Development of Traffic Operations Software Tools
Contract BC-354-61
Final Report Summary

Problem Statement

Florida's Statewide Intelligent Transportation Systems (ITS) Architecture contains a central data warehouse (CDW) component in its Statewide Concept of Operations. The principal function of a CDW is to collect and store statewide information from many data sources and make it available for use by different applications. The CDW will allow data from these separate and disparate data sources to be aggregated.

Florida Department of Transportation Contract BC-354-61 was initiated to perform a feasibility study for a central data warehouse (CDW) for data generated and used by various ITS applications in Florida and to provide preliminary recommendations on the configuration and functionality of a CDW in preparation for a future project phase.

There are several candidate alternatives that arise at all levels in the design of a CDW especially with respect to the level of centralization or decentralization. The advantages and disadvantages of each alternative must be weighed carefully against the requirements of the project. The problem to be addressed in this study is the development of a high level view of the scope of the proposed CDW, in terms of the information needs, the data availability, the hardware and software platforms, the communications requirements and the data processing requirements.

Objectives

The primary objectives of this project were to develop a conceptual design for a statewide CDW covering the full range of ITS functions and services and to produce a roadmap for further development. Specific tasks carried out in support of these objectives included 1) identification of the resources available for the development of a CDW for ITS applications; 2) Identification of the common concepts and standards (both industry-wide and ITS-specific) that apply to the design of a CDW; 3) Development of high-level recommendations for the configuration and operation of a CDW as a component of Florida's ITS establishment and 4) Development of a physical prototype for a CDW, designed to illustrate the concepts and recommendations contained in the report.

Results

The results include the recommendations that can be offered at this time, given the relatively coarse level of the investigations that have been done to this point. These recommendations define the nature of the system that should be pursued in the next phase of the study, during which substantially more detail will be required. Recommendations are provided on high level requirements for data presentation and decision support. A multi-tier architecture is proposed, including a preliminary description of the system components. A proposed data flow schema is described. An assessment of risks and their associated mitigating actions is presented. A

prospectus is included for a proof-of-concept study as a subsequent phase of the CDW development program. Finally, a software prototype of a CDW with minimal functionality was developed for demonstration purposes.

Benefits

This project has provided the FDOT with high level recommendations for the first phase of the development of a central data warehouse. When the CDW has been fully implemented, the ITS establishment in Florida will be significantly enhanced. When fully implemented, the CDW will:

- Provide more and better information for managing and operating the transportation system,
- Promote the use of archived data for multiple purposes,
- Maximize cost-effectiveness of the data collection infrastructure,
- Reduce data acquisition costs,
- Support automated government reporting systems,
- Conform to established business practice in other industries and
- Facilitate the introduction of new ITS applications