



## Synthetic Environment Core (SE Core)

Interoperable, extensible architecture and reusable components for virtual training simulation systems



# SE Core

At 0630 on Monday, a training officer plans the week ahead. Helicopter pilots will practice low, fast, night landings. A field hospital will simulate a mass casualty event. An infantry unit will train on convoy security. All will use different simulators and tactics. Everyone must train as they fight. It's all in a day's work, thanks to SAIC's development of the SE Core Architecture and Integration (A&I).

SE Core is the U.S. Army's Common Virtual Environment (CVE) initiative to link virtual training simulation devices into an integrated, interoperable training system. Since 2005, the SAIC Team has provided architecture analysis, development, and technical and management support for the SE Core A&I program under the Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

## Virtual Simulation Architecture (VSA)

SAIC bases all SE Core products on an innovative product-line architecture (PLA) that provides commonality, interoperability, systematic reuse, adaptability, and extensibility. SAIC created the VSA for the CVE, linking system and non-system virtual simulations into an integrated and fully interoperable training capability. The VSA introduces interoperability standards for the virtual domain, consisting of the Virtual Distributed Interactive Simulation (V-DIS) dialect, the Software Data Model, and the Spatial Reference Model. Future development efforts will include a common scenario definition language and extensions to the common image generation interface.

## Benefits of SE Core

SE Core provides major benefits to warfighters, Army trainees, senior officers, and simulation industry:

- Persistent interoperability, connecting standalone simulation systems, and tools in the virtual world
- Reuse of components—reducing lifecycle, maintenance, development costs
- Above all, enabling training in a contemporary operational environment – so warfighters can train the way they fight

## The SE Core Program

The SE Core is a major US Army program, led by the U.S. Army's PEO STRI, and aimed at significantly enhancing virtual training and mission rehearsal capabilities for our warfighters. For specific information about the SE Core program, please visit [www.se-core.org](http://www.se-core.org).



# One Semi-Automated Forces (OneSAF®) Integration

SAIC created the virtual capability within the OneSAF baseline for its integration into virtual simulations. Today SE Core A&I extends and adapts the Army's constructive entity simulation system, OneSAF, to operate within the Army's two fielded virtual training systems: Close Combat Tactical Trainer (CCTT) and Aviation Combined Arms Tactical Trainer (AVCATT). This enables CCTT and AVCATT to interoperate in the same training scenario on a common terrain.

## The Virtual Extension of OneSAF

SE Core extends and adapts OneSAF to operate within SE Core's virtual simulation environment with new capabilities developed by SAIC:

- New models, entities and units, such as the Apache AH64D
- New physical and behavioral common model extensions for the virtual domain like a precise rotary wing flight model and its associated tactical behaviors
- V-DIS support to provide full interoperability
- New simulation management control capability enabling virtual programs to control OneSAF simulation

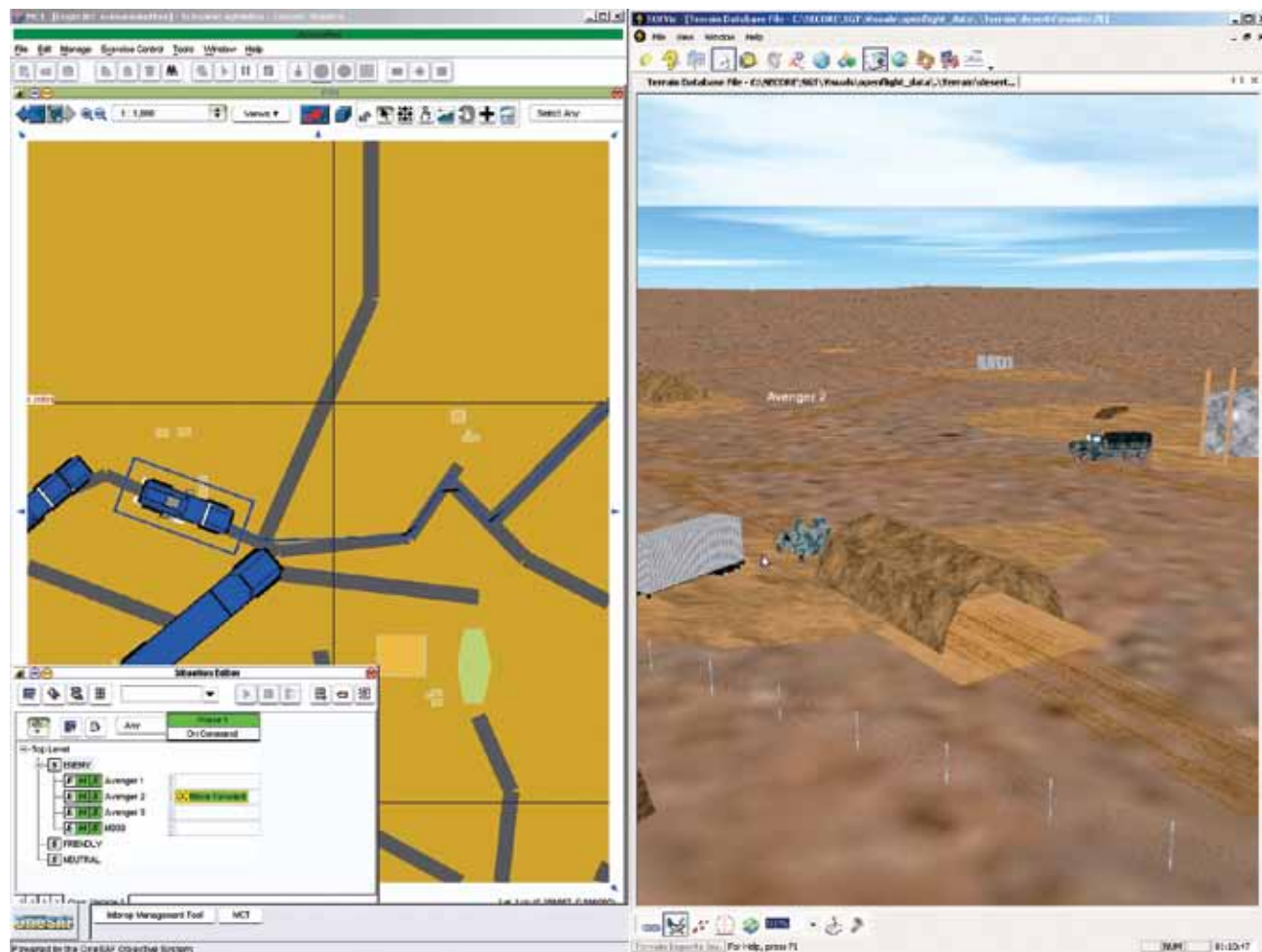


# SE Core Product Line

SE Core's PLA features Common Virtual Components (CVCs) that enable plug-and-play operation. SAIC developed this technological advancement in SE Core to reduce life-cycle costs, while making all simulation systems reusable and interoperable. The SE Core CVC products that are available include:

## Scenario Generation Tool (SGT)

SGT provides the foundation for a single-scenario generation solution for the virtual domain. To reduce costs, the tool provides verification capability via a 2-D map and a 3-D view.



## SE Core Gateway

The Gateway provides a long-haul networking capability that enables multiple simulation sites to participate in the same exercise. The VSA Distributed Interactive Simulation (DIS) concurrently supports multiple DIS dialects and bridges network interoperability between dissimilar virtual trainers.

## V-DIS

Today Army virtual systems are migrating to the new DIS specification, V-DIS. Use of V-DIS enables interoperability among virtual simulations—communicating in one common language, on a common terrain, in one training space.

## Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)

Acting as a bridge between the training system and external tactical C4ISR devices in a tactical operations center, the C4ISR capability enables live C4I systems to simulate and be simulated by the virtual simulation battlespace.

## The Virtual Bridge (VB)

The VB delivers a single consolidated gateway and common platform environment for the simulation network—the SE Core Gateway and the tactical Internet - C4ISR CVC. The VB eliminates the need for two machines and allows interoperation with other training systems. It incorporates information assurance, providing accreditation which can save time and cost.

## Data Collector and Data Analysis Products

These products deliver real-time monitoring, recall, and replay of the training exercise and after action review.

## SE Core Adopters

Current Army virtual programs adopting SE Core products include CCTT, AVCATT, Call For Fire Trainer (CFFT), Advanced Gunnery Training System (AGTS) ranging from individual to gunnery to crew to collective training systems, and the Common Driver Trainer (CDT) product line.

## Capabilities

- Provides common, reusable components for virtual simulation systems
- Enables full interoperability among virtual simulation systems
- Provides standards among the Army virtual domain
- Allows integrated live, virtual, and constructive simulation
- Provides an extensible product line architecture includes government and commercial off-the-shelf tools

## For More Information

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