

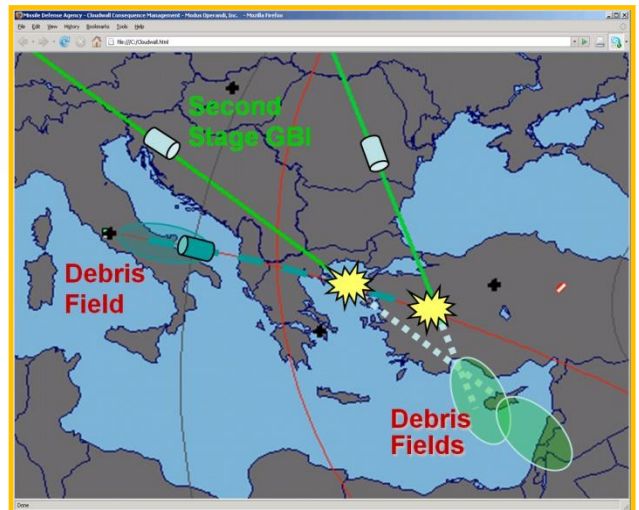
Case Study: Missile Defense Agency

BACKGROUND:

The Missile Defense Agency (MDA) is in a position to notify government and military officials of the potential consequences of falling debris from the primary and secondary effects of ballistic missile engagements over the United States and coalition territories. MDA's mission involves detecting, identifying and reacting to ballistic missile threats during the earliest phase of flight.

PROBLEM:

Debris analysis is performed using stand-alone tools, integrated by a ballistic missile defense system operator to provide the proper debris environment situational awareness. The rapid notification of appropriate authorities over a widely-dispersed region of an impending debris fallout threat is challenging at best.



SOLUTION:

The MDA project created an approach to combine community-accepted, advanced fallout prediction models with a real-time semantic reasoning architecture for the real-time generation of consequence mitigation (CM) notification plans. A prototype human-machine interface (HMI) screen for CM analysts and management was built that communicates with other Command and Control, Battle Management, and Communications HMI display components by transmitting overlay images through a semantic service-oriented architecture. Machine reasoning software provides probabilistic and rule-based reasoning over event-based and legacy information. This technology enables ballistic missile defense system operators to understand the CM situation and to provide notification to the appropriate civilian and military personnel within the expected area of threat debris impact.

RESULTS:

Superior real-time decision support for consequence management:

- Automates correlation of event-driven data
- Accelerates scenario planning and response
- Leverages best-of-breed analytics



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