F-15 Modernization is Hot Again, but EO and Radar Upgrades Have Been Underway for Years

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The conversation has heated up again: the U.S. Air Force will be modernizing its aging fleet of Boeing F-15s. Although CNN and Fox have both recently reopened discussion of the topic, this upgrade has been a long time coming and was confirmed to news sources even in advance of one of the aerospace and defense industry's most prominent coming out parties, July's Farnborough Air Show.

However, one of the humorous aspects behind the latest wave of news reports (including those this past July) is that information on the F-15 upgrade had been available for a significant amount of time through regular government reporting.

Under the current scope of modernization, the F-15s will be receiving the typical airframe upgrades associated with such a project, but they will also be receiving a host of new electronics packages comprising the latest technological advances. The electronics systems to be upgraded include the fighter jet's infrared search-and-track electro-optical pod, its radar, and the jet's brain, its mission computer.

Major RDT&E funding and even procurement for the F-15's upgraded electronics packages began as early as 2010. In April of that year, the U.S. Air National Guard rolled out the first F-15 equipped with an AESA radar (Raytheon's APG-63(V)3). Also in 2010, Lockheed Martin received its first contract to develop the technologies utilized in the F/A-18's IRST21 into a pod uniquely suited for the F-15. In February 2015, Lockheed Martin announced that the resultant airborne EO system would be known as the Legion Pod.

While procurement of Raytheon's APG-63(V)3 AESA-equipped radar has been underway for years, there is still a chance that the Air Force could seek a further evolution in radar technology for its F-15s. Raytheon, notably, has been at the forefront of adapting the latest in radar technological developments, gallium nitride (GaN) circuitry, for various new roles.

It is possible that Raytheon could venture into the next frontier for airborne radars and develop a system for the F-15 that incorporates GaN. At this point, it is highly speculative and unlikely to happen in the near term, but GaN could eventually find its way to a future F-15 radar.

In any event, the U.S. Air Force's F-15 modernization has been under incremental implementation for years. It is a mature program. As the news media were once again making the topic a hot item, industry contractors were already reaping the program's benefits.
However, with the aircraft having a stated operational life stretching into the 2030s, the latest round of F-15 modernizations is only the beginning.