FREIGHT NEWS

Freight Information Highway and Cargo Visibility Prototype

Industry and government are concerned about the capacity of ports and terminals, and the highways, rail lines, and waterways that serve them, to handle steadily increasing volumes of intermodal traffic, especially containerized freight. The volume of intermodal containers moving through ports worldwide doubled over the past decade. Similarly, the volume of intermodal freight moved by air, rail, and truck grew just as dramatically. Over the next two decades, volumes are expected to nearly double again.

Today's intermodal freight system is not equipped to handle this growth. Ineffective links among modes are degrading the reliability and performance of carriers, shippers, and terminal operators. Moreover, the lack of effective information sharing among stakeholders creates bottlenecks and unnecessary delays in the efficient movement of freight. These deficiencies increase operating costs and congestion and decrease safety, economic competitiveness, and air quality.

Inefficient use of chassis and containers affects both industry and ports.

A typical intermodal shipment traverses many miles and changes hands many times. During its journey, information about a shipment is often minimal and its visibility outside of the time that it's under the direct control of any one party is negligible. This lack of information leads to inefficiencies in freight transport due to inadequacies in scheduling, a shortage of available equipment, and the necessity of adding slack into the overall freight transportation timeline. These inefficiencies translate directly into a carrier's bottom line by inflating the size of the required pool of available chassis and containers, increasing the number of empty miles needed for repositioning equipment, and potentially increasing equipment misuse and maintenance. To respond to this situation, the Intermodal Freight Technology Working Group (IFTWG) has been working with the intermodal industry, the U.S. Department of Transportation (USDOT), and ITS America to develop and test applicable ITS technologies. Under the guidance of this public-private partnership, a team consisting of American Presidents Line (APL), PAR Logistics Management Systems, Union Pacific, and Transcentric are now deploying the Freight Information Highway and Cargo Tracking prototype national system.

The Prototype Operational Deployment

Funded by a cost-sharing initiative between USDOT and APL, the prototype system deployment effort began in late 2001. The system is expected to integrate an advanced third-generation chassis tracking system with Internet-based intermodal freight logistics applications to provide end-to-end cargo visibility. One of the project's long-term goals is to provide information on the status and location of an asset over its serviceable life. To accomplish this, standardized information will be provided to intermodal carriers via the PAR "Cargo*Mate" Logistics Information Management System and customized logistics software applications being developed by Transcentric. The cargo visibility system will also be extended to include rail movements by integrating Union Pacific's radio frequency identification rail car tagging system with Transcentric's software applications.

Under this prototype deployment, APL will instrument 60 chassis with the PAR third-generation Cargo*Mate chassis tracking systems. These chassis are tentatively scheduled for deployment at APL sites in Memphis and Oakland. The tracking system will collect location, status, association, and time-stamped data via wireless providers from sensors affixed to transport assets. The system will then consolidate and reformat the data and translate it into useful business information that will be made available to customers over the Internet. Furthermore, the prototype deployment will assess the system's ability to provide security for the shipment of hazardous materials.

Benefits of the Freight Information Highway and Cargo Visibility Prototype

This deployment is expected to demonstrate several key business benefits, including decreasing the nationwide pool of chassis, reducing empty miles, decreasing maintenance costs, reducing equipment damage, and improving rail's ability to support just-in-time logistics. Additionally, this effort will also seek to provide a proof-of-concept of the open-source Freight Information Highway logistics soft-

Container on chassis fully outfitted with tractor.

ware. The successful development of this software could lead to its adoption as an intermodal freight industry standard. This would provide for a degree of logistics information interoperability, which would support the ability to provide cargo visibility across modes and businesses.

An additional, but less tangible, benefit is the enhanced relationships that developed among the project's public and private stakeholders through the IFTWG. The IFTWG was formed in 1998 in an initial meeting sponsored by the Federal Highway Administration, in cooperation with ITS America and other public and private sector interest groups. Since 2000, a major focus of the IFTWG has been on four primary intermodal technology deployment areas identified by stakeholders as key to improving intermodal transportation. These areas are "Cargo Visibility," "Freight Information Highway," "Chassis Business Enterprise," and "Terminal Dray." Spurred by the events of September 11, the IFTWG is now examining how freight technologies might best be applied to support homeland security.

For More Information, Please Contact

Lee Jackson
Transportation Specialist
Office of Freight Management and Operations
Federal Highway Administration
(202) 366-4415
lee.jackson@fhwa.dot.gov

Expected Benefits of the Freight Information Highway and Cargo Visibility Prototype

Stakeholder	Expected Benefit
Shippers/Consignees	Pickup/delivery notification In-transit visibility Increased logistics predictability and reliability Reduced inventories through improved efficiencies Reduced costs through improved efficiencies Enhanced customer service
Ocean Carriers	Pickup/delivery notification Enhanced customer service
Freight Forwarders/Brokers	Pickup/delivery notification In-transit visibility of shipment
Terminal Operators	Increased utilization of chassis and containers Improved lost equipment management and Reductions in equipment mismatches Decreases in equipment empty miles Improved empty repositioning Increased revenue loads per container per year Reduced costs
Truck Drivers	Pickup/delivery notification Advanced notice of chassis availability More efficient use of labor/equipment Future potential for improved roadability of chassis
Rail System	Pickup/delivery notification Improved ability to support just-in-time logistics Enhanced customer service
Port Authority	More cohesive terminal operations Reductions in empties and unused chassis at port Improved cargo information sharing by port users
Government	Improved monitoring of hazardous cargo Future potential for improved roadability of chassis

March 2002
FHWA-OP-02-045
EDL 13619

U.S. Department of Transportation

Federal Highway Administration