

ENTERPRISE LOGISTICS MODELING

Integrated Supply and Repair Chains for Total Life Cycle Cost Analysis

Highlights

Why is Enterprise Logistic Modeling important?

- Defines the global enterprise operational and support environment.
- Integrates supply, repair, manufacturing, and transportation processes for worldwide support.
- Calculates equipment and support system performance and cost metrics.
- Predicts long-term performance outcomes at any level in the enterprise.
- Supports critical business decisions for enterprise scale problems.

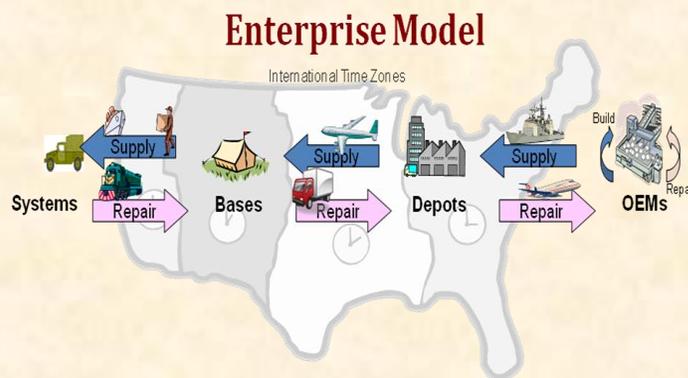
What are the Objectives for Developing this Capability?

- Characterize lifecycle sustainment of a platform and its support structure.
- Identify interdependencies of various enterprise components.
- Assess the responsiveness of an enterprise sustainment structure.
- Identify lifecycle cost drivers.
- Assess lifecycle performance of a global enterprise.
- Evaluate infrastructure design and business approach.



Enterprise Logistics Modeling Overview

Enterprise logistics modeling enables the exploration of long-term performance for a global sustainment infrastructure. Analysts are motivated to model the enterprise to better understand anticipated lifecycle costs, evaluate sustainment requirements, and perform a variety of sustainment-related trade studies. This capability can be used to support a wide range of design and operational analyses, requirements validation, trade studies, and analysis of alternatives to provide decision support for long-term enterprise planning.



What are the research areas?

- Simulation of large scale enterprise models can be extremely computationally expensive. One area of research is to develop high fidelity simulation tools that are computationally efficient. Specialized data structures and distributed computing techniques are being explored.
- Multi-echelon inventory management is an ongoing area of research. It is critical that these techniques can capture implicit dependencies across the enterprise.
- Many simulations aggregate all cost indicators into a single cost number. In reality the sources of money (color of money) have a large impact on enterprise level operations. The capability to capture the cause and effect is a highly challenging problem.

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Key Features

Software Tools

- Support Enterprise Model (SEM) – A toolset with the capability to help characterize sustainment system performance including supply, repair, and manufacturing activities over the entire life of the enterprise.
- System of Systems Analysis Toolset Enterprise (SoSAT Enterprise) – A toolset with the capability to perform SoS analysis with integrated enterprise level components for assessing lifecycle operational and support sustainment.

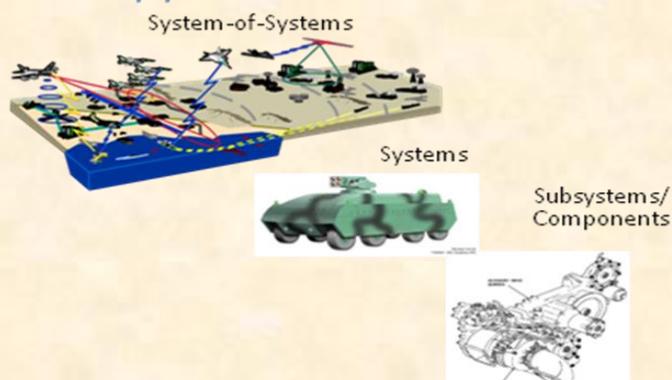
Current Capabilities

- Global operations with arbitrary multi-echelon support structure
- Integrated supply, repair, manufacturing, and transportation processes
- Dynamic changes throughout the lifecycle

Example Applications

- Lifecycle/total ownership cost component analysis
- Sustainment assessment
- Resource management and planning
- Inventory management and planning
- Acquisition programs evaluation

Support at all Levels...



Key Benefits

Program Evaluation

- Evaluate total program (enterprise) costs and identify cost drivers
- Characterize the impact of enterprise architecture, processes and business rules, equipment reliability and maintainability characteristics, and equipment usage
- Provide strategic planning support for resource management and program risk mitigation

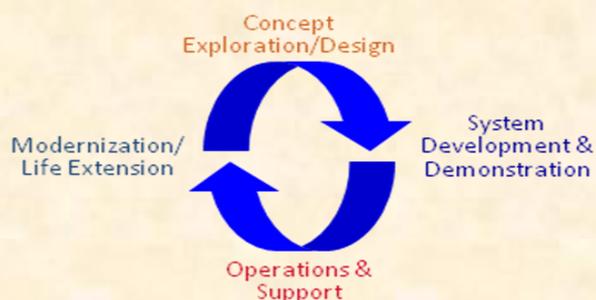
In-Depth Understanding

- Evaluating the model will help identify strengths and weaknesses of resource and inventory management, as well as the stability of the support structure
- Sensitivity analysis of the model input will help determine the effect on model output uncertainty

Defensible Decisions

- Provides defensible results to support critical business decisions for enterprise scale problems
- Offers insights into the uncertainty of enterprise requirements and operations
- Identifies hidden dependencies that may otherwise have been overlooked
- Allows historical models to verify and validate current logistics modeling

...Across Entire Life Cycle



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