



## Enterprise Modeling and Analysis (EMA) Framework: Application in Countermeasures Deployment Planning and Analysis

Center for Transportation Analysis  
(CTA) Research Areas

- Aviation Safety
- Air Traffic Management Analysis
- Data, Statistical Analysis
- Geo-Spatial Information Tools
- Defense Transportation
- Energy Policy Analysis
- Environmental Policy Analysis
- Highway Safety
- Intelligent Transportation Systems
- Logistics Management
- Supply Chain Management
- Modeling and Simulation
- Transportation Operations
- Planning and Systems Analysis
- Transportation Security

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**A**n enterprise model is a computer representation of countermeasures deployment and the infrastructure within which it is deployed. Enterprise analysis is the integrated study of infrastructure, systems, people, processes, and the relationships between them. Enterprise Modeling and Analysis may be used to design and implement a security program that is cost effective, comprehensive, integrated, sustainable, and aligned with business and/or organizational objectives.

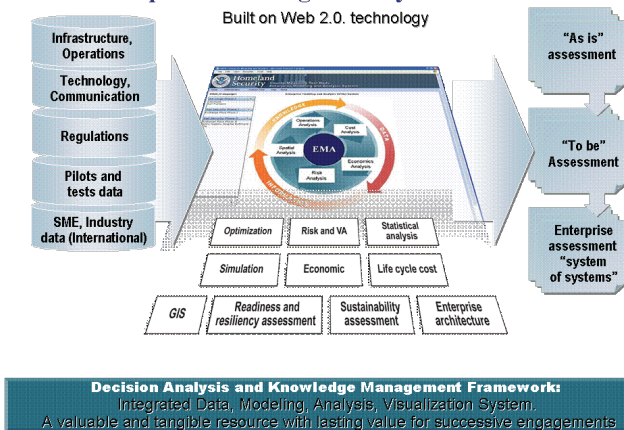
The EMA framework is a data integration, decision analysis, and knowledge management system that brings together information, advanced analysis, and visualization to help in life cycle assessment of system-of-systems. It

enhances the design, development, implementation, and integration of such systems, and provides a mechanism to evaluate system performance with respect to operational effectiveness, risk, economic viability, life cycle sustainability, and enterprise resiliency. The EMA framework is based on advanced computing and information concepts, and is enabled by Web 2.0 technologies. EMA serves data, information, and knowledge over a secure web interface based on user profile and security requirements.

### Benefits of EMA Framework:

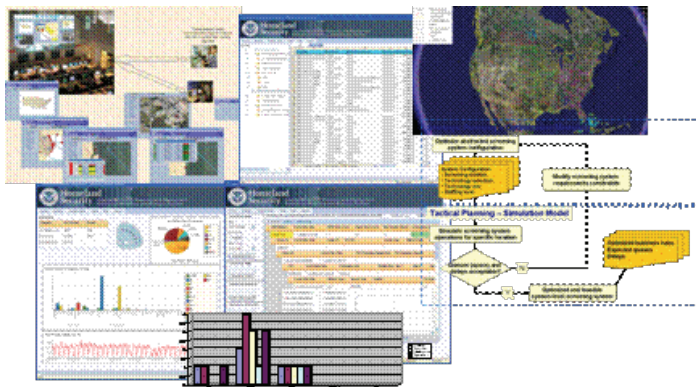
- Provides a functional and integrated view of capabilities for protecting critical infrastructures, personnel, cargo, operations, and resources;
- Helps see the integrated nature of system and the repercussions of any misstep;
- Provides a mechanism for performance-based evaluation, allowing one to benchmark system improvements;
- Facilitates planning and tradeoff analysis of technology alternatives;
- Supports testing new deployments quickly, cost effectively, and without disruption to operations;
- Supports the development of targeted security technology packages that mesh with business and/or organizational requirements, maximizing effectiveness and efficiency while minimizing cost;
- Supports the assessment of areas of concern such as cost, risk, operational impact, economic impact, and stakeholder impact;
- Reduces the gap between strategic vision and operational execution
- Facilitates the communication of program elements between stakeholders; and
- Provides a valuable and tangible resource with lasting value for successive engagements.

### Enterprise Modeling & Analysis Framework



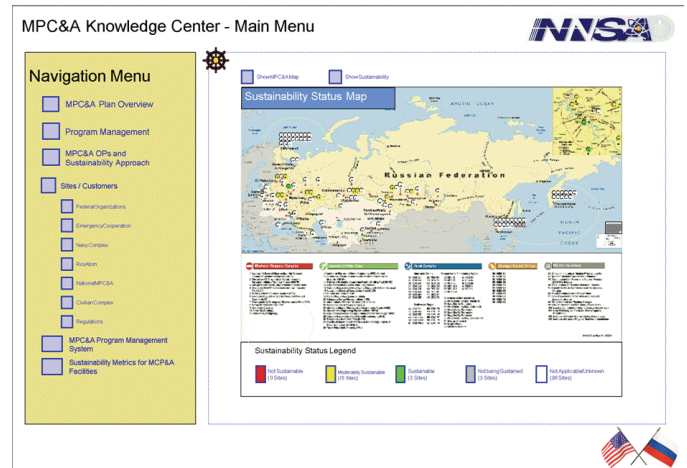
## EMA Applications:

EMA for Transportation Security provides an enterprise decision analysis and knowledge management framework within which to integrate and standardize information. It will help an organization design, manage, plan, track, and analyze its transition to a secure, efficient, cost effective, sustainable, and resilient transportation system. EMA for Transportation Security integrates (1) multi-sourced data, to include infrastructure (multi-modal) data, operational data, survey data, and technology performance data; (2) advanced statistical tools to support data quality analysis and



anomaly detection; (3) advanced optimization and simulation tools to support effective security system design, technology investment decision analysis, life cycle cost assessment, operations analysis, economic assessment, and network analysis for readiness and resiliency assessment; and (4) geographic and dashboard visualization tools to view and assess the system state.

Building a Sustainable Material Protection Control & Accounting (MPC&A) program requires collaboration and coordination across traditional boundaries, both horizontally between nuclear facilities, agencies, and services; and vertically between different levels of government. The MPC&A Knowledge Center (MKC) was developed to meet this need. Partners and stakeholders from various international, federal,



regional, and local governments, as well as the private sector and academia are engaged to systematically create an integrated knowledge center. The MKC provides a comprehensive view of the organization, systems, processes, and people involved in the program to upgrade 100+ U.S.-Russian nuclear cooperative sites. The MKC helps in performing gap analysis; managing MPC&A change; identifying site-critical processes; and sharing knowledge such as lessons learned, best practices, and standards among the sites and stakeholders.

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