



***ITS-Michigan***  
**Intelligent Transportation Society**

**Outstanding State Chapter**

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**ITS Michigan  
2012 ITS America  
Outstanding State Chapter Award Nomination**

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**ITS Michigan Mission Statement:**

ITS Michigan is a force to proactively unite Michigan resources for the planning, development and deployment of Intelligent Transportation Systems. It supports the ITS America goal of improved mobility by encouraging safer, more economical, energy-efficient, environmentally sound transportation systems through research, development and implementation of advanced technology.

**Chapter Overview:**

The ITS Michigan Chapter was incorporated in 1995 as a private, non-profit organization for several purposes:

- To advocate and promote the development/deployment of ITS to benefit transportation safety and efficiency in Michigan and to serve as a voice for Michigan's ITS concerns at all levels.
- To promote ITS professional development, create a network of professional relationships among individuals and groups and conduct chapter activities.
- To build conditions for the furtherance of ITS that take advantage of Michigan's unique blend of ITS resources.

- To educate the people of Michigan regarding the benefits ITS holds for all citizens.

## **Narrative regarding how your chapter excels in the following areas**

### **Part 1: Strong and engaging chapter governance**

ITS Michigan has a long history of strong and engaging chapter governance. In part, this stems from the diversity of membership on its board as well as the fact that many board members represent the top management tier of their organizations. The composition of the Board represents a balance between the public and private sectors, education and research organizations and industry representatives. Additionally, the Board updated its bylaws in 2006, ensuring they provide clear and concise guidelines for the organization. A variety of standing committees make certain the organization's business is completed effectively and efficiently.

A review of the organizations making up the Board membership clearly reveals ITS Michigan's vibrant diversity:

- Automotive Companies
  - Ford Motor Company
  - General Motors
- Public Highway Agencies
  - Federal Highway Administration
  - Michigan DOT
  - Road Commission for Oakland County
  - Macomb County Road Department
  - City of Detroit
  - Wayne County Department of Public Services
- Other Local Units of Government
  - City of Troy
  - City of Novi
  - City of Grand Rapids
- Universities and Research Organizations
  - Wayne State University
  - Connected Vehicle Proving Center – University of Michigan Dearborn
  - Center for Automotive Research (CAR)
  - University of Michigan Transportation Research Institute (UMTRI)
- Metropolitan Planning Organizations – Southeast Michigan Council of Governments
- Public Transit Agencies – Suburban Mobility Authority for Regional Transportation (SMART)
- Traffic Safety Organizations – Traffic Improvement Association of Michigan
- Economic Development Organizations – Automation Alley
- Traffic Equipment Suppliers – Carrier & Gable
- Automotive Suppliers – Delphi
- Information Service Providers - NAVTEQ
- Transportation Consultants, Contractors and System Integrators

- HNTB
- Hubbell Roth & Clark
- Iteris
- Parsons Brinckerhoff
- PRC Associates (Gerry Conover)
- TransCore
- URS
- Motor City Electric Technologies
- Integral Blue

The broad and diverse makeup of the ITS Michigan Board reflects the widespread participation of organization membership in the chapter's governance. The Board meets monthly to conduct normal administrative business and plan for future meetings. These meetings also provide an important venue for networking and team-building among members. As a matter of policy, all chapter members are invited to Board meetings. The Board meetings are held at member facilities and project sites in order to encourage knowledge sharing among members. On a quarterly basis, the Board meeting is held in conjunction with a Quarterly Technical Conference to encourage participation from members and to share technical research findings from member organizations.

The Michigan Chapter is organized according to Board-approved bylaws that are routinely reviewed and updated. As noted, the chapter bylaws were updated in 2006 and clearly spell out the organization's purpose, membership and Board of Directors makeup. The bylaws also clearly define the role of the chapter's officers, explain how and when elections are to be conducted, how the chapter's books and records are to be kept as well as identifying the chapter's standing committees. Those committees are:

- The Nominating Committee,
- Administrative and Finance Committee,
- Program Coordination Committee,
- Incident Management Committee and
- Membership and Outreach Committee.

ITS Michigan's finances are in excellent shape. According to the January 2012 Treasurer's Report, the chapter currently has \$80,000 in cash on hand, no significant outstanding debt and minimal recurring costs. In addition to revenue from memberships and the chapter's Annual Meeting and Exhibition, ITS Michigan receives significant support from the Michigan Department of Transportation in the form of both financial grants and staff. MDOT provides staff support for the planning and operation of the ITS Michigan Annual Meeting and Exhibition and has committed staff to the planning and execution of the 2014 ITS World Congress in Detroit as well.

As a vibrant and active chapter, ITS Michigan interacts regularly with and engages ITS America through a number of channels. The chapter has a long history of representation on the ITS America Board, with three ITS Michigan members currently serving on the ITS America Board:

- Dr. Peter Sweatman, director of UMTRI, is the ITSA Vice-Chairman;
- MDOT Director Kirk Steudle and

- Dr. Nady Boules, director of the Electrical & Controls Integration Lab at General Motors

Additionally, a number of ITS Michigan members are actively involved with the ITS America Board and administration. These include:

- Organizing Committee chair for the 2014 World Congress: HNTB Vice President James Barbaresso
- World Congress Board of Directors:
  - Gerald Conover of PRC Associates (member since this Board's inception in 1992)
  - James Barbaresso of HNTB
- International Program Committee: Gerald Conover of PRC Associates (member since 1996),
- World Congress Finance Committee: Gerald Conover of PRC Associates (Chair since 1994).
- ITSA Coordinating Council: ITS Michigan Board Member Dr. Sweatman is past chair
- ITSA Policy and Business Council
  - ITSM member John Peracchio, of Peracchio and Company (chair of the Council's Investment and Technology Committee);
  - Gerald Conover (also serves on the Council's International Committee)
- ITS Michigan President Edwin Tatem, Michigan President/Michigan Area Manager, Parsons Brinckerhoff Michigan, is a member of the ITSA State Chapters Council.

It was a contingent of the ITS Michigan Board that successfully promoted Detroit to the ITS America World Congress Site Selection Committee and the ITS America Board as the location for the 2014 ITS World Congress.

Members of ITS Michigan also serve on U.S. Transportation Secretary Ray LaHood's prestigious ITS Advisory Committee. Among the members are:

- MDOT Director Kirk Steudle
- UMTRI Director Dr. Peter Sweatman

## **Part 2: Significant Impact via Networking, Outreach and Advocacy**

The ITS Michigan Chapter feels strongly that collaboration, proactive engagement of decision makers and strong, unified messages that reflect the ITS industry's goals and objectives are critical to transforming how the state and nation fund and deliver transportation products, projects and services. The chapter also believes networking among members is vital to the growth of the ITS industry in our state. In fact, the chapter has made outreach and advocacy a key focus of the organization. This focus is promoted through a variety of means, including:

- A. The Connected-Vehicle Working Group  
This large and diverse group meets quarterly to discuss a wide range of topics related to the Connected-Vehicle realm.

- B. Quarterly Regional Transportation Operations Coordinating Committee meetings. This group always meets at the Michigan Department of Transportation (MDOT) ITS Center in Detroit, and covers topics related to regional transportation systems, including ITS.
- C. Responder Safety Workshops. These events for first responders publicize the ITS technologies available and how to use them. They also provide reviews of incident-management traffic-control practices.
- D. ITS Michigan's quarterly meetings. The chapter hosts meetings on a quarterly basis focusing on specific aspects of ITS, and provides expert speakers on those aspects.
- E. The ITS Michigan Annual Meeting and Exhibition. One of the largest such chapter meetings in the country, this event provides an ideal opportunity for chapter members and non-members alike to network and collaborate.

ITS Michigan promotes ITS and its benefits in the academic world by annually hosting a student ITS paper contest. The association invites students at universities across the state to submit papers on topics related to ITS. Then, a committee of ITS Michigan Board members reviews these papers and selects the best to receive recognition and a financial award. The papers are highlighted at the ITS Michigan Annual Meeting and Exhibition.

Also, again in 2011, the County Road Association of Michigan invited ITS Michigan Board member James Barbaresso to be a guest speaker at its annual Commissioners' Seminar. This meeting hosts the primary policy makers for the 83 county road agencies across Michigan. More than 400 people generally attend.

Mr. Barbaresso, representing ITS Michigan, also presented to the Detroit Downtown Development Partnership (related to the World Congress), at the ITS World Congress in Orlando (closing session), at the Connected-Vehicle Alliance Program and at the 2011 Wireless Access in Vehicular Environments (WAVE) Seminar in Dearborn. The ITS Michigan chapter also manned a booth in the State Chapter Pavilion at the 2011 ITS World Congress in Orlando.

#### *Collaboration with the Public Safety Community*

The ITS Michigan Traffic Incident Management Committee has been a national model for collaboration with the public safety community and other incident management stakeholders. The Traffic Incident Management Committee hosted its sixth annual Regional Operations Partnering Workshop at AAA Michigan in March 2011. The theme was to Advance Metro Detroit Traffic Incident Management. The full-day workshop focused on the role of first responders in Traffic Incident Management. A standing room only crowd of more than 100 participants attended the workshop. Participants included those from the Michigan Department of Transportation, Michigan State Police, local police and fire departments, county road commissions, metropolitan planning commissions, area universities, private engineering consulting companies and many others. The purpose of the workshop was to receive input from the participants in order to guide the future direction of the Committee's activities.



ITS Michigan has long recognized the importance of traffic incident management in reducing non-recurring congestion. Consequently, the Board of Directors of ITS Michigan has made these Partnering Workshops an annual event.

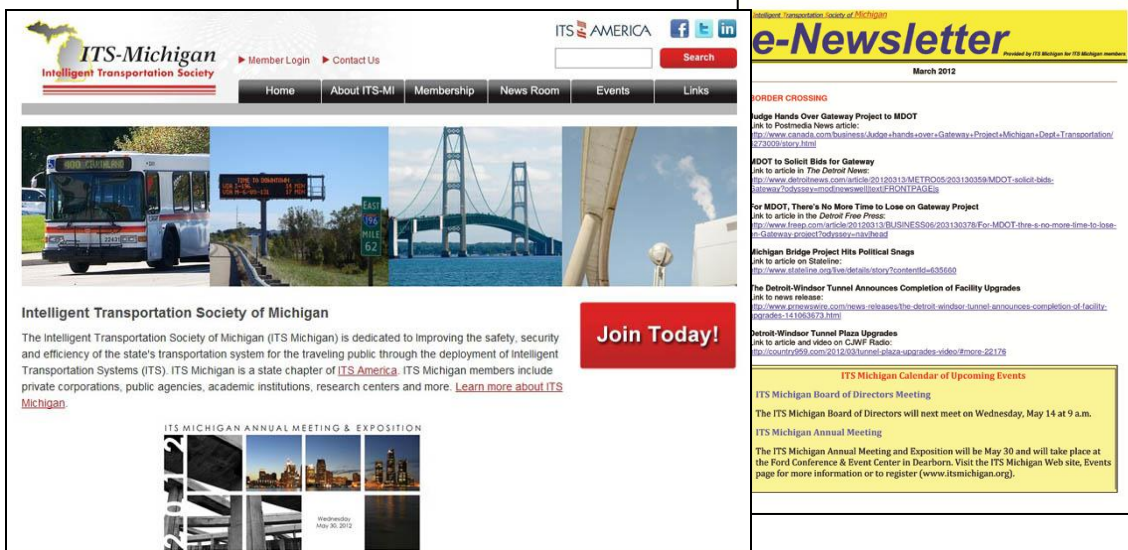
#### International Collaboration

Collaboration continued beyond regional, state and national borders in 2011. ITS Michigan is involved with the Taiwan Telematics Industry Alliance (TTIA) for collaborative research and information sharing. Through this international agreement, ITS Michigan hopes to facilitate business opportunities between companies in Michigan and Taiwan. In addition to this relationship with Taiwan, ITS Michigan has a healthy and meaningful relationship with the Ontario Ministry of Transportation. With a shared international border and the busiest border crossing between the U.S. and Canada, collaboration with the nation's number-one international trading partner makes good sense.

#### 2011 Outreach Opportunities

ITS Michigan uses a variety of methods to reach out to and communicate with its membership and partner organizations. Examples are listed below.

- ITS Michigan maintains a website, [www.itsmichigan.org](http://www.itsmichigan.org), to disseminate national and chapter business and news, viewpoints, news of member activities, and to make conference presentations available to members. The website includes links to other websites of interest including ITS America, MDOT, and member organizations. The site was completely redesigned in 2011 to ensure it is up-to-date, user-friendly and intuitive.



*The homepage of the newly redesigned ITS Michigan Web site.*

- ITS Michigan maintains a wide email distribution list and uses it regularly to reach ITS Michigan members and sister organizations.
- ITS Michigan also regularly publishes a newsletter. The newsletter keeps members informed of upcoming events, provides summaries of the quarterly and annual meetings, and ITS activities of member organizations.
- In 2011, ITS Michigan introduced a monthly e-newsletter that is provided to all chapter members and provides links to ITS-related news and information from around the state, the nation and the world. It also includes information about upcoming events of interest to chapter members.
- ITS Michigan serves a mentoring and educational role for area colleges and universities and is actively supporting and providing a public forum for the Michigan-Ohio University Transportation Center at the University of Detroit-Mercy, Wayne State University and the University of Michigan Transportation Research Institute
- During 2011, ITS Michigan conducted a very constructive partnership with Wayne State University, in which an advanced graphic-design class worked with the organization to design the logo for the 2014 ITS World Congress. This proved to be a very productive way to engage a new university population in the discussion of ITS.



### Part 3: Effective Organizational and Professional Development

ITS Michigan takes a variety of steps to ensure it responds to the needs of its members and the ITS community at large for building a community of knowledge and professional development.



These include one of the best-attended annual meetings and exhibitions of any state chapter as well as the quarterly topic-specific meetings and the above-mentioned Connected-Vehicle Working Group.

At the 2011 Annual Meeting and Exhibition, conducted April 1 at the Ford Conference and Exhibition Center in Dearborn, in addition to a strong meeting agenda, the exhibit hall and outdoor connected-vehicle demonstrations were highlights of the event.

The success of the ITS Michigan Annual Meeting was accomplished through the hard work and dedication of many volunteers from ITS Michigan member organizations, but also from the contributions of the Michigan DOT, the event sponsors and the exhibitors.

In addition, ITS Michigan and its members are involved in the U.S. Department of Transportation's Connected-Vehicle Safety Pilot program. Also, as noted above, the Regional Transportation Operations Coordinating Committee hosts quarterly traffic management workshops that reach out to many in the public and private sectors who are not traditionally considered part of the ITS world.

ITS Michigan also takes a number of steps to reach out to public officials, non-profit organizations and the public. Many county and local-level public sector organizations, including counties, county road commissions, cities and villages are members or regular participants in ITS Michigan. Additionally, ITS Michigan, as an organization, has contacted and worked with state legislators as the state struggles with the challenges of transportation funding. The value of ITS as a means of improving safety and efficiency of the state's transportation infrastructure has been broadly promoted.

Among the non-profit organizations that ITS Michigan works regularly with are the Traffic Improvement Association of Michigan (TIA), which is dedicated to improving the safety of the state's roads, and the Traffic Safety Association of Macomb County (TSA), which has a similar focus.

#### **Part 4: Emerging Experiences that Provide Lessons Learned, Case Studies, Best Practices, Etc., related to State and/or Local Planning, Deployment and Evaluation of ITS**

ITS Michigan members have been involved in many ITS deployment activities throughout the State of Michigan. Michigan has long been known as the center of the US auto industry. While it retains that distinction today, the State has also grown to become one of the leading centers in the nation when it comes to the development, deployment and testing of ITS. In addition to the robust research and development arms of the domestic auto manufacturers and suppliers, Michigan is home to advanced public-sector ITS systems. These systems are owned and operated by ITS Michigan members including the Michigan Department of Transportation, the Road Commission for Oakland County, the Road Commission of Macomb County, the Wayne County Department of Public Services and the City of Detroit. These agencies have developed an unprecedented level of cooperation when it comes to developing, managing and promoting ITS technologies.

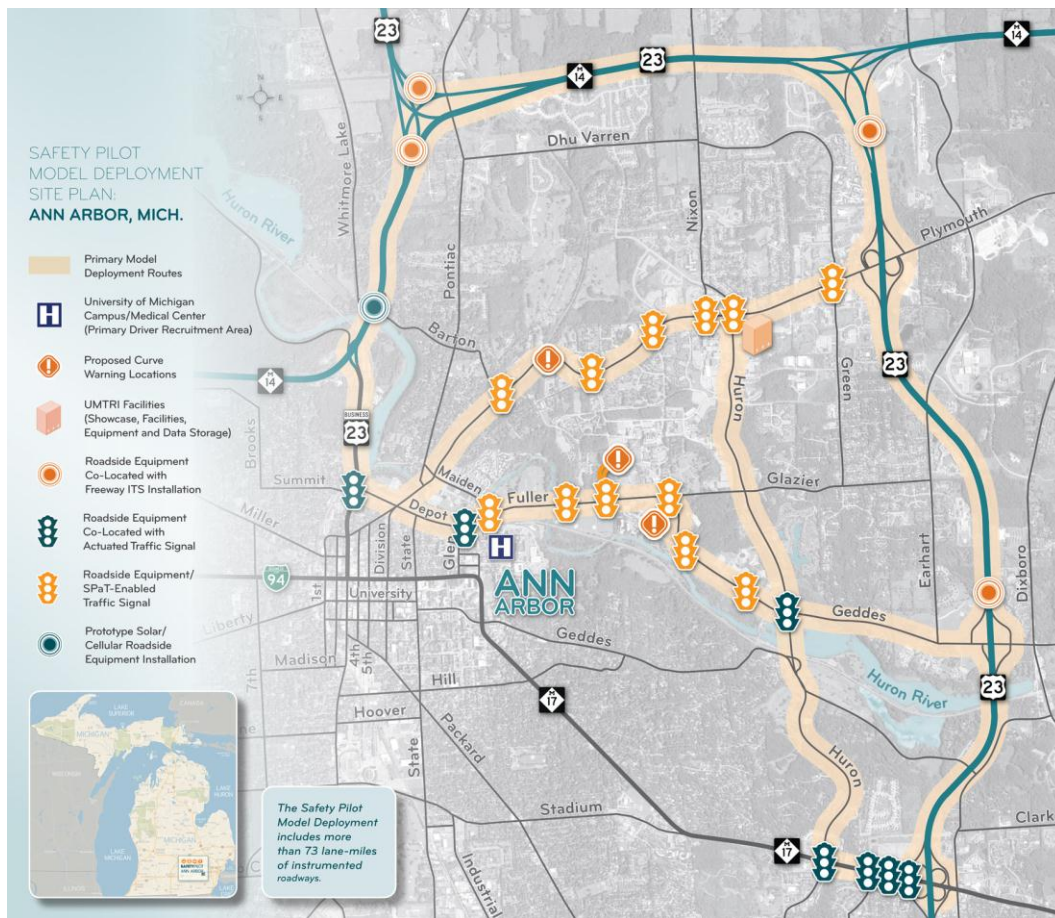
Michigan is especially recognized for its efforts in connected-vehicle research and deployment. In fact, the nation's largest test bed installation is located in Oakland County. As the concept of vehicle-to-vehicle and vehicle-to-infrastructure communications and applications continues to develop and grow, ITS Michigan is supporting model deployments and demonstration projects to advance the concept from research to implementation.

### Successful Michigan ITS Deployments

Sample projects owned by and developed by ITS Michigan members are described below.

#### Safety Pilot Connected Vehicle Model Deployment

The University of Michigan Transportation Research Institute (UMTRI) team, including ITS Michigan members HNTB and Parsons Brinckerhoff, is working with USDOT to establish a model deployment of Connected-Vehicle equipment and applications. This deployment is intended to be a real-world multi-modal (trucks, busses, cars) operating environment, supported by a diverse team of industry, public agencies and academia. Nearly 3,000 vehicles will be equipped with connected-vehicle technology. Twenty-nine field sites will also be equipped. The data collected by UMTRI during this project will be used by the USDOT to support an agency decision in 2013.



#### Michigan Connected Vehicle Model Deployment

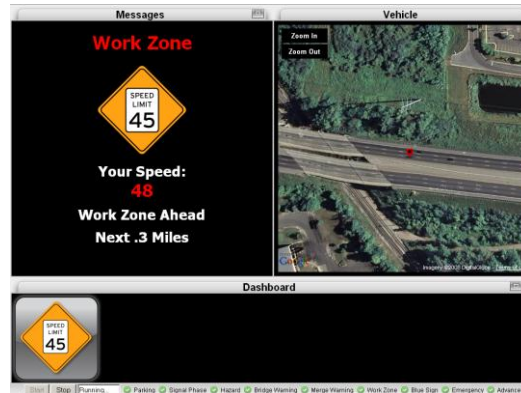
In 2009, the Michigan DOT and the Road Commission for Oakland County launched a connected-vehicle model deployment using proven technologies to support various commercial traveler information needs, transportation mobility and safety applications. The applications were deployed on a five-mile highway circuit that included I-96, Grand River Avenue, Beck Road and Novi Road in Novi, Michigan.



The following connected-vehicle applications were developed and demonstrated as part of the model deployment:

- Emergency-vehicle traffic signal pre-emption. In this case, the demonstration vehicle simulated an emergency vehicle. As the demonstration vehicle approached the traffic signal at the conference center entrance, a pre-emption was activated through vehicle-to-infrastructure (V2I) communication with the traffic signal controller.
- Incident beacon. In this case, a traffic incident was simulated along an arterial street over the crest of a vertical curve, out of sight of the demonstration vehicle. As the demonstration vehicle approached the incident location, an incident warning was transmitted through V2V communications to the demonstration vehicle.
- Mileage Based User Fee (MBUF) application. The MBUF application was set up on I-96 between Novi Road and Beck Road. As the demonstration vehicle entered the expressway, a driver interface showed that the user fee application was enabled. The interface displayed both the distance traveled and the fee charged for the trip.
- Congestion pricing application. This application was a companion to the MBUF application. Probe data from the demonstration vehicles was collected at the virtual TMC and fused with traffic congestion data from MDOT's freeway management system. The fused congestion information was used to calculate the user fees, which varied according to congestion levels.
- Traffic signal countdown. Through a V2I interface, a demonstration vehicle received precise traffic signal phase change information from the traffic controller at a signalized intersection.
- Bridge height warning. Through a geo-fencing application, overheight vehicles were given a warning of a low bridge.
- Merge warning. Through a simulated V2V application a demonstration vehicle was given a warning of a vehicle entering the freeway at a blind merge point.

- Advance work-zone warning. A geo-fence was established in advance of a highway work zone. As the demonstration vehicle entered the geo-fence, a warning of the work zone and speed limit was displayed.
- Commercial services application. As the demonstration vehicle approached an interchange, types and locations of various commercial services (food, lodging, and fuel) were provided to the demonstration vehicle.
- Parking availability information and parking e-payment. As the demonstration approached the parking venue, parking availability information was provided to the vehicle. Preferential parking and payment options were also given.
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This project was the most comprehensive and innovative demonstration of connected-vehicle technologies to date. Private-sector ITS Michigan members involved in the development of the project included HNTB, Parsons Brinckerhoff, Motor City Electric, Motorola, Kimley-Horn and Associates and URS.

The system performed flawlessly during hundreds of demonstration drives. Numerous VIP groups were given demonstration rides through the connected-vehicle Model Deployment area. These VIP groups included ITS America executive staff, USDOT staff, congressional delegations, the VII Coalition's Executive Leadership Team, members of AASHTO, and local government officials.

This project demonstrated that significant progress can be made using off-the-shelf technology for much less money and in a significantly shorter timeframe than initially envisioned. The project laid a foundation for entrepreneurial innovation and private-sector participation in the national connected-vehicle program.

#### Connected-Vehicle Proof of Concept Tests

Under the connected-vehicle umbrella, the USDOT Proof of Concept (POC) project has provided a venue to test a variety of vehicle-to-infrastructure and vehicle-safety applications that support public interests. Located in Oakland County, it is one of the first large-scale connected-vehicle demonstrations in the nation. Numerous ITS Michigan members have been involved in this landmark program, which is now in operations and maintenance mode, providing continuing value to the research and development community.

#### Chrysler Headquarters Connected-Vehicle Test Bed

ITS Michigan members, MDOT and the Road Commission for Oakland County (RCOC), worked together to set up a wireless broadband network infrastructure on the existing traffic signal poles on the campus of the Chrysler World Headquarters in Auburn Hills, which is in Oakland County. Two intersections in Bloomfield Township (Telegraph & Twelve Mile and Telegraph & Maple) were also part of the network. Chrysler staff instrumented a fleet of “fast feedback” cars to communicate across the wireless network. The purpose of this project is to retrieve real-time diagnostic data from the Chrysler fleet vehicles, helping to identify vehicle problems before the vehicles are released to the public. More than 1,500 vehicles are communicating across the wireless network. This project is also being used to better understand how public road agencies can use this new data to improve collection and analysis technologies.

#### Data Use and Analysis Project

MDOT began the Data Use and Analysis Project (DUAP) to gather the data generated through connected-vehicle initiatives such as the Chrysler project. The goal of this project is to determine how this new data can be used to improve road-agency operations. The potential uses of this data for public agencies includes planning construction projects in areas with poor pavement conditions, identifying potholes and tracking weather across counties using car wipers and temperature devices. Probe-vehicle information is also being analyzed to determine how it can be used beyond traveler-information applications.

This program is now in its second phase (DUAP-2). DUAP-2 provides a foundation for the collection, management and application of connected-vehicle data. The systems developed for DUAP and expanded in DUAP-2 will provide a platform for modeling data aggregation, synthesis and redistribution. The DUAP platform has been designed to assimilate large volumes of data from multiple sources into an integrated data repository at high speeds. The system provides means for quality checking the data as it is pulled into the system and associating those checks with the data. Processing capabilities within the DUAP structure enable DUAP to generate new data for specific applications from the collected data. DUAP also provides multiple user and system interfaces for browsing and extracting data for further analysis.

#### Vehicle-Based Information and Data Acquisition (VIDAS)

MDOT’s VIDAS project will deploy aftermarket data-acquisition systems on a select group of MDOT vehicles to gather road- and weather-condition data for DOT applications. The data will then be brought into the DUAP-2 system for further processing. These capabilities will supplement the data available from typical connected-vehicle systems with data needed specifically for transportation agency operations.

#### Cooperative Intersection Collision Avoidance System

ITS Michigan member RCOC has been working with a group of automakers to improve intersection safety through the Cooperative Intersection Collision Avoidance System (CICAS) project. The group leading the effort, known as the Crash Avoidance Metrics Partnership (CAMP), is testing communications between vehicles and traffic-signal controllers. As the name implies, the effort is the first step in research intended to lead to the prevention of intersection collisions. The focus of the project is to develop and test a collision-avoidance system for traffic-signal and stop-sign controlled intersections. The intent is to reduce the number of intersection crashes that originate from violations of traffic signals and stop signs. For the



project, RCOC equipped two intersections to test communications and data collection. The goal is to demonstrate improved intersection safety by alerting vehicles when they are about to “run” a red traffic signal. When a CICAS-equipped car approaches a test intersection, it receives, via a wireless system, a high-precision digital map of the intersection, the traffic signal state and timing and Global Positioning System (GPS) coordinates. The car uses the received information to determine if it is likely to go through the red signal. If a violation is anticipated to occur, an alert is issued warning the driver to take appropriate action. RCOC and CAMP are also testing the CICAS technology at a stop-sign controlled intersection.

#### Telegraph Road Connected-Vehicle Expansion Project

This project is equipping a major arterial corridor in Southeast Michigan with connected-vehicle technology linking it with the POC test bed. A wireless test bed was installed in Oakland County on Telegraph Road from north of 8 Mile Road to 13 Mile Road by MDOT and RCOC. The traffic signal controllers at 22 intersections have been upgraded. Roadside equipment (RSE) was installed on traffic signal poles to broadcast signal phase and timing (SPaT) data. The focus of this project is to create a test bed to encourage research on the use of SPaT. The ultimate goal is to trigger research that will lead to new connected-vehicle applications that can be used to improve safety and mobility along signalized corridors.

In addition to these exciting connected-vehicle-related projects, ITS Michigan members continue to expand ITS infrastructure and capabilities throughout Michigan. A sample of on-going programs and projects is provided below.

#### MDOT ITS Progress

The Michigan Department of Transportation invested significantly in ITS technology across the state. Deployment of ITS technology has expanded from the urban freeway network of Detroit to other urban, suburban and rural areas of Michigan. All freeways in Southeast Michigan and the Grand Rapids metropolitan area are equipped with dynamic message signs, closed-circuit television cameras and traffic detectors. Additional traffic data is provided through third party sensor and probe data providers.

Recent and ongoing projects demonstrate the commitment MDOT has made to employing ITS as a traffic management tool.

In Detroit, MDOT recently built a new facility that includes a state-of-the-art traffic operation center (MITSC). This center is able to accommodate operators from other transportation agencies, such as the Wayne County Department of Public Services. At the same time, MDOT’s ITS field devices in the metro area, parts of which date back to the 1980s and earlier, are undergoing significant modernization and upgrades, including conversion to a gigabit Ethernet communications network.

A new traffic management center at the Blue Water Bridge in Port Huron, a critical international border crossing with Canada, began operations in 2009. This TMC serves the dual purpose of managing traffic flow and traffic incidents on the freeways approaching the bridge while maintaining traffic flow through the toll plaza and customs plaza on the US side of the bridge.

In addition to the traffic management centers in Detroit and at the Blue Water Bridge, MDOT operates (and is significantly updating) a traffic-operations center in Grand Rapids on the west side of the state, which also was expanded in 2009. Additional deployments of regional ITS technologies have been completed or are underway in every other region of the state, including the Upper Peninsula. Many of the regional and remote devices will be managed at a new Statewide TOC in Lansing. Work is underway to develop this new facility as part of a comprehensive, statewide ITS deployment.

MDOT will soon release its new Advanced Transportation Management System (ATMS) software. This software will operate in all of the MDOT TMCs throughout the State, providing standardized functionality and maintenance efficiencies.

*Faster and Safer Travel through Traffic Routing and Advanced Controls (FAST-TRAC)*

The Road Commission for Oakland County (RCOC) ITS program, which falls under the umbrella name of *Faster and Safer Travel through Traffic Routing & Advanced Controls* (FAST-TRAC), is a system that makes better use of existing roadways by employing advanced traffic-management technologies to respond, in real time, to actual traffic flow, thus minimizing traffic tie-ups and improving safety on our roads. The technologies under this umbrella include:

- The Sydney Coordinated Adaptive Traffic System (SCATS). This adaptive traffic signal system, devised in Sydney Australia, was first deployed in Oakland County in the City of Troy in 1992 with 28 traffic signal intersections. Today, SCATS is deployed in 40 Oakland County communities and at 675 intersections, making it the second largest “adaptive” signal system in the United States. The system employs more than 2,000 video detectors, making it the largest video vehicle-detection system in the world.
- The SCATS Event Manager system allows police to remotely control and better manage traffic around large events using the adaptive traffic signals. It was first implemented at the Pontiac Silver Dome in 1995 for the World Cup Soccer matches. The time required to clear traffic has been significantly reduced with this program. Another significant advantage of the system is that it requires fewer police officers to be on-scene controlling traffic. Today it is used at the Palace of Auburn Hills during more than 200 events each year, including the Detroit Pistons basketball team’s home games. It is also used at the Suburban Collection Showplace in Novi (a large convention center in southwestern Oakland County) and the Great Lakes Crossing “mega mall” in Auburn Hills near the Palace.
- Computerized school-zone signs are used for control of more than 60 school-zone signs across Oakland County. School schedules are pre-programmed for the entire school year, including holidays and breaks.
- The Transportation Information Management System (TIMS) is an advanced center-to-center (C2C) data-exchanging interface, which links RCOC with MDOT and incorporates approximately 200 miles of urban freeways monitored by more than 150 closed-circuit cameras. TIMS enables RCOC and MDOT to exchange real-time traffic information and share control of the closed-circuit video cameras.
- The RCOC Website ([www.rcocweb.org](http://www.rcocweb.org)) uses advanced Internet technology to present real-time traffic data for arterial roads under RCOC’s jurisdiction. The Real-Time Traffic Map was the first in the nation to provide online real-time traffic congestion levels for non-freeway roads. It remains one of the few in the nation that combines congestion,

road construction and incident information for both freeways and non-freeways. The map displays data from both RCOC and MDOT sources, including SCATS, construction projects, CCTV cameras, remote weather information systems (RWIS) and freeway incidents.

#### Macomb County Roads Department (MCRD)

The Macomb County Roads Department, serving the third most populace county in the state, initiated its ITS program in 2005 with the building of a Traffic Operations Center (TOC). Video feeds from closed-circuit and traffic-detection cameras can be viewed on the TOC's "video wall," and signal-controller status can be monitored and modified from the center. More projects soon followed, which include:

- The Dequindre signal-modernization project included modernizing the signals at nine intersections along Dequindre Road, a major north/south corridor. This was the first corridor in Michigan to utilize an "all Internet protocol (IP) addressable" MARC Master corridor-management system.
- The Macomb County Roads Department's Advanced Traffic Management Systems (ATMS) project was the first in a series wireless communications network projects undertaken by the agency. The primary component of the project is a 150-foot-tall communication pole adjacent to the Traffic Operations Center which serves as a central receiver of communications from nine 100-foot-tall poles distributed along three county arterials. Radios installed on these poles provide wireless transmission of live surveillance video, detection video and signal-controller status between remote signalized intersections and the Traffic Operations Center. The project also includes 36 closed-circuit video cameras located at major "mile" roads as well as a consolidation of communications to master signal controllers for three corridors.
- MCRD is in the midst of a five-year plan to wirelessly communicate with 600 of the agency's 740 traffic signals, install closed-circuit video cameras at 250 major intersections, hardware upgrades throughout the county and conduct signal optimization for major corridors. These upgrades can make some arterial routes more viable as alternate routes for the most-heavily traveled routes in the county.

#### City of Detroit ITS Deployment

In 2009, the City of Detroit commissioned its new Traffic Management Center and deployed an advanced traffic management system in the central business district. The purpose of the project was to provide safe and efficient movement of vehicles and pedestrians throughout the district. The components of the systems include:

- A Traffic Management Center
- A centralized traffic-signal control system
- Closed-circuit video camera control for traffic monitoring
- A traffic information Web site
- A new, hybrid communications network

The first phase included the deployment of a broadband wireless and fiber-optic communications network throughout downtown Detroit. The ring configuration not only provides maximum redundancy, but also links the City with other partner organizations, including the MDOT ITS Center (MITSC), the Detroit-Windsor Tunnel, Ford Field (home of the Detroit Lions) and the



Fox Theater (a major entertainment venue downtown). Thirty downtown traffic signals are controlled centrally with a traffic-signal control system, which provides capabilities for special-event traffic management. Closed-circuit video cameras are co-located with many of the traffic signals, particularly in the areas around activity centers such as Ford Field, Comerica Park (home of Tigers baseball team), Hart Plaza (the city's downtown riverfront park) and Cobo Hall (the city's convention center). All of the functions are controlled from the City's new TMC.



The City is now embarking on a new project to deploy the first urban test environment for connected vehicles. Intersections in downtown Detroit will be equipped with connected vehicle technology and tied to the City's existing communications network to establish this test environment prior to the 2014 ITS World Congress.

#### *Suburban Mobility Authority for Regional Transportation (SMART)*

The Suburban Mobility Authority for Regional Transportation (SMART) provides public transportation services to the suburban Detroit area, supplying 13 million annual rides. The application of technology has been an integral part of SMART's service delivery. The agency computerized paratransit reservations 20 years ago and has applied Automated Vehicle Location (AVL) technology, employing GPS, to paratransit services since 1994. Fixed-route services have been managed through AVL since 1995. SMART paratransit operations include real-time schedule update as pick-ups or drop-offs occur, and with both Web-based and interactive voice-response ride reservations.

#### *Great Lakes Intelligent Transportation System Program*

The Great Lakes Intelligent Transportation System (GLITS) program was established by ITS Michigan to facilitate the deployment of ITS technologies to enhance the Great Lake International Economic Corridor, which encompasses a region bounded by Toledo, Flint, and Port Huron. The projects are helping to ensure a safer and more efficient transportation system, and are intended to help propel the region to national prominence as a center for transportation technology. GLITS has involved researching or deploying a variety of ITS technologies including:

- At Wayne County's Detroit Metropolitan Airport, ITS plans were developed to help move traffic, improve safety, and provide traveler information for patrons of the newly renovated airport.
- The I-75 freeway/arterial integration project, located on northbound I-75 between Square Lake and Lapeer roads in Oakland County, was initiated to improve corridor traffic flow

under conditions that might involve traffic diversions from freeway to arterial roadways (freeway incidents, emergencies and lane restrictions). Adaptive traffic signals (using SCATS), closed-circuit television cameras, dynamic trailblazer signs and dynamic message signs (DMS) support the diversion plans. Coordination efforts involved local police departments from the cities of Auburn Hills and Pontiac as well as MDOT and RCOC.

- Construction of the Macomb County Road Department's Traffic Operations Center is allowing the agency to remotely to view traffic areas in real time to better anticipate and mitigate traffic congestion and allowing the adjustment of signal timings to aid in redirecting traffic at more than 175 traffic signals along the county's most congested corridors. Expansion of the department's Advanced Traffic Management System (ATMS) included additional vehicle detection (optical and radar) and wireless communication devices.

But the state and ITS Michigan are not sitting on our laurels. In fact many new ITS initiatives are either being planned or deployed currently, including the deployment of a cutting-edge ITS system throughout downtown Detroit, that will be operational in time for the 2014 World Congress. Currently in the installation phase is a new signal phase and timing (SPAT) project on a busy section of the Telegraph Road corridor in Oakland County. That project is a partnership of MDOT, RCOC, the Taiwanese Information Institute and private-sector companies.

The ITS Michigan chapter also takes a variety of steps to encourage partnerships that lead to its members engaging in demonstrable transportation solutions fueled by ITS applications. The chapter's public-sector members in the Southeast Michigan region all participate in the Southeastern Michigan Council of Governments (SEMCOG – the region's metropolitan planning organization) Transportation Improvement Program, which is the channel for distribution of federal ITS funds. This includes the Road Commission for Oakland County (RCOC) and the Macomb County Roads Department both of which work through the TIP to receive operating funds for their ITS projects.

Additionally, the chapter itself provides an environment where chapter members gather to discuss potential partnering opportunities related to ITS, including planning, deployment and evaluation. In fact, it was working through ITS Michigan that local governments and chapter members created the ITS architecture for Southeast Michigan, which is now posted on the SEMCOG Website.

ITS Michigan has always helped identify and promote emerging ITS activities as a way of increasing awareness and understanding of these initiatives, promoting greater involvement and contributing to the greater knowledge of ITS within the chapter and across the country. Some of the ways it does this are through its quarterly and annual meetings and the exhibition portion of the annual meeting. Through these events, which are open to the public, ITS Michigan introduces new or growing activity areas within ITS and promotes the cross-pollination of these areas with other, existing ITS segments. As noted above, ITS Michigan has been active in the creation and promotion of the U.S. DOT's Safety Pilot program, as well as countless other ITS initiatives in the state.

Many of the chapter members are actively involved in the planning, deployment and evaluation of ITS projects in Michigan, which has one of the highest concentrations of such projects in the nation. This includes private-sector members who are hired to design, deploy, help maintain and evaluate projects as well as public sector members who have identified the need for the projects and oversee their operation, maintenance and evaluation. It also includes ITS Michigan members involved in the auto industry, including auto manufacturers and suppliers involved in the vehicle side of ITS.