

Topic: N141-006

GameSim, Inc.

Distributed Synthetic Environment Correlation Assessment Architecture and Metrics

GameSim is developing a framework, Validate, to detect synthetic environment correlation and integrity errors realized in military training systems. Validate automatically verifies correlation and correctness of new and networked training simulation environments to ensure a fair fight between networked participants. Validate provides a means to test correlation between any combination of source datasets, including NAVAIR Portable Source Initiative (NPSI) and run-time systems, including image generators (IG). GameSim provides game development services and expertise in synthetic environment design, development, and integration. GameSim developed a near real-time capability to import and fuse geospatial datasets, and has published extensive research in advanced M&S techniques. Validate's prototype establishes design requirements and demonstrates the efficacy of a validation framework suitable for employment by training systems.

Technology Category Alignment:

Air Platforms

Autonomy

Command, Control, Communications, Computers, & Intelligence (C4I)

Ground and Sea Platforms

Sensors

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SYSCOM: NAVAIR

Contract: N68335-15-C-0340

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-15-C-0340

Department of the Navy SBIR/STTR Transition Program

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WHO

SYSCOM: NAVAIR

Sponsoring Program:

Transition Target: Aviation
Distributed Virtual Training
Environment (ADVTE)

TPOC:

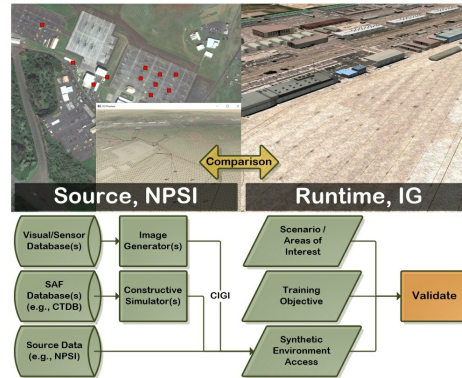
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Other transition opportunities:

Training systems that need to verify correlation and correctness of their synthetic environments.

When any training system integrates a new synthetic environment, the tool, "Validate", can be used to verify that the runtime system is well correlated with the source data. Validate can be used by the Navy to automated the acceptance test process.

Test correlation among source datasets and run-time systems



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WHAT

Operational Need and Improvement: Naval/Marine Corps flight simulators are often run in isolation; however, there are growing requirements for distributed networked simulation such as those included in the Aviation Distributed Virtual Training Environment (ADVTE). Communication, processing models and synthetic environments are some of the simulation components that are affected by distributed system interoperability. Interoperability of distributed systems is achieved only when the perception of the same events and models by different systems is similar, thus enabling the linked war fighters to work together and achieve a common goal. Working together is dependent on the consistency between the synthetic environments.

Specifications Required: The technology needs to work with all major geospatial source data formats and industry leading commercial image generators.

Technology Developed: GameSim is building an extensible correlation assessment framework to detect and report correlation and integrity errors, called Validate. Validate can test among source data formats, as well as among runtime formats. All issues and metrics identified by the tests are mapped to Fit-for-Use categories, based upon areas of interest. These categorizations mappings will provide the Navy with clear results as to whether correlation is adequate for a particular training objective. All test findings and Fit-for-Use categorization are compiled into an HTML-based, distributable final report.

Warfighter Value: 1) Ensure connected training systems are correlated enough to achieve training objectives. 2) A means to test correlation between existing Navy flight simulators. 3) Verify vendor systems (e.g., Image Generators) are correlated to source data delivered to the government.

WHEN

Contract Number: N68335-15-C-0340 **Ending on:** August 25, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Functional Prototype	Low	Demonstrated to NAVAIR in their lab	4	September 2016
Distributable Prototype	Low	Deliver to Navy, install at NAWCTS Lab	5	December 2016
Implement all Elevation and Feature Tests	Med	Deliver to Navy, install at NAWCTS Lab	5	March 2017
Implement all Imagery Tests	High	Deliver to Navy, install at NAWCTS Lab	5	May 2017
Implement all Visualization Tests	High	Deliver to Navy, install at NAWCTS Lab	5	August 2017

HOW

Projected Business Model: The ultimate goal is to integrate and transition Validate into government and prime contractor training systems to improve accuracy and fair fight issues. GameSim will offer professional services to integrate and customize the tool for program specific requirements. This shall improve GameSim's work-share when subcontracting to larger defense contractors that service the Department of Defense (DoD).

Company Objectives: GameSim provides development services and expertise in synthetic environment design, development, and integration. GameSim developed a near real-time capability to import and fuse geospatial datasets, and has published extensive research in advanced M&S techniques. The research developed under this SBIR will further GameSim's objective of being a leading provider of synthetic environment subject matter expertise.

Potential Commercial Applications: GameSim is actively marketing the technology to the US Navy, Army, Marines, and the intelligence community. Any program that relies upon accurate, correlated geospatial information can benefit from using the technology.

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