A1A07: Committee on Strategic Management
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Strategic Management

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Strategic management asks questions of the future. What are the forces driving change in the marketplace? What are the new competencies we will need to meet them? How will we have to change ourselves to build those competencies?

Public demands on transportation planners and politicians have never been higher. They want greater efficiency, lower cost, and higher quality. Engineering solutions are necessary, but not sufficient. Resources are too scarce. The challenges are too complex. Success depends instead on quality-of-life solutions: more balanced, better maintained, and more sustainable systems from agencies that are more responsive, proactive, and accountable.

The most obvious drivers of change have been the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and 1998's Transportation Equity Act for the 21st Century. Together these federal acts created a new framework for spending and decision making, with greater local involvement and more flexible funding, an intermodal system approach, and a new concern for the environmental and the social consequences of transportation investment. But the federal mandates merely reflected three larger drivers of change: public participation, alliance building among transportation agencies and the private sector, and information technology, to which transportation professionals must respond.

Public participation can no longer be deferred until the development phase, when neighborhoods rally to block the permits or stop the bulldozers. Success will depend on building consensus early; shaping any plan or project to mirror community concern; and using the public to develop goals, objectives, priorities, and performance measures.

State agencies cannot unilaterally dictate policy any longer. Asset ownership is too dispersed, a crazy quilt of state, county, municipal, port, airport, and transit agencies, each with its own finance, construction, and maintenance departments. Success in the future will depend on building coalitions, sharing resources, and integrating many points of view into a team that can work together. The old private-sector relationships will not work, either. Agencies will need to control and manage expenditures for increasingly complex projects that link a broad range of specialized talents. Success will depend on integrating vendors into supply chain alliances and creating partners focused on a common goal.

Information technology (IT) can be a powerful tool to advance these ends, but only if it, too, is designed strategically. Anyone can spend money on IT. Success will depend on investing in ways that both build on and enhance larger critical competencies.

These strategic questions would look familiar to any manager anywhere. How do you listen to the customer? build teams? turn vendors into partners? How can technology help? No one has all the answers. But organizations across the country are seeking them in provocative new ways, setting a strategic course for the new millennium. The following

case studies describe how transportation agencies have handled these drivers of change to strategically manage their organizations.

CONSENSUS BUILDING IN MINNESOTA

Mukhtar Thakur knows first hand how hard it can be to forge consensus. He led the Minnesota Department of Transportation (MnDOT) team trying to build a bridge across the Mississippi at I-35E into the Twin Cities and spent a resource-intensive year working to get the potential stakeholders to agree on the design. His goal was to get everyone talking around the same table, exploring the choices and trade-offs. “I wanted the pedestrians and bicyclists to listen to the emergency vehicle users to listen to the business community to listen to the truckers,” he says. “I wanted them to formulate what they wanted from the bridge and to understand that everyone around the table had to use it, too.”

He played process facilitator. He brought whatever issues were raised, “provided they were reasonable to a majority,” back to the table as options and explained the possible consequences. City agencies were invited to sit in, too. “Come, be a resource,” he told them. “Hear what your citizens are saying.”

It was effort well spent, Thakur says today. “Without it we probably would not have been able to get city approval to build.” His success is just one of many such stories throughout Minnesota: the product of a larger 7-year effort by MnDOT to reinvent itself as a consensus builder. Prodded by ISTEA—and “inspired by common sense,” according to MnDOT Director of Research and Investment Randall Halvorson—MnDOT is building interagency cooperation and public participation throughout its organizational structure and key processes.

MnDOT’s first question was basic, Halvorson says: “How can we get local governmental units more involved in working together?” To start the conversation, MnDOT sponsored a statewide forum, where 160 participants representing different municipalities, interest groups, and the public met to discuss how to decentralize decision making. The result was a new investment system, the Area Transportation Partnerships (ATPs), designed to increase public participation, take advantage of funding flexibility, and build multiplayer cooperation for the state’s highway, transit, bikeway, and rail programs. Each of the state’s eight ATPs makes spending decisions for its own area, with target funding levels set on the basis of its share of estimated available funds according to an agreed-upon formula. Each ATP creates a prioritized list of projects aimed at solving local problems while implementing larger statewide goals. MnDOT evaluates each list for consistency, determines the actual funding level, and aggregates the lists into the larger state Transportation Investment Program, a 3-year spending road map. MnDOT’s role is to facilitate the partnership with guidance and support from its own internal planning processes and annual guidebooks that explain the program; detail funding-level formulas; and dissect categories like preservation, management and operations, and replacement.

Integration of public participation in strategic planning began with outreach at eight regional forums sponsored by MnDOT in 1995. Exploring trends in education, economics, health care, demographics, the environment, technology, and resource availability, the participants focused on the challenges ahead. The future, they agreed, would demand “a coordinated transportation network that provides safe, user-friendly access and movement and responds to the values of Minnesota’s citizens.” MnDOT’s role would be to assess customer needs, determine investments, deliver programs, and maintain and operate the

system. Each element would require many skills, but all would start with the same skill: involving the public.

Today public participation is central to the agency's training program and is integrated into its performance reports. MnDOT's most recent update of the state's master plan had 1,000 hours of public participation built in.

The impetus for MnDOT's project-level initiative came from a 1995 effort to create a process of two-way learning between planners and the metropolitan Twin Cities' nontraditional stakeholders, defined as people of color; low-income groups; community, neighborhood, civic, and cultural groups; and members of the disabled community. New ideas for outreach and communication developed there led to a larger agency effort to identify better ways to engage the public as a whole. The result was *Hear Every Voice*, a guide to public participation at the project level. Combining history and theory with 19 case studies, including Thakur's bridge across the Mississippi, it represents a toolbox for project managers, a curriculum for training, and a continually expanding library of best practices.

"Projects can be incredibly complicated," says Pat Bursaw, a leader of MnDOT's nontraditional stakeholder initiative. "You have to explain things directly—and, most of all, listen. Participation works best as a dialogue, not as experts talking at the public, but as equals sitting down together."

ALLIANCE BUILDING IN PUERTO RICO

No one thought Carlos Pesquera could build a transit system through the heart of San Juan. In 1993, when he took office as Secretary of the Puerto Rico Department of Transportation (PR/DOT), plans for the Tren Urbano project had languished for almost 30 years, with only 10 percent of the design completed. Public enthusiasm was thin, and the engineering, management, and technology challenges were daunting.

Pesquera, however, was convinced of the need and that he could rally broad and deep community support. He was convinced, too, that he could get it built if he could create new, more collaborative relationships with the private-sector designers and builders who would do the work.

Large projects like Tren Urbano present increasingly complex challenges for planners. Expensive, with great potential effects, they usually demand a broader and deeper skill pool than any agency can muster internally. Typically implemented over a long stretch of years, they face constant challenges from a changing political and regulatory environment.

The conventional solution is to outsource the work in discrete pieces to multiple firms for feasibility studies, environmental impact statements, design, construction, and operations and maintenance. With no single point of accountability, however, too often costs will rise along the way, while schedules and quality slip. Puerto Rico took a different approach. In search of greater cooperative performance and accountability from private-sector players, all relationships were placed under one umbrella, a consortium.

This design-build-operate-maintain (DBOM) relationship offers both theoretical and practical advantages. It is faster because construction can begin while design is in process. Quality is often higher, with opportunities for value engineering built in. It helps maximize the usable life of the asset because operations and maintenance are considered from the beginning. However, for the DBOM relationship to succeed, public- and private-sector team members must work as partners. That, in turn, requires new processes for oversight, procurement, risk management, and reward sharing.

Secretary Pesquera's first step was to assemble a small team of advisers, including a group of Massachusetts Institute of Technology professors led by Fred Salvucci, the former Massachusetts secretary of transportation. This General Management Architectural Engineering Consultant Consortium, led by Frederick R. Harris, Inc., was to be his representative for implementation and the first point of accountability, responsible for the environmental impact statement, preliminary design, procurement documents, and selection and oversight of the eventual DBOM partner.

Bidding for the DBOM role itself was a two-step process. Before any cost proposals were considered, the agency's team reviewed each bidder's technical and management proposals. Any good ideas were shared with every bidder before the second phase began, with new technical and management proposals from each, and separate cost proposals.

The challenge was to balance risk by structuring the contracts for the greatest mutual benefit. Some risks, like right-of-way or acts of God, fairly belonged to PR/DOT. Others, like hazardous materials, had to be negotiated. PR/DOT's environmental impact statement predicted 110,000 rides per day, for example. But the agency agreed that a prudent bidder would probably discount the number in its bid. So the agency took the downside, asking for a flat price quotation. All fares collected up to 100,000 riders would go to the agency. If ridership climbs higher, PR/DOT and the winning bidder would split the gain 50/50.

PR/DOT was not required by law to choose the lowest bidder—"but we were lucky," Salvucci says. "The bid our evaluation chose as best was also the lowest cost." Siemens, the German industrial conglomerate, was named leader of the Systems and Test Track Turnkey group, which was responsible for building two stations and the track between them on a section of right-of-way already available. The group would then install the track signal communication systems throughout, provide the rolling stock and maintenance and dispatching facilities, and operate and maintain the system for 5 years, with another 5-year option. Other contractors, often local, were hired for more conventional fixed work, all under the coordination and oversight of Siemens.

Construction began with a series of team-building workshops focused on safety, quality, cost control, and schedules for all the partners, the agency, and the contractor alike. Then they went to work, with value engineering clauses written into the contracts, splitting any savings between the contractor and PR/DOT.

Today, with the opening scheduled for 2001, it remains a working partnership. "The one big surprise was how much construction management was required even after we'd selected the DBOM contractor," according to PR/DOT's Chris Dixon. "People think once you select a turnkey contractor they're responsible for everything. But it has to be an ongoing joint exercise in ensuring the best possible implementation practices and extracting maximum value."

PERFORMANCE BUILDING IN CYBERSPACE

Successful technology adaptation is rarely a question of technology itself. It starts, instead, with the question of application: the hole we need drilled, not the tool we need to drill it. Design is the critical competency, marrying people and technology with larger strategic goals. Applications need to be incremental, focused on a clear and achievable target. Then applications need to be implemented, stressing three nontechnical skills: fostering interagency cooperation, listening to technology customers, and assembling the right alliance of expertise—the same skills that define the other strategic management imperatives.

Consider metropolitan Phoenix, Arizona, for example. By creating a $7.5 million network to manage traffic and emergency services, the city used its team-building strengths, linking 13 agencies so that traffic signal timing, traffic diversion, emergency response, and on-ramp monitoring are seamlessly coordinated.

A December 1997 accident west of downtown Phoenix on I-17 demonstrated the payoff. A Cadillac cut off a cement mixer, causing the two vehicles to collide and slide into a patrol car that had pulled over. Cameras alongside the highway immediately picked up the accident, and ambulances and fire engines, whose dispatchers received those images, arrived in minutes. Firefighters were able to borrow control of the cameras to plot a route to get to the accident while word of the accident was being transmitted to radio reporters and city traffic managers. Within 5 minutes, traffic on the expressway dropped 20 percent compared with typical levels as people responded by changing routes. Simultaneously, traffic signals along those routes were adjusted to let more cars head toward downtown.

Finding the right technologies was the easy part of building Phoenix's network, according to Matt Burdick, project spokesperson. "What was hard was getting all the players who manage traffic to sit down and think about how to improve traffic flow overall—not just on the one piece that they managed."

No matter how helpful transportation technology is, commuters, public employees, and other stakeholders will not adopt it unless it is easy to use. Unfortunately, what is easy for the technicians building a system often baffles those for whom it is built. For that reason, involving the users in development is critical, as was done with the LifeLink project in San Antonio, Texas.

Using cameras, fiber optics, and computers to link paramedics with hospital emergency rooms, LifeLink allows experienced trauma physicians to coach paramedics through tough situations, helps emergency room staff with diagnosis and preparation of treatment before patients arrive, and results in better choices about which hospital to use. To ensure that the technology would not be difficult or distracting to use, the LifeLink team assembled an advisory board, including paramedics and chiefs of trauma and surgery at local hospitals. Called in several times to test the system during development, the board suggested several modifications that engineers had not anticipated, including changes in the size and placement of the display screens, the addition of a small microphone so that patients could speak to doctors without borrowing the medics' headsets, and full system automation.

The result has typically technophobic doctors and medical personnel clamoring for LifeLink to be installed in 15 additional ambulances, according to Sterling Kinkler, a principal engineer with the Southwest Research Institute, the community's technical partner in the project. "But if we hadn't involved users, the system would just be collecting dust." As with many complex projects, sophisticated technology initiatives often work best as supply chain alliances.

BUILDING TOMORROW'S TRANSPORTATION AGENCIES TODAY

What will successful transportation agencies look like in the next millennium? Driven by irrevocable forces of change and inspired by the evolving best practices created to meet them, they will develop critical new competencies in public participation, coalition building with other transportation agencies and private-sector partners, and strategic technology investment. However, to do so effectively, they will have to change themselves internally,

developing new perspectives on purpose, personnel, structure, business processes, and their technology infrastructure.

Their job will no longer focus primarily on building roads or transit systems; their job will focus on building cooperation among the transportation system's many stakeholders. Engineering and design skills will be necessary but not sufficient. Personnel will have to be hired, developed, and evaluated for their ability to coordinate multiple points of view, lead internal and external teams, and listen to customers and stakeholders. The organization will have to be flatter, more flexible, and more responsive, with authority decentralized and decision making pushed to the front lines. Financial stewardship, project management, asset management, and constituent relationship management will be the critical processes. Technology design will be the responsibility of senior management, with systems developed as a distributive tool to build and share the knowledge necessary to do those jobs.

The public's demands are clear: better efficiency, lower cost, and higher quality. Tomorrow's transportation agencies will be redesigned through strategic management to meet those demands.

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