

CONNECTED AND AUTOMATED VEHICLE TECHNOLOGY STRATEGIC PLAN



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INTRODUCTION

MDOT developed its first *Vehicle Infrastructure Integration (VII) Strategic and Business Plan* in 2008 in an effort to provide the foundation for an integrated connected vehicle system throughout the state. The Plan was last updated in 2011 in alignment with new developments of technology and national Intelligent Transportation Systems (ITS) policies.

The purpose of this document, MDOT's *Connected and Automated Vehicle Technology Strategic Plan*, is to align MDOT's long-term plans with recent advances in technology and policy regarding connected and automated vehicles. This plan has also been updated to clearly reflect the core MDOT mission and departmental strategic goals. Central to this updated plan is the inclusion of rapidly developing technologies in digital cellular communications and vehicle-embedded automated systems. MDOT strategies must account for these important technologies in addition to the traditional Dedicated Short Range Communications (DSRC) and ITS technologies that were the focus of previous planning efforts. Additionally, this plan out-

lines a strategic philosophy that may guide specific programming directions and investment decisions in the foreseeable future.

This document, the MDOT *Connected and Automated Vehicle Strategic Plan* is divided into six strategic areas of focus:

- Leadership
- Safety
- Customer Service
- Partnerships
- System Linkages
- Efficiency

These categories directly relate to six of seven strategic areas of focus in the MDOT departmental strategic plan. The remaining area, *department workforce*, is assumed to be outside of the scope of connected and automated vehicle technology strategic planning. This direct reference to the departmental strategic plan is intended to assure that activities regarding connected and automated vehicle technologies support broader MDOT goals and policies.



MDOT CONNECTED AND AUTOMATED VEHICLE TECHNOLOGY MISSION AND VISION

MDOT's mission and vision for its connected and automated vehicle program provide the foundation for this *Connected and Automated Vehicle Technology Strategic Plan*. This plan elaborates on MDOT's ITS strategy, mission and vision, while supporting the goals of MDOT's overall departmental strategy.

The connected and automated vehicle mission statement expresses the overall, long-range intent of Michigan's connected and automated vehicle program. The mission statement includes:

- The purpose of MDOT's connected and automated vehicle strategy
- The "business" in which MDOT is engaging to accomplish this purpose
- A statement of the values guiding its accomplishment

MDOT's connected and automated vehicle vision is an image of the future. While the connected and automated vehicle strategic plan is the "blueprint" for MDOT's work, the vision is the "artist's rendering" of the achievement of that plan; the resulting environment after MDOT and its partners deploy connected and automated vehicle technologies.

MDOT'S CONNECTED AND AUTOMATED VEHICLE MISSION STATEMENT

MDOT's core departmental mission is to:

Provide the highest quality integrated transportation services for economic benefit and improved quality of life.

The specific needs and issues addressed by ITS are summarized in MDOT's ITS mission statement as follows:

Develop and sustain a program at MDOT to improve integrated transportation system safety and operational performance using existing and innovative Intelligent Transpor-

tation Systems technologies for economic benefit and improved quality of life.

The needs and issues addressed by wireless vehicle communications and advanced sensor-based automated systems are further summarized in MDOT's connected and automated vehicle mission statement:

Support MDOT's core and ITS missions through strategic investment in research and deployment of connected and automated vehicle technologies.

MDOT'S CONNECTED AND AUTOMATED VEHICLE VISION STATEMENT

MDOT's vision for ITS emphasizes partnerships and leadership. In this vision, MDOT is a public leader and supporting partner in the research, development, deployment, operation, and maintenance of ITS. In this ITS vision, MDOT:

- Integrates ITS applications into Michigan's transportation systems in a sustainable way, enabling our customers to experience improved system safety, mobility and reliability
- Is both an effective partner and a leader in ITS research, development, deployment, operation and maintenance
- Continues to lead the nation in the research, development and sustained deployment of connected vehicles
- Fully and seamlessly coordinates the ITS program into its business processes on a statewide basis
- Supports the ITS program through dedicated long-term investment
- Manages the ITS program in a sustainable manner

Given MDOT's vision for ITS, the focus for connected and automated vehicle technology includes the following strategies:

- Michigan is partnering with the automotive

industry, including vehicle manufacturers and suppliers, technology companies and the telecommunications industry, and has enabled efficient research, development, and deployment of connected and automated vehicle technology

- Michigan is partnering with other states to assure coordinated research, development, and deployment across the United States
- Test results provide clear and measurable evidence that connected and automated vehicle technology has the potential to increase transportation safety, mobility, security, and efficiency

- Connected and automated vehicle projects are programmed into the annual budgeting of Michigan's transportation needs
- Connected and automated vehicle technology has become an emerging industry with an entrepreneurial foundation that is central to Michigan's strong new information technology sector
- Connected and automated vehicle technology is becoming acknowledged as the biggest change in passenger and commercial transportation since the inception of the Interstate Highway System

MDOT'S CONNECTED AND AUTOMATED VEHICLE STRATEGIES

The MDOT *Connected & Automated Vehicle Strategic Plan* is divided into six *strategic areas of focus*. These categories reflect the applicable strategic areas of focus highlighted in the departmental *MDOT Strategic Plan*. The six strategic areas are described below, along with detail regarding how they are related to MDOT organizational strategic planning.



STRATEGIC AREA OF FOCUS: LEADERSHIP

MDOT Strategic Goal: *Align the organization to carry out the MDOT mission, achieve the vision, and demonstrate the values.*

Department Strategies	Connected and Automated Vehicle Strategies
Establish clear, measurable, and aligned performance goals and desired outcomes across the organization.	Establish clear, measurable, and aligned performance goals regarding research and deployment of connected and automated vehicle systems technologies.
Regularly evaluate organizational performance and adjust direction as necessary	Continually evaluate connected and automated vehicle research and deployment program performance and adjust direction as necessary.
	Regularly update State ITS architecture to reflect accepted standards, technological changes, and industry needs.

MDOT has demonstrated capability for vision and leadership in the development of connected and automated vehicle technologies. In addition to partnering with the United States Department of Transportation (USDOT) and industry groups to deploy connected vehicle test beds, MDOT spearheaded the *Data Use Analysis and Processing* (DUAP) research program to investigate how connected vehicle data may be utilized by a state department of transportation for asset management, operations, and maintenance.

MDOT is already demonstrating leadership in the nascent field of automated vehicle technology as the lead agency working with the Governor's office and Michigan Legislature to introduce a framework for the testing and eventual deployment of automated vehicles. While there are similar efforts in other states, Michigan is the only state where the effort has been led by the state transporta-

tion agency.

MDOT will continue to demonstrate leadership in connected and automated vehicle technology research and deployment in ways that align with the departmental goal of establishing clear and measurable performance goals and desired outcomes. Measurable performance goals will allow MDOT to justify investments in connected and automated vehicle programs by quantifying the benefits of improved system performance.

Effective leadership involves recognizing when strategic directions are not optimal and adjusting accordingly. MDOT will continually monitor progress towards performance goals and general effectiveness of connected and automated vehicle research and deployment programs. Priority will be given to updates of the ITS architecture and programs and projects that have the greatest chance of resulting in measurable benefits.

STRATEGIC AREA OF FOCUS: SAFETY

MDOT Strategic Goal: *Move Michigan toward zero deaths through the incorporation of safety in all our transportation efforts.*

Department Strategies	Connected and Automated Vehicle Strategies
Foster communication, coordination, and collaboration with our public and private safety partners to achieve the goal.	Engage public and private partners in cooperative strategies to improve transportation system safety through the utilization of connected and automated vehicle systems technologies.
Prioritize MDOT safety investments toward those with the highest probability to move us toward the goal of zero deaths.	Prioritize MDOT connected and automated vehicle research and deployment efforts toward those with the highest probability of reducing fatalities.

Maintaining and improving the safety of the transportation system is one of MDOT's primary tasks. In one decade, from 2001 to 2011, Michigan traffic fatalities per vehicle mile traveled have decreased by a third (33%). This rate coincides with a roughly 30% decrease in crashes per vehicle mile traveled over the same period. Thus, lives are being saved, because crashes are being avoided, not only because people are much more likely to survive a car crash than they were a decade ago.

Lives are being saved, because crashes are being

Connected and automated vehicle technologies, by their very nature, are designed primarily to reduce crashes. Advancements in connected and automated vehicle technologies represent an opportunity to further reduce the vehicle crash rate in Michigan.

various public and private partners to continue to improve the safety of the transportation system. One example of this is MDOT collaboration in the USDOT Connected Vehicle Safety Pilot in Ann Arbor, which will inform national policy on such technologies.

The deployment of connected and automated vehicle technologies may result in measurable savings through intelligent asset management and operations of the transportation system. Such cost-savings would be valuable, but saving lives would be priceless. Thus, MDOT will prioritize research and deployment efforts toward technologies and strategies with the highest probability of reducing fatalities.



SAFETYPILOT

A key MDOT strategy is to foster communication, coordination, and collaboration with

STRATEGIC AREA OF FOCUS: CUSTOMER SERVICE

MDOT Strategic Goal: *Understand our customers' most important needs to achieve a more customer-focused agency that results in better service and lower cost.*

Department Strategies	Connected and Automated Vehicle Strategies
Align our programs and services to be responsive to customer feedback.	Incorporate input from MDOT customers in the planning and implementation of connected and automated vehicle technology research and deployment programs.
Be accountable and transparent to our customers through tracking and reporting on MDOT's key performance metrics.	Develop, track, and report metrics relating to the success and effectiveness of connected and automated vehicle research and deployment programs.

MDOT's primary customers are the residents, businesses, and visitors who use Michigan's transportation system. MDOT, however, is a broad and multi-faceted department with customers situated across the public and private sectors. Responding to the needs of key customers and stakeholders invariably improves the overall performance of the transportation system, multiplying the benefits seen by individual residents, visitors, and other users of the statewide transportation system.

Innovative connected and automated vehicle systems may be used for improved performance data collection and dissemination.

Customer service is best improved through open communications and effective response to customer feedback. Michigan has previously implemented programs for increased government accountability and transparency through a series of online "dashboards." These tools allow stakeholders to investigate government efficacy and efficiency by tracking specific metrics.

Innovative connected and automated vehicle

systems may be used for improved performance data collection and dissemination. MDOT will investigate the use of connected and automated vehicle technologies to further improve department performance reporting to customers and stakeholders.

Key MDOT Customers

- Michigan residents, visitors, and other users of the Statewide multimodal transportation system
- County and municipal transportation and transit agencies.
- Metropolitan Planning Organizations (MPOs)
- Federal agencies, including USDOT and the United States Department of Defense (U.S. DOD)
- Entities researching, developing, and eventually deploying the technologies



STRATEGIC AREA OF FOCUS: PARTNERSHIPS

MDOT Strategic Goal: *Foster and sustain partnerships to optimize operations and achieve customer-centered results.*

Department Strategies	Connected and Automated Vehicle Strategies
Prioritize and strengthen partnerships that create organizational efficiencies and optimize the contribution of transportation investment to Michigan's economy	Enhance public-private partnerships to create knowledge-based business opportunities and expand labor force growth. Prioritize connected and automated vehicle research and deployment programs that contribute to sustainable economic development in Michigan.

MDOT desires to continually improve the quality of the state transportation and mobility system. For a public agency like MDOT, the customers of the transportation system are also valuable partners in maintaining assets and improving services. Perhaps most notably, MDOT regularly coordinates with national efforts in connected vehicle applications led by the USDOT's Research and Innovative Technology Administration (RITA) and National Highway Traffic Safety Administration (NHTSA).

MDOT has been a crucial enabler in the deployment of multiple test-bed environments within

Through joint efforts with multiple public and private partners, MDOT has already participated in research and development of advanced connected and automated vehicle technologies in key research projects. For example, MDOT has been a crucial enabler in the deployment of multiple test-bed environments within Michigan. Such real-world research is critical to push innovative connected and automated vehicle tech-

nology from research to deployment.

An efficient statewide transportation system is crucial to an efficient statewide economy. Furthermore, Michigan is a crucial research and product development center for the transportation industry. MDOT will continue to prioritize connected and automated vehicle technology programs that contribute to the development of a sustainable 21st century economy.

- Key MDOT Partners**
- County and municipal transportation and transit agencies
 - MPOs
 - Federal agencies, including USDOT and US DOD
 - Universities
 - Advocacy organizations
 - Research organizations
 - Automotive, transit, and technology interests
 - Freight and shipping industry interests
 - Any and all users of the state-wide transportation and mobility system



RobotTown is one of MDOT's innovative strategic partnerships

STRATEGIC AREA OF FOCUS: SYSTEM LINKAGES

MDOT Strategic Goal: *Provide cost-effective, integrated and sustainable transportation solutions.*

Department Strategies

Apply asset management principles to prioritize and implement the most cost-effective transportation investment strategies.

Optimize the value of transportation investments by employing solutions that are creative and innovative, support job creation, reduce life-cycle costs, leverage partnerships to increase investments in Michigan's transportation system, improve the quality of life for Michigan's citizens, are sustainable, and reduce energy use, congestion and emissions.

Connected and Automated Vehicle Strategies

Prioritize investments in research and deployment of connected and automated vehicle technologies that:

- Improve asset management and life-cycle costs
- Improve operations and maintenance efficiency
- Provide new mobility solutions to improve quality of life and wellbeing
- Are environmentally and economically sustainable
- Support economic development

The transportation system is the lifeblood of the economy, community, and wellbeing of residents in Michigan and beyond. Investments and deployments of connected and automated vehicle systems may have significant effects on interlinked systems, and these could lead to unintended consequences, both positive and negative. MDOT will routinely assess secondary and tertiary effects of individual programming and investment decisions.

Recent developments in technology and policy have highlighted the need for a broad, systemic perspective to strategic planning.

In 2002, the national Vehicle Infrastructure Integration (VII) program established a vision of a comprehensive nationwide connected vehicle environment based exclusively on 5.9 Gigahertz (GHz) DSRC. While there is still great potential for DSRC, parallel technologies have advanced considerably. Accordingly, USDOT has shifted focus from solely DSRC systems to the ultimate goal of a safer and more efficient transportation system.

There is much uncertainty about the future state of various systems. Effective strategic planning will have to be incremental and

The nationwide transportation system is deeply intertwined with the national economy and society. Technical assessments must be balanced with political and economic considerations. For example, the national socio-political environment may delay or prevent investments and coordination needed for a nationwide DSRC system. An ideal strategic approach would be agnostic to the specific technologies that are utilized, and focus on the potential for deployable solutions. There is much uncertainty about the future. Effective strategic planning will have to be incremental and adaptable.

There is certainly potential to use developing technologies to improve transportation system asset management and operations efficiency, and MDOT will continually assess how connected and automated vehicle programs and investments relate to broader economic and societal systems. Supporting the development of economic centers that produce future mobility products and services will have a real-world positive impact on economic development and quality of life in Michigan.

STRATEGIC AREA OF FOCUS: EFFICIENCY

MDOT Strategic Goal: *Move people and goods through better customer-centered services and performance-driven decision-making.*

Department Strategies	Connected and Automated Vehicle Strategies
Pursue innovations, transformational changes, and organizational efficiencies that lead to investing more in the transportation system.	Pursue innovative connected and automated vehicle technologies that lead to efficient and effective investment in the transportation system.
Manage performance to provide value and better customer-centered results.	Prioritize research and development of connected and automated vehicle technologies that provide measurable improvements in operational efficiency.

Efficiency is a broad and abstract concept. Most simply, an increase in efficiency can be viewed as the reduction of waste. Considerations of efficiency can be applied across MDOT's strategic areas of focus, but it is useful to focus on efficiency itself, because such an approach can be useful in identifying processes or programs that could be improved through the use of new methods or technologies. Whenever money, time, or any resources are being wasted, there is an opportunity to improve efficiency. Marginal improvements of efficiency can add up, resulting in broad and significant systemic benefits. Connected and automated vehicle technologies have strong potential for improving efficiency on multiple facets of the transportation system.

Wherever money, time, or any resources are being wasted, there is an opportunity to improve efficiency.

MDOT will focus on connected and automated vehicle technology research and deployment projects that have the greatest potential for improving system safety and efficiency. Efficient mobility of people and goods implies there is less time wasted in traffic, less stress on physical assets, fewer vehicle crashes, and reduced environmental impact.

Another convenient aspect of using efficiency as a strategic area of focus is that improvements in efficiency can often be directly

The goal of efficiency also applies to investments made in connected and automated vehicle technology; there should be minimal waste.

measured. In most cases, an increase in efficiency will result in a measurable improvement in some performance metric. Whenever practical, MDOT will provide specific performance metrics to show the extent to which strategic investments in the transportation system are improving the user experience. The goal of efficiency also applies to investments made in connected and automated vehicle technology; there should be minimal waste.



MDOT Core Mission:	Connected and Automated Vehicle Technology Mission:
<i>Provide the highest quality integrated transportation services for economic benefit and improved quality of life.</i>	<i>Support MDOT's core mission through strategic investment in research and deployment of connected and automated vehicle technologies.</i>

Strategic Areas of Focus

Leadership	Safety	Customer Service	Partnerships	System Linkages	Efficiency
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MDOT Departmental Strategic Goals

<i>Align the organization to carry out the MDOT mission, achieve the vision, and demonstrate the values.</i>	<i>Move Michigan toward zero traffic fatalities through the incorporation of safety in all our transportation efforts.</i>	<i>Understand our customers' most important needs to achieve a more customer-focused agency that results in better service and lower cost.</i>	<i>Foster and sustain partnerships to optimize operations and achieve customer-centered results.</i>	<i>Provide cost-effective, integrated and sustainable transportation solutions.</i>	<i>Move people and goods through better customer-centered services and performance-driven decision-making.</i>
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Connected and Automated Vehicle Technology Strategies

<p>Establish clear, measurable, and aligned performance goals regarding research and deployment of connected and automated vehicle systems technologies.</p> <p>Continually evaluate connected and automated vehicle research and deployment program performance and adjust direction as necessary.</p> <p>Regularly update State ITS architecture to reflect accepted standards, technological changes, and industry needs.</p>	<p>Engage public and private partners in cooperative strategies to improve transportation system safety through the utilization of connected and automated vehicle systems technologies.</p> <p>Prioritize MDOT connected and automated vehicle research and deployment efforts toward those with the highest probability of reducing fatalities.</p>	<p>Consider and incorporate input from MDOT customers in the planning and implementation of connected and automated vehicle systems technologies research and deployment programs.</p> <p>Develop, track, and report metrics relating to the success and effectiveness of connected and automated vehicle research and deployment programs</p>	<p>Enhance public-private partnerships to create knowledge-based business opportunities and expand labor force growth.</p> <p>Prioritize connected and automated vehicle research and deployment programs that contribute to sustainable economic development in Michigan.</p>	<p>Prioritize investments in research and deployment of connected and automated vehicle technologies that:</p> <ul style="list-style-type: none"> • Improve asset management and life-cycle costs • Improve operations and maintenance efficiency • Provide new mobility solutions to improve quality of life and well being • Are environmentally and economically sustainable • Support economic development 	<p>Pursue innovative connected and automated vehicle technologies that lead to efficient and effective investment in the transportation system.</p> <p>Prioritize research and development of connected and automated vehicle technologies that provide measurable improvements in operational efficiency.</p>
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USING THIS PLAN

This strategic plan is designed to be general enough to guide any MDOT tactical decisions regarding connected and automated vehicle technology. It is left to individual MDOT employees to translate strategy into action. It is anticipated that MDOT staff and management will find this strategic plan a valuable reference in planning and executing tactical-level decisions.

As an example of implementation, this plan could be useful for an MDOT manager deciding how to allocate limited resources between potential projects. The manager could review this plan and determine how well each project supports the strategies within each of the six strategic areas of focus. The correlation between strategic planning and project attributes should guide and support difficult decisions that must be made.

The full context for decisions and actions that support broad strategies is too nuanced and dynamic to be effectively addressed in strategic planning. MDOT management and staff must be capable of setting tactical goals that support strategic planning. Such tactics include resource allocation, investment decisions, and the operational decisions and activities that staff and management engage in on a day-to-day basis. The additional research and decision-support guidance presented in the Appendix will further help this process.

The scope of this plan includes the connected and automated vehicle mission and vision, strategic goals, and broad strategies. As shown in the graphic below, a strategic plan provides guidance for the specific actions employed by individual departments and personnel within the organization. These also will be affected by future events that may alter the broader context within which MDOT operates (e.g., changing funding environment, new research, etc.). MDOT believes that deployment and operation of connected and automated vehicle technologies can significantly support MDOT's departmental core mission and strategic areas of focus. This plan may act as a constant guide



to how such a vision may best be achieved.



APPENDIX A: ADDITIONAL RESEARCH AND DECISION-SUPPORT GUIDANCE

This document, the *Connected and Automated Vehicle Technology Strategic Plan*, is a product of the Center for Automotive Research (CAR) under a State Planning and Research Grant administered by MDOT. The ongoing partnership between CAR and MDOT includes several research projects that provide tactical guidance to support connected and automated vehicle strategic planning. This section briefly summarizes the most relevant projects and available documents.

MDOT ITS INVESTMENT PLAN (FORTHCOMING)

The MDOT ITS Investment Plan recommends specific investment in new ITS products, technologies, programs, projects, hardware, software, and infrastructure. The 2013 ITS Investment Plan emphasizes investments that support connected and automated vehicle strategic planning, as well as more general ITS strategic planning. The plan recommends specific tactical goals based on relevant context, a realistic timeline, and MDOT strategic planning.

CONNECTED VEHICLE INFOSTRUCTURE PLAN (OCTOBER, 2012)

The [MDOT Connected Vehicle Infostructure Plan](#) provides a proposed framework and roadmap for deployment of a communications infrastructure ("infostructure") to support near term priorities and prepare for a future connected vehicle environment. The report details MDOT institutional roles and responsibilities, a description of relevant technology, priority strategies for infostructure deployment, and near-term deployment steps.

INTERNATIONAL SURVEY OF BEST PRACTICES FOR CONNECTED VEHICLE TECHNOLOGY (OCTOBER, 2012)

In the [International Survey of Best Practices for Connected Vehicle Technology](#), CAR investigated current connected vehicle activities throughout the world. The information was then analyzed for common and contrasting themes, drivers of success, and types of technology tested or deployed. CAR also identified funding strategies that have been successfully used to support connected vehicle programs.

USE OF ITS TECHNOLOGY FOR USE OF FREIGHT AND TRANSIT ASSETS (SEPTEMBER, 2012)

The [Use of ITS Technology for Freight and Transit Assets](#) study investigated mode-specific ITS strategies to further MDOT goals of maximizing safety, mobility, environmental performance, and asset management performance. Freight and transit connected and automated vehicle technologies are potentially a central aspect to broader ITS strategies.

CONNECTED VEHICLE TECHNOLOGY DELPHI STUDIES (SEPTEMBER, 2012)

The Connected Vehicle Technology [Local Government Delphi Study](#) and [Industry Delphi Study](#) outline the plans, needs, and expectations of key industry and public agency stakeholders regarding connected vehicle technology. The studies provide contextual analysis in addition to basic survey results.

PUBLIC PERCEPTIONS OF CONNECTED VEHICLE TECHNOLOGY (JULY 2012)

In addition to investigating the general public views of connected vehicle systems, the [Public Perceptions of Connected Vehicle](#)

[Technology](#) report provides an overview of connected vehicle systems, consumer trends regarding connected vehicle technology, and the impact of government regulations. This report outlines key issues that might impact the deployment of connected vehicle programs, using public and consumer perceptions as a framework for analysis.

ETHICS OF GOVERNMENT USE OF DATA
COLLECTED VIA INTELLIGENT
TRANSPORTATION SYSTEMS (JUNE 2012)

The deployment of big data-based systems should always consider the ethical implications of data collection, use, and storage.

Such issues become significant with connected vehicle systems because of the potential of collecting data from vehicles owned and operated by the general public. Every connected vehicle system has unique implications regarding the rights and expectations of privacy, and the proper role of public agencies and corporate partners. The [Ethics of Government Use of Data Collected via Intelligent Transportation Systems](#) report attempts to synthesize broad concepts regarding data collection, and relate lessons learned to implementation at a project level.

APPENDIX B: SUMMARY OF HISTORICAL VERSIONS OF THIS PLAN

This document represents the most recent strategic plan produced by CAR for MDOT, but the ongoing partnership between CAR and MDOT has included multiple iterations of the strategic plan over the last several years. This appendix provides a brief overview of the previous versions, which were produced in 2008 and 2011. Hyperlinks have been provided for documents that were available online when this document was finalized.

LINE OF BUSINESS STRATEGY FOR VEHICLE-INFRASTRUCTURE INTEGRATION (JUNE, 2008)

PART I: STRATEGIC AND BUSINESS PLAN

This document, [Part I: Strategic and Business Plan](#), a section of the Line of Business Strategy for Vehicle Infrastructure Integration (VII) document, was the first strategic plan that CAR produced for MDOT. It provides an executive summary and high-level overview of MDOT's VII strategy in terms of mission, vision, and customer/partner needs and goals.

PART II: SPECIFIC GOALS AND ACTIVITIES

In [Part II: Specific Goals and Activities](#), a section of the Line of Business Strategy for Vehicle Infrastructure Integration document, CAR researchers expand on Part I of the MDOT's VII strategic and business plan by providing details on customer needs, goals, and specific activities for addressing these needs and accomplishing the goals. Furthermore, Part II of the strategy shows how the work activities align with and the strategic outcomes/goals that clearly support customer and partnership needs for Vehicle Infrastructure Integration. These goals and activities are derived from MDOT's VII mission, vision, and goals that are described in greater detail in Part I of the VII Strategic Plan document.

PART III: PROGRESS ON SPECIFIC GOALS AND ACTIVITIES

Part III of the Line of Business Strategy for Vehicle Infrastructure Integration expands upon Part II of the MDOT's VII strategic and business plan by focusing on the progress made toward reaching specific strategic goals of the plan. These goals and activities were derived from MDOT's VII mission, vision, and goals that are described in greater detail in Part I of the VII Strategic Plan document.

PART IV: HISTORY AND BACKGROUND

Part IV of the Line of Business Strategy for Vehicle Infrastructure Integration provides the background and history for the preparation of MDOT's VII strategic and business plan. This document discusses the U.S. Department of Transportation's VII Initiative and lays out the various aspects of VII in Michigan, including testbeds, the auto industry, infostructure, and infrastructure.

PART IV: HISTORY AND BACKGROUND APPENDICES

Part IV of the Line of Business Strategy for Vehicle Infrastructure Integration provides additional background context for MDOT's VII strategic and business plan. The appendices discuss various wireless technologies, relevant industry consortia, VII use cases, VII-related initiatives, and automotive telematics.

LINE OF BUSINESS STRATEGY FOR CONNECTED VEHICLE TECHNOLOGY (AUGUST, 2011)

PART I: STRATEGIC AND BUSINESS PLAN

Part I of the Line of Business Strategy for Connected Vehicle Technology provides an executive summary and high-level overview of MDOT's connected vehicle strategy in terms of mission, vision, and custom-

er/partner needs and goals.

PART II: SPECIFIC GOALS AND ACTIVITIES

Part II of the Line of Business Strategy for Connected Vehicle Technology expands on Part I by identifying strategic goals and activities and outlining strategies for partnerships, infostructure, test beds, safety, traffic management, asset management, outreach, justification, and investment. The document also lists measures of success that can be used in evaluating whether or not strategic goals are being met.

MDOT'S STRATEGIC AND BUSINESS PLAN FOR CONNECTED VEHICLE TECHNOLOGY

This four-page document outlines MDOT's mission, vision, and strategic goals as they relate to connected vehicle technology. The document also presents a matrix listing customers and partners, their needs, and activities and strategic goals related to those needs. A list of MDOT's connected vehicle initiatives with brief descriptions of these initiatives is also included.

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