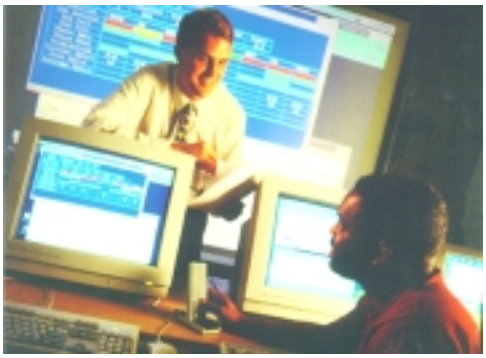
Intelligent Transportation Systems Plan

City of Dallas Department of Public Works and Transportation



ITS

Using Computers and Technology:

- ***To Minimize Traffic Congestion***
- ***To Improve Safety***
- ***To Travel with Knowledge***

The performance and reliability of our transportation system impacts our economy and environment.

Investing now in a high-technology system that provides the tools to manage traffic and maximize the use of our freeways and arterials will benefit the public for years to come.

Executive Summary

Prepared for:

City of Dallas Transportation and Tele-communications Committee

By:

City of Dallas

Department of Public Works & Transportation

With the completion of the interstate highway system, the attention of transportation officials at the federal, state and local level has shifted from constructing new roadways to achieving better and more efficient use of the existing transportation system.

ITS is short for "Intelligent Transportation Systems". ITS uses modern communication, computer, and control technologies to maximize the use of the existing transportation road network. The purpose of this plan is to provide a guide for the orderly implementation of ITS field devices and computer systems in response to increasing traffic congestion. This plan establishes phased objectives to incrementally deploy ITS citywide and support a regional Dallas-Fort Worth ITS System.

Transportation Needs

A safe and efficient transportation system is an invaluable asset to any city. Not only does it affect the quality of life for daily commuters but it also has a direct impact on economic growth and vitality. The ability to move goods and services efficiently through our city is a determining factor for businesses deciding where to locate corporate headquarters and distribution centers. A large portion of the Dallas-Fort Worth area is already experiencing peak-period traffic congestion and public concern is growing. With a projected 44 percent increase in population over the next 25 years, long-range transportation solutions need to be addressed as soon as possible. While much of the problem is a result of traffic demand exceeding available roadway capacity, it is estimated that over 50 percent of all motorist delay is due to traffic incidents such as crashes or stalled cars. ITS provides the necessary tools to respond to changes in traffic flow and make full and efficient use of our existing transportation network.

National Trend

With the completion of the Interstate Highway System, the attention of transportation officials at the federal, state and local level has shifted from constructing new roadways to achieving better and more efficient use of the existing transportation system. Due to the increase in population in our metropolitan areas, many road systems have reached their vehicle carrying capacity. It is now becoming more and more difficult to improve our existing infrastructure through traditional road-widening methods due to the rising cost of acquiring more property, impacts to adjacent property owners and motorist delay caused during construction. As a result, major cities throughout the nation are implementing advanced transportation management systems to reduce delay and improve air quality. These systems have demonstrated that the combined use of traffic signal control systems, roadway camera systems, and traffic information systems can reduce the effects of congestion on freeways and arterials.

Background

The Texas Department of Transportation (TxDOT), Dallas County, Dallas-Ft. Worth area cities, transit agencies, toll road authorities and airports are working together to create a regional "Intelligent Transportation System". Over the past decade, engineers and planners from various transportation agencies in the Dallas and Fort Worth areas have been meeting regularly to create separate ITS plans. The Dallas Area ITS Plan was adopted in 1996. Metroplex-area committees have recently merged to develop a regional Dallas-Ft. Worth system. All plans recommended by the technical committee are adopted by the "Regional ITS Executive Committee".

TxDOT has already deployed roadside equipment such as vehicle speed detectors, cameras and road-condition information signs on portions of our most congested freeways. The City has also been actively working to implement technologies to improve traffic flow. The City currently operates one of the largest and most sophisticated traffic signal control systems in the country. Over 85% of the traffic signals in Dallas are remotely monitored and controlled using a central computer system. In 2001, 100% of the traffic signals will be connected to the system. The City is currently seeking bids to procure and install cameras and electronic message signs along arterial routes frequently affected by freeway incidents.

Goals and Objectives of ITS

Intelligent Transportation Systems use modern communication, computer, and control technologies to accomplish the following goals:

- Improve safety and mobility in the transportation network.
- Reduce environmental impacts by reducing congestion in the transportation network.
- Enhance quality of life, economic productivity and viability by improving the efficiency and operations of transportation in a region.
- Provide new services to travelers designed to enhance travel on existing systems and encourage the use of alternative modes of transportation.

The need for a new approach is critical to:

Save Time
Save Money
Save Lives

System Functions

The Dallas system will include high technology capabilities to help manage traffic congestion caused by incidents and provide real time information about unusual traffic flow conditions. The goal of the program is to provide the following functional capabilities:

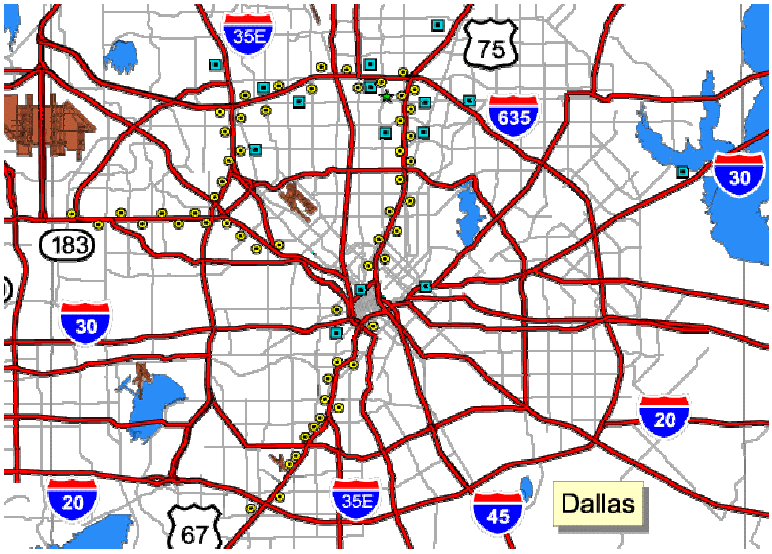
Reliable and Adaptive Traffic Signal Timings - Traffic signals can be remotely monitored and controlled by a central computer system to ensure that equipment is functioning properly. If problems are detected, the equipment communicates to the central system and sets off alarms and paging systems to alert repair technicians. These control systems also measure traffic flow and can automatically adjust traffic signal timings during unusual traffic flow conditions such as freeway incidents or special events.

Freeway and Arterial Incident Management – Although much of our congestion is related to traffic volumes exceeding available road capacity, it is estimated that over 50 percent of freeway congestion is caused by accidents and stalled cars. ITS provides the tools to detect and visually verify incidents along a freeway. Using roadside cameras, emergency staff will be able to determine the precise location of an incident and dispatch emergency staff along the fastest route and with all of the necessary equipment. Not only is clearing the freeway a matter of convenience to delayed motorists, but one out of every five freeway accidents results in a secondary accident. And, the faster an incident is cleared, the less disruption will be caused to our arterial streets by traffic diverting off the freeway.

Traveler Information Systems

Commuters understand why traffic accidents, construction, and weather conditions cause major delays, but many times it is not necessary for motorists to get caught in these traffic jams. If the public has knowledge of current traffic conditions they can make decisions about their routes. Knowing delays exist, motorists may decide to take a bus or train, use a different commute route or maybe even postpone their trip. Intelligent Transportation Systems both collect and distribute information about the performance of the transportation system using the latest technologies in communication such as road-side dynamic message signs, in-vehicle terminals, internet web pages and digital pagers. These systems will allow commuters to travel with knowledge.

Dallas Area Web Page - Real-time Freeway Camera Snap Shots



http://www.dfwtraffic.dot.state.tx.us

System Components

A state-of-the-art Regional Intelligent Transportation System is comprised of many subsystem components that must be integrated using communications links and computer systems. The City's Intelligent Transportation System will be used to manage traffic on our arterial street network and will integrate and operate in conjunction with the Texas Department of Transportation ITS for freeway traffic management. System components that will be implemented, operated and maintained by the City of Dallas include the following:

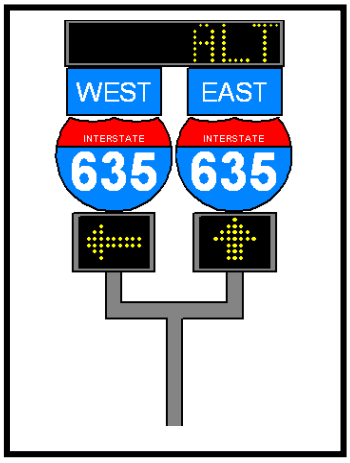
Field Devices

Traffic Signal Controller Equipment. Each traffic signal requires a microprocessor to control the signal colors and collect data on traffic volumes and green time distribution. The City recently upgraded all 1236 signals with standardized control equipment. Similar control equipment is used extensively in the states of California, Florida and Arizona as well as the cities of Austin and San Antonio.

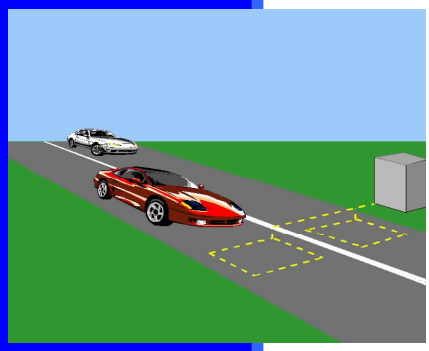
Cameras. The ability to view traffic flow conditions is an essential tool for engineers when adjusting traffic signal timings from a remote location. As the signal timings are implemented, a real-time view of the effects of those changes is necessary for optimal results. Cameras also allow 911 dispatchers to determine the precise location of an incident and the appropriate emergency equipment required.

Dynamic Message Signs. Providing up-to-date information about traffic flow conditions allows motorists to make decisions about their trip, such as taking a different travel route, changing modes of transportation, or postponing a trip. Unless a complete road closure occurs, freeway and arterial message signs will not indicate the use of a specific alternate detour route - only facts about the incident location. Posting specific routes would quickly over saturate the freeway exit ramp and arterial.

Dynamic Turn-Lane Signs. In the event of a traffic incident, it may be necessary to change the number of left or right turning lanes. The ability to change lane assignments to fit the percentage of turning vehicles can significantly reduce delay.



Dynamic Detour Route Signs. When a freeway incident occurs and congestion begins to build on the freeway, a percentage of the motorists will decide to exit to the surface streets. Signs (like the one illustrated on the right) will be placed along paralleling streets informing motorists when they have passed the incident location and can return to the freeway system.



Traffic Flow Sensors. The City has been using road pavement sensors for many years to detect vehicles passing through the intersection and extend the amount of green time based on demand. These sensors can also be configured to collect information about the speed and number of vehicles. As the local traffic signal controller passes information to the central computer, the system can analyze the data and automatically down load new signal timings based on the traffic flow data collected.

System Components

Traffic Management Center

As field devices are deployed throughout the City, engineers and technicians will be able to view traffic conditions and remotely change the traffic signal timings and dynamic signs in response to congestion caused by stalled vehicles, accidents or road closures. The City is in the process of upgrading the existing center with new operator consoles and a video wall monitoring system as shown in the virtual photo rendering on the right. The traffic management center is currently located next to the 911 center on lower Level 1 of City Hall. The proximity to the 911 and emergency preparedness centers allows emergency staff to work closely together during roadway incidents and severe weather conditions.

Central Software Control System

The City of Dallas began the upgrade of our existing centralized traffic signal computer control system in 1989 and completed it in 1992. Although the functional design for monitoring and controlling traffic signals is adequate, maintenance support by the computer industry for this late 1980's computer system is diminishing rapidly. The City plans to upgrade the existing system with faster and higher capacity computers that will be more reliable and allow better monitoring and control capabilities. The new software will also incorporate the control of roadside cameras and electronic message signs as well as exchange information between traffic management centers operated by the state, county, other cities, transit authorities and airports.

Communications Links

The system will require communication links to transmit and receive data to and from each field device and also to the various operations centers in the Metroplex. The rapid exchange of information and the ability to remotely control field devices are extremely dependent on the performance and reliability of the communications network.

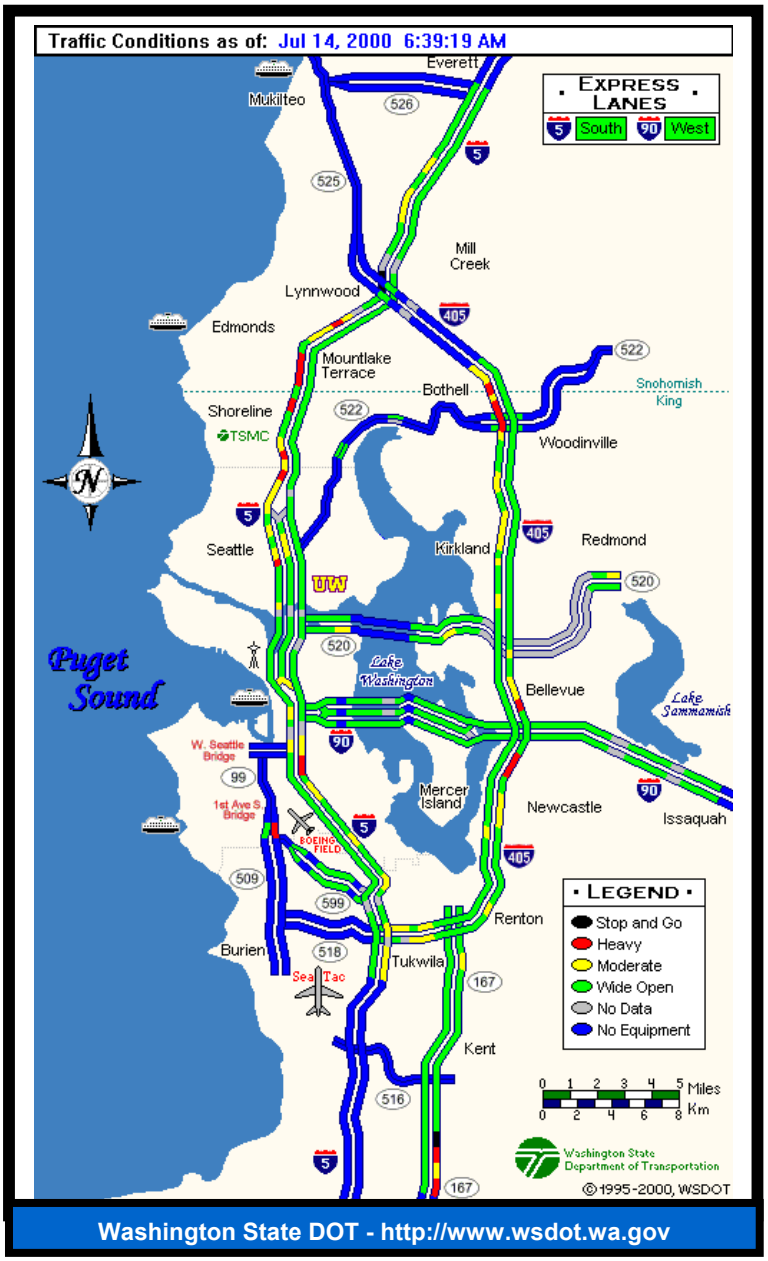
The City communicates with over 70% of the existing field devices using the AT&T television cable plant under a franchise agreement. The franchise agreement allows the City to continue to use a portion of the "B" cable (dual A-B cable system) at no cost. The City will only be charged for the actual costs incurred to maintain the "B" cable in areas outside of AT&T's subscriber network. This portion of the cable is occasionally damaged by car accidents, roadway construction, and storms, and currently results in an average annual maintenance cost of about $30,000 per year. Over the next seven years, AT&T plans to upgrade the existing cable plant with new cable that allows more channels and improved reliability. The new system will eventually abandon use of the "B" cable for subscribers but will remain in place for City use. After AT&T stops using the "B" cable citywide, the City and AT&T will renegotiate the costs needed to maintain the "B" cable if exclusively used by the City.

The City has hired a consultant to review current and alternative communication media for the ITS system. The consultant will produce a report summarizing the capital and recurring costs for all viable alternatives. This includes an assessment of the needs related to traffic signals, roadway cameras, dynamic message signs, and data exchange between regional traffic management centers. The alternative media to be evaluated includes several types of wireless technologies, fiber and leased lines. The recommended system should ensure that communication services are provided at the lowest cost, are reliable, and allow for growth and technological advances.

Traveler Information Systems

In-route Systems -The City plans to install dynamic message signs along arterials that carry high volumes of traffic. These signs will be located in advance of high volume freeway interchanges to allow motorists adequate time to decide on an alternate route and to make lane changes and turns. Advance notice also encourages the use of major thoroughfares and secondary streets as opposed to a last minute turn into the nearest residential street as they arrive at the congested site.

Pre-Trip Systems - TxDOT recently began posting a real-time web page for the Dallas-Fort Worth area that displays information on freeway speeds and incidents. TxDOT is looking for additional funds to install the speed measurement devices needed for area-wide speed data collection. As system coverage expands, our regional speed map will begin to display the various speed condition colors like the Washington State website shown on the right.



Washington State DOT - http://www.wsdot.wa.gov

Private Sector Systems - The ITS plan supports sharing data collected by public-agency systems with the private sector to help disseminate traffic information to as many motorists as possible. The private sector is developing several methods of broadcasting traffic information. This includes web pages, in-vehicle displays, and paging and voice mail systems. Information can be custom tailored to motorists' travel routes and commute times. Private sector systems should become more prevalent as ITS coverage increases and information becomes available for a substantial client base.

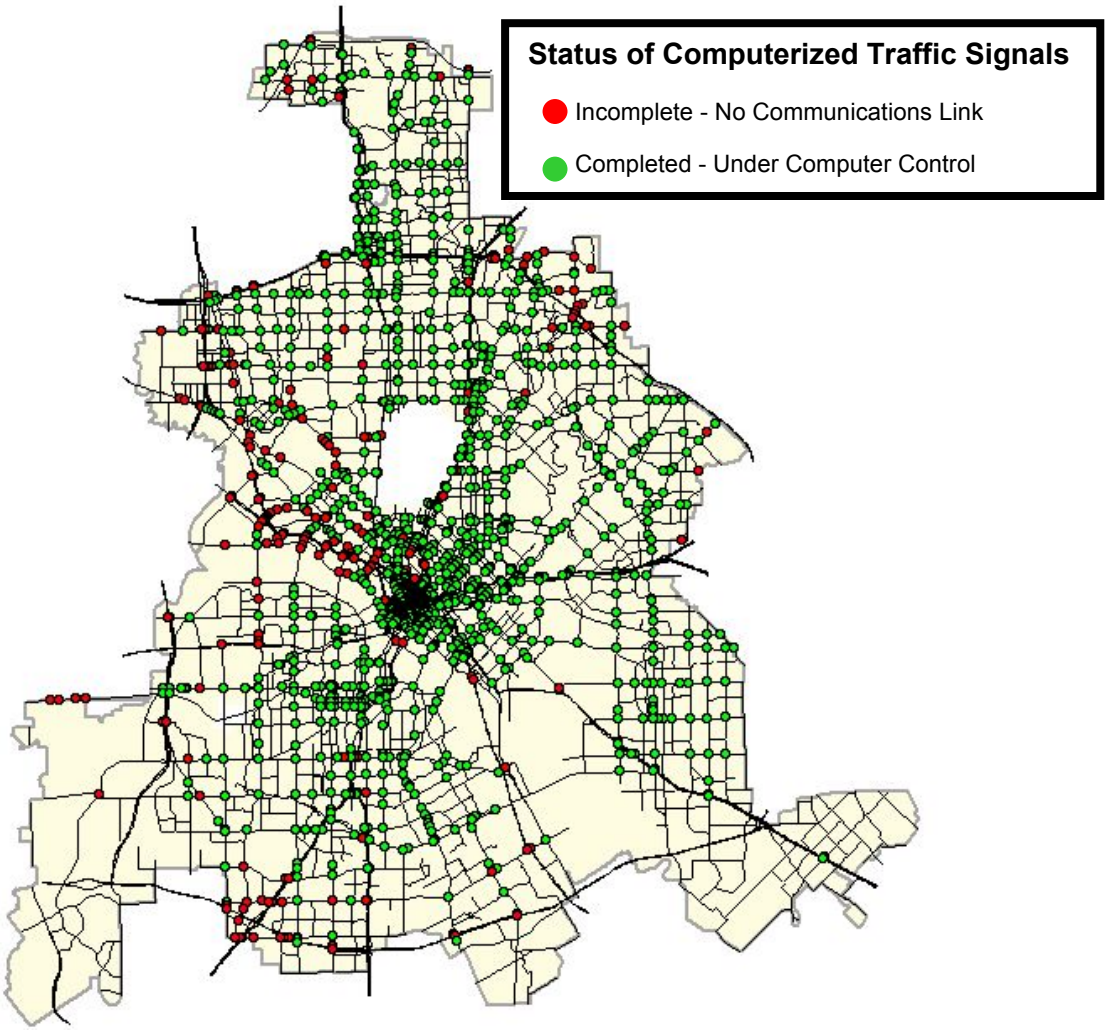
Implementation Plan

The City's Intelligent Transportation System will be implemented in the following four functional phases. It will not be necessary to complete any phase in order to begin the next.

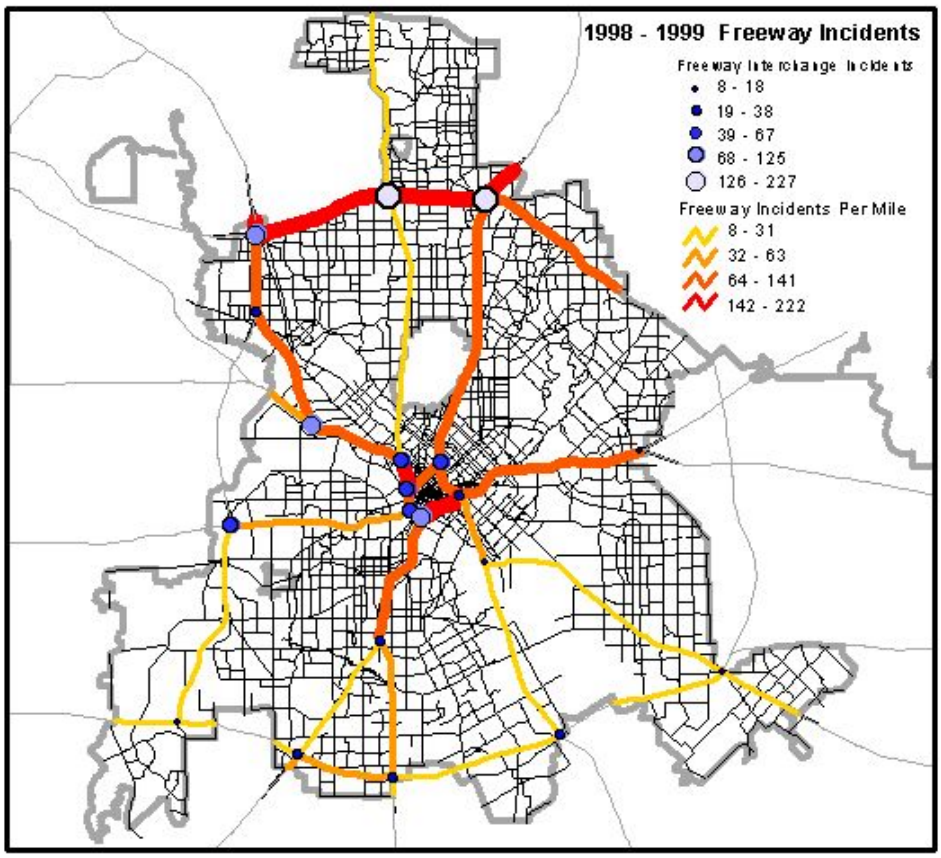
- Phase 1 - City-wide expansion of Traffic Signal Computer Control
- Phase 2 - City-wide installation of Cameras, Dynamic Signs and Traffic Flow Sensors
- Phase 3 - Integration of Central Computer Control Software with other Management Centers
- Phase 4 - Enhancement of Real Time Traveler Information Systems

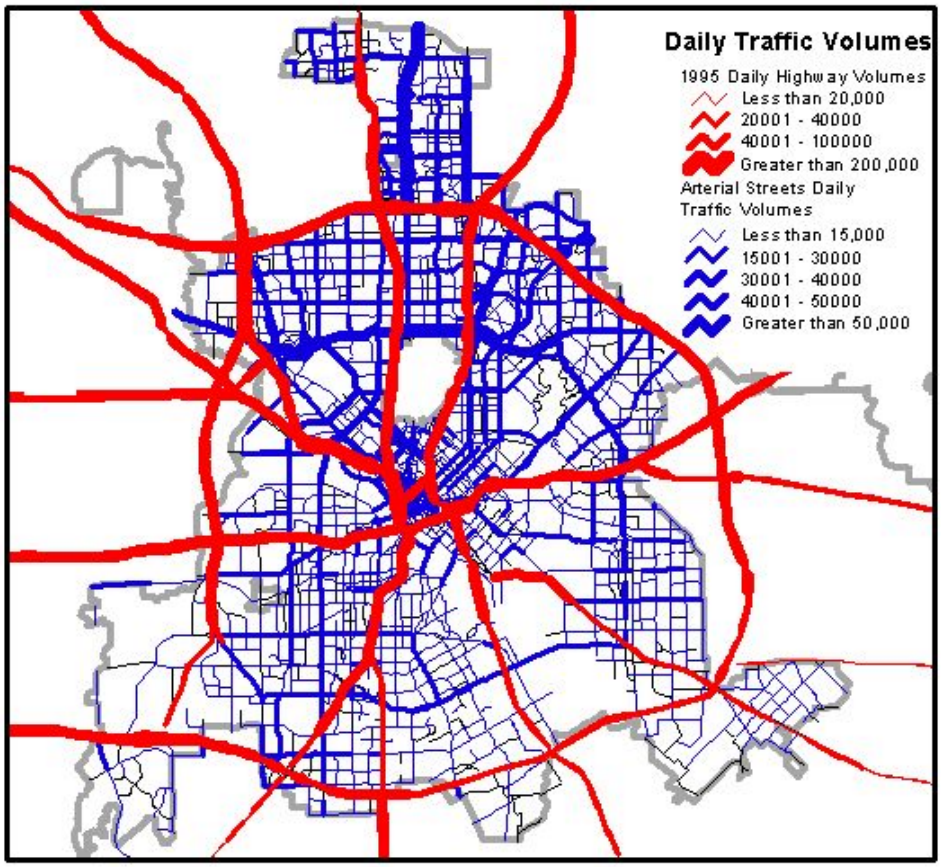
Phase 1 – Citywide Expansion of Traffic Signal Computer Control

In 1985, a master plan was approved by City Council to expand computer control of traffic signals citywide. Although the Central Business District, consisting of over approximately 200 traffic signals was brought under computer control in 1980, the 1985 bond election provided the funds necessary to enhance the central computer system with the capability for citywide expansion and to extend computer control to the North Central Corridor area. In 1991, Federal, State and City bond funds were appropriated to complete the expansion citywide. Project construction consists of replacing the traffic signal control equipment and installing a communications link at each signalized intersection. 100% of the intersection control equipment replacements are complete and 85% of the communication linkages have been installed. The status of the communication links to each traffic signal is shown on the map below with red representing the locations with an incomplete link. This phase is scheduled for completion in late 2001. Upon completion, the total cost for Phase 1 is estimated to be $14.1 M.



Phase 2–Install Cameras, Dynamic Signs and Traffic Flow Sensors





Although engineers and operators in the transportation management center have the ability to remotely control traffic signal timings, it is still necessary to implement cameras, dynamic message signs and traffic flow measurement equipment in order to assess the traffic flow adjustment needs, enhance the effectiveness of remote traffic signal timing changes and inform the motorists of current conditions.

The benefits of ITS are realized quickly if the system is placed along arterials where congestion occurs unexpectedly due to recurring traffic incidents, special events or severe weather conditions. The traffic flow on many of our arterials measures approximately the same number of vehicles every day with a predictable time of day flow change at rush hours. However, there are a number of arterials with traffic volumes that frequently fluctuate unpredictably due to recurring incidents in a freeway corridor or nearby traffic generators (i.e. retail centers or entertainment districts).

Deployment of cameras, dynamic message signs, and traffic flow sensors will be accomplished in a phased implementation strategy that focuses on the level of congestion in each freeway corridor. The deployment plan will prioritize the installation of ITS field devices along arterials based on:

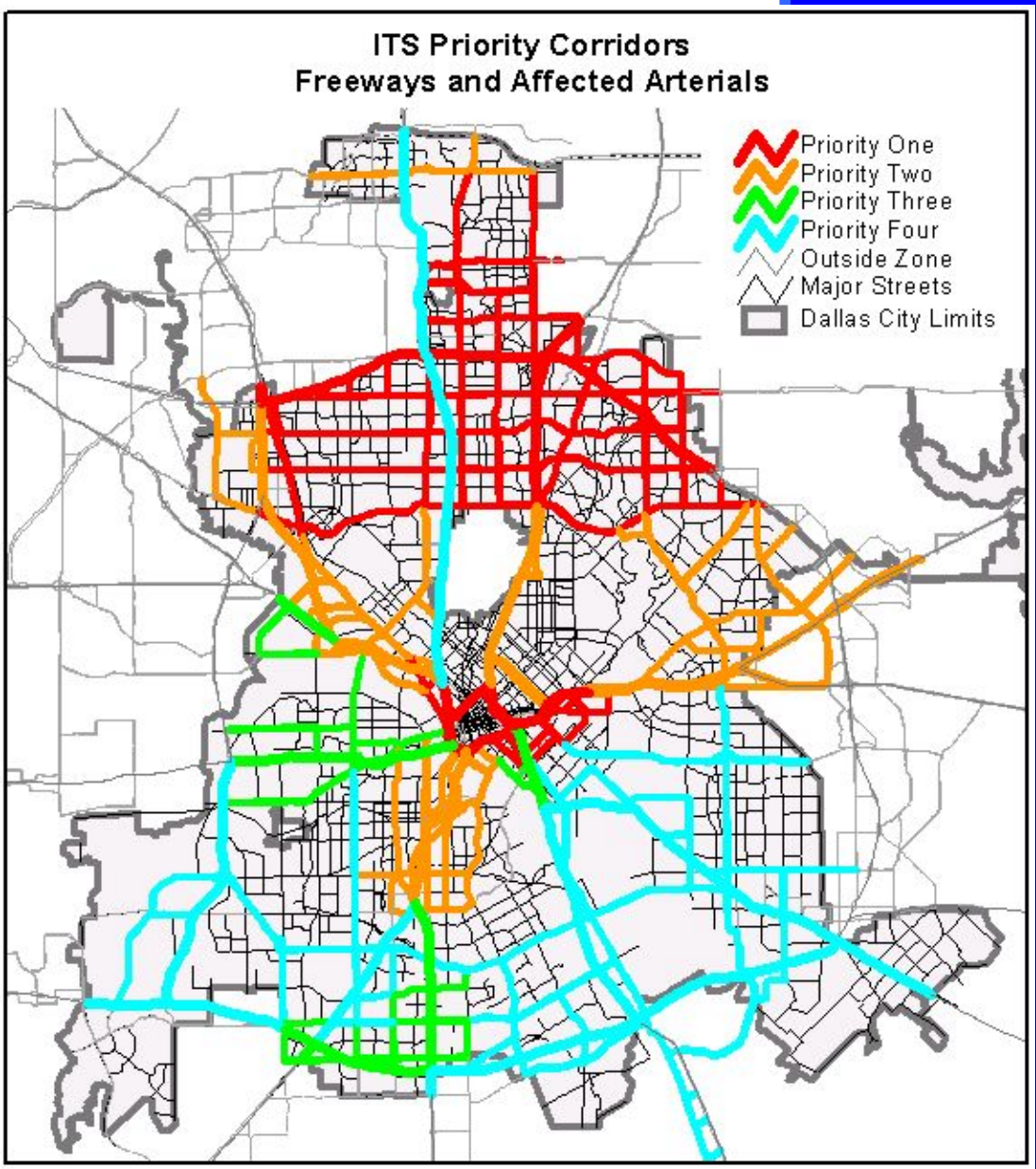
- Frequency of incidents
- Volume of traffic affected
- Major freeway construction projects
- Special event generators

The goal of this implementation strategy is to expedite the benefits of traffic management to the greatest number of motorists affected by congestion; thereby minimizing delay, fuel consumption and vehicle emissions.

Another consideration in the ITS deployment plan is traffic management during long-term construction projects. Lane closures required for multi-year construction projects result in daily traffic diversions to the arterial street system. Prior to the reconstruction of Central Expressway, the City and State prioritized the implementation of computer control of traffic signals and reversible lanes along arterials paralleling the freeway corridor. This same prioritization must be given to the Central and LBJ area to prepare for the start of interchange reconstruction in June of 2001.

The Fair Park area also warrants priority consideration. Fair Park holds at least three major events each week along with the frequent need to simultaneously manage ingress and egress traffic for multiple events (i.e. Cotton Bowl, Music Hall, and Amphitheater).

Based on the data presented, in the 98-99 Freeway Incidents map and Daily Traffic Volumes map on page 7, staff is recommending ITS field devices be implemented according to the priority levels shown in the ITS Priority Corridors map on the right. This recommended plan should serve as a guide to the orderly implementation of ITS field devices citywide.

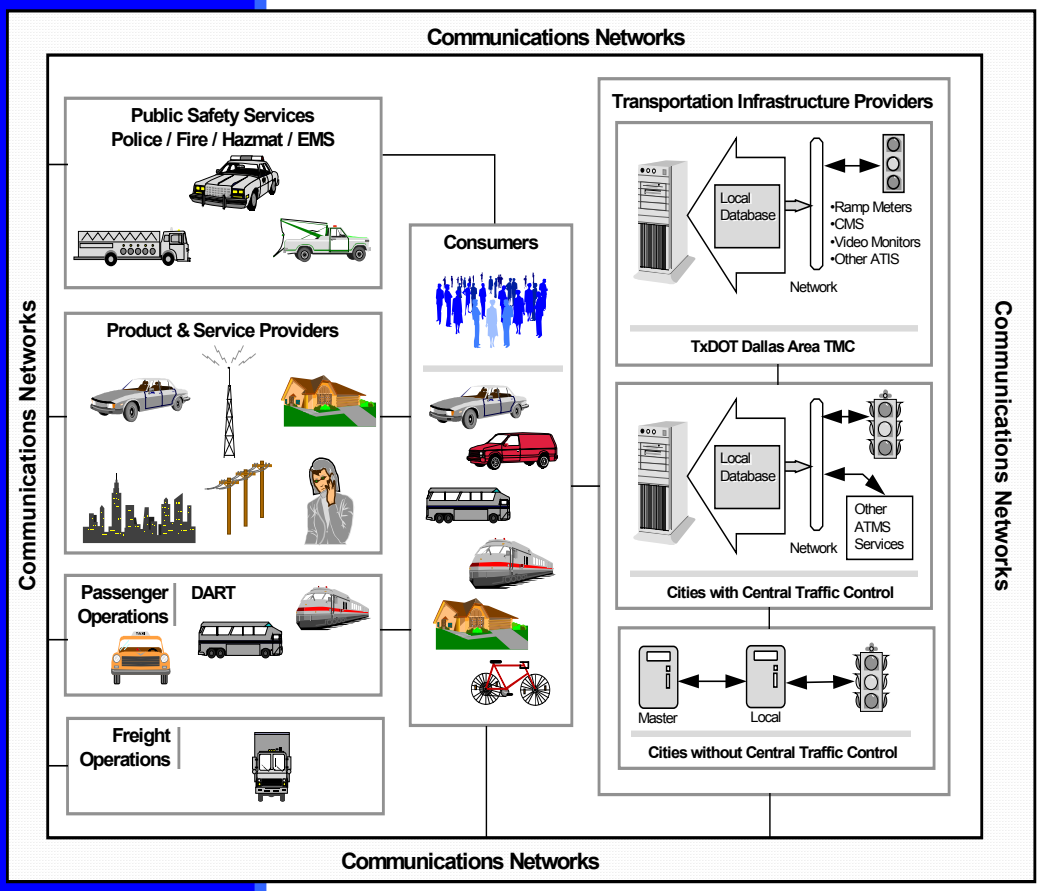


Phase 3 – Integrating the City ITS into a Regional ITS Network

The Federal Highway Administration requires all regions receiving federal funding for ITS implementations to comply with National ITS Architecture Standards. The National ITS Architecture Policies require all transportation management-related agencies in a region to prepare a plan showing how the systems will eventually be integrated and operated. The plan requires all traffic management devices, computer control systems, information systems, and communication linkages to be identified and reviewed for possible integration. The architecture does not dictate the type of technologies or system configuration to use; only that agencies demonstrate that they have cooperatively adopted a long-range plan to provide a regional system.

Implementation Plan

Distributed Dallas-Fort Worth Area ITS Model



The Intelligent Transportation System implemented by the City of Dallas will be designed to integrate with other City of Dallas information systems as well as the regional Dallas-Fort Worth Intelligent Transportation System. Four national ITS demonstration projects built in the early 1990s invested in large operations centers capable of housing multiple transportation operations agencies. After reviewing the investments that many of the Dallas-Ft. Worth agencies have already made in existing management centers and communication links, it was determined that connecting these centers using telecommunications and software would preserve the existing infrastructure and still provide a seamless travel management environment. This concept is also being adopted in other regions with similar multi-agency operations issues.

The Dallas-Ft. Worth Regional ITS Technical Committee has been working to identify possible architectures. The design must consider existing and near-term communication linkages between centers, amount of and type of data transfers and resultant communication capacity requirements. Identifying agency's responsibilities for network administration, operation and maintenance will also be significant to the system integration process.

Phase 4 – Enhancement of Real-Time Traveler Information Systems

TxDOT is currently implementing traffic flow measurement devices to display the current status of traffic flow on our freeways. The graphic display could be delivered to motorists via the Internet or broadcast to an in-vehicle navigation system. Once the freeway system conditions are available and system deployment expands throughout the region, cities will need to consider methods to enhance the system to report arterial performance.

Data collection for real-time arterial flow can be accomplished several ways. Most often, an automatic vehicle location system (AVL) is used to track vehicles travelling over the arterial and freeway links. One difficulty with this system is accomplishing the necessary widespread distribution of AVL tags into vehicles. In the Houston area, 50,000 anonymous toll tags were distributed to drivers. This allowed vehicle speeds and delay to be tracked over the arterial links, without regard to the vehicle ownership. Other data collection technologies are being tested such as the use of cell phones and global positioning systems. The biggest challenge for the public and private sector will be to develop data collection systems that measure travel-times along road segments without invading the privacy of motorists.

Estimated Construction Costs

Depending on the availability of funds, field devices will be implemented citywide over the next seven years. Existing bond funds and programmed federal grant funds are not adequate to fully implement the system. Additional funding, through future bond programs, federal grants or other funding sources will be pursued. More specific funding requirements will be identified as site-specific plans and specifications are developed. An approximation of the funding requirements is given below.

Estimated Costs and Construction Schedule

	Implementation Phase	Total Estimated Cost	Funds Spent to Date	Available Federal,State & County Funds	Available Bond City Funds (1)	Funds Required	Work Schedule
1	**Traffic Signal Computer Control**	$14,151,500	$13,362,500	$675,000	$114,000	$0	1989-2001
2	**Cameras & Dynamic Signs**						
	Citywide Central Equipment	$1,845,000	$115,000	$1,570,000	$160,000	$0	2001-2002
	1998 Bond Locations	$1,800,000	$0	$1,450,000	$350,000	$0	2001-2003
	Priority 1 Corridors	$4,570,000	$0	$4,070,000	$500,000	$0	2001-2003
	Priority 2 Corridors	$1,500,000	$0	$630,000	$0	**$870,000**	2003-2005
	Priority 3 Corridors	$330,000	$0	$0	$0	**$330,000**	2004-2006
	Priority 4 Corridors	$1,690,000	$0	$0	$0	**$1,690,000**	2005-2007
2	**Traffic Flow Sensors - Citywide**	$600,000	$0	$0	$0	**$600,000**	2001-2002
3	**Computer Upgrade/Integration**	$1,000,000	$0	$800,000	$200,000	$0	2001-2004
4	**Traveler Info Enhancements**	TBD (2)	$0	TBD (2)	TBD(2)	TBD(2)	TBD(2)
		$27,486,500	$13,477,500	$9,195,000	$1,324,000	**$3,490,000**	

(1) 1995 and 1998 Bond Funds.
(2) TBD – "To be determined" at a future date depending on the development of new technologies (see page 9).

Recurring Costs - Based on available data from other agencies and equipment vendors, staff has developed an estimate of the costs related to operations and maintenance. Since most ITS systems are fairly new and the technologies of these devices change continuously, the availability of historical ITS maintenance data is limited and many times not transferable to the Dallas-area weather conditions, size and geographic density. As more devices are implemented and the system grows in size, staff will be able to provide a better estimate of the manpower, equipment design life, and maintenance expected.

Estimated Maintenance & Operations Costs

Maintenance Item Description	Year 00/01 Budgeted	Year 00/01 Required	Year 2001-02	Year 2003-04	Year 2005-06	Year 2007-08
Additional Staff for ITS (1)	$110,075	$146,000	$153,041	$202,789	$565,380	$620,892
Central Computer Maintenance	$0	$0	$25,000	$25,000	$25,000	$25,000
Communication Linkages (2)	$30,000	$30,061	$40,000	$50,000	$60,000	$70,000
Camera (3)	$0	$0	$1,500	$1,500	$15,000	$110,000
Dynamic Message Signs (4)	$0	$0	$6,000	$12,000	$18,000	$24,000
Road Vehicle Sensors (5)	$30,000	$350,000	$30,000	$30,000	$30,000	$30,000
	$170,075	**$526,061**	**$255,541**	**$321,289**	**$713,380**	**$879,892**

(1) Costs shown for first four years have been reduced by the estimated reimbursements from Federal ISTEA, STPMM and TEA21 funds.
(2) Per site maintenance fee will be determined following completion of citywide fiber upgrade by AT&T (scheduled for 2007).
(3) 3-year material warranty. 7-year design life. Beginning 2007, replacement cycle of 30 cameras per year @$3,000/camera.
(4) 3-year material warranty. 10-year design life for front panel text modules. Beginning 2010, refurbish 20 signs per year @$5,000/sign.
(5) Citywide inventory of sensors determined 27% of all traffic signal locations currently have damaged-nonfunctional sensors.

Operations and Management

Even with the most sophisticated technologies in place, ITS will not be effective unless it is managed, operated and maintained properly. Adequate staffing, policies and procedures must be in place to effectively respond to congestion once ITS detects traffic flow changes. A summary of the work by City staff from various departments and disciplines are summarized below:

Interagency Cooperation - A key to managing and operating regional ITS is the establishment of strong and effective working relationships among all participating agencies and disciplines. Techniques to establish and maintain these relationships include regional steering committees, traffic management teams, emergency response teams, and periodic agency briefings. The City of Dallas staff plans to continue participating in several existing inter-agency committees that deal with operations and management issues.

Review of Policies and Procedures - How an incident is cleared can also significantly affect traffic congestion levels. By focusing on methods to reduce clearance time, we not only prevent secondary accidents, but also reduce the amount of time the arterial street system is impacted. And, not only is time important, but minimizing the number of lanes blocked during the incident can also prevent unnecessary delay. The City has formed an Internal City ITS Committee to analyze current policies and procedures used by Police, Fire, 911 and Street Operations response crews. The committee is compiling a list of recommendations that range from simple departmental policy changes to City Council or state legislative action. A recent departmental policy change that related to dispatching tow trucks resulted in an average 30-minute reduction in incident clearance time around the LBJ-Central Interchange. Other examples are the shared use of City police radio channels and video images between 911 dispatch, TxDOT and the City Traffic Management Center.

Development of Freeway Incident Diversion Plans – The Dallas Area Traffic Management Team has identified arterials and freeway service roads that should be used for diversion routes whenever major traffic incidents occur (i.e. multi-vehicle accidents, overturned trucks and hazardous spills). When considering the freeway miles and possible incident scenarios that could occur within the Dallas City limits, the planning effort to prepare pre-determined plans will require significant manpower and documentation. This includes determining the number of barricades, portable signage, cones and police officers needed to direct traffic along these routes.

The internal ITS committee is reviewing the staffing requirements for incident management in Dallas. Some Metroplex areas have developed incident management divisions within their police departments dedicated to incident response. This provides experienced and properly trained staff to safely and efficiently manage traffic during high-speed and low-speed freeway conditions. Police departments in metropolitan Seattle, WA and Los Angeles, CA have found that these specialized emergency response teams improved safety, efficiency, and public relations in their jurisdictions.

Development of Diversion Signal Timings and Adaptive Signal Systems - City traffic engineers will need to review manpower requirements to ensure that arterial signal timings are developed and ready to respond to the additional traffic diverting from the freeway. The Traffic Management Center staffing hours may also need to be extended so that experienced traffic engineers and technicians are available to make on the spot decisions about signal timing needs and adjustments during incidents. Adaptive signal timing systems are planned for freeway interchange ramps and arterials frequently affected by traffic diverting from the freeway. These systems measure the flow along the route and automatically down load pre-determined signal timings based on the flow measurements.

Benefits of ITS

In today's economy, it costs significantly more to build a new freeway or widen an arterial than to manage the existing one. Research has shown that implementing transportation management systems has yielded benefit to cost ratios ranging from 4 to 20, whereas the ratio of constructing a new roadway is often lower. Benefits can accrue in terms of both quantifiable values and in more subjective non-quantifiable benefits. Traditionally, the method of system justification is a benefit to cost analysis which compares benefits accruing to the public in dollars compared to capital operating and maintenance dollar costs. Benefits measured in dollars include:

- Travel time savings (average worker wage/hour)
- Reduction in fuel consumption (gasoline costs)
- Reduction in accidents (property damage and injury costs)

Other benefits, less readily quantifiable are:

- Improved air quality
- Improved customer service in terms of information and dependability
- Special event management
- Heightened sense of personal safety
- Database for system performance evaluation and planning

ITS Related Information Sources

- ITS America (http://www.itsa.org)
- ITS Texas (http://itstexas.tamu.edu)
- Institute for Transportation Engineers – (http://www.ite.org)
- Transportation Research Board – (http://www.nas.edu/trb)

Dallas-Ft. Worth Area ITS Related Committees

Dallas-Area Traffic Management Team – Comprised of transportation engineers, planners, and traffic/news reporters that meet monthly to discuss area-related transportation improvements.

Dallas-Area Incident Management Team – Comprised of policemen, firemen, and motorist assistant patrol crews that meet quarterly to discuss methods to improve freeway incident response and clearance time.

Dallas-Fort Worth Regional ITS Committee – Comprised of a technical and executive committee. The technical committee meets monthly to discuss and develop a regional ITS deployment plan.

Prepared for

City of Dallas Transportation and Tele-communications Committee

By

City of Dallas Department of Public Works & Transportation

For more information about transportation management improvements, contact:

Elizabeth Ramirez
ITS Program Manager
(214) 670-4024

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