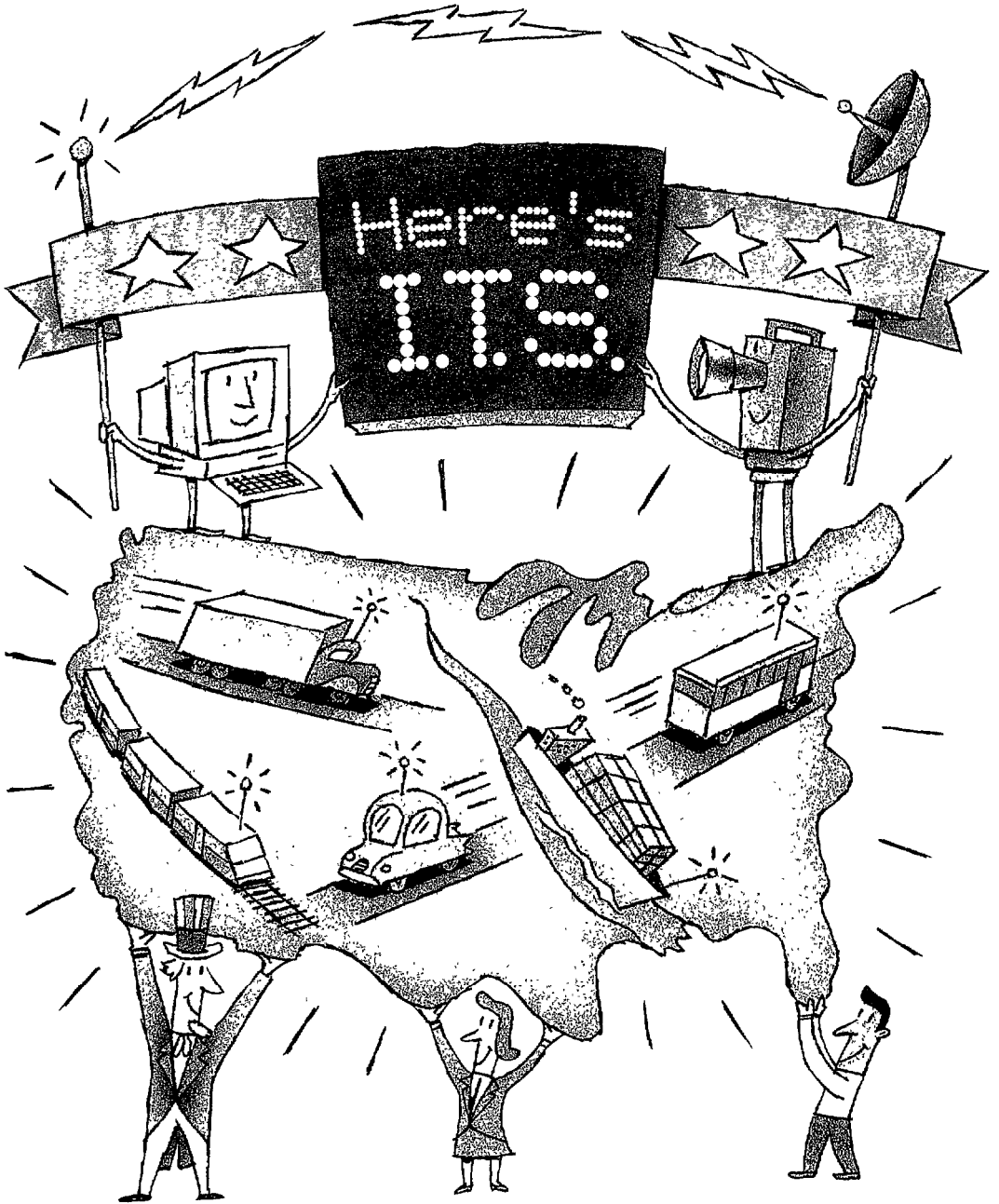


Intelligent Transportation Systems

Action Guide

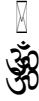


Realizing the benefits



Intelligent Transportation Society of America





Intelligent Transportation Society of America

The Intelligent Transportation Society of America (ITS America) is a non-profit, scientific and educational society that also serves as an official utilized federal advisory committee to the U.S. Department of Transportation. The goal of ITS America, which began operations in 1991, is to coordinate and accelerate the development, deployment and acceptance of advanced transportation technologies in the United States. ITS America is a public/private partnership with more than 1,000 member organizations drawn from all levels of government, the private sector academia and the intelligent transportation systems (ITS) international community. For more information call ITS America, (202) 484-4847.

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"Through a variety of state-of-the-art technologies ITS provides easier traveling to everyone, whatever their mode of transportation.

These high-tech programs provide long-term solutions to a very complex problem facing cities across this country."

Mayor Bob Lanier, Houston

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Dear Policymaker,

Transportation is safer, more convenient and more efficient thanks to intelligent transportation systems (ITS). Essentially, ITS is about providing the right people with the right information at the right time. In the United States, we have drawn on the work of communications, computer and information systems to create technologies that can improve traffic, transit and commercial vehicle operations.

Now, our nation's ITS program is entering an exciting new stage

Both the Intelligent Transportation Society of America (ITS America) and the U.S. Department of Transportation (U.S. DOT) have set ambitious goals for deployment of ITS nationwide by 2005. At a minimum U.S. DOT wants to use advanced traveler information systems to trim 15percent off the time it takes to commute in 75 of the nation's largest metropolitan areas. And ITS America believes the nation can have basic ITS services in place for consumers of passenger and commercial transportation within that same time frame.

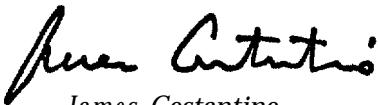
There are many ITS opportunities but it is important to involve the private sector as you decide on your community's needs. Often, the private sector can help with creative solutions or innovative funding.

In fact, these "public-private partnerships" are at the heart of the many transportation challenges ITS solves. Furthermore, the public sector is expected to pay for only 20 percent of the total cost of these systems, with 80 percent of the expenditures taking place in the private sector.

*This action **guide** was created for you. It will help you **bring** the benefits of ITS to your community. It includes several case histories, a section on the essential steps to **get** ITS in place and helpful private-sector and public-sector contacts.*

The approximately 1,000 members of ITS America deal with the technical and societal implications of ITS on a daily basis. As such, we are here to help you realize the benefits of Intelligent Transportation Systems. Please contact us if you need further assistance.

Sincerely,



James Costantino
President
ITS America

When deploying ITS, leaders should:

- ***emphasize public needs,***
- ***insist on competition***
- ***work closely with the private sector, and***
- ***"buy smart" when adding technology.***

The benefits are:

- ***greater mobility and safety,***
- ***cleaner air, and***
- ***lower operational costs.***

Introduction

ITS stands for Intelligent Transportation Systems.

Congress authorized the ITS program in 1991. The program applies scientific and engineering advances in communications, computer and information systems developed for the space program, defense and aviation industries to surface transportation. Over the last several years, transportation policymakers and the private sector have been adapting these advances into tools they can use through a program of ITS research and testing. Now, the ITS program is entering an exciting stage: delivering the benefits of ITS to the public.

Simply put, you can deploy ITS solutions that supply travelers and commercial vehicle operators with real-time travel information about the roads ahead, increase the efficiency of transit systems and traffic infrastructure and provide travelers with convenient information on inter-modal transportation options.

***“Decisions made today about research,
testing and deployment of ITS systems could
have profound implications for the way people
travel to and from work, school and other
activities over the next several decades.”***

*High-Tech Highways: Intelligent Transportation System and Policy,
Congressional Budget Office, October 1995.*

***Intelligent – people gathering
and analyzing real-time information,
then making the right decisions.***

***Transportation – choices affecting
airports, urban and rural highways ports,
public transit railroads and waterways.***

***Systems – solutions linked
together to benefit the traveling public
and the commercial sector.***

ITS helps leaders solve transportation-related problems.

“The reality is that most cities and rural communities already have many of these elements in place. It is really a matter of connecting them. And it is a matter of buying smarter when we replace or upgrade equipment I am calling on transportation policymakers and implementers to be move strategic in their investments.”

U.S. Secretary of Transportation Federico Pena January 1996.

Already, more than 400 ITS projects are under way in communities throughout the United States and Puerto Rico. In every case, the goal is to give the public a safer, more convenient and more efficient transportation system. Many communities are involved in ITS activities and your ITS America state chapter or the national organization can help you pinpoint the closest example (see ITS Contacts).

“By using Intelligent Transportation Systems (ITS), the Atlanta Traffic Control System engineers will have the ability to alert drivers heading in all directions to upcoming construction, accidents and detours. This will be of great value to the City of Atlanta during and after the 1996 Centennial Olympic Games. We anticipate more than 2 million people within a 17-day period and expect traffic snarlsto abound. ITS will let drivers know what to expect.”

Mayor Bill Campbell, Atlanta

States and municipalities
are facing many
transportation-related challenges:

*from **environmental mandates** to*

***tourists who cannot find their way
around your city,***

*from **cuts in federal funding** to aging
transit systems,*

*from **gridlock** to inadequate
infrastructure,*

*from **land-use restrictions** to traffic
signals that never keep up with traffic.*

"ITS has enormous potential to solve some of our pressing transportation problems.

To succeed, it requires broad-based stakeholder participation, including that of elected officials."

Mayor John Mason, City of Fairfax, Va.

"San Diego is looking at Intelligent Transportation Systems for ways to make border crossings more predictable for commercial vehicles and improve the movement of goods in our region."

Mayor Susan Golding, San Diego.

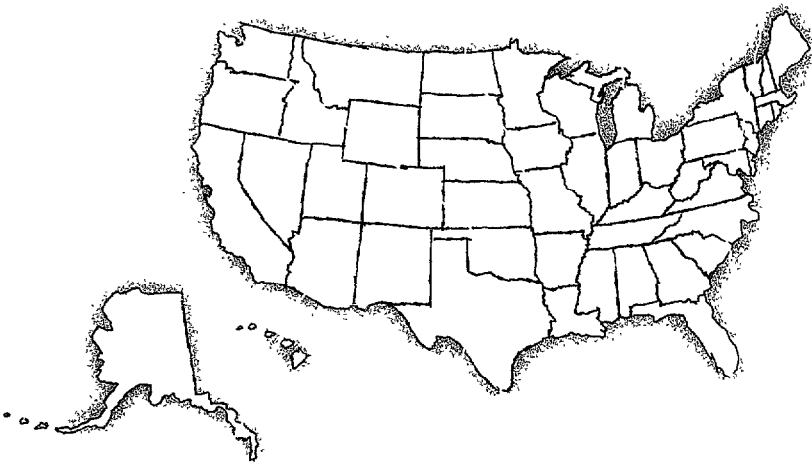
ITS Success Stories

Oakland County, Mich.
unified transportation services

Kansas City, Mo.
increased efficiency

Maryland
improved safety

Oklahoma
reduced emissions



Phoenix
improved air quality

Winston-Salem, N. C.
assisted elderly & disabled

Abilene, Texas
eased congestion

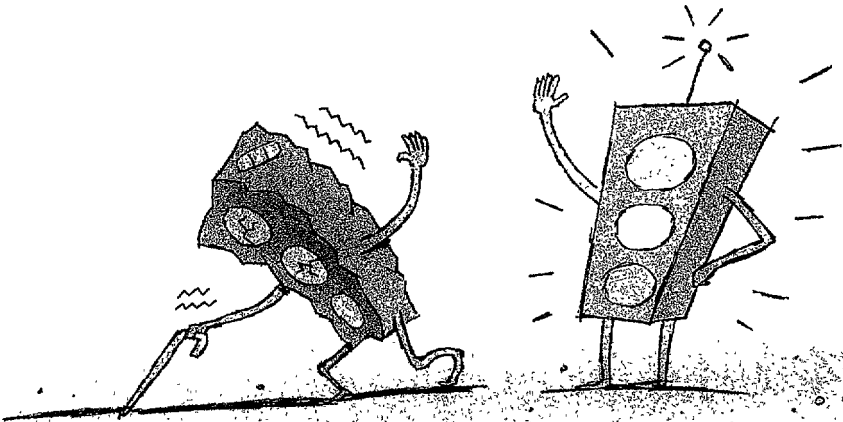
Florida to Ontario Canada
Advantage I-75

Houston
enhanced emergency response

Problem:

Outdated traffic signal system
created congestion in
city of 110,000.

- Replacement parts for out-dated signal system were hard to locate.
- Consumers wasted money for fuel when caught in traffic.
- Carbon monoxide levels rose.



ITS Solution:

Modernize traffic signals using a closed-loop, computerized system allowing centralized control.

- Coordinate signals along heavily used corridors.
- Allow for expansion of signal system to other traffic corridors.
- Improve ability to maintain signal system.

Benefits: On the initial project, the city reported a 37-percent reduction in delays, 22-percent increase in travel speed, 14-percent reduction in travel time and 12-percent reduction in carbon monoxide. Subsequent projects have yielded between \$8 and \$11 of benefits for every dollar spent. The benefits resulted from reduced stops and delays as well as fuel savings.

Contacts: public sector — Jon Krieg, City of Abilene, (915) 676 6280, private sector — Wayne Kurfees, Kimley-Horn and Associates, (214) 770-1300.

Problem:

Needed to improve efficiency of commercial-vehicle monitoring.

- Truck traffic on U.S. interstates is forecasted to increase for the foreseeable future.
- Multiple weigh/inspection stations impeded long-haul truck traffic and, in some instances, created unsafe traffic conditions.
- Needed alternatives to increasing the physical size and/or location of weigh/inspection stations (a new station costs nearly \$15 million).

ITS Solution:

Allow transponder-equipped and properly documented trucks to travel any segment along the entire length of I-75 and Canadian Highway 401(1,900 miles from Toronto to Detroit to Miami) at mainline speed with no more than a single stop at an inspection station.

- Establish a public-private partnership to overcome institutional barriers.
- Develop a Mainline Automated Clearance System and deploy it in an operational test.
- Expand the system geographically and enhance the functionality with a focus on safety.

Benefits: Accrued travel-time and fuel savings; improved regulatory efficiency (reduced capital cost and focused on non-compliant truckers); enhanced safety (weigh-station vicinity); set stage for future benefits (paperwork reduction and transparent borders).

Contacts: public sector - Douglas McKelvey, Federal Highway Administration, (202) 366-9246, David Smith, Kentucky Transportation Cabinet, (502) 564-3730, Calvin Grayson Kentucky Transportation Center, (606) 257-4513, private sector - Gary Ruegg, SAIC, (402) 291-2233, Gene Bergoffen, National Private Truck Council, (703) 683-1300.

Problem:

Emergency responders needed more information on hazardous materials (hazmat) shipments traveling by rail through the largest petro-chemical area in the nation.

- When an accident happened, first responders would need to know if the train carried hazmats and, if so, what were they dealing with.
- Manifests and placards may not always be readily available or readable after an accident.
- Consequences of the accident may require prompt evacuation.

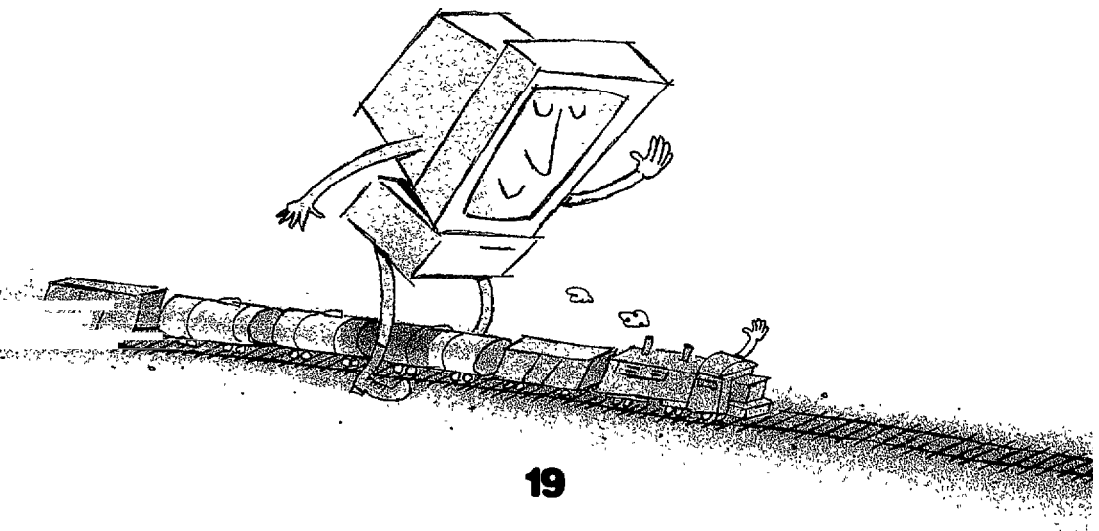
ITS Solution:

Direct links to product-safety information.

- Support and expand “Operation Respond,” a computerized information-exchange system linking emergency dispatchers and responders to carrier databases.
- Merge existing public-sector information systems (emergency-response guidebooks) with customized computer software to confirm the contents of private-sector multimodal hazmat shipments .
- Help eliminate confusion for first responders.

Benefits: Enable emergency crews to react to hazmat spills quickly and accurately. Minimize environmental impact. Protect infrastructure.

Contacts: public sector — Jim Boone, Federal Railroad Administration, (202) 366-0402, Lee Jackson, Federal Highway Administration, (202) 366-4415, private sector — Dan Collins, Operation Respond Inc, (202) 906-2770.



Problem:

Needed a new radio system to improve contact between transit dispatchers and metropolitan-area buses.

- Existing radio system failed repeatedly.
- Transit officials did not know if buses were running early or late or if there were accidents or if drivers were threatened.
- Situation required more street supervision, and the resulting overtime was costly.

ITS Solution:

Use a computer-aided-dispatch (CAD) and install an automatic vehicle location (AVL) system on metropolitan buses instead of a new radio system.

- . Constant contact with buses.
- . Improve customer service by solving problems faster.
- Generate real-time information on how bus system was operating.

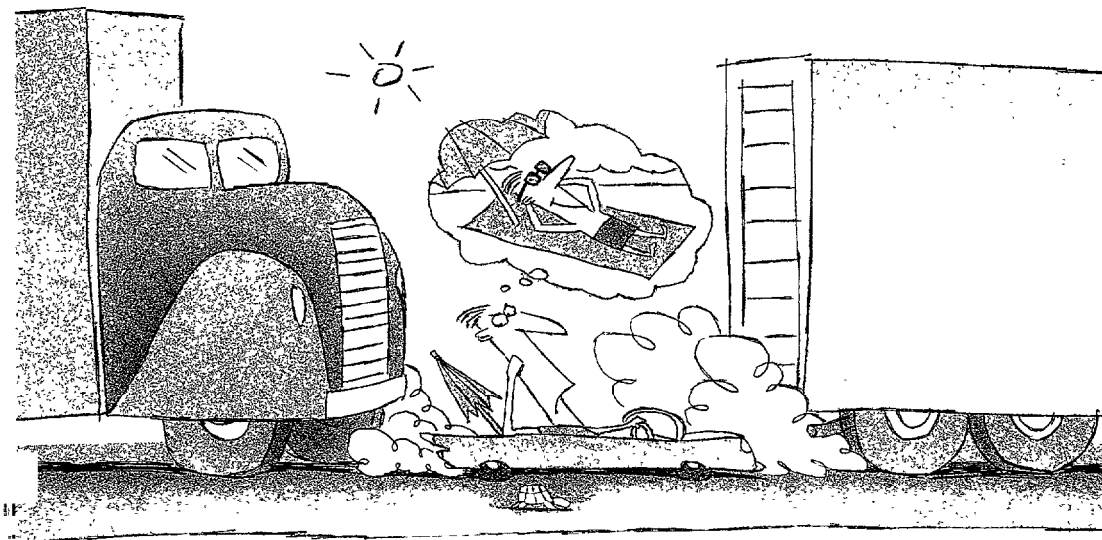
Benefits: An analysis of actual run miles, based on AVL-generated data, prompted a reduction in scheduled-run times on several routes allowing seven fewer buses to serve routes with no reduction in service to the customers. The productivity gain of eliminating seven buses out of a 200-bus system allowed Kansas City to amortize the investment in AVL in two years. These savings were: capital expense, \$1.5 million, and operating expense, \$404,000, a year. The cost of the AVL/CAD systems was \$2.3 million. The AVL system was installed just as sales-tax revenues, which helped fund transit, fell sharply.

Contacts: public sector- Dolores Brehm, Kansas City Area Transportation Authority, (816) 346-0238, private sector- Jack Meltzer, Wornall Electronics Inc., (816) 333-6299.

Problem:

Highway travel increases.

Highway travel (measured in vehicle miles traveled) increased 60 percent between 1980 and 1995, and could increase by an additional 40 percent from now to the year 2010. Approximately 70 percent of all traffic in Maryland travels on the state highway system, even though this system comprises less than 20 percent of the total road system in the state. Heavy volumes of traffic, stop-and-go commuter peaks, and lack of comprehensive information regarding conditions on available alternatives contributed to and compounded the effects of unexpected incidents, such as traffic accidents. Accidents contribute to almost 60 percent of all delays due to congestion. The impetus for change came when summertime traffic overwhelmed local infrastructure as tourists and others headed for Maryland/Delaware beaches.



ITS Solution:

"Hub and satellite" system.

CHART — Chesapeake Highway Advisories Routing Traffic — improves efficiency and safety on Maryland's major highways through the application of ITS technology and interagency teamwork. CHART is built upon a "hub and satellite" system design which is comprised of a Statewide Operations Center supported by localized Traffic Operations Centers. Given the complexity of travel in the Northeast region of the United States, it is common for users to cross multiple jurisdictional boundaries. Therefore, it is necessary to often "act local while thinking regional."

- Assess real-time traffic flow and weather conditions using remote sensors, information received from agency field units, and information received from individual travelers.
- Initiate an immediate response to clear the incident and re-open lanes as quickly as possible, while protecting the safety of victims, travelers and emergency personnel, once the surveillance/detection system identifies a problem.
- Provide remote and adaptive traffic signal control and coordinated signal timing with arterial signal systems.

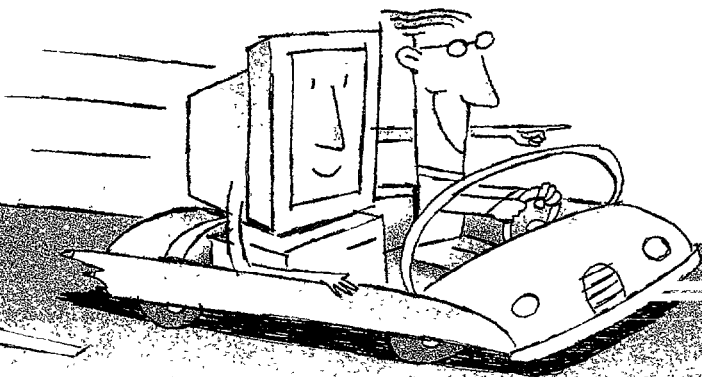
Benefits: Commuter traffic in Washington and Baltimore metropolitan areas benefit from quicker clearing of incidents, regional travelers benefit from coordinated travel information and operations between agencies, and commercial vehicle operators benefit from both local and regional efforts.

Contacts: public sector — Steve Kuciemba, Maryland State Highway Administration, (410) 787-5884, private sector — Jeffrey Randall, JHK & Associates, (410) 825-5414.

Problem:

Rapidly growing county with approximately 2,500 miles of roads and highways needed to expand and coordinate travel services for motorists.

- Additional cars meant more accidents, especially at intersections.
- Poorly coordinated county traffic signals caused delays.
- Deteriorated infrastructure added to delays.



ITS Solution: FAST-TRAC Information links.

Traffic-management was linked with advanced traveler information systems to reduce congestion county-wide (Faster and Safer Travel Through Traffic Routing and Advanced Controls, FAST-TRAC). This is the largest operational test of ITS applications in the world.

- Use central computer to balance network-wide traffic-signal system with traffic flow.
- Deploy safety-video systems at approximately 300 intersections.
- Equip some vehicles with in-vehicle navigation systems that communicate with roadside beacons to provide traffic operations center with information on tie-ups.

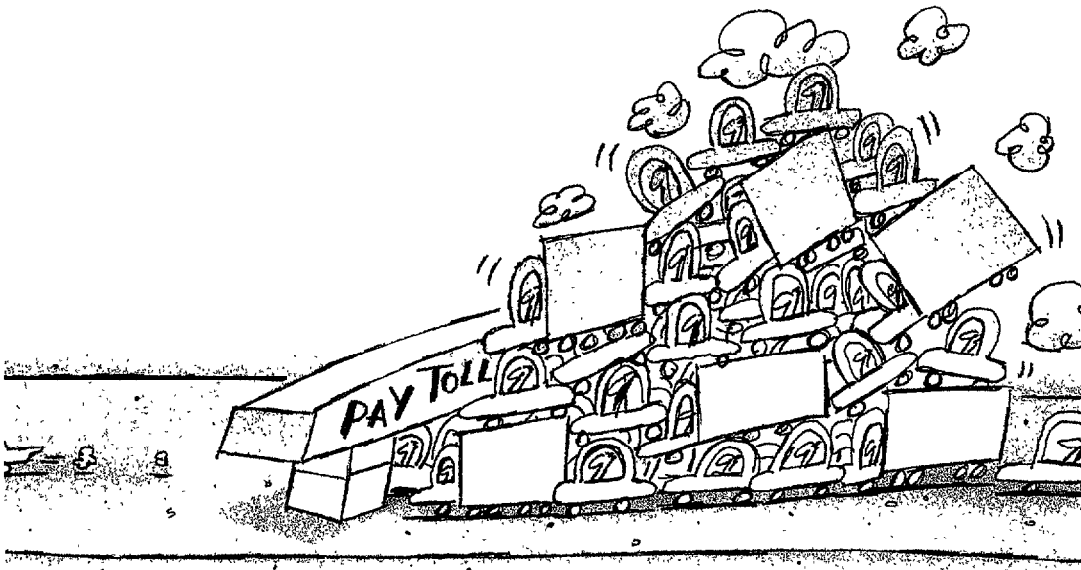
Benefits: The on-going project reported an 89-percent decrease in left-turn accidents at dangerous intersections, 27-percent decrease in total traffic-related injuries, 19-percent increase in vehicle speeds during rush hours and potential for up to 13-percent decrease in air pollution.

Contacts: public sector — Brent Bair, Road Commission for Oakland County, (810) 645-2000, private sector — Ronald Knockeart, Siemens ITS North America, (810) 253-2780.

Problem:

Accidents and air pollution caused by backup of commuters entering staffed toll booths along 563-mile system.

- High-cost, staffed toll booths failed to alleviate congestion.
- Air-quality problems increased.
- There were 71 accidents in staffed toll lanes in 1992.



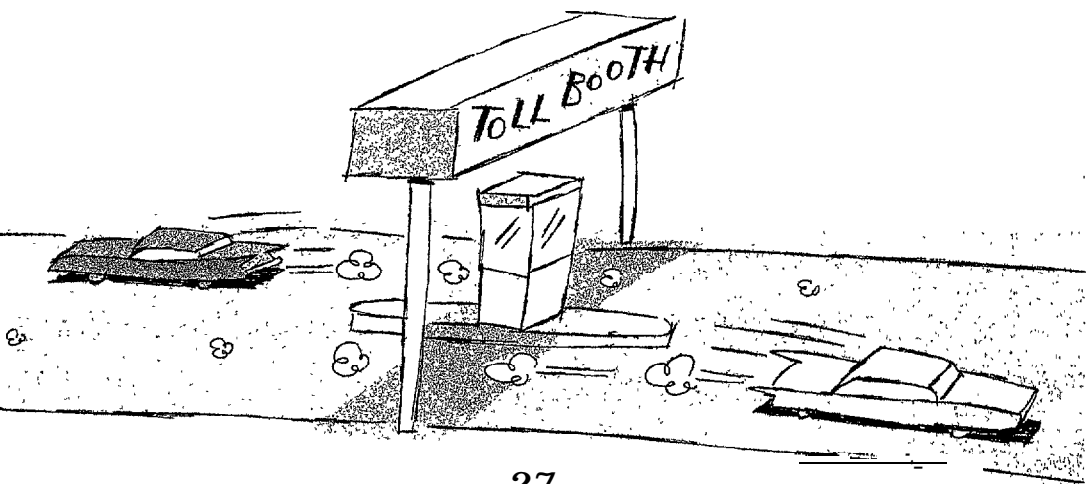
ITS Solution:

Install an electronic toll-collection system (PIKEPASS).

- Allow commuters to pay with electronic-debit accounts.
- Provide motorists with transponders (electronic devices that store data) and maintain normal speeds when passing through electronic toll-collection booths.
- Boost efficiency of toll-collection for 563-mile highway system.

Benefits: Operating costs dropped from \$176,000 per year each at staffed booth to \$16,000 per year at each of the electronic tolls. There were no accidents at electronic toll-collection booths in 1992. Emissions levels at the toll facilities were reduced for hydrocarbons by 6-to-1, for carbon monoxide by 4-to- 1 and for nitrous oxide by 2-to- 1.

Contacts: public sector — Mary Kay Audd, Oklahoma Turnpike Authority, (405) 425-3600, private sector — Bob Neely, Amtech, (214) 733-6600.



Problem:

Too many single-occupancy cars,
poor air quality in a metropolitan
area of more than 2.3 million.

- The county issued travel-reduction ordinance after the state legislature passed air-quality legislation.
- Employers with more than 50 employees were mandated to reduce single-occupancy vehicle trips by employees by 5 percent in two years.
- Previous means of paying for employees' use of transit system were not cost effective for employers, who supplied monthly passes even though employees did not always use the passes.

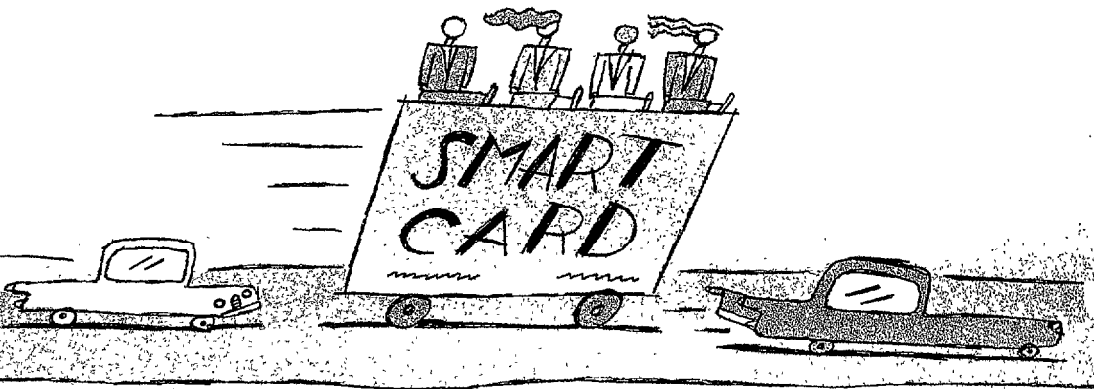
ITS Solution:

Make transit system more convenient and innovative to attract motorists and reach environmental goals.

- Create magnetically encoded plastic passes (Bus Cards), allowing for better tracking of services and operations by the transit system.
- Create a transit credit card (Bus Card Plus) available through employers. And bill employers for employees' actual transit use only.
- Allow credit card payment for transit fares (Visa and Mastercard in use). Cards are verified by private-sector company.

Benefits: Emissions from single-occupancy cars were reduced and transit ridership increased.

Contacts: public sector — Mike Nevarez, City of Phoenix Public Transit Department, (602) 262-7242, private sector — Zafar Syed, National Data Corp., (703) 448-5789.



Problem:

Specialized transportation needs.

Improve transportation services for elderly and disabled people who need to visit health and human services providers. The transportation area covers 400 square miles and includes 150,000 urban residents and 300,000 rural and small-town residents.

- Rural people, especially, needed to be served by Trans-AID, the dial-a-ride component of the Winston-Salem Transit Authority. Before 1995, the fleet of 19 small buses annually reached 120,000 demand-response passengers, which was less than what was needed.
- Out-of-date computer software did not schedule the best subscription routes. As a result, routing inefficiencies constrained Trans-AID capacity. Billing was slow. Service for new passengers was delayed up to one week, and invoicing and payment for transportation services took weeks.
- The out-of-date software did not allow interactive real-time passenger reservations to be made nor did it provide minute-by-minute passenger and vehicle information. Dispatchers had insufficient knowledge to insert a “real-time” passenger into a day’s schedule.

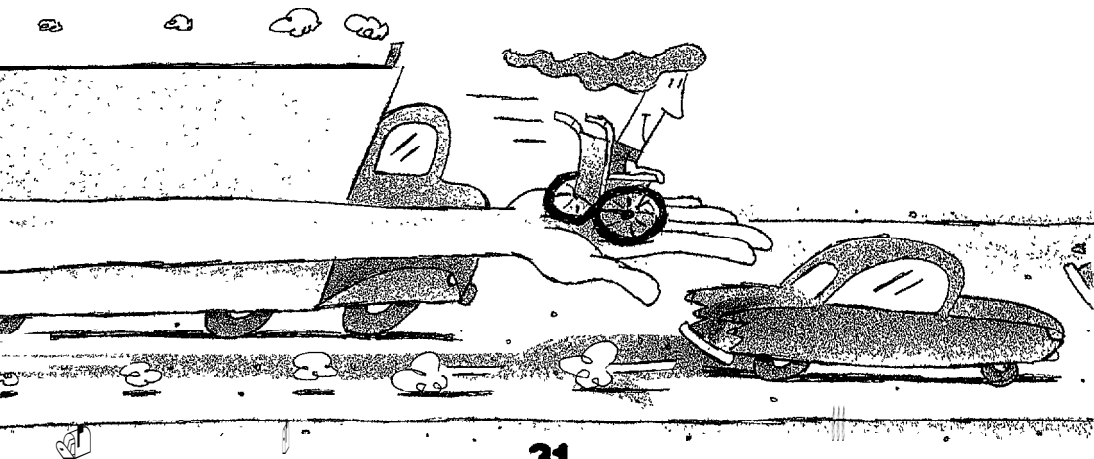
ITS Solution:

Implement innovative mobility-management programs.

- Automate dispatch and scheduling, routing and reservation functions. Provide dispatchers with on-line access to transit system information. Integrate dispatch and scheduling software with mobile digital communications, automatic-vehicle-location (AVL) and smart-card technology. Give passengers single-call reservation service.
- Link Trans-AID directly via high-speed digital communications with agencies in order to speed client certification and billing.

Benefits: The five-year amortized cost for automated dispatch and scheduling for the 19-vehicle fleet (exclusive of digital communications, AVL and smart cards) is approximately 18 cents per passenger trip or about 3 percent of operating cost. System ridership increased 18 percent and rural ridership increased over 236 percent without increasing the number of vehicles.

Contacts: public sector — J.R. Stone, North Carolina State University, (919) 515-7732, private sector — Marsha Moore, On-Line Data Products, (602) 483-3822.



ITS Action Guide

"Tempe is home to many special events that can draw upwards of 100,000 people to our downtown area. ITS offers state-of-the-art technology that can help Tempe manage its special events and still handle day- to-day traffic flows. "

Mayor Neil Giuliano Tempe, Ariz

Necessary tools for deploying ITS:

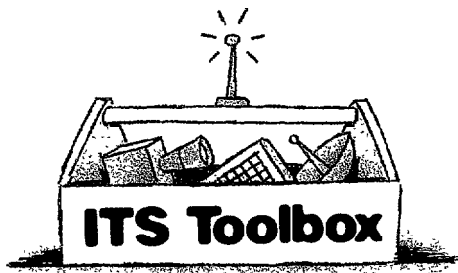
- *build awareness*
- *develop a forum for stakeholders,*
- *plan for deployment,*
- *build interagency cooperation,*
- *use incremental deployment,*
- *refine the procurement process,*
- *create public-private partnerships,*
- *use request for proposals for
partnership.*

Build awareness:

Bring public- and private-sector representatives together to discuss the current transportation system and the improvements possible with ITS. ITS projects are enhanced by a broad understanding of their benefits.

Example:

Senior technical experts from the transit and highway departments in Houston were the catalysts for bringing ITS to Houston. The agencies' personnel realized "it would be much easier to do their jobs and get federal support if they were not competing for the same money," says Robert MacLennan, general manager, Houston METRO. Then, senior leaders from the transit and highway operations, in cooperation with city, county, state and congressional officials, also sought and received support for the changes from business groups such as the Greater Houston Partnership, the Downtown Management Association and other business associations. In addition, cable television broadcast city council hearings covering ITS, community leaders spoke about ITS at business meetings, a brochure was distributed and plans were advertised — all of which helped build public awareness. This process of building awareness created new ways of assigning responsibility, too. "Now, METRO has money to upgrade the traffic-signal system, the state is doing high-occupancy-vehicle work for transit and the city is providing rights-of-way for transit. Most importantly, the public has found streets and traffic are better than before," MacLennan says.



- Get technical experts within city agencies involved.
- Develop a clear and concise communication program.
- Select a champion for the project.
- Get the business community and public involved.

Contacts: public sector — Douglas Wiersig, Houston Transtar, (713) 881-3000, private sector — Roger Hord, Greater Houston Partnership, (713) 651-2185.

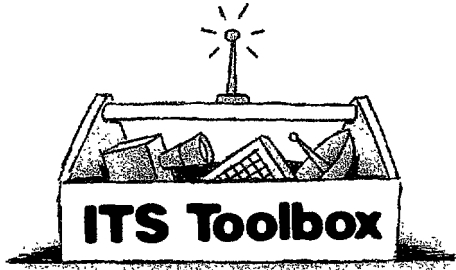
Develop a forum for stakeholders:

Transportation decision-making is moving away from a formal planning process into an era where transportation decisions are made by individuals exercising personal choice. More importantly than ever before, transportation stakeholders must be involved throughout the planning and decision-making process. A single forum to review local, state and regional ITS technologies and options is essential for building a consensus.

Example:

The California Alliance for Advanced Transportation Systems (CAATS) is the California chapter of ITS America. CAATS is a broad-based coalition of business, labor, academic institutions, public agencies, local governments, professional organizations and individuals. It provides a market-driven, public-private partnership to deploy advanced transportation technologies in California. “We saw a need for a statewide stakeholder forum to implement the programs, policies, products and partnerships necessary to successfully deploy ITS in the state and, further, to promote the state as a leader in the development of these technologies,” Robert Ratcliff, manager of CAATS, says. “By bringing everyone to the table, we can retain the flexibility to meet local transportation problems with local solutions while building consensus for statewide actions to provide improved mobility and economic vitality for all Californians,” Ratcliff adds.

Develop a forum for stakeholders:



- ITS touches many stakeholders. Identify them and seek their active participation.
- Inform the stakeholders. ITS is a very dynamic field. Outreach is an essential component of an informed stakeholder forum.
- Involve the stakeholders. Provide opportunities for their input.
- Implement priority actions once a consensus is reached. A forum without action will be short-lived.

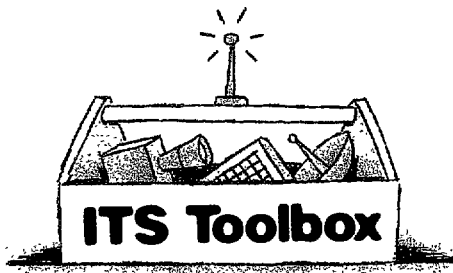
Contacts: public sector — John West, Caltrans, (916) 654-8877,
private sector — Robert Ratcliff, CAATS, (916) 654-8367.

Plan for deployment:

Review your needs, especially in relation to regional use of ITS technology. ITS technologies are designed to be interconnected.

Example:

Hampton Roads, Va., began an early deployment study in September 1992 (since completed) because "if this is where the technology is headed, we need to be sure we get there with everybody else in an organized fashion," says Dwight Farmer, the planning district commission's director of transportation. The process encompassed 15 local governments, the state department of transportation, the U.S. Department of Defense, ports, three transit authorities, and two bridge and tunnel authorities. The organizational focus was on who provides what kind of transportation information to whom. One of the key lessons learned from this project was the need to act regionally in operations by tying into a formal regional-planning process. A more immediate result was the infusion of an awareness of ITS throughout the agencies.



- Contact the state department of transportation and the regional offices of the Federal Highway Administration and the Federal Transit Administration to identify applicable sources of funding (see ITS Contacts).
- Organize an action group for local governments, transportation authorities, and transportation companies and other users of the services.
- Involve resellers who want to market ITS-generated information, such as traffic reports.
- Produce a strategic plan for deploying ITS that includes information on costs and potential benefits for recommended projects.

Contacts: public sector — Dwight Farmer, Hampton Roads, Va., Planning District Commission, (804) 420-8300, private sector — Steve Lockwood, PB Farradyne, (301) 468-5568.

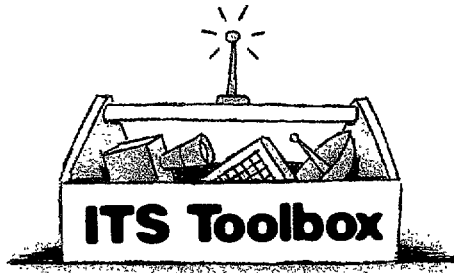
Build interagency cooperation:

Collaboration, for instance through a transportation operations and information group, is an effective means of resolving problems. ITS technology provides a catalyst that can bring government agencies and industry together so that they can function as a system.

Example:

TRANSCOM is a coalition of 14 transportation and safety agencies in the New Jersey, New York and Connecticut metropolitan region. It was created in 1986 to provide a cooperative and coordinated approach to regional transportation management. TRANSCOM services include an Operations Information Center (OIC), which collects and disseminates real-time information, 24-hours-a-day to over 100 member agencies and affiliates. The OIC helps to marshal member agencies' traveler-information resources (such as highway advisory radio and variable-message signs) for regional incident response. TRANSCOM uses a regional construction-coordination program to help member agencies avoid unknowingly restricting capacity on adjacent routes or facilities. Through its federally funded technology-development program, TRANSCOM conducts operational tests to improve the quality, timeliness and dissemination of transportation information. Also, TRANSCOM is implementing a regional architecture to ensure that member agencies' current and future ITS can communicate with each other and to maximize regional mobility.

Build interagency cooperation:



- Advocate unanimous consent. Every coalition member needs assurance that the coalition will act in a manner that is consistent with its own policies. Unanimous consent gives each member that assurance.
- Emphasize your unique function. A coalition exists because it can provide services that no member agency can provide.
- Demand customer focus. The staff assigned to the coalition must treat each member of the coalition as a customer. The coalition must earn the right to exist from its members, not take its existence for granted.
- Practice constant communication. Coalition staff must be proactive constantly in communicating essential information to the members. The staff must be available to respond to coalition members' questions and needs.

Contacts: public sector — Matthew Edelman, TRANSCOM, (201) 963-4033, private sector — Phil Tarnoff, PB Farradyne, (301) 468-5568.

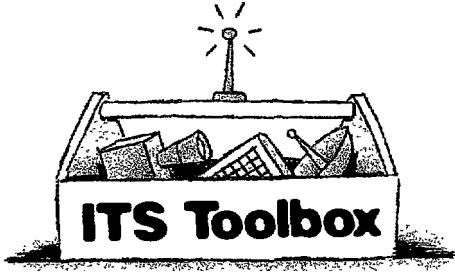
Use incremental deployment:

ITS projects work best as they form larger systems of interrelated benefits. By developing these larger systems in stages, you can better control the eventual costs and include the latest technology at every stage.

Example:

Minnesota DOT Guidestar is using incremental deployments to introduce new ideas that might never have gotten consideration if they were attached to very large projects. “ITS is being used in a series of field trials,” says Jim Wright, program director of the state’s ITS Guidestar project. “We have lists of where problems are in our metro freeway system and we invest incrementally starting with the biggest problems. We can get the ITS architecture constructed and a prototype system up and running very quickly. Then, with a series of those field trials, we can build to a bigger concept such as the recently announced Intelligent Transportation Infrastructure.”

Use incremental deployment:



- Conduct user-market research. The people you want to interact with are the potential users. Find something that makes sense to them. Identify the users' highest need that is being met the least and start your incremental deployment there. Also, conduct provider-market research. Interview various private-sector providers with a spirit of forming an alliance. Then form agreements with those strategically interested in ITS.
- Develop “early winner” scenarios. Incremental deployments produce benefits in short order compared with larger-scale projects.
- Incremental deployments can help foster new ways of looking at procurement processes. For instance, using life-cycle costing as an alternative to simply taking the cheapest bid and then maintaining the equipment.

Contacts: public sector — Jim Wright, Minnesota Guidestar, (612) 296-8567, private sector — Peggi Eller, Loral Federal Systems, (607) 751-3385.

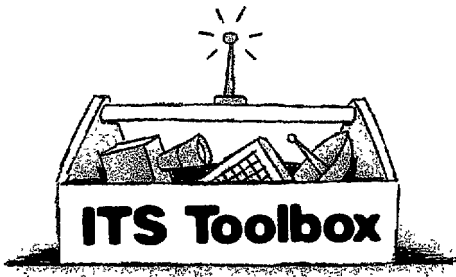
Refine the procurement process:

ITS projects often require new ways of thinking about how to purchase the needed components. The low-bid procurement process is not always the most cost-effective, nor will it always give you the flexibility to acquire rapidly evolving technology.

Example:

E-ZPass is the name for an electronic-toll-collection (ETC) project involving eight agencies in New Jersey, New York and Pennsylvania, which represent over 40 percent of the nation's daily toll transactions and 67 percent of the daily toll revenue. In developing a procurement process, the eight agencies, known as the E-ZPass Interagency Group, used their combined purchasing power to leverage the best price for the electronic-toll-collection (ETC) technology and to ensure commuters would be able to use a single ETC system throughout the region. Also, this cooperative approach helped the vendor avoid the need for multiple bids. That meant the vendor could lower the per-unit costs. Because the group had no legal standing to enter into a single contract for the ETC equipment, it used instead the concept of an "irrevocable offer." The request for proposal "invited" the successful vendor to offer essentially identical contracts to each of the member agencies, which they could then accept according to individual contracting policies and procedures. The process retained the legal prerogatives and contracting obligations of the individual agencies while also assuring the regional ETC would benefit from identical language on critical issues such as price, delivery and declaration of default. The agencies agreed to append their own contracts as necessary to account for unique local requirements (for instance, special affirmative-action clauses) but not to amend the offer's basic terms and conditions.

Refine the procurement process:



- Rethink the number of steps in a procurement process to take advantage of emerging technology, but begin by emphasizing the lowest common technical denominator as a starting point for negotiations. Some projects benefit from life-cycle bidding on components whose true costs and benefits only emerge over the long-term.
- Emphasize the competitive aspect of the process, beginning with a competition of concepts in a request for proposals.
- In some cases, joint ventures with private-sector partners can be effective.

Contacts: public sector — Mike Zimmerman, NY State Thruway Authority, (518) 436-2718, private sector — Mark IV Industries, Paul Manuel, (905) 624-3025.

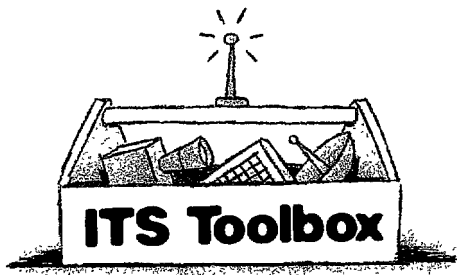
Develop ITS infrastructure with public-private partnerships:

Looking at your needs in relation to your region's future is becoming more and more important. The local benefits of ITS are compounded if they reappear on a regional level. The private sector can play a key role in developing a widespread ITS infrastructure to gather and transmit vital information.

Example:

The backbone of St. Louis' regional planning process involves a regional incident-management coalition made up of cities, counties, state and local officials from both Illinois and Missouri. The coalition was created using \$4 million in federal congestion-mitigation and air-quality funds. In addition, St. Louis is the starting point for a statewide fiber-optic telecommunications system. The Missouri Highway and Transportation Department traded access to interstate rights-of-way in return for a dedicated portion of a private telecommunications network being installed by Digital Teleport Inc. The network enables Missouri to approach ITS deployments on a regional and statewide basis and not be limited to a corridor-only approach. The state's portion of the network is valued at \$30 million, and this sum can be applied to state-matching-grant requirements on future ITS projects, U.S. DOT says. In addition, by involving the private sector in the regional planning process, the state estimates it will save \$45 million in construction costs and \$100 million, over 40 years, in maintenance and operational expenses.

Develop ITS infrastructure with public-private partnerships:



- Look for private-sector support to help implement regional goals. The private sector is attracted by the cost-effectiveness of large-scale projects.
- Interagency cooperation is an absolute must if the process is going to be successful. Be prepared to deal with many entities, including even a neighboring state. In the example above, Missouri is working on incident management with Illinois and about 100 local entities, 50 of which have police jurisdiction over the interstate roads.
- Prepare a forum that can take action. As the first step, develop a management coalition made up of representatives from all the jurisdictions. Then, form a guidance committee. A typical schedule would have the entire coalition meeting once a year, a guidance committee meeting every three months and related subcommittees meeting monthly. The guidance committee should have the authority to implement recommendations through appropriate jurisdictions.
- Make sure the incident-management information reaches all the participants. Use a traffic management center to send it on-nation to the various jurisdictions in order to maximize the benefits for the whole system.

Contacts: public sector — Dale Ricks, Missouri Highway and Transportation Department, (314) 751-1097, private sector — Richard Weinstein, Digital Teleport Inc. (314) 253-6600.

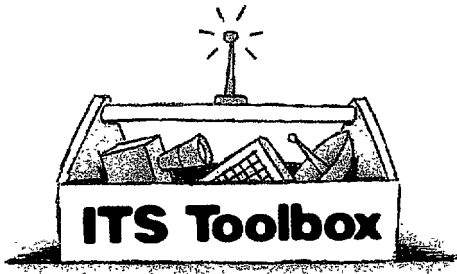
Deliver ITS services using public-private partnerships:

Neither sector can do it alone. A partnership develops projects of mutual benefit. It is estimated that the private sector will provide 80 percent of the necessary capital for ITS projects and the public sector only 20 percent. Both sectors will have to work together closely if ITS is to fulfill its promise.

Example:

“Public-private partnerships can mean anything. There are no automatic models,” says Stephen Crosby, chairman and CEO of SmartRoute Systems, a private-sector company founded in 1987 that focuses on providing advanced-traveler-information systems. The states of Indiana, Kentucky and Ohio, facing common air-quality problems in Cincinnati, turned to SmartRoute Systems to provide metropolitan commuters with detailed, real-time information on traffic and transit conditions, road conditions and alternative routes. The Cincinnati model was based on the public-private “SmarTraveler” Boston partnership between the company and the Massachusetts Highway Department. In both cities, SmartRoute Systems invests all the capital costs, the department of transportation pays for information services and the parties split the revenue from the resale of the database to private companies. “Tenacity, creativity and a willingness to compromise were key to creating our partnership,” Crosby says. Then, the partnership was developed by “focusing aggressively on using the skills of each party appropriately; sharing the benefits of the partnership fairly; and breaking down the procurement, jurisdictional and other barriers to new ways of doing business together,” he adds.

Deliver ITS services using public-private partnerships:



- Provide support and direction from highest level of government, recognizing new ventures may require new forms of sharing risks, rewards, public resources, and private-sector technical and market expertise.
- Encourage on-going dialogue at the mid-manager level among potential partners.
- Define a mutually satisfactory, collaborative process of strategies and frameworks — paying particular attention to roles, risks and rewards. Also, establish a “backbone” infrastructure that will serve as the basis for private investments in value-added technology and services.

Contacts: public sector — Leon Walden, Kentucky Transportation Cabinet, (502) 564-7433, private sector — Stephen Crosby, SmartRoute Systems, (617) 494-8100.

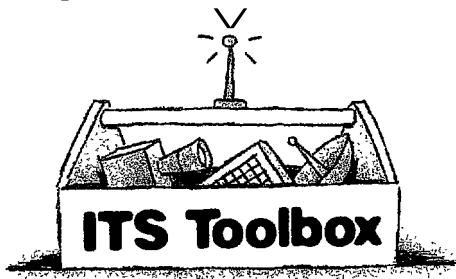
Use request for proposals for partnership:

Creating partnerships between public agencies and private-sector companies often is the key to deploying ITS projects successfully. Each sector brings unique and necessary talents to a project and combines them in new and more effective ways. The focus, however, remains on satisfying public goals and needs.

Example:

Ideally, the private sector will come up with approaches not foreseen by public planners. An effective way of creating a partnership is for the public agency to issue a broad request for proposals for partnership (RFPP), which simply is a variation on the standard request for proposals. Where the RFPP differs from a traditional proposal is by creating a more flexible opportunity for problem solving. An RFPP should define desired project outcomes or performance but impose minimal preconditions. Greater emphasis should be placed on detailing the selection criteria as opposed to the design specifications; this allows the private sector to define innovative projects based on their knowledge of technology, markets and investment objectives. Essentially, an RFPP encourages private-sector initiative in the service of clearly defined public-sector objectives. As a result, unique partnerships may be created while satisfying the need for a competitive selection process. +

Use request for proposals for partnership:



- Proposals can lead to a public-private, cost-sharing partnership where the private-sector organization absorbs most of the costs in exchange for the chance to push products to market.
- Proposals can be structured as cooperative programs where the private-sector organization deploys competitive systems that generate profits for all parties.
- Proposals can be driven by federal operational tests that involve the public-private partnership.

Contacts: public sector — contracts management officer, Minnesota DOT, (612) 215-0446, or Craig Roberts, ITS America, (202) 484-2895.

ITS Action Guide

***“ITS research may enable
highway and transit authorities
to provide better service at lower cost,
possibly reducing the need for public subsidies.”***

*High-Tech Highways Intelligent Transportation Systems and Policy,
Congressional Budget Office, October 1995.*

ITS Funding

ITS projects are funded in a variety of ways because there is no single national funding source. Some of the means are familiar, others are new.

“By spending tax dollars wisely on ITS traffic signal systems, the City of Abilene is actually saving its citizens time and money every time they drive along one of the project streets.

Also, it is one of our goals to be sensitive to the environment by reducing noise and air pollution.”

Mayor Gary McCaleb, Abilene, Texas

The tools for funding ITS include:

- Intelligent transportation infrastructure (ITI) components are not new budget items to state and local jurisdictions. Most state, and many metropolitan areas, are already using federal-aid funds to purchase or upgrade ITI systems, including traffic signals, incident, transit and freeway management, electronic-fare payment and toll collection, traveler-information centers, railway-highway grade crossings and emergency management.
- As you upgrade or replace existing systems, you need to plan ahead for system integration and “buy smart.” In the future, state and local jurisdictions need to purchase component systems that are able to share data with other transportation systems and with neighboring jurisdictions so that the public can experience the benefits of integrated metropolitan transportation management.
- Integrate ITS into planned transportation improvements.
- Use public-private partnerships to provide or fund system elements, for instance, by allowing private fiber-optic cables in public rights-of-way.
- Information technology can make better use of state and local operations and maintenance funds.
- Seek to participate in federally sponsored operational tests.
- Develop project revenues, for instance, through tolls, fees for service or markets for information.
- Some states have used 100-percent federal funding on certain safety projects (see Title 23, Section 120(c)). The federal government will pay the total capital costs for safety-related ITS projects, such as traffic-control signalization or priority-control systems for emergency vehicles at signalized intersections. A broad definition of traffic-control signalization could include traffic-management centers.

ITS Funding

- Tap innovative financing. The federal government is creating a pilot project of state infrastructure banks (SIBs). NHS allows states, or multijurisdictional regions, to develop infrastructure banks. Seed money would come from the federal government, and a state could use up to 10 percent of its highway funds and 10 percent of its transit funds to create such banks. Highways and transit, though, would have separate accounts in the banks. U.S. DOT officials have suggested SIBs may become very helpful in developing ITS projects because many ITS projects have identifiable revenue streams that would be used to repay the loans.

Contacts: public sector — see U.S. DOT regional contacts (ITS Contacts), or Oliver Yandle, ITS America, (202) 484-4589.

ITS Action Guide

***“States and cities can use ITS to further
whatever transportation goals they have,
be it smoother flow of all vehicle traffic,
or encouraging travel
by high-occupancy vehicles.”***

*Intelligent Transportation in America: Prospects and Perils,
National Conference of State Legislatures.*

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. ITS Joint Program Office
(202)366-9536

Provides national perspective on strategic planning, ITS budgeting, legal issues and user-acceptance research.

. Federal Highway Administration
Office of Traffic Management and ITS Applications
(202)366-0372

Handles innovative funding solutions. It also handles ITS research and development on advanced traffic-management systems, advanced traveler-information systems, commercial vehicle operations, advanced vehicle-control systems, advanced rural-transportation systems, automated highways and communications.

• Federal Railroad Administration
Railroad Development Office
(202)366-9660

Interests cover ITS deployments related to railroad grade-crossing safety, advanced train control systems and high-speed passenger transportation.

• Federal Transit Administration
Office of Mobility Innovation
(202)366-4991

Develops the Advanced Public Transportation program, including vehicle-location systems, smart cards and passenger communication.

• National Highway Traffic Safety Administration
Office of Crash Avoidance Research
(202)366-5662

Serves as the lead agency for the motor-vehicle-safety component of the ITS program. It facilitates the development and deployment of products that enhance the ability of drivers to avoid collisions.

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