

DEVELOPMENT OF AN INTERACTIVE FREIGHT MOBILITY AND SECURITY DATABASE STRUCTURE FOR RESEARCH AND FREIGHT MODELING APPLICATIONS

PROBLEM STATEMENT

The importance of freight mobility and its integration into the transportation infrastructure at the local, state, or national level is becoming more important as the public consumes more commodities that require longer transport distances. Accompanying this issue of freight mobility is the necessity of the safety and security of the supply chain. With the increased awareness of international terrorism, it has become evident that heightened security requirements are necessary.

An online data management system that integrates the ability to enter freight data, port security data, and information; report cargo theft; store these records with previously entered (historical) data; and cross-reference it could provide a versatile tool for engineers, planners, and seaport operations personnel. Developing a useful structure that combines storage and analysis of freight data records through cross-classification of user-specified information could assist in the evaluation of seaport operations, including the mobility of freight in and out of Florida's seaports. This system could be applied to future freight research or freight modeling.

OBJECTIVES

The first objective of this project is to develop a comprehensive database for referencing documentation regarding intermodal freight transportation, including safety and security of related facilities. The second objective is to integrate into the database a repository of vessel and freight data that can be shared through the use of a web site. The database will be flexible enough to provide a foundation as further development and enhancements in freight mobility occur. Recent advancements in computer technology have led to more sophisticated hardware and software to manage freight transportation systems and facilities. Through the combined efforts of public agencies and private industry, resource utilization for programs addressing issues such as the safety and security of freight transportation may improve with an available detailed reference source. This database could bridge available information between related agencies and organizations to coordinate efforts in developing such programs.

FINDINGS AND CONCLUSIONS

Efforts were made in the development of this web site to upload vessel and freight data into the database via the web portal. The purpose of this effort was to allow users that have not been trained in database development to be able to create tables and relationships between data. It was determined that allowing the end user the ability to generate tables and relationships within the database could itself present a risk, not only in data integrity but also database security. Another contributing factor preventing this relationship application is the differences in vessel data formats in

which the ports store their records. Even the two data sets provided by Port Everglades (one from 1995 and the other from 2000) showed some differences. Some historical vessel data may only be available as hard copies and would need to be manually entered into the database.

As with any web site that uses a database, the services of a webmaster and a database administrator would be needed in order to keep it maintained and current. The database administrator would be especially important when new data sources, such as additional ports, are added. The database structure would need to be updated regularly as changes are identified in the data sets ports would supply. The overall findings from the online evaluation of the database structure requirements are that the structure would need to be dynamic in order to ensure future versatility as port data changes and is updated, a more defined structure would be required with direct input from FDOT and the port authorities (the targeted users of the data management system), and relationships between data fields would need to be specified by the database administrator because interactive use of the database online would pose a security risk.

BENEFITS

The web site and database that were developed for this project can serve as tools for sharing research data and security information. This site demonstrates how warehousing and sharing data can assist in improving seaport management and development of best practices making Florida's ports more secure and viable.

This research project was conducted by Patrick Kerr, of the Center for Advanced Transportation Systems Simulation. For more information, contact Meredith Dahlrose, Project Manager, at (850) 414-4551, meredith.dahlrose@dot.state.fl.us.