

# Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2020-0437

Topic # N181-053

Leveraging a Robust Data Architecture for Rapid Combat System Integration, Testing, and Certification

Skayl LLC

## WHO

**SYSCOM:** NAVSEA

**Sponsoring Program:** NAVSEA PEO IWS 1.0

**Transition Target:** Government and prime customers who design, deliver, and sustain large, complex, distributed Systems of Systems (SoS) in environments such as fleet management, aviation, UAS, and command and control.

**TPOC:**

(202)781-3165

**Other transition opportunities:** Skayl is currently considering the following potential transition targets: NAVSEA NSWC DD CRADA (signed Jan 2020); NSWC Dahlgren PLA Maintenance, Evolution, and Test Strategy Session (Jan 2020); Software and System Integration Architecture Meeting (May 2020); Army CCDEVCOM Integrated Mission Equipment (IME).

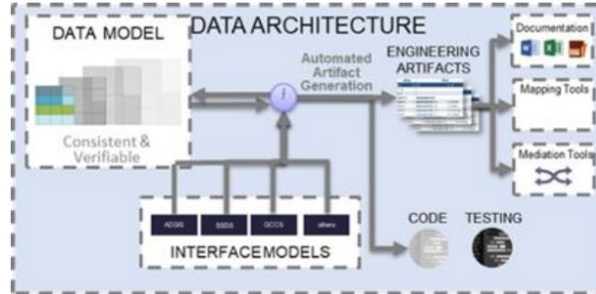


Image Courtesy of Skayl, LCC

## WHAT

**Operational Need and Improvement:** Current integration is powered by repeated labor intensive, error prone human capital. While we can integrate systems-of-systems by hand, we can not execute integration with the precision and velocity required to provide and maintain offset advantage. The Government is in need of:

- Cost-Effective, Performant, Verified Integration Infrastructure
- The ability to Sense, Track, and engage capabilities of Distributed Systems

**Specifications Required:** Large, complex, distributed, Systems of Systems integration, validation and verification.

**Technology Developed:** Automated Integration Capability, Model-Based Engineering Tools and Processes, Semantic Data Architecture Driven Software Development Processes, Incremental Certification Capabilities via Formal Methods Based Testing - "Software that Writes Software" providing the ability to:

- Derive statistically complete multi-perspective tests
- Enable model-managed test and infrastructure regression verification
- Generate scalable data validation and input verification software in support of cyber requirements
- Eliminate cyber vulnerabilities early in the development
- Assess impact of local changes and updates on integrated system
- Enable agile software development processes

**Warfighter Value:** Rapid Fielding and Integration of Warfighting Capabilities and Cyber Updates within and across Combat Systems

## WHEN

**Contract Number:** N68335-19-C-0599 **Ending on:** September 15, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Start of Phase II	Med	Begin development of a configurable and flexible transport service segment that streamlines integration through mediation and protocol bridging.	3	September 2019
Army FACE™ TIM Demo: Rapid Integration	Low	Successful rapid integration and validation demonstration at the Future Airborne Capability Environment (FACE™) Technical Interchange Meeting (TIM)	5	September 2020
Seminal Transition Event (STE)	Med	Adoption of Semantic Model-Based Test and Validation Tools & Processes by IWS and/or Army IME Prime contractors via tools and data model content	5	October 2021
End of Phase II	Med	Commercial application of CinC	6/7	June 2022

## HOW

**Projected Business Model:** Our business model involves licensed access to our infrastructure ecosystem.

**Company Objectives:** We anticipate the STP program will facilitate further transition and awareness of our technology; provide advice on selling infrastructure and tooling vs. a product (and how this fits into procurement steps, and market research to identify program timelines and decision-makers for which our tools could be valuable.

In the short-term, Skayl is looking to transition this SBIR technology in at least two Phase III's. Immediate targets include the Product Line System Engineering team at NSWCDD supporting IWS 1.0 and the Army's CCDEVCOM Integrated Mission Systems program.

In the long-term, Skayl plans to automate integration, testing and verification across other industries in mission critical applications such as the medical, public safety and power industries. We will incorporate this SBIR's results into our ecosystem of configurable infrastructure and advanced data model manipulation tools to streamline the recertification of evolvable infrastructure.

**Potential Commercial Applications:** With increasing proliferation of and reliance on large, complex and distributed SoS, this technology has vast potential commercial applications. In particular, mission critical applications with stringent certification and verification requirements are ideally suited for the technology. Potential transition targets include aerospace, medical devices, and smart city IoT applications such as public safety, traffic management, and power.

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