Incorporating Intermodalism into Transportation Planning

The Intermodal Management System as a Foundation

MICHAEL D. MEYER

The Intermodal Management System (IMS) is one of the more challenging of the six management systems required by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). At its very heart, IMS encompasses much of what ISTEA intended as a shift in the transportation planning process: increased emphasis on intermodalism and greater use of performance-based planning tools. As noted in the Interim Final Rule for the management systems, IMS is

> a systematic process of, 1) identifying key linkages between one or more modes of transportation, where the performance or use of one mode will affect another, 2) defining strategies for improving the effectiveness of these modal interactions, and 3) evaluating and implementing these strategies to enhance the overall performance of the transportation system.

Importantly, IMS is to be developed in coordination with the Congestion Management System (CMS) and the Public Transportation Management System (PTMS). This coordination can occur through the types of strategies and options that are to be considered by each of these systems, by the definition of the targeted transportation system, and with the identification of compatible performance measures. In addition, IMS, CMS, and PTMS are to be integrated with the transportation planning process at the state and metropolitan levels.

Michael D. Meyer is Professor and Director of the Transportation Research and Education Center, Georgia Institute of Technology.

Linking Modes

Crucial to this definition of an IMS is the concept of links (or connections) from one mode to another that are often inherent in many trips. Transportation professionals have known for years that terminals or transfer points are major bottlenecks for the efficient movement of people and goods.

IMS now provides a means of highlighting these issues in the planning process. The types of planning and policy issues that can be considered as part of IMS planning process include such things as physical constraints that limit the access to intermodal facilities (e.g., bridge height restrictions and posted bridge weights for truck access), coordination and transferability (e.g., delays caused at highway and rail or waterway crossings), delivery and collection (e.g., landside access to airports and truck curbside restrictions), safety (e.g., bicycle and pedestrian safety at high-volume locations), legal and regulatory issues (e.g., truck route restrictions), and economic and environmental impacts (e.g., economic impact of railroad abandonment). By focusing its system monitoring and strategy identification activities on the intermodal elements of the transportation system, IMS can provide significant input into the process of resolving many of these issues.

New Challenges

Although each of the ISTEA management systems has its own set of challenges associated with development and implementation, IMS represents a true departure from many characteristics of transportation planning as it has traditionally occurred. The key elements of this departure include the following:

- Goods movement. IMS focuses on the intermodal movement of people and goods. However, transportation planning has not had a long record of successfully dealing with goods movement, from either a technical or process perspective. IMS now places greater emphasis on these issues.
- Data collection and analysis. The effective analysis and evaluation of the intermodal movement of people and goods needs to be based on data that describe such movement and that can be used to forecast future trip patterns and needs. Much of this information will probably come from private sources where proprietary issues could become significant.
- Measures of system performance. The basic foundation of IMS is the identification of performance measures that represent what is truly important in the role of transportation in the economy and

community quality of life. Although level of service and congestion variables could be meaningful indicators for system performance, many others may have greater significance to the users of the intermodal transportation system (e.g., system reliability in the case of goods movement).

• Open process. All of the management systems are to be developed with opportunities provided for public involvement. In the case of IMS, for example, the Interim Final Rule states that IMS performance measures shall be "established cooperatively at the State and local levels with private sector coordination, as appropriate." This suggests that a wide variety of groups that have seldom been involved in transportation planning (e.g., trucking firms, rail operators, airport operators, shippers, etc.) now need to be involved.

Perhaps the greatest challenge to IMS is that of developing the required strong link to the systems planning process. All of the management systems should be viewed as supporting, not replacing, the systems planning process. However, because IMS is so new, there is the risk that its development could occur outside the systems planning context (in order to better understand the underlying phenomena) and be perceived as a separate process. IMS developers must carefully consider the relationship between IMS and systems planning and indeed the interrelationship among IMS, CMS, and PTMS.

IMS Development

Most states are in the early stages of developing their IMS. One of the first steps in IMS development is an inventory of intermodal facilities; this step appears to be the one that is most advanced among the states. Ohio, for example, has conducted an extensive inventory of intermodal facilities, as have California and several other states. Given that such an inventory is to be completed by October, it should not be surprising that this element of a state's IMS has received most attention.

ransportation planners and decision mak-

continued on page 44

Public Transportation Facilities and Equipment Management

SEAN LIBBERTON and DWAYNE WEEKS

Ters face a number of challenges in the coming years: maintaining and improving mobility, reducing automobile emissions, and equitably distributing services to meet the needs of all sectors of society. Public mass transit will no doubt play a very large role in meeting these needs. However, transit service providers themselves must address a number of issues:

• Uncertain availability of federal, state, and local funding resources;

• Increased competition for these funds, not just among types of transit projects but also among transit and other modal investments and public expenditures;

• An aging capital base. According to FTA's most recent report to Congress on the performance and condition of mass transit in the United States, expenditures of $3.1 billion per year will be required just to maintain, but not improve, the condition of current transit assets;

• New statutory obligations to serve disabled Americans, as required by the Americans with Disabilities Act of 1990, and improve vehicular emissions, as mandated by the Clean Air Act Amendments of 1990.

These issues necessitate the prudent management, efficient operation, and timely maintenance, rehabilitation, and replacement of existing transit assets. The Public Transportation Facilities and Equipment Management System (PTMS) requirement of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) is one mechanism that states, metropolitan planning organizations, and transit operators can use to evaluate the condition of major transit capital assets for the purpose of determining statewide investment priorities.

Sean Libberton and Dwayne Weeks are planners with the Federal Transit Administration.

Intent of PTMS

The intent of PTMS is to provide decision makers with the information "to select cost-effective strategies for providing and maintaining transit assets in a serviceable condition." It supports both statewide and metropolitan transportation planning by identifying needs, and the strategies to meet these needs, as inputs to the planning process. PTMS further supports the results of the congestion and intermodal management systems by determining the capacity and condition of the existing capital stock—and expansion requirements—necessary to implement the transit strategies generated by these systems.

State Requirements

Consistent with the other management systems, PTMS is ultimately a state requirement. For many state departments of transportation (DOTs), the monitoring

Development of Systems and Application Architectures for Geographic Information Systems in Transportation

The first phase of the National Cooperative Highway Research Project 20-27 (Adaptation of Geographic Information Systems for Transportation) found that GIS-T offered numerous advantages for the management of information in state departments of transportation (DOTs) and developed a conceptual client-server architecture for GIS-T. It was noted, however, that more work was needed to address data, institutional, and technological problems hindering wider application of such systems.

NCHRP Project 20-27(2) is intended to develop data and functional models for GIS-T systems and applications to facilitate the development of detailed architectures for innovative applications addressing the critical missions of DOTs. The project will involve the compilation and synthesis of existing concepts and models, the formulation of fundamental models, and review and refinement of these models by noted experts. The models will serve to provide the basis for the conceptualization of innovative applications under GIS-T.

The University of Wisconsin has been awarded a 19-month, $200,000 contract [NCHRP Project 20-27(2), fiscal year 1993] to provide a top-level view of the information, technology, and functionality provided by GIS-T to support innovative applications.

For further information, contact Kenneth S. Opiela, TRB (telephone 202-334-3237).

Environmental Impact of Construction and Repair Materials on Surface and Groundwater

Considerable research has been conducted on water-quality impacts from highway and vehicle operations, maintenance practices, and atmospheric deposition. Currently there is concern that the use of some materials, including recycled and waste products now being considered for use in construction and repair, may affect the environment.

Oregon State University has been awarded an 18-month, $200,000 contract (NCHRP Project 25-9, fiscal year 1994) to develop a validated methodology for assessing the environmental impact of highway construction and repair materials on surface water and groundwater, and to apply the methodology to a spectrum of materials in representative environments.

For more information, contact Frank R. McCullagh, TRB (telephone 202-334-3236).

Derailment of Transit Vehicles in Special Trackwork

Derailment of transit vehicles in special trackwork is a major concern to transit properties because of safety and economic considerations. Research is needed to investigate the parameters that contribute to derailments in special trackwork, evaluate current mitigation methods, and develop better means for reducing such derailments.

ZETA-TECH Associates, Inc. has been awarded a 24-month, $399,956 contract (TCRP Project D-2, fiscal year 1993) to (*a*) develop optimum mitigation methods and (*b*) provide design and maintenance guidelines that can be used by transit properties to reduce incidents of transit-vehicle derailments in special trackwork.

For further information, contact Amir N. Hanna, TRB (202-334-2886).

Incorporating Intermodalism *continued from page 30*

The real test of IMS development, however, will be the identification of performance measures. Only a few states have reached this stage of development, with many states not likely to identify such measures until later in the year. Some examples of performance measures include time for transfer of people and goods from one mode to another (Ohio, Florida), reliability of travel time (California), and safety record (Oregon).

In sum, IMS is potentially one of the most important innovations resulting from ISTEA. More than any other tool available to planners, it has the greatest chance of firmly embedding the "I" from ISTEA into transportation planning. In addition, by opening the planning process to many users of the transportation system who have not been heard before, IMS takes a major step in introducing a customer perspective into the planning and decision-making processes.