

Biden, Carter Applaud 'Team MRAP' as Production Ends

AMERICAN FORCES PRESS SERVICE (OCT. 1, 2012)

Karen Parrish

WASHINGTON—Vice President Joe Biden today joined Deputy Defense Secretary Ashton B. Carter at a Pentagon ceremony marking the end of production of the mine-resistant, ambush-protected vehicle.

There are seven MRAP variants, and nearly 28,000 of the vehicles were produced over the past five years, with 24,059 fielded to Iraq and Afghanistan. Nearly 13,000 of the vehicles remain in use in Afghanistan. The vehicle, with its blast-resistant V-shaped hull, was rushed to production as a better defense against roadside bombs than the up-armored Humvee, and it is credited with saving thousands of lives.

Biden noted the speed of MRAP production and fielding since 2007 was the result of a joint effort involving defense, industry, and Congress. During that effort, the members of "team MRAP," he said, showed "remarkable leadership."

"[It's] not easy to push something this big through this system this fast," the vice president said.

Biden said the nation's leaders, while they have many obligations, have only one "truly sacred obligation": to equip and

protect those who fight the nation's wars, and to care for those who come home from those wars.

The MRAP program faced a crucial vote in Congress in 2007, Biden noted, when—despite then-Defense Secretary Robert M. Gates' designation of the program as his top acquisition priority—many lawmakers could see little reason for the expense. The vice president was a senator leading the battle for funding at the time, and said today Gen. James T. Conway, then the commandant of the Marine Corps and now retired, tipped the balance toward congressional approval.

Biden said he called Conway before the vote, and asked the general how important the program was to him.

Conway, Biden said, called the program his "highest moral imperative," because "my kids are getting killed." Biden quoted those words on the Senate floor, he said, and the vote passed.

Army Chief of Staff Gen. Ray Odierno, then a lieutenant general and commander of U.S. Forces Iraq, also made an ardent case for the lifesaving troop carrier, the vice president said.

Ultimately, Congress appropriated \$47.4 billion for the MRAP through fiscal 2012. The alternative in 2007, Biden



Deputy Defense Secretary Ashton B. Carter presents Vice President Joe Biden with a model of a mine-resistant, ambush-protected vehicle after a transition ceremony at the Pentagon, Oct. 1, 2012.

DoD photo by Erin A. Kirk-Cuomo

said, was “a new vehicle in five years” that might only now have begun reaching troops.

“What do we get for the effort?” he asked the audience here. “We’ve got a whole lot of young women and men coming home in one piece.”

Carter, who also spoke at today’s ceremony, noted that at peak production more than 1,000 MRAPs—each weighing between 26,000 and 56,000 pounds—arrived in Iraq or Afghanistan. The deputy secretary, who served under Gates as undersecretary of defense for acquisition, technology and logistics, read a message the former secretary sent about today’s milestone.

The MRAP team, Gates wrote, “implemented the largest defense procurement program to go from decision to full industrial production in less than a year since World War II.” The members of that team, Gates continued, can look back on their MRAP work and know “that your work truly saved the lives and limbs of many men and women in uniform.”

Carter said the transition formalized today, which sees the MRAP move from production status to a program of record for the military services and U.S. Special Operations Command, marks a strategic turn.

“The era of total focus on Iraq and Afghanistan—which had to be done—is coming to an end, and a new strategic era is dawning,” he said. The defense strategy launched nine months ago provides the framework for the new era and “transitions all of us to the strategic future,” focused on regions including the Asia-Pacific and emerging security challenges such as cyberdefense, he added.

Face of Defense: Army Acquisition Officer Works With Google

U.S. ARMY 21ST THEATER SUSTAINMENT COMMAND (OCT. 5, 2012)

Jonathan Pruett

KAISERSLAUTERN, Germany—An Army acquisition officer assigned here is the first in his branch selected to work with Google Inc., as part of the Army’s Training with Industry Program.

Maj. Matthew Bisswurm, plans and operations officer with the 903rd Contingency Contracting Battalion, 409th Contracting Support Brigade, began his one-year internship with the Fortune 100 company in August and will bring back to the Army any lessons learned.



Army Maj. Matthew Bisswurm, plans and operations officer with the 903rd Contingency Contracting Battalion in Kaiserslautern, Germany, was selected for a position at Google Inc. as part of the Army’s Training with Industry Program.

U.S. Army photo

“I’m looking to bring some of the innovative processes and successful techniques that Google has used, and help integrate them into the Army,” Bisswurm said.

The Army, as well as the acquisition career field, has prepared Bisswurm for this opportunity.

“I love the expeditionary side of contingency contracting,” Bisswurm said. “I love doing missions, and I love being on a team.”

One of the objectives of the TWI is to provide soldiers hands-on experience in top defense, information technology, and pioneering commercial companies, officials said. The program helps improve communication between commercial industry and the Army. Working with major corporations helps the Army speak the same language as its industry partners.

Bisswurm joined the Army in 2000 and made the transition into contracting in 2008 following a second combat deployment to Iraq.

"I wanted to broaden my skills," he said. "Being in a combat deployment, I saw the direct impact contracting had on the warfighter."

Bisswurm said he wants to use the skills he learns at Google and take them back with him to his next assignment.

"I want to have a different perspective on decision making, theory, manufacturing, and problem solving," he said. "I think the Army gains ten-fold on this program. The experience and insight are immeasurable."

Selected officers, warrant officers, and noncommissioned officers are placed in jobs with industry partners and exposed to innovative industrial management tactics, techniques, and procedures that can benefit the Army, officials said.

After completing the training, participants are immediately placed in a mandatory follow-on Army assignment to improve the Army's ability to interact and conduct business with industry.

"We want our guys to benchmark lessons learned and effect positive change in the Army Acquisition Corps," said Scott Green, acquisition education and training branch chief, U.S. Army Acquisition Support Center.

Panetta Announces Packard, Efficiency Award Recipients

AMERICAN FORCES PRESS SERVICE (NOV. 2, 2012)

WASHINGTON—Defense Secretary Leon E. Panetta today announced the two recipients of the David Packard award and the recipient of the Better Buying Power Efficiency award.

The Packard award is presented by the Defense Department to organizations that have demonstrated superior management and accomplishment in carrying out one or more of the Better Buying Power acquisition efficiency initiatives.

The Better Buying Power Efficiency award recognizes innovation in better buying power efforts. The objective of the Better Buying Power program, according to defense officials, is to ensure needed warfighting capabilities are delivered within the constraints of a declining defense budget by better managing the costs of acquisition.

"Efforts like these ... help us strengthen our vital defense industrial base, a top priority for me as Secretary of Defense," Panetta said in prepared remarks at the Pentagon ceremony.

Also attending the ceremony was Under Secretary of Defense for Acquisition, Technology and Logistics Frank Kendall.

"These three teams are at the forefront of our efforts to increase acquisition innovation and professionalism, as well as efficiencies," Kendall said. "We hope that these efforts are also recognized by others within the Department and are used as a template for increased innovation within the acquisition workforce."

The two Packard recipients are the Army's Project Manager Combat Ammunition Systems, from Picatinny Arsenal in New Jersey, and the Navy's DDG 51 Shipbuilding Program Office, from the Washington Navy Yard.

In response to an increased need for artillery and mortar items, the Army team "dramatically reduced the average time from receipt of requirement to delivery—from 18-24 months to just 45-60 days—while also saving the government an estimated \$60 million," Panetta said.

The Navy team developed and executed an innovative acquisition approach for three Arleigh Burke-class DDG 51 guided missile destroyers, the defense secretary said.

"They created real competition in a situation where none had previously existed, awarded \$2.1 billion dollars in contracts within six months, and saved the government \$298 million dollars," Panetta said.

The David Packard Excellence in Acquisition Award was first awarded in 1997 in honor of the late David Packard, a former deputy secretary of defense and advocate of excellence in defense acquisition practices.

The first-ever Better Buying Power Efficiency award went to Special Operations Command's Acquisition Rapid Response Medical Team for Tactical Combat Casualty Care and Casualty Evacuation.

The team developed a new casualty evacuation system that enhanced the ability of ground units to gain access to, treat, and recover casualties from the battlefield. The system greatly improved the medical treatment capabilities of Special Operations Forces.

"Quite simply, the work done by this team of experienced combat medics, research experts, and acquisition professionals saves lives," the secretary said. "They successfully developed and fielded pioneering capabilities that are ensuring our troops receive life-saving medical treatments at the

point of injury, helping them to survive and be evacuated within the critical 'golden hour.'"

Army Scientists Earn Patent for Advanced Neural Chip

U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND (NOV. 5, 2012)

David McNally

ADELPHI, Md.—Two Army scientists and a university professor earned a patent for the forerunner of a powerful quantum neural dynamics computer chip. The device uses nonstandard mathematics to accomplish analog problem solving at high speed.

"The patent covers different ways to make computer chips," said Army scientist and principal investigator Ronald E. Meyers. "These computer chips can represent biological and physical processes."

Meyers and his colleague, Army mathematician Keith Deacon, joined forces with Gert Cauwenberghs, a professor of bioengineering and biology and co-director of the Institute for Neural Computation at the University of California at San Diego.

"This is as a first step toward large-scale non-Lipschitz intelligent information processing systems," Cauwenberghs said.

Cauwenberghs worked with Meyers and Deacon to map the mathematics onto an analog "continuous-time neural architecture." He also designed and tested the integrated circuit implementing the architecture.

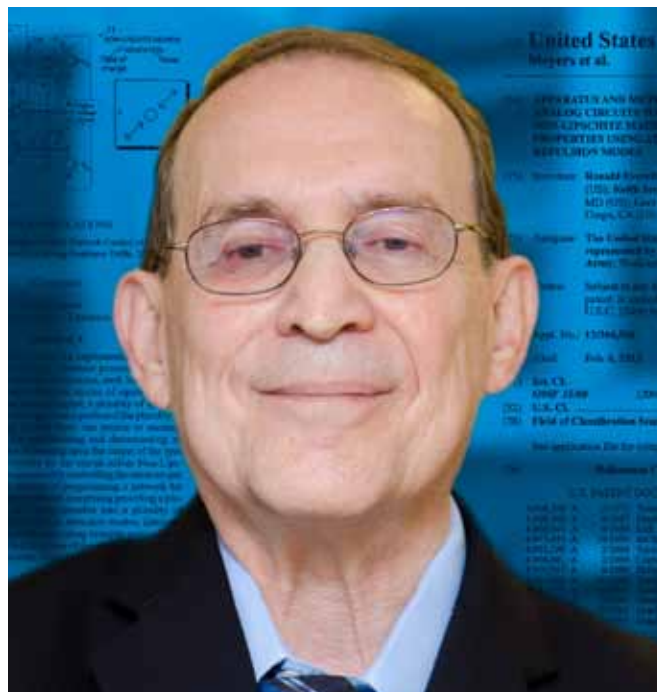
"Experimental data from our silicon integrated circuit demonstrated the elements of terminal repulsion and attraction in neural dynamics and synaptic coupling," he said.

In other words, by using different mathematics, the scientists potentially removed a limit on how fast functions can change—clearing the way for ultra high-speed computing.

"The chip has a lot of application to both the military and civilian use," Meyers said.

A unique aspect of the research is the use of synaptic connections for interfacing neurons and learning through feedback, which is modeled after biological systems, Meyers said.

It's all part of the futuristic vision of quantum computing. Researchers believe one day they will effectively harness individual atoms to build complex super-computers.



Ronald E. Meyers delves into quantum physics research at the U. S. Army Research Laboratory. Meyers, fellow researcher Keith Deacon and Gert Cauwenberghs, a professor of bioengineering and biology at the University of California at San Diego earned a patent for a futuristic neural computer chip.
U.S. Army photo

Meyers delves into quantum physics research projects at the U.S. Army Research Laboratory. Currently his project is to invent a secure communications system immune to the awesome power of future quantum computers.

"Quantum computing will give unparalleled computational ability," he said. "We're talking about an ability to compute that exceeds exponentially millions of times greater than any of the computers that exist or are on the drawing boards using conventional approaches."

Meyers said neural chips can be made with classical computers or in the future with quantum computers.

"This is a different type of chip that we've developed and it's somewhat in between," Meyers said. "It's not a classical approach, and it's not quantum yet. But, we're wanting to evolve the concepts into quantum computing."

The research took several years. The U.S. Patent and Trademark Office issued a patent Sept. 11.

"It looks like a breakthrough to others but it's just a lot of hard work, continuous work," Meyers said. "When you put something out, it's a milestone. It means you're able to explain it in a way that the Patent Office understands, or that other scientists understand. So what happened here is we're looking into one of the most important problems that the Army faces and it turns out—from my perspective—the ones that are not solved and are most important."

Meyers is listed as the inventor on 14 patents. He co-authored a book, "From Instability to Intelligence: Complexity and Predictability in Nonlinear Dynamics," covering nonlinear equations in math, physics, and biology, and authored a plethora of scientific papers.

"Problems are unsolved because they're difficult to tackle," he said. "I tend to seek out a different path to go toward solving problems that before have not been solved. I think I have a background that can do that. I've gained some insight. It's putting together your experience and you're trying to project it into the future. And so, in my mind I see how things can be applied in the future, and I look at how to solve these. Quite often if you go for the hardest unsolved problem, that's the one that gives you the most benefit."

Inspired by difficult problems, Meyers said he and his small team of scientists and mathematicians are focused on the end-user of this technology.

"We work for the soldier," Meyers said. "We work for the warfighter and that's what our thinking is. That's why we're trying to solve these difficult problems. As Army scientists, we are responsible to really help these soldiers operate in a way that can defend the country and protect them, anticipate any threats, and deal with them in an effective manner."

Female Body Armor Named Among Best Inventions by *Time Magazine*

U.S. ARMY GARRISON-NATICK PUBLIC AFFAIRS (NOV. 6, 2012)
Bob Reinert

NATICK, Mass.—An innovation that will leave female soldiers safer and more comfortable on the battlefield was named one of *Time Magazine's* "Best Inventions of the Year 2012."

A collaborative effort between the Natick Soldier Research, Development and Engineering Center and Program Executive Office Soldier resulted in an improved outer tactical vest, or IOTV, designed specifically for women. The 101st Airborne Division's 1st Brigade will be the first unit to test the new female body armor in Afghanistan.

The new armor was designed to offer better protection and to prevent bruised hip bones that women experienced when wearing IOTVs meant to fit smaller men.

Maj. Joel Dillon, assistant product manager, Product Manager Soldier Protection and Individual Equipment, PEO Soldier, called the *Time* story a motivator for those involved in the body armor's development.

"I think it's great that it shows the American people that we're continuing to make sure that our soldiers have the best equipment in the world," Dillon said. "And so any word that gets out in that respect is great. It's a big boost for our team, because we work very hard to make sure that all of the equipment we develop and field is the finest that we can possibly obtain for the American soldier."

Dillon pointed out that in a head-to-head comparison with the current IOTV, the female version was chosen by all of the 101st soldiers who tested it.

"They provide a better, more secure fit for female soldiers," Dillon said. "I was down there visiting while the testing was ongoing at Fort Campbell (Ky.), talking to the soldiers, and it was just really obvious to me that the form, fit, and function are definitely what we were shooting for."

In a recent interview with National Public Radio, Lynne Hennessey of NSRDEC, lead designer for the female body armor, related what she heard from soldiers during testing at Fort Campbell.

"Most of them, when they put it on, they were like, 'oh, my goodness, I need this right now. Can I have this? I could wear this all day. It fits so well,'" Hennessey said. "We actually took a picture of one soldier hugging her vest, like she was immediately in love with it."

Dillon said that more fine tuning is necessary, however.

"We are going to make some tweaks to the vest based on the feedback that we got from these female soldiers at Fort Campbell," Dillon said. "They had some comments about the location of the buckles on the shoulders and some other adjustability concerns, and we're going to make those modifications before we go out on our next contract. That is exactly the purpose of the ongoing testing—to make the vest even better."

The evaluation process will continue.



Members of the 101st Airborne Division's 1st Brigade will be the first to test the new female body armor, which was named one of *Time Magazine's* best inventions of 2012, in Afghanistan. U.S. Army photo

"Our goal is to fit additional female soldiers for testing, both stateside and in Afghanistan," Dillon said. "We're looking to get more of them down range."

As Dillon noted, *Time's* recognition shines a spotlight on the continuing, combined effort to improve soldier equipment.

"There is a team of very dedicated professionals both at PEO Soldier and at the NSRDEC at Natick who have done yeoman's work behind the scenes to design, produce, issue, and evaluate this vest," Dillon said. "While not as important as the feedback we have received directly from the female soldiers themselves, national-level recognition such as this helps validate our efforts, and provides additional motivation to this team of consummate professionals."

OSD Salutes Research Lab's Branch Chief for National STEM Push Forward

U.S. ARMY RESEARCH LABORATORY PUBLIC AFFAIRS (NOV. 8, 2012)

ADELPHI, Md.—Scientists within the Sensors and Electron Devices Directorate at the U.S. Army Research Laboratory

know Dr. Paul Barnes as the leader of the Power Components Branch.

However, Barnes' role occasionally shifts throughout the year as a reservist, who is the chief of Advanced Technologies and Counter Intelligence at the Office of the Assistant Secretary of Defense for Research and Engineering in Washington, D.C.

In his capacity with the Office of the Secretary of Defense as an Air Force Reserve lieutenant colonel, he led a joint team of servicemembers that recently wrapped up national projects to develop scientists, technicians, engineers, and mathematicians (STEM), and he encouraged them to join government service. As a result of the STEM initiative, the Honorable Zachary J. Lemnios, Assistant Secretary of Defense for Research and Engineering, awarded Barnes the Joint Service Commendation Medal during a ceremony on Sept. 7 at the Pentagon.

The work began nearly two years ago when Barnes took on an existing project to develop a challenge for college teams across the country to solve current operational issues fac-



Assistant Secretary of Defense for Research and Engineering Zachary J. Lemnios awarded Air Force Reserve Lt. Col. Paul Barnes, U.S. Army Research Laboratory's Power Components Branch Chief, the Joint Service Commendation Medal during a ceremony on Sept. 7 at the Pentagon, for implementing national programs to develop scientists, technicians, engineers, and mathematicians.

DoD photo

ing the Joint Services. Additionally, he led a panel of more than 30 engineering leaders from academia, governmental, and non-governmental agencies to select students for government-sponsored fellowships.

"We wanted to make advances in getting students focused on military-related science and technology," Barnes said. "The goal was giving them something to get excited about."

Barnes has a personal interest in keeping scientists and engineers with passion at the research labs, having come to ARL from the Air Force Research Laboratory less than two years ago. But outside of the Department of Defense, he said he is aware of the vast amount of work industry does also to support DoD research. "If we can't get and retain the very best scientist and engineers, the research will suffer.

"Our military's competitive edge is in its ability to stay technologically advanced. As other countries come on par with a level of technological capability, it presents new challenges."

The White House has been working diligently to encourage student interest in STEM careers. Barnes' efforts supported the administration's goal.

"I have been in the Army and received awards, and in the Air Force I have received some, but this is my first Joint Service award," Barnes said. "This time my work wasn't for one Service—it was for everybody. That is what makes it extra special to me."

Navy Squadron Earns Phoenix Award for Field Maintenance

AMERICAN FORCES PRESS SERVICE (NOV. 16, 2012)

WASHINGTON—A California-based Navy squadron is this year's winner of the Phoenix Award for field-level maintenance, part of the Secretary of Defense Maintenance Awards, officials announced yesterday during the 2012 DoD Maintenance Symposium and Exhibition in Grand Rapids, Mich.

Helicopter Maritime Strike Squadron 77 from Naval Air Station North Island was singled out as the best of the best among active and reserve organizations performing unit or field-level maintenance, officials said.

HSM-77 was the first Navy fleet squadron to transition to the MH-60R Seahawk helicopter. It provided Carrier Air Wing 2 and Carrier Strike Group 9 with combat-ready aircraft and

equipment and executed the first MH-60R deployment to the 5th and 7th Fleet areas of responsibility in fiscal 2011.

The squadron's maintenance personnel completed more than 38,000 work orders, performed 100,800 hours of maintenance, supported 7,168 hours of mishap-free flight hours, and executed 2,344 sorties with a 97 percent completion rate, all while achieving 84 percent mission-capable and 78 percent full-mission-capable rates.

Officials noted these accomplishments took place while HSM-77 was devising and implementing an extensive training plan made necessary by a 45 percent turnover in maintenance personnel. That plan resulted in the qualification of additional collateral duty inspectors, quality assurance representatives, and landing signal enlisted personnel, among others, to support an upcoming surge deployment, officials said.

Defense and Industry Narrow Communication Gap

AMERICAN FORCES PRESS SERVICE (NOV. 19, 2012)

Terri Moon Cronk

WASHINGTON—As a cost- and time-saving measure, Defense Department officials have developed an experimental website to help government and industry stay up-to-date on developing projects that support the warfighter.

The new site, Defense Innovation Marketplace, is part of the Defense Department's Better Buying Power initiative to save DoD money, said Jack Blackhurst, a "customer" of DoD, and director of the Human Effectiveness Directorate at the Air Force Research Laboratory at Wright-Patterson Air Force Base, Ohio.

Customers from all branches of the military and small-business owners can access the site to see what the government is looking for. A special feature was also developed for those interested in "human systems."

"A human system is anything to do with performance of humans in a particular job—airplane operator, submarine operator, soldier on [the] ground—all humans who operate weapons systems," Blackhurst said.

Human systems ensure warfighters have the best equipment to do their jobs and improve performance, he said.

"It's about a human being interacting with the weapons system," Blackhurst said. "Unlike a conventional weapon that an airplane drops, the focus is on the pilot in the cockpit."

The website is the only forum that increases communication among government, industry, and academia, he said. The site, which is expected to save time and money, allows interested parties to learn about projects in development and what capabilities the government wants, he added.

"On the government's part, it gives us a vehicle to put our information out, and at the same time, it allows industry to put their information out in terms of where they're investing their dollars in a particular technology area," Blackhurst said.

"It gives us an excellent tool to search these capabilities."

Industry and academic institutions now have the ability to "know what's going on out there and then strategize for the government," he noted.

By first becoming familiar with information on the site, the marketplace can eliminate some conferences. Once they know about particular projects, people from DoD, industry, and academia can meet later in a conference to talk specifics, saving time and money, according to Blackhurst.

"There's a wealth of information that doesn't exist anywhere else," he said.

The site stems from communication issues between industry and DoD, said Ron Kurjanowicz, senior adviser to the assistant secretary of defense for research and engineering.

"We made the Defense Innovation Marketplace no more complicated than a one-stop shop where industry could find information about the investment priorities for DoD," Kurjanowicz said.

Feedback has been positive from industry officials," he said, adding that the site is updated nearly every day.

"It's important in this climate of change that we talk about Better Buying Power to reduce costs in our acquisition program and activities, and this site presents that opportunity. We're out of Iraq and getting out of Afghanistan, so new capabilities will be needed in the future," Kurjanowicz said.

"Industry needs to know where DoD is making its changes, so they can align their investments with the capabilities of the future. The marketplace is one of those places to keep them connected," he said.

Kurjanowicz said the site makes doing business more effective and efficient, and that the government will see "enor-



The AN/TPQ-53 Counterfire Target Acquisition Radar provides long-range counterfire target acquisition for mortars, rockets and cannons. Product Manager Radars and Lockheed Martin were recently awarded an excellence in systems engineering award by the Defense Department for their work with AN/TPQ-53. U.S. Army RDECOM CERDEC systems engineers and quality assurance engineers supported the Q-53 radar system and developed the predecessor system prior to it being transitioned to the PM. U.S. Army photo

mous payoffs in how it strategically places its investment, [in addition to] leveraging industries' projects."

As a result, taxpayers also benefit, he said.

Industry's payoff, Kurjanowicz said, lies in knowing where DoD is going on its projects, he said.

"We want to do things smarter, and we think this is an opportunity to do that," he added.

Systems Engineering Expertise Leads to Increased Counterfire Target Acquisition Radar Capabilities

ARMY NEWS SERVICE (NOV. 16, 2012)

Kristen Kushiya

ABERDEEN PROVING GROUND, Md.—A seamless link from development to production helped to distinguish a recent Department of Defense-awarded radar as one of the top five 2012 defense programs of excellence in systems engineering in October.

The AN/TPQ-53 Counterfire Target Acquisition Radar, more commonly referred to as Q-53, leveraged government, industry, and academic organizations to provide U.S.

soldiers with an advanced radar with 360-degree surveillance capabilities.

The Q-53 system is managed by Product Manager Radars, or PM Radars, with Lockheed Martin as the prime contractor, but the program traces its roots back to development work done in the Army's Research, Development and Engineering Command's communications-electronics center, or CERDEC, more than 10 years ago.

The effective transition from the science and technology community through to production was a distinguishing factor in recognizing the Q-53, said Leo Smith, Army representative to the selection committee and director of the Program of Record Engineering Support Directorate under the Assistant Secretary of the Army (Acquisition, Logistics and Technology), Office of the Chief System Engineer.

"This program was highly ranked across the representatives who selected this year's winners, and it was one of the few programs that started as an [Army Technology Objective] or [Advanced Technology Development] funded effort that eventually transitioned across the 'valley of death,' where requirements change or the [science and technology] prime contractor doesn't get a bid, etc.," said Smith.

"Systems engineers from across CERDEC directorates along with quality assurance managers from CERDEC Product Realization Engineering and Quality Directorate, PRD, have been working hard for a number of years to make this critical program a reality and have succeeded in doing so," said Ron Michel, CERDEC PRD director.

CERDEC first demonstrated the Q-53 technology concept in 2006 through its Army funded Multi-Mission Radar Advanced Technology Objective demonstration, said Hai Phu, a CERDEC Intelligence and Information Warfare Directorate, or I2WD, systems engineer working with PM Radars.

"I2WD started with the idea [of] collecting requirements to get approved by [Office of the Secretary of Defense], and we had five years of development and prototyping starting in 2001 [on the MMR ATO]. It then transitioned to PM RADARS and was picked up and developed into what we have right now with the Q-53," said Phu.

Researchers referred to the ground work done across Army acquisition communities as a key factor in the success of the program starting with CERDEC's identification of a possible soldier need.

"Going back 10 plus years, CERDEC I2WD is credited with identifying the mission need and the technological solution and getting in front of the [TRADOC Capabilities Manager] Fire Brigade at Fort Sill and saying 'This requirement doesn't exist today, but it is a need of yours, and if you make it a requirement, it can be met with technology that is now available,'" said David Lusk, a consultant from D&S Consultants Incorporated who works with I2WD and PM Radars.

Those involved in the Q-53 program utilized the late Rear Admiral Wayne E. Meyer's "build-a-little, test-a-little, learn-a-lot" approach. Part of Q-53's success was because of this method of incremental building and testing of technologies

and systems to increase efficiency when developing systems, according to Lusk.

"There were technical reviews along the way to ensure the design was progressing as it should, was meeting requirements, and was meeting what the user ultimately wants," said Daniel Foster, Booz Allen Hamilton consultant working at PM Radars.

The Q-53 program is also applying additional systems engineering rigor through the Life Cycle Signature Support Plan, which is a "living document" that allows for new threats to be identified in theater and accounted for, said Jessy Chacko, a CERDEC I2WD systems engineer working at PM Radars.

Accounting for new threats to the soldier is also part of the systems engineering process for incorporating engineering design changes to defeat those threats.

"Systems engineering incorporates multiple engineering disciplines and reduces risk by providing an ordered process that ensures you've looked at all available courses of action," said Frank Vellella, PM Radar's chief engineer and CERDEC PRD's radar branch chief, currently assigned to CERDEC's Systems Engineering Office. "Without it you're kind of scatter brained; this allows you to break things down logically and reduce risks over the product's life cycle because you know you have looked at everything."

The Q-53 quick reaction capability system first deployed in 2010. The program was awarded its Milestone C decision in February, meaning the DoD approved Q-53 to start its low-rate initial production, and the first LRIP program of record system will deploy in a few months, said Phu.

"In the DoD life cycle you come to Milestone C, which is essentially the gate between finishing your engineering and development and going into production," said Foster.