

# Out of Joint

By John A. Tirpak, Executive Editor

*Paratroopers from the 82nd Airborne Division use the Joint Tactical Radio System to communicate during a field test. JTRS has long been a troubled—and expensive—joint program.*

## JOINT PROGRAMS WERE TOUTED AS THE ONLY WAY TO GO IN ACQUISITION. WHY HAVE THEY CAUSED SUCH HEARTBURN?

**J**oint defense acquisition programs have a poor track record. Much more than single-service projects, they have a habit of racking up significant cost increases and schedule delays, and many run into trouble during testing.

Defense leaders can't quite nail down the reason, but they are preparing to do a "deep dive" to figure out why.

"We seem to have a lot of difficulty with joint programs," Pentagon Comptroller Robert F. Hale said at a March acquisition conference in Arlington, Va. "We're trying to get a handle on ... what's behind this."

It's not a new problem. According to a study in *CrossTalk: The Journal of Defense Software Engineering*, joint programs from 1997-2005 were on average about twice as likely to have schedule, development, or other problems compared to those managed by a single service. In the research, development, test, and evaluation phase, joint efforts were three times more likely to have trouble.

Since that study, a raft of joint programs—the Joint Tactical Radio System and the F-35 strike fighter are two prominent examples—have continued this dubious tradition.

"Joint programs stand out" in terms of having problems, said Katrina G. McFarland, assistant secretary of defense for acquisition. McFarland said there's "not a huge delta" between problems on joint projects and those managed single-service, but there are "obvious indices that show" joint efforts "seem to carry a lot of weight with them."

"We're looking into programs that are joint because we want to do some remediation and strengthen [their] performance," she said in a May interview in her Pentagon office.

McFarland concurred that the F-35 has been a poster child for troubled joint programs—if only for its unprecedented size and complexity—but a similar deep dive on the F-35 two years ago seems to have helped. "I'm ... optimistically but cautiously confident" the program is on track, she said.

A deep dive typically entails a forensic examination of a program's requirements, assumptions, contracting vehicle, and performance.

Indeed, Frank Kendall, the undersecretary of defense for acquisition, tech-



Photo by Ashley Blumenthal



USAF photo by Jim Varhegyi

**Lt. Gen. Christopher Bogdan, the program executive officer for the F-35 program, testifies before a Senate subcommittee. Bogdan is an Air Force general, but leadership on the project routinely switches between the three participating services.**

nology, and logistics, said there's reason to be optimistic that acquisition reforms broadly—and on the F-35 in particular—are starting to pay off.

"I don't want to make too much out of a couple of data points," Kendall told an audience at the Center for Strategic and International Studies in late May, but "we're sending our Selected Acquisition Reports to the Congress today; [and it's the] first time in my memory there are zero Nunn-McCurdy breaches, neither critical nor significant, in that report." A Nunn-McCurdy is a congressionally mandated notification that a program has exceeded its cost estimate or schedule by 15 percent. If a program sees a cost rise of greater than 25 percent, it must be terminated unless the Secretary of Defense certifies that it's irreplaceable. The bulk of Nunn-McCurdy breaches have occurred in joint programs.

### Pinning it Down

"So there is some evidence that things are getting better," Kendall continued. "We're getting some complimentary reports from [the Government Accountability Office] for the first time in my memory."

In the SAR, released May 23, the F-35 saw a then-year cost reduction of about \$4.5 billion compared to the previous report. Although part of that was due to a reduced buy driven by sequestration, production lots were negotiated at lower-than-expected prices, and there were other efficiencies as well.

Generally, the Defense Department creates a joint program for one of two reasons: either it needs systems that can function cooperatively or "talk" to each other among the services—such as radios or computers—or buying a common product for several services to use aims to reduce unit costs by raising the number bought, such as with vehicles, rifles, or aircraft.

The reasons for the disparity of performance between single-service and joint programs are hard to pin down, McFarland said. They each tend to have the same number of billets associated with them—program manager, contracting officer, logistician,

etc., she noted. They also are structured similarly. So "why would the color of money make such a difference in terms of an outcome?" she asked.

One key headache is interoperability, she said.

"A lot of the programs that you see in the category of joint is in the [command, control, communications, and intelligence] category, ... those that need to be interoperable." Often, services have constructed their own, customized networks, formats, and reporting systems, and when these need to talk to each other, sometimes quite a bit is lost in translation.

"C3I programs don't do very well, for example, compared to others," Kendall said in his CSIS speech.

In "some sectors" of the C3I world, he explained, commercial technology is moving far faster than military technology, meaning the ponderous DOD acquisition system simply takes too long to acquire products before they are eclipsed by the commercial state of the art.

"We have had a long, troubled program for a long time called JTRS, Joint Tactical Radio System," Kendall said, adding he'd spent his early years at the Pentagon trying to get it back on track. The system aimed to control radios with software rather than hardware, to be more adaptable to changing technologies and reduce the replacement rate of components. After 15 years and \$15 billion, in 2012 the program was vastly reduced in scope and the Army was put in charge of it.



Oshkosh Defense photo

**Oshkosh Defense's Joint Light Tactical Vehicle prototype negotiates the off-road course at Quantico, Va.**



AM General photo

**AM General's version of the JLTV. The program will benefit from the application of lessons learned in the acquisition community.**

The Pentagon acquisition enterprise, Kendall said, has “gotten to a point now where we recognize that for some of those products, industry has done some investing on its own” and came up with systems “that were competitive, that would meet our requirements.”

Kendall said, “We ought to give people the chance to build those products. So we’re going to a more commercial-like acquisition strategy for some of those products.”

That approach is mainly applicable to C3I “and commercial electronics, particularly in the RF [radio frequency] domain,”

DOD photo by Glenn Fawcett



**Frank Kendall, undersecretary of defense for acquisition, technology, and logistics, speaks to reporters at the Pentagon in 2012. Kendall is optimistic about joint program reforms, and particularly the F-35 program.**

he added, and competition will be at the heart of it.

“I’m not going to get a commercial fighter plane, but some of the things I’d put in the fighter plane may be commercial,” he said.

Besides the challenges of interoperability, the services have different tactics, techniques, and procedures—TTP—for “how they field, how they maneuver, how they carry,” McFarland noted.

In the Marine Corps, “they have to carry everything with them” for 30 days. The Army, by contrast, expects “a supply chain already built in. Well, that characterizes the operations, and that translates into equipment, and when you translate it into equipment, that means you have competing aspects to the program.”

Typically, this is where the friction happens, McFarland said. While the basic requirements are nearly always the same—because all the services are facing a similar threat that needs to be defeated in mostly the same way—differences abound in how the equipment is transported, networked, operated, manned, and supported. Shipboard operations are very different from land-based operations, for example.

“The threat is agreed upon,” she said. The “trade space” emerges in fielding, and that’s “where some unique facets come to light.”

She allowed that joint programs, because they are populated by managers from multiple services with different ideas and

basic assumptions about warfare, seem not to have the same “focus” that single-service efforts have.

In a single-service program, the managers are “all from that organization, they all have that culture of that organization. They’re trained the same way.” But with a “mix of more than one [entity] coming together to manage a program,” she added, “there’s always going to be a complex dynamic going on with people working together who have different backgrounds, ... experiences, ... training. So you have to manage that.”

Services need to send “their best and brightest” to joint programs just as they would to a program serving only their individual needs, McFarland said. They also need “access to command authority” and a “streamlined chain for decision-making.”

McFarland also said that in joint programs, the program manager must be strong enough to enforce the rules and act as the “umpire” when the services have different ideas about how to proceed. Presumably, there already will be a consensus on the requirements through the tortuous process known as JCIDS, the Joint Capabilities Integration and Development System, as governed by the Joint Requirements Oversight Council, or JROC.

The acquisition leadership is trying to get program managers to identify problems early and quickly, before they get out of hand, McFarland said.

“And so the program manager has to have a chain of command, both up and inside their organization, that facilitates quick



Lockheed Martin photo

**Lockheed Martin’s offer. The joint program to replace the Humvee got high-level attention from the very beginning.**



BAE Systems photo

**BAE System’s JLTV. The benefits of affordability and competition are clear.**



*Service members go through maintenance training on a USAF F-35 Joint Strike Fighter. Airmen, marines, sailors, and international partner operators train on the new fighter at Eglin AFB, Fla.*

bringing-forward of issues” and enough access to top leaders that program managers can “get to the executing agent or the service Chiefs ... and get [them] resolved.”

Another healthy step would be to ensure that services have “a common infrastructure” to accommodate joint programs, especially in how career acquisition officers are educated and trained.

Commenting specifically on the F-35, McFarland noted that Air Force Lt. Gen. Christopher C. Bogdan, the program executive officer, is “playing on two ... or three teams, or all the teams right now.” It’s essential that the F-35 program manager not be unduly influenced by his own or any other service, she said. The acquisition leadership “is there to facilitate the success of the program—not the particular service or organization. And that is a balance.”

Bogdan, she said, is a “strong” manager and has the temperament to tell truth to power.

Such a high-profile program might also need an impartial party as the leader at some point, McFarland said.

“Could it, in the future, have a flip where we have a civilian as the [program manager] and a military as the deputy? Quite possibly.”

The F-35 is a unique project in that the services routinely swap leadership of it. When the program manager is an Air Force officer, his deputy is a Navy or Marine Corps officer and he reports to the Navy’s service acquisition executive.

When the program manager is a Navy admiral, he has an Air Force deputy and reports to the Air Force acquisition chief. Although the strike fighter has had “mixed results” in the past, McFarland declined to attribute its performance to the rotating leadership model.

The F-35’s problems, she said, had to do more with “the programmatic and how it was laid in.” Programs often are felled by faulty assumptions at the outset, and the F-35 was no different, she said.

“We assumed that modeling and simulation would answer a lot of the concurrency concerns that we had,” she said. Various offerors had a variety of modeling and simulation tools, and it was thought the eventual winner would have access to all of them, so that capability was included as part of the request for proposals.

### Joint Prognosis

“We ended up having a program that had already been built and funded to a certain paradigm, and the concurrency had been built in” with assumptions that modeling and simulation tools “would be able to mitigate that.”

This problem wasn’t addressed until the F-35 suffered a Nunn-McCurdy breach. More time was added to the restructured program, and “now, we’re seeing very positive results,” McFarland asserted.

As another example, she said that cost assumptions on building missile defense sites in Europe were all predicated on host country “acceptance of the system being

in their backyard.” That issue also “never actually filtered out,” she acknowledged.

So now “we have people ... focused on making sure we didn’t assume away something that is a critical problem.”

McFarland plans to explore why some multiservice programs that don’t have the “joint nomenclature” work quite well. She held up the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) as an example of such programs.

It’s one of those that has “really met the criteria of ‘joint’ because [the other] services come in and buy their product,” she said, even though one service—in this case, the Air Force—runs the program.

McFarland said AMRAAM “does very, very well. And I think it has learned over time and has utilized what it has learned effectively and improved continuously. So I think very highly of that program.” It uses appropriate contracting methods, she said, that make sense given the scope of the project.

Kendall said he wants to get away from textbook approaches to defining and structuring programs, including joint ones. He wants the Pentagon to think specifically and clearly about when some kind of contracting vehicle is appropriate and when it isn’t.

There was a lot of “overreaction,” Kendall said, when he and his predecessor—now Deputy Defense Secretary Ashton B. Carter—pushed for more fixed-price contracting.

“People started thinking that was what they should use all the time and use it for everything,” he said, but that was not the intention. New guidance “modifies that a little bit and says [to] use the right type of contract for the job. We have a range of contracts for good reason.”

Fixed price, he said, should be applied when the work is clearly defined, costs are clearly understood, and there is minimal to no invention required.

“We want to use fixed-price incentive more ... in early production. It turns out that we’re pretty good at predicting the cost of production. We’re not nearly as good ... at predicting the cost of development. ... There, the risk is inherently higher, [and] ... it may not be as appropriate to use a fixed-price vehicle.”

The approach is “paying off for us,” especially on the F-35, Kendall said, asserting, “I think it’s done a lot to get that program’s cost under control.” Starting with the first lot of production F-35s, the government and Lockheed Martin agreed to a fixed price for the fighters.

***SSgt. Jessica Srigley inspects an AIM-120 missile on an F-16 during a Red Flag exercise. AIM-120 is a multiservice program that works well—perhaps because it isn’t labeled “joint.”***

McFarland said commonsense contracting has been used with the AMRAAM. “The missile round is not as complex” as an F-35. It’s a “classic example of having the right decisions made as they made them—because they could—and they didn’t have to deal with complexity.”

Sometimes programs can be done in by simple things, too. The Joint Air-to-Surface Standoff Missile, or JASSM, had an exasperating run of failures in early tests—not because of any inherent design flaw, but mainly because of maddening small issues like faulty bolts and mistakes in procedures, ultimately traced to vendor quality and operator issues.

After a Nunn-McCurdy breach and a joint scrub of the program by Lockheed Martin and DOD, recent tests of the missile and its extended range variant show much higher reliability.

The days of test failures due to bolts and springs, “I believe, ... are far behind us,” said Frank St. John, vice president of tactical missiles and combat maneuver systems at Lockheed Martin Missiles and Fire Control.

What’s the prognosis for future joint programs? McFarland said she’s “still in the diagnostic phase,” but optimistic about improvement. Service Chiefs, she said, have begun to realize that billions of dollars of their own services’ money are being spent on joint programs, so they need to appoint officers to them who will do well and provide benefit to the acquisition community—and then “make sure [they]

... don’t overlook the people who did acquisition tours when they do promotions.”

Many of the improved practices the acquisition leadership is developing will be applied to the Joint Light Tactical Vehicle program—an Army-Marine Corps-Special Operations Command effort to come up with something to supplant the venerable Humvee for certain applications.

McFarland said the setup of that program got high-level attention “at the very beginning because we had an opportunity to do so.” Leaders focused on “realistic requirements, moderating between the services [on] what is the product that they can agree to.” An emphasis on affordability and the benefits of competition are “coming to bear as we had hoped” on the JLTV, she said.

However, “right now we don’t have too many new starts or programs that are joint coming forward, so I can’t say I have any other program pathfinders.”

What has become clear from managing—and restructuring—many joint programs is that when they are given a go-ahead, McFarland said, it’s with the conscious recognition that this status will exact an early cost. That cost must be deemed acceptable to gain certain benefits later in the program.

Whether it’s the interoperability, hoped-for efficiencies, or other considerations, “the value or the costs” were “applied distinctly when the decision was made to make them joint. Everybody said, ‘Yes, ... we want to do this.’” ■

USAF photo by TSgt. Patrick M. Kuminecz

