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USING THE VIRTUAL REALITY MARKUP LANGUAGE (VRML) TO UNDERSTAND THE U.S. ARMY'S SIMULATION AND TRAINING DOMAIN

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Knowledge gained via the technology explosion continues to grow at an exponential rate. The size of all knowledge bases will become larger and more difficult to design. The Functional Description of the Battlespace (FDB) is the Army domain modeled for use in simulation development, Warfighter's Simulation 2000. The database that must be designed to describe everything that the Army does is going to be very large. Military unit descriptions, mission models, task process descriptions and other models reside within a large warehouse of data, models, algorithms, information and knowledge.

FDB users currently navigate on two-dimensional screens that use standard hypertext markup languages. In order to lead the FDB user in a more efficient and effective manner, a three-dimensional mapping and visualization of the FDB contents are sought. The gain will be increased understanding of the FDB knowledge warehouse. Using the virtual reality markup language (VRML), a virtual map and guide of the FDB will teach the abstract concepts inherent in complex domain modeling.

The FDB is becoming the Army's single source repository of validated, verified and accredited descriptions and performance parameters for all entities in the battle space. The data that populates the FDB spans the following categories and their interactions:

1. Human Characteristics: Performance data of behavior, capabilities and limitations, learning, thinking, situation awareness, judgment and the influences of doctrine, organizations and the physical environment. Mission models and task process descriptions are included in this category.

2. Systems and Materiel: Descriptions and performance data and utility data for individual and crew served battlespace systems as influenced by human operators, the natural and manmade physical environment, and impact of supply and maintenance operations. Equipment models show this type of information and data.

3. Physical Environment: Descriptions of natural and manmade physical and environmental conditions and effects including atmospheric, terrain, oceanographic, and space components for all climates world wide, including dynamic changes to the selected scenario battlespace that would occur due to natural environmental disasters (i.e. floods, earthquakes, sunspots, destruction of natural or manmade objects such as lakes, dams, etc.).

4. Organizations: Arrangements (templates) of systems into units following prescribed command structures to perform roles and execute mission objectives. This will represent the impact of cognitive processes of command and control, standard operating procedures (SOP), status of communication links with higher, adjacent and lower echelon units and the influences of outside activities on mission completion. Unit models contain this information.