

Unmanned Tactical Air Power Enabling Small Units in Counterinsurgency and Near-Peer Conflicts



Nineteen years of United States and allied counterinsurgency (COIN) operations have produced new concepts of operation and new battlefield solutions for gaining situational awareness and delivering precision lethality at the small unit level. A strategic, doctrinal shift to peer and near-peer competition creates opportunities and challenges for U.S. forces and military planners. The potential vulnerability of strategic assets to new classes of threats from much more capable adversaries requires a blended response that incorporates larger numbers of smaller, more agile and lower cost capabilities distributed more widely across the battlefield's edge in full-spectrum, multi-domain operations.

As the world leader in engineering and delivery of tactical unmanned aircraft systems to all branches of the U.S. military for nearly two decades, AeroVironment is working very closely with our customers to address the ever-evolving

threat environment, where the deployment of a wide range of weapons and technology is designed to overwhelm and confuse opposing forces.

A key component of hybrid warfare, as we see it, are the battle-proven counterinsurgency strategies using tactical unmanned aircraft systems and tactical missile systems as part of complex, full-spectrum combat operations. These operations will depend on small units conducting targeted intelligence missions to understand a rapidly changing landscape. Examples include scouting transit corridors, command and control infrastructure and electronic warfare nodes.

These forces will need to conduct reconnaissance and gather intelligence on the move. They will be operating in the most dangerous environments, not unlike those in COIN operations. They will require airpower, but a need for stealth and anti-access, area-denial

capabilities may prevent the deployment of larger manned or unmanned systems to support them. And, different from most COIN missions in highly-defined land operations, large-scale operations will take place across land, sea, air and even space or near-space domains.

AeroVironment's current solutions and those in initial deployment and development give these small tactical forces the confidence they need to proceed with certainty, in COIN or peer/near-peer operations.

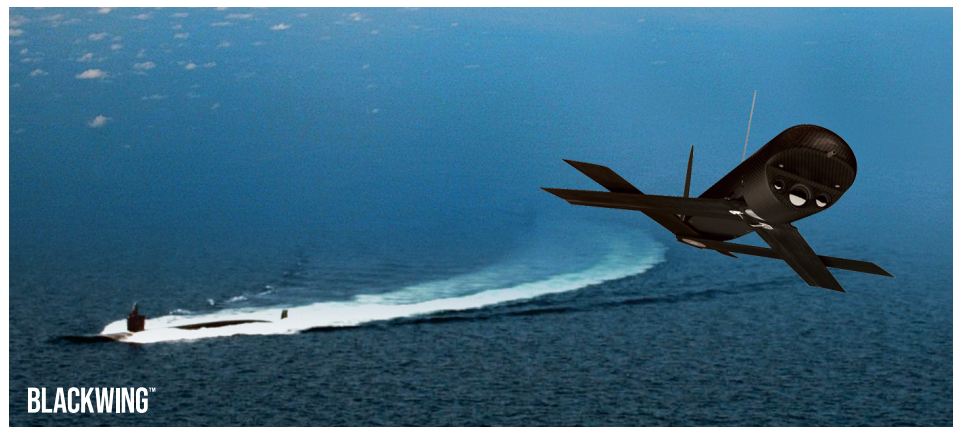
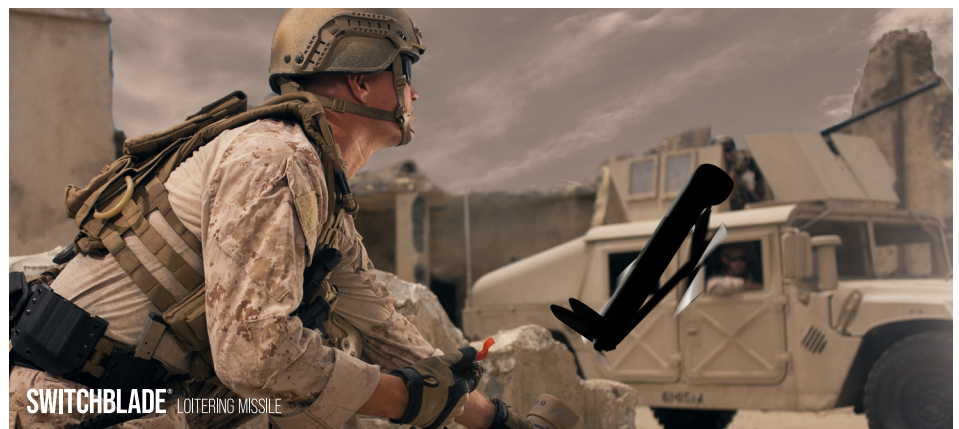
AeroVironment's engineering innovation has transformed small team capabilities by inserting short-range air power into the rucksacks of these small tactical units. Within five minutes, operators can launch an unmanned tactical aerial asset, such as the RQ-20A/B Puma AE or RQ-11B Raven, for instantaneous reconnaissance in the immediate vicinity or beyond line of sight.

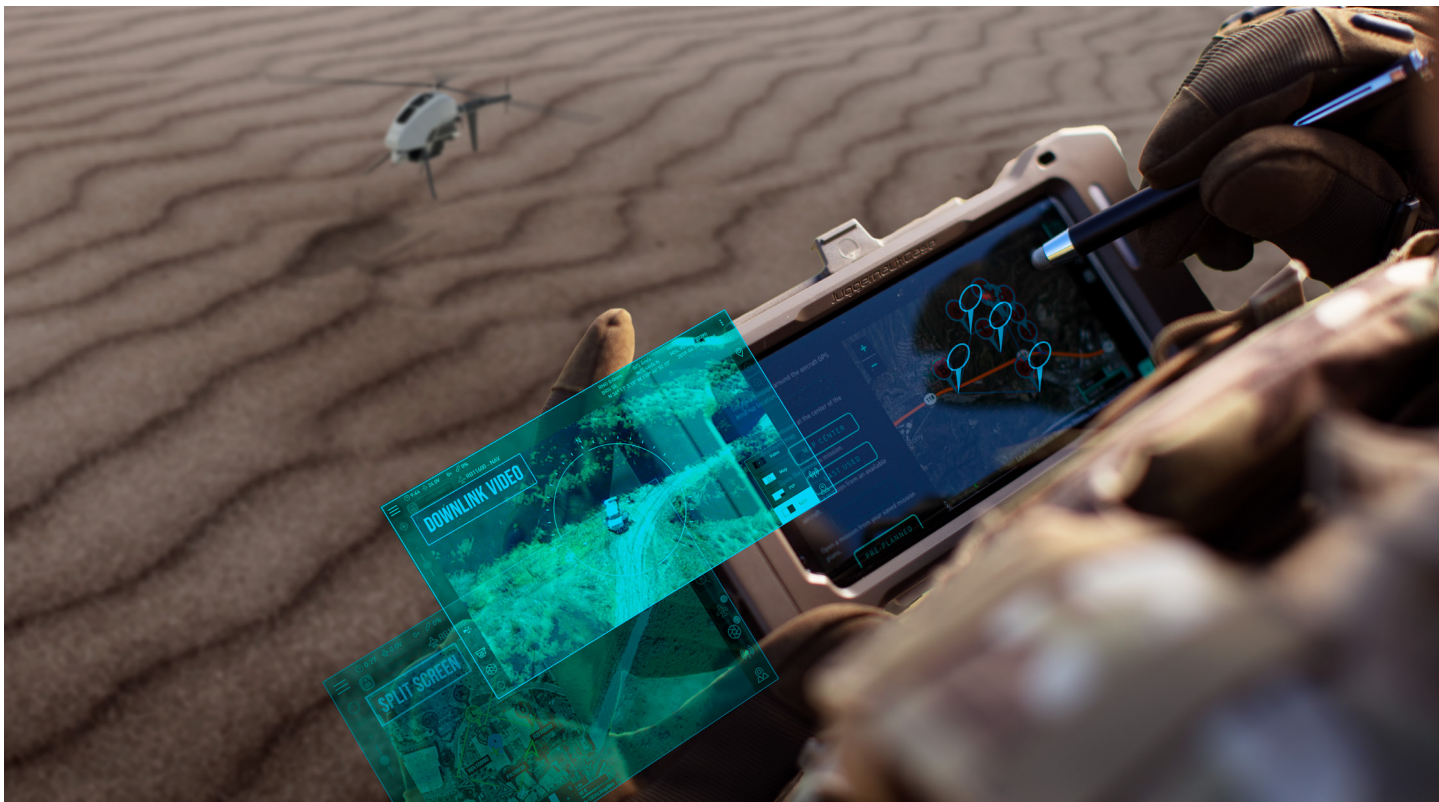
Recently, AeroVironment unveiled two new unmanned aircraft systems that provide distinct advantages to U.S. and allied troops in these types of operations. Puma LE, which can be launched by hand or with a bungee cord, delivers persistent aerial intelligence with its 5.5-hour flight time. With two Puma LEs, a tactical unit can maintain continuous, real-time, high-fidelity aerial intelligence for as long as needed in ground, maritime and riverine operations. Puma LE and other Puma AE systems can be launched from ships and small boats and are capable of landing in and being retrieved from the water.

Quantix Recon, unveiled in April 2020, is a fully automated, hybrid, vertical takeoff and landing unmanned aircraft system, and because it offers radio frequency silent mode operation, it is capable of performing an entire mission without detection. This capability provides greater stealth for concealed operations in close proximity to adversaries and also reduces the cognitive load on the system operator.

These tactical units also have immediate, accessible, precision lethal aerial support available to them with AeroVironment's Switchblade tactical missile system. Backpackable and rapidly deployable from air, sea or ground platforms, Switchblade provides operators with increased lethality, reach and precision strike capabilities with minimal or no collateral effects. Remotely piloted or flown autonomously, Switchblade provides real-time GPS coordinates and video for information gathering, targeting, or feature/object identification. Switchblade's small size and quiet electric motor make it difficult to detect, recognize, and track, even at very close range, which is extremely important in larger scale operations.

A Switchblade variant, and part of the larger scale equation of conflict over land, sea and space, is AeroVironment's Blackwing, a reconnaissance unmanned aircraft system that can be deployed from a submerged manned or unmanned submarine using an underwater-to-surface delivery canister, or from a surface ship or mobile ground vehicle via tube or multipack launcher. It, too, is small with a quiet motor to make it difficult to detect, recognize, or track, even at close ranges.





Another avenue AeroVironment is pursuing is to give U.S. and allied troops distinct advantages in larger scale operations through best-of-breed collaborations. AeroVironment is currently working with General Dynamics Land Systems to integrate its unmanned aircraft and tactical missile systems with GDLS' next generation armored combat vehicles. This combination of solutions will deliver a new level of battlefield lethality, survivability and combat effectiveness to protect and enable the warfighter. Integrating the companies' battle-proven technologies will ensure precise, mobile lethality with increased automation, decreased workload, and even fewer operators required for small tactical unmanned aircraft system and tactical missile system deployment.

AeroVironment is also teamed with Kratos Defense & Security Systems, Inc. on a best-of-breed collaboration. The two companies are working together to develop and demonstrate highly integrated and operationally effective multi-domain unmanned system solutions for near-peer, denied environments. In this collaboration, AeroVironment is integrating its tube-launched tactical missile systems with Kratos' high-speed, larger unmanned aircraft to enable delivery of small, highly autonomous systems across significant distances in denied environments at coordinated times and locations.

In the near-space domain, AeroVironment is flight-testing its next generation solar-powered, high-altitude pseudo satellite (HAPS). Dwelling for extended missions at an altitude of 65,000 feet,

these HAPS systems can provide redeployable, secure connectivity and remote sensing across large areas of interest, supporting ground or naval operations employing tactical unmanned systems at the battlefield's edge.

AeroVironment's focus as a company is to ensure our customers have the most effective, reliable and tactically deployable aerial intelligence and tactical missile system capabilities for any mission over land or sea, in counterinsurgency or near-peer conflicts.

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