

WHO

SYSCOM: NAVSEA

Sponsoring Program: IWS5E

Transition Target: AN/UYQ-100 USW-DSS

TPOC:
(301)227-2585

Other transition opportunities: Tactical Decision Aids (TDAs), Command and Control systems, and ground, sea, and air platforms that receive and process sensory information.

Notes: The included image displays the three major components of the Universal Sensor Definition Schema (USDS) and their respective positions in the USDS processing pipeline. The image also highlights the delineation between components of USDS that are intended for different users. Sensor producers can use the USDS programming language to construct descriptions of their sensors which sensor consumers can use to generate immediately usable source code and documentation in a programming language of their choosing.

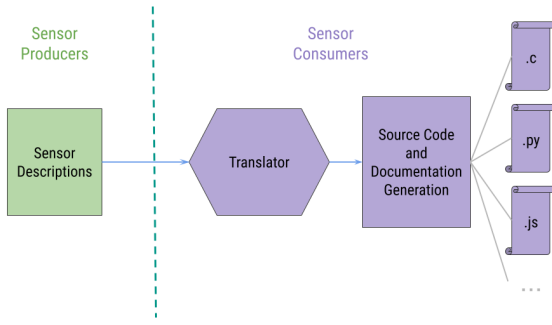


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WHAT

Operational Need and Improvement: The need for efficient and streamlined integration of legacy, modern, and future sensors is ever increasing. As the number of sensors increases, so does the overhead of the integration of those sensors into a growing number of applications and platforms that make use of those sensors. The prevalence of potential errors in the integration process also increases as the overhead of integration increases. USDS seeks to eliminate these overheads and errors by streamlining the integration process for these sensors. USDS improves upon the current process by providing a common syntax to describe sensors and their common associated functionality, and a mechanism for developers to translate these descriptions into immediately usable source code. This precludes developers from having to construct interfaces for each new sensor or data source that is to be integrated into a system and allows the developer to instead focus on the critical elements of the application or platform instead.

Specifications Required: The Navy requires a tool to streamline the integration of legacy, modern, and future sensors into applications and platforms such as the AN/UYQ-100 USW-DSS. USDS provides a common mechanism of sensor integration. It reduces the overhead of sensor integration into applications and platforms and reduces the likelihood of developmental errors.

Technology Developed: USDS streamlines sensor integration through providing a common syntax in which sensor developers can describe the data that is produced by their sensors, and common associated functionality. Application and platform developers can then take these descriptions and translate them into the programming language that is required for an application or platform. USDS generates immediately usable source code as an output that developers can efficiently integrate into their projects. In addition to source code, USDS also produces documentation that developers can use to inspect the generated code and describes the structures and functions that the code provides to them.

Warfighter Value: USDS simplifies the sensor integration process, reducing application development time and reducing the likelihood of errors. This aids the warfighter by allowing for applications to be developed that addresses their needs in more timely and error-free way. In addition, systems such as tactical decision aids can be upgraded and extended with additional sensors more efficiently, allowing for more informed decisions to be made.

WHEN

Contract Number: N68335-21-C-0187 **Ending on:** February 17, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Task IIB-1 Prototype Enhancement	Low	USDS description language and translation pipeline demonstrated and evaluated	5	February 2022
Task IIB-2 Development of USDS Implementation of ACDM	Low	All structures in the ACDM capable of being supported and translated by USDS	5	February 2022
Task IIB-3 Feature Enhancements	Low	USDS capabilities and functionality extended to incorporate feedback and needed features	6	February 2023
Task IIB-4 Prototype Hand-off	Low	USDS successfully integrated into USW-DSS and able to support all required features	6	February 2023

HOW

Projected Business Model: The primary goal of USDS is to be sold directly to the Navy and integrated into the AN/UYQ-100 USW-DSS. ARiA will work with the Navy, other DoD agencies, and large primes to license USDS where appropriate in other applications, platforms, and systems that make use of sensors.

Company Objectives: ARiA will continue to develop USDS to become the standard for sensory interfacing for both the Navy and other DoD Agencies. USDS will be expanded to produce source code for all relevant and used programming languages, and support features that allow USDS to be used with all sensors that are currently in use. USDS will also be expanded to allow it to be used as a service, allowing customers to upload sensor descriptions and receive usable source code.

Potential Commercial Applications: The primary commercialization target is integration of USDS in TDAs, command and control systems, and other sensory platforms. USDS is also able to be licensed to primes and system integrators. USW-DSS Prime Progeny is a target for USDS Licensing. As USDS intends to become a sensor interfacing standard TASW communication is another target for USDS integration. Thus Lockheed Martin, the integrator for SQQ-89 and BQQ-10/ARCI, is another commercialization target.