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With Air Force's Gorgon Drone 'we can see everything'

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In ancient times, Gorgon was a mythical Greek creature whose unblinking eyes turned to stone those who beheld them. In modern times, Gorgon may be one of the military's most valuable new tools.

This winter, the Air Force is set to deploy to Afghanistan what it says is a revolutionary airborne surveillance system called Gorgon Stare, which will be able to transmit live video images of physical movement across an entire town.

The system, made up of nine video cameras mounted on a remotely piloted aircraft, can transmit live images to soldiers on the ground or to analysts tracking enemy movements. It can send up to 65 different images to different users; by contrast, Air Force drones today shoot video from a single camera over a "soda straw" area the size of a building or two.

With the new tool, analysts will no longer have to guess where to point the camera, said Maj. Gen. James O. Poss, the Air Force's assistant deputy chief of staff for intelligence, surveillance and reconnaissance. "Gorgon Stare will be looking at a whole city, so there will be no way for the adversary to know what we're looking at, and we can see

everything."

Questions persist, however, about whether the military has the capability to sift through huge quantities of imagery quickly enough to convey useful data to troops in the field.

Officials also acknowledge that Gorgon Stare is of limited value unless they can match it with improved human intelligence - eyewitness reports of who is doing what on the ground.

The Air Force is exponentially increasing surveillance across Afghanistan. The monthly number of unmanned and manned aircraft surveillance sorties has more than doubled since last January, and quadrupled since the beginning of 2009.

Indeed, officials say, they cannot keep pace

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with the demand.

"I have yet to go a week in my job here without having a request for more Air Force surveillance out there," Poss said.

But adding Gorgon Stare will also generate oceans of more data to process.

"Today an analyst sits there and stares at Death TV for hours on end, trying to find the single target or see something move," Gen. James E. Cartwright, the vice chairman of the Joint Chiefs of Staff, said at a conference in New Orleans in November. "It's just a waste of manpower."

The hunger for these high-tech tools was evident at the conference, where officials told several thousand industry and intelligence officials they had to move "at the speed of war." Cartwright pressed for solutions, even partial ones, in a year or less.

The development of Gorgon Stare began about 18 months ago. It is based on the work of Air Force scientists who came up with the idea of stitching together views from multiple cameras shooting two frames per second at half-meter resolution. Currently full-motion video is shot at 30 frames per second from one camera mounted on a Predator or the larger Reaper drone. That makes for more fluid video, but also more difficulty in assembling frames quickly to get

the wide-area view.

Technological advances now make it possible for a soldier on the ground to receive any portion of a panoramic view in real time, streamed to a portable device about the size of an iPad, Poss said. At the same time, nine other soldiers can get the same or a different view. The images will be stored so analysts can study them to determine, for instance, who planted an improvised bomb or what the patterns of life in a village are.

The Air Force has also taken tips from the purveyors of pop culture. It is working with Harris Corp. to adapt ESPN's technique of tagging key moments in National Football League videotape to the war zone. Just as a sportscaster can call up a series of archived quarterback blitzes as soon as a player is sacked on the field, an analyst in Afghanistan can retrieve the last month's

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worth of bombings in a particular stretch of road with the push of a button, officials said.

The Air Force placed a contractor on the set of a reality TV show to learn how to pick out the interesting scenes shot from cameras simultaneously recording the action in a house. And taking a page from high-tech companies such as Google, the Air Force will store its reams of video on servers placed in used shipping containers in Iowa.

The Air Force is looking to mount wide-area surveillance cameras on airships that can stay aloft for up to two weeks.

"This is all cutting-edge technology that is being fielded in a short period of time," said retired Lt. Gen. David A. Deptula, who served as deputy chief of staff for intelligence, surveillance and reconnaissance.

"If you look into the not-too-distant future, what these technologies will allow us to do is remove more and more ground forces and replace them with sensors where we normally would have to rely on people going somewhere to find something out," he said.

But other military officials caution that a counterinsurgency requires an understanding of the local population.

"That really only comes from human intelligence or boots on the ground," said

Army Col. Steven A. Beckman, the former intelligence chief for coalition forces in Kandahar in southern Afghanistan.

"We can get the 3-D geo-intelligence that tells us what every building, what every street looks like in Marja," he said at the U.S. Geospatial Intelligence Foundation conference in New Orleans in November. But such intelligence needs to be "underpinned by a degree of local knowledge . . . to enable us to maximize that."

Beckman called full-motion video "the crack cocaine of our ground forces" - but often, he said, it's a technology that is poorly utilized.

He noted in an interview that he is an advocate of the technology but that in some cases, other tools might be a better solution for a commander's needs.

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Marine Capt. Matt Pottinger, who collaborated on "Fixing Intel," an official critique of the intelligence effort in Afghanistan issued a year ago, said he found a disconnect between the intelligence requests for aerial surveillance issued by commanders in regional headquarters and the needs of the soldiers or Marines at the platoon level.

"Often what the guys need it for is not to stare at some highway for five hours because they want to drop a bomb on some guy they see coming out to dig a hole in the ground to plant an IED," he said. "Oftentimes, the questions that the soldiers and Marines need answered are 'Where's the traffic? Where are the cars going? Are they actually using this strip of desert or completely bypassing this district?' "

Pottinger, a visiting fellow at the Council on Foreign Relations, said analysts in regional headquarters should meet with troops in the field to understand their needs, otherwise all the "whiz-bang" gear will never be used to its full potential.

Gorgon Stare is being tested now, and officials hope it will be fielded within two months. Each \$17.5 million pod weighs 1,100 pounds and, because of its configuration, will not be mounted with weapons on Reaper aircraft, officials said. They envision it will have civilian applications, including securing borders and aiding in natural disasters. The

Department of Homeland Security is exploring the technology's potential, an industry official said.

Poss said he would "never denigrate the need for good, solid human intelligence because even watching an entire city means nothing unless you can put context to it."

But, he said, "being able to watch an entire city, I'm convinced, is going to have a huge impact on operations in the war zone."

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