The U.S. Army Should Establish a Robotics Branch

by John Dudas

As part of the effort to modernize and to build the Army of 2030, air and ground robotics systems will soon be fielded to Army brigade combat teams (BCTs).

According to ***The U.S. Army Small Unmanned Aircraft Strategy*** published in September 2020, there are five robotics systems designated for fielding in the next two to three years.[1] Included in these systems are four small unmanned aircraft systems (SUAS) with the capability to perform small-unit intelligence, surveillance and reconnaissance (ISR) missions, and one ground robotic vehicle designed for equipment transport. These capabilities are managed by the Robotics Requirements Division within the Maneuver Capabilities Development Integration Directorate at Fort Benning, GA.

Another robotic system is also on board for fielding, albeit some years down the road. The Robotic Combat Vehicle-Light (RCV-L) is under development as part of the portfolio of the Next-Generation Combat Vehicles Cross-Functional Team (NGCV-CFT). The NGCV-CFT is one of the six priorities for Army modernization.[2]

See Table 1 for a brief description of each system.

Challenges

A quick study of Table 1 will tell the reader that all these systems are destined for fielding at the tactical level (brigade and below). Looking even closer, one system stands out:-the RCV-L. The glaring difference in this system as compared to the others is that the RCV-L is a lethal ground robotic. The vehicle is forecasted to be equipped with a Common Remotely Operated Weapons Station-Javelin (CROWS-J) system, similar to the infantry carrier variant that is present in the Stryker BCT.[3,4]

The CROWS-J is a remote weapon station armed with a .50-caliber machinegun or MK 19 grenade machinegun and one Javelin missile. The RCV-L is perhaps the strongest case for a robotics military-occupation specialty (MOS) within a dedicated Robotics Branch.

Common sense sharply indicates that only a highly trained Soldier should be permitted to operate this combat system and not someone with an additional duty whose focus may be elsewhere. True, there are many examples where Soldiers can perform their primary MOS and an additional duty – the anti-armor infantryman is one such case. This Soldier is expected to fight as a dismounted infantryman and then transition into an anti-armor gunner when required.

However, to ask a Soldier to operate an air or ground robotics system – especially one with the complexity and lethality of the RCV-L, and expect the same Soldier to give the required concentration, skill and vigilance while performing their primary combat duty – is simply asking too much. Specialization is needed.

Options

After the previously mentioned robotic systems are fielded, a practical question is: Who is going to operate and maintain them? Right now, the answer is that Soldiers from each echelon where they are assigned will have this task. For example, an infantry platoon fielded with three Soldier-borne sensors (SBSs), one short-range reconnaissance (SRR) system and one small multi-purpose equipment transport (SMET) would require five Soldiers to operate these robotic systems in addition to their primary MOS duties. A different approach must be considered.

One option is to create an additional skill identifier (ASI). The ASI denotes a coded position within an organizational chart that ensures the proper manning of a special duty within the unit. It can be considered a so-called forcing function for organizational leaders (and the Army) to ensure these positions are filled with qualified Soldiers. The ASI qualification is earned after the Soldier completes more training for the specific duty assigned.

Applying an ASI system to fill robotics-operator positions is a band-aid at best, especially in light of future quantities that are destined to maneuver formations. The Army is still left with the dilemma of asking a Soldier to perform two complex functions on the battlefield: their primary MOS and the additional duty.

Another option is to create new MOSs in a branch career-management field. Since most air and ground robotic systems will be fielded at the tactical level, this highlights more MOSs within the two primary maneuver branches: infantry and armor/cavalry.

Creating more MOSs in these two branches would result in only a better band-aid. Though you have seemingly solved the problem of overloading the Soldier with two jobs, a new problem is created with career development. How do armor Soldiers with RCV-L operator MOSs compete with their 19D/19K cousins? Does he or she have the experience to lead a dismounted reconnaissance team after operating a lethal robot for three years inside a control vehicle?

Probably yes. Motivated Soldiers are very adaptable, and quality leaders will always find a way. But the Army should manage talent in a manner that avoids putting a Soldier in that position in the first place. Especially when it must be accepted that military application of robotics technology is only going to advance in the future. And these advancements will find their way in greater numbers to the maneuver formations. There will be a time when potentially half the combat vehicles in a mounted-maneuver formation will be robotic.

Perhaps there will even be entire robotic formations at different echelons – robotic sections and platoons, robotic companies, perhaps even robotic battalions – complete with air and ground systems. These formations may even have different roles within the same organization, some being lethal and others providing combat-support functions such as ISR, logistics transport or resupply. The point is to not split the maneuver branches into human combat systems, if you will, and robotic systems. Again, specialization of skill in talent management is key.

The best option for the Army is to create a Robotics Branch that can fill combat organizations with specially trained Soldiers. These Soldiers should be backed and supported by a purposeful branch, filled with robotic experts with the mission to solely focus on their training, employment, professional development, promotion and assignment. Only a dedicated Robotics Branch can perform all those functions.

Robotics Branch and center of excellence

Building a new branch is not without precedent. The creation of a Robotics Branch would be similar to the advent of the Motor Transport Corps after integration of mechanized vehicles into the force, or even the Tank Corps, which both began in 1918.[5,6] As recently as 2014, the Army started the Cyber Branch to engage threats in the cyber domain.[7]

The new Robotics Branch should be classified as another member of the combat arms since most of its systems will find their home in maneuver formations (at BCT level and below). A seemingly logical home for a Robotics Center of Excellence (RCoE) is at Fort Benning, which is also home to the Maneuver Center of Excellence (MCoE).

However, a strong argument could be made for Fort Bliss, TX. Fort Bliss and the adjoining White Sands Missile Range has an enormous training area with excellent live-fire ranges, along with adequate air and ground maneuver space, that would fit the needs of an air and ground robotics training center. Until 2009, Fort Bliss served as the Air Defense Artillery School and would have little difficulty ramping up for a dedicated training-support mission. Officers, warrants officers, noncommissioned officers and Soldiers could all receive specialized robotic training at Fort Bliss, providing a professional environment of robotics experts for the Army.[8]

Besides entry-level MOS training for operators, maintainers and leaders, the RCoE would also provide advanced education for all ranks and become the repository of lessons-learned. In addition, the RCoE would have the responsibility of developing future roles and concepts for robotic formations and ensuring these concepts were nested across the doctrine, organization, training, materiel, leadership development, personnel, facilities and policies categories.

Conclusion

As stated, the U.S. Army should establish a Robotics Branch. As robotic technology advances and finds its way into maneuver formations, dedicated and skilled Soldiers must be properly trained and led to employ these systems. A Robotics Branch will directly support this effort.

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and Development (DoTD), MCoE, Fort Benning, GA, previous assignments have been capability developer (thermal sights-sniper and crew-served weapons), Soldier Requirements Division, Maneuver Capabilities Development and Integration Directorate, Fort Benning; directorate sergeant major, DoTD, MCoE; command sergeant major, 3rd Battalion, 11th Infantry (Officer Candidate School), Fort Benning; and sergeant major, G-3/5/7, U.S. Army Africa, based at Caserma Ederle, Vicenza, Italy. His military schooling included Sergeants Major Course, Capability Developer Course and Ranger and Airborne schools. Dudas holds a bachelor's of science degree in liberal studies from Excelsior College and a master's of education degree in instructional design from Western Governors University.

Notes

[1] Robotics Requirements Division, Maneuver Capabilities Development Directorate; ***U.S. Army Small Unmanned Aircraft System Strategy***; Fort Benning, GA: Army Futures Command; 2020.

[2] Andrew Feickert; "The Army's Robotic Combat Vehicle (RCV) Program"; Congressional Research Service; Dec. 14, 2021; https://crsreports.congress.gov/product/pdf/IF/IF11876.

[3] Shephard News Team; "Javelin firings showcase CROWS flexibility"; Jun. 25, 2021; https://www.shephardmedia.com/news/landwarfareintl/javelin-firings-showcase-crows-flexibility/.

[4] Director, Operational Test and Evaluation; "Stryker Common Remotely Operated Weapon Station-Javelin (CROWS-J)"; Feb. 26, 2022; Fiscal Year 2018 Army Programs; https://www.dote.osd.mil/Portals/97/pub/reports/FY2018/army/2018strykercrowsj.pdf?ver=2019-08-21-155808-197.

5 Richard Killblane; ***70 Years of the Transportation Corps***; U.S. Army Transportation Corps; Feb. 26, 2022; https://transportation.army.mil/history/index.html.

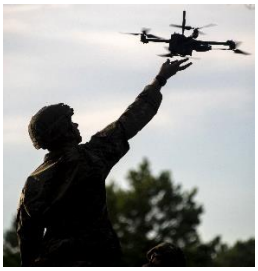
[6] Office of the Chief of Armor; ***This is Armor***, U.S. Army Armor School Pamphlet 360-2; Dec. 8, 2021; www.benning.army.mil/armor/ocoa/content/References%20and%20Guides/USAARMS%20Pam%20360-2%20This%20is%20Armor.pdf?8DEC2021.

[7] Bill Roche; "Army's Cyber Branch Marks its Fifth Anniversary"; Army Cyber Command; Aug. 28, 2019; https://www.army.mil/article/226345/armys_cyber_branch_marks_its_fifth_anniversary.

[8] LaSonya Morales and Jason Stadel; "Air Defense Artillery School Graduates Final Classes at Fort Bliss"; U.S. Army 16th Mobile Public Affairs Detachment; Dec. 15, 2009; https://www.army.mil/article/31876/air_defense_artillery_school_graduates_final_classes_at_fort bliss.

Acronym Quick-Scan

ASI – additional skill identifier
BCT – brigade combat team
CROWS-J – Common Remotely Operated Weapons Station-Javelin
DoTD – Directorate of Training and Development
ISR – intelligence, surveillance and reconnaissance
MCoE – Maneuver Center of Excellence
MOS – military-occupation specialty
NGCV-CFT – Next-Generation Combat Vehicles Cross-Functional Team
RCoE – Robotics Center of Excellence
RCV-L – Robotic Combat Vehicle-Light
SBS – Soldier-borne sensor
SMET – small multi-purpose equipment transport
SRR – short-range reconnaissance
SUAS – small unmanned aircraft system

Table 1.			
Robotic system	**Type**	**Description**	
Soldier-borne sensor (SBS)	Air	The SBS is a nano unmanned aerial system that provides a squad with an organic "quick look" capability. The system allows squads to conduct reconnaissance and observe targeted areas of interest while remaining out of enemy contact.	 *From Program Executive Office Soldier Website*
Short-range reconnaissance (SRR)	Air	The SRR is a platoon-level SUAS that provides advanced situational awareness and a standoff capability enabling reconnaissance, target detection and acquisition. The SRR has vertical take-off and landing, hover, perch and stare capabilities.	 *From Army News Service*
Medium-range reconnaissance (MRR)	Air	The current fielded MRR platform is the RQ-11B Raven and serves as a company-level SUAS. The Raven has been in service for several years and is undergoing an upgrade. The new RQ-11C will be modernized with a new hand controller, sensor gimbal and longer battery life.	 *A Raven launched in Iraq. From Wikipedia*
Long-range reconnaissance (LRR)	Air	The currently fielded LRR is the Puma SUAS. This hand-launched SUAS is used as a battalion-level surveillance and intelligence gathering tool that uses an electro-optical camera and infrared camera. A new LRR SUAS is in development.	 *PUMA*
Small multi-purpose equipment transport (SMET)	Ground (equipment transport)	The eight-wheel SMET will provide small dismounted units at battalion level and below with an unmanned cargo transport. The SMET also features a universal battery charger with the capability to recharge unit equipment batteries.	 *From U.S. Army Acquisition Support Center Website*
Robotic Combat Vehicle-light (RCV-L)	Ground (combat)	The RCV-L could potentially be employed as a scout or escort for manned combat vehicles. It will weigh no more than 10 tons, with the ability to be transported by a rotary-wing aircraft. The system will be fitted with a remote weapon station and armed with a heavy machinegun and an anti-tank missile.