OVERT Solution Proposal - Attachments - Page 1

The Open Virtual Environment for Responder Testing (OVERT) is based on an extensible 4D simulation architecture, and the DHS HSEEP Framework for exercise planning, design, conduct, and evaluation. It is designed to be community driven, scalable, and sustainable. OVERT integrates data logging and research capabilities, to support testing, training, exercise, and evaluation scenarios. It supports real time, time scaled, and time stepped, high and low resolution simulations, with virtual replay. During simulations, situational awareness is maintained by the use of virtual and augmented reality views, with concurrent 3D overwatch. The OVERT tools and technologies are designed to be easily integrated with local responder equipment and procedures, advanced indoor location technology, and virtual sensor technology. Ease of implementation and safe use by local public safety personnel, and its self documentation features, will enhance local OVERT testing, training, and evaluation methodologies.

OVERT provides an open architecture solution for the future that will disrupt the current simulation market space, and transform the capabilities available to local emergency response agencies. Through community support, a national clearinghouse for simulation scenarios, and local customization capabilities, the cost and complexity of next generation simulation will be dramatically reduced. Space does not permit here, but the remainder of this Solution describes how OVERT will exceed expectations.

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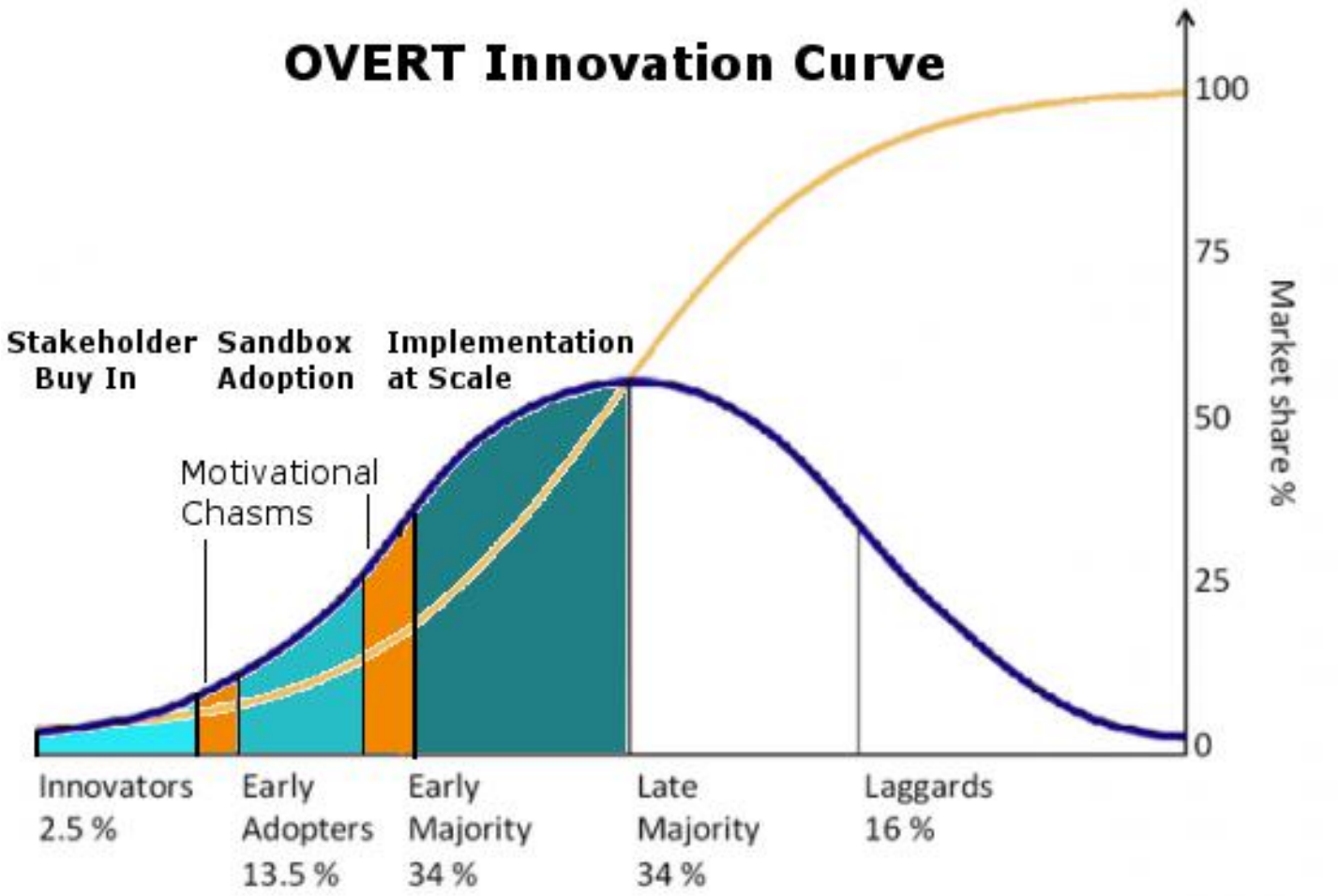
Successfully implementing OVERT requires understanding of the classical adoption curve. In this curve there are two motivational gaps which must be bridged in order to successfully reach early majority adoption. Beginning with innovators, the first motivational chasm exists in trying to get innovators to become early adopters, who run pilots and demonstration projects. In order to cross that chasm the innovators need to be highly motivated and committed to working with others to achieve their goals. The OVERT Consortium will be the motivation these innovators need to bridge the chasm. By entering the OVERT sandbox, these early adopters will be able to launch pilots and demonstrations for a fraction of the budget, and in a fraction of the time, they would otherwise be able to do.



The second motivational gap on the innovation adoption curve (attached) is reached when committed early adopters desire to go to full implementation at scale. In order for this decision to happen a number of key obstacles need to be overcome. The planning alone for this kind of full scale implementation could take years. The availability of the OVERT Reference Implementations makes it possible for organizations to go to scale in months instead of years, and with full support along the way. By bridging these two motivational challenges with easily accessible, incremental solutions, we can dramatically increase OVERT adoption.

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OUTCOMES

REALITY	The OVERT design provides for both high and low resolution rendition of scenarios, scenes, and vignettes. Simulations can be deployed on conventional computer displays, large screen and panoramic displays, augmented reality (AR) glasses in physical training spaces, and on virtual reality (VR) headgear in open spaces indoors and out. The immersive nature of the scripted scenarios can provide a high degree of realism for emergency responders and for incident command staff, whether used for training or testing.
AVAILABILITY	All of the hardware and computer components of the OVERT architecture exist and are commercially available. The game engine upon which OVERT is built is available for licensing, and the standards, software, documentation, and training to support it, needs to be developed.
VERSATILITY	OVERT has the ability to accommodate a variety of scenarios, scenes and vignettes. The architecture is designed to enable and encourage customization of scenarios with local content and details. As a community supported effort, OVERT will benefit from contributions from emergency response agencies, and OVERT users, around the country.
METRICS	The OVERT architecture is designed with an embedded research and data logging component. Whenever simulations are running it is collecting granular simulation log data, operational data, responder performance data, environmental sensor data, rich media data (audio, video, etc.), geospatial and position data, and test data for equipment, devices, and tactics.
REPLICABILITY	As an open architecture, OVERT is designed expressly for ease of replication. The core back-end server processes can be hosted by states, counties or local jurisdictions. To expedite installation and configuration of the OVERT architecture a set of Reference Implementations will be provided. These Reference Implementations can be used for demos and pilot programs, and can be downloaded to create turnkey local implementations.
REPEATABILITY	Once defined and configured, OVERT simulations can be started quickly. The only latency for the responders is from network bandwidth and local area network connections. Even in situations where OVERT is hosted outside a local jurisdiction, the simulation content is downloaded and cached on a local server to assure responsiveness. If necessary, simulations can quickly be stopped, reset to a prior checkpoint, and replayed seamlessly under local administrator control.
INTEROPERABILITY	OVERT is architected to support an almost unlimited range of hardware interfaces, communications, and legacy computing systems. It accomplishes this through standards, interfaces, and custom sensor interface hubs, which enable local staff to integrate devices, data feeds, imagery, video, audio, communications, and sensors into simulations.
SAFETY	The inherent benefits of simulations create a safer environment for training and testing, by reducing or eliminating hazards, and by mitigating risks. OVERT simulations have built in Operational Risk Management strategies which are part of the scenario design process. Every OVERT simulation begins with a Safety briefing as part of the scenario, and frequent safety prompts can be turned on during simulations.
ABOVE AND BEYOND	OVERT provides an open architecture solution for the future that will disrupt the current simulation market space, and transform the capabilities available to local emergency response agencies. Through community support, a national clearinghouse for simulation scenarios, and local customization capabilities, the cost and complexity of next generation simulation will be dramatically reduced. Space does not permit here, but the remainder of this Solution describes how OVERT will exceed expectations.

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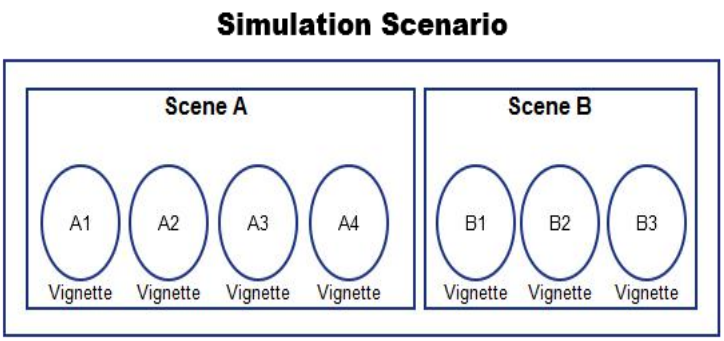
Implementation

The following line items represent the one time investment in building infrastructure and doing the foundation building work, that will pay off as jurisdictions implement OVERT. Costs are not specified as they are highly dependent on NIST decision making. Investments in national OVERT infrastructure, and in establishing the OVERT Consortium, should disrupt the Simulation marketplace and dramatically reduce the costs of setting up OVERT tools and technologies for local jurisdictions. That will guarantee much wider dissemination of the benefits of OVERT technology, sooner.

Implementation Phase	Description	Unit Costs
Sandbox Infrastructure - Pilots and Demonstrations	-- National OVERT Website -- OVERT Beta Clearinghouse (documentation, training, simulations, best practices, content assets) -- OVERT Architecture and Integration Activities -- OVERT Research Development and Training -- Game Engine (License)	
Support for Reference Implementations	-- Hosted OVERT Reference Implementations -- OVERT Clearinghouse (documentation, training, simulations, best practices, content assets) -- OVERT Research Development and Training -- Game Engine (Enterprise License)	
Emergency Response Agency Implementations	-- Training facilities or Open multi-use spaces -- Servers with OVERT Installed -- Game Engine License (annual) -- Large screen display or panoramic projector -- Workstations -- Laptops -- Tablets - Mobile Devices -- Augmented Reality Glasses -- Virtual Reality Headgear -- Locatioin sensors (Lidar, GPS -- Biometric sensors	Varies 1600 400 Optional 800 500 400 600 600 400/100 350

The benefits of OVERT are based on shared collaborative development and community ownership of the technology. NIST and large Public Safety organizations have resources, personnel, and budgets to develop standards and open architecture simulation components. By bringing NIST together with states, large cities and counties, into an OVERT Consortium, these agencies can contribute their resources and creativity to the evolution of the architecture. By combining those capabilities with an open standards based architecture, and community development and sharing, has the potential to bring high quality simulation technology for emergency responder testing and training to all size organizations across the country. Thousands of small local jurisdictions will benefit from this transformative model.

Simulation Hierarchy



OVERT simulations are built on a 3 level hierarchy.

Scenarios are the basic building blocks and represent a complete narrative of events over time.

Scenes are settings or locations within a scenario that occur in scenario time.

Vignettes describe tasks, interactions, competencies, and standards of performance for testing and/or training in the scenario. We log and measure vignette outcomes.

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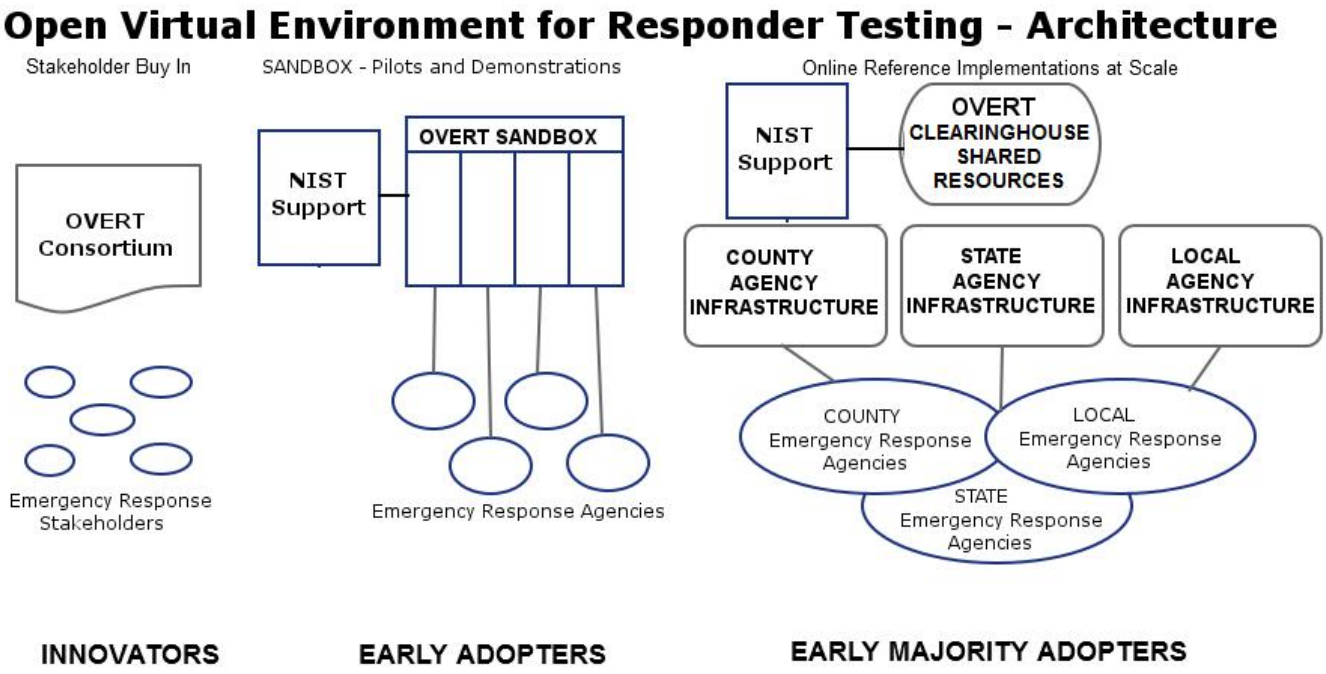

We are interested in discussing future roles in, and support for, this project with NIST. The remainder of this section contains three brief snapshots of Statements of Work (SoW). The first, covers the development of the architecture and key infrastructure components. The second SoW, is for the development of the detailed functional design requirements for the software effort to create the OVERT Reference Implementations. The third SoW is for support of a few pilot and demonstration projects based on the Reference Implementations and sample scenarios and simulations, intended to demonstrate OVERT capabilities.

Statement of Work 1 - Architecture Documentation and Infrastructure Design

This is the central task required to support building the OVERT architecture. It is a design process for building that architecture, and for securing buy in from all key stakeholders. The process will take as inputs requirements from innovator members of the OVERT Consortium. Another part of this process will be to explore existing government and other open simulation, exercise, and testing software to determine if any of it could add net value to OVERT.

Statement of Work 2 - Functional Design Requirements for OVERT Reference Implementations

Once the architecture is complete, and some infrastructure is in place, the next step is to build one or more Reference Implementations (RI). These RI will initially support the OVERT Sandbox, and later be templates for full scale implementations. The cost of developing these RI will be kept low by having tight and complete requirements and by requiring conformance with standards and conventions. The investment in the RI will be recovered man times over in the savings of customers using them to achieve full scale adoption.

Statement of Work 3 - Support for Pilot and Demonstration Projects - Sample Simulations

This part of the project focuses on the launch of the OVERT Sandbox, and a set of sample scenarios and simulations to demonstrate it. The Sandbox is built on the OVERT Reference Implementations, which will be developed from the requirements described in SoW 2. Successfully implementing OVERT requires understanding of the classical adoption curve. See *Attachment Page 2*. In this curve there are two motivational gaps, which must be bridged in order to successfully reach early majority adoption. Beginning with innovators, the first motivational chasm exists in trying to get innovators to become early adopters, who run pilots and demonstration projects. In order to cross that chasm the innovators need to be highly motivated and committed to working with others to achieve their goals. The OVERT Consortium will be the motivation these innovators need to bridge the chasm. By entering the OVERT sandbox, these early adopters will be able to launch pilots and demonstrations for a fraction of the budget, and in a fraction of the time, they would otherwise be able to do.