

MICHIGAN
DEPARTMENT OF
TRANSPORTATION



Intelligent Transportation Systems (ITS)

Projects and Programs

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FOREWORD

This is a brief outline of the current projects and programs related to the Intelligent Transportation Systems (ITS) initiatives, formerly known as Intelligent Vehicle Highway Systems (IVHS), being planned, developed, or implemented by the Michigan Department of Transportation (MDOT).

Several of these projects are funded by the Federal Highway Administration, MDOT, private industry partners such as General Motors, Ford, Chrysler, GE/Ericsson, AAA of Michigan, Ameritech, and public industry partners such as the University of Michigan at Ann Arbor.

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1. FIELD OPERATIONAL TESTS

The Michigan Department of Transportation (MDOT) is the program administration agency for DIRECT and an active participant in FAST-TRAC and Advantage I-75 Operational Field Tests.

A. DIRECT (Driver Information Radio using Experimental Communication Technologies)

DIRECT is a federal/state/private industry partnership to conduct an advanced traveler information system (ATIS) operation field test. The goal of the project is to evaluate user benefits, institutional, and technical issues of en route traveler information services in an operational setting. Emphasis is on the testing and evaluation of voice-based communication systems that offer basic services at a minimal incremental cost to the traveler with a high potential for operational deployment.

The project consists of a selected group of communication technologies that satisfy these criteria. Communication methods tested are:

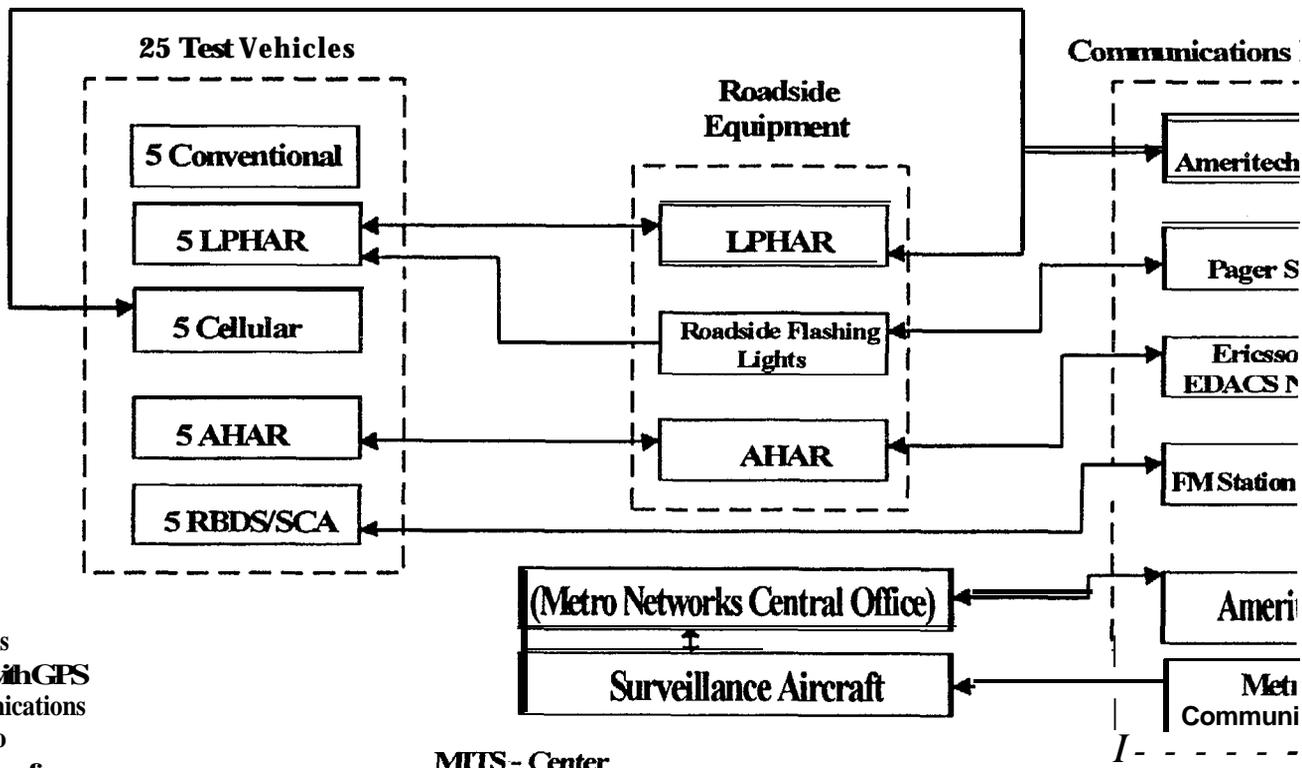
- 1) Low Powered Highway Advisory Radio (LP HAR) using an AM broadcast band frequency and radiated power of 100 milli Watts to 10 Watts.
- 2) Automatic Highway Advisory Radio (AHAR) using one of the 220 Mhz frequency pairs recently made available to FHWA.
- 3) Radio Broadcast Data System (RBDS) combined with an analog Subsidiary Communication Authorization (SCA) voice message.
- 4) Cellular Call Server using a three-tiered menu system to query information about specific segments of the highway system.

In addition, the project provides incident locations for assessment by the partners of the enhanced services like route guidance and navigation applications.

System Integration is being conducted by MDOT staff. The system design contractor is ERIM of Ann Arbor, Michigan, and evaluation of the field test is being conducted by the University of Michigan. Private industry partners for the project which are participating by contribution of equipment, cash and/or technical services include: GE/Ericsson, AAA of Michigan, Capstone, Inc for GPS/AVL, Ameritech, Metro Networks, and the University of Michigan, Ann Arbor. The largest funding partner is the Federal Highway Administration.

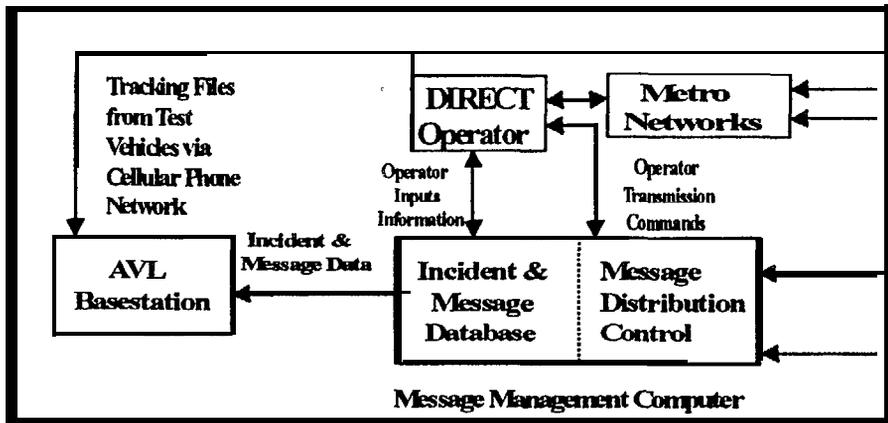
Twenty five test vehicles have been outfitted with the ITS radio communication technologies for test and evaluation. The response of 150 drivers commuting between their home and work site is being documented and analyzed. A time period for completion of the test is 15 months from the start date, April 12, 1996. On this date, a ribbon cutting ceremony was performed by Mr. Rodney Slater, FHWA Administrator, at the MITS Center which was attended by over 100 people, including Detroit Mayor Dennis Archer and MDOT Director Robert Welke.

Direct System Elements and Interfaces



* All Vehicles Equipped with GPS and communications equipment to regularly transfer vehicle state data to MITS Center via CDPD

MITS - Center



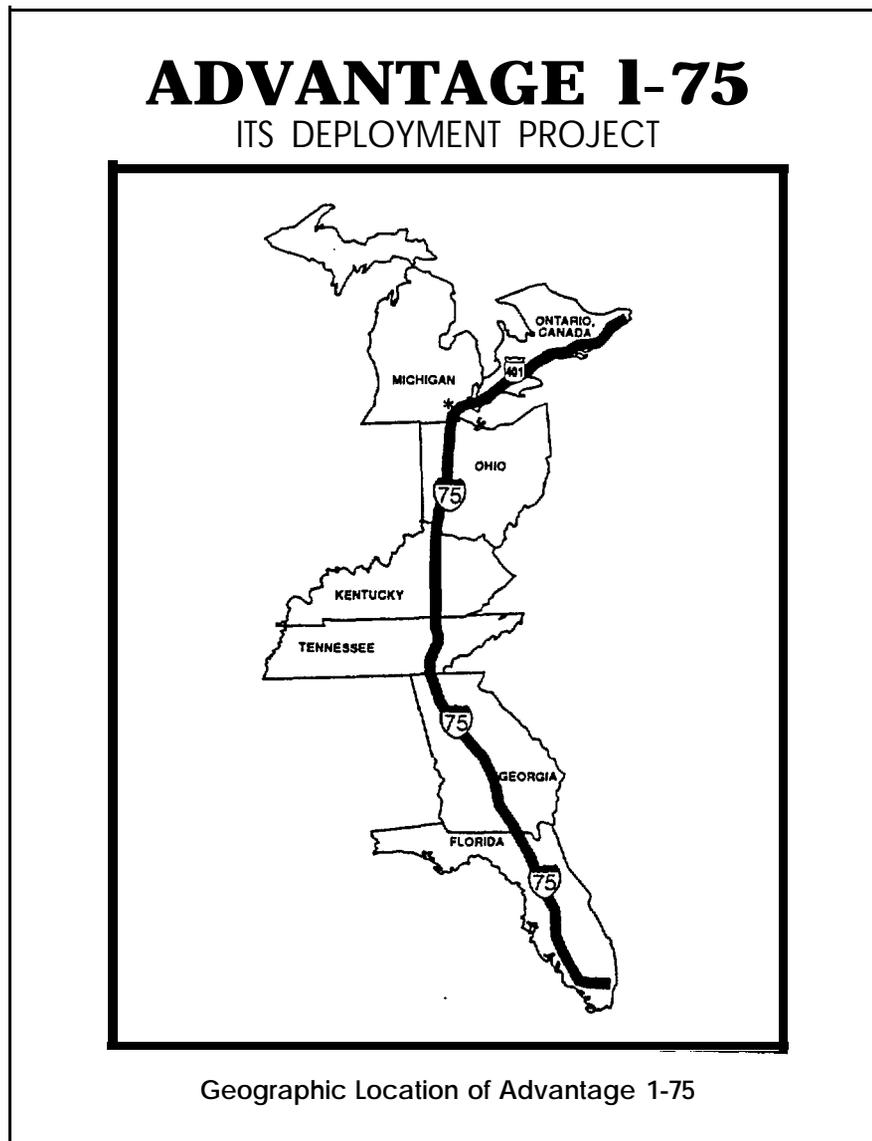
Archived Tracking & Incident Data to U of M

B. ADVANTAGE I-75

This project will deploy ITS technology to expedite clearance and movement of commercial vehicles across state lines between Ontario, Michigan, Ohio, Kentucky, Tennessee, Georgia, and Florida (Figure 2). The project improves efficiency of motor-carrier operations by allowing properly documented, transponder-equipped trucks to travel any segment of I-75 with minimal stopping at weigh stations. Weight and other truck data are automatically communicated ahead to subsequent stations for compliance checks upon the truck's arrival. The in-vehicle transponders communicate to the driver the results of the compliance check, which may allow for authorized by-pass of the weigh station.

In-vehicle transponders have been designed and are being allocated to participating major carriers. Mainline weigh-in-motion (WIM) has been installed in several states including Michigan at the Erie weigh station on I-75 south of Detroit where fiber optic communications have been used. For the overall project, SAIC is the system integrator, and Hughes Aircraft Company is the vendor for the transponders.

Installation and testing have been completed on I-75 in Monroe County, Michigan. Evaluation of the operational test is being conducted by the University of Iowa and is estimated for completion in two years.



*Michigan
locations
NBD and SBD

C. U.S. - CANADA INTERNATIONAL BORDER CROSSINGS

This is a joint project between the United States and Canada to provide a transparent, seamless border for expeditious crossing of people and goods by application of ITS technologies. A state/province team including Michigan, New York, and Ontario was established to conduct the functional requirements for the three Detroit area and four Niagara River area international border crossings. Requirements include the use of in-vehicle units to communicate via radio frequency with strategically located antenna placed near toll, customs, immigration, and transportation safety facilities to demonstrate automated nonstop border crossings. This project will promote the basis for additional ITS initiatives to be integrated at future sites for international border crossings.

The institutional issues study and the preliminary engineering and design has been completed. The deployment phase is currently in progress. Sites selected for deployment of the pilot programs will be the Ambassador Bridge in Detroit and the Peace Bridge at the Niagara River crossing. A Request for Proposal for system integration and deployment of ITS technology at the Ambassador Bridge site is expected for issue in the fall 1996. In addition, the Custom's NAFTA Prototype will be integrated into this project in the fall of 1996 for both sites.

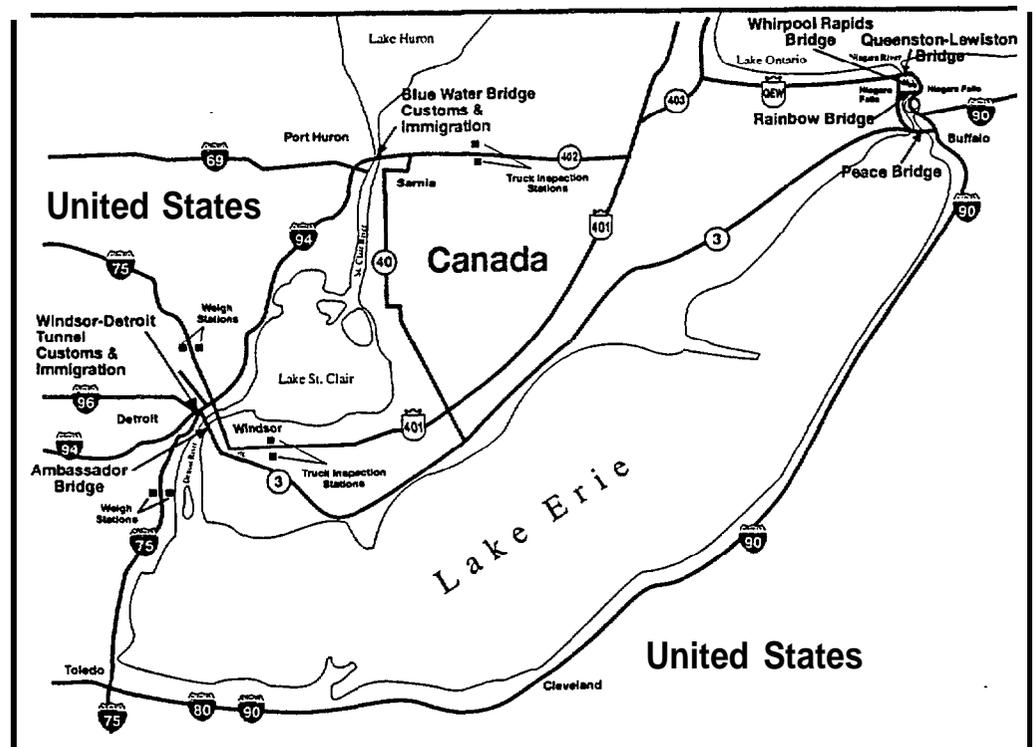
Project participants include MDOT, the Ministry of Transportation of Ontario, the New York Department of Transportation, FHWA, the Ambassador Bridge and the Detroit-Windsor Tunnel Corporation, the Blue Water Bridge in Port Huron-Sarnia, the U.S. Immigration and Naturalization Service, customs officials from both countries, the Peace Bridge and New York Thruway Authority, customs brokers, and trucking organizations.

MICHIGAN

- Blue Water Bridge
- Ambassador Bridge
- Detroit-Windsor Tunnel

NEW YORK

- Rainbow Bridge
- Whirlpool Rapids Bridge
- Peace Bridge
- Queenston-Lewiston Bridge



D. FAST-TRAC

FAST-TRAC (Faster and Safer Travel through Traffic Routing and Advanced Controls) is administered by the Road Commission for Oakland County. It has completed its first phase of implementation and is well along into the second phase. Over two hundred intersections are equipped with SCATS (a system that monitors traffic flow and adjusts signal timing in response to the changes in traffic) and Autoscope (machine-vision vehicle detectors). Ali-Scout roadside beacons have been installed at 100 locations throughout Southeast Oakland County. The beacons are communicating with 400 vehicles equipped with the Ali-Scout dynamic route guidance system. Work has begun on the design and installation of SCATS at 70 new intersections.

System integration is well underway. The FAST-TRAC transportation information management system will include interfaces with Ali-Scout, SCATS, Autoscope, SMART, and MDOT. Both video and traffic data will be shared by the new FAST-TRAC Traffic and Operations Center in Waterford and MDOT's MITS Center in Detroit, thereby facilitating integrated corridor traffic management in metropolitan Detroit.

E. INTELLIGENT CRUISE CONTROL

A Field Operational Test of Intelligent Cruise Control (ICC) is being conducted through a cooperative agreement between the National Highway Traffic Safety Administration and the University of Michigan (U of M). In addition to U of M, the partners include Leica AG, the Michigan Department of Transportation, and Haugen Associates. The Volpe National Transportation Systems Center will serve as the independent evaluator of the results.

The ICC system automatically controls the headway between an equipped vehicle and the vehicle ahead, whenever the preset cruise speed causes overtaking to occur. When the headway constraint no longer exists, the equipped vehicle accelerates again back up to its set speed. The tested system will provide for driver selection of the desired minimum headway time and will automatically control headway by means of a throttle control.

Each of ten Chrysler Concorde passenger cars is to be equipped with ICC based upon the Leica infrared sensor and placed in the hands of lay persons for use as their personal vehicle for a period of 2 to 5 weeks. Approximately 180 participants are expected. Testing will run from July 1996 to June 1997.

2. *ATMS/ATIS DEPLOYMENT IN METROPOLITAN DETROIT*

The current system of traffic surveillance in the City of Detroit consists of 32 miles of freeways involving segments of I-94, M-10, I-75, and I-375. An expansion is underway of the advanced traffic management systems/advanced traveler information systems (ATMS/ATIS) to cover an additional 148 miles of the freeway system in metropolitan Detroit. The plan includes installation of 145 CCTV cameras, 43 changeable message signs (CMS), ramp meters, highway advisory radios (HAR), machine vision, and approximately 700 loop sensors.

Rockwell International is designing and building the deployment, which includes freeway corridors in the City of Detroit, and Wayne, Oakland, and Macomb Counties, including portions of I-75, I-696, I-94, I-96, I-275, M-39, M-10 and M-59. Integration of Oakland County's FAST-TRAC traffic operations center in Troy with the MITS Center in Detroit is also included in this phase of expansion, thus making it one of the only areas in the country to link urban and suburban traffic monitoring systems. It is also proposed to integrate traffic information with the Michigan State Police 911 dispatch unit by relocating them to the MITS Center.

The Detroit ATMS/ATIS project, which began in April 1995, is estimated to cost \$33 million and will take about two years to complete. Construction is in progress at this time.

3. *ATMS/ATIS EARLY DEPLOYMENT STUDY FOR METROPOLITAN GRAND RAPIDS*

Grand Rapids, the second largest metropolitan area in the State, has a freeway system with locations that experience recurring as well as nonrecurring congestion through the downtown area. In an effort to effectuate a solution, ITS applications are being considered for incorporation into the Grand Rapids Strategic Deployment Plan. HNTB Corporation in association with TRW, Inc. and Ed Swanson & Associates is conducting an ATMS/ATIS early deployment study for metropolitan Grand Rapids. The study focuses on the freeway, the arterial, and the transit systems.

The study was administered by the Michigan Department of Transportation. A project advisory committee, which included representatives from MDOT, FHWA, the Grand Rapids and Environs Transportation Study, Michigan State Police, City of Grand Rapids, area county representatives, and the Grand Rapids Area Transportation Authority, have provided critical input throughout the study. The study has been completed and funding alternatives are being considered for possible implementation.

4. *CONGESTION ANALYSIS OF SOUTHFIELD FREEWAY (M-39)*

In a partnership with MDOT and Ford, the Michigan State University Research Center of Excellence investigated congestion along M-39. The study analyzed high risk locations, congestion patterns, perceptions of travelers, and recommended strategies for action. Completion of the project is expected in the fall of 1996.

5. *APTS (ADVANCED PUBLIC TRANSPORTATION SYSTEMS): GRAPHIC DISPLAY SYSTEM FOR REAL TIME TRAFFIC INFORMATION*

This project applied ITS technology to communicate real-time traffic information by a graphic display of the congestion levels on freeways. The display is color coded: green for normal traffic flow, red for heavy congestion, etc. The project consisted of providing the graphic display system at the dispatch centers of five public transit agencies and fleet owners and evaluating the results of savings in time by conducting “before” and “after” studies.

The agencies that participated in this experiment were: Greyhound, United Parcel Service (UPS), Detroit Department of Transportation, Suburban Mobility Authority for Regional Transportation (SMART), and Commuter Shuttle Company at the Detroit Metro Airport. The evaluation study was completed in May 1995 by Wayne State University.

The Graphic Display System is available on the Internet at: <http://campus.merit.net/mdot>

6. *APTS: ANN ARBOR SMART BUS*

This project will support the Ann Arbor Transportation Authority’s operational test of the “smart bus” concept. Included are an on-board bus communication and navigation system, a central control system and a cashless payment system. The on-board system will monitor actual performance in regard to route, schedule and location. It will allow control of on-board electrical equipment such as destination signs, electronic engine controls, enunciators and fare collection systems. The on-board system will also enable the buses to interact with traffic signal controllers and to communicate with the central control system. The central control system will integrate the data from the bus fleet for coordinated supervision and will also provide real-time transit information to the public. The cashless payment system will test radio frequency proximity cards as an inter-modal payment method.

The project is funded by a \$1.5 million Federal Transit Administration (FTA) capital grant. The operational test will be evaluated by the University of Michigan and the Volpe National Transportation Systems Center. Rockwell has begun work as the prime contractor with a scheduled completion date of February 1997.

7. *APTS: SUBURBAN MOBILITY AUTHORITY FOR REGIONAL TRANSPORTATION (SMART)*

The Federal Highway Administration and the Federal Transit Administration have approved \$16 million to set up APTS programs and purchase computer hardware and software to coordinate services using ITS and automated dispatch. The programs are administered by the Suburban Mobility Authority for Regional Transportation (SMART) for several counties, including Macomb, Oakland, and Wayne.

Dispatch Systems - Automate functions of reservation, scheduling, etc.

AVL System - Place hardware and software aboard SMART buses to track the fleet.

Dispatch/AVL - Budget funds for affiliated agencies.

Regional 800 Number - 800 number to refer potential customers and interface into the SMART dispatch.

Data Collection Systems - Development activities to collect and report on available data

Traveler Information Systems - Timely information available to SMART travelers. The system is proposed to cover Oakland, Macomb, and Wayne counties. Any further information can be obtained from Steve Fern, (810) 223-2127.

8. *APTS: HIGH SPEED POSITIVE TRAIN CONTROL SYSTEM*

The high speed passenger rail initiative focuses on implementing a control system that upgrades the safety rail traffic operations. The safety system termed "High Speed Positive Train Control System" is currently being integrated into AMTRAK passenger trains along the Detroit-to-Chicago high speed rail corridor. Initial implementation will begin with 70 miles of track from Kalamazoo to Niles, Michigan. The HSPTC system, through state-of-the-art train-to-wayside communication, will automatically control headway between trains traveling on the same track. This will allow trains to operate at speeds up to 125 mph. This effort demonstrates Michigan's commitment to enhancing inter-modal travel and developing public transportation in its entirety.

The funding partners for this project are the Federal Rail Administration (FRA), MDOT, AMTRAK, and Harmon Industries. The demonstration project for the 70 mile section has a total budget of \$22 million (of which \$6 million was awarded on a FRA grant to Michigan). The demonstration of the HPTC system for the Kalamazoo to Niles segment was awarded to Harmon Industries and AMTRAK, and has a scheduled completion of late 1998.

9. *STATEWIDE INCIDENT MANAGEMENT EFFORTS*

The Metropolitan Detroit Incident Management Coordinating Committee, with representatives from MDOT, FHWA Wayne, Oakland and Macomb County Road Commissions, City of Detroit, AAA of Michigan, Michigan State Police, and others meet at the MITS Center every month on incident management issues. Several task forces published an incident management plan for Detroit entitled, "Blueprint for Action," in October 1993. An updated version of the report has been prepared October 1995.

The Michigan Incident Management Conference, held on October 5, 1995 in Detroit was the site for the second national conference hosted by MDOT, the National Coalition for Incident Management, FHWA, SEMCOG, and several other agencies. Christine Johnson, Director of Joint Programs Office, USDOT, was the key-note speaker.

10. MICHIGAN ITS STRATEGIC PLAN

KCI (Kan Chen, Inc.) has been under contract to assist MDOT in the development of an ITS strategic plan for the State of Michigan. The plan will develop a vision and layout a strategy for implementation of the goals and objectives to deploy ITS technologies and services in Michigan. This action-orientated plan will facilitate the forming of alliances among academic, private, public, and private sectors of ITS research, operational tests, deployment, and implementation. The first version of the plan has been completed with a final completion anticipated in the latter half of 1996.

11. AUTOMATED HIGHWAY SYSTEM (AHS)

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 requires the U.S. Department of Transportation to develop an automated highway and vehicle system and establishes a goal of having a prototype demonstration by 1997.

MDOT is an Associate member of the General Motors Consortium for AHS which has been awarded the sole contract by the US DOT.

12. INTELLIGENT CRUISE CONTROL

In collaboration with the University of Michigan Transportation Research Institute (UMTRI) and the Leica Corporation, an effort has been underway to developed a smart cruise control system. This research project includes the design, development, and analysis of the hardware and software to allow for smart cruise capable of sensing vehicle headway and adjusting the vehicle accordingly.

13. THE UNIVERSITY OF MICHIGAN ITS RESEARCH CENTER OF EXCELLENCE

The University of Michigan was selected in 1993 by the U.S. Department of Transportation as one of three ITS Research Centers of excellence in the nation.

MDOT is committed to an annual funding level of \$250,000 from the State Planning and Research funds to the Center. This commitment will not only benefit MDOT by research conducted in an environment of excellence, but will also stimulate the private sector in developing ITS initiatives in Michigan.

14. INTER-REGIONAL INSTITUTIONAL ISSUES STUDY FOR COMMERCIAL VEHICLE OPERATIONS

Twelve states, including Michigan, are evaluating the institutional impediments to efficient and cost-effective movement of commercial traffic at the interstate level. Institutional issues are being identified in several alternatives. Recommendations include implementation of uniform

data requirements, “one-stop shopping,” and roadside enforcement. A Michigan working group including MDOT, State Police, Treasury, Secretary of State, Public Service Commission, and American Trucking Association has been established to review the progress.

15. ENTERPRISE

The Enterprise program represents an international forum for collaborative research, development, and deployment ventures comprising the interest of governmental entities and industrial groups. It emphasizes rural Advanced Traveler Information Systems (ATIS).

16. RURAL ITS

Rural development of ITS technology will extend from systems providing ATIS to enhancing safety of train crossings by the inclusion of ITS warning systems. Efforts are underway to develop an ITS prototype grade crossing warning system to be deployed along the Detroit-Chicago high speed rail corridor.

17. INTELLIGENT TRANSPORTATION SOCIETY OF MICHIGAN (ITS MICHIGAN)

On March 9, 1995 the creation of ITS Michigan was announced at a press conference held at the MITS Center in Detroit. It is a state chapter of the national organization, ITS America, a non-profit educational and scientific society which began operations in 1991 to coordinate and accelerate the development, deployment, and acceptance of advanced transportation technologies in the U.S.

The purposes of the society include:

- Promoting professional development to those interested in intelligent transportation systems;
- Advocating the development and deployment of ITS for benefit to Michigan, and to serve as a voice for Michigan’s ITS concerns at all levels;
- Building coalitions for the furtherance of ITS to take advantage of Michigan’s unique blend of resources including, but not limited to, its transportation system, the domestic auto industry, the international borders with Canada, and a strong university system; and.
- Educating the people of Michigan on the benefits ITS holds for all citizens.

The headquarters for ITS Michigan is located at the MITS Center in Detroit. The First Annual Conference was held at Cobo Hall in Detroit on May 7-8, 1996, and was attended by 200 people with over 20 exhibits. The keynote address was given by Detroit Mayor, Dennis Archer and MDOT Director, Robert Welke.

18. *COMMERCIAL VEHICLE INFORMATION SYSTEMS AND NETWORKS (CVISN)*

Michigan is the recipient of an FHWA grant awarded to demonstrate model deployment of Commercial Vehicle Information Systems and Networks (CVISN). The program goals are to establish an automated safety compliance system for CVO (Commercial Vehicle Operations) and the development of a “paperless commercial vehicle” through the application of ITS technologies and the “one stop shopping” concept .

The scope of the CVISN Model Deployment Program includes distribution of safety information to computers, electronic collection of inspection data from the roadside, electronic application for credentials by carriers, interfacing of State systems to the International Registration Plan clearinghouse, interfacing of State systems to the International Fuel Tax Agreement clearinghouse, and performing electronic clearance.

A kickoff meeting is scheduled for October 8 and 9, 1996 to mark the beginning of the Michigan CVISN Model Deployment Program. Participants include FHWA, MDOT, Michigan State Police, Department of State, Public Service Commission, and the private industry sectors comprising information service providers from the American Trucking Association and the Michigan Trucking Association, as well as shippers/carriers.

19. *ITSKVO STRATEGIC BUSINESS PLAN*

Maximizing the safety and productivity benefits of ITSKVO services, deployment and reengineering activities are essential. To establish this vision, an ITS/CVO strategic business plan covering a three year period is under development. The business plan will address the scope of deployment activities, project costs, implementation schedule, and anticipated accomplishments.

The goal of the business plan is to institutionalize the process and projects, develop private partnerships, and provide justification for state budget requests for ITSKVO deployment funding. Also it will be a framework to integrate ITSKVO technologies with existing state regulatory programs.

The time frame for development of the business plan is 15 months with an anticipated completion of December 1997.

GLOSSARY OF TERMS

ATIS (Advanced Traveler Information Systems)

ATIS provides a variety of information that assists travelers in reaching a desired destination via private vehicle and/or public transportation. On-board navigation systems are a building block of ATIS. Information includes location of traffic accidents, weather and road conditions, optimal routes, and recommended speeds. Applicable also to this functional area is pre-trip planning through television, personal computers and kiosks.

ATMS (Advanced Traveler Management Systems)

ATMS is the building block of ITS. All other functional areas will use the information provided by ATMS. ATMS integrates management of various roadway functions, including freeway ramp metering and arterial signal control. In more sophisticated implementations, ATMS predicts traffic congestion and provides alternative routing instructions to vehicles over wide areas in order to maximize the efficiency of the freeway network. ATMS collects, utilizes, and disseminates real-time data of congestion on arterial streets and expressways and alerts transit operators of alternative routes. Also included are dynamic traffic control systems which respond to changing traffic conditions by routing drivers around delays. Rapid detection and response to traffic incidents is especially effective in reducing congestion.

APTS (Advanced Public Transportation Systems)

ARTS uses constituent technologies of ATMS, ATIS, CVO, and AVCS to improve operations of lanes dedicated for vehicles with a large number of passengers. Real-time ride matching, electronic payment through smart cards, and automated dispatch systems, as well as automated collision avoidance technology, are utilized.

AVCS (Automated Vehicle Control Systems)

AVCS enhances the driver's control of the vehicle. AVCS includes concepts that will become operational on different time scales. Safety being the key factor in AVCS, collision avoidance systems would alert the driver of imminent collision conditions with other vehicles, or hazardous objects. Such systems usually require communications within the vehicles and thus involve, to a larger extent, the automobile manufacturers.

CVO (Commercial Vehicle Operations)

CVO is applicable to trucks, busses, commercial vans, taxis, and emergency vehicles and is broadly defined as the movement of goods and services in an expeditious manner. Automatic vehicle identification systems and locating systems are the basis of CVO. CVO benefits the transportation industry by the improved efficiency of the movement of goods through such technologies as weigh-in-motion and the advanced communication devices that link drivers with weigh stations and their dispatch centers.

ITS (Intelligent Transportation Systems)

ITS is the application of new and emerging technologies in the field of transportation. It involves a wide array of technologies, including electronics, computer hardware, software, control, and communications. It consists of five functional areas with which these technologies are applied. All five areas are overlapping and can be applied to rural areas as well as urban.

MICHIGAN INTELLIGENT TRANSPORTATION SYSTEMS CENTER

The Michigan Intelligent Transportation Systems Center, also known as the “MITS Center,” is the hub of ITS technology applications at the Michigan Department of Transportation. It is a world-class traffic management center where staff oversees a traffic monitoring system for 32 miles of Detroit freeway.

Traffic flow data is communicated from road sensors to the MITS Center where it is analyzed. This traffic information is then conveyed to the motorist in the form of advisory message signs strategically located along the freeway. The system includes 24 television monitors, 11 television cameras, 14 changeable message signs, 49 ramp meters, 1,240 inductive vehicle detectors. The center utilizes 16,000 square feet of space with administrative offices and conference rooms to assist in the effort of freeway operations and development of ITS.

An expansion of the current monitoring system to cover an additional 148 miles of freeways in metropolitan Detroit is underway. It will include integration with Oakland County’s FAST-TRAC traffic operations center in Troy. Also, a proposed relocation of Michigan State Police dispatch into the MITS Center will integrate incident management efforts in southeast Michigan.

A SHORT HISTORY

The traffic surveillance concept was first conceptualized in 1955 through experimentation involving closed circuit television. Results prompted an agreement in 1959 for the project known as the Freeway Traffic Surveillance and Control Research Project. At this time specifications had to be determined for the television cameras, monitors, transmission system and associated equipment. Installation of the camera equipment and communications progressed rapidly.

By October of 1960 it was possible to transmit a live picture of freeway traffic to the Automobile Show at Cobo Hall in downtown Detroit. The nation’s first experimental traffic control system utilizing closed circuit television coordinating with illuminated signs began experimental operation on May 7, 1962. In 1965 the phase-in of digital computer control was being utilized. The first use was to provide up-to-date information to operators controlling field signals.

Proposed in 1970 with actual development beginning in 1976 was the Surveillance Control and Driver Information Operation (SCANDI). It included four and eventually 10 remote controlled television cameras viewing the freeway’s highest volume sections, nine changeable freeway message signs, 70 motorist aid telephones along 14 miles of freeway, and the SCANDI computer which continually monitored traffic flow information from 1,300 sensor loops imbedded in the pavement.

In 1987 the SCANDI project covered both directions on parts of four freeways: All of the Ford Freeway (I-94) within the City of Detroit (14.2 miles), all of the Lodge Freeway (U.S -10) within the City of Detroit (12.2 miles), part of I-75 (23 miles of the Fisher Freeway east of Jeffries), and 3.4 miles of the Chrysler Freeway (I-75) south of the Ford Freeway.

In 1991 SCANDI was relocated and renamed to the Michigan Intelligent Transportation Systems (MITS) Center. Along with its new name there was an update and expansion of the computer capability and the addition of remote control capability.

Michigan Intelligent Transportation Systems Center (MITSC)



(MITSC)

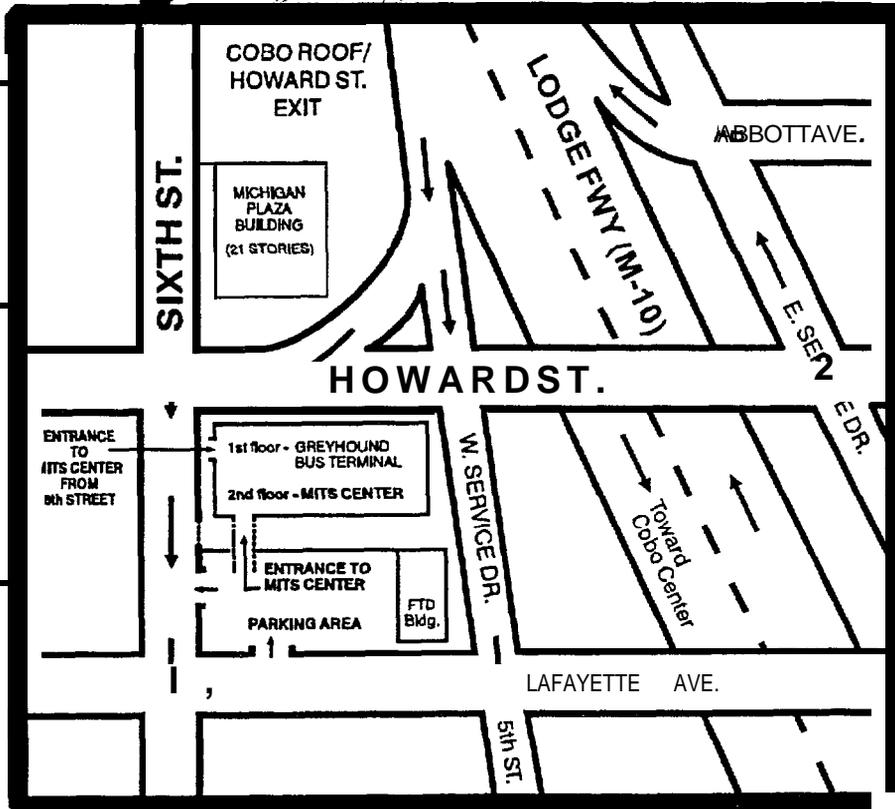
Michigan Department of
Transportation
1050 Sixth Street
Detroit, Michigan 48226.
(313)256-9800

DIRECTIONS FROM METRO AIRPORT:
TAKE I-94 TO SB LODGE FWY. (M-10)
TO COBO ROOF/ HOWARD ST. EXIT

DIRECTIONS FROM LANSING:
TAKE I-96 TO 696 TO
SOUTHBOUND LODGE FWY. (M-10)
TO COBO ROOF/HOWARD ST. EXIT

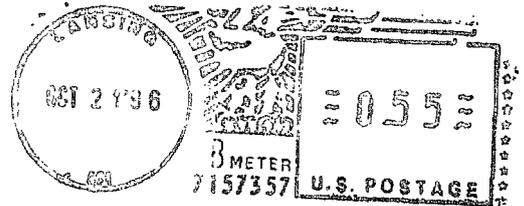
TO ENTER MITS PARKING LOT:
PRESS BUZZER OR
ENTER CODE (IF PROVIDED)

TO ENTER MITS CENTER:
PRESS BUZZER NEXT TO DOOR
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