GlobalResearch
Center for Research on Globalization

Video: The US Air Force's "Swarm Approach". Toward Aerospace Warfare Model of the 21st Century

By South Front
Global Research, July 08, 2020
South Front

Region: USA
Theme: Intelligence, Militarization and WMD

While the phrase "system of systems" has entered relatively common usage some years ago as a reflection of the need to field systems and assets with complementary capabilities that will operate as part of a synergistic whole in their respective domain of warfare, in the realm of aerospace combat the United States is moving in the direction of the "swarm" as the key organizing principle of its combat paradigm.

The US Air Force Future Operating Concept *which attempts to envision USAF operations in the year 2035 places "interconnectedness" high on the list of buzzwords, and promotes such goals as "Global Integrated Intelligence, Surveillance, and Reconnaissance" and "Global Precision Strike", all being controlled from "Multi-Domain Operations Centers" whose ability to manage a wide variety of interconnected systems and assets would guarantee getting inside the adversary's "Observe, Orient, Decide, Act" (OODA) Loop, a long-standing Holy Grail among US airmen ever since USAF* ***Colonel John Boyd*** *formulated the concept as a result of his Korean War experiences.*

Advances in communications, sensors, and artificial intelligence have meant that munitions have progressed greatly beyond being little more than bullets, launched at a specific target and then guided to it by either its on-board sensors perceiving some aspect of the electromagnetic spectrum emanated by the target, or by an autopilot navigating it and its lethal payload to its destination.

The swarm approach apparently became attractive to the US military following the cruise missile strikes against targets in Syria, during which the slow-moving trickle of subsonic, non-maneuverable, but very expensive Tomahawk SLCMs was combed out of the sky by a variety of modern air defense systems. Evidently even the current sophisticated Tomahawk mission planning software is incapable of delivering the "time on target" response necessary to overcome local air defenses. On the other hand, an AI-enhanced swarm of smaller, cheaper munitions might succeed where the by now dated Tomahawk had failed.

https://southfront.org/wp-content/uploads/video/FPD_DRONE_SWARMS_ENG.mp4

In response, the US military had embraced the "swarm" idea with a vengeance, hoping that interconnectedness and AI will deliver the sort of technological overmatch of any and all adversaries that currently does not exist.

US Air Force and the US Navy have been enormously resistant to the idea of heavy unmanned combat aerial vehicles (UCAVs) for much of the last decade. Many earlier

experiments involving flying wing-style UCAVs such as the X-47 have failed to result in a deployed combat system. This hesitancy was driven by two factors. The first was the "fighter mafia" that rules the USAF and the naval aviation component of the USN, which is jealously guarding its elite status and which is not interested in "fighter jocks" being displaced by a bunch of kids with video game consoles controlling UCAVs. The second was the belief that the F-35 Joint Strike Fighter would live up to Lockheed-Martin propaganda and be that technological "silver bullet" in both air-to-air and air-to-ground applications, thanks to its stealth, advanced sensors, and the ability to share tactical information in real time. In actuality, however, the incredibly protracted F-35 development allowed for countermeasures to be developed, and secondly the fighter itself was found to have enough shortcomings to practically relegate it to a "niche" weapon system, a sort of second-generation F-117, rather than a workhorse to replace the vast fleet of F-16 fighters in US and allied use.

With the F-35's flaws now in plain view, the UCAV has been given a second lease on life as a means of rescuing the most expensive combat aircraft program in history from failure. Remarkably enough, the first air force to recognize these problems was Australia's, which launched the "loyal wingman" project for which Boeing, a competitor to Lockheed Martin, is already building prototypes. The US equivalent is the considerably more ambitious Skyborg which is still in the conceptual stage, but which also is pursuing the same aim that is close to being achieved in Russia with the Su-57—Okhotnik UCAV combination. While the information about Skyborg is still scarce, once operational it will be procured in large numbers to ensure each F-35 could take at least one into combat by its side.

USAF's swarm principle is unlikely to stop there, and will also extend into munitions. The service awarded several contracts in the past couple of years to further the development of stand-off munitions that would be cheaper, longer-ranged, equipped with sensors, and interlinked, in order to facilitate their cooperation while in flight.

The US "space swarm" so far is the least developed of the three, but its rudiments are already visible. The SpaceX Starlink constellation of small satellites that was advertised as a means of providing the entire world with access to wireless internet has also been revealed to have direct military applications. The US Air Force has acknowledged it will rely on it for broadband access for its combat aircraft. Moreover, if combined with powerful enough signal processing capabilities, Starlink offers the prospect of a global aircraft detection system, possibly even capable of tracking large moving objects on the surface of the planet, such as aircraft carriers. It's difficult to imagine USAF and USSF would forgot attempting to develop a technology which was demonstrated for the first time with the downing of the F-117 over Serbia in 1999.

Given the US military's interest in reusable space-launch vehicles and developing the ability to surge launches whenever needed, it's doubtful the Starlink will remain the only US application of the swarm concept in space. G_5 (A) – Done. Sooner or later they will be supplemented by combat vehicles, likely based on the X-37 unmanned and reusable space shuttle that has logged an impressive number of hours in space, and whose payloads and activities remain a closely guarded secret. The recent tests of an anti-drone combat laser aboard a US warship suggest that such a weapon could eventually be deployed aboard X-37-derived combat spacecraft. While the small size of the X-37 means accommodating necessary power supplies to make the lasers effective would be a daunting task indeed, the absence of an atmosphere in low Earth orbit and the fragility of most satellites mean that a

space-borne laser would be a more effective anti-satellite than anti-missile weapon.

The dream of interconnected aerospace swarms extending from the Earth's surface into low Earth orbit and beyond will encounter major obstacles along the way, to the point that perhaps it will remain yet another US utopian technological project aiming at obtaining permanent military supremacy.

The first is the existence of the US Space Force, which will fight tooth and nail for organizational turf and control over space-capable assets. Ironically, the establishment of the USSF may undermine the drive toward integrated aerospace operations the same way as the creation of the US Air Force as an independent service led to the promotion of the idea of airpower winning wars entirely on its own, without collaboration with other services. While strategic airpower was a favorite among the US Army Air Corps leadership in part because, in the absence of a large land theater of operations against Germany, the bombers were the only means of bringing the war to Germany, the subordination to the Army meant tactical air could not be ignored. Once that independence from the Army was won, time and again tactical air support capabilities had to be engineered into various combat aircraft only after they became operational. One still remembers "not a pound for air to ground" that accompanied the creation of the F-15 Eagle.

By the same token, the creation of the USSF means the existence of an organization about as interested in watching USAF develop its space capabilities, which it seems very interested in doing, as USAF is in the US Army having its own fixed-wing combat aircraft. And just as USAF prioritized air superiority and strategic warfare over tactical air support, so is the USSF liable to lose sight of the fact the most important aspect of its mission is the support of combat operations in the atmosphere and on the Earth's surface.

The sheer complexity of the goal of building a global swarm of swarms that links all the aerial and space platforms and munitions will also be a major challenge. It should be noted that many of the problems of the F-35 are actually software-based, for example the failed ALIS centralized maintenance monitoring system which USAF finally gave up on and decided to commission an entirely different system. Since US software development do not appear to be on a part with US military's ambitions, there is no guarantee the US military will be able to achieve its end objective.

This is not the first time the US military has bet on a technological advance to provide a "game changer" that would give it an irresistible advantage. The Norden bombsight, the nuclear weapon, guided munitions, were all supposed to deliver a similar objective. None of them really delivered what they promised because other powers responded in kind, and the technological capabilities themselves fell short of what was advertised.

*

Note to readers: please click the share buttons above or below. Forward this article to your email lists. Crosspost on your blog site, internet forums. etc.

SUPPORT SOUTHFRONT:

PayPal: southfront@list.ru, http://southfront.org/donate/ or via: https://www.patreon.com/southfront

---