

Agile Lion delivers data to the front lines

By David Walsh, Special to GCN

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IN AGILE LION, the Marines extended real-time communications to PDA-equipped troops.

Marine exercise connects command centers, aircraft and troops

The Marines have successfully tested an innovative, ad hoc network that connects ground controllers, pilots and troops on the ground, providing real-time digital video and other data.

Agile Lion, a Marine Corps exercise conducted late last year in Arizona, showed how net-centricity and situational awareness can enable quick coordination of targeting and intelligence data, officials said.

The Marines hired Northrop Grumman Corp. to meld current and emerging systems, keeping in mind the technology's potential uses in Iraq and Afghanistan.

Currently, most tactical data is available in cockpits and command centers, when signals connecting reconnaissance aircraft and ground-based operators are delayed, ground forces are out of the loop and potentially face hazards.

Agile Lion largely remedies that shortcoming, according to Marine Lt. Col. Robert Sofge, Agile Lion's project officer. For the first time, soldiers—using specialized personal digital assistants—relied on net-connectivity, via airborne and ground-based servers, he said.

The system uses a variant of Northrop Grumman's Advanced Information Architecture (AIA). "Down at the squad level, we're able to give that Marine using that [proprietary] architecture everything that's available to the command center, except for the streaming video," Sofge said. "He can chop stills out of [the video] as fast as he can push his digital pen, but he's limited to the narrow bandwidth."

Sofge, speaking recently at the National Press Club in Washington during a briefing on Agile Lion, said the system could "bring real-time video and data, beyond line-of-sight, to the tactical battle space where the Marines are fighting—down to the squad level, the fighting level we're seeing overseas today." Just as important, the exercise proved the technology to be interoperable, he said.

One of the keys to the exercise's success was connecting everything in previously untested ways, under conditions closely resembling those in Iraq or Afghanistan, officials said.

Agile Lion's other main components included:

- A dual-band radio network of narrow-band UHF and wideband KU, the latter a portion of the radio-frequency spectrum for satellite communications
- The Marines' rugged Personal Digital Data Assistant network, an enhanced position-location and ranging system
- Specially configured, rugged commercial notebooks tied to PDAs for sending targeting data to participating aircraft
- Aircraft wing-mounted targeting pods
- A ground-based portable laser range-finder, which uses laser energy to determine distance
- Server-equipped platforms on aircraft using AIA software
- A ground-based operations center
- A device using Command-and-Control Personal Computer, a Windows application developed for the Marine Air-Ground Task Force, and Tactical Air Control
- A Rover 3 multireceiver ground station, which gets video from targeting pods and other assets
- Target Locator Designation and Hand-off System, a digital stills and video communication components to broadcast target locations—one each in an airplane and on the ground.

Marines on the ground had a 12-pound, tripod-mounted, Lightweight Laser Designator Rangefinder boasting day and night thermal cameras, embedded Global Positioning Satellite system, serial link and export video interface. Individual Marines also wore special vests with network-linked communicators.

Sofge likened the communications system to civilian "cell towers moving around ... with the actual servers and connectivity on the move and keeping track of where everything is and with [the Enhanced Position Locating and Reporting System] tracking more specific locations, with everyone reporting where they are" in real time.

Marines "pulled" imagery from the jet's wing pods and "pushed" target identification data from the PDAs to servers in the refueling plane and command center.

The upshot is that ground forces—Marines, Army Rangers, infantry, special operations units and any others on such a network—should be able to communicate under real combat conditions.

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"We are moving in a direction where we are more connected, and our ability to share information—to share knowledge on the battlefield—is going to increase," Sofge said. "Ultimately, we're trying to bring [more] capability to the folks on the ground."

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