Special Issue Guest Editors' Introduction:

The High Level Architecture for Simulations

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This Special Issue of *SIMULATION* is devoted to the "High Level Architecture for Simulation," with a focus on simulation applications which have been implemented using the HLA. The High Level Architecture (HLA) is a general-purpose software architecture for distributed simulation designed to support a wide range of simulation approaches and applications.

The architecture itself is openly available, as is software to support its implementation. It is being used for a variety of simulation applications, including linked high-fidelity simulators for mission rehearsal, Internet games, distributed virtual learning applications for team skill building, large distributed discrete event simulations for training, analysis of international space station developments, and distributed medical applications. These diverse applications are examples of different forms of 'simulation' which come from different technical heritages and have historically supported different user communities. With the advent of general-purpose software capabilities such as the HLA, once-isolated technical approaches are beginning to become a readily available part of the simulation developers' toolkit, opening up new possibilities for simulation applications for new users.

This issue includes a series of articles that describe applications of HLA in multiple domains across the international community. "TRAILBLAZER: An Application of the High Level Architecture to Joint Experimentation" describes a project created to examine the application of an HLA federation of simulations to support *joint experimentation*. In "Developing An HLA Virtual Command Post," the authors discuss the development an HLA-compliant version of the Virtual Command Post (VCP), a distributed simulation providing a

virtual collaborative command post environment. The authors of "A High Level Architecture-based Medical Simulation System" describe how the HLA was used to integrate a set of existing commercial and military simulations to develop the *medical domain* Combat Trauma Patient Simulation (CTPS).

In "Exploiting HLA and DEVS to Promote Interoperability and Reuse in Lockheed's Corporate Environment," the HLA is used to support *high-performance distributed simulation*. "Migration of HLA into Civil Domains: Solutions and Prototypes for Transportation Applications" describes the use of the HLA to connect civil simulation tools in prototypical applications focusing on the area of *civil transportation*, and postulates how the HLA could become an important standard in civil domains. Lastly, in "CIMBLE: Distributed Team Training via HLA," the authors provide a discussion of how the HLA was used in the implementation of a distributed and collaborative virtual environment for conducting *team training*.

This set of articles provides an excellent glimpse into the application of HLA across multiple domains of what has been coined as "a converging world of simulations."

Mike Lightner ***Judith Dahmann***

Mike Lightner is the Technology Group Leader for the Simulation Technologies Group at AEgis Research Corporation. In this role he establishes, communicates and fosters the vision, goals and agenda for the advancement of simulation technologies. He also currently serves as the Project Manager for the Defense Modeling and Simulation Office High Level Architecture Integrated Training Program. He previously managed the successful HLA Command and Control (C2) Experiment, which extended the existing Joint Training Prototype Federation (JTFp) through the integration of three real-world C2 federates (AFATDS, CTAPS & MCS/P). Mr. Lightner served in the U.S. Air Force from 1972 through 1996. During his last assignment at Wright Laboratory, he managed a critical modeling, simulation, and analysis program aimed at electronic combat and avionics advanced technology and led the JMASS federate team in the HLA Engineering Protofederation experiment. Mr. Lightner has a BS degree from Arizona State University and an MS degree from the Air Force Institute of Technology, both in Computer Science.

Judith S. Dahmann was named Chief Scientist for the Defense Modeling and Simulation Office (DMSO) in July 1995. Prior to that, Dr. Dahmann worked as a Program Area Manager for the MITRE Corporation in the area of advanced simulation programs. Her most notable accomplishments there include development of the Aggregate Level Simulation Protocol architecture for distributed simulation. She came to the DMSO with more than eight years of experience in defense modeling and simulation. Dr. Dahmann was selected as a 1998 Arthur S. Flemming Award winner in the Applied Sciences category for her technical acumen and leadership in developing and implementing the Department of Defense's High Level Architecture for modeling and simulation. Dr. Dahmann holds a Master's degree from the University of Chicago, and a Doctoral degree from the Johns Hopkins University.