munication, to changes and optimization of command and control using virtual reality and immersive environments, a wide array of emerging and maturing technologies are being adapted and deployed for the use of emergency and disaster personnel.

The US Department of Homeland Security's (DHS) science and technology is in the forefront of developing innovative technologies to provide emergency managers and operators a capability to effectively, economically, and rapidly verify and validate response tactics, plans, and procedures. These technologies also are used to conduct "what-if"-type analyses prior to an incident (preparedness, analysis, and training) and during/after an incident (operational, lessons learned). The science and technology approach to developing these technologies is to provide training and exercises (real time) and analysis of alternative response tactics (non-real time). As part of this research effort, DHS is developing a common framework to allow for the rapid integration of existing incident-related modeling and simulation tools and use of virtual worlds to enhance the user experience. This technology is intended to enhance the understanding of the impacts and consequences of complex incidents to improve planning and response for increased effectiveness of procured resources and reduce the loss of life and property.

Keywords: emergency; disaster; preparedness; response; science; technology
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Federated Modeling and Simulation Architecture to Enhance Preparedness and Response

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Increasingly, modeling and simulation technologies are proving to be a cost-effective method of improving preparedness at the incident response and the community level. Currently, there is a plethora of modeling and simulation technologies, methodologies, and techniques, each intended to support a specific capability. In regards to preparedness and response at the tactical and command control level, many of these models must be brought together to provide an integrated capability. The current challenges include managing interfaces, scalability, interoperability with commercial and government tools, and the use of gaming technologies. An innovative approach to solving this complex integration problem will be presented, and a prototype solution that addresses modeling and simulation interoperability and scalability will be showcased.

Keywords: modeling; preparedness; response; simulation
Prehosp Disaster Med

Making Exercises More Useful and Relevant Through Application of Modeling and Simuation Technology

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The (US) National Exercise Simulation Center (NESC) is a Congressionally-mandated, state-of-the-art training and exercise facility within the Federal Emergency Management Agency (FEMA) Headquarters. It is designed to be a state-of-the-art, scalable, flexible, simulation center to accommodate a wide range of services. The NESC also supports the all-hazards preparedness and response mission through employing a mix of live, virtual, and constructive simulations. The NESC is an important tool for elected officials and emergency support providers at all levels of government and supports NEP events involving partners from federal, state and local government, non-governmental organizations, and the private sector. The NESC is a forum for interagency planners to test their plans (e.g., annual hurricane plans, pandemic influenza plans) by providing realistic incident scenarios through which partners can identify gaps and determine courses of action. This presentation will describe NESC, its capabilities, use of technologies, and its use within FEMA as a key supporting element of the National Level Exercises in the upcoming years.

Keywords: exercises; modeling; National Exercise Simulation Center; simulation; technology
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International Cooperation in Bringing Technology Out of the Laboratory and into the Field

Dr. Eric Stern
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CRISMART is a leading center of competence in the field of crisis management. CRISMART fosters knowledge about national and international crisis management and acts as a bridge between practitioner and researcher communities in an effort to strengthen Swedish and European crisis management capability. CRISMART's research activities target various societal sectors using a number of theoretical and analytical tools to shed light on preparedness and capacity to mitigate acute contingencies. CRISMART's research is headed by the staff in Stockholm, and conducted in collaboration with partners in Sweden and around the world. All of CRISMARTs analytical support and educational activities are based on scientifically documented experiences of national and international crisis management. Since the mid 1990s, CRISMART has trained decision-makers at all levels and in a number of sectors in Sweden amd abroad. This presentation will describe CRISMART and associated research that is applied to preparedness and response scenarios.

Keywords: cooperation; international; research; technology
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National Center for the Study of Preparedness and Catastrophic Event Response

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The mission of the (US) National Center for the Study of Preparedness and Catastrophic Event Response (PACER) is improve the nation's preparedness and the ability to respond in the event of a high-consequence disaster, and alleviate the effects of the event by developing and dissem-