UNDERWRITTEN BY BOOZ ALLEN HAMILTON

FCW **DEFENSE**SYSTEMS

AN INTERVIEW WITH

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Integrated C4ISR through Enterprise Integration
Making Information Warfare a Reality

The concept of information warfare is based on a simple but powerful premise: Connecting sensors and shooters throughout the battlespace helps warfighters carry out their missions more effectively and rapidly, improving the odds of success and saving lives.

The question is how to make those connections. Vice Adm. Arthur K. Cebrowski and John J. Garstka described the vision of what was then known as network-centric warfare in 1998. The ensuing years have generated a proliferation of systems for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR). However, these systems often work in stovepipes, and limit the ability of commanders to develop a more complete picture of the battlespace.

The solution is what is known as Integrated C4ISR through Enterprise Integration. This involves creating an open digital ecosystem that connects C4ISR systems through common, standard interfaces. The open architecture means no vendor or proprietary technology lock-in and creates a "marketplace" that allows new niche innovators to participate in the ecosystem.

In this interview, two C4ISR experts from Booz Allen Hamilton discuss the concept of Integrated C4ISR through Enterprise Integration and the difference it can make in the years ahead. We spoke with Steve Soules, Executive Vice President in Booz Allen's Defense & Intelligence business leading the firm's C4ISR cross-cut cohort initiative along with Navy/Marine Corps C4ISR, and Greg Wenzel, Executive Vice President and Lead, Digital Solutions/C4ISR within Booz Allen's Strategic Innovation Group.

Q How does Integrated C4ISR through Enterprise Integration support the vision of information warfare?

A Soules: Back in the day of Admiral Cebrowski, there was a lot of supplementary funding that was provided to link data sources, link ground forces with air forces, and use translators or modulators to attempt to link data, communications and sensors in this point-to-point world. Integrated C4ISR through Enterprise Integration introduced the concept that if we looked at this world, this global grid, as an enterprise instead of patched point-to-point systems; we could start to put definition around the common interface requirements.

We can tap into the cloud environment. We can move information regardless of the application or type of phone. Everybody can share the network. They don't have to have common systems, but they do need to have common (and secure) standards and interface specifications.

A Wenzel: Enterprise integration is Booz Allen's holistic approach and methodology to helping government and military organizations achieve this integrated, interoperable environment. It has three steps—assess, architect, and assemble. Assess what you have, architect the blueprint for a truly system-to-systems world, and then you start connecting and assembling them together. The main difference here is the discovery and re-use of what has already been built and creating new value through those connections.

Q In the near term, how can Integrated C4ISR through Enterprise Integration move the Department of Defense (DOD) closer to this vision of information warfare?

A Soules: I'm excited to report the Naval Air Systems Command (NAVAIR) and the Space and Naval Warfare Systems Command (SPAWAR) have made moves to define the standard protocols and specifications. In the near-term, people are recognizing two things: First, the enemy is dictating the need for a more rapid response through what is called asymmetrical or irregular warfare. Second, we need to quickly move information in the battlespace to preempt, attack and respond.

You can take incremental steps through enterprise integration, as we have done for the Army, and as we're starting to do for the Navy/Marine Corps and the Air Force by helping them define the standards, protocols, and interface requirements.

A Wenzel: The Army is another leading example. This was a multi-year change. Their Distributed Common Ground System (DCGS) platform had 13 stove-piped systems. The ultimate desire was interoperability between the systems. In partnership, we helped them accomplish that by enabling them to pull back control of the architecture, setting the common, standard interfaces at the beginning, creating the open platform, and spurring competition among the systems, which freed up resources that allowed them to innovate into new areas like the cloud. We're also proud to be supporting the Air Force in their quest to achieve an open architecture.

Q How is the vision of Integrated C4ISR through Enterprise Integration reflected in how Booz Allen supports its DOD customers?

A **Soules:** We have a single profit-and-loss center across Booz Allen by design. That lets us pick up the phone and ask for help from anywhere it is needed. When you're asked for help, you respond. I am supporting the Navy/Marine Corps and Greg was in the Army. I say, "Greg, I need your help." And so to cultivate instant internal access and resources, we formed a cohort and said, "Okay, here's how we're going to be able to effectively arrive at the right outcome given this pain point." It's inherent in our culture of collaboration.

A **Wenzel:** We also have what we refer to as "cross-cuts" [aligned groups that provide subject matter expertise in a given area serving multiple clients]. We have a C4ISR cross-cut that connects all services (Army, Navy/Marine Corps, Air Force, and so on) together with our functional capabilities. When you have mission know-how as an essential partner to the government, and connect that with advanced engineering, agile software development, and analytics, which are all separate teams operating as an integrated team to deliver the best of breed application to a client—it's very powerful. I believe it helps our clients tremendously. So, it's the culture, the process, and the forums. But it's also the incentives by which we're driven.

> " *Integrated C4ISR through Enterprise Integration not only improves situational awareness and decision-making, but also fosters an open culture.*"
> —*Steve Soules*

Q In the next five to seven years, how will Integrated C4ISR through Enterprise Integration help DOD meet the demands of the evolving landscape?

A **Soules:** Integrated C4ISR through Enterprise Integration not only improves situational awareness and decision-making, but also fosters an open culture that brings together engineering, operations, and acquisition communities. C4ISR programs will need enhanced capabilities in all three discipline areas to build systems on a foundation of secure and open architectures, agile development, modular construction, and common hardware, software, data, and infrastructure. The impact for warfighters and their missions is unmatched superiority over current and future threats.

A **Wenzel:** Enterprise Integration provides the engineering, operational, and acquisition approach to help the C4ISR enterprise actually become an enterprise. On the engineering front, it provides the blueprints for how you can discover and/or connect across the entire joint enterprise. It removes technology as an excuse. On the acquisition front, we help our clients navigate the challenging acquisition environment to buy a greater quantity of smaller things that are naturally networked together—much like the way we buy and use apps from the digital ecosystem in our personal lives. Finally, on the operations front, we are helping define the new C4ISR operator/ analyst where mission threads transcend traditional organizational and acquisition boundaries much like the Navy "kill chain."

Q What is on the more distant horizon for information warfare?

A **Soules:** Facilitating secure tactical clouds on land and at sea is what I see on the near horizon. SPAWAR and others are already starting to experiment. SPAWAR's Strategic Plan for execution in 2016 outlines the implementation plan with milestones for all the key elements of what we have we've been discussing— open architecture; agile, small procurements of incremental steps towards integration; and secure networks.

In my opinion, we're marching toward integration at the tactical edge through secure tactical clouds on land and at sea. These concepts are the vision of the future and where we are heading in information warfare.

A **Wenzel:** The vision for information warfare will yield the digital warrior; specifically through information-on-demand. Think of apps on devices that provide real-time information to meet specific, situational needs in our personal lives. Data transmission access helps us navigate and operate because the digital ecosystem is open.

Now think of digital warriors, with their own secure, ruggedized apps operating in a bandwidth disadvantaged environment. That will be the future and will require things like the secure tactical cloud and mesh networking. Digital sailors, soldiers, and airmen have small devices that give them the information they need to find out where the bad guys are, or where they need to not be to protect themselves. It truly creates the networked force and a networked force is a more lethal force.

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