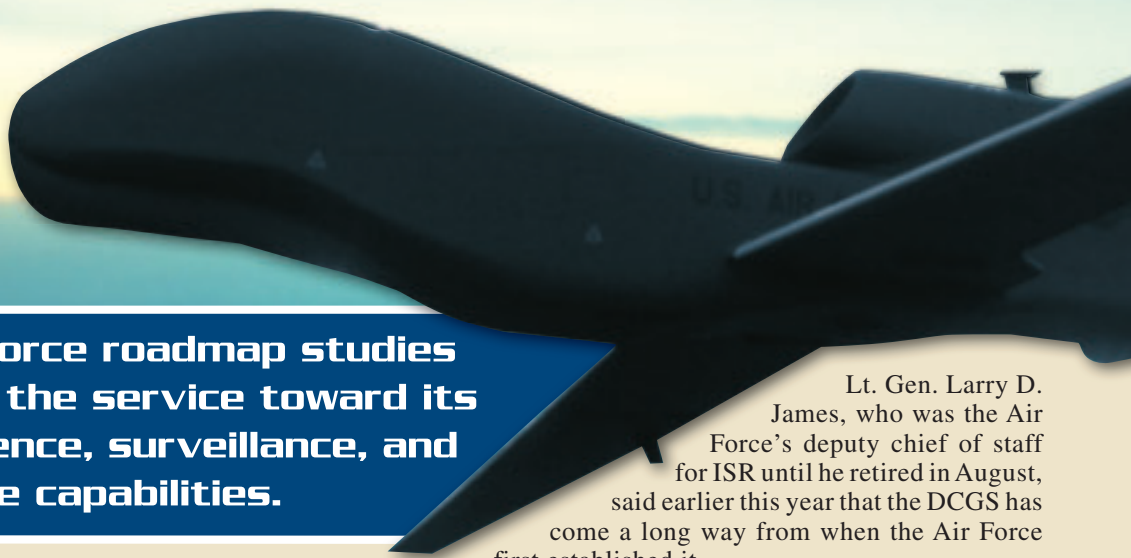# Focusing

A pair of Air Force roadmap studies will help guide the service toward its future intelligence, surveillance, and reconnaissance capabilities.

By the end of the year, the Air Force should have a pair of roadmaps in hand, guiding how the service plans to structure and grow its exploitation of intelligence, surveillance, and reconnaissance gathered by remotely piloted and manned aircraft.

One of the roadmaps, built over most of 2013, will look 10 years ahead at the toolbox that analysts will need for exploitation of mission data collected by RPAs.

The other will forecast what the Distributed Common Ground System—the globally networked, ISR ground-processing system—should look like 10 years hence.

ISR aircraft have been plying the skies of Southwest Asia and the Middle East for more than a decade, and both roadmaps are expected to play a significant role in defining the Air Force's future ISR procurement plans.

Lt. Gen. Larry D. James, who was the Air Force's deputy chief of staff for ISR until he retired in August, said earlier this year that the DCGS has come a long way from when the Air Force first established it.

"It was a system that kind of grew up ad hoc," James said.

The DCGS is the backbone of global processing, exploitation, and dissemination, or PED. The service wants the system to become "sensor agnostic," capable of collecting and digesting data no matter where the "take" comes from. Right now, DCGS works with real-time intelligence collected from aerial sensor aircraft such as the high-altitude, long-endurance RQ-4 Global Hawk RPA, the MQ-1 Predator and MQ-9 Reaper RPAs, and the manned U-2 Dragon Lady and MC-12W Liberty.

The Air Force must decide, however, whether it wants the system to be all-source—meaning inclusive of space, cyber, and airborne technology—and if so, how to best achieve that goal in an organized and streamlined way.

DCGS started off as a U-2 node, tasked with taking the data collected by the venerable spyplanes while they

ISR

so, how much, according to the Air Force official.

The ISR tools roadmap will look at what USAF analysts do now and what they've done in the past, focusing on the automated tools analysts use to catalogue information.

As the Air Force has grown increasingly concerned that its ISR take far exceeds its capacity to analyze and disseminate finished ISR products, it must now identify a feasible way to keep up with the quantity of material being collected.

"They're really trying to standardize how the information is displayed for the airmen, ... doing the cognitive brain work for: 'That's a picture. What is that picture telling me?'" the official said.

The analysts are "the ones adding value to those pictures" so the data become useful to decision-makers and those in combat, the official said. "Anybody who employs a weapon is going to want to be able to use the information that you have available and that's ... the goal."

The need for the roadmaps became obvious after a RAND Corp. study—requested by Lt. Gen. David A. Deptula, then USAF's deputy chief of staff for ISR—revealed the vast disparity between the amount of information collected by the Air Force's RPAs and the number of analysts available to interpret and catalogue it.

An oft-quoted remark from that study noted that if USAF doesn't improve its automated ISR processing tools and change the way it does business, especially given the increasing volume of data coming in, it would need 110,000 new people just to keep up. "So, copy, that's a real problem," the official said.

Retired Air Force Gen. Charles F. Wald, former deputy commander of US European Command, said USAF needs to better define its RPA acquisition strategy, including the capabilities on each platform, before buying any more of them. Wald's firm, Deloitte Services, compiled a white paper on defense acquisition in 2010, which suggested USAF decide how much it intends to spend on RPAs in the coming years and identify common sensors and analytical tools that are its top priorities.

Wald asserted in a June interview that military RPAs have been inefficiently used. The Air Force, Army, and Navy, he said, should be sharing their remotely piloted aircraft and ISR tools with each other in order to avoid wasting the assets. He also questioned the need for the military services to put funding into duplicate efforts, calling this a "peacetime luxury" the Defense Department can't afford.

were on missions and digesting that information, James said. Over the years, the system's role has expanded.

That "ad hoc" system was not necessarily built on a comprehensive architectural plan, which has made it difficult for the Air Force to plan out the future of the system, James said during an *Aviation Week* conference in Arlington, Va., in March.

What the DCGS roadmap will do is provide guidance on whether to evolve DCGS into a cloud-based system, according to an Air Force official familiar with the service's progress on the two roadmaps. That would allow future system operators at any DCGS node worldwide to instantly access or store information on the same database, the official said.

The ISR roadmap is equally important to the Air Force, James said. Over the past few years, the service has been overwhelmed by the amount of data streaming in from its RPAs, he said.

"We have roughly, let's say, 6,000 analysts across the DCGS enterprise—by about 2015, [we'll] need over 100,000 analysts," James said. "And obviously, we're not going to do that because we don't have those people." So the Air Force will need to look at other options, he added.

Copy, That's a Problem

The Air Force has also been expanding its RPAs' ability to capture wide-area motion imagery while surveying a large swath of land, a system called Gorgon Stare. That ability, though so far limited to just a few medium-altitude, long-endurance MQ-9 RPAs, has changed what was once a narrow, "soda straw" view to a large, neighborhood-size view. The roadmaps should help USAF decide on continuing to invest in Gorgon Stare or something like it, and if

Above: A U-2 comes in for a landing at Beale AFB, Calif., accompanied by a chase car carrying a second U-2 pilot relaying instructions. The Distributed Common Ground System—now considered the backbone of global ISR processing and dissemination—started out as a node on the U-2. Right: An RQ-4 Global Hawk Block 30 in a hangar at Edwards AFB, Calif. The prime contractor for Global Hawk, Northrop Grumman, was tapped to contribute to the ISR roadmap. Below: Lt. Gen. Larry James, who was then deputy chief of staff for intelligence, surveillance, and reconnaissance, briefs on the ISR mission at an Air Force Association breakfast in Virginia. James believes the ISR roadmap will be important to USAF planning.

In addition, Wald said USAF should concentrate on growing its wide-area motion imagery sensor capabilities, like the Gorgon Stare pods on Reapers.

The Air Force's enthusiasm for Gorgon Stare seems to have waned after several years of investment. Some project funding has been put on hold, and depending on the outcome of the roadmap efforts, USAF may decide to spend its research, development, test, and evaluation funds on other ISR tools, according to the Air Force official.

"Now, [if] I want to track a vehicle—that one vehicle—I can still be able to do that, but now I can see where all the vehicles are," the official said, describing Gorgon Stare. "I have broadened that aperture and I can see more ... [which] gives you more ... 'pattern of life'" information.

"Pattern of life" is terminology the military uses to describe scenarios where its analysts are able to identify the history and accomplices associated with a particular target, thereby providing context and content to a particular incident.

"That one vehicle that I was watching: Now I know where he was before," the official continued. "I see where other vehicles ... that I'm tracking—where they've been in the neighborhood." The wide-area view allows better understanding, he said, permitting greater depth to analysis. "It's not just me reporting what that truck is doing right now; I'm gaining understanding."

Full-motion video assets, however, are only one part of the ISR tools roadmap. The Air Force is also looking at collaboration, automation, and visualization. The service wants to have an inventory of those tools to understand what new ones are needed—and where.

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Platforms are not the prime focus of either roadmap. George Guerra, Northrop Grumman's vice president of high-altitude, long-endurance systems, said USAF tapped his company to contribute to the RPA roadmap. Northrop is the prime contractor for USAF's Global Hawk Block 30 and 40 and their sister aircraft in the Navy, the MQ-4 Triton.

Capability roadmap meetings are valuable, Guerra said. "The contractor team is there with the Air Force team going, 'Hey, what if we wanted to do this with Global Hawk and we wanted to add this? Is it feasible? Do you guys think it would be affordable?' I think, from that aspect, ... they've done a nice job of including us up front."

The two roadmaps were launched by then-Air Force Secretary Michael B. Donley in 2011. He instructed James to conduct a comprehensive review of where Air Force ISR was and where it needed to go in the future. The DCGS roadmap and ISR tools roadmap are just two of several tasks directed by Donley.

The milestones have no suspense dates, the official said. They are meant to be descriptive of how USAF should move toward an all-source, all-domain common system.

Hard To Find, Easy To Destroy

The roadmap may face some huge potholes from budget sequestration, which is slashing billions from USAF programs. Besides the uncertainty of the sequester's effect on the budget, Wald said the Air Force, along with the other armed services, is pursuing a cost strategy that doesn't fit its needs.

Wartime and peacetime spending requirements have shifted over the past few decades, Wald asserted. While it's natural to assume spending can taper down if the country's not at war, that's not necessarily true, he said. There's high risk associated with lower spending, he claimed.

The old mantra of targets—"easy to find, difficult to destroy"—has been stood on its head, Wald said. Now, it's "hard to find and easy to destroy," which significantly changes the capability requirements equation—not just for USAF and its RPA fleet, but for the Defense Department as a whole, he said.

Another problem the Pentagon faces, Wald said, is that each of the service chiefs must make the best possible investment to ensure his own branch can accomplish the mission. But those leaders are not, by definition, responsible for deciding when to start scaling back on force structure and assets. That means the acquisition process for ISR assets is askew, according to Wald.

There is nothing in a service chief's job description that says they are responsible to "divest," Wald said, suggesting there might be a need for an independent group with the charter and authority to make such recommendations to the Defense Secretary.

"Somebody that's objective has to make the cut, and it can't be based on who has the cutest PowerPoint slides, ... and I don't think we're there yet," he said. ∎

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