



A comprehensive, fully integrated Transportation Asset Management System weaves together information on all asset inventories, condition and performance databases, and alternative investment options.

Source: FHWA Asset Management Primer



U.S. Department
of Transportation
**Federal Highway
Administration**

MANAGING INFRASTRUCTURE DATA

Data Integration and Data Sharing for Transportation Asset Management

The Federal Highway Administration's (FHWA) Office of Asset Management has embarked on a major research initiative to assess the data integration needs of transportation agencies and to provide technical assistance to address those needs. This FHWA initiative underscores the importance of effective information management in supporting a variety of decision-making processes.

Why Data Integration

Information management activities within transportation agencies involve tools and methodologies to collect, store, process, analyze, and present data elements required for a wide range of management analyses. The comprehensive information arising from these activities is necessary to monitor and report on the condition and performance of the inventory base, develop performance objectives and measures, identify cost-effective investment strategies, and conduct value assessments for different types of assets. Because Asset Management's business processes merge existing management systems to create a holistic decision-making framework, data integration and data sharing are central to Transportation Asset Management.

What Data Integration Involves

The infrastructure management systems developed by transportation agencies, such as those used for pavements and bridges, provide a rich foundation from which to build the database system required to support Asset Management. Some agencies may decide to protect their prior investment in data collection and maintain their current, or legacy, information systems and data management capabilities. Others may find it necessary to upgrade or migrate their systems to facilitate database integration. In either case, the goal is to integrate core data from the existing asset management systems with other information systems, such as those used for managing physical, financial, and human resources. Bringing compatibility to the disparate data sets is challenging, however, because each system usually is characterized by limited capability for data exchange.

Although it is not necessary to store all the data in a single repository, it is crucial that the data be readily accessible and comparable. Storing, accessing, and distributing data may be accomplished through a variety of means, including database consolidation (warehousing) or database interoperation (linking computer servers through a network).

FHWA's Role

Applications of data integration strategies to support Asset Management have occurred in only a few transportation agencies, and these applications have been limited in scope. Many States are looking to FHWA to provide technical assistance on approaches for effectively integrating their databases. Such assistance includes identification of compatible data referencing methods, standardization of data management and data processing procedures, and evaluation and selection of appropriate technologies and information system tools.

In response to this need, FHWA's Office of Asset Management is collecting, developing, and disseminating the following information pertaining to data integration:

- Alternative approaches and strategies that can be adopted by transportation agencies
- Best practices from transportation agencies that have integrated their databases
- Methods for dealing with legacy systems
- Development and application of data standards
- Available technologies including geographic information systems and Web-based tools
- Common problems or barriers encountered and ways to alleviate them (lessons learned)
- Subject areas and issues that require further research

As new technologies and business processes affecting data integration continue to be introduced, research activities in this area will be ongoing. In the near term the FHWA will be working on five interrelated initiatives: producing informational materials, conducting a national forum for peer exchange, preparing a research agenda, evaluating technologies, and providing technical assistance to States.

FHWA Data Integration Initiatives

1. Informative materials:
 - Primer on data integration
 - Glossary of data integration terms
 - Case studies of State experiences
2. Data integration workshop for transportation agencies to share their experiences
3. Long-term research agenda
4. Evaluation of innovative procedures and technologies
5. Technical assistance



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To request copies of data integration documents published by FHWA or to inquire about participating in the data integration forum and other research initiatives, please contact:

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