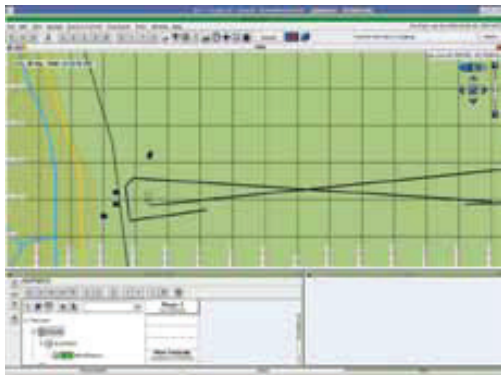# One Semi-Automated Forces (OneSAF®)

Powerful constructive simulation tools for an increasingly complex, dangerous world

Whether you are a combat unit on foreign ground, or border security in your own country, you know the world is becoming an increasingly dangerous place. Mission execution and survival depend on having the right tools, training, and talent in the right place, at the right time. This requires a solution and tools that go beyond old architectures, standards, and inflexible approaches. Today that solution is OneSAF.

OneSAF is the U.S. Army's open source, common constructive simulation platform that is built to meet the challenges of today and tomorrow for the Army, joint, and non-military communities. Leidos developed OneSAF as the first truly composable full-spectrum system for managing the entire constructive simulation life cycle, from scenario development through after-action review. OneSAF is a powerful simulation toolkit designed to shorten development cycles, reduce development cost, and accelerate the delivery of training to the warfighters. With OneSAF tools users can compose new entities, units, groups, behaviors, and scenarios with little to no programming.

PROVIDING THE FOUNDATION AND ARCHITECTURE FOR COMPLEX CONSTRUCTIVE SIMULATION

OneSAF can be effectively used in multiple domains, training situations, and experiments. Whether it's evaluating advanced soldier equipment by simulating a squad of dismounted infantry on patrol in Afghanistan; training a command and staff team by simulating their respective forces and units; or representing complex actors, features, and environments in a domestic setting open to potential attack, OneSAF provides:

▶ The constructive simulation framework for developing and advancing the tools needed by users anywhere in the field

▶ The simulation environment and tools required for complex training, and assessing individual actors in complex situations

▶ The critical insight needed for front-line troops and decision makers to meet challenges in the real world.

OneSAF is the user-focused constructive simulation architecture that addresses your most complex entity-level simulation challenges – whether for warfighter training, requirements definition, concept exploration, or systems analysis.

Improvements and expansion of capabilities in OneSAF directly support training and analysis in current operational theaters, and respond to warfighter issues. Among OneSAF's new capabilities are advances in obstacle avoidance, incorporation of dynamic terrain effects, an enhanced communications framework, and various new models including combustion.

Users can replicate the real world that warfighters face with higher fidelity within OneSAF's larger, more complex, terrain databases and urban areas. OneSAF also enables users to interoperate with detailed, high level simulators such as the Common Driver Trainer (CDT) Mine Resistant Ambush Protected (MRAP) vehicle driver trainer. The enhanced realistic environment provided by OneSAF delivers highly effective learning experiences and enhanced results in exercises, training events, or experiments. These capabilities and others directly

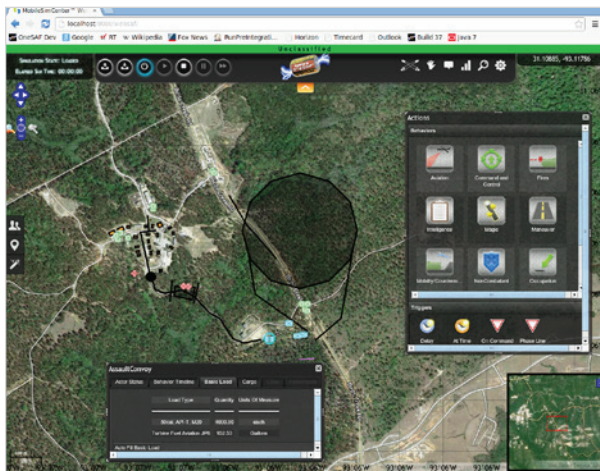# Supporting Warfighters in Current Operational Theaters

support the needs of today's warfighters and can ultimately save lives.

IMPROVING IMPROVISED EXPLOSIVE DEVICES (IED) TRAINING

OneSAF can improve the training of users in dealing with IEDs. Through OneSAF, soldiers and commanders react and interact with systems that can detect and defeat IEDs. Users can also learn behavioral support for military working dogs and explosive ordnance disposal units in IED situations.

EXPANDING SUPPORT FOR COMPLEX EXERCISES

OneSAF supports complex events and exercises through the composable, flexible interoperations management system that supports Distributed Interactive Simulation (DIS) and High-Level Architecture (HLA). This enables users to incorporate many different applications in a complex environment, creating a best-in-class technology solution.

ENABLING BATTALION STAFF TRAINING

The OneSAF Battalion Training product, OneSAF Version 6.1, is a targeted software product. It features a reduced systems footprint, simplified compositions, easier installation, a customized user's guide and interface, and simplified Mission Command configuration. These features allow the Battalion Commander to efficiently train his or her staff with minimal external support required.

CREATING NEW TERRAIN AT THE POINT OF USE

Using the new Terrain & Urban Representation Framework (TURF), championed by Leidos, OneSAF users can now generate terrain, obstacle avoidance, PVD terrain tiles and Ultra High Resolution Buildings (UHRBs), including underground tunnels within urban warfare environments. With this capability, Simcenter end users can, for example, now add dug-in tank positions that match the tactical maneuver plan specific to an exercise, in real time.

ENDURING PERFORMANCE

Leidos has focused specific attention on the enduring performance of its software products to ensure there is no degradation caused by the introduction of new features. Our commitment to quality resulted in a 40% enhancement in performance from version 7.0 to version 8.0.
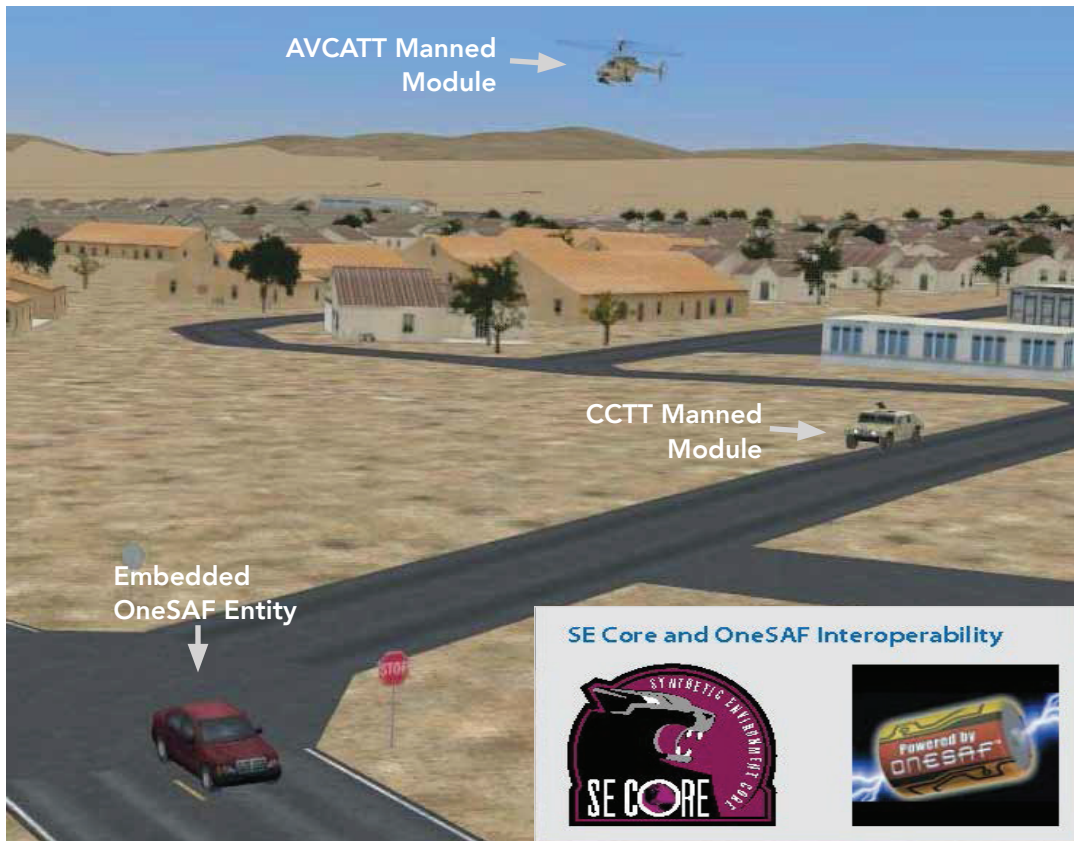
Real-World Simulation Tools
to Meet Mission Requirements

FEATURES AND BENEFITS:

▸ **Represents the real world environment in which soldiers fight. OneSAF provides the Contemporary** Operating Environment (COE) and theaters of operation including complex sides, weather, doctrines and tactics, and operational system capabilities.

▸ **Provides the required components to seamlessly build and manage exercises, training events, scenarios, and situations**. OneSAF and ARES deliver tools that streamline: scenario generation, control of multiple workstations during active exercises, use of integrated, comprehensive 2-D and 3-D user interfaces, and data collection and analysis.

▸ **Fully adapts to units and individual actors**. Users can adapt the OneSAF system for many purposes using flexible, composable actors and environments, based on modern, open architecture standards including Java™, JavaBeans™, XML, and UML.

▸ **Supports the use and integration of other tools and models.** OneSAF provides trainers, users and scientists with the capability to interact and interoperate with a wide variety of external systems through a live (C4I) interface and various simulation architectures (DIS, HLA with multipleFOM support).

OneSAF and Synthetic Environment Core (SE Core) Integration

AVCATT Manned Module

CCTT Manned Module

Embedded OneSAF Entity

SE Core and OneSAF Interoperability

SE CORE

Powered by OneSAF

Leidos integrated SE Core's virtual simulation capabilities into the OneSAF baseline to enhance the realism and application of the OneSAF system for all users. The integration of SE Core and OneSAF provides a common architecture framework for shared applications and services across both the virtual and constructive domains. This integration overcomes the challenge of combining human reactions and intervention in a computer-based environment, and demonstrates how users can fully interoperate using OneSAF.

CREATING INTEROPERABILITY BETWEEN CLOSE COMBAT TACTICAL TRAINER (CCTT) AND THE AVIATION COMBINED ARMS TACTICAL TRAINER (AVCATT)

SE Core provides the common virtual components to support new functionality, composability and flexibility between the two major U.S. Army fielded virtual training systems: CCTT and AVCATT users experience enhanced interoperability from OneSAF's dynamic capabilities.
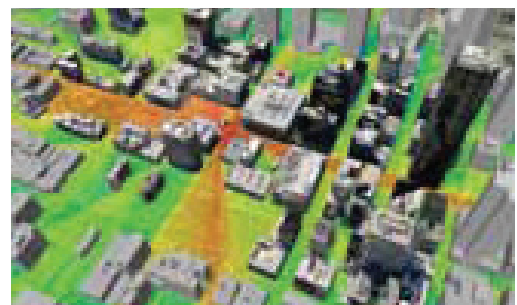
Powering Cyber Modeling
and Simulation with OneSAF

Leidos is pursuing enhanced modeling and simulation solutions to replicate today's complex cyberspace and electronic warfare (EW) environments.

Leidos has extended OneSAF to prepare users for real-world effects that may occur with the loss or degradation of computer and communication networks in a cyber attack. Through integration of external products, OneSAF users can portray computer networks with high-fidelity simulation – from the emulation of network devices, protocols, users and attackers, to the physics of indoor and outdoor wireless network transmission and signal propagation in urban areas. OneSAF enables users to see the effects of threats and actions based on simulated, complex physical and behavioral environments. The reactions of actors in the real world can also be represented in the realistic organizational and physical entities provided by the OneSAF system.

Users can employ OneSAF's capability in conjunction with other threat assessment tools, training regimes, and planning systems to develop a comprehensive view into the exotic, complex, and hard to visualize world of the cyber domain to help understand, predict, and solve the cyber threats and problems before they occur.

Images above: created using high-fidelity radio frequency propagation simulation within the simulated geospecific complex urban environment of Los Angeles, correlated and overlaid on Google Earth™.

Leidos understands the need for flexible, adaptable solutions in today's environment. We continue to add functionality to OneSAF, including Joint capabilities to support multi-domain operations-land, air, and sea - as well as international solutions to support the increasingly complex needs facing U.S. and allied forces.

OneSAF provides a critical solution to representing complex, multi-domain operations, preventing fratricide and bringing combined arms on the objective. This enhanced realism is especially important in arenas where the traditional conflict is superseded by asymmetrical threats.

In addition to U.S. Army users, OneSAF is becoming a critical component of the U.S. Marine Corps combined arms training. And OneSAF tools can also be expanded beyond current forces to encompass future forces that do not yet exist in the real world.

Leidos has a proven history of innovation and demonstrated commitment to developing advanced capabilities for OneSAF and its associated programs. Our mission is to provide Soldiers with tomorrow's technology, today.

COMMITMENT TO SUCCESS

Leidos is committed to building sytems that reduce lifecycle maintenance and development costs, while saving time and accelerating the delivery of new technology to the warfighter. This reduces lifecycle, maintenance and development costs, saves time, and accelerates new technologies' integration for warfighters, the joint, and non-military communities. OneSAF is simple to use and reflects the complexity of the real world today and tomorrow.

LATEST ONESAF CAPABILITIES:

- ▶ Enhanced Cultural Modeling
- ▶ Web Control Tool
- ▶ Stable Wide Area Network (WAN) operations
- ▶ Reduced Footprint
- ▶ Disease and NonBattle Injury Impacts
- ▶ Unit Supported Battalion Staff Training

OneSAF capabilities can be expanded to encompass future forces as well as current forces.

ABOUT LEIDOS

Leidos is a Fortune 500® information technology, engineering, and science solutions and services leader working to solve the world's toughest challenges in the defense, intelligence, homeland security, civil, and health markets. The company's 34,000 employees support vital missions for government and commercial customers. Headquartered in Reston, Virginia, Leidos reported annual revenues of approximately $10.19 billion for the fiscal year ended December 28, 2018.

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