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TECHNOLOGIES/METHODS FOR ENABLING TRANSACTIONAL INTERFACES

Fuse Integration developed its highly successful Tactical Technologies Toolset (T3) through the SBIR program, helping the Navy achieve real-time fleet readiness.

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THE CHALLENGE

Combat systems exchange tactical information over data links that prescribe unique sequences of events, or transactions, that must occur for an information exchange to take place. Historically the transactional nature of these data links has led to equally closed and transactionally based internal interfaces between the combat system computer software configuration item and the data link processing CSCIs. This tight coupling between internal interfaces and the data links precluded the DoD's ability to easily leverage modern communication technologies to provide rapid insertion of capability to the end users. To meet this challenge, the Navy sought to define a set of technologies and methods that enable transactionally based data links, yet decouple the internal interfaces to the maximum extent possible in a way that can be leveraged across many different systems.

THE TECHNOLOGY

Fuse Integration was founded by military veterans who understand the needs of the end user well. With this knowledge, the company developed its Tactical Technologies Toolset (T3), a remote network monitoring and management solution for multi-domain operations. Presenting an enterprise view of distributed fleet networks and systems, T3 provides commanders and decision-makers with an intuitive layout of tactical data link (TDL), network, and radar settings and status. This helps the subject matter expert pinpoint a problem in real-time, allowing a solution to be implemented as quickly as possible. Practical graphics and design of the interfaces support easy understanding of what's happening, even for those who are not network engineers.

THE TRANSITION

Fuse's T3 achieved over $20 million in Phase III awards, which included the successful installation on three U.S. Navy ships during the Trident Warrior 16 at-sea exercise. During this event, the secure end-to-end network architecture was successfully demonstrated in an operational environment. T3 is slated to be installed on another 12 Navy ships this year. Fuse was also awarded a $3.9 million contract from NAVWAR (N00039-20-D-0008) to update the existing T3 software to interface seamlessly with the C2P Tech Refresh System.

THE NAVAL BENEFIT

Prior to the development of the T3 toolset, troubleshooting network issues onboard a Navy ship was an arduous process. It could take days to get a subject matter expert out to a ship in the middle of the ocean to diagnose the problem, which could be as simple as a line configuration issue. T3 allows for real-time diagnostics from a central location, saving the Navy manpower and money. Interconnecting established transactional links with modern networks also addresses issues of interoperability between dissimilar systems, and issues with hardware obsolescence and incremental capability upgrades. The technology provides increased TDL readiness across the fleet, establishment of a collaborative remote support environment for diagnosing network issues related to configuration settings over SIPRNet, a database for historical analysis of TDL issues, and a remote global view of TDL network status for mission commanders.

THE FUTURE

Fuse participated in the Mobile Unmanned/Manned Distributed Lethality Airborne Network (MUDLAN) Joint Capability Technology Demonstration (JCTD) and got to demo the T3 technology to a wider audience. For this event, Fuse added internet protocol (IP) network management to the initial T3 baseline, including the ability to directly control individual radios and to remotely address configuration changes on the airborne nodes from the ground on command. CORE®, which was developed alongside T3 with Navy SBIR funds, is a ruggedized, minimized size, weight, and power networking solution that reliably connects airplanes, ground vehicles and ships with ground operations across secure and unclassified networks in rugged conditions. CORE has been awarded multiple Phase III contracts from NAVAIR, including a $10 million Rapid Prototype Project. Fuse is continuing to find new applications within both the Navy and the U.S. Air Force for its SBIR-derived product suite.