Air Cargo Screening Cost Analysis

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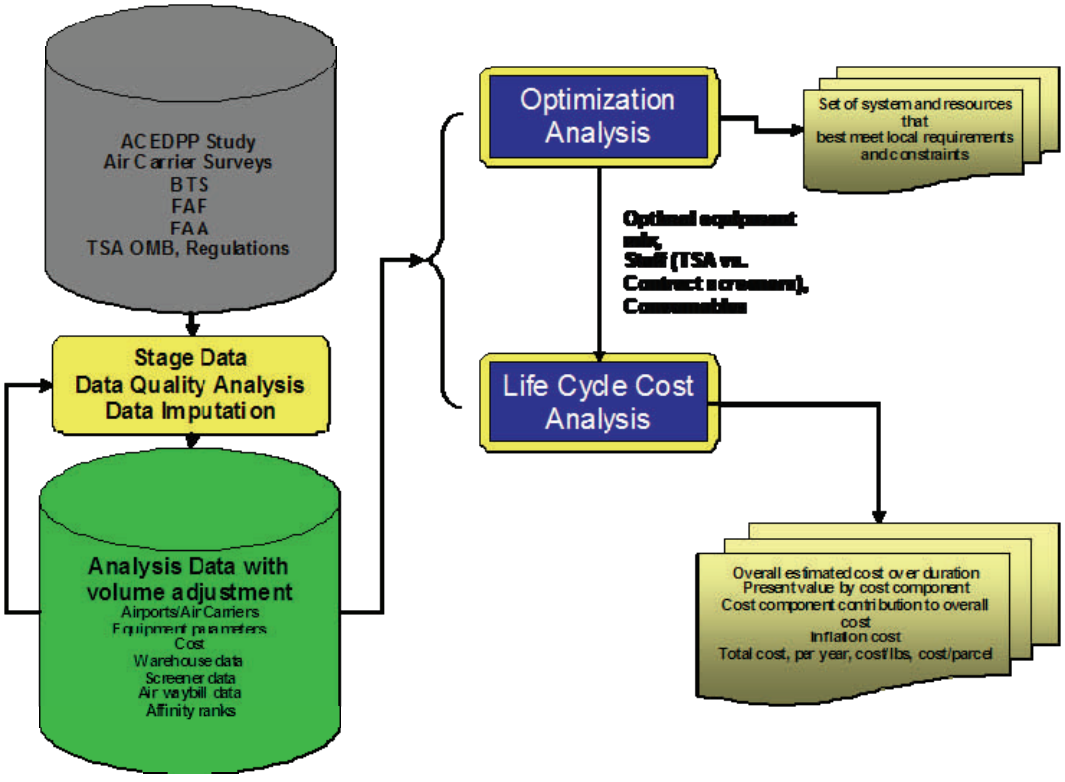
In the Department of Homeland Security Appropriations Act of 2006, Congress tasked the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (DHS/S&T) and Transportation Security Administration (TSA) to undertake pilot programs and life cycle cost estimation projects to assess enhanced aviation cargo screening approaches. TSA tasked the Department of Energy's Oak Ridge National Laboratory (ORNL) to support the TSA requirement to develop cost estimates for the operational concepts developed in the DHS S&T pilot program. The objective of the air cargo cost analysis project was to help TSA meet its air cargo screening mandates by developing defensible cost estimates for implementing screening systems at the top ten passenger and top five all-cargo airports.

ORNL used its Enterprise Modeling and Analysis (EMA) cost estimation system in this project to determine the optimal screening system design for screening cargo at existing air carrier operational facilities, and to provide life cycle cost estimates of the screening system.



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Oak Ridge National Laboratory is managed by UT-Battelle, LLC, for the U.S. Department of Energy under Contract number DE-AC05-00OR22725

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Benefits of Using the EMA Cost Estimation System

Using the optimization and life cycle models developed in ORNL's EMA cost estimation system allowed TSA to:

- Estimate the costs of screening air cargo at the various airports.
- Determine how the costs were distributed across cost categories, e.g. labor, equipment, etc.
- Perform sensitivity analysis to identify the largest cost drivers found within the air cargo screening system, e.g. equipment choice, staffing levels, cargo volume, etc.
- Ensure the screening costs reflected the system's ability to handle peak demand.
- Estimate the life cycle costs of the optimal screening system.
- Support credible comparisons of screening system alternatives.

A Verified and Validated Solution to Air Cargo Analysis

As part of the project, TSA tasked an independent entity to verify and validate the optimization and life cycle cost components of the EMA cost estimation system. The independent verification and validation effort concluded that:

- "The model is credible and produces solutions consistent with sound analytical judgment," and
- "The model is suited for evaluation of strategic long-range decisions regarding the configuration of air cargo screening systems."

TSA is currently undertaking a further effort to independently verify and validate the simulation part of the cost estimation system.

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