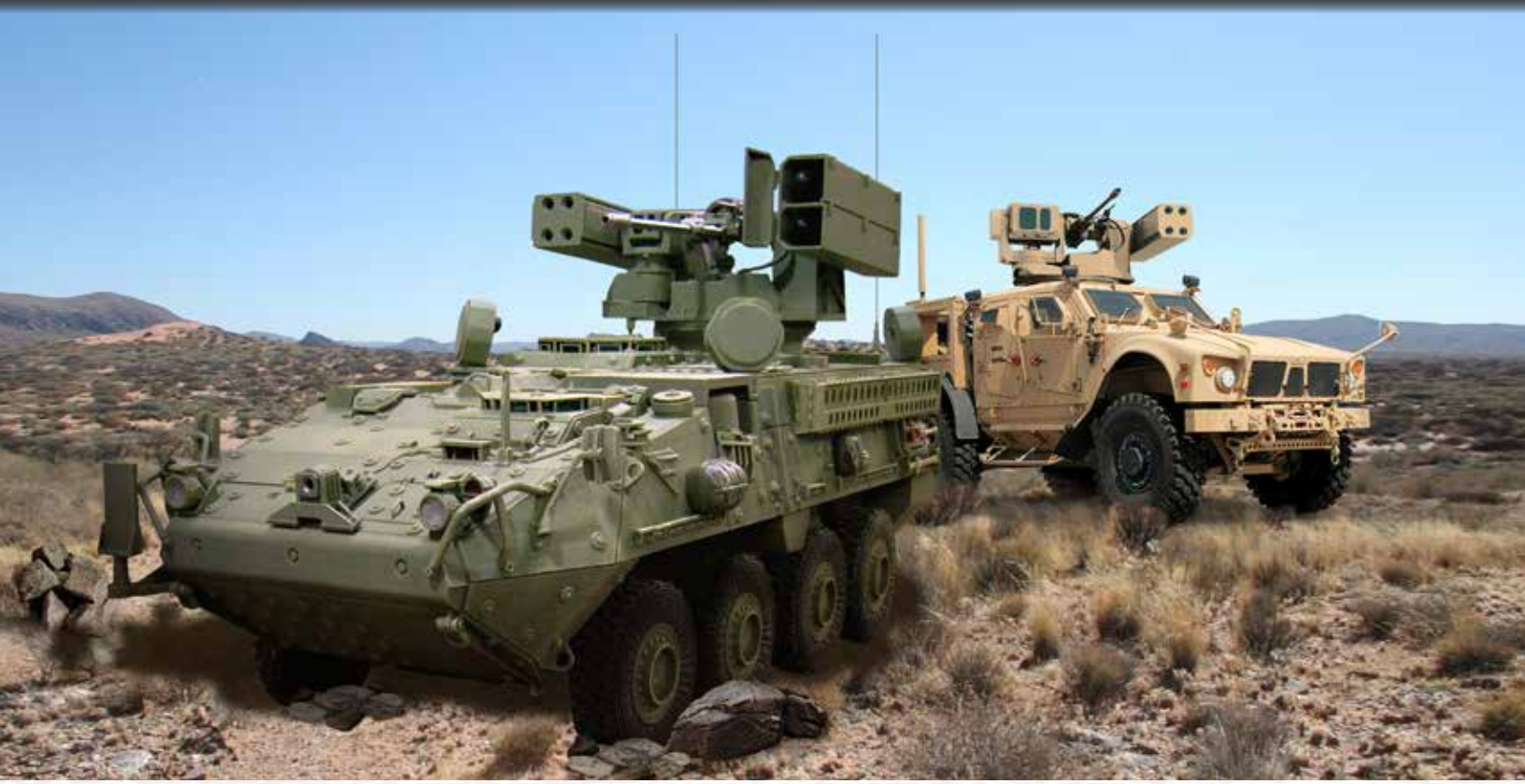
ARMY MODERNIZATION:

THE PUSH FOR SOLDIER, AIRCRAFT AND VEHICLE DEFENSIVE PROTECTION



As the U.S. Army focuses on increased defensive protection for soldiers in its modernization effort, one company is standing up to support the service's efforts through innovative engineering and advanced technology.

The modern battlefield has become a complex theater of threats, from powerful anti-armor and anti-aircraft missiles, to small but lethal unmanned aircraft that can quietly locate troops or swarm targets, to a variety of low-flying and heavily armed aircraft.

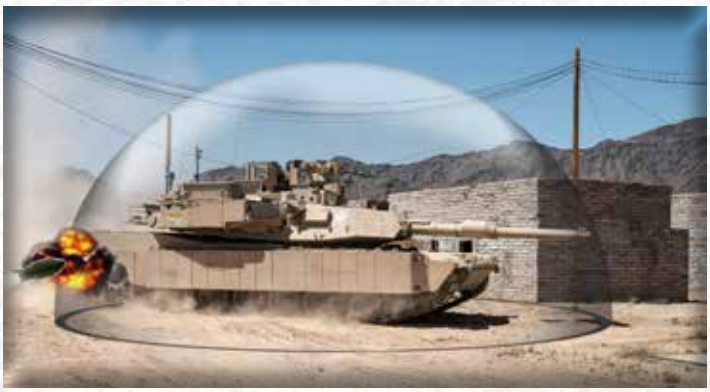
Leonardo DRS has become a recognized leader in defensive protection technologies with its Trophy Active Protection Systems (APS), counter-UAS, and air defense systems, among other technologies that will protect soldiers from a range of growing advanced threats.

ARMOR DEFENSE

One of the first significant modernization programs the U.S. Army has undertaken is upgrading a number of brigades of M1A2 main battle tanks with an APS capability to counter increasingly lethal anti-armor threats on the battlefield. A highly mature APS already chosen by the U.S. Army for fielding is the Trophy system. Developed by the Israeli firm Rafael, Trophy is offered in the United States by Leonardo DRS.

But as smaller and more modern vehicles, like the Next-Generation Combat Vehicle, take shape - smaller and yet more comprehensive Vehicle Protection System (VPS) solutions will be required to shield them from an even wider array of threats. Enter the Trophy Vehicle Protection System (VPS). Leonardo DRS and Rafael have been qualifying this lighter-weight, yet equally effective, version of Trophy for lighter armored vehicles.

Published by: DEFENSE DAILY Sponsored by: LEONARDO DRS



"Trophy VPS is the logical next step in APS for smaller combat vehicles that require hard-kill threat defeat but are weight and space constrained," said Aaron Hankins, senior vice president and general manager of the Leonardo DRS Land Systems business unit. "The system is 40% lighter than current systems but retains Trophy's proven defeat performance. Most importantly, it provides the mature foundation for a broader, more holistic approach to vehicle protection," he said.

Additionally, other Leonardo DRS protection technologies enabled by Trophy VPS add further layers of security for the vehicle and crew.

Hostile Fire Detection – Multi-spectral sensors employing modern detection hardware and algorithms give users the ability to quickly identify the type and location of hostile fire and immediately react to protect the platform and engage the threat.

Target Detection – Leonardo DRS technology detects enemy weapons prior to a hostile fire event. Using highly advanced optical technology, targets are located and identified by their optical signature. The technology senses a wide variety of threat weapons, whether hidden in complex urban landscapes or open terrain.

AIRCRAFT DEFENSE

New aircraft-based defensive protection systems are being developed to counter exponentially growing heat-seeking anti-aircraft missile threats. A combination of electro-optical, infrared (EO/IR) and laser-based systems being tested are showing a great deal of promise for improving survivability for air crews when threatened by these missiles.

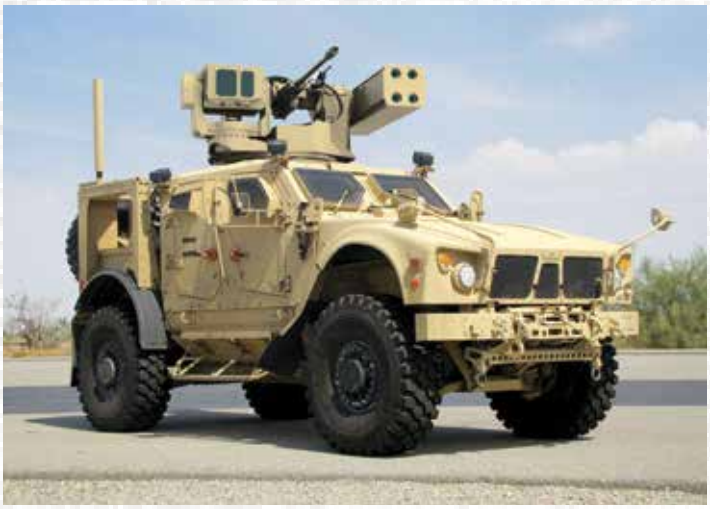
Leonardo DRS is a company with advanced laser and EO/IR systems designed to identify and counter these threats, including sensors to protect U.S. Army rotary wing aircraft as part of the new Limited Interim Missile Warning System, providing a foundation for the Army's future threat detection needs. Leonardo DRS advanced laser systems are also gaining attention throughout the services for the ability to counter heat-seeking missile sensors and keep them away from helicopters with their industry leading quantum cascade laser technology.

"The Leonardo DRS quantum cascade laser-based countermeasure works in concert with our missile warning sensors to identify and cripple heat-seeking missile threats," said Dr. Timothy Day, senior vice president and general manager of the Leonardo DRS Daylight Solutions business unit. "The system is then able to confuse the missile and direct it safely away from the aircraft."

The U.S. military plans to grow its helicopter fleet in the coming years, including development of the future vertical lift program. While the platforms will become increasingly sophisticated, older and improved anti-aircraft technology will still be a threat. Laser-based high-tech tools are available now to upgrade the current fleets and can be incorporated into future platforms.

DEFEATING AIR THREATS

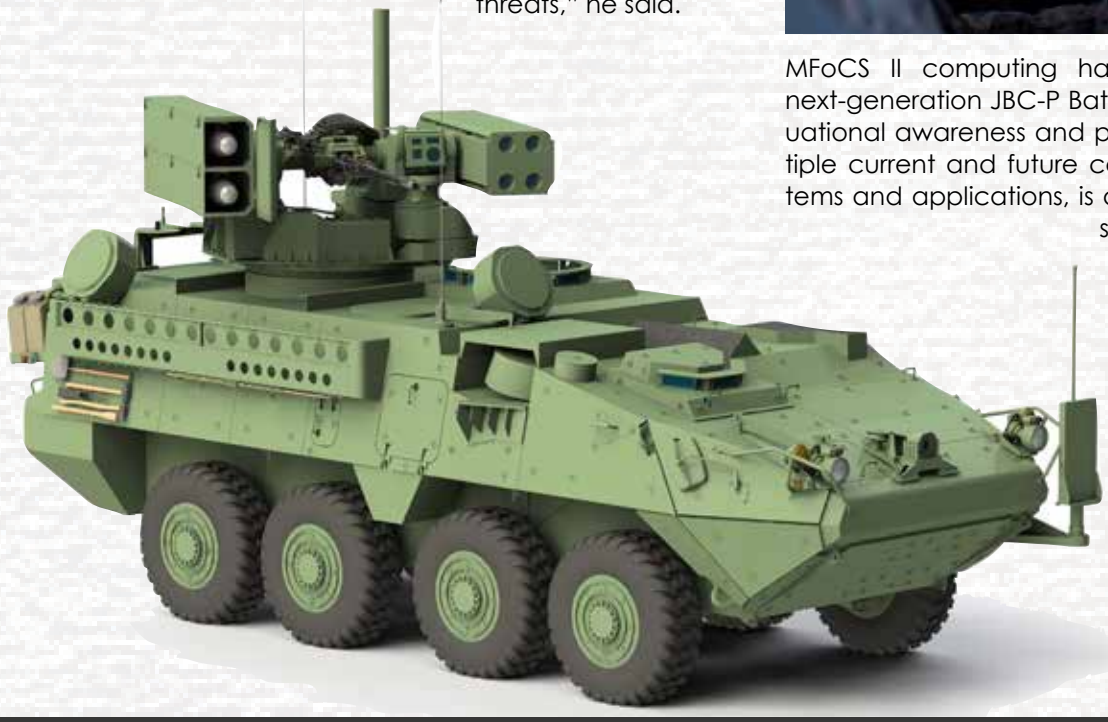
As potential enemies expand their inventories of small unmanned aerial systems (UAS), the U.S. military, with help from industry, is moving quickly to develop, test and field new systems to defeat these threats.



Leonardo DRS has played an important role in developing a counter-UAS capability by integrating radar, electronic warfare and kinetic defeat technologies to defeat Group 1 and 2 UASs at significant ranges.

The U.S. Army is also moving quickly to develop, test and field a new "Initial" Maneuver-Short Range Air Defense (IM-SHORAD) capability to defeat larger UAS, rotary wing and fixed wing threats. Leonardo DRS was selected to provide the vital Mission Equipment Package to be integrated on Stryker A1.

"Leonardo DRS is providing the U.S military with vehicle-mounted options designed to target both medium and small UAS threats," Hankins said. "Our Initial Maneuver-Short Range Air Defense mission equipment package, when integrated on the Stryker A1 platform, will provide maneuver Brigade Combat Teams with a full 'detect-identify-track-defeat' capability required to defeat UAS, rotary-wing and fixed-wing threats," he said.

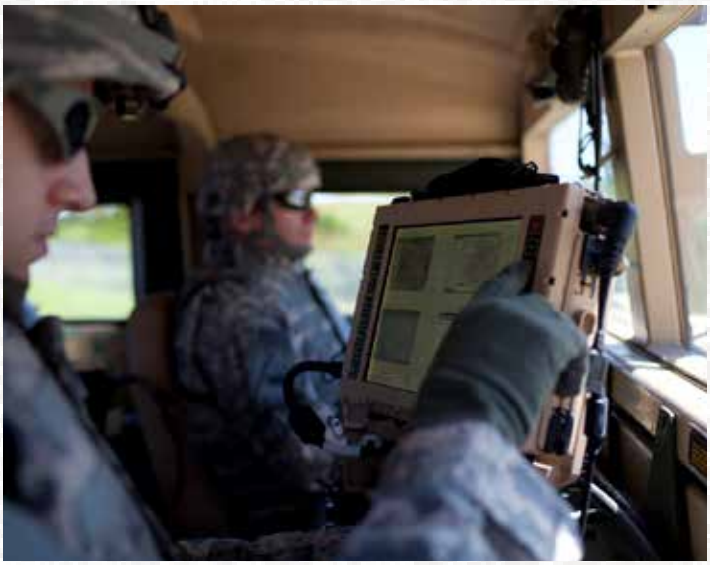


COMBAT COMPUTING

Multi-Domain Operations (MDO) is advancing warfighting by synchronizing data across air, space, sea, land, cyber and electromagnetic domains with revolutionary simplicity. The future of warfighting will require technology solutions that create seamless interoperability and strengthen joint operations in a range of contested environments.

New state-of-the-art ground combat networking technology will increase situational awareness in future conflicts.

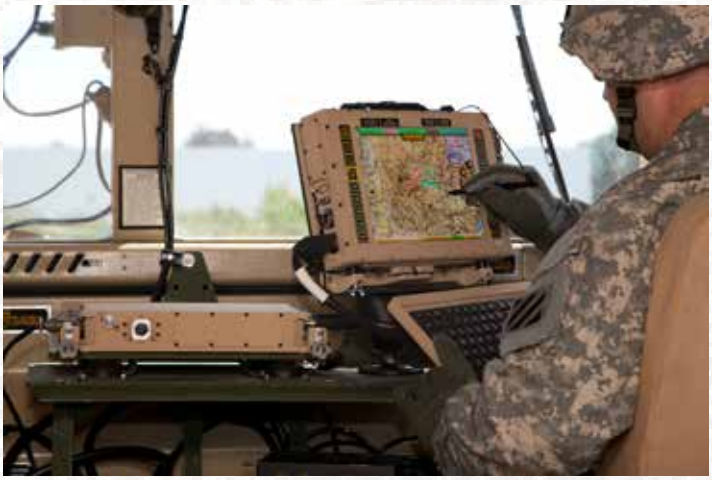
The Mounted Family of Computer Systems II (MFoCS II), developed by Leonardo DRS, enables the next generation of computing and display technology with faster processing speeds and multi-function application capabilities. Additionally, MFoCS II has enhanced processing capabilities to enable Mounted Common Operating Environment capability convergence as the vehicle network integrates multiple sensor inputs, internal and external communications and multiple current and future software applications.

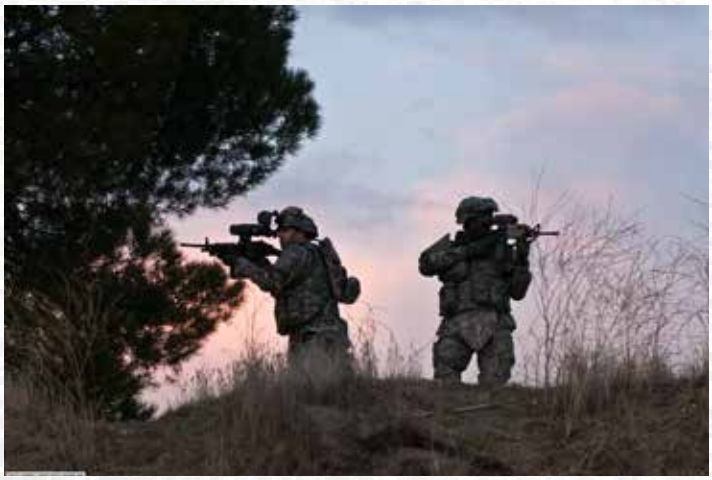


MFoCS II computing hardware, which operates the next-generation JBC-P Battle Management System for situational awareness and position location as well as multiple current and future combat platform operating systems and applications, is a more powerful and updated system.

The U.S. Army will begin fielding MFOCS II systems in tactical ground combat vehicles in the U.S. Army and Marine Corps fleets in 2019 and will be available to allied nations around the world.

"The system is a direct response to U.S. Army requirements for a more networked, mobile, flexible,





agile and integrated ground combat computing hardware system, with an enhanced capability for expeditionary missions across the full range of military operations," said Bill Guyan, senior vice president and general manager of the Leonardo DRS Land Electronics business unit.

NEXT-GEN ELECTRO-OPTICAL AND INFRARED

The modernization of U.S. military ground forces has called for giving troops the most state-of-the-art EO/IR technologies available. Upgrading targeting sensors for combat vehicles provides new capabilities in weapon sights that can see at incredible ranges through the most difficult environmental conditions.

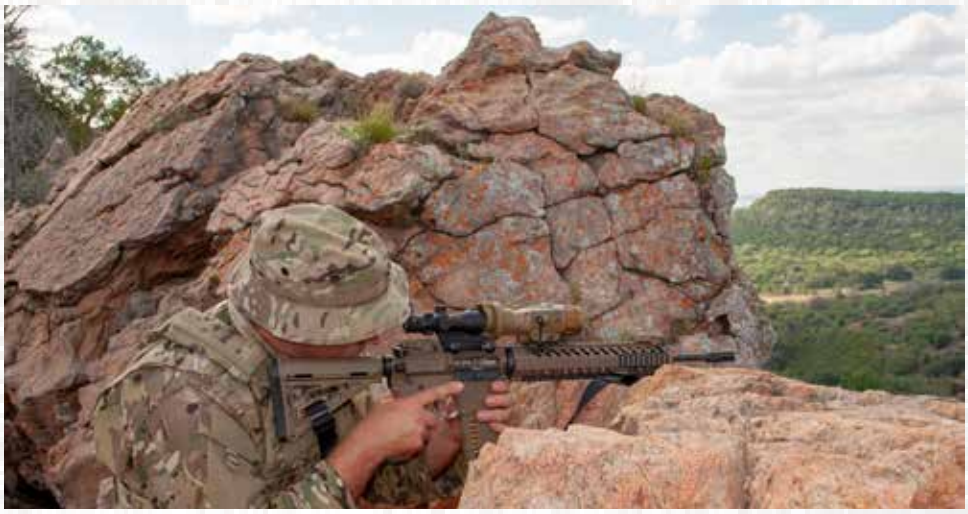
"Next-generation EO/IR technology is at the heart of the Army's ground force modernization efforts," said Jerry Hathaway, senior vice president and general manager of Leonardo DRS's Electro-Optical & Infrared Systems (EOIS) business unit. "The need for troops to have access to this new state-of-the-art technology mounted on vehicles, helmets or handheld is essential to keep the edge over increasingly advanced adversaries around the world," Hathaway said.

Leonardo DRS is providing advanced sensors for the new generation of Night Vision Goggles that are providing soldiers with technologies allowing users to see much more clearly through the toughest of environmental conditions than previous versions.

The company is also providing the Army with a new generation of the Family of Weapon Sights-Individual that not only provides incredibly clear thermal vision, but allows users to see what is in the sight wirelessly when connected to the new Enhanced Night Vision Goggle-B.

Leonardo DRS also produces and delivers a range of industry-leading advanced thermal targeting and surveillance sights for Army and Marine Corps combat vehicles, giving them an unprecedented level of sight through darkness, smoke, dust and other poor environmental conditions.

With over a half of a century pioneering infrared detector development, advanced sensor suites and robust targeting systems, Leonardo DRS has built a reputation for providing the innovative electro-optical and infrared systems that U.S. and allied military forces have come to rely on.



SUMMARY

Leonardo DRS has long been a leader and provider of advanced sensor technologies. The company recognized the needs for increased battlefield protection by the U.S. military and recognized its unique capabilities could deliver advanced soldier protection based on modernization efforts to create multiple platforms designed to offer maximum protection with the most advanced technology available.