12TH ICCRTS
"Adapting C2 to the 21st Century"
Tools for the Creation of Semantic Information for Modeling and Simulation
Modeling and Simulation, C2 Technologies and Systems, Cognitive and Social Issues

Thomas Stanzione (Primary Author)
Kevin Johnson
MAK Technologies
68 Moulton Street
Cambridge, MA 02138
(617) 876-8085 x109
tstanzione@mak.com

Abstract:

Current simulations use polygonal representations of the terrain, augmented with vector data, for terrain reasoning. While these data provide the terrain representation needed for vehicle dynamics and weapon system effects, they do not provide the semantic information needed for higher level reasoning. Semantic information goes beyond the physical characteristics that most terrain databases provide, and includes relationships between terrain features and how they can be used in the performance of combat missions. Humans can interpret this additional semantic information and make decisions based on it, but behavior algorithms need these data to be represented within the combat simulations. This paper will discuss current work MAK is doing for the US Army Soldier System Center to generate semantic terrain information for the Infantry Warrior Simulation (IWARS), a constructive simulation being developed for analysis of infantry tactics and equipment. Geoprocessing models are being developed in C/JMTK to generate mobility, cover, and concealment features for use in planning and movement behaviors. Scripts for Autodesk 3ds Max are being developed to automate the generation of semantic information for building interior representations. These tools are being developed to allow the semantic information to be used in other simulation systems, using the geography markup language (GML).

Paper Outline:

Introduction
Terrain Database Representations in M&S Systems
Semantic Information for Modeling and Simulation
Semantic Information in C/JMTK
      Mobility Feature Generation
      Ridge and Valley Feature Generation
      Cover and Concealment Feature Generation
Semantic Information for Building Interiors
Conclusions and Future Work