

Chief of staff calls for harmony between technology, doctrine

Air Force Times, Posted 10/1/2009

10/1/2009 - LEDYARD, Conn. (AFNS) -- The Air Force chief of staff discussed the complementary roles of technology and doctrine during a major conference here Sept. 30.

"Our success today relies on both the technology that enables advanced systems and, believe it or not, the doctrine that articulates our institutionally held beliefs on how to leverage those capabilities," Gen. Norton Schwartz said.

Addressing the Air Force Command, Control, Intelligence, Surveillance and Reconnaissance Symposium here, the general said C2ISR effectiveness has always depended on technology and doctrine keeping pace with each other.

"The translation of air power's inherent characteristics of speed, range and flexibility into capabilities that are timely, precise and lethal is underpinned by the ability to command and control our air assets," the general said. "In turn, the ability to command and control depends on the availability of timely and actionable intelligence."

The chief, like many speakers at the symposium, separated C2 and ISR. While each depends on the other, they are not one and the same, he noted.

"C2 and ISR form an intricate relationship," he said. Blended, they enable other mutually interdependent capabilities, too.

"For example, C2 enables the full exploitation of air, space and cyber power," General Schwartz said. "But sophisticated command and control architectures, which you all understand much better than I do, rely on the capabilities borne of those mediums."

This "symbiotic relationship" dates to the beginning of air power itself, he said, when a dearth of technology made robust command and control of airpower impossible.

In World War I, there was no radar or radio coverage, not even for aircrews to talk to one another, General Schwartz noted. Airmen received their initial tasking orders, but were isolated from their teammates and air commanders on the ground until they landed.

In the decades that followed, there were incremental improvements. Then, in the latter part of the twentieth century, more significant capabilities came along.

Still, air power orchestration was hampered by a lack of corresponding doctrine, General Schwartz said.

"In Vietnam, while a tactical air control center was established, in theory to centralize command and control and to facilitate greater flexibility and responsiveness, only modest gains were made," he said. The reason: doctrinal resistance to establishing centralized air control.

"While technological elements of centralized control, like the tactical air control center, existed and, moreover, we introduced other means, like C-130 airborne battlefield command, control, and communications aircraft, our doctrine failed to mature and thus did not facilitate centralized control that we now know is critical to success."

In fact, it wasn't until 1991 in Operation Desert Storm that doctrine began to catch up with technology, he said. There, with the assignment of Gen. Chuck Horner as the first true joint forces air component commander, operational control of virtually all air assets fell under one commander.

"For the first time, we had the institutional belief in our doctrine to leverage the existing technology," he said. "However, by today's standards, the technology had not quite kept pace with our doctrinal development, and thus our intent to properly centralize control of the air was somewhat challenged."

For example, hundreds of pages of air tasking orders, directing about 2,500 sorties a day, had to be flown from the air operations center in Saudi Arabia to Navy aircraft carriers in the gulf because Air Force and Navy networks were not compatible.

"The need for more advanced technological support became quite clear," he said, leading to development of the air operations center, or AOC, which itself is constantly evolving to meet speed and mission complexity requirements.

Now, "at this moment in time, with the confluence of available advanced technology and mature doctrine, we are at another inflection point," the general said.

He noted that just as doctrine and technology continue to evolve, so too does the threat environment.

"Thus, even with all the advances that we have made, there are still challenges to overcome as we move forward," he said.

"With the sheer magnitude of data, there is a greater need for enhanced management of intelligence collection, fusion and dissemination," General Schwartz said. "The systems running our centers must be more interoperable across all the services, as well as with our coalition partners."

He also discussed the challenges of synthesizing ground moving target indicator data with full-motion video from unmanned systems, and providing more bandwidth to meet increased reliance on data links between disassociated systems.

"These are challenges that bright and creative professionals must address and overcome," he said. "These challenges require a total effort involving all of our nation's resources."

The symposium was conducted by officials with the Air Force Electronic Systems Center, headquartered at Hanscom Air Force Base, Mass., and the Paul Revere Chapter of the Air Force Association.