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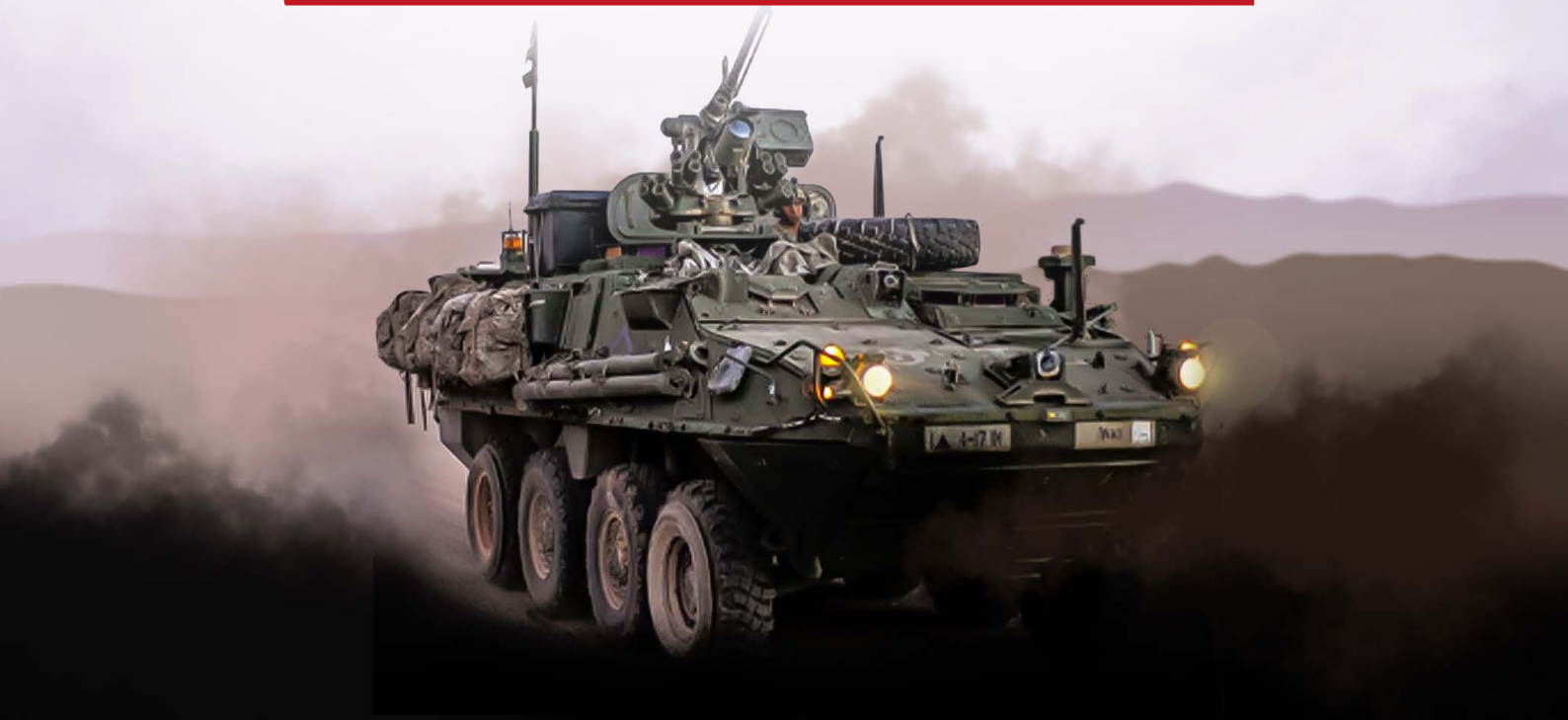


ROBOTIC COMBAT VEHICLES: THE U.S. ARMY'S PATH TO AUTONOMOUS WARFARE

IDGA
Institute for Defense and Government Advancement

While many are familiar with the commercial sector's advancements in the autonomous vehicle space, many might not be aware of the critical role the U.S. Army Future Command and other defense agencies have played in bringing these autonomous technologies into the defense space, including for armored vehicles.

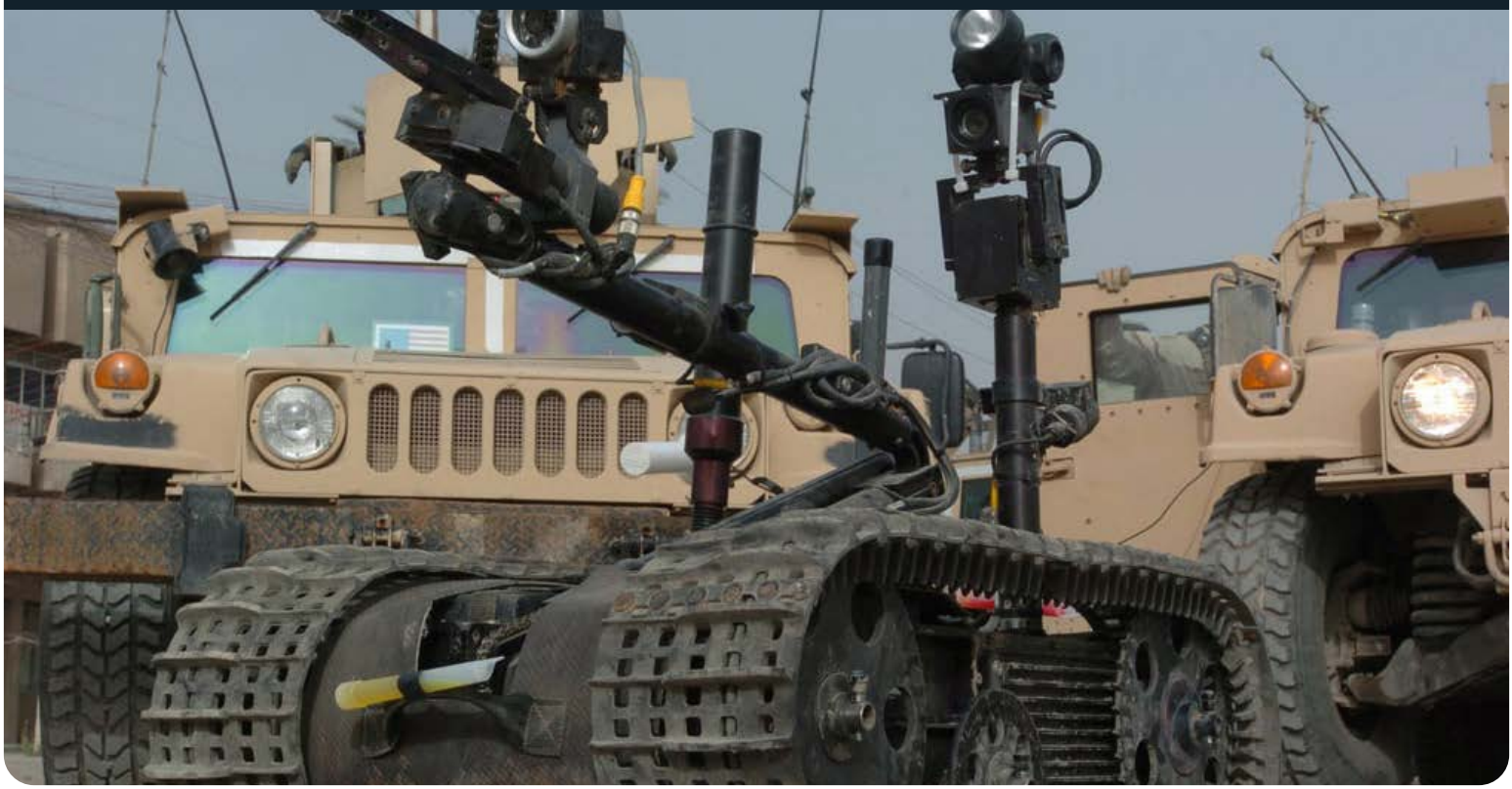
The goal for many defense agencies when bringing autonomous capabilities into their ground vehicles is to reduce casualties and enhance the ability to conduct operations in dense urban environments.

Despite the obvious benefits, as of 2024, Robotic-UGV's (unmanned ground vehicle) only made up 2.6% of the global armored vehicle market, according to IDGA's "Armored Vehicle Defense Acquisition Report: North America 2025-2029". When looking at North America specifically, Robotic-UGV is expected to make up 1.9% of the regional market in 2025, with an expected investment of $139 million. Although making up a small portion of the regional armored vehicle market, the defense acquisition report anticipates the Robotics-UGV market to grow to $188 million in 2026, and $181 million in 2027.

In order to raise the prominence of robotic vehicles in the U.S. Army's ground vehicle arsenal, Robotic Combat Vehicles (RCVs) have become a critical pillar in the Army Future Commands Next Generation Combat Vehicle (NGCV) efforts.

Last year, IDGA published an article analyzing where the Army stood at the time in its efforts to create a next-generation RCV and the expected timeline for a new RCV to be used in the field. 12-months later there have been several updates to those efforts, and the below content piece will cover those items that range from vehicle testing to decision-making timelines.

If you are interested in learning more about the U.S. Army's efforts to develop next generation vehicles, register for the Armored Vehicles USA Conference today. This two-day event taking place June 24-25 in Detroit, Michigan, will discuss emerging technologies, changing CONOPS, and preparations for the challenges of the Army of 2030 and beyond.



RCV ITERATIONS

The Army's RCV efforts will focus on three variants of vehicle: light, medium and heavy. Even though these semiautonomous systems are currently expected to be controlled by operators, improvements in AI and navigation technologies might allow them to operate more autonomously.

RCV-L (Light): will weigh up to 10 tons, have dimensions of 224 x 88 x 94 inches and be transported by rotorcraft. They are also expected to have on-board lethality such as self-defense systems, anti-tank guided missiles (ATGMs) or recoilless weapons. The Army considers this system to be expendable in that its destruction is acceptable.

In August 2023, the Assistant Secretary of the Army for Acquisitions, Logistics, and Technology (ASA [ALT]) stated that the Army would focus their efforts on RCV-L first and foremost.

> **"The Army is still broadly, of course, interested in robots of many different sizes. But we're focusing on RCV-L because we think that's a necessary first step before going to larger platforms," the Assistant Secretary said, adding that the Army will defer RCV-M for the time being.**

RCV-M (Medium): will weigh between 10 and 20 tons, with dimensions (length, width, height) of no more than 230 x 107 x 94 inches. These vehicles are primarily expected to be used for surveillance and as escorts for manned fighting vehicles. Even though the RCVs are initially expected to be controlled by operators in the NGCVs but technological advancements in artificial intelligence and ground navigation could ensure more autonomy in the future. The Army expects the RCV-M to more durable and survivable as compared to the RCV-L.

RCV-H (Heavy): will weigh between 20 and 30 tons with dimensions of 350 x 144 x 142 inches. In terms of mobility, it would need one C-17 transport aircraft to move two RCV-Hs. Considered a non-expendable system, the vehicle will have on-board direct fire weapon systems.

2024 PROGRAM UPDATES

In late summer 2024, the Army received prototypes from four competing vendors—McQ, Textron Systems, General Dynamics Land Systems, and Oshkosh Defense—marking a key milestone in the Robotic Combat Vehicle (RCV) program. Training rotations at the National Training Center (NTC) tested these prototypes, while an "off-road autonomy software assessment" in June 2024 highlighted ongoing challenges with autonomous navigation. Additional testing was scheduled for December 2024 to refine software capabilities.

> **"The good news is we are moving forward in that area. The bad news is industry is nowhere near where people think in terms of off-road autonomy. There's still a lot of development to do," one Army official noted following the testing.**

The Army planned to down-select to a single vendor by March 2025, with the selected company delivering eight prototypes for further refinement. New requirements will be integrated into these second-phase prototypes, leading up to a production decision in FY2027 and initial fielding in FY2028.

TEXTRON'S RIPSAW M3 SELECTED FOR NEXT PHASE

In March 2025, sources indicated that Textron Systems' Ripsaw M3 won the Army's latest RCV competition, though an official announcement is still pending as of March 7. Textron's modular open systems architecture (MOSA) design and adaptable chassis were key advantages in the selection process.

Textron will now refine its design and deliver up to nine prototypes by FY2026. However, larger concerns remain about the Army's overall RCV strategy, including autonomy levels, operational control, and payload selection. Additionally, shifts in defense spending priorities under the new administration could impact the program's future direction.

INDUSTRY CONCERNS AND CONGRESSIONAL SCRUTINY

Industry stakeholders have raised concerns about the Army's acquisition approach, particularly its reliance on the internally developed Robotic Technology Kernel (RTK), now called the Autonomous Robotic Control System. This software has faced developmental setbacks, prompting skepticism about its viability. Additionally, uncertainty remains about how the Army will integrate critical subcomponents and whether it will select a prime integrator.

Congress has echoed these concerns, urging the Army to reconsider its funding strategies and engage more with industry leaders in the ground autonomy sector. Lawmakers question whether current autonomy and navigation challenges can be resolved before down-selection occured in March.

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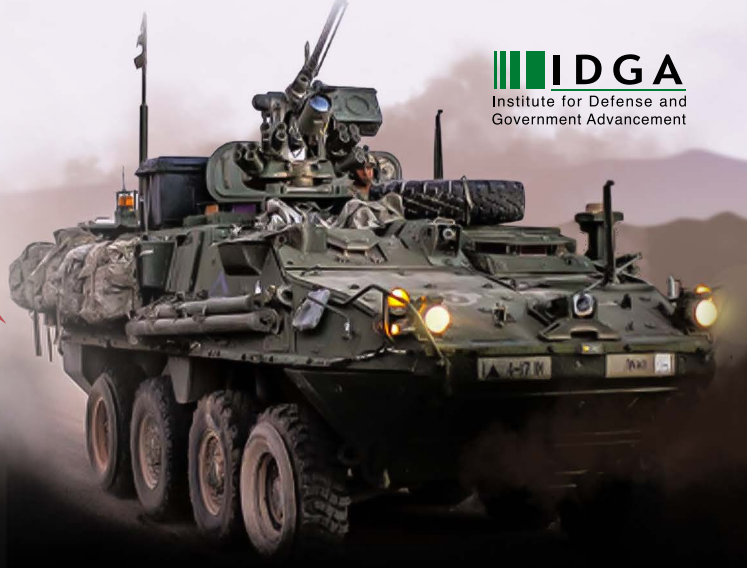

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