An Integrated **Intelligent Transportation Infrastructure** for Your Area

U.S. Department of Transportation
Federal Highway Administration
Federal Transit Administration

An Integrated Intelligent Transportation Infrastructure is about being SMARTER

Are you Planning Smarter?

By including intelligent transportation solutions in your transportation plans and programs, you will improve the safety and efficiency of your existing transportation system. Smart planning stretches your dollar to accommodate other priorities.

Are You Buying Smarter?

By purchasing equipment that can "talk" with other transportation and emergency service components within your jurisdiction—and by sharing data between jurisdictions—you create a new generation of capabilities to improve mobility and safety, encourage economic development, and maintain the quality of life in your metropolitan areas. Communicating and sharing information results in efficient use of resources while eliminating costly duplication.

The Integrated Transportation Components...

Each Successful Alone—Together a Powerful System

An Intelligent Transportation Infrastructure is composed of individual components that are part of a larger system which operates on a common communication backbone with a common information "language". The individual components are as follows:

Traffic Signal Control and Highway-Rail Crossing Protection

Traffic flow can be regulated and adjusted by controlling signal timing within a transportation network. Signal Control maximizes traffic flow and improves safety by providing optimized signal timing, reversible lane operations, and railroad crossing signal control and preemption. Traffic Signal Systems can be coordinated to traffic flow by time of day or in response to area-specific events.

In Lexington, KY, coordinated computerized traffic signals reduced "stop and go" traffic delay by about 40% and reduced crashes by 31% between 1985 and 1994.

Freeway Management

Real-time information about traffic flow and environmental conditions affecting freeways and major roads is collected to better manage freeway flow.

Up-to-the-minute information enables traffic managers to adjust traffic flow and provide traveler information via roadside signs, radio broadcasts, and other means.

Freeway monitoring capabilities using current technologies—such as magnetic loop speed detectors, video, microwave, radar, and ultrasonic speed

monitors—can also be used to speed emergency response and improve traffic handling for special events. Data from police, maintenance personnel, cellular phone users, and private-sector traffic reporters all help improve freeway management.

Ramp metering in Seattle has kept traffic moving and cut accident rates by more than 60%, despite a 10% -100% increase in traffic levels.

Incident Management and Emergency Management Services

Sixty percent of all freeway delays are attributable to crashes, disabled vehicles, spilled debris, and other traffic incidents. Of particular importance is the coordination of information between the various respondents, such as police, fire, emergency medical service, highway maintenance, and traveler assistance. Every minute an incident remains on the roadway results in an additional five minutes of delay after the incident is cleared. A one-lane blockage of a three-lane freeway results in a 50% loss of throughput. Incident management programs include incident detection, verification, response, scene management, traffic management, and clearance.

In Minnesota, an Incident Management Program has reduced traffic delay time by a disabled vehicle by 8 minutes.

Traveler Information

A Traveler Information System delivers better information and allows better route and mode choice. Aggregating data from a number of sources, including

freeway detectors, local street signals, and video cameras, a Traveler Information System provides the urban or rural user with real-time information such as traffic flow, weather and travel conditions, and transit services status. This information can be provided in a number of ways by the public or private sector via telephones, on-line computer services, cable TV, in-vehicle displays, variable message signs, highway advisory radio, information kiosks, or handheld computers.

Montgomery County, MD, reaches 180,000 homes via cable TV to show traffic conditions on major roadways.

Transit Management

Studies have ranked on-time performance as the most critical factor in the decision process of whether to ride transit. Implementing a Transit Management System can increase ridership, raise operating efficiencies, and lower costs. Among the system elements are automatic vehicle location, computer-aided dispatching, advanced voice and data communication, automatic passenger counting, bus prioritization systems, and real-time passenger information and flexible signal control.

With implementation of a Transit Management System, Kansas City transit officials reduced operating costs by $400,000, avoided $1.5 million in new bus purchases, and cut the response time to emergencies from 4 minutes to 1 minute.

Electronic Payment

In the same way one credit card is accepted by different merchants, Electronic Payment enables the use of a single card to pay bus, rail, parking, and even toll fares. Several different card types are currently using either "contact" or "non-contact" technologies, such as chip-on-card and radio proximity. With Electronic Payment, a rider can use any type of transit without carrying cash or having to fumble for the right combination of change. In the future, even some ATM cards may be accepted on transit. Public agencies will benefit from decreased costs associated with manual money-handling and processing.

Go Card

New Jersey Transit estimated annual cost savings of nearly $2.7 million through reduced labor costs.

Electronic Toll Collection

For locations with toll facilities, Electronic Toll Collection offers a number of benefits to the traveling public, whether commercial or individual. Electronic Toll Collection systems enable vehicles to continue through toll stations without stopping, and, in future applications, could allow for transit fare payment. Tolls can be based on vehicle type, trip length, or even time of day.

After four years of use on the Oklahoma Turnpike, Electronic Toll Collection has resulted in a savings in annual cost per lane of more than 90%.

Need More Information?

For more information, contact the Federal Transit Administration (FTA) or Federal Highway Administration (FHWA) Regional Offices.

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