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U.S. military turns to TV for surveillance technology

The Air Force is looking at the technology that powers NFL broadcasts and TV news to see if it can be used to catalog information from the cameras of its drone fleet.

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Reporting from Washington — As it rapidly expands its drone program over Afghanistan, the U.S. military is turning to the technology that powers NFL broadcasts, ESPN and TV news to catalog a flood of information coming from the cameras of its fleet of unmanned aircraft.

U.S. military archives hold 24 million minutes of video collected by Predators and other remotely piloted aircraft that have become an essential tool for commanders. But the library is largely useless because analysts often have no way of knowing exactly what they have, or any way to search for information that is particularly valuable.

To help solve that problem, the Air Force and government spy satellite experts have begun working with industry experts to adapt the methods that enable the NFL and other broadcasters to quickly find and show replays, display on-field first-down markers and jot John Madden-style notations on the screen.

"The NFL has the technology so you can pull an instant replay of any Brett Favre touchdown over his career," said Carl Rhodes, a researcher with Rand Corp. "The idea is maybe the Air Force could use similar technology to look at what has happened at a particular corner in Afghanistan in the past week or past year."

Sports television broadcasters mark video with embedded text "tags" that later can be searched to find footage of a particular player or play. Such tags can help editors compile a highlight reel of the day's most exciting home runs, or a retrospective of the year's best dunks.

The military is seeking to use similar technology to track possible insurgents in theaters thousands of miles away.

Drones are used by the CIA to attack suspected insurgent sites in Pakistan's tribal areas along the Afghan border. In Afghanistan and Iraq, they are operated by the military, and are used more for spying and observation.

"We are used to having the cutting edge technology: reconnaissance satellites and unmanned vehicles," said Maj. Gen. James Poss, who helps oversee the Air Force's reconnaissance programs. "And this is the first time industry is really way ahead of us."

Unmanned aircraft have been used for reconnaissance since the 1990s. The first armed drones were rushed to Afghanistan with a minimum of testing days after the Sept. 11 terrorist attacks. The military is still refining the aircraft, but more than 7,000 drones of all types now are in use over Afghanistan and Iraq. The Air Force is spending \$3 billion a year to buy and operate the aircraft, and is training more pilots to fly unmanned than manned vehicles.

Pilots can fly them remotely from bases in the U.S., with others in the theater of action handling takeoffs and landings. The pilots are assisted by camera operators — some of them technicians as young as 19 or 20 — and intelligence coordinators.

They may be called upon to watch over a U.S. military vehicle stranded in the Afghan desert until help arrives, or launch a missile strike. Mistakes can be deadly. Results of a U.S. military investigation released last month criticized a drone crew based in Nevada and ground commanders in Afghanistan for misidentifying civilians as insurgents. Using their information, a helicopter airstrike was authorized. As many as 23 civilians were killed.

The CIA does not publicly acknowledge the existence of its program in Pakistan, but officials say it received permission two years ago to launch attacks on the basis of "pattern of life" analysis — without knowing the names of its targets. Officials say that they may conduct surveillance for days before deciding they have enough evidence to launch an attack, and that they gather so much detail that they can watch for the routine arrival of particular vehicles or the characteristics of individual people.

The military once stored Predator video in much the same way it handled photos from a U-2 spy plane or a satellite: It chopped the video into short clips and filed it by date and location.

But new technologies developed by firms such as Harris Corp. and Lockheed Martin record the observations of analysts who monitor the video feeds, creating a database of terms and footage that can later be searched.

For instance, every time a white truck appears on video, an analyst will type "white truck." The observation automatically tags that portion of the video. Later, if someone wants to find all the white trucks that passed by a particular building, all they need to do is designate the area of interest and the time frame and search for "white truck."

The Air Force hopes that eventually, such emerging technology will automatically give people, places and vehicles more unique identifiers. Then, the database will be able to search for specific white trucks, such as one with a dented fender or any other unique mark.

In addition to improving archives, the new tools also may help analysts combine live video feeds with other sources of intelligence to better understand the situation on the ground.

Analysts soon may be able to view Predator video feeds alongside intercepted phone calls from the area under surveillance. They also could view area maps or other information.

"We are creating situational awareness in real time," said John Delay, a director of strategy for Harris, a defense contractor that also equips broadcasters.

The drive to change began in earnest four years ago, when Michael O'Neal, a civilian working for the Air Force, went to the National Assn. of Broadcasters symposium in Las Vegas, a trade show where companies that help the television industry manage video exhibit their products.

Some businesses thought the military would be too small of a market. Harris, however, showed an interest, and O'Neal began working with the firm's executives.

Two years later, Harris had a working version of its technology, the Full-Motion Video Asset Management Engine, or FAME.

An early version of the system, developed by Lockheed Martin and Harris, is being tested in Afghanistan on a limited number of smaller unmanned planes flown by the Army. The Air Force hopes to do its own tests with larger Predator and Reaper planes too.

It is not known whether the CIA is using the technology yet, but it is likely to eventually employ some version of the technology. The National Geospatial-Intelligence Agency has established standards for the new archiving technology so that all surveillance video can be easily searched.

In addition to news and sports technologies, the Air Force also has examined video applications used by reality television. At the request of the Air Force, one Rand Corp. analyst spent time last fall on the set of a reality show to see what lessons the military might glean from its production techniques. The think tank is prohibited from disclosing which show it visited.

Reality television is of limited usefulness because the setting is a "controlled environment," said Poss, the Air Force major general. The range of expected actions on a reality show set is far more limited than that of possible insurgents in Afghanistan.

But it is instructive: Instead of monitoring a single camera that captures a range of images, television editors can use a variety of cameras and angles to track a single subject.

"In reality TV, there could be 20 cameras. Instead of each person watching a camera in each room, you have a camera following each individual around," said Rhodes of the Rand Corp. "That doesn't exactly translate to the Air Force's job, but there are things they can learn."

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