

The F-35 could help create a defense architecture across the Asia-Pacific region

Proponents for the F-35 Joint Strike Fighter have long insisted the aircraft would fundamentally transform air combat and ensure U.S. and allied dominance of the air domain for decades to come. The evidence is proving the truth of this prophesy.

At last year's Red Flag exercise, the F-35A racked up an impressive 15-to-1 kill ratio, targeting hostile air targets before they were even aware of the Joint Strike Fighter's presence. The JSF also was able to locate and attack advanced surface-to-air threats with pinpoint accuracy, blowing holes in hostile air defenses through which non-stealthy aircraft can advance. Equally important, the F-35 can act as a forward-deployed intelligence, surveillance and reconnaissance platform, employing its advanced sensors to multiply the effectiveness of older aircraft in air-to-air combat.

As the U.S. military acquires the F-35 in numbers and learns how to exploit its unique attributes, the services are discovering the aircraft's potential to enable entirely new ways of organizing, integrating and employing their assets alongside joint and coalition forces. Each service has different names for its concept for future operations: Multi-Domain Battle, Multi-Domain Command and Control, Distributed Lethality, Naval Integrated Fire Control-Counter Air and Maneuver Warfare in Every Dimension.

What these approaches have in common is a focus on the creation of resilient networks of sensors, platforms and weapons systems; the rapid



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collection, fusion and dissemination of actionable intelligence; and the employment of the most appropriate unit of action across multiple domains.

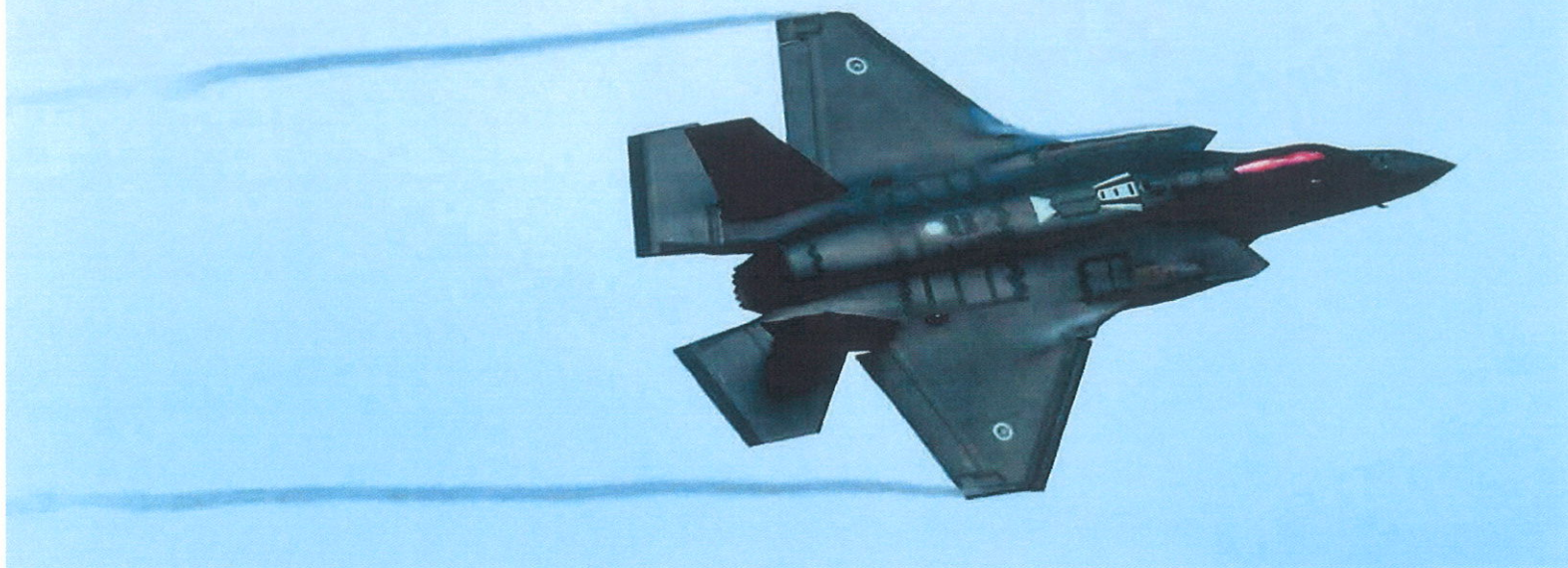
Ongoing combat exercises and tests have demonstrated that the F-35's combination of stealthiness, maneuverability, sophisticated electronics, active and passive sensors, battle management software, and advanced data links will make it a key enabler in all of these emerging concepts of future warfare.

According to pilots that have participated in numerous simulations and experiments, the F-35's abilities

to penetrate further, see more clearly, assess faster and directly distribute information to other aircraft is overturning the traditional top-down approach to the management of air operations. As one U.S. Air Force officer described the potential for change this way: "If you rewrite rules of engagement to reflect how fifth-generation aircraft can sense, fuse, share and act on information, it enables us to delegate decision-making from much higher levels down to individual cockpits. That's all because we're seeing the same picture

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and able to operate in places others cannot.”

What should be of particular interest to U.S. allies in the Asia-Pacific region is the potential for all the F-35 variants to support air and missile defense operations. The U.S. Navy is working hard to make the F-35 a central player in the architecture for its Naval Integrated Fire Control-Counter Air. In 2016, the service successfully demonstrated that the F-35B could serve as a forward-deployed sensor for the Aegis ballistic missile defense system firing a Standard Missile-6 at an aerial target.

A live-fire exercise involving the F-35B and Aegis is planned for this year. In 2014, the U.S. Missile Defense Agency conducted an experiment that successfully demonstrated the ability of the F-35's distributed aperture system – a set of electro-optical and infrared sensors – to develop a 3-D moving picture of a ballistic missile's trajectory. The F-35 could pass information to land- and sea-based missile defense systems such as Patriot, Terminal High Altitude Area Defense and Aegis to support over-the-horizon capabilities.

Recently, officials from the U.S. Army's Space and Missile Defense Command held discussions with representatives of the F-35 program office and operational users regarding ways of employing the Joint Strike Fighter as a forward-based,

mobile sensor in support of theater air and missile defense.

There is even the possibility that the F-35 could directly engage short- and medium-range ballistic missiles. Equipped with extremely high-speed missiles or a laser weapon, a forward-deployed F-35 could provide a limited boost phase defense.

The U.S. Air Force, Navy and Marine Corps plan to acquire more than 2,000 F-35s. In the near future, all three variants will be present in the Asia-Pacific region. When the F-35B and the carrier-based F-35C are fully deployed, the Navy and Marine Corps will have hundreds of potential airborne sensors deployed aboard large-deck amphibious warfare vessels and aircraft carriers with which to conduct air and missile defense operations.

In addition, major U.S. allies are acquiring this fifth-generation fighter. Australia, one of the original partners in the program, plans to buy 100 F-35As. Japan and South Korea have announced plans to acquire 42 and 40 F-35As, respectively. Other nations may soon see the wisdom of being part of the F-35 “family.” Together, the U.S. and its allies can use their F-35s to support a sensor-communications network to support regional missile defenses reaching from the South China Sea to the Arctic. **DN**