Support for Fundamental Change in Public Transportation

This TCRP digest is the third product from TCRP Project J-08B, "New Paradigms for Local Public Transportation Organizations." The aim of this project is to inform and assist public transportation systems in the United States that are considering fundamental change to their organization. This product was prepared as part of the third and final phase of this project. The digest addresses major dimensions of fundamental change; illustrates a few extraordinary, fundamental changes that are being pursued by transit organizations; and calls attention to immediate opportunities to support and sustain fundamental change in the U.S. transit industry. Robert Stanley, of Cambridge Systematics, Inc., prepared this digest.

BACKGROUND

Since the outset of TCRP Project J-08B in May 1998, significant changes have occurred in many public transportation systems in the United States. This digest summarizes the principles that have guided paradigm shifts in business and industry by describing lessons learned from the broader U.S. transportation sector and European transit systems. It defines the dimensions of fundamental change and the common themes and principles of the new paradigm. Importantly, the digest presents steps to support the emergence of a new paradigm for public transportation systems in the United States.

INTRODUCTION

Change has become a constant feature in almost every aspect of our daily lives. In business and industry, circumstances that dictated corporate missions, strategies, and business practices over the last decade have changed dramatically. In response, organizations of all types are being forced to rethink, reorganize, and adapt on a nearly continuous basis to remain successful. In 2000, *Business Week* characterized these adaptations by observing

> . . . the 21st century corporation . . . must be predicated on constant change, not stability; organized around networks, not rigid hierarchies; built on shifting partnerships and alliances, not self-sufficiency; and constructed on technological advantages, not bricks and mortar.

In contemplating organizational change of this magnitude, management guru Peter F. Drucker summed up his most basic rule for corporate and civic leaders in the 21st century: "The first policy—and the foundation of all others—is to abandon yesterday."

Although these characterizations may seem extreme, it has become evident that neither public nor private enterprises can prosper in the 21st century by adhering to traditional past practices (see Appendix for a summary of forces and factors that necessitate fundamental change in public transit organizations). In the public transportation sector, pressure to embrace fundamental change is also mounting despite acceleration in the expansion of traditional services and a dramatic resurgence in transit ridership, nationwide.

Surging Transit Ridership

Americans used transit 9.6 billion times in 2001, and transit ridership has grown 23 percent since 1995—faster than population growth (4.5 percent), highway use (11.8 percent), and domestic air travel (12 percent).

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In response, leading transit managers and policymakers are examining new principles for guiding fundamental change in public transportation organizations. More importantly, transit agencies both large and small and are beginning to implement far-reaching changes that can lead the industry to a new paradigm in the design and delivery of services in the years ahead. The impetus for pursuing fundamental change has been a recognition that current organizational arrangements and business practices that have been largely unchanged for 40 years are inadequate for the needs of the present and future.

However, the impetus to pursue fundamental change in public transportation organizations is being fed by ongoing research that demonstrates that the principles guiding fundamental change in other businesses and industries worldwide have direct applicability to transit.

The Previous Transit "Paradigm"

Since the 1960s, when transit systems began to shift from private to public ownership,

- Transit has been operated directly by local governments or independent single-purpose agencies, independent of other travel modes;
- Services have been provided with assets owned by the agency—usually 35- to 45-ft buses and rail cars, operating on fixed routes and schedules, some unchanged for decades;
- Management has been highly centralized, with a persistent cost-revenue squeeze and labor-management tensions; and
- Performance has been measured largely by internal operating efficiency and annual budget adherence.

Sidebar 1:

". . . business—and every other organization today— has to be designed . . . to create change rather than react to it. . . . The starting point is not the company's own performance. It is a careful record of the innovations in the entire field during a given period."

—*Peter Drucker*

Drawing on these experiences, a framework for shifting the 40-year-old transit paradigm has emerged, and fundamental change is being pursued by an increasing number of transit agencies and organizations. ***The issue at hand, however, is to determine what steps and measures might be enacted to encourage, facilitate, and hasten progress toward a new transit paradigm.***

In response to this issue, this digest serves three purposes:

1. To highlight the major ***dimensions of fundamental change*** taking place today in the U.S. transit agencies as well as in other businesses and industries;
2. To illustrate a few of the ***extraordinary, fundamental changes being pursued*** by transit organizations actively seeking a new paradigm in the design and delivery of transit services; and
3. To call attention to the ***immediate opportunities to support and sustain fundamental change in the U.S. transit industry.***

An Agenda and the Opportunity at Hand

The rapid emergence of a "new paradigm" in public transportation comes at a uniquely opportune time. In 2002 and 2003, federal policy and programs that support investment in surface transportation will be rewritten, along with major human-service programs and policies. At the same time, the search for new paradigms in local public transportation by the nation's most far-sighted transit leaders and local elected officials is producing a compelling agenda for fundamental change. It is this new paradigms agenda that must be supported in the next generation of federal policies and programs. The opportunity ahead lies in the convergence of fresh, new strategic thinking about transit with the requirement to reenact public transportation policies and programs in 2002 and 2003—an immediate opportunity to set fundamental change in motion and sustain that change in the coming years. The new paradigms agenda is outlined in the final section of this paper.

PRINCIPLES THAT HAVE GUIDED PARADIGM SHIFTS IN BUSINESS AND INDUSTRY

Over the past 2 decades, fundamental changes in businesses and industries—as well as in the transportation sector—have followed a consistent set of principles and themes that have direct relevance for public transportation agencies and organizations.

Lessons from the Broader Transportation Sector

As far back as the 1980s, businesses in the transportation sector began to strategically shift their missions, business practices, and organizational structures in response to the same forces that challenge the public transit industry today. Most of these change efforts were led and supported by enlightened executives facing overt crises in the performance of their organizations. Particularly noteworthy examples come from the intermodal freight industry, the package delivery industry, and the airlines. The combined experiences and responses within these industries define a powerful new model for public transit organizations in the future.

Intermodal Freight

In the 1980s, companies in the intermodal freight industry began a "logistics revolution." At the core of this revolution was a shift in strategic focus away from strict attention to the use of an individual company's owned assets, to a focus on the quality of the service to the customer, regardless of whose assets were being used. In the interest of customer service and loyalty, new partnerships were formed between former competitors, assets were rationalized and shared, and new information technologies were introduced to link partners and to provide continuous real-time evaluation of the quality of service from a customer's standpoint.

As a result, freight customers typically deal with a single organization that serves as the "logistics manager." A shipment may be transported on any of a number of carriers that in combination best meet customer needs. Jack Helton, a former Vice President of SeaLand/CSX, described this new paradigm at a 1991 conference on intermodal transportation:

> . . . decisionmakers at SeaLand Services, Inc., . . . for many years believed that working alone with dedicated assets (ships, containers, terminals, etc.) was the way to maintain a competitive advantage in the marketplace. During the last decade, the operating philosophy at SeaLand evolved from one of being driven by the market, the competition, and the cost to one of an obsession for the customer.

As a result of this shift toward a customer-driven business strategy, SeaLand entered into a partnership with Maersk Lines to increase value to the customer by improving vessel schedules, enhancing frequency, and rationalizing terminal use.

Airline Alliances

In the 1990s, the formation of global airline alliances emerged following the same customer-driven model that had been developed in the intermodal freight industry a decade before. The integration of airline schedules, fares, frequent-flyer programs, and web-based booking and electronic ticketing systems through partnership agreements and the use of state-of-the-art information technology has given air passengers a far easier way to satisfy their travel needs. A call to one alliance member allows an entire trip to be booked through a single organization whose primary strategic mission is to provide each individual customer with an integrated set of services tailored to his or her needs. The issue of who owns and operates a particular plane becomes less important.

Package Delivery

The rise of the package delivery industry offers another example of the new transport paradigm in action. In this highly competitive industry, experiences continue to converge toward the same basic model that emerged in intermodal freight and the airlines. The customer contacts a single organization whose primary role is to serve as the "logistics manager," arranging for door-to-door service to meet each individual customer's requirements, potentially using a variety of capacity providers, if necessary. Customers make arrangements for package delivery with a single organization. That organization, in turn, calls on a combination of partners to provide the best mix of routes, schedules, and tariffs to ensure customer expectations are met on a consistent basis.

State-of-the-art information technologies and various cooperative agreements among service providers allow a strategic focus on the quality of the customer's experience. Today, the U.S. Postal Service partners with Mail Boxes, Etc. to expand access to the postal system for a larger customer base. More recently, Federal Express—well known for its long-standing reliance on its own corporate transportation assets—has begun to shift its strategy and to integrate its services with former competitors to increase the quality of service and, thereby, the loyalty of its customers. To quote the *Wall Street Journal*:

> FDX is trying to recast itself as a major provider of the very management systems that threaten the company. Working at their best, such systems would select the most logical, most economical type of transport—air, land, or sea—for delivering packages on time. . . . So now, FDX is preparing to embark on its new strategy. FDX is creating a unique system that will automatically select routes for an endless number of . . . shipments. . . . It's quite possible that FDX's system will route deliveries on ships, airplanes or trucks owned by other companies, even UPS.

From these experiences, a fundamentally new way to organize the design and delivery of transportation services has emerged with enormous implications for U.S. public transportation organizations. This concept is illustrated in Figure 1.

The New Paradigm Emerges in European Transit

The paradigm shift described and illustrated above has also emerged more recently in European transit agencies as they struggle to expand services, improve service quality, and enhance the management of essential public services while constraining costs. As evidenced by experiences in London and in Gothenburg, Sweden, both large and small transit organizations are adapting and applying this same new paradigm.

London Transport Bus

London Transport Bus operates as a subsidiary of Transport for London, the new multimodal regional transport agency established under the direction of London's first elected Mayor. Today, bus services are provided throughout Greater London under a scheme that mirrors the three-tiered model described above. A strategic focus is placed on the level and quality of service as a matter of clear public responsibility; the actual service on the street is provided by many operators.

Figure 1. Implications of reorganization of transportation services for U.S. public transportation organizations: rationalization of shipping, 1990.

As part of its strategic mission, London Transport Bus sets public policy on service standards, fare policy, performance standards, customer information, and monitoring systems. Accountability for actual operations lies with multiple private providers. London Transport Bus neither owns a significant revenue vehicle fleet, nor directly employs significant numbers of operating personnel.

As this new organizational model has matured, there has been a striking improvement in the public management of transport services. Between 1986 and 1996, bus ridership increased more than 23 percent, cost per trip decreased 32 percent, and the public subsidy per trip fell nearly 80 percent. In the last 2 years, additional steps have been taken in London to extend the integration of transportation services throughout the Greater London region. Under Transport for London, strategic management of both highways and transit has been consolidated to fully integrate transport systems, services, and assets on behalf of the traveling public.

Gothenburg, Sweden

In Gothenburg, Sweden, the increasing cost of special service transportation was of serious enough concern to force examination of new arrangements to meet the needs of distinct client groups, each of whom had formerly been served by separate transport providers under separate sets of policies using separately dedicated vehicle fleets.

Through the introduction of new information technologies, the needs of individual clients can now be matched to the availability of multiple service providers while complying with the requirements of varying human-service programs and policies. In this model, like the others described above, the integration of services on behalf of the individual customer has emerged as the highest strategic responsibility of the organization; the actual services are made available by many providers. New information technology has allowed the integration of route, schedule, fare, eligibility,

and payment information. Perhaps more interestingly, the trip assignment and dispatching function is now fully automated and operates in real time, integrating the varied customers and different program requirements with multiple providers.

Sidebar 2:

"Organizations will be critically important in the world, but as organizers, not employers."

—*Charles Handy*

Both the London and the Gothenburg models for delivering passenger transport services are essentially the same as that described for the intermodal freight, package delivery, and airlines industries, as shown in Figure 2.

Defining the New Paradigm: Common Themes and Principles

Common to all these experiences are several fundamental themes and principles:

- A shift in strategic focus of the organization to the customer and his or her mobility;
- A increased focus on monitoring and tracking the quality of customer experience;
- Extensive partnering and collaboration;
- Integration across organizations, institutions, and modes;
- Reliance on state-of-the-art information technology; and
- Reduced emphasis on whose assets are being used to provide the service.
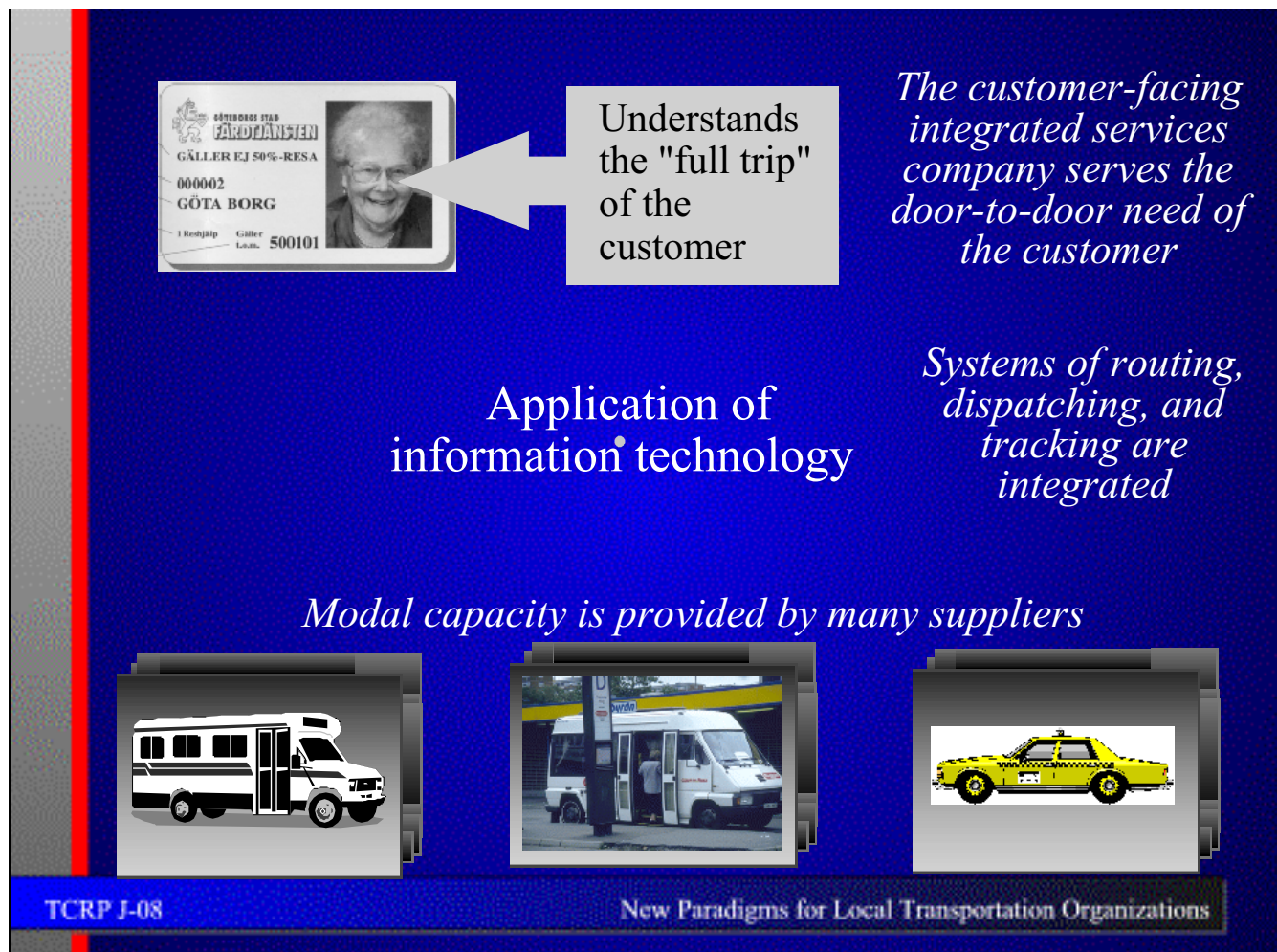

Figure 2. A Swedish model for integration of human services.

The new paradigm that has emerged has the following characteristics. In each case,

1. The client deals with the integrated service provider concerned with the door-to-door trip;
2. Information technology is used to design, track, and evaluate the services provided; and
3. Modal capacity need not be provided on the dedicated assets of the company.

Across the U.S. transit industry, these same themes and principles are being embraced and acted on by a growing number of agencies as diverse as Chatham Area Transit (CAT) in Savannah, Georgia; the Los Angeles County Metropolitan Transportation Authority (LACMTA) in California; VIATrans in Boise, Idaho; the Utah Transit Authority (UTA) in Salt Lake City; and the Washington Metropolitan Transit Authority (WMATA) in Washington, D.C. *What at first appeared to be isolated examples of extraordinary shift and change 3 years ago have become, in fact, the leading edge of a much broader, industrywide transformation.*

DIMENSIONS OF FUNDAMENTAL CHANGE

How does a traditional transit agency begin to move toward a "new paradigm" based on the principles and themes described above? One path is through the introduction of fundamental changes in response to immediate crises—a threatened system shutdown from funding shortfalls, with-drawal of funding or political support because of unsatisfactory service or performance, legal problems in management or governance, and so forth. Because transit agencies are public bodies, however, public scrutiny is generally thorough and constant. Rarely do these types of crises reach the point at which wholesale institutional change is required or attempted. The transformation of a traditional transit agency based on the themes and principles cited above is more often set in motion by enlightened managers and community leaders who anticipate the need for fundamental change rather than in response to short-term crises.

From recent experiences both inside and outside the transit industry, it appears that there are six major dimensions across which fundamental change must occur if, in fact, a true "new paradigm" is to emerge. These six dimensions are identified in Table 1, and we can chart the progress being made toward a new paradigm in local public transportation organizations by examining how far various agencies have moved from long-standing, traditional practices across each of these six dimensions.

At any given time, an organization can be evaluated with respect to how far and how quickly it is moving away from the traditional status quo along these key dimensions toward truly new ways of doing business. An organization may be

- *Considering or conceptualizing* fundamental changes in these dimensions, as many transit agencies are doing today;
- *Formally planning* major changes in these dimensions, a process that is underway among an ever-increasing number of agencies;

TABLE 1 Six dimensions of change leading to a new paradigm in transit agencies

Dimension	Scope
1. Mission Shift	A change in the strategic mission of the organization from a "provider of capacity" and "an operator of owned assets" to a "manager of mobility," regardless of whose assets might be used to provide capacity.
2. Customer Focus	A change in measures of success from service *outputs* to measures of the *quality of the customer experience* and *outcomes* of service investment and use across the community.
3. Collaboration	An expansion of sustained relations and communications across modes, agencies, organizations, and jurisdictions with responsibility for mobility and community quality of life.
4. Integration	An expansion of formal and informal arrangements that integrate facilities, equipment, systems, services, functions, and resources across agencies and organizations with a responsibility for mobility and community quality of life.
5. Information Technology	Full-scale introduction of state-of-the-art information technologies to support customer focus and integration across organizations—that is, universal fare media, real-time on-street customer information, shared dispatching and scheduling systems, and so forth.
6. Organization Structure	Introduction of new or altered functions, business units, skills, support systems, and so forth to support the new strategic mission.

- *Implementing or deploying* the types of fundamental changes presented in Table 1, as is occurring in the agencies identified earlier; or
- *Already operating under fundamentally new arrangements* along one of more of these dimensions.

In recent years, changes of these types, to the degree they were noted at all, were thought to represent isolated episodes taking place under unique circumstances, leaving industry observers with the mistaken impression that the U.S. transit industry remains largely unchanging. While this sentiment may have been accurate 5 years ago, it no longer is today.

An ever-increasing number of transit organizations are beginning to move swiftly away from the long-standing, traditional transit agency model by instituting significant changes across all of the key dimensions noted. As progress has accelerated, it has become clear that there is a new sense of urgency in the pursuit of fundamental change, a growing sense of confidence over the directions of that change, and an ever-widening array of examples that define the leading edge of a new paradigm in U.S. public transit organizations.

CHARTING THE CHANGE

To illustrate the scope of the changes underway today in the industry, several brief examples are provided below. In each case, a firm commitment has been made to pursue a new paradigm in the design and delivery of transit services; however, the agencies involved are at different stages along the path to a new paradigm and proceeding at different paces across different dimensions.

WMATA—Washington, D.C.

WMATA has, over a 25-year period, completed construction of the originally planned 103-mile Metrorail system. As this massive undertaking has come to a close, transit managers, policymakers, and regional leaders have launched a series of initiatives that cover all six dimensions of fundamental change and that together chart significant progress toward a new paradigm. The dimensions and initiatives are as follows:

- *Mission Shift*—Consideration is being given to *shifting the agency's core mission* from one of capital construction to one focused on operations and the management of mobility in the region. A new strategic planning exercise has been launched to define this mission shift and its implications more clearly.
- *Customer Focus*—Simultaneously, a customer environmental survey program is being launched to develop a continuous process for *measuring the quality of customer experience.* In addition, *new types of services and products* are being examined to better meet ever-widening travel requirements in the region.

- *Collaboration and Integration*—Earlier initiatives like the regional Ride Guide (i.e., the online trip planning that links multiple providers in the region), the regional SmarTrip smartcard program (which is being deployed across multiple regional providers), and the associated effort to establish an independent regional revenue clearinghouse to facilitate the use of the SmarTrip card are impressive examples of *regional multiagency, multijurisdictional, and multistate collaboration and integration.*
- *Information Technology*—Each of these efforts at collaboration and integration has relied on the *deployment of state-of-the-art information technologies.* In addition, WMATA has deployed a Passenger Information Display System on the Metrorail system to provide real-time customer information at each platform on the arrival time and length of approaching trains.
- *Organizational Structure*—Finally, changes in organizational structure and business practices are being made to support the changes taking place across other dimensions. An extensive "culture change" initiative is underway to open the door to further organizational change and enhanced internal collaboration. The revenue clearinghouse function, long a traditional in-house activity, is to be moved outside the agency, and a new office and function at the assistant general manager's level has been created—Long-Range Planning and Strategic Initiatives—which provides a permanent organizational unit to guide continuing change and progress toward a new paradigm.

Sidebar 3:

What change is taking place in your local transit agency along these dimensions?

Progress is clearly being made by WMATA across each of the key dimensions of change that can lead to a new paradigm in service design and delivery. While perhaps not as comprehensive or as far advanced, other major metropolitan transit agencies have also recently taken major steps toward a new paradigm, including the LACMTA; UTA; and the Transit Authority of River City (TARC) in Louisville, Kentucky.

Sidebar 4:

LACMTA has launched a fundamental reorganization that moves authority and accountability for service planning and operations down to the subregional level to heighten responsiveness to widely varying localized travel needs and markets and to citizenry. The "subarea" reorganization is a fundamental change that will also refocus the strategic MTA mission on monitoring and managing the overall quality of the service on the customer's behalf; pursuing service integration strategies; and deploy-

ing the essential; supportive new information technologies. The Los Angeles region's commuter rail agency (the Southern California Regional Rail Authority) has also initiated fundamental change in collaboration, service integration, and information technologies to better meet MetroLink customer needs and expectations across the larger region.

Sidebar 5:

In Salt Lake City, UTA is poised to embark on a wholesale reorganization on the heels of its highly successful management of the 2002 Winter Olympic transportation system. Broader responsibility and greater autonomy will be given to a new independent set of operating units defined by mode and geography. A smaller UTA central staff will focus on the set of more strategic responsibilities with a greater focus on market research, the quality of the customer experience, and the integration of services. A collaborative "guidance team" has been in place for 5 years to direct collaboration and integration initiatives and new real-time information technology is being deployed to assure full integration of bus and light rail services.

Sidebar 6:

In Louisville, Kentucky, TARC operates in an area in which city and county governments were recently consolidated. TARC is the only agency in the consolidated city-county that has a regional operating scope. As the new governance structure is put in place, the role of TARC as a regional mobility manager has emerged and is being further discussed and defined.

The impressive changes that are occurring or being contemplated in a growing number of our larger metropolitan areas are being matched by transit agencies that serve far smaller communities. Activities at CAT in Savannah, Georgia, and at VIATrans in Boise, Idaho, are just a sample of the efforts to embrace a new transit paradigm in our smaller urban centers.

Sidebar 7:

In Savannah, Georgia, CAT has begun a series of formal steps and activities aimed at shifting its mission and scope from a city service provider to multicounty and multistate "mobility enterprise." Leadership training is underway to shift the CAT "culture" to one focused on the quality of the customer experience, and broad-based efforts are underway to build and sustain collaborative relationships in advance of efforts to introduce new information technologies that link customers and service providers across modes, organizations, and jurisdictions.

Sidebar 8:

VIATrans in Boise, Idaho, was formed in 1998 to oversee a regional system of coordinated services involving eight regional providers, both public and private. The VIATrans board is a coalition of broad-based regional interests, and its mission is moving people without regard to mode. The quality of the customer experience will be the primary measure of success, and a strategic plan is underway to develop the process and measures to sustain a customer focus. The deployment of new information technology including universal fare media will also be a focus of the strategic planning effort.

In these sidebar examples, the paradigm shift in local public transportation organizations is happening in large part because of bold, insightful leadership of individual industry managers and by forward-thinking local policymakers. Together, these managers and policymakers are taking risks and venturing into areas that dramatically redefine how the business of public transit should be organized and conducted in the 21st century. Similar efforts are underway in dozens of other organizations around the county.

There are, however, limits and major constraints—even on the most far-sighted efforts and forward-thinking individuals. These constraints come in the form of law, regulation, policy, and procedure as well as in the form of strongly rooted precedents from past decades. The continued emergence of a new paradigm in local public transportation depends, therefore, on actions by more than committed local transit managers and policymakers. The "enabling environment" that imposes limits and constraints on fundamental change—an environment that restricts the actions of true pioneers in pursuit of a new paradigm—must be altered. As suggested by both Robert E. Skinner, Jr., and Thomas B. Deen, the respective current and past Executive Directors of the Transportation Research Board,

> Without changes in the enabling environment, the transportation system would continue down the path of incremental change, rather than enable the kind of paradigm shifts that would bring us to a truly "sustainable" transportation system.

Sidebar 9:

"Incrementalism is innovation's worst enemy."

—Nicholas Negroponte, MIT Media Lab

Today, we have the opportunity to dramatically alter the transit "enabling environment," to clear away the barriers and constraints to true fundamental change, and to put in place the types of resources, incentives, and flexibility that can foster and reward industrywide progress toward a new paradigm.

STEPS TO SUPPORT THE EMERGENCE OF A NEW PARADIGM

The findings and conclusions from the search for a new paradigm in public transportation have met with widespread acceptance and acknowledgement from varied audiences, including current transit industry leadership; rising industry professionals; and federal, state, and local officials. On its own, the new paradigms framework provides a blueprint that can be used by agencies of all sizes to define the transit organization of the future. Today, however, there are opportunities to reshape public policies and commit resources in support of the new paradigm.

The Emerging "Operations" Mission

One opportunity revolves around the notion of greater increasing investment in transportation "infostructure" to enhance performance of the street and highway system as part of a new "operations and management" mission for transportation organizations.

For more than 2 years, a wide range of interests and organizations have been exploring a mission shift for federal, state, and local transportation organizations. The focus of this shift has been on defining the processes and investments required to more effectively operate and manage the nation's multimodal surface transportation network on a sustained basis.

This new "operations and management" mission stands in contrast to the long-standing focus of highway organizations on construction of new capacity and maintenance of new and existing facilities. The operations and management mission is also receiving increased attention because of the widely held view that the era of wholesale expansion of the highway system and construction of extensive additions to the highway network has passed.

The effort to organize resources, redefine business practices, and refocus highway-oriented organizations around an operations mission is wholly consistent with current and evolving federal policy and programs that emphasize intermodalism and improved systems performance. The majority of the discussion to date has focused on strategies, actions, and investments to increase the throughput of vehicles on the highway network while achieving higher levels of safety (e.g., signals, signage, lane configurations for separating vehicles and trip purposes, pavement markings, message signs, incident response procedures, etc.).

Participants in the discussion have, however, recognized the central role of information technology in carrying out the operations and management mission. The emphasis on new infostructure provides a focus for joint efforts by highway and transit leaders to deploy state-of-the-art information systems.

This infostructure investment imperative might be broadened to include investment in the types of infostructure vital to make public transportation a fully effective contributor to the enhanced operation of our multimodal transportation network. Dramatic increases in funding for and more rapid deployment of universal fare media like smartcards, real-time on-street service information for customers and managers, unified scheduling, and dispatching systems can certainly enhance the role and effectiveness of public transportation as part of our multimodal network. Perhaps, more importantly, parallel investment in state-of-the-art transit infostructure can hasten the fundamental change and paradigm shift that is underway throughout the transit industry.

Transit's Role in Multimodal System Operations and Management

In community after community, the operation of the street and highway network, during times when it is under the most stress, is being enhanced substantially by the increased availability and use of transit and other shared-ride modes of travel.

In major metropolitan areas in which congestion problems are greatest and their economic consequences are the most severe, transit is carrying significant and increasing proportions of peak-hour travel on facilities that are the most susceptible to breakdown.

Similarly, transit accommodates significant proportions of travel to central cities, central business districts, and major surrounding activity centers in which the ease of access for private and commercial vehicles is often the most difficult to maintain.

Under these circumstances in which performance of the highway network is expected to continue declining, efforts to enhance the attractiveness and effectiveness of transit and other shared-ride services could become a new strategic focus. This new strategic focus could perhaps be achieved through an aggressive program of investment in the types of infostructure that will make public transportation a more attractive, viable, and effective alternative, particularly where roadway capacity is most severely compromised. Initiatives might include the following:

- *Universal fare media,* like the smartcards being used in Washington, D.C., and tested and introduced in several other major metropolitan areas;
- *Real-time, on-street service and operations information systems* for both customers and managers; and
- *Unified scheduling and dispatching systems* to link all service providers in a region for customers' ease of use.

Converging interests in multimodal system operations by the highway community and transit leaders in pursuit of a new paradigm provide a compelling opportunity and rationale by which to explore new transportation policy, program, and investment initiatives.

Evolution of National Programs and Policies

A second opportunity to support the pursuit of new paradigms in public transportation lies in the periodic review and revision of highway and transit programs. In the evolution of public policies and programs lie opportunities to directly and indirectly support and reward progress across each of the six dimensions of change that can lead to a new paradigm in public transportation. These opportunities may take the form of supportive statutory provisions, regulatory actions, or administrative procedures that encourage

- Mission shifts to focus on mobility;
- Greater customer focus;
- Broader, sustained collaboration;
- More extensive integration;
- State-of-the-art information technology; and
- Changes in organization structure.

The earlier discussion of expanded infostructure investment represents the kind of specific proposal that might be considered. Similar propositions could be developed to support fundamental change across the remaining dimensions noted above.

The Transportation Equity Act for the 21st Century (TEA-21) and its predecessor, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), in many ways constituted a paradigm shift in national transportation policies and programs away from a focus on project-based construction and mode-specific system expansion toward a focus on system-level performance and operations from a customer and community perspective. In continuing this evolution, industry leaders might find opportunities to

- Acknowledge the need for a new paradigm in public transportation;
- Examine how each key dimension of change might be addressed; and
- Pursue mechanisms that encourage, reward, and hasten the specific types of fundamental changes that can lead to a new paradigm.

Support for new paradigms in transit might focus on any of the several stages, such as local and regional planning, project funding, or both.

- **_In the local and regional planning process,_** there may be value in the following:

  — Defining and declaring a new mission oriented toward mobility management,
  — Introducing and testing new measurement techniques to heighten the focus on the quality of the customer experience,
  — Documenting collaborative activities and consequences,

  — Documenting efforts and consequences of increased integration on a number of levels,
  — Reporting more fully on the deployment and impact of new technologies, and
  — Planning and reporting on the nature and consequences of organizational change.

- **_Transit funding at all levels_** might also be reshaped to support paradigm shift:

  — Additional increments of investment, incentive arrangements, or both could be made available to ensure that overall transit capacity requirements will be met over a designated multimodal system;
  — Greater levels of investment might be made available to support the costs of significant integration across facilities, equipment, services, functions, and so forth.;
  — Substantially greater levels of funding might be made available for broader and faster deployment of the transit infostructure (as discussed above);
  — Special funding might be made available to support some of the costs of significant organizational change;
  — Constraints on collaboration and integration might be loosened or waived under varying circumstances;
  — Full-scale demonstrations of fundamental change in all or combinations of the six major dimensions noted above might be supported through independent investment; and
  — Activities that may be ineligible for funding but necessary or essential for progress across the dimensions of change might be made eligible, or greater flexibility might be granted in the use of funds generally provided.

It remains for supporters of fundamental change in public transportation to define these opportunities more sharply and to fashion strategies and proposals to advance the new paradigm agenda.

SUMMARY

The pursuit of a new paradigm in public transportation has led to a powerful framework for fundamental, positive change. As these new ideas have emerged from other businesses and industries, they have been embraced by forward-thinking transit managers and policymakers—fundamental change is underway.

Today, there is an opportunity to reinforce the principles of a new transit paradigm and to support the instincts of the transit industry's most thoughtful leaders with respect to what transit agencies of the future might look like and how they might operate.

APPENDIX: BACKGROUND ON THE NEW PARADIGMS PROJECT

In 1997, transit industry leaders convened under the auspices of the Transportation Research Board's Transit Cooperative Research Program (TCRP). Concerned about an industry that had changed very little over the past 40 years, participants endorsed the premise that the industry was on the verge of crisis and that fundamental change in our traditional public transit agencies was both necessary and inevitable. This conclusion was documented in *TCRP Research Results Digest 24: Creating a New Future for Public Transportation: TCRP's Strategic Road Map* and set the stage for a thorough examination of new paradigms in local public transportation organizations.

TCRP Project J-08B, "New Paradigms for Local Public Transportation Organizations," was launched in 1998 as an initial step in defining possible new directions that the transit industry and agencies might take. The goal of the project has been to move public transportation organizations from their current pattern of small-scale, reactive, incremental change to a position of dynamic, continuous innovation and responsiveness. More simply, the project was designed to address three major questions:

1. *Why* is fundamental change in the transit industry needed?
2. *What* types of change will be necessary?
3. *How* will those changes be initiated, pursued, and sustained?

In the process of addressing these questions, a set of common themes and principles have emerged to help guide fundamental change in transit organizations. The results have been presented to and discussed by a wide range of audiences, including senior and midlevel transit managers, transit agency board members and policymakers, elected representatives of local and state governments, and community leaders in a host of locales.

In each case, audiences have broadly embraced the themes and principles that have emerged as a framework for change in the design and delivery of public transportation services. More importantly, activities are now underway in dozens of local transit agencies to fundamentally rethink missions, business practices, and organizational structures consistent with the principles emerging from other businesses, industries, and organizations.

In short, the U.S. transit industry is clearly in a very different place now than it was only 3 years ago, and the pace of change continues to increase. What, however, lies behind the rising sentiment for fundamental change?

Why Is Fundamental Change Necessary and Inevitable?

To one degree or another, communities and their public and private institutions—including public transportation organizations—must contend with and respond to a series of forces and factors that are evident in virtually every community in the United States. The most important of these challenges have been documented in *TCRP Report 53: New Paradigms for Local Public Transportation Organizations, Task 1 Report: Forces and Factors That Require Consideration of New Paradigms.* The challenges include the following:

- *Threats to economic vitality, environmental quality, and quality of life* in urban, small urban, and rural areas brought on by sprawling development, the spread of traffic congestion, declining mobility for the most vulnerable of our citizens, increasing costs and declining performance of public infrastructure and assets, and continued unwillingness to increase public investment in systems and services that do not meet our rising expectations;
- *Socioeconomic trends that diminish the role and relevance of traditional transit services,* such as the rise of the service economy; flexibility in work schedules; rising real income; single-parent, single-adult, and two-worker households; low population and employment densities; and the slow introduction of new technologies into public services;
- *Fragmented responsibilities, regulatory constraints, and conflicting policies and goals* that characterize the environment in which transportation decisions and investments are made;
- *Outmoded organizational structure, dynamics, and culture* within hierarchical transit agencies that are slow to respond to market forces, are driven by short-term budget and election cycles, and are captive of historic adversarial labor-management relationships and of continuing funding constraints;
- *Preoccupation with the "outputs" of public investment* without adequate regard for or measurement of the "outcomes" of those investments or the quality of the customer's experience; and
- *An inability to deploy state-of-the-art information technologies* to keep up with customer expectations for instant, personal communications born out of the Internet Age.

The impact of these forces and factors and their significance is not unique to public transportation organizations. Every industry sector and business and every governmental agency must recognize and respond to a variation of these

challenges to remain viable and successful in today's changing world. To do so, however, requires fundamental changes to long-standing traditional business models, products, and practices. Wide-ranging examples of successful efforts at fundamental change in both the public and private sectors have also been documented in *TCRP Report 53*, and a broad framework for a new paradigm has been described in *TCRP Report 58: New Paradigms for Local Public Transportation Organizations, Task 5 Report: Opening the Door to Fundamental Change*. Other New Paradigm resources include

- "Changing the Way We Do Business," a brochure available from TCRP; and
- www.newparadigms-transit.com.

Requests for additional information on the TCRP's new paradigms project (Project J-8) can be made to

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