

Topic: N162-084

SimVentions, Inc.

Hardware Open Systems Technologies (HOST) Hardware Integration Tool Set

The Hardware Open Systems Technology (HOST) Hardware Integration Tool Set (HHITS) is a web-based Model Based System Engineering (MBSE) tool that models hardware systems built using standards such as HOST, SOSA™, and OpenVPX™. Using an innovative graphical user interface, engineers perform integration by searching and selecting hardware modules from the integrated repository, virtually integrating modules, identifying integration issues by applying rule sets, mitigating issues, and capturing the design details prior to acquiring any hardware, saving time and money. The benefits are reaped throughout a program's lifecycle from initial design of a new capability to sustainment through simplification of obsolete module replacement.

SimVentions' goal is to deliver HHITS to the government, prime contractors, and hardware vendors to facilitate the design of hardware configurations.

Technology Category Alignment:

Electronics Integration

Collaborative Analysis and Decision-making

Computational Research Engineering Acquisition Tools and Environment

Design and Integration

Modeling, Simulation & Test Infrastructure

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SYSCOM: NAVAIR

Contract: N68335-18-C-0214

Booth: 405

Room: FST at AIAA Aviation 2020

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-18-C-0214

WHO

SYSCOM: NAVAIR

Sponsoring Program: Air Combat Electronics Program Office (PMA- 209)

Transition Target: Developers of OpenVPX™ based embedded systems such as those using the Hardware Open Systems Technology (HOST) standard.

TPOC:
(301)342-2058

Other transition opportunities:

Hardware integrators using the Sensor Open Systems Architecture (SOSA™), C4ISR/EW Modular Open Suite of Standards (CMOSS), or VNX™ standards. Standards bodies such as the VITA Standards Organization (VSO).



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WHAT

Operational Need and Improvement: Hardware integration is time consuming and costly. In order to determine if hardware modules will meet system requirements and work together, system integrators must manually search through specifications and design documents and then analyze the performance parameters individually and as a whole. This difficult process continues throughout the program's lifecycle as maintenance and upgrades must be performed. The adoption of practices such as Model-based system engineering (MBSE) has led to the development of standards such as HOST that is aimed at improving interoperability, portability, and maintainability. To fully take advantage of these advances, tools must be developed that enable integrators to perform systems integration more effectively.

Specifications Required: The HHITS tool has been developed to support VITA's OpenVPX™ 65 and 65.1, HOST Tier 1 and Tier 2 version 3.1 and 4.0, and The Open Group's SOSA™ Snapshot 2.0 standards. It is the intent that the tool will be enhanced to support future versions of these standards as they are released.

Technology Developed: HHITS is a web-based application developed to support the Hardware Open Systems Technology (HOST) and VITA's OpenVPX™ standards. HHITS allows avionics engineers and hardware system integrators to virtually search for components (backplanes, modules, mezzanines, power supplies), configure a chassis, apply rules to identify and mitigate integration issues, and capture that design prior to acquiring any physical hardware, saving time and money. Additional hardware standards are easily supported through the addition of rule sets. The HHITS tool reduces the amount of time and effort spent gathering data and performing analysis on hardware components for integration. More importantly, by embedding the workflows and analysis capabilities in the tool, this will allow a less experienced engineer/integrator to be able to perform the integration tasks of a senior engineer/integrator in a shorter amount of time.

Warfighter Value: Using the HOST standard and the HHITS tool, avionic system integrators can virtually design a hardware configuration and mitigate any incompatibilities before procuring any hardware allowing new technology to get the warfighter faster and cheaper. Benefits are reaped throughout a program's lifecycle from initial design of a new capability to sustainment by aiding engineers performing obsolete module replacement.

WHEN

Contract Number: N68335-18-C-0214 **Ending on:** May 7, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Capability Release 0,5	Low	Proof of Concept Delivered	TRL 2	November 2018
Capability Release 1.0 Beta	Low	Application delivered, demonstrated, and reviewed by customer	TRL 3	January 2019
Capability Release 1.0	Low	Application delivered, demonstrated, and reviewed by customer	TRL 4	April 2019
Capability Release 1.5	Low	Application delivered, demonstrated, and reviewed by customer	TRL 4	July 2019
Capability Release 2.0	Low	Application delivered, demonstrated, and reviewed by customer	TRL 5	October 2019
Capability Release 2.5	Low	Application Demonstrated at Tri-Service Open Architecture Interoperability Demo	TRL 6	January 2020

HOW

Projected Business Model: SimVentions, Inc. intends to license the HHITS tool for use by the government and commercial industry. This tool has clear applicability to any systems engineered using the the HOST ecosystem. HHITS has already demonstrated success as a prototype tool supporting the integration of avionics systems at NAVAIR. As new Defense programs consider adopting the HOST Technical Standard, this tool will be indispensable to the design and integration of hardware architectures.

SimVentions specializes in delivering innovative defense solutions centered on the company's key theme of Imagine, Create, Explore, and Discover™. Our goal is to deploy this product in government and prime contractor programs for facilitating HOST system integration

Company Objectives: SimVentions would like to increase the visibility of the HHITS tool to government and prime contractor contacts. Specifically, this Small Business Innovative Research (SBIR) project is eligible for continued SBIR investment to increase the maturity of the product and its commercial readiness. Prime contractors would be interested in this product because it is a completely unique capability that would help discriminate a potential proposal from the competition.

Potential Commercial Applications: Although this application was developed in support of the hardware integration and interoperability challenges of the DoD avionics community, there is applicability to any industry where hardware design and integration is required, including tactical systems and space systems. In addition, hardware vendors and standards organizations have expressed interest in the tool for various uses.