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Growth Curb

U.S. military spending is shifting from big-ticket platforms to a more diversified portfolio. What does this portend for avionics suppliers?

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In 2009, a new U.S. administration and a shift in defense priorities stirred unease throughout the military aerospace industry.

After years of substantial growth in defense spending, the Obama administration endeavored in its first defense budget to trim and retarget spending. The objective, according to Defense Secretary Robert Gates: replace high-priced "niche, silver-bullet" solutions, such as the F-22 Raptor air superiority fighter with "a portfolio of military capabilities with maximum versatility across the widest possible spectrum of conflict." That portfolio will feature the multi-role F-35 Lightning II as well as unmanned aerial vehicles (UAV), already widely used in Iraq and Afghanistan.

The policy shift, plus the need to address growing battlefield and military personnel costs, is likely to put the squeeze on aviation spending. "Everything is being stretched out on the air side because of the ground-side needs" from technology upgrades to aircraft programs, said Frost & Sullivan analyst Wayne Plucker.

Overall, the outlook for avionics sales is mixed not only because of the program cuts and delays, but also the fact that the Air Force and Navy will have fewer funds to work with after finishing "a bunch of really expensive avionics upgrades on the legacy airplanes," Plucker said. Those improvements include investments in cargo and tanker aircraft under the Global Air Traffic Management program.

The upshot is "the mod-cycle budgets are going to be very small, and there are few drivers that could cause an uptick (before) 2013," Plucker said. However, there is a significant effort to retrofit digital data link systems on legacy aircraft, although that initiative has been stretched from three to five years or maybe longer depending on the aircraft, he said.

Still, with the United States involved in a two-front war, communications technology "is probably less (affected by budget pressures) because the military realizes it needs information superiority," said Theresa Hartley, defense electronics analyst for Forecast International.

This need is spurring demand for systems like the Multifunctional Information Distribution System (MIDS) supplied by ViaSat, of Carlsbad, Calif., and Data Link Solutions, the joint venture of Rockwell Collins and BAE Systems.

Last June, the Air Force's 653rd Electronic Systems Group at Hanscom Air Force Base, Mass., awarded Northrop Grumman a $276 million contract for the Battlefield Airborne Communications Node (BACN) "to fulfill an urgent and compelling requirement for enhanced communications capability," according to the company's announcement. BACN is a forward-deployed airborne communications relay and network-centric information server. The contract covered installation on two Bombardier BD-700 Global Express jets and two Global Hawk Block 20 UAVs, as well as continuing operation of a BACN-equipped BD-700 deployed in December 2008.

Intelligence, Surveillance, and Reconnaissance (ISR) is another area with urgent need. "The commanders in Iraq are screaming for it," Hartley said. Improved communications and ISR actually "go hand and hand," she said. It won't matter "if you have great intelligence and an F-22 can't communicate it to an F-16."

Lockheed Martin, for example, is developing its Video from Unmanned Aircraft for Interoperability Teaming-Level 2 (VUIT-2) to help solve the aforementioned issue by delivering imagery from UAVs to Apache cockpits.

The military also is pushing ahead with efforts to move its aircraft from federated to integrated architectures, Plucker said. Eventually, all systems brought onto aircraft will be plug-and-play, and the F-35 is "the poster child" for this effort.

Unlike older aircraft with strapped-on targeting pods, for example, the F-35's Electro-Optical Targeting System (EOTS) from Lockheed Martin is integrated into the fuselage with a sapphire optical window. The system provides high-resolution imagery, automatic tracking, infrared search-and-track, laser designation and range finding. Lockheed Martin in November announced the delivery of the first EOTS production units to its Aeronautics division in Fort Worth, Texas. The company is ramping up to produce 200 units a year, with a production goal of more than 3,000 units.

The single-seat, single-engine F-35 uses Northrop Grumman's integrated communications, navigation and identification (CNI) system, providing the equivalent of more than 40 avionics subsystem functions, including IFF transponder, automatic acquisition of fly-to points and voice and data communications.

While airborne ISR and communications hold some promise for avionics suppliers, the new aircraft market offers fewer prospects. In fact, the capping of the F-22 program is part of a "shift away from the high-end, more complex, larger

aviation systems (to) UAVs, like the Predator, Reaper and possibly the Navy Unmanned Combat Air System (N-UCAS) and the Joint Cargo Aircraft," said Todd Harrison, a defense budget analyst at the Center for Strategic and Budgetary Assessments. "All of these systems are more applicable to the types of irregular conflicts we are in in Iraq and Afghanistan," Harrison said.

The lone exception is the F-35 Lightning II, which is destined to become "the dominant fighter program in the world," said Raymond Jaworowski, senior aerospace analyst at Forecast International. While technologically sophisticated, the F-35 fulfills Gates' call for versatility with its conventional takeoff and landing (CTOL), short take-off and vertical landing (STOVL) and carrier-based variants. "Anyone who flies anything from F-16s to early model F/A-18s and Harriers can be looked at as potential F-35 customers," said Jaworowski.

One caveat is cost. In 2008, the Pentagon's Joint Estimating Team indicated the program was "coming in at a much higher figure (than planned) and that is going to really eat into things," said Harrison.

Analysts already concede the U.S. military will scale back its planned overall acquisitions. Slated to acquire 1,763 of the CTOL variants, for example, the Air Force will more likely buy about 1,500, Jaworowski said. The Navy and Marine Corps plan to acquire 680 aircraft between them.

Meanwhile, the next generation fighter "has been put off for the time being," said Harrison. John Pike, director of GlobalSecurity.org, said that aircraft will likely mark a move to unmanned combat air vehicles. The main question now "is whether the F-35 is the UCAV incumbent or whether unmanned combat capability is so different that a robotized F-35 will simply be one of several contestants," he said. Both Boeing and Northrop Grumman have UCAVs that would likely compete for the program.

The unmanned aircraft will offer some challenges to avionics companies. "You are going to need avionics regardless of what is in the cockpit," but the flat-panel display and HUD suppliers "may need to rethink what they are doing," Pike said.

An unmanned fighter aircraft would seem to be a logical follow-on to the explosive growth of military UAVs since 9/11. "When we got into Iraq and Afghanistan, and (the battles) shifted to counter insurgency campaigns, the demand for UAVs really took off because the U.S. didn't have enough troops to garrison every square mile of (those countries)," said Larry Dickerson, unmanned vehicles analyst for Forecast International. Before that time, the United States had a couple hundred systems in service; now it has more than 6,000.

"There are more UAVs being purchased because they have proved their worth," said Plucker.

Nevertheless, while effective in the current engagements, "these systems really haven't been tested in what you would call a Category One conventional war where you have two very advanced armies engaging each other," Dickerson said, adding it is unclear "whether or not the current demand for UAVs will extend beyond these operations."

UAV Rationalization?

Analysts are by no means predicting a fall-off in the enthusiasm for unmanned systems for military, law enforcement and civilian applications. In a recent study, the Teal Group estimated overall UAV expenditures will double within a decade from $4.4 billion annually to $8.7 billion, with more than $62 billion spent over the next 10 years.

However, there could be a rationalization of the military UAV market after such sharp growth. "Eventually the tempo is going to stop, and acquisition is going to drop," said Dickerson. The market may drop in value, he added, "but it will stabilize at a much higher level than prior to this big surge."

Trends in the market include the possibility of substantial growth in VTOL systems like Northrop Grumman's MQ-8B Fire Scout, "especially if you see more maritime applications," said Dickerson. "Putting the fixed-wing systems on small destroyers just hasn't been working."

Platforms may grow in size to accommodate customer demands for increased range, endurance and on-station time. Also, there could be "composite air wings in which a single ground control station controls a whole array of vehicles, including the Predator, Reaper and maybe" the follow-on MQ-X, Dickerson said.

In the transport segment of the market, it is more a story of retrenchment and survival. Unlike the case of the F-22, Congress rebuffed the Obama administration's attempt to kill the Boeing C-17 Globemaster III and funded up to 10 additional transports. The C-17 lifeline was extended at least in part by "genuine concern as to whether or not there is a need for additional airlift" for current conflicts, said Jaworowski.

However, the investment in C-17s may "at some point cut into (the) money that is available to re-engine the older C-5s," said Harrison. In strategic terms, the Air Force needs to maintain a balance between the two transports because of their different configurations.

Control of the L-3/Alenia North America C-27J Spartan Joint Cargo Aircraft (JCA) program, embroiled in inter-service rivalry, was wrested from the Army by the Air Force and trimmed back. "Traditionally, the Air Force does not like the Army to get into fixed-wing aircraft and thought it could largely do (JCA's) mission with C-130s.... That debate played a role in the JCA being cut back," said Jaworowski.

The JCA, though, remains a model for future programs because of its use of a derivative aircraft (Alenia G.222) instead of a new development, said Harrison. "I think we are going to see more of that in the future because it makes for much

better development time," he said. "You are just adapting them and can produce them more economically."

The C-130 Avionics Modernization Program (AMP), on the other hand, seemed at this writing to be on life support. The program has been stretched and "some of the notional parts" are not being funded or postponed, said Plucker. If the AMP is cut or terminated, there will be an increased need for new C-130Js, said Jaworowski.

In Europe, the Airbus Military A400M four-engine turboprop made its long-delayed first flight Dec. 11 in Spain, but remained a troubled program with $3.4 billion in cost overruns. Representatives of France, Germany, the U.K. and other countries that first placed orders for 180 aircraft were negotiating their respective contributions to the program.

"The military need for those that ordered the aircraft is real," said Jaworowski. "They tend to be using aging C-130s and old C-160s. These countries are likely to buy (newer) C-130s or perhaps C-17s if the A400 really falls apart."

The U.S. Air Force is set for trainer aircraft through 2020 after its T-38 Talon fleet underwent a multi-year avionics upgrade program. The Navy is expected to acquire 260 upgraded T-6B turboprops equipped with the CMC Electronics' Cockpit 4000 integrated avionics suite.

There also is life in the rotary-wing segment. It is "much more dynamic than other areas, (and) we expect to see growth over the next few years before it levels off a bit," said Jaworowski. "The existing assets are being heavily used and we are seeing increases in requirements for both new and rebuilt helicopters."

The military planned to rebuild existing AH-64 Apaches to D standard and CH-47 Chinooks to F standard. "There is still a lot of that going on, but they've also begun to buy a lot of new AH-64Ds and Ch-47Fs," Jaworowski said.

With programs like the UH-60 Black Hawk, which had become a procurement of rebuilt aircraft, "there seems to be a movement away from all rebuild to more of a mix," he said.