DEPARTMENT OF THE NAVY
SBIR/STTR
TRANSITIONS

SKAYL SPOTLIGHT

Navy's SBIR Investment in SoS Integration Expands to Benefit the Army, Air Force, NATO and Commercial Sector

Source: Sonya Hand, Director, Skayl

The integration of disparate technologies and capabilities in Systems of Systems (SoS) is complex, costly and resource intensive. Skayl provides interoperability solutions, including automated integration products designed for large, complex SoS with a need for integration scalability, flexibility, dependability, and security, supporting real-time, mission-critical environments.

According to the DoD Defense Acquisition Guidebook (DAG) [2008], an SoS is "a set or arrangement of systems that results when independent and useful systems are integrated into a larger system that delivers unique capabilities."

The Navy designs, delivers, and sustains complex SoS in environments within individual fleet assets and capabilities, across battle groups, strike groups, and theater-wide situational command and control (C2) while facing rapidly changing environments, tight budgets, and aggressive schedules. While commonality is ideal for fixed, tightly coupled systems, true SoS integration requires scalability, flexibility and adaptability. SoS integration is one of the most significant challenges facing today's systems engineers. With the development of each new system, there is a combinatorial expansion in the integration effort; the projected integration cost of these disparate systems could exceed the cost of the systems themselves. Therefore, a scalable user-friendly approach for system integration to increase integration efficiency and save time and money is needed.

Current integration is powered by repeated labor intensive, error prone human capital. As systems become larger and more complex, programs cannot execute integration with the precision and velocity required to provide and maintain offset advantage. Skayl's technology solution leverages advanced semantic data models to address data and transport protocol mediation, significantly improving exponential technology growth, bringing value to the warfighter through rapid fielding and integration of warfighting capabilities and cyber updates within and across combat systems.

Skayl's PHENOM + CinC (Configurable infrastructure Capability) provides integration scalability, flexibility, dependability, security and value. PHENOM is a software-based integration ecosystem providing interoperability solutions for mission-critical, real-time data communication, including aviation, C2, medical devices, and smart cities. PHENOM's advanced semantic architecture enables automated data discovery and a unique, fully configurable integration infrastructure.

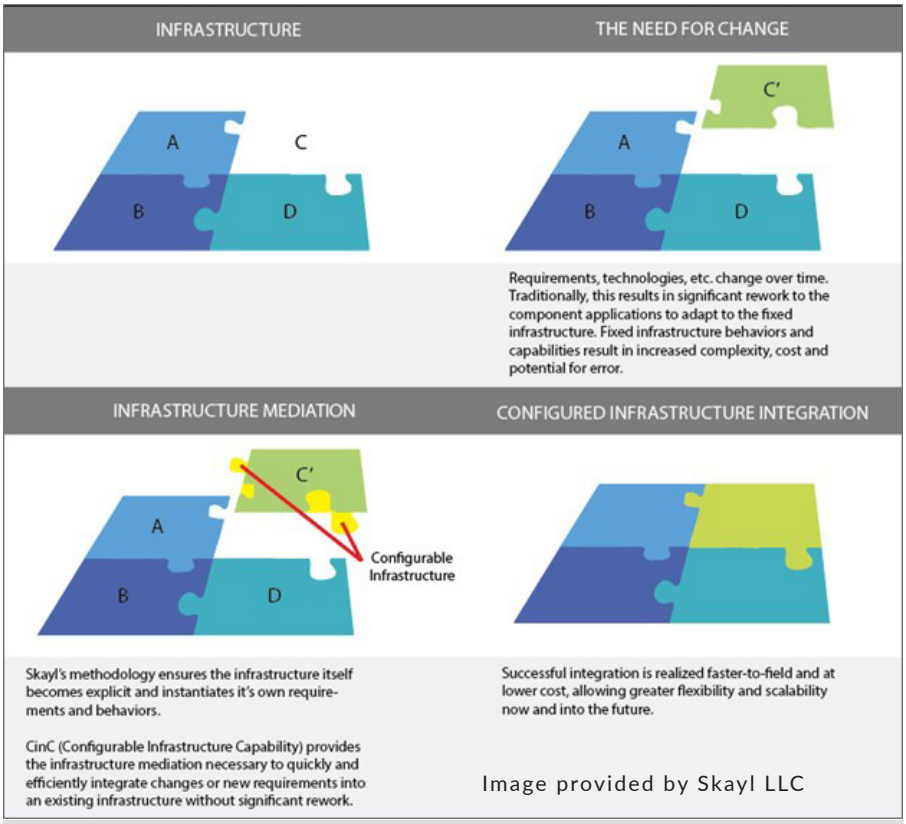
PHENOM + CinC provides a portal for collaborative data architecture management, providing intuitive visualization, navigation, editing, tracing, testing, and code and artifact generation. The PHENOM ecosystem contains a collection of collaborative integration tools as well as large, robust, pre-built conformant data models. PHENOM supports multiple data-centric interfaces and integration patterns with various optimization constraints. Optimized protocol mediation enables interoperability across technologies and message formats. The technology

relies on mathematical algorithms and advanced modeling and documentation approaches that support scalable, configurable infrastructure and automatically generate optimized products that integrate directly into a client's runtime code. The technology is accessed through simple graphical configuration management software that also assists system integrators in mediating protocol, visualizing data models, identifying incompatibilities between data models, checking for conformance, and combining message models to create or enhance a system.

One of the biggest benefits of participating in Navy STP for Skayl was the Navy Forum for SBIR/STTR Transition (Navy FST) at the Sea-Air-Space Exposition. Presentation of their technology at the Navy FST exposed the company to several potential business development opportunities, including both government and prime personnel.

Skayl's Navy-funded technology applies far beyond Navy SoS. In addition to Skayl's NAVAIR Phase II "Scalable Model-Driven Protocol Mediation & Systems Integration" and NAVSEA Phase II "Leveraging a Robust Data Architecture for Rapid Combat System Integration, Testing & Certification," the company has ongoing contracts and integration product subscriptions serving the Navy, Army, Air Force, NATO, and multiple primes. Skayl is currently the contract prime in the role of architect on the Army's Joint Multi-Role Technology Demonstrator (JMR TD) Mission Systems Architecture Demonstration (MSAD) Capstone Demonstration. The company is also currently working with Army Integrated Mission Equipment (IME). The company, headquartered in Maryland, is currently seeking commercial transition partnerships, particularly with programs involved in systems integration in aerospace, public safety, healthcare and medical devices.

PHENOM + CinC provides a framework upon which capabilities can be developed, enhancing affordability and speed to fleet by reducing integration and testing time, decreasing errors, and eliminating duplication of effort. Skayl's technology is revolutionizing integration, cutting costs, reducing timelines and increasing system scalability.



The Role of a Configurable Infrastructure in Integration