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THE ENTERPRISE INTEGRATOR

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Applying the enterprise integrator to IT mission systems

BY ADAM STONE

Faced with disparate, proprietary, stovepiped systems, government and military leaders express an understandable degree of frustration.

Non-interoperable legacy systems cost too much to operate, consume excessive resources and ultimately disrupt mission readiness. Thus, within the vast array of military systems, particularly for IT mission systems related to intelligence, surveillance and reconnaissance, as well as command and control, and weapons control, for example integration has become the new benchmark priority. Tearing down the walls has become the order of the day.

"We're trying to avoid stovepipes. We all know what can happen if there's a stovepipe and we overlook a critical piece of intelligence," said COL Charles Wells, project manager for Distributed Common Ground System.

This calls for tighter forms of collaboration between government and industry. In a recent study from Government Business Council (GBC) and Booz Allen Hamilton, 43 percent of the senior federal and military defense leaders surveyed identified the disconnect between government and industry expectations as a significant problem in the current defense acquisition process.

Many leaders want to see the government take a lead in integration efforts. In the survey, 55 percent of respondents said greater government involvement would generate products and services that better meet warfighter needs, and 51 percent said they would expect to see greater interoperability.

Private industry already is moving in this direction. MarketsandMarkets forecasts that the system integration market will grow from $191.36 billion in 2013 to $331.76 billion in 2018. The military is actively working with integrators and has made multiple awards for systems integration related to complex IT programs.

Still, there is plenty of room for expansion, particularly for more complex mission systems, as opposed to business systems like email, human resources and finance. "The Department of Defense (DoD) is simply a very large enterprise that has a large number of variables in it," said Martin Gross, a program executive officer for communications for the Defense Information Systems Agency (DISA). "It's very complex because we have such varying missions, and we have to be very careful that we don't break things as we integrate them across the boards."

Despite the risks, the integration of multiple components strengthens the system overall. "A new sensor may have a ground station that needs to be connected to the left or the right. There is a value in that connection, but it is point to point, physically connecting one thing to another," said Greg Wenzel, Booz Allen Hamilton senior vice president and lead of advanced enterprise integration. "So each one of those systems has one piece of the puzzle. When all those pieces come together, that is when you actually start getting the situational awareness that you need to find the bad guys."

While several methods have been tried to unify disparate systems, all have fallen short in one way or another. Lately, though, a sensible solution has increasingly risen to the fore, in the form of the enterprise integrator. It's rooted in a philosophy traced back to the 1990s and the concept of netcentric warfare introduced by the late VADM Arthur Cebrowski, who served as the director of the DoD's Office of Force Transformation from late 2001 to early 2005. In the age of enterprise architecture, the enterprise integrator is more relevant than ever before. The enterprise integrator offers a solution to the challenge of making data readily interoperable – a human intervention to smooth out what has so far been a bumpy technology road.

THE ROLE OF THE ENTERPRISE INTEGRATOR

As an intermediary working on behalf of government, the enterprise integrator's chief virtue is one of neutrality. Straddling the line between big commercial integration vendors on the one hand, and mission-driven government managers on the other, the integrator can serve as an essential partner to guide the process without being beholden to any one specific agenda.

"The integrator understands how to pull together an enterprise and they can sit side by side with the government in an independent way, as someone who is not actually building those systems," said Ralph Wade, Booz Allen vice president who supports the Navy/Marine Corps C4ISR business.

Before exploring such a potential solution, it helps to step back and take a look at the case for integration overall. Integration

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creates a standard information environment. This in turn generates data that is more easily analyzed and monitored. Integrated information also can be easily configured for use across different sources and systems. The Government Accountability Office (GAO) sees bottom-line savings in integration. The office has reported that the DoD could realize up to $82 million in cost savings and ensure equivalent levels of performance and protection by taking action to address its fragmented approach. In fact, the GAO has identified 31 areas where agencies may be able to achieve greater efficiency or effectiveness, of which 17 involve fragmentation, overlap or duplication.

Despite perceived advantages, integration has not materialized at the pace some might wish, nor is government alone in being slow to integrate. Industry too still has a long way to go in achieving true systems integration, according to Scribe Software's 2013 "State of Customer Data Integration" report. That report found that only 16 percent of more than 900 respondents from companies of all sizes reported full integration among various business systems. Even more dramatic, 10 percent reported a complete lack of integration between any of their systems.

Yet without integration, without the removal of longstanding stovepipes, negative effects ripple through the system. Beyond the financial toll and the inherent inefficiencies, a lack of integration can have a direct impact on warfighter capability, said Gary Wang, director, Intelligence Surveillance Reconnaissance Infrastructure, office of Deputy Under Secretary of Defense for Intelligence Strategy, Programs and Resources.

With so many good reasons to do it, it seems fair to ask: Why hasn't integration been more thoroughly and successfully achieved?

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HOW TRADITIONAL SOLUTIONS FALL SHORT

In their first try at reorganizing its disparate systems, government and military users typically opted to outsource whole integration programs, bringing in large outside vendors to break down stovepipes and merge varied systems. These players came with big experience, big talent – and big expenses.

In addition, vendor-driven solutions have tended to be too proprietary, with the result being that one integrator's solutions often could not interface with solutions from other vendors. "The problem from an operational standpoint was that each of those systems only handled one source of data. Many integrators built the same functionality but they built it slightly differently from different vendors with their own proprietary systems," said Steve Soules, Booz Allen senior vice president, who leads the Navy/Marine Corps C4ISR business.

In addition, the prime contractor model has never truly fulfilled its promise of freeing the government from being in the business of integration. A promised benefit of the use of a prime contactor is that all the heavy lifting will be taken off the shoulders of government planners, but that typically has not been the case.

Tight boundaries surround the specifications for weapon systems across the military, requirements that necessitate stringent government oversight. "So the government still has the integration role, whether or not they get an integrator, because of all the interdependencies, because of all the complexities," Wade said. Due to the myriad rules, regulations and highly specific needs of military systems, "it's almost impossible to put a contractor in charge of that. The government almost has to be in charge."

Given the prevalence of the prime contractor model, it's worth digging deeper into the shortcomings of the system. One major concern, for example, involves the contractor's perceived self-interest, a tendency to hold work too closely even when it may not be in the customer's interest. "Sometimes they feel like they are taking money off their own plates when there are other vendor products that need to be integrated," Wang said. In such cases, the vendor's interests may be directly at odds with those of the government client.

From a business perspective, it's understandable that big integrators will bring to the table a certain degree of self-interest. "How am I going to expect my prime [contractor], for example Lockheed Martin, to integrate at a detailed level with Boeing or Raytheon?" said VADM David Dunaway, Commander, Naval Air Systems Command. "They are not vested in the platform, they are not vested in the weapons or the systems."

While each contractor may be working independently toward a vision of integration, such players may have a compelling interest to promote their proprietary solutions rather than forging an open

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architecture.

At DISA, Gross worries that giving too much of the responsibility for integration to an outside vendor could ultimately leave the military in a weakened position going forward. "You don't just want to outsource all your brains. You still want to maintain control," he said.

An alternative solution has been to take in house the work of building an integrated architecture, using internal talent to meld the relevant systems. However, these are the same government and military personnel who built the stovepipes in the first place. Typically they have deep niche expertise, but they may not have the specific skill sets required to tackle a big integration effort.

"I am not a big proponent of government being a prime integrator," Wang said. The human element weighs heavy here: Government may be limited in its ability to bring the appropriate talent to the table, with the hiring process often outpaced by the rapid changes taking place in the IT world. "In this day and age with the pace of technology I am not sure there are government organizations who have the right integrators in place, or the ability to hire those integrators."

Even if an agency can get the hiring authority, it may find that talent is not readily available. In a recent poll of undergraduates, for example, 2.4 percent of engineering students and less than 1 percent of business students listed government agencies as their ideal employers, according to the Wall Street Journal.

Finally, there is the ever-present acquisition challenge. "We are funded vertically," Dunaway said. "Congress appropriates to buy an F-18. They don't appropriate anti-surface warfare. We buy equipment in vertical stovepipes." The way money gets spent simply doesn't lend itself to internal investments in integration. There's no line item for horizontal integration efforts.

Clearly a third option is needed.

A PRACTICAL APPROACH

This is where the enterprise integrator comes into play, with its promise of expertise paired with neutrality. Ideally, the integrator takes the government's practical needs and translates them into technical specifications. From there the integrator will communicate them in such a way as to keep the systems integrator on time and on budget.

Unlike a coach on the sidelines, the enterprise integrator is more like a quarterback on the field for every play. The integrator analyzes the requirements and divides them into a set of implementation packages, effectively calling the plays. The integrator stays engaged at each step, conducting testing and evaluations on systems to ensure developers are on target, and serving as the government's agent to ensure the end product has common standard interfaces and is therefore interoperable.

Specifically, the integrator may receive requirement packages for implementation. They will manage the mission and requirements decomposition, as well as the system-of-systems architecture, while systems developers perform component design and development according to the blueprint.

Working as the government's agent, the enterprise integrator tests and evaluates systems and works with the program managers to communicate key messages and ensure all stakeholders are involved and updated throughout the process.

For government agencies planning to go this route, it is vital to vet your integrator thoroughly. "You need to identify somebody with that credible kind of background, someone who can remain neutral throughout the life of that project, who can surge talent depending on the phase of the program – those are all things you have to look out for," Wang said.

Government and military planners say they are ready to take a good hard look at such a solution that will help them overcome the systems logjam that has thus far held them back from full common mission functionality. A successful effort early on in the systems life cycle could propel the momentum for full integration over the long term. ■

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