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16. Abstract

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As public and private transportation providers deliberate the strengths and weaknesses of the first Act, it is important to record what has evolved in the area of intermodalism at the end of the six-year authorization period. This report examines some of the past challenges and requirements of ISTEA legislation. It reviews the meaning of intermodalism across modes for freight and passenger service. The report takes an in-depth look at public/private intermodal alliances that are working efficiently. These examples of intermodalism across the country are scanned, focusing on the state-of-the-industry. Documents are examined and synthesized to highlight these efforts. Elements identified as barriers to intermodalism are also identified. Recommendations to improve intermodalism are considered. Next, we examine the role of MPOs in intermodal transportation planning and look at the benefits of a National Intermodal Transportation System. Lastly, the report looks at ISTEA's successor, The Transportation Equity Act for the 21st Century (TEA 21).

It is hoped that this publication will be a valuable guide for Federal, state and local planners, policymakers, and transportation practitioners.

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By

Edward Owens
And Carol A. Lewis, Ph.D.

Research Report SWUTC/466050-1

Southwest Region University Transportation Center
Center for Transportation Training and Research
Texas Southern University
3100 Cleburne Avenue
Houston, Texas 77004

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EXECUTIVE SUMMARY

Historically, America's transportation system has been a key factor in the nation's development and economic prosperity. But as Congress recognized in the creation of the National Commission on Intermodal Transportation, the system will need improvements in order to meet the changing needs of the nation. The Intermodal Surface Transportation Efficiency Act (ISTEA) was passed in 1991 with the objective of encouraging greater coordination and efficiency of transportation movement among modes. The Act also offers a new vision for U. S. Transportation policy:

> *It is the policy of the United States to develop a National Intermodal Transportation System that is economically sound, provides the foundation for the nation to compete in the global economy, and will move people and goods in an energy efficient manner. The National Intermodal Transportation System shall consist of all forms of transportation in a unified, interconnected manner, including a transportation system of the future. (Intermodal Surface Transportation Efficiency Act, Section 2).*

The Act continues by designating what should be the benefits of a national intermodal transportation system. Specifically, the following improvements were sought:

- Lowering overall transportation costs by allowing each mode to be used for the portion of the trip to which it is best suited;
- Increasing economic productivity and efficiency, thereby enhancing the nation's global competitiveness;
- Reducing congestion and the burden on overstressed infrastructure components;
- Generating higher returns from public and private infrastructure investments;
- Improving mobility for the elderly, disabled, isolated, and economically disadvantaged; and
- Reducing energy consumption and contributing to improved air quality and environmental conditions.

As a result of ISTEA, we are embarking on a new era of transportation in this country, an era of Intermodalism. Intermodalism refers to the interconnectivity of transportation modes, the use of multiple modes for a single trip and coordinated transportation policy and decision-making. Spurred by technological developments and international competition, the U.S. transportation

system is undergoing an important transformation. For example, the growth in container movement has resulted in greater efficiency and economies of scale, thus fueling rapid expansion worldwide. Similarly, U.S. companies are aggressively pursuing infrastructure improvements that complement increased container usage. However, the vision of developing an Intermodal transportation system of the future did not come without some problems. For example, the National Commission on Intermodal Transportation (NCIT) investigated Intermodal transportation in both the United States and internationally, and found significant barriers which actually prohibited the development of a fully integrated National Transportation System. In a report presented to Congress, the Commission identified the following as significant barriers.

- Policies at the federal level are not structured to stimulate or accommodate intermodalism. US DOT is organized along modal lines and communication across modes is not within normal operating practices.

- Federal funding is heavily geared to highway projects and money for intermodal projects must compete within long-established policies, programs and procedures (Toward a National Intermodal Transportation System: Final Report – NCIT–September 1994).

While the federal government encourages greater intermodalism based on a vision for more competitive and efficient systems, it recognizes that the goals of private companies must also be met. That is, the improved intermodal systems must be profit making for private transportation firms. Therefore, as private and public transportation officials deliberate the strengths and weaknesses of ISTEA and its successor, the Transportation Equity Act of the 21st Century (TEA 21), it is important to record what has evolved in the area of intermodalism through the end of the initial ISTEA authorization period. This paper will review some of the goals of the ISTEA legislation in promoting and planning for intermodalism. It will also identify successful intermodal examples, highlight potential barriers and offer recommendations on ways to improve intermodalism as the nation enters into the 21st Century.

HOW TO USE THIS REPORT

This report is divided into eleven sections. The *first section* provides a historical perspective on the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and takes a look at some of the challenges and requirements of the ISTEA legislation. *Section two* takes a broad look at the meaning of intermodalism from both a freight and passenger perspective. *Sections three and four* look at the development of intermodalism examining both freight transportation and passenger transportation. *Section five* provides several examples of successful intermodal projects. *Section six* looks at some of the barriers to intermodalism, while *section seven* offers some recommendations to improve intermodalism. *Section eight* looks at some of the benefits of a National Intermodal Transportation System and *section nine* examines the role of MPOs in intermodal transportation planning. *Section ten* evaluates ISTEA's successor, the Transportation Equity Act for the 21st Century (TEA-21) and its position on intermodalism. Finally, *section eleven* concludes with some final recommendations and thoughts on intermodalism. The report also includes a glossary of terms, an annotated bibliography and extended resource list.

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1. ISTEA AND INTERMODALISM, A HISTORICAL PERSPECTIVE

Introduction and Background

The Intermodal Surface Transportation Efficiency Act (ISTEA) was passed in 1991 with the objective of encouraging greater coordination and efficiency of transportation movement among modes. The Act issued a challenge to transportation professionals to shift the old paradigms and explore new opportunities to improve the integration of modes, as well as to ask new questions about coordinated freight and passenger movements. The first conference to be co-sponsored by all five modal administrations (FHWA, FAA, FTA, FRA, NHTSA) of the U.S. Department of Transportation was held in December 1992 and confirmed "pooled expertise must be the new, if not yet affirmed approach to addressing the vision for transportation" (Special Report 240, TRB). The conference highlighted the importance of public and private partnerships as a part of the ISTEA mandate. ISTEA was passed with the recognition that the world is becoming more global and in order for the U.S. to be competitive, the consumer for goods and passengers movement must receive consistently high quality, cost-efficient transport. In contrast, Papavassiliou and Archontoulis (1995) suggests a decision support system based on a dynamic programming optimization model to find the optimal solution in the total distribution of goods movement. Their model provides a systems approach to decision-making concentrating on resource inputs and outputs that provides the best strategy to obtain the most competitive advantage in meeting the objectives of the firm.

While the federal government encourages greater intermodalism based on a vision for more competitive and efficient systems, the goals of the private companies must still be met; that is, the improved intermodal systems must be profit making for the private transportation firm. In the few years since the advent of intermodalism, several components have been identified that contribute to successful intermodalism. Key among them is that intermodal partnerships must focus on each partner's strength. Another of the ISTEA requirements is that states must develop a multimodal transportation plan. These plans focused on the coordination between modes and highlighted the state's commitment to promoting and planning for intermodalism. The states were to designate transportation goals and enact policy supportive of improved intermodal mobility and connectivity. In all, ISTEA stipulated 23 planning factors that must be addressed, including social, environmental, financial, and coordination considerations. Although ISTEA's successor, the Transportation Equity Act for the 21st Century did not stress intermodalism, the idea had been planted and examples of intermodal partnerships are numerous.

Therefore, as private and public transportation officials deliberate the strengths and weaknesses of ISTEA and TEA 21 legislation, it is important to record what evolved in the area of intermodalism at the end of the initial ISTEA authorization period. First, we will begin by looking at some of the challenges and requirements of ISTEA legislation.

Challenges and Requirements of ISTEA Legislation

There are several essential elements to accomplishing ISTEA's mission. At the core of the process is an understanding of the U.S. transportation system's current status. The existing conditions can be addressed by answering the following questions:

1) ***What is the greatest strength of U.S. transportation?***
2) ***What has made U.S. transportation the envy and inspiration for nations around the world?***

First, the U.S. transportation system has all the components of a complete system. U.S. residents have access to a vast highway network that connects urban and rural communities across the country. The system central components are the roadways, railroads, marine, and air transportation. People and freight move with relative ease in a cost-efficient manner. Second, we must recognize that the U.S. transportation system is the foundation of U.S. economics. The transportation sector represents about 11 percent of the Growth Domestic Product (Bureau of Labor Statistics, US DOT, National Transportation Statistics 2000). Similarly, the transportation system can be seen as the foundation for all U.S. goods movement. At times, connectivity occurs without delay and in other circumstances, coordination is not so seamless. Multiple transfers, difficult pricing schemes, jurisdictional barriers and lack of available information diminish potential system effectiveness. In order to set a national agenda, which could address these problems, Congress enacted the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ISTEA reflected the country's traditional commitment to highways and transit and also added emphasis on the coordination of multiple modes with the goal to create a "seamless" transportation system. This focus was considered revolutionary and unprecedented by some, as it not only spurred increased integration of modes, but also granted greater flexibility to state and local officials to solve their specific transportation problems. The challenges and requirements of ISTEA are to identify what the U.S. does well, identify needed areas for improvement and facilitate implementation of these improvements. The ultimate purpose is to maximize the benefits that could be achieved through an intermodal transportation system.

National Highway System

A key provision of ISTEA legislation is the designation of a National Highway System (NHS). A NHS consists of an interconnected network of highways and principal arterioles that link major residential areas. This elaborate highway system provides public access to international borders, ports, airports, public transportation facilities, and other intermodal facilities. ISTEA also provides federal funds to support state highway projects as part of this effort to build a National Highway System.

Additionally, the NHS includes an interstate system with high-priority corridors that have been identified by ISTEA as being strategic and important to the United States' national defense. As such, we are witnessing increased coordination and communication among local, state, and federal governments with the Federal Highway Administration (FHWA) and Department of Defense. If successful, the NHS will provide greater economic opportunities for communities not directly served by the interstate system as well as provide international commerce and free trade among neighboring countries such as Mexico and Canada.

The NHS will serve as the basic fabric of a National Transportation System enhancing the capacity of all other modes, bringing them together to operate in a seamless manner that will meet the needs of a global economy in the 21st century.

DOT and FHWA Intermodal Approach

DOT and FHWA have taken numerous steps to implement the intermodal provisions of ISTEA. First, the Office of Intermodalism was created to ensure coordination among all transit modes and to facilitate the development and implementation of intermodal policies, planning, and projects. The Division focuses on intermodal issues in the highway program and serves as a focal point for intermodal issues that involve FHWA programs. The FHWA has worked with the Office of the Secretary and other modal administrations in the implementation of ISTEA's flexible funding procedures, development of intermodal passenger terminals, and coordination of providing training and technical assistance.

2. WHAT IS INTERMODALISM?

The U.S. Department of Transportation Office of Intermodalism defines *Intermodalism* as ***...*** the use of more than one form of transportation. Established in 1992, the Office of Intermodalism is responsible for coordinating Department of Transportation's projects, programs and policies involving more than one mode of transportation.

Intermodal systems highlight the points and links between modes with the objective of streamlining the interface. "An intermodal transportation system should be viewed from the perspective of the total trip. Therefore, not only are the points of connection between modes important, but so too are the links that connect these points." (TRB Special Report 240). Euritt and Harrison (1994) write that intermodal transportation is a "commonly used term to describe rail freight movement using trailers, or containers, on flat cars, or a double stack of containers in special rail cars. Alternatively, it may describe people or goods movement within a transportation center. The Intermodal Association of North America describes intermodalism as "a movement by a combination of two or more modes." Central to these definitions is the perception of a smoothly coordinated trip. For freight, the transportation network flows without re-handling goods at transfer points. This maneuver occurs via container and equipment movement.

In the passenger sense, the intermodal label indicates a transfer facilitated by minimal waiting time with the fare for the entire trip covered in few payments. The U.S. Department of Transportation's definition incorporates the movement of both people and goods. Further, it expands the concepts of intermodalism to include distinct areas including connections, choices, coordination and cooperation.

The concepts of "Intermodalism" have been applied by the freight industry for many years to provide the shipper with the most efficient movement of goods for the best value. The same concepts that work for freight have broad applications to all types of transportation. In its simplest terms, "intermodalism" covers all of the issues and activities, which may affect or involve more than one mode of transportation. It has several important aspects: the safe and efficient connection or transfers of passengers or goods from one mode to another; the provision of transportation choices or options between different modes; and the coordination and cooperation among transportation providers in providing improved transportation services.

3. INTERMODAL FREIGHT TRANSPORTATION

Intermodalism has taken hold in the Freight Sector

The increasing importance of intermodalism in this country can best be illustrated in the freight sector. Intermodal freight traffic is increasingly driving our market and world economy. The era of intermodal freight transportation began in the mid-1980s, when ocean carriers and railroads teamed up to launch double-stack rail container service. This approach used two shipping containers on specialized railcars for greater efficiency. Since this system was introduced, its growth has been explosive. New partnerships between ocean carriers, railroads, truckers, and shippers have been formed, providing our Nation's economy with efficient, cost-effective, seamless service, and driving dramatic changes in land and ocean shipping.

The new intermodal partnerships among rail, truck, and ocean carriers offer classic examples of the promises of intermodalism: lower costs, which result in lower prices for consumers and improved marketability for U.S. exporters; congestion relief, by shifting traffic from highways to the private sector rail network; and environmental benefits, because rail and water transport typically cause less damage to the environment. Additionally, new information technology, expanded use of air freight, sophisticated logistics operations including just-in-time delivery practices, and other industry factors are expected to drive a substantial increase in intermodal freight traffic. Deregulation and competition have already help to facilitate this growth. However, the National Commission on Intermodal Transportation (NCIT, September 1994) learned that the great success of freight intermodalism has resulted in some of the problems outlined below.

Terminal Access and Urban Congestion

Connections between interstate highways, ports, rail yards, and truck terminals have often shared congested city streets with residents and commuters. Significant investments have been made by port authorities, railroads, trucking companies and terminal operators to develop modern terminals. Nevertheless, planning has not always been coordinated with local communities, and upgraded access routes do not always serve upgraded terminals. For example, some state transportation organizations have complained that a major intermodal freight problem is highway access to terminals. Other private trucking companies have complained that freight intermodal growth has far outweighed the infrastructure support needed.

State and Local Taxes

As a result of a previous Supreme Court decision, states can now impose sales taxes on the lease of containers used exclusively in international commerce. This decision has also reopened the debate on the imposition of local property taxes on domestically owned containers used exclusively in international commerce. In both cases, this outcome could lead to a proliferation of local taxes and produce a negative impact on the free-flow of intermodal freight.

Public-Private Freight Planning Guidelines

The world of freight has changed dramatically over the past several decades. Since the advent of intermodalism in the mid-1950s, freight transportation has undergone significant changes, which have increased the efficiency of goods movement. Intermodalism has created a system of goods movement in which containers can be moved from one mode to another without breaking and repackaging crates. Deregulation of motor carriers and railroads along with revised freight rates led to greater competition and lower shipping costs. The advent of integrated logistics and supply-chain management result in just-in-time delivery of goods and the need for transportation networks which enable quick and reliable deliver of freight.

Due to such innovations and efficiency improvements, total logistics costs dropped substantially as a percentage of the U.S. gross domestic product between 1980 and 1990. These cost savings are passed on to consumers throughout the economy, which translates into direct economic gains for almost all members of society. Improving the efficiency of our national and regional transportation networks will also result in cost savings and increase economic competitiveness.

In response to the ever-changing world of freight transportation and its implications to our economy, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) amended the metropolitan planning requirements and established that statewide transportation planning requirements also consider freight and goods movement. Although many efforts had considered freight in their transportation planning efforts, this was the first time that the Federal government required freight planning. The guidelines were derived from research conducted for the Federal Highway Administration (FHWA) by the American Trucking Associations, the Pennsylvania State University Center for Logistics Research, and the Pennsylvania Transportation Institute. The guidelines areintended to provide MPO staff and interested private-sector personnel with important information based on real-world examples of public-private freight planning efforts, on what can be accomplished, and how to initiate and maintain

freight planning efforts. For more information, see ISTEA's Section 450.312 of the Metropolitan Planning Regulations.

Examples of Public-Private Freight Planning

In keeping with ISTEA's themes of flexibility and decentralization, the planning regulations developed in response to ISTEA did not prescribe what MPOs had to do to meet the new requirements. After a period of learning and "getting up to speed" on what planning agencies could accomplish with the new powers ISTEA granted, many MPOs initiated new and innovative efforts for incorporating freight needs into transportation planning. The following provides several examples of how different MPOs are incorporating the input of private sector firms in transportation planning. More detailed information can be found in a report produced by the National Commission on Intermodal Transportation (Toward a National Intermodal Transportation System: Final Report, September 1994). Although this is not a comprehensive list of MPO efforts, the examples demonstrate some of the creative ways in which the private sector can participate in transportation planning.

The Puget Sound Regional Council (PSRC) - The Seattle-Tacoma region formed the Freight Mobility Roundtable in 1994 as a joint venture by PSRC and the Economic Development Council of Seattle and King County (EDC). Originally created to assist with the freight element of the Metropolitan Transportation Plan, the Roundtable has advised PSRC on their freight data collection efforts, helped to put together a list of short-term improvement projects, and has made efforts to educate other members of the freight community about the MPO planning process. For more information please contact PSRC at 206-464-7090.

The Metropolitan Transportation Commission (MTC) - The MTC is the MPO for the region encompassing the cities and suburbs of San Francisco, Oakland, and San Jose. To address private sector freight concerns and to provide them with a voice in the planning process, the MTC formed the Freight Advisory Council. The primary accomplishments of the Council include drafting a list of short-term infrastructure projects to alleviate bottlenecks, surveying truck drivers in the Hayward-Union City-Fremont area, and assisting with goods movement planning workshops for local congestion management agencies. For more information please contact MTC at 510-464-7700.

The Capital District Transportation Committee (CDTC) - The CDTC encompasses the Albany-Schenectady-Troy metropolitan area in upstate New York. Although the region is only a medium-sized metropolitan area, the CDTC formed the Goods Movement Task Force in 1994 as part of their New Visions comprehensive planning effort. The Task Force has helped CDTC identify the major problems facing the freight infrastructure, recommended actions to be

taken, and has identified performance measures specifically for freight planning. For more information please contact CDTC at 518-458-2161.

The Toledo Metropolitan Area Council of Governments (TMACOG) - Toledo is home to the third largest railroad hub in America; twenty-four rail lines converge in the city. With such a strong rail presence, public-private sector planning was prompted by and focused on railroad-related issues. In 1984, seven years before ISTEA, the TMACOG formed the Railroad Task Force (RRTF) for the purpose of providing a forum for addressing rail transportation related issues of mutual concern to the public and private sectors. The RRTF continues as the principal vehicle for freight transportation input to TMACOG and railroad issues continue to be the focus of the Task Force's efforts. The RRTF's accomplishments include cooperating with TMACOG in long range planning, coordinating rail corridor studies, and sponsoring rail safety education programs for the community. For more information please contact TMACOG at 419-241-9155.

The Chicago Area Transportation Study (CATS) - Chicago is the nation's largest intermodal freight market, featuring 26 major intermodal yards, five waterborne freight facilities, and a substantial volume of drayage and local truck traffic. Because of the historical importance of goods movement for the region, CATS has been involved in freight transportation planning even before 1970. CATS have conducted separate travel surveys of the motor carrier industry, which included truck traffic with passenger traffic in the CATS demand model. Motor carrier surveys were conducted in 1970 and 1986. The latest vehicle for incorporating the private freight sector's views into the planning process is the Intermodal Advisory Task Force (IATF). Since 1994, the IATF has assisted CATS in identifying bottlenecks, crafting the Intermodal Element of the TIP, and completing an inventory of the region's intermodal facilities and resources.

The intermodal systems report also provided examples of the private sector's efforts. Specifically, the private sector has been involved with transportation planning for freight. In an attempt to make the private-sector needs be heard through a systematic process, the Freight Stakeholders National Network was created. The Freight Stakeholders National Network is a consortium of eight national industry associations whose collective goal is to promote freight mobility through private-sector-initiated "Freight Stakeholder Coalitions" throughout the country. The eight member associations include the Air Freight Association, the

American Association of Port Authorities, the American Trucking Associations, the Association of American Railroads, the Intermodal Association of North America, the National Association of Manufacturers, the National Industrial Transportation League, and the National Private Truck Council. This National Network has help to form Freight Stakeholders Coalitions in Kansas City, Detroit, and the State of Minnesota, with other potential sites already in the various stages of planning. For more information please contact CATS at 312-793-3460.

4. INTERMODAL PASSENGER TRANSPORTATION

Passenger Transportation's Organizational Structure

Intermodalism is far less developed when it comes to moving people compared to freight. Individual modal systems have traditionally been planned, built, and operated with little regard for coordination or connections. The modal structure of government transportation institutions is a significant barrier to a seamless intermodal passenger system because the passenger sector has historically been closely tied to Federal programs and funding. However, passenger intermodalism has shown some signs of progress since the passage of ISTEA. Bus and rail transit systems are now coordinating their schedules and fare cards. Amtrak and intercity bus lines are recognizing the need to provide coordinated schedules and interline ticketing, and multimodal passenger stations are being planned across the country. In the passenger system, just as in the freight system, poor modal connectivity is a significant barrier to intermodalism. Too often, the bus stations maybe long distances from the commuter rail station, or the transit line stops at airports are out of walking distance to the terminals. The following issues were raised most often during the National Commission on Intermodal Transportation outreach activities to study intermodal transportation in the U.S. (Toward a National Intermodal Transportation System: Final Report, September 1994).

Lack of Intermodal Terminals

Many cities abandoned or demolished downtown passenger rail terminals during the urban renewal era of the 1960's. Yet, by the 1990's, it became clear to many cities that a central, downtown multimodal transportation center would be the heart of a viable passenger intermodal system. Construction of these facilities requires cooperation among local governments, transit and commuter rail operators, public and private bus operators, and often one or more freight railroads. Ownership of such facilities is no longer necessarily a public responsibility. In fact, funding them often requires a complex mix of public and private financing and commercial development arrangements. The Union Stations in Los Angeles and Washington, D.C., and Boston's South Station, are excellent examples of successful projects. Atlanta spent several millions in Federal, city, and private funds for a new multimodal terminal. Intermodal terminals encourage coordination of intercity bus service with rail passenger service. In California, state transportation funds are used by Amtrak to run buses, which offer coordinated service with passenger trains. In Seattle, the King Street Station project is a coalition of transport operators-local, regional, and intercity buses; airport shuttles; pedestrian paths; bike trails; links to the ferry terminals; and Amtrak and commuter rail. It appears that the users of these

systems accept the concept of intermodalism. The difficulty was is in forging implementing agreements between service providers (Muller, Gerhardt 3rd Edition).

Congested Airport Access

Congestion generated by passenger travel to airports is a growing problem in many urban areas. Improved rail transit and commuter rail access to airports can reduce highway congestion. Examples of good transit service to airports exist in Chicago, Atlanta, St. Louis and Washington D.C. area (TRB, 1996).

Parking Availability

One aspect of past challenges faced by Amtrak were the difficulties it had in marketing its services due to the overwhelming need to provide adequate parking facilities. Commuter rail managers echoed these comments across the country. The Metra System in Chicago experienced a similar problem of inadequate parking and this became a major barrier to increased use of commuter rail service. Dependable train service will not be optimally utilized if the parking supply is not adequate. Inadequate funding for parking and the unwillingness of local communities to make land available was also seen as potential intermodal barriers.

Intercity/Commuter Rail Connections

In many markets, particularly in the Northeastern United States and Southern California, seamless transfers between commuter rail systems and Amtrak must be available for rail to become a viable alternative to auto or air travel. Unfortunately, jurisdictional fragmentation of intercity and commuter rail systems has created barriers to seamless connections, particularly in areas like ticketing, information dissemination, and schedule coordination.

Investments are not keeping pace with infrastructure demands

City streets and bridge clearances are major barriers to intermodal transportation. Postponed improvements of infrastructure construction and maintenance contribute to delays and congestion. Unfortunately, even funding Federal transportation programs to authorized levels did not provide sufficient funds to meet all transportation needs that have been identified by Federal, State, and local planners. The Federal Government makes the smallest contribution to the overall funding of transportation. However, Federal policies

have strong influence over transportation funding decisions throughout the system. Federal funds become inducements for significant portions of State, local, and even private expenditures. The challenge is to target the Nation's transportation investments to reap the greatest benefits for the future. Funding intermodal projects, thereby maximizing capacity of the entire system, should be a goal of major transportation policies.

5. EXAMPLES OF SUCCESSFUL INTERMODAL PROJECTS

Intermodal Transportation Center – Fort Worth, Texas

The Intermodal Transportation Center (ITC) is a regional transportation facility that will serve as a transfer point for commuter rail, Amtrak, high speed rail, and an enhanced bus system. The ITC will provide an inviting environment for public transit users for transfers, waiting, information, and other services. Planning for the development of the ITC located at the old Texas and Pacific Railroad (T&P) historical building has been underway for several years under the guidance of the Intermodal Steering Committee, which is composed of private and public sector representatives including the Fort Worth Transportation Authority (the T), and Dallas Area Rapid Transit (DART).

In addition, a RAILTRAN Commuter Rail Project will extend between Fort Worth and Dallas along an existing 34-mile corridor, which was acquired jointly by the cities in 1983 from the trustee of the former Chicago Rock Island and Pacific Railroad. The Federal Transit Administration also participated in the acquisition of this real estate. The cities have designated their local transit agencies, The Fort Worth Transportation Authority (The T) and Dallas Area Rapid Transit (DART), to develop the commuter rail services for the cities (Intermodal Passenger Facilities Project Summaries, US DOT, December 1994, pp.181).

The Alameda Corridor Intermodal Project

The Alameda Corridor Project in Southern California is another example of a partnership between ports, railroads, and surrounding cities to move international freight more efficiently through the ports and to the rest of the country. Similar examples exist on the passenger network. In Boston, the Central Artery Project, originally an all-highway project that has been expanded to include a rail link to close a gap in the passenger rails system. The rail link was proposed to connect more than 600 miles of commuter rail lines and more than 140 stations, and improve transportation alternatives in northern New England by connecting the region to Amtrak. The highway portion of the project includes new port and airport access routes and removes several major bottlenecks.

Joint-Use Intermodal Facilities

Intermodalism has most often been viewed within the context of two largely separate systems; one devoted to freight, and the other to passengers. But, it is important to recognize linkages between the freight and passenger systems. As demand grows for both movement of goods and people, and as parts of the system reach capacity, transportation planners and decision makers must foster interrelationships between these two systems. For example, passenger systems need access to rail lines, many of which are now used exclusively for freight, to move people on commuter rail and intercity rail systems. Los Angeles, St. Louis, and Chicago are leading examples where freight and passenger rail officials reached agreements that benefited all parties. In Chicago, Metra and the Burlington Northern Railroad operate 83 commuter trains, 4 Amtrak trains, and 60 to 100 freight trains daily between Chicago and Aurora with little inconvenience to freight shippers and a 98 percent on-time factor for passengers. In Southern California, the public sector purchased and improved rail lines so that commuter and freight trains can share them. In St. Louis, an imaginative trade of infrastructure between the private and public sectors enabled the construction of a light rail line. Freight carriers need to improve their systems for moving through congested urban areas. Examples were also given in New Orleans, Boston, and Los Angeles where dedicated freight corridors are being developed with support of metropolitan planning organizations and State planners. Only by connecting the modes and addressing the relationship between passenger and freight systems can the full promise of ISTEA be achieved.

6. BARRIERS TO INTERMODALISM

Spurred by technological development and international competition, and encouraged by the vision of ISTEA, the U.S. Transportation System is already undergoing a historic transformation to an intermodal system, particularly in the private sector movement of freight. However, several barriers have been identified as hindrances to the development of a fully Intermodal National Transportation System.

- First, planning and policies, particularly at the Federal level, do not encourage and accommodate intermodalism.

- Second, Federal funding of transportation programs falls short of authorized levels and is directed modally, discouraging investment in Intermodal transportation.

Finally, Federal Government institutions are organized along modal lines, which inhibits planning and developing an intermodal transportation system. (Toward a National Intermodal Transportation System: Final Report – NCIT – September 1994).

7. RECOMMENDATIONS TO IMPROVE INTERMODALISM

Freight containers double-stacked on railcars moving from ports to inland markets have transformed the shape and cost of freight transportation, generating significant savings for the nation shippers and consumers. Ports, airports, railroads, inland waterways, transit and highway systems are the foundation for the Nation's economy, quality of life, and success as a world power. In an era of scarce resources, America needs to invest more strategically in transportation infrastructure to meet the future needs of travelers and shippers and to maintain the Nation's competitive position in an increasingly global economy. Consideration must be given to the relative strengths and efficiencies of all transportation modes. Government policies and spending must optimize the contribution of each mode to the overall transportation system and to the Nation's quality of life.

The Intermodal Surface Transportation Efficiency Act (ISTEA) offers a vision of the intermodal transportation system that America needs for the safe and efficient movement of passengers and freight. Findings from the National Commission on Intermodal Transportation investigation and study of intermodal transportation in the U.S. led to recommendations in three areas that build upon the basic vision of ISTEA. They are as follows:

- First, it is essential that Federal policy makers envision the national transportation infrastructure as a unified system linking the Nation together with the rest of the world. To capture the seamless potential of the system, connections between the modes must be improved. Intermodal connectors, such as multimodal passenger terminals and roads between freight terminals and major highways, are currently among the weakest links in the transportation system.

- Second, the Nation needs to expand investment in transportation by fully funding authorized Federal programs and encouraging innovative financing mechanisms. The Commission also urges increased flexibility in the use of Federal and State funds for intermodal projects.

- Third, government institutions that support the Nation's intermodal transportation system must be better structured to deliver optimal results. While the private sector has changed to meet the needs of the marketplace, the public sector is still organized along modal lines, hampering efforts to reap the benefits of intermodalism. Communities needing to build a road, dredge a port, expand a runway, or construct an intermodal passenger terminal too often are endlessly delayed by conflicting policies and regulations that create a regulatory maze for State and local transportation officials.

In order to accomplish the above three objectives, the Commission proposed 12 recommendations as identified in their September 1994 report entitled: "Toward a National Intermodal Transportation System." The recommendations specify three areas where changes are needed to improve intermodal transportation. These include policy issues, investment issues and the restructuring of government institutions. The Commission recommendations were:

1. Maximize safe and efficient movement of passengers and freight by incorporating individual modes into a National Intermodal Transportation System.

2. Ensure Federal policies foster development of the private sector Freight intermodal system and reduce barriers to the free flow of freight, particularly at international ports and border crossings.

3. Adopt Federal policies that foster development of an Intermodal passenger system incorporating urban, rural, and intercity service, including a viable intercity passenger rail network.

4. Fund Federal transportation infrastructure programs at authorized levels and strategically target these funds for maximum impact.

5. Expand innovative public and private financing methods for transportation projects.

6. Allow greater flexibility and expand eligibility in use of State and Federal transportation funds for intermodal projects of public benefit.

7. Provide Federal funding incentives for intermodal projects of national or regional significance.

8. Expand the intermodal focus of research, education, and technology development efforts.

9. Restructure the U.S. Department of Transportation to better support intermodal transportation.

10. Streamline and expedite the transportation infrastructure planning and project delivery process.

11. Require Department of Transportation concurrence on other Federal agency actions that affect intermodal transportation.

12. Strengthen the metropolitan planning organization process to accomplish the goals of ISTEA.

In making these recommendations, the Commission emphasizes that not all intermodal transportation problems require Federal solutions. Federal policy should support private sector innovation, provide maximum flexibility for State and local transportation officials, and not intrude unnecessarily into private sector operations.

8. BENEFITS OF A NATIONAL INTERMODAL TRANSPORTATION SYSTEM

The National Commission on Intermodal Transportation (NCIT) September 1994 final report “Toward a National Intermodal System” identified several benefits of a National Intermodal Transportation System. The report suggests that Intermodalism offer the promise of:

- lowering overall transportation costs by allowing each mode to be used for the portion of the trip to which it is best suited;
- increasing economic productivity and efficiency, thereby enhancing the Nation's global competitiveness;
- reducing congestion and the burden on overstressed infrastructure components;
- generating higher returns from public and private infrastructure investments;
- improving mobility for the elderly, disabled, isolated, and economically disadvantaged; and
- reducing energy consumption and contributing to improved air quality and environmental conditions.

9. THE ROLE OF MPOs IN INTERMODAL TRANSPORTATION PLANNING

An underlying premise of ISTEA is that States and MPOs have more authority to decide how Federal funds are used. In exchange, Congress sought to preserve the national public interest by imposing substantive new planning and programming requirements. ISTEA mandates that MPOs and States undertake integrated planning, linking transportation and land use, tying transportation to environmental and socioeconomic concerns, and addressing urban congestion, growth demands, and air quality concerns.

The new role of MPOs, their capabilities, and their organizational structures raises some potential challenges in fulfilling these obligations. Many concerns raised by observers hinted that MPOs might not be adequately staffed and trained to handle their expanded role, and suggested that training efforts should be expanded. It was noted that state DOT's could play an important part in providing training for MPO staffs and by serving as a clearinghouse for information regarding effective tools and techniques. This expanded role for MPOs also raised concerns regarding their membership. In many regions, transit providers, ports, airports, and Amtrak remain outside the MPO process. Another concern raised was that central city interests might not have a strong enough voice in the decision-making process. The need to bridge the gaps between public planning and private sector decision making also requires flexibility and commitment from all parties.

It was also noted that Intermodalism in the private sector has resulted in new and productive partnerships. There are opportunities for similar productive solutions in the public sector, but they will require new communication, cooperation, and partnerships. The Alameda Corridor in Southern California and the Tchoupitoulas Corridor in New Orleans are two projects that have emerged as a result of complex partnerships among the host cities, ports, railroads, truckers, labor unions, adjacent residential communities, and environmental advocacy groups. They serve as examples of creative solutions emerging from the new opportunities of ISTEA.

10. REAUTHORIZATION OF ISTEA LEGISLATION – TRANSPORTATION EQUITY ACT OF THE 21ST CENTURY (TEA-21)

On June 9, 1998, the President signed into law PL 105-178, the Transportation Equity Act for the 21st Century (TEA-21) authorizing highway, highway safety, transit and other surface transportation programs for the next 6 years. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. This new Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation, and try to advanced America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation. Significant features of TEA-21 include:

- Assurance of a guaranteed level of Federal funds for surface transportation through FY 2003.

- Continuation of the proven and effective program structure established for highways and transit under the landmark ISTEA legislation. Flexibility in the use of funds, emphasis on measures to improve the environment, focus on a strong planning process as the foundation of good transportation decisions—all ISTEA hallmarks—are continued and enhanced by TEA-21.

- Streamlines the metropolitan and statewide transportation planning processes and includes freight shippers and transit riders as stakeholders. Strengthens the role of local officials and improves public involvement in the planning processes.

Noticeably absent from the title is the word, "intermodalism." TEA-21 does not provide the motivation for coordination from the highest levels of government in the same way as its predecessor. Yet, many of the initiatives begun under ISTEA are still being pursued. The most prevalent outcome is that MPOs and local planning processes now incorporate freight and marine elements as an integral component of the long range planning process.

11. CONCLUSIONS AND RECOMMENDATIONS

ISTEA placed new emphasis on empowering MPOs and States to take advantage of Federal funding flexibility to meet the needs of their jurisdictions. Unfortunately, this strong local focus might prove to be a barrier to projects of national significance that provide benefits beyond local areas.

Ports, airports, railroads, inland waterways, transit and highway systems are the foundation for this Nation's economy, quality of life, and success as a world power. In an era of scarce resources, America needs to invest more strategically in transportation infrastructure to meet the future needs of travelers and shippers and to maintain the Nation's competitive position in an increasingly global economy. Also, consideration must be given to the relative strengths and efficiencies of all transportation modes. Government policies and spending must optimize the contribution of each mode to the overall transportation system and to the Nation's quality of life. The Intermodal Surface Transportation Efficiency Act (ISTEA) offers a vision of the intermodal transportation system that America needs for the safe and efficient movement of passengers and freight. The following recommendations are intended to build on the vision originally established by ITEA.

- There is a need for greater focus on intermodalism in the new TEA-21 legislation to stimulate national vision relative to seamless transportation.
- There is a need for American transportation government officials to visit other countries, especially those countries that are important trading partners to the United States, to become better informed about their intermodal transportation policies and programs.
- The government should consider more innovative and focused funding mechanism policies for intermodal freight transportation (rail, highway, inland and coastal waterways, air) fundamental to improving our Nation’s transportation system efficiency and ability to compete internationally.
- Transportation planning organizations, including federal, state, and local planning organizations could benefit from sharing intermodal technology and standards.
- Government must continue to recognize freight transportation’s role in economic competitiveness.
- The planning process must involve distinct public/private interaction and dialogue.

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APPENDIX A – GLOSSARY OF ACRONYMS

AAR Association of American Railroads

AAPA American Association of Port Authorities

AASHTO American Association of State and Highway Transportation Officials

Amtrak National Rail Road Passenger Corporation

APTA American Public Transit Association

DOT U.S. Department of Transportation

EPA Environmental Protection Agency

FAA Federal Aviation Administration

FHWA Federal Highway Administration

FRA Federal Railroad Administration

FTA Federal Transit Administration

GNP Gross National Product

HUD U.S. Department of Housing and Urban Development

ISTEA Intermodal Surface Transportation Efficiency Act of 1991

MARAD U.S. Maritime Administration

MPO Metropolitan Planning Organization

NHS National Highway System

NTS National Transportation System

OST Office of the Secretary of Transportation

TRB Transportation Research Board

USCG U.S. Coast Guard

APPENDIX B – ANNOTATED BIBLIOGRAPHY AND EXTENDED RESOURCE LIST

Directory of Bulk Truck Transfer Facilities and Directory Of Container Depots, Modern Bulk Transporter, Vol. 58, No. 6, December 1995, pp 84-119

This is the eleventh annual directory of facilities where bulk commodities can be transferred between tank and bulk trucks and rail and water modes. The facilities listed here are owned or operated by bulk trucking companies, railroads, or independent terminal operators. Following the bulk commodities transfer facilities directory is a directory of bulk container depots. This is the seventh annual directory for bulk container depots. As tank container operations continue to grow, this is the most complete listing of depots in the U.S. In addition, listings are given for Canada and Mexico. Also, only companies having actual depot operations are listed. Companies providing only drayage service are not included.

Richardson, Helen L., **Intermodal: Keeping Pace With Growth,** Transportation & Distribution, Vol. 36, No. 4, April 1995, pp 39-44

According to the Association of American Railroads, combined 1994 intermodal container and trailer loadings were up 14.1% from 1993. This growth has created many challenges for the industry. Key issues in intermodal's future are capacity and velocity. While most forecasters see intermodal growing in 1995 at about half the 1994 rate, in order for the industry to meet the demands continuous improvements in all areas of operations will be necessary. The basic goals are to drive out costs and increase service levels. The industry also needs to reduce terminal congestion in order to improve speed. Investments in technology will also be needed to improve and expand intermodal capabilities. With continued growth in the intermodal industry, shippers and service providers must work together to improve efficiency and enhance service levels.

Melbin, Jodi E., **Is This The Golden Age Of Intermodal?,** Distribution, Vol. 94 No. 4, April 1995, pp. 32-36

Intermodalism has grown by increasing its on-time performance and customer services. In addition, cost pressures on traffic managers continue to place intermodal at an advantage over high-service long-haul truckers. The partnerships that the railroads have formed with motor carriers have also been critical to the growth of intermodalism.

Judge, Tom**, Intermodal Phases To Gather Strength, Progressive Railroading**, Vol.38, No. 11, November 1995, pp. 36-45

For the first three quarters of 1995, U.S. Class I railroads originated a total of 6,033,135 trailers and operators were down 0.3 percent of 1994's nine-month totals, according to figures from the Association of American Railroads.

Intermodal Marine Container Transportation, Transportation Research Board, TRS SR 1333, 92-01-01, January 1, 2001

ABSTRACT: The container revolution, which began in the mid-1950's, has lead to major changes in this country's foreign and domestic trade. At first, a largely American enterprise confined to U.S. coastal and inter-costal routes, marine containerization has evolved rapidly, spreading to all U.S. trading areas. Today, containerized traffic dominates liner (non-bulk goods) trade to and from the United States, representing about 80 percent of all U.S. liner trade by volume and $195 billion a year by value of the goods transported. The technological revolution – involving newly designed containers, containerships, and container ports-has been accompanied by an equally important institutional revolution, yielding true land-sea-land intermodalism.

Crossing modes and national boundaries, the intermodal marine container transportation chain has numerous links-shippers and consignees, intermediaries, ocean carriers, ports and marine terminals, cargo inspection agencies, drayage and long-haul trucking, and railroads. Partly because of the multimodal, international nature of marine container transportation, government has always had a major role in the affairs of the industry, and the industry is heavily affected by government action at all levels-local, state, national, and international.

Like other industries that have expanded rapidly, the international intermodal container transportation industry is experiencing growing pains. Despite the advances made in the industry, opportunities to improve efficiency arise at almost every link in the chain. Various forms of governmental regulation affect the different links in the chain, which impacts on the efficiency with which marine containers are used and the efficiency with which U.S. carriers can move containerized cargo.

Intermodal Freight Transportation Combined Rail-Truck Service Offers Public Benefits, But Challenges Remain, United States General Accounting Office, MS-5127,92-12-01

ABSTRACT**:** This report reviews developments in intermodal freight transportation and its potential to relieve the nation's highways of some of the freight burden. The report addresses the prospect of greater cooperation between the rail and trucking industries and identifies some challenges that the industries must overcome if the nation is to fully realize the potential benefits from intermodal freight transportation. The report contains recommendations to the Secretary of Transportation for initiatives to promote efficient intermodal freight transportation.

Marine And Intermodal Transportation: Freight Movement And Environmental Issues, Transportation Research Board, TRR-1333, January 1, 01

ABSTRACT: The papers in this record deal with topics related to marine and intermodal transportation, logistical considerations of freight movement, and environmental issues related to freight transportation.

Chadwin and Talley discuss anticipated trends in vessel design and marine terminal configurations that facilitate cargo flows. Wei et. al. develop a numerical model to estimate delays in barge movements on congested waterways.

Three papers examine environmental aspects of freight movement. Newsstrand examines environmental ramifications of shifting freight from water carriage to rail or highway movement. Starry et. al. discuss a gravity model to estimate origin-destination pairs and routes for truck shipments of hazardous chemicals. Another perspective on the movement of hazardous materials is presented by Abkowitz et. al. They examine trade-offs of safety and operating efficiencies in state–designated hazmat routings. Najafi et. al. discuss oil spill response capabilities in South Florida. South Florida's coastline and extensive shallow reef areas present a major challenge to traditional oil spill cleanup procedures.

Rebelo and Thomas evaluate transit corridors from a trade logistics management perspective. Freight carriers, particularly those linking landlocked countries to the sea, are subject to many exogenous factors that are discussed in this paper.

Wong, PJ, Grant, AR, Sakasita, M., **Concept Design And Analysis Of A Linear Intermodal Freight System,** Transportation Research Board, TRR-920, January 1, 1983

ABSTRACT: A conceptual linear corridor intermodal freight system was analyzed by using the computer model LINET. The train operating strategy used-freightliner-IT, an idealized form of a typical railroad strategy for a corridor. The problem formulation for this generic linear corridor freight system is described, and the LINET computer simulation model and the cost equations used to quantify the various trade-offs and relations between fundamental system design parameters as they affect costs and performance are presented. The results of these analyses include trade-offs associated with the most cost effective system design, feasible system designs with sufficient capacity, minimum-cost system designs, and design for a specified level of service.

Transportation & Distribution, Vol.37; Issue 2; February, 1996, pp. 10

In this article, Inernet is described to be a plethora of information about carriers and other organizations. The World Wide Web is used by the International Association of North America, Union Pacific Railroad, Conrall & Canadian national. Mostly, Internet enables them to make advertisement about their activities and to give a clear description of their company.

Richardson, Helen, **Changing Times Demand New Thinking**, Transportation & Distribution, Vol.37, No. 4, April 1996, p 72

Helen Richardson describes here big opportunities that may be offered to shippers and carriers if they join together. Different measures are suggested to increase productivity, improve communication, reduce cycle times, etc. to make freight transportation markets better for both shippers and carriers. Like Roger Wigen says, "The key to productivity gains is the collective multimodal cooperation of carriers and shippers that creates common solutions to common problems."

Journal of Business Strategy, Vol.18, Issue 3, May – June, 1997, p. 35

Former President Bill Clinton, initiator of ISTEA, which is supposed to expire by the end of September 1997, is suggesting NEXTEA, which will be an 11% increase over the current ISTEA's funding levels. NEXTEA within 6 years will try to improve Air, Rail and Port Access to the global market place by improving connections to the National Highway System.

Hoffman, Kurt, **Wild And Wolly Distribution**, Vol. 95, No. 8; July 1996, pp. 44-48

The author Kurt Hoffman focuses on the crisis of the Railroads Industry. He points out four problems: The Stock Prices Rise; The Declining Costs; The Merger Mania; and The Weak Freight. As a result of the merger mania is the embarrassments of some parties such as Shippers, The Texas Railroad Commission, The National Industrial Transportation League, Conrail & Kansas City Southern, and the Departments of Agriculture and Justice. Some of them felt sacrificed and some others abused, because the competition was unfair. Finally, thanks to the contribution of the Surface Transportation Board, the process of merging has been regulated solving two major problems: the Cotton Belt and the Service Requirements.

Minahan, Tim**, Railroads Face Uphill Battle,** Purchasing, Vol. 120, No.11, July 11, 1996, p 62

This topic deals with some dysfunctions between the Rail traffic and the Railroad, and the way it affects productivity. For instance, the Lackluster Economy and the Low Less-Than-Truck Load rates are responsible for the lack of Rail traffic. As for the Railroads, they are responsible for some decreases because they incorporate longer cars into their fleet. Nevertheless, it is said that some efforts will be done to ameliorate this service in the future.

Hub Group Grows, Expands Services, Transportation & Distribution, Vol. 37, No. 6; June 1996, p 18

In this abstract, the emphasis is put on the implication of the Hub Group formed by Intermodal Marketing Company and American President Companies. Now, customer demand will be better satisfied and revenues will increase. Both of the companies have expanded and optimized their activities.

Morris, Gregory D.L., **Steamship Lines Target Chemical Traffic,** Chemical Week, Vol. 158, No. 23, June 12, 1996, p 36

This article describes chemical traffic as a big revenue area because a big volume of this traffic is moved in International Tank. It is said that the number of hazardous shipments has increased compared to the last years, except for those who face some restrictions in certain ports, which do not have specific infrastructures to accommodate it. This is the case for Southeast Asia.

Smith, Judy R., **Transportation Today,** Economic Development Review, Vol. 14, No. 3, Summer 1996, p 72

This abstract focuses on changes, which are expected to come within the future and consequences they will have on Freight Transportation Demand. Research will be helpful to identify the factors that bring changes both in the national and International levels; and the research process will involve 3 phases at the term of which, a process for forecasting freight demand will be developed. In that way, J.B. Hunt is the typical example of success with his 39 Intermodal Terminals.

Dinge, Casey, **Taxing Matters For Trust Funds**, Civil Engineering, Vol. 66, No. 7, July 1996, p 100

Dinge, Casey deals with some financial changes, which are going to be operated by the government through the Highway Trust Funds, the Congressional Budget Office, the General Accounting Office, the Airport & Airway Trust Funds, the Federal Aviation Administration, and the Airport Improvement Programs. These changes will consist of increasing taxes in different fields of transportation from 1995 to 2002. For the Air, it will concern: airplane, ticket tax – cargo tax – international departure tax and other taxes on aviation fuel. For the Highway, it will concern: the Motor Fuel Tax – and the Gas Tax. The reason for these Taxing Matters is the Renewal of the Transportation Policy within 2002 in the U.S.

Witt, Clyde E; **Weighing In On The Side Of Safety**, Material Handling Engineering, Vol. 51, Issue 11, October, 1996, p. 24

Clyde E. Witt argues here about the Intermodal Safe Container Act, which purpose is to give the clearest possible information to the carrier about the content and the weight of the container within written Notification and Certification. This Act should have impact on Shippers, Motor Carriers, Warehousing and Packaging. He adds that today, Distribution centers are equipped with Weighing Systems and Interactive Systems, adaptable for Lift Trucks.

Effect Of Railroad Mergers, Transportation & Distribution, Vol. 37, Issue 11, December 12, 1996, p. 53

This is a criticizing article toward Railroad Mergers. It defines the role of each party in a Railroad Merger. Because of the complex layers in the channel, it is suggested to eliminate connections in the Transport Chain and by the same way, to stop overhead. Most of the Intermodal Marketing Companies should evolve into Logistics Companies if they do not want to go bankrupt. Motor Carrier Industry is proposed to improve costs and services in order to maintain its economic

advantages since the merger between Truck and Rail is really a great deal. As for shippers, they are required to deliver safe goods at the right time with complete information. The Railroad is responsible for accommodating the shipment and providing clear schedules.

Intermodal, Still Not Meeting Customer Needs, Transportation & Distribution, Vol. 37, Issue 10, Oct. 10, 1996, p.11

During this meeting in the Summer 1996, Nabisco, Continental Mills, and Schneider made some complaints about deficiencies in the Intermodal Transportation and submitted it to the International Association of North America. Nabisco through Paul Avantao suggested to improve information flow; to consider Intermodal Process as an individual supply chain that should be managed end-to-end; to eliminate counting at delivery, to break out the costs of accessorial items; to be more serious and to offer a 15 minute window for operations. Continental Mills through Joan Pierce Fuller required more reliable transit times, and Schneider criticized the higher freight costs.

That Little Glitch Could Be Telling You Something, Purchasing, Vol. 120, Issue 8, May 23, 1996, pp. 51-52

What is discussed here is the problems which occur in a supply-chain. It appears that most of these problems are the results of inefficient receiving operations and unreasonable buyer demands. Buyers and carriers have problems with the Distribution Process; carriers and customers have problems with deliveries. For those reasons, Intermodal Transportation is criticized as a “default service”.

Z. West, Kathryn, **Higher Profile Of Risk Management,** Vol. 43, Issue 7, July 1996, pp 10-12

The author, Kathryn West talks about Managers’ behavior in any kind of Enterprise when facing risk. She gives three different cases where the notion of risk is analyzed differently for *Aptech Engineering Services*. The higher level of risk is said to be the damage to the technical reputation and the lack of payment. For *Sun Media Corporation*, a News Paper and Publishing/Printing Company, the biggest risk may be linked to the printing division and to the lack of quickness and efficiency of each entity. For *Reserve International*, an Intermodal Company which manipulates a big number of containers; the greatest risks are theft and damage to the containers. As a conclusion, all these companies have a different approach to the risk and different interests to protect but, they finally manage it.

Intermodal Cooperation, Transportation & Distribution, Vol. 37, Issue 1, p 16 January, 1996

In this short piece of paper, it is said that IANA and AAR will merge in order to influence better communication between Railroads and their Intermodal partners. Besides, Intermodal Marketing Companies will provide monthly information to IANA about Intermodal Freight Movements.

Harrington, Lisa H., **I.T.S., It's On The Move,** Transportation & Distribution, Vol. 37, Issue 10, pp. 93-98, October, 1996

Lisa Harrington describes here coming changes in Transportation thanks to ITS. This Project will bring about $244 Million and is described to be a collection of technologies that tend to: improve the productivity; assist drivers in reaching destinations; gather and transmit information; decrease congestion; and naturally tend to be helpful for carriers and shippers. Within the next decade, ITS should be available in the 75 largest Metropolitan Areas. Their Intelligent Transportation Infrastructure should consist of numerous components such as: "*Smart Traffic Signal Control Systems – Freeway Management Systems – Incident Management Programs – Electronic Toll Collection – Traveler Information Systems*". In the same way, the Commercial Vehicle Information Safety and Network (CVISN) tends to electronically connect *Government Agencies*, the *Motor Carrier Industry and other parties* dealing with *Commercial Vehicle Safety and Regulations*. The big deal here is the Electronic Clearance at fixed and Mobile Sites. Beside, *two Projects* are coming regarding the ITS Border Crossing. First, is EPIC *(Expedited Processing and International Crossing)* which will be applicable for Drivers, Vehicles and Cargos; and this is only an information Pre-Processing System. Second, is IBEX *(International Electronic Border Clearance)* which purpose is to provide an accredited service to both the Border Officials/Agencies and Commercial Fleet Users through the CVO preclearance system. In addition to those Projects are "Advantage I-75" and "Help Inc.", two Highway ITS tests underway. In conclusion, the success for ITS will depend on the way Business Managers will use it.

Bradley, Peter**. It's All In The Handoffs**, Logistics Management, Vol. 36, Issue, 3, p. 76-77, March 1997

In this interview, Eugene K. Pentimonti, President of the American Trucking Association suggests some regulatory changes to improve Transportation Efficiency. First, it is important to have all the part of the Transport Chain running smoothly together. Second suggestion is to perform container and chassis road ability. Another problem he focuses on is the issue of productivity and efficiency at the interchange points. In conclusion, the author is optimistic about the future in the Intermodal Transport Industry. In fact, Economic benefits coming from Intermodal are great because the amount of freight shipped in an Intermodal mode is huge. Then, in the International level, the United States will still remain a dominant market, as it is the case for the Pacific Basin and the European Markets.

A Downward Spiral, Distribution, Vol. 95, Issue 3, March 1996, p.19

This article talks about the increase of Intermodal Shipping in the past 15 years and the incessant decrease since 1995. This is explained by three factors noticed in trade moving from the Far East. First, is the U.S. consumption of consumables; second is the Modernization of Companies participating in that traffic; and third is the price increase of the Railroads and Stacktrains.

Bradley, Peter, **Transport Interests Fight For A Slice Of The ISTEA Pie,** Logistics Management, Vol. 36, Issue 3, March, 1997, pp 21-22

This paper describes the way Members of Congress are fighting to get funds from ISTEA, and opportunities that will be offered to them. Each region state claims about its problems. First, is the case of Donor States who pay out more in Highway taxes than they get back. This problem is to be addressed by Tom Delay, Representative for the House Republican Whip. Afterwards, comes the problem concerning the size of the Transportation Funding Pie for which different operators are competing for. The Kasich & Mach bill tends to *give more responsibility to the State for Highway Construction*. And opposed to it, the Keep America Moving Coalition recommends that Congress *authorize a multi-year Federal Highway Program* that enables one to spend as much money as possible, provided it does not cause a deficit. Another debate is the surplus of money in the Highway and other Transportation Funds that requires the nomination of Advocates to regulate the manipulation of these Funds. And finally, the entry of a new group has occurred called the *Surface Transportation Policy Project*.

Minahan, Tim. **The New Face Of Trucking**, Purchasing, Vol. 120, Issue 4, March 21, 1996, P. 38-43

The author describes here problems that Trucking Companies have faced since 1994. He talks about the harsh winter weather, poor utilization of equipment, high fuel cost and loss of money. In general, the situation was critical but thanks to the diligence of some Managers the problem has been definitely solved. The greatest of them merged together and expanded their services because it appeared that the solution to remain competitive was Multimodalism. The reason for this crisis is the incapacity of Trucking Companies to face the growing demand. The solution came from two programs: Accelerator System & Blueprint for Change that tended to eliminate Terminals and Handling and to promote more direct shipping. Shippers required shorter transit times, reliable service and extensive coverage will have two impacts on the way they use to manage their business. These include smaller truck shipments and larger load sizes. The advantage for shippers is the large amount of money saved. Tim Manahan also suggests some changes in the firm's core business and the use of Information Technology. He describes this as a Competitive Necessity. As a conclusion, it appears that two groups will manage the Trucking Industry within the next years. Large Multimodal Providers at the top and Specialty Carriers at the bottom. And obviously, thanks to shippers, the Trucking Industry has been definitely changed.

Productivity On Lips Of Shippers And Carriers, Purchasing, Vol. 120, Issue, 3 March 7, 1996, p 49-50

This topic focuses on inefficiencies in the Nation's Transportation System. And that is why the National Industrial Transportation League pointed out the problem of Information Transfer during the Productivity Forum. Since ICC does not exist anymore and Deregulation is more than ever on the rise, efforts have to be made by shippers and carriers in the way of new information processes such as EDI, Bar-Coding and Electronic Commerce to Standardize both Trailers and Containers, and to reduce the time for loading and unloading freight. After the League

Committees Meeting in March 1996, four quadrants will come out from the Major Issues and the Action Plan.

Up And Chemical Lehman Bulk Up Intermodal Service, Purchasing Vol. 120, Issue 6 April 25, 1996, p. 84

This is a presentation of the new service that Chemical Lehman Tank Lines and the Union Pacific Railroad will provide for portable tank containers. The Bulk Container Service North America's Railways and Highways for long shipments.

Guggloz, Richard A., **Something For Everyone**, Transportation & Distribution, Vol. 37, Issue, 1 January, 1996, p. 67

Richard Guggolz presents the Transportation Research Forum (TRF) which purpose is to inform all kind of transportation professionals dealing with passenger and freight transportation. Ten Disciplines are available for Transportation Research Forum's Members among which are Regulation and Safety, Intermodal Transportation, and Logistics. The (TRF) consists of some International Members who are from Israel, Canada, and Australia. The Publication of a bi-annual journal, the Annual Membership Directory, the 200 Attendees Forum, the TRF foundation and a Home Page on the Internet.

Richardson, Helen. **Partnership For Intermodal Excellence**, Transportation & Distribution, Vol. 37, Issue 3, March 1996, p. 34-38

Helen Richardson examines Quality of Service in Intermodal Transportation. It appears that a considerable loss of time and money occurs during connections between Road and Rail. The major problem is that, the window offered by Rail for deliveries is said to be incompatible with the real needs for Dray Carriers. There is a fixed and short time span for physical inventory, that, drivers must never miss. The solution may be some standards for transmitting information automatically. Added to that, Railroads do not respect schedules and in the mean time affect the competitiveness of other carriers. Despite these negative aspects, the fact is that quality of equipment has improved but the big question that remains is the optimum use and management of this equipment. Meanwhile, a promising future is forecasted for the Intermodal Industry.

Minahan, Tim, **Quality In Transportation The Final Frontier**, Purchasing, Vol. 120, Issue, Jan. 11, 1996, pp. 90-95

In this topic, Tim Minahan puts the accent on quality in transportation. He distinguishes Quality of Product, which is related to ISO, and quality of Service, which is related to the way professionals manage their business according to the competition. Some carriers have Quality Department and Processes and some have established Industry-Wide Quality Protocols. Others such as Chrysler are redesigning their delivery process, and so on. What comes out globally is that, a 100 percent score on quality is almost impossible but the carrier's goal is to increase the quality in transportation to a correct and acceptable level, which will satisfy enough of the customer requirements.

Bowman, Robert, J. **The Breaking Point,** Distribution, Vo. 95, Issue: 2, P: 36-39

Robert J. Bowman talks about the progressive extinction of Intermodal Marketing Companies due to the customer demand. They are enforced to enlarge their activities by becoming Ocean and Air transport providers or Third-Party transportation providers in Logistics. The best example is the relationship between Mark VII (USA) and Whirlpool (Europe), two big companies in their country. They are managing the largest businesses because they discovered early on, the advantages of diversification and partnering. After them, some other cases such as APL, Richmond Transportation Services, and Walnut Creek moved toward Logistics Companies.

ISTEA Reauthorization, http:/www.ctaa.org/new/istea-re.htm. September 15, 1997

This is a presentation of different themes and topics that have been discussed under ISTEA. Some measures have to be taken within the 21st century and the Federal Government has to assume its role concerning the National Interests. In this era of scarce resources, the financial aspect of Transportation has its importance but, the problem of Environmental Responsibility, Balancing Safety and Efficiency, and the efficient delivery of transportation improvements are also at the top of the list. The two last topics regarding ISTEA Reauthorization suggest a review of DOT structure and operations, and presentation of proposed program initiatives.

Why Choose Dieterle & Victory For Your Shipping Needs,
http://www.dievict.com September 15, 1997

DIETERLE is an Intermodal Transportation Company which plies between Australia, New Zealand, Mid-East and Far-East destinations and recently, Africa. In addition to Warehousing Facilities and Loading Operations, this company also offers some Cargo and Documentation Procedures.

Intermodalism – Not Just A Lot Of Hype,
http://www.transact.org/apr95/inter.htm September 15, 1997

The author, Hank Dittmar defines Intermodalism as planning for the entire trip instead of the modal links in a trip and improvements of the connections between modes. He focuses on the National Commission on Intermodalism and the two conferences sponsored by the Transportation Research Board. He provides the positive impacts that ISTEA will have on the future. ISTEA will open new markets and opportunities for Intermodal Companies and will improve the economic performance through the regulations of competition in the private sector.

Intermodal Freight Transportation,
http://www.emporium.turnpike.net/-IANA/ift.html. September 15, 1997

This book presents a comprehensive overview of Freight Intermodalism. It describes many aspects of Intermodalism, including Terminal Operations, Transport Equipment, Containerization, Documentation, Liability rules, and Communications Technologies. Interrelationships between Modes, Shippers, Third Party and Government Agencies are thoroughly discussed, including a range of trends and changes occurring within the industry. This edition of reference reflects the most current information on the Intermodal Industry.

Greenbrier Announces $72 Million Sale of Intermodal Assets,
http//wwwpathfinder.com. September 15, 1997

Greenbrier Companies is a leading supplier of Intermodal and Conventional Transportation Equipment and Services to the Railroad Industry. It is located in Lake Oswego, Oregon. This group has sold its Intermodal Assets to Transport International Pool (TIP) in the purpose of paying down debt and re-investing in the core Railcar Manufacturing and Leasing Operations.

HI-Best Air Ocean Inc., http://www.primenet.com/~hi-best/ September 15, 1997

Hi-Best Air Ocean Inc. is an International Freight Forwarder and NVOCC that offers Air Freight, Ocean Freight, Distribution and Other Services. For the Air Freight, services range from air consolidation to service areas. Ocean Freight services deal with the primary Gateways consolidations systems and the Intermodalism/In-Land Trucking service. The last category of service concerns Distribution and others including trucking arrangement, baking services, automobile handling and more.

JPO Assesses Link Between I. T. S. Program http://www.ite.org/icv3n3.htm-
September 15, 1997

This Carol Colman's edition talks about Intermodal Connections. It emphasizes Federal Highway Administration's Joint Program Office for Intelligent Transportation Systems regarding Intermodal Freight Operations. In 1996, a White Paper on ITS and Intermodal Freight Transportation was developed by Anne D. Aylward which originated in the Volpe National Transportation Systems Center (VNTSC). This paper provides a description of new technologies that can influence the Intermodal Freight Transportation Industry, and discusses various opportunities that can improve the Intermodal Freight Systems in Performance and Safety. And lastly, the paper defines the role of the Federal Government in several areas.

Air Transport Association - http://www.air-transport.org/.
American Association of Port Authorities - http://www.aapa-ports.org/.
American Association of State Highway and Transportation Officials-
http://www.aashto.org/.
American Public Transit Association - http://www.apta.com/.
American Short Line and Regional Railroad Association - http://www.aslrra.org.
American Trucking Associations - http://www.truckline.com/.
Association of American Railroads - http://www.aar.org/aarhome.nsf
Intermodal Association of North America - http://www.intermodal.org/.
National Private Truck Council - http://www.nptc.org.