AeroVironment, Inc.
Unmanned Aircraft Systems Overview
Background

AeroVironment is a technology solutions provider with a more than 40-year history of practical innovation in the fields of unmanned aircraft systems (UAS) and electric vehicles (EVs). Founded by serial innovator Dr. Paul MacCready, the creator of the world's first human powered airplane and one of Time Magazine's "Greatest Minds of the 20th Century", AeroVironment has established numerous world records and has seven of its breakthrough vehicles in the Smithsonian Institution. Today AeroVironment is the world's leading supplier of hand-launched UAS for tactical intelligence, surveillance and reconnaissance (ISR), and is developing entirely new UAS solutions designed to provide compelling new advantages to military and non-military customers.

Unmanned Aircraft Systems Overview

With more than 25 years of experience developing, supplying and supporting small UAS, AeroVironment is a prime contractor and supplier to all U.S. Department of Defense

Raven SUAS - the World's Most Prolific

(DoD) programs of record for this category of UAS and has delivered more than 20,000 new and replacement air vehicles to customers in the U.S. and elsewhere. AeroVironment's family of small UAS includes Raven®, Wasp™ and Puma™. These backpackable/ man portable, hand-launched unmanned aircraft systems are carried and used by armed forces -- who frequently operate across large geographic areas, often far removed from their bases and dependent mainly on what they can carry in their packs or vehicles – and deliver front-line, real-time situational awareness to increase combat effectiveness and force

protection. By transmitting live, streaming color and infrared video from onboard cameras directly to a common, hand-held Ground Control System with an embedded color monitor, AeroVironment's UAS provide real-time information that helps U.S. and allied armed forces operate more safely and effectively.

Product	Customers	Weight	Nominal Endurance	Payload
RQ-11B Raven B®	US Army, Marines, Air Force, USSOCOM, National Guard	4.5 lbs.	90 min.	Gimbaled EO and IR video sensors
Wasp AE™	US Air Force, Marines	2.85 lbs.	50 min	Gimbaled EO and IR video sensors
RQ-20A Puma AE™	USSOCOM, Army	13.5 lbs.	210+ min.	Gimbaled EO and IR video sensors

Ground Control System

AeroVironment's Ground Control System provides a common command and control solution for the company's family of small UAS. Small, lightweight, and combat proven, the Ground Control System enables the system operator to monitor and control the air vehicle while also displaying real-time video from its payload cameras to personnel on the ground. In addition, it allows the operator to capture screen images, store and play back data for target assessment, and facilitates real-time re-transmission of video and metadata to an operations network.

Common Ground Control System

When embedded at remote locations, the Ground Control System also can operate as a remote video terminal, providing command centers or monitoring stations with the same viewing and analysis capability as the UAS operator. It is compact and portable, taking up only a portion of a small backpack, and can be assembled in less than two minutes.

Digital Communications Architecture

New Raven, Puma AE and Wasp AE systems now come equipped with a Digital Data Link™ developed by AeroVironment. With digital Raven, Puma AE and Wasp AE systems, users can operate up to 10 times as many air vehicles in the same geographic area as compared to the analog

> *"UAV operators saw people placing improvised explosive devices on the side of a nearby road… They called in the report, and within a short amount of time a response team was on-scene to check out the situation. Just knowing the fact that we have the power to save lives is a great benefit to working with the Raven."*

systems they replace. Digital Small UAS also permit beyond line-of-sight operation, the creation of an ad-hoc wireless data network for the battlefield (turning the system into a "flying hotspot") and secure communications.

UAS Mission Services

AeroVironment's small UAS provide valuable information to their operators. In some cases customers may wish to acquire the information, but lack the infrastructure to support and maintain the systems. For those customers, AeroVironment provides mission services, utilizing its highly-trained personnel to operate company-owned systems and deliver the information to customers.

UAS Training Services

AeroVironment develops training courses for its customers for a wide range of small UAS applications and tactical situations. Courses are designed to give students a comprehensive understanding of the selected UAS solution, including safety, operational proficiency, aircraft maintenance and air space management, that when applied "in theater" will enable them to accomplish their mission objectives.

UAS Logistics Services

AeroVironment's UAS Logistics services ensure mission success by providing quality products and logistics support anywhere in the world. AeroVironment's UAS logistics support solutions include planning, upgrades, UAS spares and repair services. Support also is provided in the areas of technical expertise, material management, supply chain management and military and commercial logistics.

UAS In Development

AeroVironment is a technology innovator focused on solving important customer problems with practical, new solutions. In addition to a growing product line supporting demand for UAS solutions, AeroVironment cultivates a robust pipeline of new solutions under development to drive growth.

Switchblade®

One of the most dramatic capabilities transitioning from development into initial production at AeroVironment is the Switchblade loitering munition system. Switchblade provides a portable lethal strike capability, creating an entirely new type of loitering precision munition to protect U.S. forces.

The backpackable, battery-powered Switchblade launches from a tube, unfolds its tandem wings and transmits back streaming video from color & infrared video sensors directly to the AeroVironment Ground Control System. Upon identifying a hostile target on the handheld video monitor, the operator can designate the target and the Switchblade becomes a weapon – autonomously guiding itself onto the target, detonating its small warhead with high precision and low probability for collateral damage.

Switchblade Loitering Agile Munition System

Switchblade can rapidly deliver a powerful but expendable backpackable flying intelligence, surveillance and reconnaissance package on a distant target within minutes. The vehicle's small size and quiet motor make it difficult to detect, recognize and track even at very close range. The Switchblade is scalable and can be launched from a variety of air, ground and sea-based platforms.