

Open Standards for Exchanging Command and Control and Geospatial Information

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Open Standards are critical for obtaining actionable geo-information within a Command and Control (C2) context. Current Command and Control systems utilize a wide variety of 2D and 3D visualization technologies. However, most of the map displays developed in the last 10 years are raster based and do not employ a Geospatial Information System (GIS). However, the commercial world employs GIS widely for visualizing and processing geospatial information.

Terrain and weather effects represent a fundamental, enabling piece of battlefield information supporting situation awareness and the decision-making processes for C2). These effects can both enhance or constrain force tactics and behaviors, platform performance (ground and air), system performance (e.g. sensors) and the soldier.

Battlefield Management Language (BML) is being developed as a open standard for specifying military missions. Within NATO the task group MSG-048 "Coalition BML" is defining a BML using the Command and Control Information Exchange Data Model (C2IEDM) as a lexicon. The integration of actionable terrain and weather information within a Coalition C2 process can best be accomplished by developing a common "abstract" representation of geo-environmental objects – a geoBML. These common spatial objects are defined as those required in a specific mission context (e.g., an "assembly area" to stage equipment). Also required is the explicit set of tactical relationships between the expanded set of geo-environmental objects and military missions.

Currently, terrain data and C2 data are stovepiped in C2 systems and applications. C2 information is overlaid on a map in a hap-hazard fashion. geoBML is a solution to this problem and has the potential to be a well specified interface to enable modern GIS systems to geolocate C2 information for modern C2 applications. The current geospatial tool for US Defense applications is C/JMTK (the Commercial Joint Mapping Toolkit), a developers package that provides robust GIS functionality. However, C2 systems would benefit from a well codified interface between C/JMTK and the C2IEDM. Similarly, other GIS systems that provide additional functionality to C/JMTK require such an open standard to provide advanced visualization, terrain reasoning, etc.

Open standards for GIS are an enabler for C4I system development and deployment. Having both open source 3D earth and commercial products such as C/JMTK conform to the same standards is necessary in the future.