

## LEVERAGE THE GLOBAL INFORMATION GRID (GIG)

# SEE FIRST, THINK FIRST, ACT FIRST IN THE BATTLESPACE.

## SMALL UAS SOLUTIONS

Small Unmanned Aircraft Systems (UAS) are highly effective solutions that provide critical support for the small unit commanders allowing them to see first, think first, and act first in the battlespace.

Direct ownership and operation of small tactical UAS platforms provide boots on the ground real-time situational awareness with immediate access to Intelligence, Surveillance, and Reconnaissance (ISR) systems that dramatically decrease the time it takes to Task, Process, Exploit, and Disseminate (TPED) information so it can be acted upon more quickly.

Small UAS are difficult for the enemy to detect or engage and effectively mitigate risk by performing active reconnaissance around the next corner and beyond the next terrain feature without putting ground forces into harm's way. When configured and deployed with the appropriate payload, they serve as an electronic and kinetic attack system working to identify and locate threats which can be destroyed directly or via handoff to other battlefield assets.

Small UAS tie tactical commanders directly into the entire network of battlefield assets, including additional UAS piloted by others, Close Air Support platforms, adjacent units, and higher headquarters. Additionally, ISR receivers combined with data link radios push the UAS feed into the link 16 tactical network contributing to the Common Operating Picture (COP) and allowing others to view and act on the data, whether they are in the battlespace, out at sea, or across the globe.

In the current constrained budget environment, maintaining readiness and enhancing capabilities while reducing costs can be extremely challenging at the unit level. From procurement, operator training, and flying hours, to repairs and maintenance, the cost of ownership of small UAS is exponentially less when compared to manned airborne assets. Upgrading small UAS capabilities is also relatively inexpensive and can often be accomplished at the unit level by replacing components procured through governmentwide acquisition contracts.

Small UAS consist of an airframe and payload.

Operators utilize a Ground Control Station, peripheral receivers, and data link radio systems to provide other battlefield systems and units access to the data collected by their UAS.

**AIRFRAMES:** Small UAS airframes include fixed and rotary wing of varying sizes. The most common and widely used small UAS solutions provider is AeroVironment. Their Raven, Puma AE, and Switchblade family of systems are currently in use by the U.S. Army and Marine Corps as well as Special Operations Forces.

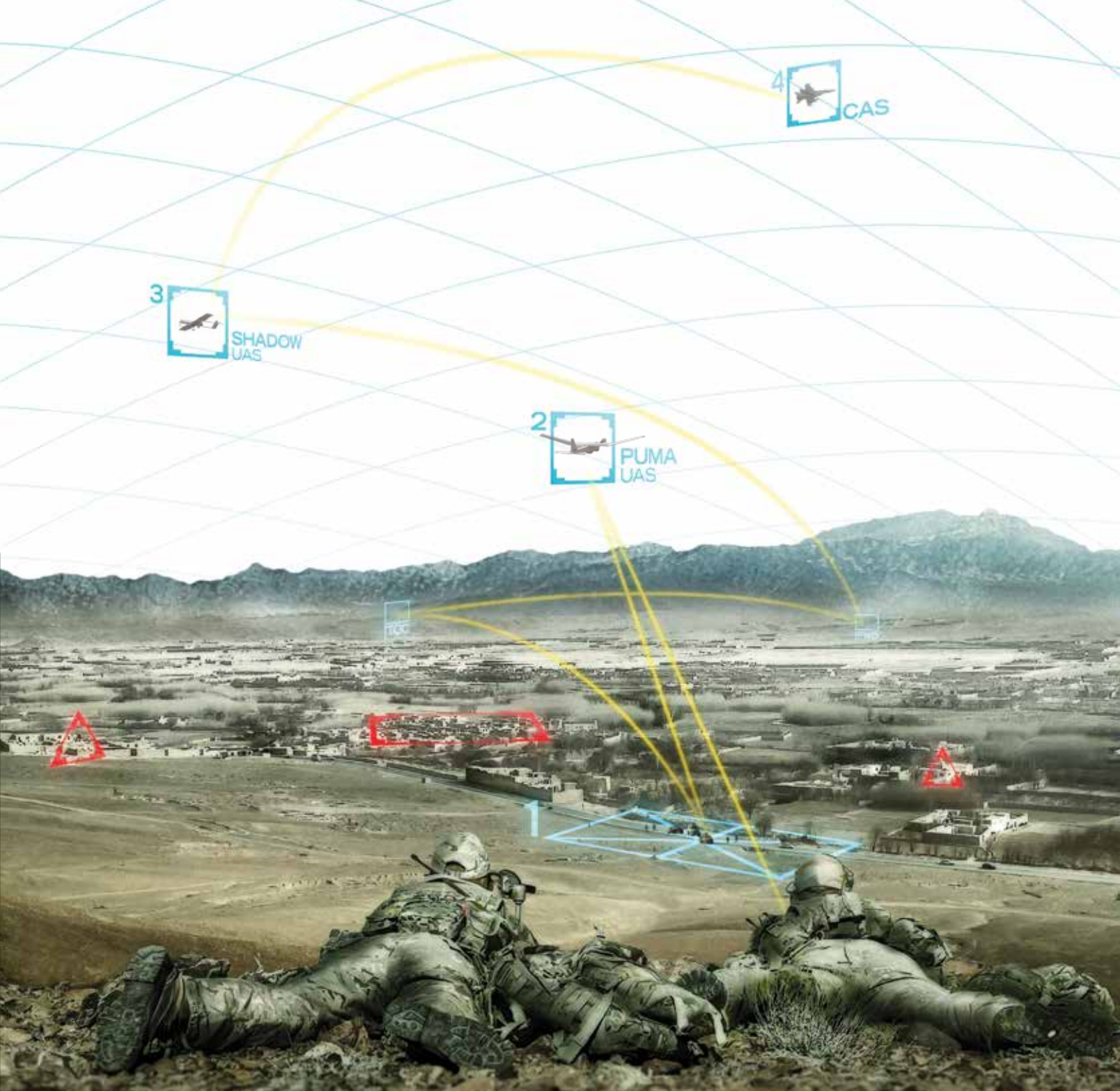
**PAYLOAD:** The heart of any UAS, payloads provide small unit commanders with their own eyes, ears, and weapons system. Payloads can include:

- › EO/IR cameras for day/night video surveillance.
- › Signal Intelligence (SIGINT) for communications monitoring and transmitter geolocation.
- › Communications relay systems that extend UAS tether by linking multiple airframes to increase range and ISR coverage.
- › Counter-IED and communications jamming.
- › ISR systems in conjunction with weaponized UAS to find, fix, and finish targets.
- › Kinetic energy and electronic attack weapons.

**GROUND CONTROL STATIONS (GCS):** The GCS systems utilized to pilot UAS provide real-time, instant control of the airframe for fluid situations. GCS systems can be manpackable, vehicle mounted, or in a fixed location such as a FOB or TOC. They can also pre-program UAS for autonomous missions using GPS waypoint navigation for force protection or route reconnaissance missions.

**RECEIVERS:** ISR receivers are available that interface with UAS to provide a broad set of capabilities. They range from body worn IP-based systems, small handheld video enabled systems such as the Harris RF-3590 Ruggedized Tablet and RF-7800T-HH SAVR, to data link radios that transmit through the link 16 tactical data exchange network.





## CONNECTING THE BATTLESPACE

With the proper configuration, small UAS serve a vital role as a primary battlefield asset for multiple units and higher headquarters as they work to find, fix, and finish threats.

### 1 SMALL UNIT PATROL

A small unit patrol pilots a small tactical UAS via Ground Control System. His video is fed directly to his commander's ISR video systems and simultaneously relayed back to their TOC via data link radio through the link 16 tactical network contributing to the Common Operating Picture.

### 2 TACTICAL UAS

The small UAS flies over the patrol providing real-time situational awareness, surveilling potential insurgents, and identifying threats for the small unit commander on the ground.

### 3 LARGER UAS

Overhead, a USMC Shadow UAS is being piloted beyond visual range (BVR) from the MEF ashore HQ. Small Tactical Terminals push the Shadow's video and Precise Position Location Information (PPLI) into link 16.

### 4 CLOSE AIR SUPPORT

Higher overhead, an FA-18 pilot can see video feeds from both UAS on his displays and their locations via link 16. He deconflicts his flight path and stands by to provide close air support.

### THE GLOBAL INFORMATION GRID

Through the network, additional assets can also leverage the data to TPED information so it can be acted upon more quickly whether they are in the battlespace, out at sea, or across the globe.