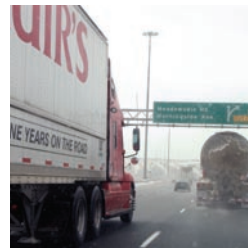
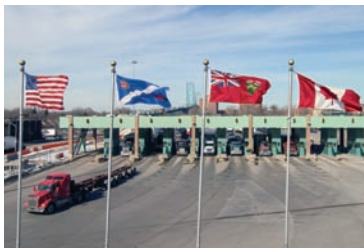
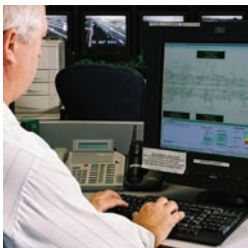




Moving Forward with Intelligence:

Ontario's Intelligent Transportation Systems Strategy



MESSAGE FROM THE MINISTER



I am pleased to present *Moving Forward with Intelligence: Ontario's Intelligent Transportation Systems Strategy*. Ontario is a recognized leader in building an effective transportation infrastructure and in developing and using new technology to enhance and improve our transportation network. Innovative new technologies used in Intelligent Transportation Systems (ITS) will help us achieve our goal of building a safe, effective and integrated transportation system that supports business growth and strong communities, to help meet future needs.

Our current transportation system faces many challenges due to unprecedented population growth. By 2031, another four million people are expected to choose Ontario as their home. Add to this the economic realities of just-in-time delivery, and the increased need for border security, and it is obvious we must look at new and innovative ITS solutions to meet our transportation needs.

With ITS, we can manage traffic more effectively, improve public transit and maintain our highways better. *Moving Forward with Intelligence: Ontario's Intelligent Transportation Strategy* provides a framework for these improvements. The strategy combines short-term solutions, such as integrated ticketing systems for transit, with longer-term improvements using enhanced technology to meet future demands.

Our government is committed to reducing congestion, increasing transit ridership, improving road safety and establishing more efficient border crossings. Planning for the future begins today. By working together, we can improve transportation in Ontario with ITS.

A handwritten signature in black ink, reading "H. Takhar". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Honourable Harinder Takhar
Minister of Transportation

ITS STRATEGY

THE ITS VISION

ITS is technology moving us forward intelligently to create strong prosperous communities. Ontario will expand on the successful ITS programs in Ontario and elsewhere with the use of new technologies, approaches and synergy.

Intelligent Transportation Systems (ITS) can help deliver an integrated transportation network that supports the economic well-being and quality of life that Ontarians deserve.

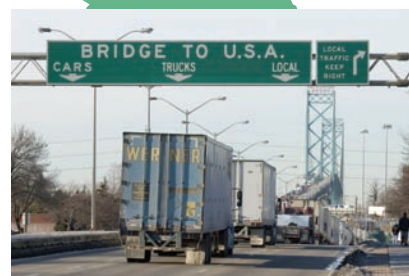
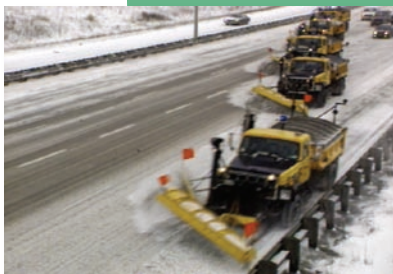
To do this we must refine our model of how transportation systems work and organizations interact. Transportation solutions, such as Ontario's COMPASS traffic management system, provide tremendous benefits such as reduced travel times, increased use of capacity, and improved road safety. But we can do better!

We can operate all roads as a single transportation network. We can make transit an integral part of moving commuters in major urban centres to support urban growth management. We can integrate transit, maintenance operations, and emergency services in with our general traffic management processes. We can work better with our partners, taking advantage of the shared skill sets and synergy that teams offer us.

By overcoming the organizational constraints to integrated operations, we can take advantage of new technology.

Moving Forward with Intelligence: Ontario's Intelligent Transportation Systems Strategy focuses on four key areas:

- Reducing urban congestion and commuting times – supporting transit and improved transportation management to address the impact of growth in the GTA and urban Ontario;
- Making border crossings more effective – supporting continued growth in the movement of people and goods and minimizing the impact on local communities;
- Improving vehicle and passenger safety – taking advantage of new in-car technologies and ensuring they contribute to safe travel; and
- Delivering ITS services effectively – ensuring that the best blend of investments are made to position Ontario to maximize ITS benefits.



Intelligent transportation systems could revolutionize transportation services. Picture these scenes:

- You jump on the local transit bus, use your fare card so you don't fumble for change, and travel to the heart of the city for work without having to worry about transfers.
- You drive a commercial vehicle to the United States without delays at the border because you've been pre-cleared, verified and issued a time-slot to pass through customs.
- You approach a curve in the highway, and your car is alerted to ice ahead so you can adjust to the road conditions in time.
- You travel to an area you aren't familiar with and need gas and something to eat – so you ask your traveller information service and get directions without ever taking your hands off the wheel or looking at a map.
- On your drive home from work you relax listening to the radio – knowing your car will handle the drive for you and adjust your route as needed to get around any congestion.

Sound too good to be true? It's a lot closer than you might imagine!

The tremendous evolution in computing and telecommunications capabilities is opening up new service models previously unheard of. It is now up to us to decide which ones we want to take advantage of – and to begin preparing for the future.

This ITS strategy will help the ministry of transportation move forward with intelligence. It will identify the opportunities we can use now, and set directions that will allow us to take advantage of opportunities as they arise in the future.



In Leicester, U.K., transit users can retrieve real times for all star trak buses on their cellular phones, by sending a six character bus stop code – found on all star trak routes – to an information number.



Intelligent Multimode Transit System (Toyota) combines the advantages of rail and bus transport. The buses run in automated platoons on dedicated roads, while on ordinary roads, each bus is manually driven.

INTELLIGENT TRANSPORTATION SYSTEMS

What are intelligent transportation systems (ITS) – and how do they differ from simple information technology (IT)?

Simply speaking, ITS uses IT – computers, communications and sensor technologies – to create integrated transportation solutions. However, these are not regular IT desktop solutions. ITS involves real-time operations 24 hours a day.

Typically an ITS solution involves three major functions:

Monitoring

A wide variety of sensors – from loops of wire embedded in roadways to video cameras to weather stations – are used to monitor conditions and detect anomalies. These could include increased congestion or a collision, or they could include changes in weather and road conditions. This information is merged with other information and analyzed.

Automated Analysis

The compiling of this diverse information allows us to analyze it in real-time (or as it occurs) for patterns. For example, to automatically detect

a problem on a highway based on slowing or stopped traffic behind it; or to predict when a roadway is going to freeze based on weather forecasts and road temperature sensors. The analysis alerts us to action that can be taken to prevent expected conditions – such as presalting a roadway before it freezes – or to respond to a collision.

Action

Based on the analysis, ITS allows us to make many changes that affect real transportation services, for example:

- Changing of traffic signal timing;
- Posting a message to overhead changeable message signs;
- Modifying transit schedules and rerouting buses;
- Dispatching emergency services;
- Providing information to the media and public electronically; or
- Plowing and salting a roadway.



Advanced Road Weather Information System (ARWIS) monitor and detect weather and road conditions.



ITS can blend information on current conditions and historical trends to help decide what action to take.



Based on information and analysis of traffic data, COMPASS signs alert drivers to problem ahead allowing them to decide on alternative routes.

Ontario has a long and successful history in the development and use of ITS – in fact there are far too many examples to include in this report. The following highlight Ontario’s success – and demonstrate our role in developing this exciting field.

Improving public transit

Improved public transit is critical to quality of life and economic viability in Ontario’s urban centres. The ministry has long recognized and supported this – and ITS offers substantial opportunities to improve cross-jurisdictional services. Working with transit properties, Ontario has piloted the use of smart-cards for transit payments with the successful “ComboCard” payment system – which could be used for both transit fares and commuter parking in Burlington – and more recently with GO Transit’s fare card in York Region.

These effective payment systems make travelling easier by eliminating the need to find exact change for fares and gives cardholders the best available rate.



The ComboCard makes payment for transit use – especially cross-jurisdictional travel – easier and faster for both riders and local transit systems.

Improving traffic flow

The first North American computer-controlled traffic signal system was installed in Toronto in 1963. This has grown to one of the largest centrally controlled traffic management systems in the world with more than 1,900 traffic signals in operation.

The Ministry of Transportation's COMPASS system, and the City of Toronto's RESCU system, monitor traffic conditions on Toronto area highways – some of which have in excess of 400,000 vehicles travelling on them daily. COMPASS continues to deliver leading edge solutions and industry firsts. By detecting and managing problems, and by providing real time traffic information, ITS helps keep people moving in Ontario’s urban centres.

Highway 407, running across the north end of the Greater Toronto Area, received international recognition when it opened in 1997 as the first ever all electronic toll highway. It allows travellers to cross the region without stopping at toll plazas, expediting the flow of traffic.

The future of ITS brings not only expansion of existing applications, but also new possibilities for transportation solutions.



Electronic tolling system automatically bills users or charges their account without the need to slow down or handle change.

Improving road safety

Safety is one of the driving forces behind the development of ITS.

COMPASS continuously monitors traffic to detect and clear problems quickly. It automatically provides congestion and incident information to drivers and improves traffic flow. The Advanced Road Weather Information System (ARWIS) provides timely and accurate information about local pavement and weather conditions to alleviate the effects of inclement weather. These systems save lives while minimizing delays. At Ontario-U.S. border crossings, ITS helps reduce the potential hazard of unexpected line-ups. Queue-End Warning systems on roads leading to the Queenston-Lewiston Bridge and the Peace Bridge, automatically detect the location of the queue-end and advise motorists of conditions ahead to help avoid collisions at the end of truck queues.

Enhancing road maintenance

Maintenance fleet management systems used by the Ministry of Transportation, help maximize the effectiveness of winter maintenance activities. When combined with road weather information these systems help minimize the environmental

effects of winter maintenance by targeting salt usage in the most critical areas and allowing deployment at optimum times.

Another example of innovative methods to use road weather information to maximize safety is Fixed Automated Spray Technology (FAST), a bridge anti-icing spray that applies liquid de-icing chemicals to bridge decks before ice forms.

Growing ITS industry

Ontario has more than just exciting systems – we also have a vibrant ITS industry made up of many professionals and service providers. Our industry – including engineering consultants, systems integrators, and manufacturers – exports significant amounts of ITS-related goods and services, such as Public Transport Services, to the U.S., Europe and Asia.

Ontario universities, with the Government of Ontario's support, are also developing expertise in the expanding field of ITS. One of the highlights is the University of Toronto's ITS Centre and Testbed – a world class facility combining real-time data streams from the province and city, with micro-simulation models of traffic conditions in Toronto. It can study a variety of traffic and incident management scenarios.



University of Toronto's ITS Centre and Testbed facilitates computer simulation and analysis of real-time and archived traffic scenarios.

REDUCING URBAN CONGESTION AND COMMUTING TIMES

Making public transit more convenient and increasing ridership

Enhanced public transit is critical to the continued economic well-being and quality of life in our urban centres. ITS offers a number of opportunities to help make transit more attractive, convenient and reliable for people in communities across Ontario.

EVALUATION OF THE SMART CARD ELECTRONIC PAYMENT SYSTEM IN VENTURA, CALIFORNIA, INDICATED POTENTIAL SAVINGS OF \$9.5 MILLION PER YEAR IN REDUCED FARE EVASION, AND \$990,000 IN TRANSFER SLIP ELIMINATION.

~ Advanced Public Transportation Systems Benefit. Federal Transit Administration, March 1996.

A key first step to making public transit more convenient is the launch of an integrated ticketing system using smart card technology. This will make payment for transit use – especially cross-jurisdictional travel – easier and faster for both riders and local transit systems. When combined with location monitoring technologies, it also offers the potential to make route integration easier – again making systems more convenient.



Real time scheduling can ensure multi-modal transit schedules work together to reduce travel times for transit users.

The City of Toronto has made great strides in transit signal priority operations. This work should be expanded towards broader integration of transit operations with traffic management. The integrated model being developed under the following “Expanding and evolving traffic management” section should be expanded to include transit operations as a key driver of traffic management.

The Ministry of Transportation is developing its high occupancy vehicle (HOV) program. Similar programs exist in a number of municipalities. Use of high occupancy lanes by unauthorized, low-occupancy vehicles has been a traditional problem. Moreover, the ministry needs to further investigate the use of managed lanes and broader ramp metering, to keep traffic moving on its highways. ITS opportunities to automate the enforcement of HOV lane use need to be explored.

Expanding and evolving traffic management

Services such as COMPASS and RESCU highway traffic management, and traffic signal control systems need to continue to operate and grow into areas currently not covered. The safety and capacity benefits provided by these systems are critical to maintaining current levels of service in Ontario’s urban centres.



Changeable or Dynamic Message Signs provide information to motorists on conditions beyond the next ramp, interchange or transfer lanes, allowing motorists to make informed travel decisions, such as selecting an alternate route.

VISION

Travel within and across major Ontario urban centres is predictable, convenient and safe through the integrated operation of traffic, transit, maintenance and emergency service management.

"IT IS ESTIMATED THAT OVER 50 PERCENT OF ALL MOTORIST DELAY ON THE FREEWAY SYSTEM IS DUE TO TRAFFIC INCIDENTS SUCH AS ROADWAY DEBRIS, ACCIDENTS, OR STALLED VEHICLES." COMPASS REDUCES THE DURATION AND WARNS DRIVERS OF INCIDENTS IN PROGRESS.

—North Central Texas Council of Governments website. June 2004.

To address the growing demand, however, these systems will need to evolve from independent to integrated operations. In the Greater Toronto Area, COMPASS and RESCU are currently linking control centres to share information. This work should be continued and expanded to develop models for integrated area-wide management of our road network. A major rewrite of the COMPASS software is underway. One of the cornerstones of this work is the focus on multi-centre interconnection. The opportunity exists for the City of Toronto to also adopt the software once complete – which would fully support the seamless integration of the centres. It will also be available to other major urban centres such as Ottawa.

Improving traveller information

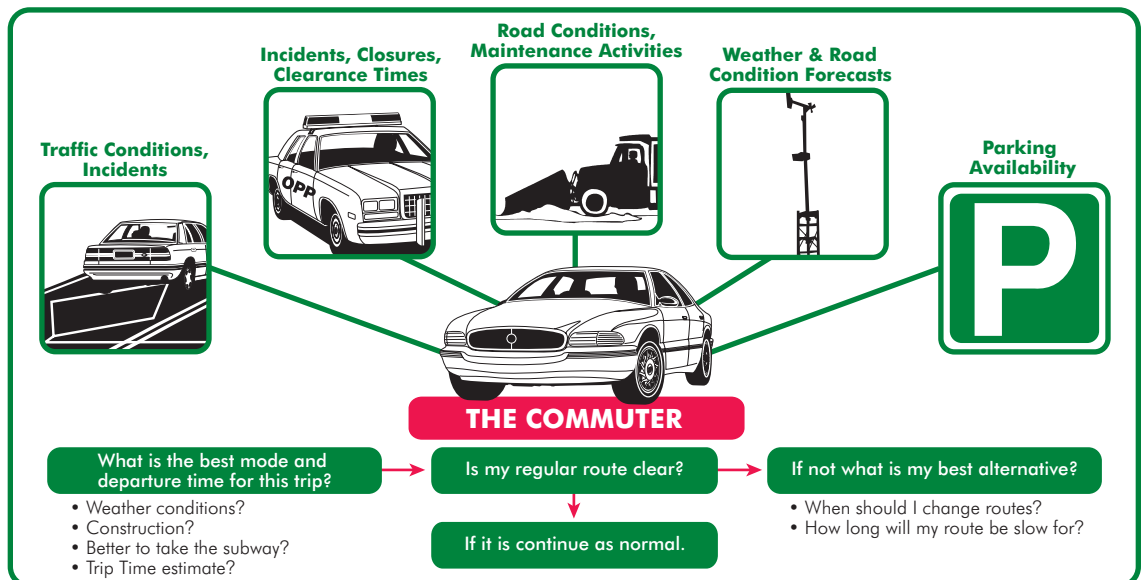
Information is the hub of intelligent transportation systems. It highlights existing conditions on our transportation system that we act on. It highlights historical patterns used for planning the system. And it leads to travel choices for the traveller.

Traveller information brings the traveller into the decision process. We need to evolve our current approach to make it easier for the traveller to get this information and make decisions.

Both the public and private sector can help. This strategy focuses public sector actions on the collection and dissemination of mass information. The private sector role is focused on value-added information targeted at individual users or groups. For example, MTO provides general information through its web site on highway conditions, while the private sector would notify individual subscribers of incidents on their planned route and offer alternative routes.

Further development of the Travellers Road Information Project (TRIP) will provide a single window into the growing variety of traveller information we have – traffic, road, weather and construction. Border and tourism information

An improved and interconnected traveller information system will make it easier for the traveller to get information and make decisions.



MORE THAN 99% OF THOSE SURVEYED SAID THEY BENEFITED BY AVOIDING TRAFFIC PROBLEMS, SAVING TIME, REDUCING FRUSTRATION, AND ARRIVING AT DESTINATIONS ON TIME AFTER USING THE TELEPHONE TRAVELER INFORMATION SERVICE IN CINCINNATI, OHIO.

~ Clemons, et al. ARTIMIS Telephone Travel Information Service: Current Use Patterns and User Satisfaction. Kentucky Transportation Center, University of Kentucky 1999.

can be added to provide broader coverage and improved service. TRIP should also help better link other public sector organizations so they can share information, and with the private sector so it can provide better service to the public. To do this, the ministry can standardize information licensing agreements and system interfaces.

Public and private sector organizations need to work together to find the best way to get information to the traveller. One possibility is to work with ITS Canada to designate 511 as a national traveller information number. Similar to 911 as a link to emergency services, 511 could provide travellers with ready access to specific traveller information.

Reducing the impact of maintenance and construction

The ministry and other road authorities have made great strides in increasing road safety and minimizing the impact of road maintenance and construction activities.

The ministry has worked with municipal, private and federal partners on a network of road and weather condition monitoring stations – known in Ontario as the Advanced Road Weather Information System (ARWIS). ARWIS helps us understand current ground level weather impacts and when combined with atmospheric forecasts, can be studied to develop road condition forecasts to help plan winter road treatments.

ARWIS can be broadened with additional stations and can be taken on the road by using vehicles equipped with sensors for broader geographic coverage.

Ontario will continue to work with its partners on maintenance decision support systems that increase the effectiveness of our maintenance services.

The use of technology to help manage major work zones on our roadways holds great promise to increase traveller service. A priority should be finding ways to avoid conflicting construction and maintenance closures. The ministry can further explore the use of ITS to monitor in real-time, the impact of construction work zones. This could include measuring time delays, as well as the performance of contractors with an eye toward penalties in contractor agreements.

AVERAGE CLEARANCE TIMES FOR INCIDENTS WERE REDUCED 44% WITH IMPLEMENTATION OF MOTORIST ASSISTANCE PATROLS AND A TEMPORARY TRAFFIC MANAGEMENT CENTRE DURING A CONSTRUCTION PROJECT AT THE "BIG I" INTERCHANGE IN ALBUQUERQUE, NEW MEXICO.

~ Dumke, et al. Intelligent Transportation Systems in Work Zones: Leveraging the Internet and Wireless Communications. Paper presented at the 11th ITS America Annual Meeting, Miami Florida, June 2004.

The safety of work zones also relies on drivers obeying signs and speed limits within the zone. When fixed speed reductions are put in place, regardless of actual construction and maintenance activities, research shows drivers often ignore them leading to dangerous differences in speeds among vehicles. ITS applications can be used to monitor conditions and control variable speed limits. The ministry will look at using variable speed limits and automated signs to enforce them.



ITS can combine local road and weather monitoring stations (background) with automated spray systems (foreground) to prevent dangerous road conditions from occurring.

MAKING BORDER CROSSINGS MORE EFFECTIVE

VISION

ITS will help Ontario address Homeland Security concerns to make travel to the United States more predictable and faster, and to minimize the impact on local communities hosting border crossings.

Intelligent Border Crossing

The efficient operation of our international border crossings to the United States is critical to the economy of Ontario – and yet this same economic benefit can in some ways hurt some of our communities. MTO will keep working with Transport Canada on an *Action Plan for the Intelligent Border Crossing*.

BETWEEN 1994 AND 2000, U.S. TRADE WITH CANADA INCREASED FROM \$243 BILLION TO \$406 BILLION, AN AVERAGE ANNUAL GROWTH RATE OF 8.9%.

~ www.wcoag.org/mlk/itscvo.html

An *Intelligent Border Crossing* (IBC) will use ITS solutions to improve border efficiency – solutions that will dovetail with the new emphasis on homeland security in the U.S. and improve the quality of life in local communities. The action plan will be developed with key stakeholders, including the Canadian and U.S. federal, state, and provincial governments, local municipalities and industry. The plan will take advantage of existing systems and links, such as COMPASS and the

Niagara International Transportation Technology Coalition (NITTEC). By linking together diverse opportunities, whether they are from the public sector, or from organizations like the Bridge and Tunnel Operators, we can maximize the value of our investments.

IBC could take advantage of such ITS services as pre-clearance, traveller information, traffic management, emergency response and hazardous goods monitoring. The concepts emerging from the development of the action plan will include the same type of integration as our previously mentioned "Reduce Urban Congestion" section strategies.

A TWO-YEAR STUDY BY THE AMERICAN TRUCKING ASSOCIATIONS FOUNDATION FOUND THAT THE COMMERCIAL VEHICLE ADMINISTRATIVE PROCESSES (CVAP) REDUCED CARRIERS' COSTS BY AN ESTIMATED 9–18% WHEN ELECTRONIC DATA INTERCHANGE (EDI) WAS USED.

~ American Trucking Associations Foundation. Study Explores Benefit/Cost of ITS/CVO User Services. Prepared for the FHWA. Undated.



The pre-clearance system brings up truck information on Custom Agent's screen, allowing for swifter processing.



Queue-end monitoring and advisory systems reduce incidents by warning vehicles of delays ahead.

Continuing short term improvements

Ontario has partnered with municipal and federal governments, and has acted independently to make a number of short term improvements to our international border crossings. These have included such things as:

- Video monitoring systems to monitor Huron Church Road in Windsor;
- Changeable message signs near major crossings to advise travellers of conditions;
- and
- Truck queue-end monitoring and advisory systems on Highway 405 and the Queen Elizabeth Way to warn of dangerous queue conditions.

The ministry has continued with the scheduled addition of queue monitoring on Highway 402 approaching the Blue Water Bridge.

The *Action Plan for the Intelligent Border Crossing* will also bring short and long term improvements to our international border crossings. The ministry will work with its partners to pursue these. One promising area is the Travellers Road Information Project. This system will form the basis for sharing border operations information throughout the Ontario government.

Increasing U.S. homeland security intelligence

In order to implement any border congestion solution effectively it is necessary to first fully understand the implications of the increased U.S. Homeland Security measures. Through active participation in events and organizations, such as NITTEC and U.S. Commercial Vehicle Freight Mobility Forums – that provide the opportunity to gather this information – MTO can effectively understand and meet any challenges. These forums will also provide an opportunity to voice Ontario's interests.



Intelligent Border Crossing (IBC) will help the flow of commercial and passenger vehicles across Canada and U.S. border crossings. These systems will reduce processing times and increase security.

ENHANCING VEHICLE AND PASSENGER SAFETY

VISION

In-vehicle technology will revolutionize the task of driving and the entire experience of travelling by road – from increased travel information to the driver, through self-monitoring of safety systems, to fully automated travel.

Improving commercial vehicle safety

The Ontario Government has worked hard with industry, police and other organizations to improve the safety of the commercial vehicle fleet in Ontario. ITS offers opportunities to continue these improvements, including:

- On-board safety monitoring systems;
- Driver performance and operation monitoring systems; and,
- Incentive based inspection such as pre-clearance at commercial vehicle inspection facilities.

The Ontario government will further investigate opportunities presented by ITS and develop a comprehensive strategy with industry.

Many of these same solutions can also play a role in moving goods through Ontario's urban areas, and across the borders with the U.S.

Developing provincial policies on ITS – driver distraction issues

A major effort by the automotive and electronics industry focuses on safety devices in vehicles. These include technology to improve driver vision, provide backup warnings, communicate with roadside devices, warn of lane drift, and control the information presented to the driver at any given time. Some other devices focus on communications and general information for drivers and passengers, but may also present possible distractions. These include cell-phones, telematics and navigation systems.

A TRANSPORT COMPANY IN ST. NICHOLAS, QUEBEC, CANADA, WAS ABLE TO REDUCE AT FAULT ACCIDENTS BY 33.8% IN THE FIRST YEAR AFTER THE INSTALLATION OF A RADAR-BASED COLLISION WARNING SYSTEM. THE SYSTEM INCLUDED A FORWARD-LOOKING SENSOR AND A SIDE SENSOR TO WARN DRIVERS OF OBSTACLES IN BLIND SPOTS.

~ Freightliner to offer Collision Warning on New Truck Line. Inside ITS. November 1995.

The ministry needs to continue to work with its counterparts at the federal and provincial level, as well as private sector, road safety and academic partners, to develop provincial positions and policies on the use of these devices in vehicles. It should begin with a project to examine issues and consider policy options on driver distraction – and increased in-vehicle technology.

By working with Transport Canada, other provinces and international organizations, MTO will address safety in both new vehicle and aftermarket products.

SERIOUS CRASHES HAPPEN EVERY DAY,
MORE THAN HALF OF THEM IN RURAL AREAS
WHERE THE ABILITY TO RAPIDLY CONTACT
9-1-1 AND THE CAPABILITY OF RESPONDERS
TO QUICKLY REACH THE SCENE CAN MEAN
THE DIFFERENCE BETWEEN LIFE AND DEATH.
NEW TECHNOLOGIES SUCH AS WIRELESS
E9-1-1, AUTOMATIC COLLISION NOTIFICATION
AND EMERGENCY VEHICLE ROUTE NAVIGATION,
ARE AVAILABLE THAT WILL MAKE EMERGENCY
ACCESS MORE RELIABLE AND HELP DELIVER
FASTER AND BETTER EMERGENCY CARE.

~ E.R. Does Top Technology As Lifesaver in Traffic Accidents and Disasters.
ITS America News Release, October 2002.

Linking automated collision notification services with 911 emergency response

Automated in-vehicle information and safety systems, such as GM's OnStar® service, are gaining considerable market appeal. These systems are capable of providing an Automated Collision Notification (ACN) service, where in-vehicle devices sense when the vehicle has been in a collision and automatically link to a call centre providing data on the incident as well as voice communication with the traveller. Currently calls are directed to independent call centres, which then contact the appropriate emergency services to help the distressed traveller. This results in a delay in getting a response to the traveller.

It is possible to automatically detect an emergency call and have it routed directly to the 911 emergency response centre – saving time and possibly reducing the severity of injuries. The Ministry of Transportation can potentially work with ACN service providers, and other government agencies, to pilot this in Ontario.



In 2002 trucks represented 6.98 percent of all vehicles involved in collisions.



A direct link to 911 by automated emergency calls will save critical time for emergency crews to respond.

DELIVERING ITS SERVICE EFFECTIVELY

VISION

Investments in ITS by the provincial government achieve the greatest benefit in meeting provincial needs and achieve optimal use of internal and external skills and resources for the planning and delivery of ITS services.

ITS is a diverse and complex field. While ITS has evolved from a research topic to an operational tool – many aspects still require development including new conceptual models and the appropriate supporting standards. To deliver all ITS systems independently would be a mammoth undertaking for any organization – and the Ministry of Transportation is no exception. The ministry can take advantage of better planning approaches; increased education and outreach to ensure skilled employees and partners are available; put in place policies to address critical issues; and take advantage of the tremendous partnership opportunities available – both internally and externally. The ministry can also work with Ontario industry to help it access international markets – bringing jobs back to Ontario.

ITS deployment planning

With the maturing of the ITS field comes the maturing of our ITS planning processes. The next evolution in the development of detailed strategies for deployment of ITS will include the development of an Ontario Regional ITS Architecture. This will be based on the ITS Architecture for Canada, developed by Transport Canada. The

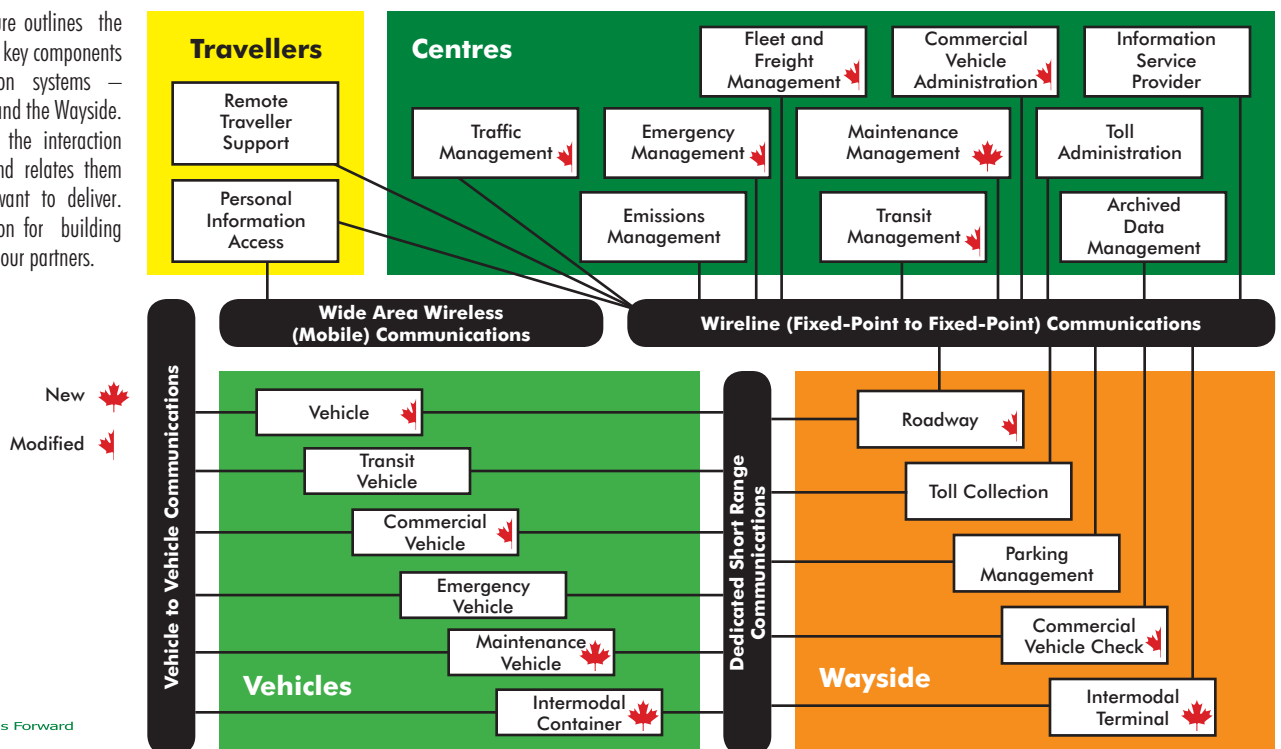
development of the Ontario architecture will provide a consultative opportunity to develop more detailed plans with our partners.

It is also important to move ITS investment planning into the ministry’s Asset Management Framework – to ensure ITS solutions are considered in concert with other ministry investment decisions. The ministry will continue to implement the ITS Deployment Analysis System (IDAS) and use it for ITS investment planning.

Strengthening partnerships

ITS planning, development and delivery in Ontario is a shared responsibility – both across the ministry’s organization, and with partners in municipalities, federal government, industry, consultants and academia. The ministry will take advantage of this broad skill set through joint initiatives with other Canadian jurisdictions and working with international standards committees like the American Association of State Highway Transportation officials (AASHTO) and National Transportation Communication Infrastructure Protocol (NTCIP), to implement ITS solutions and establish standards.

The Canadian ITS Architecture outlines the relationships among the four key components of intelligent transportation systems – Travellers, Centres, Vehicles and the Wayside. This model helps us plan the interaction among the components, and relates them back to the services we want to deliver. It enables better coordination for building and operating systems with our partners.



The current climate of greater cooperation between the federal, provincial and municipal governments creates an opportunity for maximizing funding for ITS initiatives. Joint cost-sharing programs – Strategic Highway Improvement Program (SHIP), the Border Infrastructure Fund (BIF) and ENTERPRISE (a consortium of road authorities of which MTO is a member) – will use Ontario taxpayers' funds to get the greatest possible value for each dollar that MTO invests. The United States has taken great advantage of the 'shared pool fund' concept for research and development activities. Ontario has participated actively in a number of these funds. This same concept should be used in Canada to encourage increased cooperation among Canadian jurisdictions. Through these activities opportunities exist for MTO to play a larger part in border security, infrastructure development and national standard development.

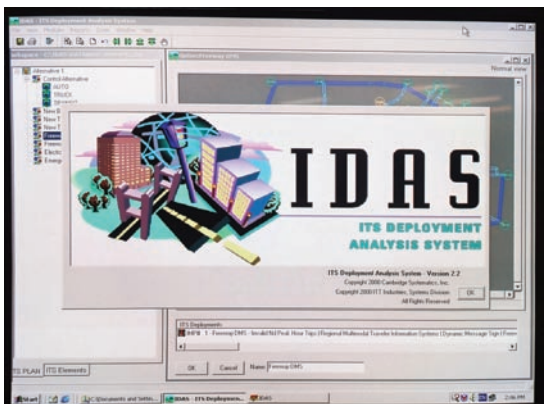
Research and development needs can be met through partnerships with Ontario's universities and colleges, industry and other governments. Forming collaborations on projects can result in innovative technologies and systems, while training a workforce for the current and future needs of the ITS industry. Skill development can be furthered by incorporating ITS at an undergraduate level, and creating complimentary advanced ITS continuing education curriculum in collaboration with Transport Canada and ITS

Canada. The ministry encourages the ITS industry to move towards a Centre of Excellence concept for ITS research, using each organization's limited funding to create a strategic research and development investment plan. The University of Toronto's ITS Centre and Testbed represents an excellent hub for the urban ITS solutions component of such a Centre of Excellence.

Developing ITS policy and standards for Ontario

The new wave of ITS shows us the value that systems integration and information sharing can bring to us. To make this happen, however, requires the appropriate policies and standards be in place.

Internationally, a tremendous effort is underway to develop the necessary supporting technical standards. Ontario has played a role in past – and needs to continue to play a role in future to ensure that the province's needs are included. However, we need to ensure that we play the right role and that our collective investment in this is targeted at the appropriate standards – those that will make the biggest difference to our plans and support our quality of life and economic growth. The ministry will work with its partners to identify these critical standards and develop a program to ensure our needs are included.



ITS Deployment Analysis System (IDAS) helps MTO understand the benefits and costs of specific ITS applications and ensures effective ITS investment planning.



By meeting and continuing to work with partners and stakeholders, MTO will take advantage of our combined knowledge and resources.

Formal technical standards aren't the only guidelines necessary. Issues such as protection of privacy, driver distraction and transponder interoperability all require the development of guiding policy. Ontario will work with our partners to ensure the necessary policy and guidelines are in place to make sure our systems work together.

Outreach and education

The ministry will work with the federal government, academia, other governments, and other organizations to provide general and specific workshops and demonstrations of ITS technologies and standards to Ontario and Canada. Some examples of recent partnerships include the partnership with Transport Canada for a visit by the US Department of Transportation Advanced Public Transit Mobile Showcase – a 40-foot tractor-trailer loaded with public transit related systems and tools. The ministry also worked with the Institute of Transportation Engineers to host a series of ITS standards workshops in Toronto.

Investing in Ontario's ITS industry

The support of the Ministry of Transportation can be of tremendous benefit to Ontario's industry. By standing with Ontario industry as it develops contacts with international markets, the Ontario government helps tell the world that our industry is the best and can be trusted to provide expert advice, products and services. The ministry will continue to participate in select international ITS events, such as ITS World Congress. In addition, the ministry will continue to meet with and host international delegations to Ontario – and provide opportunities for Ontario industry to meet these delegations.

The ministry also has access to international standards development activities, and will take advantage of this access to ensure Ontario industry's needs are reflected.



Award of the ITS World Congress to Ontario in 1999 was an international recognition of Ontario and its ITS industry's history in developing and using ITS solutions.

CONCLUSION

ITS is a growing field that is developing innovative technology with proven benefits worldwide.

Moving Forward with Intelligence: Ontario's Intelligent Transportation Systems Strategy is about investing in innovative solutions to make our transportation infrastructure and border crossings safer and more efficient.

By focussing on key transportation needs, the strategy will help deliver positive results for people in Ontario. Reduced congestion, improved public transit and increased road safety for all will make Ontario a better place to live and work.

The ministry is proceeding with improvements to our border crossings as well as transit system to help increase transit ridership and manage traffic congestion, along with the continued expansion of the COMPASS and ARWIS systems. MTO will also lead the development of an Ontario ITS architecture, to make it easier to work with partners and ensure our systems work together.

We are working with academia and industry to develop innovative solutions, co-operating with jurisdictions to implement them effectively and helping to build a strong, integrated transportation infrastructure for the future.

Contact Information

Intelligent Transportation Systems Program
Ministry of Transportation of Ontario
1201 Wilson Avenue
3rd Floor, Building 'B'
Downsview, ON M3M 1J8

P: 416.235.4676 F: 416.235.5224
E-mail: ITS@mto.gov.on.ca