capability Technology Demonstrator] has the Army thinking about the possibilities of this capability for the future,” Donohue said. “While we’ve all

seen basic robots in sci-fi movies and car commercials for a long time, the interesting ones were autonomous ones able to sense their environment and use that information to take actions.”

From the Google self-driving car to autonomous vehicles being licensed and allowed on the road in some states, Donohue said it is apparent that industry has become a key player in the world of autonomy.

“Being able to work with and leverage industry investment in autonomy will ensure the technology moves forward for the Army as well,” Donohue said. “Partnering with industry will ensure that the autonomous systems will be producible.”

Donohue pointed to an annual science and technology budget of about \$23 million for investment in the development of robotics and autonomy for ground applications.

“Robotics and autonomous systems have shown promise for many years,” he said. “With shrinking budgets and a potentially shrinking force structure, I think now is the time for autonomous ground systems, if done correctly, to make it into the force.”

RDECOM is a major subordinate command of the U.S. Army Materiel Command. AMC is the Army’s premier provider of



A B-52H Stratofortress bomber sits on the tarmac to be prepped by its crew for flight during a wintry day at Minot Air Force Base in North Dakota, Jan. 8, 2014.

U.S. Air Force photo by Airman 1st Class Christopher Boitz

materiel readiness—technology, acquisition support, materiel development, logistics power projection, and sustainment—to the total force, across the spectrum of joint military operations. If a soldier shoots it, drives it, flies it, wears it, eats it, or communicates with it, AMC provides it.

*Editor's note. This article appears in the November/December 2014 issue of Army Technology Magazine, which focuses on robotics. The magazine is an authorized, unofficial publication published under Army Regulation 360-1, for all members of the Department of Defense and the general public.*

### Work Details How DoD Will Implement Nuclear Improvements

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY  
(NOV. 14, 2014)  
Cheryl Pellerin

WASHINGTON—The Defense Department will implement more than 100 recommendations to improve its nuclear deterrent enterprise and in the process make the difficult job of working in that environment better for the nuclear workforce, Deputy Defense Secretary Bob Work said today.

Work took the podium after Defense Secretary Chuck Hagel's announcement to the Pentagon press corps about a series of reforms to the nuclear enterprise that will be made

based on recommendations of an internal review and an independent external review of the enterprise.

Hagel ordered the reviews in January after revelations about troubling lapses and poor morale in the U.S. nuclear forces.

Hagel and Work joined other speakers at the briefing today, including Navy Adm. Michelle Howard, vice chief of naval operations; Navy Adm. Cecil D. Haney, commander of U.S. Strategic Command; Air Force Lt. Gen. Stephen Wilson, commander of Air Force Global Strike Command; and Army Sgt. Maj. Patrick Z. Alston, STRATCOM's senior enlisted leader.

### High-level Visit

Air Force Secretary Deborah Lee James also appeared on the podium, and today she'll accompany Hagel on a day-long visit to Minot Air Force Base in North Dakota.

Minot AFB is the only dual-wing, nuclear-capable base in the Air Force. The 5th Bomb Wing and the 91st Missile Wing are based there and are part of Air Force Global Strike Command. Assets assigned to the base include the B-52H Stratofortress strategic bomber, the UH-1 Huey helicopter, and the Minuteman III intercontinental ballistic missile.

At the briefing, Work told reporters that the department has had many nuclear deterrent enterprise reviews but said this one is different because DoD's senior leadership is involved.

"One of the things that the internal review said is, 'You don't have anybody looking at this as an enterprise and you better get somebody to look at it as an enterprise because at an enterprise-wide view, you're having problems,'" Work said.

### **Taking an Enterprise-wide View**

The reviewers recommended the department consider the fact that past reviews have focused on individual problems in the intercontinental ballistic missile force and the sea-launched ballistic missile submarine force, Work added, but no one was taking an enterprise-wide view.

Work, who spent 27 years in the Marines, said, "The external reviewers, as a Marine, really knocked me and the secretary and punched us between the eyes, because they told us ... 'You have got to take ownership of this issue, Mr. Secretary.' And the secretary did."

The Nuclear Deterrent Enterprise Review Group, or NDERG, is another reason the latest review is different, the deputy secretary said.

Work said he, the No. 2 civilian in the department, co-chairs the NDERG with the vice chairman of the Joint Chiefs of Staff, the No. 2 uniformed officer in the department, and both report directly to Hagel.

### **Internal and External Reviews**

Retired Air Force Gen. Larry D. Welch and retired Navy Adm. John C. Harvey Jr. co-authored the external review, Work said.

"It is because of the insistence of two really seasoned nuclear officers that, if you do not do this as a secretary-level initiative, you're going to go the same way as in the past," the deputy defense secretary said.

Heading the internal review were Navy Rear Adm. Peter J. Fanta of the Joint Chiefs of Staff and Madelyn R. Creedon, who at the time was assistant secretary of defense for Global Strategic Affairs. In July she was confirmed as principal deputy administrator for the National Nuclear Security Administration.

Between them, the internal and external reviews produced more than 100 recommendations, Work said, and Hagel has assigned Dr. Jamie Morin, director of the Office of Cost

Analysis and Program Evaluation, to establish a team that tracks each recommendation individually.

Accountability will change as well, Work said, adding that Hagel has granted the Air Force authority to elevate the Global Strike Command to a four-star billet and the Air Force staff's head of strategic deterrence and nuclear integration to a three-star billet so they wouldn't be outranked by their nuclear counterparts.

### **Big Moves to Improve the Nuclear Enterprise**

The department also is making big moves in oversight, the personnel reliability program, and the inspection regime, Work said, all of which were mentioned in both reviews as "getting out of control."

The next NDERG meets on Nov. 19, he added, "to make final changes to the personnel reliability program, the inspection regime, and the security regime to take the burden off of our airmen and sailors, and the officers who've supervised them."

The investment in the nuclear deterrent program will be billions, the deputy secretary said.

"We spend about \$15 billion to \$16 billion a year on the nuclear enterprise," he said, "and we're probably going to have to increase that on a sustained basis of at least 10 percent."

### **Making the Deterrent Safe and Secure**

Despite the range of issues, the people who work in the department's nuclear enterprise realm are "just unbelievable," Work said. "They were able to make this deterrent safe, reliable, effective, and secure. But we were doing it on their backs," he added.

With the implementation of recommendations from the reviews, Work said, the department is "not going to ask the impossible of our sailors and soldiers and airmen who have been making this enterprise work. We're going to make it better for them and we're going to make sure that it remains that way."

### **Hagel Announces New Defense Innovation, Reform Efforts**

*DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY  
(NOV. 15, 2014)  
Cheryl Pellerin*

WASHINGTON—In a keynote speech tonight at the 2014 Reagan National Defense Forum, Defense Secretary Chuck Hagel announced a plan to harness the brightest minds and

cutting-edge technology to change the way the Department of Defense innovates and operates.

On the second day of a five-day trip nationwide to see some of the critical training the force receives to maintain readiness, Hagel addressed members of Congress, DoD officials, military leaders, and members of the defense industry during the annual forum held in Simi Valley, Calif.

Along with the new innovation initiative, the secretary also announced a project to reform the defense enterprise, preparing it to deal with dwindling budgets in an uncertain future.

### **DoD Experiencing a Time of Transition**

“The Department of Defense is undergoing a defining time of transition,” Hagel said. “We [face] a reshaping of our enterprise by a fiscal environment plagued by ... budget uncertainty and a large decline in resources, and by an historic realignment of interests and influences around the world.”

As these dynamics unfold, he added, the U.S. military is engaged in crises and security challenges around the world—degrading the terrorist organization the Islamic State of Iraq and the Levant, helping to stop the spread of Ebola virus disease, and reinforcing NATO allies.

“Few would have predicted these missions a year ago,” the secretary said, adding that DoD is responsible for addressing a range of contingencies and crises.

### **New, Old Threats, Challenges**

“We face the rise of new technologies, national powers, and non-state actors,” as well as “sophisticated, deadly, and often asymmetric emerging threats ranging from cyberattacks to transnational criminal networks, [and] persistent, volatile threats we have faced for years,” Hagel said.

The nation’s long-term security, he added, depends on whether the department can address today’s crises while preparing for tomorrow’s threats.

Hagel described the department’s two most-important investments as bolstering the United States’ unrivaled capacity for innovation and reforming the defense enterprise to ensure that the military foundation is reliable, agile, accountable, and worthy of the men and women who serve.



Defense Secretary Chuck Hagel provides remarks during the Reagan National Defense Forum at The Ronald Reagan Presidential Library in Simi Valley, Calif., Nov. 15, 2014.

DoD photo by Kevin O'Brien

While the United States and its allies spent more than a decade at war, he said, countries like Russia and China have heavily invested in military modernization programs to blunt the U.S. military’s technological edge, fielding advanced aircraft, submarines, and longer range and more accurate missiles, and developing new anti-ship and air-to-air missiles, and counter-space, cyber, electronic warfare, undersea, and air-attack capabilities.

### **New Defense Innovation Initiative**

“Today I am announcing a new Defense Innovation Initiative,” Hagel told the audience, describing the effort as an ambitious, department-wide effort to identify and invest in innovative ways to sustain and advance America’s military dominance for the 21st century.

“Continued fiscal pressure will likely limit our military’s ability to respond to long-term challenges ... so to overcome challenges to our military superiority we must change the way we innovate, operate, and do business,” the secretary explained.

The innovation initiative, he said, will ensure that U.S. power-projection capabilities continue to sustain a competitive advantage over the coming decades.

### **Identifying, Developing Cutting-edge Technologies**

As part of the initiative, Hagel said, a new Long-Range Research and Development Planning Program will help identify, develop, and field breakthroughs from the most cutting-edge technologies and systems, especially in robotics, autonomous systems, miniaturization, big data, and advanced manufacturing, including 3-D printing.

"The program will look toward the next decade and beyond," he said, "[but] in the near-term it will invite some of the brightest minds from inside and outside government to ... assess the technologies and systems DoD [should] develop over the next three to five years and beyond."

The innovation initiative will explore and develop new operational concepts, including new approaches to warfighting, and balancing DoD's investments between platforms and payloads, Hagel said.

### **People Are DoD's Premier Asset**

New approaches to war-gaming and professional military education already are in development, the secretary added, "and [the initiative] will focus on the department's most-important asset—people—by pursuing time-honored leadership development practices and emerging opportunities to reimagine how we develop managers and leaders."

Deputy Defense Secretary Robert O. Work will guide the innovation initiative's development and lead a new Advanced Capability and Deterrence Panel to drive it forward, Hagel said.

"The panel will integrate DoD's senior leadership across the entire enterprise—its policy and intelligence communities, the armed services, the Joint Chiefs of Staff, and research, development, and acquisition authorities," he said.

Hagel said he expects the panel to propose changes to the way DoD diagnoses and plans for challenges to the military's competitive edge, and to face a new challenge head-on—the fact that many breakthrough technologies are no longer in the domain of DoD development pipelines or traditional defense contractors.

### **Seeking Private-sector Proposals**

"We all know that DoD no longer has exclusive access to the most cutting-edge technology or the ability to spur or control the development of new technologies the way we once did," the defense secretary said. "So we will actively seek proposals from the private sector, including firms and academic institutions outside DoD's traditional orbit."

The Defense Innovation Initiative will shape the department's programs, plans, and budgets, Hagel said, adding that as the initiative matures over time he expects its impact on the defense budget to scale up as well.

"As the world in which we operate changes, we must change too," the defense secretary said, adding that he has ordered full reviews of the department's business and management systems.

"The first reviews are underway now, starting with the Office of the Secretary of Defense," Hagel said. "DoD must embrace better business practices that are core to any modern enterprise, private or public."

### **Upgrade Business, Information Technology Systems**

The department will upgrade business and information technology systems and processes, striking the right balance between civil service and contractor support and avoiding duplication of support functions in Office of the Secretary of Defense and the Services, he said, adding that after years of postponement and delay the department is making progress in moving toward greater financial accountability.

Hagel said the department has been making hard choices and mustering the flexibility required by new geopolitical and fiscal realities.

"But to succeed," he said, "we need the support and partnership of Congress, especially at a time when demands on our military are surging and our resources are shrinking, and our ability to manage our institution is being more and more limited."

The continuation of sequestration could impose nearly \$1 trillion in cuts to the defense budget over 10 years, the defense secretary said, in a department that has already begun taking deep cuts over the last few years.

### **Sequestration 'Would Devastate' Military Readiness**

Sequestration, he said, "would devastate our military readiness and threaten our ability to execute our nation's defense strategy. Congress has an opportunity this year to help the Defense Department, and I and all the leaders of DoD look forward to working with Congress on this challenge."

Hagel added, "If we make the right investments in our partnerships around the world in innovation and in our defense enterprise, we will continue to keep our nation's military and our nation's global leadership on a strong and sustainable path for the 21st century."

**Work Looks to Industry to Maintain Technology Edge**

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY

(NOV. 19, 2014)

Amaani Lyle

WASHINGTON—In remarks at the Defense One Summit here today, Deputy Secretary of Defense Robert O. Work stressed the importance of engaging industry, Services, and the Defense Business Board in maintaining the United States' technological edge in coming years.

Work noted the challenge of balancing resources and requirements against the landscape of what he called an "especially chaotic" drawdown and a persistent continuing resolution over the past five years.

"The temporal aspects of this strategy are going to be much more challenging than in the past," Work said. "And we're going to have to do rapid prototyping ... or we will continually lose ground."

**Budget Uncertainty Threatens Advances**

Speaking on acquisition and technological advances, Work described the Defense Department's focus across the decades, from the 1950s' nuclear weapons, 1960s' space, 1970s' stealth and microelectronics, 1980s' large-scale systems of systems, into current systems that can face asymmetric challenges.

But efforts to increase base-level demonstrations, exercises, and prototyping, Work said, can be stymied by budget uncertainties.

Work said that in response to those uncertainties, the department will seek to enhance its effectiveness through the Defense Business Board, which includes former chief executive officers, chief financial officers, chief operating officers, and captains of industries.

"They're now an operational arm directly associated with my deputy chief management officer, and they're going to help us benchmark against civilian business practices," Work said.

So far, the DoD has been able to annually identify some \$26 million in savings from duplication of contracts, administrative costs, and other expenses over five years through these internal analyses, he said.

"That gave us great confidence that as we look at the broader defense agencies we were going to find significant savings," Work said.