NCOs Influence Tech and Gear in Army S&T Program

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A noncommissioned officer assigned to Natick Soldier Research Development and Engineering Command, Headquarters Research and Development Detachment, participates in a cognitive study via virtual reality technology, co-directed by NSRDEC and Tufts University at the Center for Applied Cognitive and Brain Sciences (Photo by Jeffery W. Sisto, NSRDEC Public Affairs)

In the Army today, noncommissioned officers play a role in evolving the technology Soldiers use in the field; they also help create new equipment that may seem like science fiction now but is in actuality becoming a reality.

Marine Maj. Mathison G. Hall, senior analyst and project manager at the Johns Hopkins University Applied Physics Laboratory, Washington D.C., and an infantry officer in the U.S. Marine Corps Reserve, won the U.S. Army Training and Doctrine Command's 2017 Mad Scientist "Warfare in 2030-2050" Writing Contest with a short story titled "Patrolling the Infosphere" where references to angel drones, e-pills, and link suits showed a future dominated by technology.

As the backbone of the Army, NCOs continue to contribute significantly to its future. One Army program in particular, the Army Science and Technology Program, is directly impacted by NCO guidance. Army S&T creates foundational technology developments to achieve the Chief of Staff of the Army's priorities for overmatch against adversaries in all operational domains and implement successful warfighter support.¹

S&T NCO responsibilities vary from testing the latest gear to conducting extensive research with engineers and scientists to help them operate across a wide range of possible future operations.² This technology and equipment will assist frontline Soldiers deployed in Afghanistan, Iraq, and throughout the world. By directly working with developers and researchers, NCOs resolve the technological issues Soldiers experience in the field.

"NCO involvement in the S&T process is extremely critical to the development of the right technologies and the right equipment for the warfighters currently in the field,"³ said former Command Sgt. Maj. of U.S. Army Research Development Engineering Command, Hector G. Marin. "This relationship [between NCOs, scientists and engineers] is critical to keeping the Army on the cutting edge of technology because it brings fresh experience into our labs and produces warfighter-focused solutions."⁴

S&T consists of various commands. Not all of them can be discussed in full, however below are a few highlighted examples.

The U.S. Army Natick Soldier Research, Development & Engineering Command

Deployments and experience conducting operations play a large role in NCOs' influence on Army technology. They provide useful input for solutions and ideas during project development, according to Staff Sgt. Robert D. Keifer, operations NCO and infantryman, Natick Soldier Research Development Engineering Command, Headquarters Research and Development Detachment.⁵

With their knowledge and experience, NCOs raise questions or develop solutions that scientists and engineers would not have considered.

"When I give my assessment or opinion, I highlight pros and cons, raise questions or concerns with functionality, durability, weight, size, and contingencies," said Staff Sgt. Anthony M. Sandoval, calvary scout and operations noncommissioned officer in charge, NSRDEC, HRDD. "Also understanding the desired capability of a certain technology or kit to the warfighter can help generate answers and avoid stifling innovation."⁶

Most NCOs handle technological frustrations by submitting Army Materiel Command Acquisition Reports, which leaves them in the dark about the outcome. By working alongside developers, NCOs directly influence research and testing.

Sgt. 1st Class Steven M. Fief, military liaison and parachute rigger NCOIC, NSRDEC Aerial Delivery Directorate, learned about NCOs' roles in NSDREC while assigned to the Training with Industry Program as a developmental test jumper in Yuma Proving Ground, Arizona. He acknowledged that different aspects must be considered when testing equipment, such as differences between a live jumper and a mannequin or how data is still vital even when a piece of equipment fails.⁷

Fief's civilian and military testing experience gave him a better understanding and ability to influence changes in testing future equipment and the current systems.

NCOs of all military occupational specialties make an impact in the S&T program. Sgt. 1st Class Eric L. Dukes, senior culinary management NCO, Combat Feeding Directorate, NSRDEC and senior enlisted advisor, ensures battlefield nutrition by developing recipes and conducting studies. He influences projects by giving researchers, engineers, and technologists subject-matter-expertise based on his personal experience and the latest ideas or questions from warfighters.⁸

U.S. Army Research, Development and Engineering Command

According to retired RDECOM Command Sgt. Maj. Lebert O. Beharie, NCOs assigned to RDECOM, a subordinate command of U.S. Army Materiel Command, help engineers develop technology for Soldiers in the field and play a vital role in making sure RDECOM is technology-driven and warfighter-focused.⁹

The importance of NCO contributions was highlighted during the 2015 Noncommissioned Officer Professional Development System training sessions.

"Start thinking, 'How do I better work with others out there to leverage the product that we are building in design, so that way we can give the benefit to the Soldiers in the Army?'" said retired RDECOM Command Sgt. Maj. James P. Snyder to his NCOs. "It's not about us. It's about the Soldier in the field and the product that we provide them."¹⁰

Snyder worked with Army Training and Doctrine Command to develop a block of instruction on RDECOM and its mission for the Basic Leaders Course.

"We're trying to embed a block of training, not just about RDECOM but Army Materiel Command in general, because AMC is misunderstood," he said. "We're trying to embed it in BLC so that our young leaders, who are the ones who are going to find the problems in equipment, have reachback capability to us."¹¹

U.S. Army Research Laboratory

Kevin M. Connor, an Army Research Laboratory operations analyst and retired ARL sergeant major, sees the influence NCOs have on technology and gear on a daily basis.

He explained that as an NCO, he experienced equipment issues he was unsure of how to report. His assignment to ARL gave him the opportunity to correct these issues and inform other NCOs about ARL's purpose.

"There are a lot of people here doing a lot of things for the Army that people just don't know about," Connor said. "You don't realize all the work that goes into the equipment in your hands. This is years in the planning."¹²

U.S. Army Rapid Equipping Force

During the war in Afghanistan, the Army "found itself in dire need of materiel technology to help thwart Improvised Explosive Devices and victimborne explosive devices."¹³ As a result, the Army established the Rapid Equipping Force to "quickly procure and deliver nonstandard, specific solutions with a goal of 180 days or less to ease the urgent challenges that Soldiers were facing."¹⁴

Combat experience is a requirement for any NCO assigned to REF.

"He or she must have been a combat leader, which means you must have done time as a platoon sergeant and you must have met your

minimum requirements for the next position," said retired Sgt. 1st Class Michael Wayne Dessecker, requirements NCO and Department of the Army REF outreach team member. "Most of us have two or three years of combat experience as platoon sergeants, not to mention that we did our staff sergeant time in combat arms positions," Dessecker said. "So we bring all of the information from the squad level to the platoon level to the company level."¹⁵

Due to their combat experience, NCOs play a vital role in REF by providing valuable insight to civilian scientists and engineers.¹⁶

"NCOs bring that firsthand knowledge and experience," said Dessecker. "We can give them appropriate feedback and collaborate with them to find the best piece of equipment to fill those capability gaps."¹⁷

NCOs Help Create Technology

NCOs in the S&T program are not simply valuable for input. They also design, model, and test gear that save Soldier lives. Below are examples of technology NCOs created.

Interrogation Knives

Created to investigate suspicious ground sites while also decreasing the risk of close circuiting an improvised explosive device and detonating it. The REF and ARL partnered to develop the knives for Explosive Ordnance Disposal Soldiers stationed in Afghanistan.

Dessecker helped design the first knife prototypes on a 3-D printer for EOD techs to test before transferring the plans to ARL for production.¹⁸ The teams created different iterations based on terrain NCOs encountered.¹⁹

Mine Detector Light Mounts

While deployed to Afghanistan, REF NCOs noticed that during nighttime operations Soldiers were struggling to see, so they taped flashlights to the shaft of the Minehound metal detectors, which they used to identify IEDs.

"If you attach a metal object to a mine detector you're going to end up getting false positives," Dessecker said. "Enough false positives and a Soldier is going to start ignoring them. If you ignore the wrong positive, you could blow your leg off."²⁰

As a result, a REF NCO and expeditionary lab engineers (scientists who work directly with REF NCOs in deployable labs) created a flashlight mount for Soldiers that does not interfere with the detector's operations, thus improving night visibility.

Tire Valve Stem Protectors

It may be a simple invention but its creation saved Soldiers' lives. Vehicle convoys ran the risk of being stranded in enemy territory because the tire valve stems broke off on obstacles.²¹ NCOs helped REF personnel design a cover to protect them, reducing the number of damaged valve stems.

Gear in Development

Exoskeleton Suit

Currently under development in partnership with Massachusetts Institute Technology.

"Allowing the exoskeleton to bear the weight of our rucksack loads provides Soldiers with more energy and cognitive ability when they reach the objective," said Sgt. Andrew B. Cochran, infantryman and sniper, HRDD platoon sergeant, NSRDEC. "Exoskeletons are still very much in the prototype phase right now, but that's the kind of technology that comes to mind that needs more Soldier involvement at the moment."²²

Load Effects Assessment Program- Army (LEAP-A) testing

This program measures the impact of clothing and individual equipment on Soldier performance through a series of obstacles and missionrelevant activities to simulate challenges warfighters face in combat. This is important data NCOs and researchers study when developing new technology.

Conclusion

From interrogation knives to exoskeleton suits, S&T NCOs develop technology that save Soldiers' lives and improve their ability to accomplish the mission. Their experience and knowledge provides critical insight and supports warfighters across all services.

To participate in gear testing or to provide feedback over fielded technology, contact NSRDEC, RDECOM, ARL or REF via your NCOs or the subcommands' main web page.

Related Articles

Technology's Influence on the NCO (http://www.armyupress.army.mil/Journals/NCO-Journal/Archives/2018/January/Tech-Influence/) by Christopher Raynor, NCO Journal

NCOs Keep RDECOM Focused (https://www.army.mil/article/136935/ncos_keep_rdecom_focused) by Mike Roddin, TARDEC Public Affairs

Patrolling in the Infosphere (http://www.armyupress.army.mil/Journals/Military-Review/Future-Warfare-Writing-Program/Patrolling-in-the-Infosphere/) by Maj. Mathison G. Hall, winner of the 2017 TRADOC Mad Scientist "Warfare in 2030- 2050" Writing Contest and the June 2017 Army University Press Future Warfare Writing Program

NCO at Forefront of New Army Technology (http://ncojournal.dodlive.mil/2016/01/26/nco-at-forefront-of-new-army-technology/) by Martha C. Koester, NCO Journal

NCOs See Future Army Technologies on Display (http://ncojournal.dodlive.mil/ncos-see-future-army-technologies-on-display/) by Martha C. Koester, NCO Journal

Army 'can't afford' not to have Rapid Equipping Force, Leader Says

(https://www.army.mil/article/113454/army_cant_afford_not_to_have_rapid_equipping_force_leader_says) by C. Todd Lopez

Related Links

Army Research Laboratory (https://www.arl.army.mil/www/default.cfm)

U.S. Army Materiel Command (http://www.amc.army.mil/)

The Rapid Equipping Force (https://www.army.mil/standto/archive_2015-01-27)

Army Science and Technology (https://www.army.mil/standto/2017-09-26)

U.S. Army Research, Development and Engineering Command (https://www.army.mil/article/39385/rdecom_overview)

The U.S. Army Natick Soldier Research, Development & Engineering Center (http://www.nsrdec.army.mil/)

RDECOM Army Technology official blog (http://armytechnology.armylive.dodlive.mil/index.php/tag/rdecom/)

Notes

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- 2. U.S. Army, Operations, FM 3-0 (Washington, D.C.: Government Printing Office, October 2017).
- 3. Command Sgt. Maj. Hector G. Marin, "Commentary: NCOs lead in the S&T community," Army Mil website, 07 October 2009, accessed 15 November 2017, https://www.army.mil/article/28446/commentary_ncos_lead_in_the_st_community.
- 4. Staff Sgt. Robert D. Keifer. Interview with the author in collaboration with NSRDEC POA specialist Jeffery W. Sisto, November 2017.
- 5. Staff Sgt. Anthony M. Sandova. Interview with the author in collaboration with NSRDEC POA specialist Jeffery W. Sisto, November 2017.
- 6. Sgt. First Class Steven M. Fief. Interview with the author in collaboration with NSRDEC POA specialist Jeffery W. Sisto, November 2017.
- 7. Sgt. First Class Eric L. Dukes. Interview with the author in collaboration with NSRDEC POA specialist Jeffery W. Sisto, November 2017.
- Mike Roddin, "NCOs keep RDECOM focused," Army Mil website, 24 October 2014, accessed 16 November 2017, https://www.army.mil/article/136935/ncos_keep_rdecom_focused (https://www.army.mil/article/136935/ncos_keep_rdecom_focused); and AMC Major Subordinate Commands," Army Materiel Command website, accessed 17 November 2017, http://www.armc.army.mil/Organization/Major-Subordinate-Commands/.
- Martha C. Koester, "RDECOM's NCOs use expertise to assist in Army product development," NCO Journal, 22 December 2015, accessed 16 November 2017, http://ncojournal.dodlive.mil/2015/12/22/rdecoms-ncos-use-expertise-to-assist-in-army-product-development/.
- 10. Koester, "RDECOM's NCOs use expertise to assist in Army product development."
- 11. Martha C. Koester, "NCOs lend expertise to Army Research Laboratory," NCO Journal website, 23 November 2015, accessed 15 November 2017, http://ncojournal.dodlive.mil/2015/10/13/ncos-lend-expertise-to-army-research-laboratory/.
- 12. Martha C. Koester, "Rapid Equipping Force's NCOs Keep Soldiers in the Fight," NCO Journal website, 01 March 2016, accessed 16 November 2017, http://ncojournal.dodlive.mil/2016/03/01/rapid-equipping-forces-ncos-keep-soldiers-in-the-fight/.
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- 14. Koester, "Rapid Equipping Force's NCOs Keep Soldiers in the Fight."
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- 17. Martha C. Koester, "REF Boasts Multiple Technological Successes," NCO Journal website, accessed 16 November 2017, http://ncojournal.dodlive.mil/ref-boasts-multiple-technological-successes/.
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- 21. Sgt. Andrew B. Cochran. Interview with the author in collaboration with NSRDEC POA specialist Jeffery W. Sisto, November 2017.
- 22. Cochran. Interview with the author and Jeffery W. Sisto.