Montana 2016 Annual Transportation Safety Meeting: Engineering and Safety

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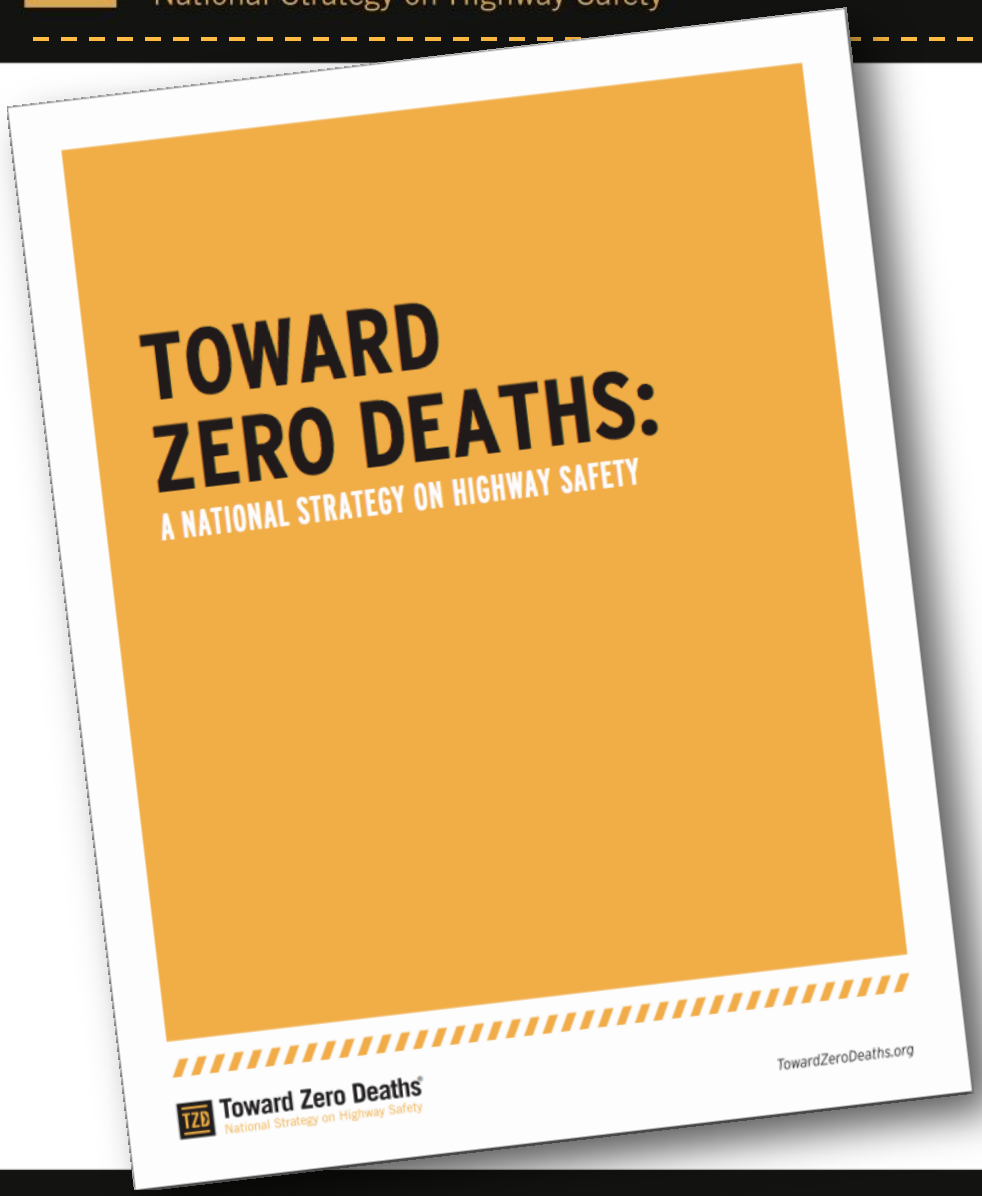
Cambridge Systematics
October 13, 2016

Toward Zero Deaths
National Strategy on Highway Safety

CAMBRIDGE SYSTEMATICS
Think Forward



Vision: A highway system free of fatalities, changing the nation's culture to the point where even one traffic-related death is unacceptable

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TZD Emphasis Areas

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TZD Emphasis Areas

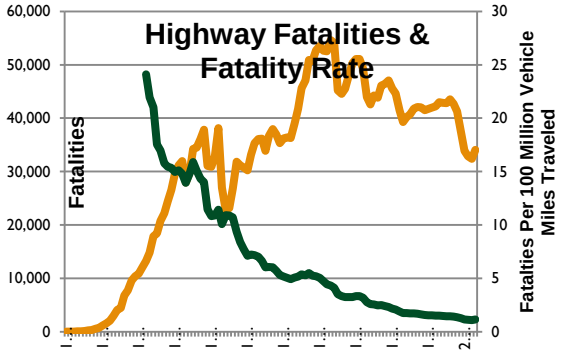
Drivers and Passengers

Vulnerable Users

Vehicles

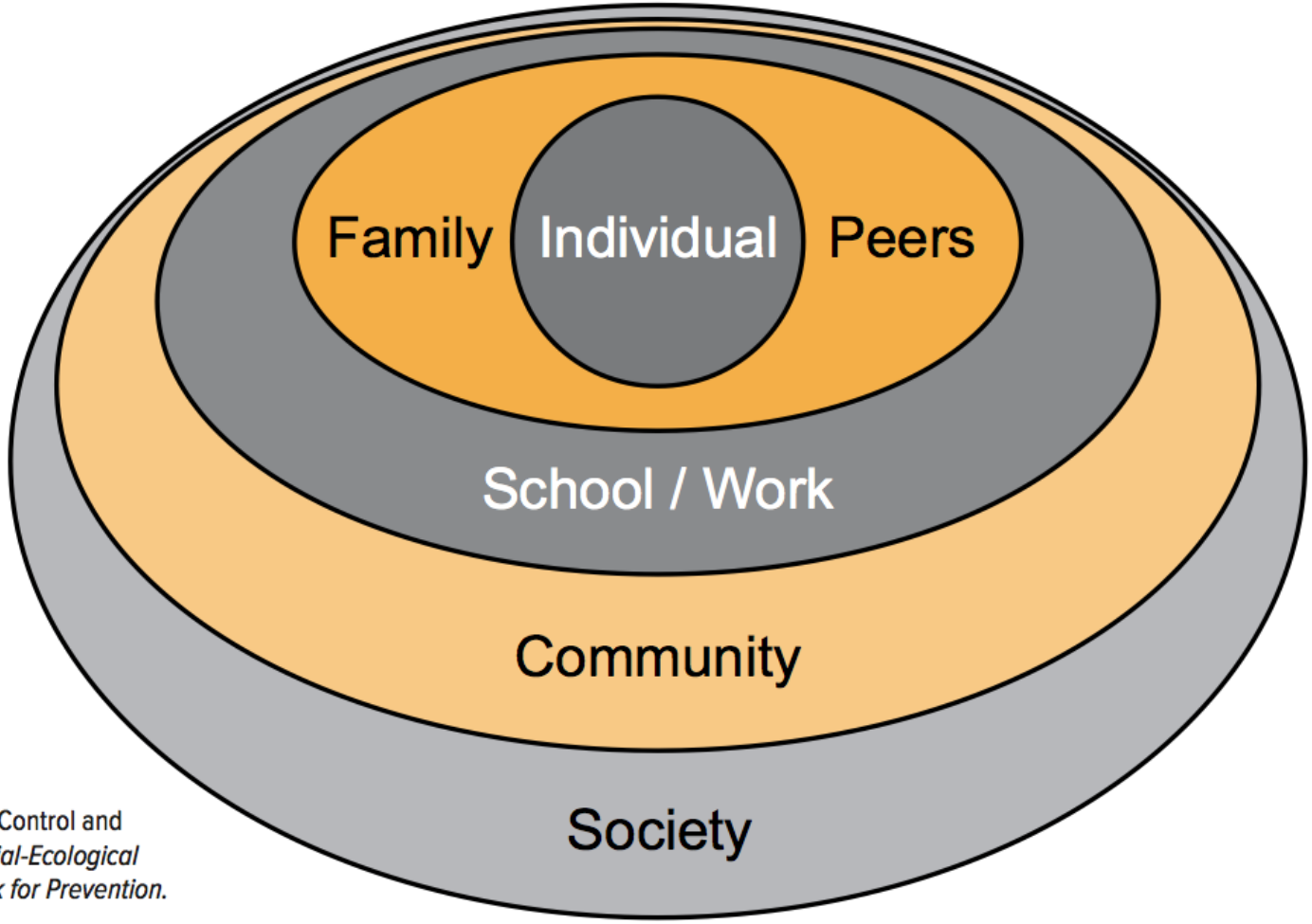
Infrastructure

Emergency Medical Services



Safety Management

Safety Culture



Centers for Disease Control and Prevention. *The Social-Ecological Model: A Framework for Prevention.*

Implementation

Toward Zero Deaths
National Strategy on Highway Safety

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Implementation

- Use *Toward Zero Deaths* as a resource
  - *National network of like-minded colleagues*
  - *Engage and build on collective knowledge*

Implementation

- You already have a head start
  - *You have a zero-based goal*
  - *You have collaborative partners*
  - *You are taking actions listed in the National Strategy*

Safer Infrastructure

Toward Zero Deaths
National Strategy on Highway Safety

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Safer Infrastructure

Safer Infrastructure

Toward Zero Deaths
National Strategy on Highway Safety

SECTION 3.4: KEY AREAS

Safer Infrastructure

Any changes to the roadway environment must consider the other two elements—vehicles and road users—and how they will interact with the roadway once it has been changed. One challenge, however, is the size of the public roadway network—four million miles, maintained by numerous highway agencies at all levels of government—and implementing effective countermeasures in the most appropriate locations. Therefore, in addition to countermeasures in the roadway environment, strategies include methodologies that support their widespread use. Many of the general challenges of implementing vehicle strategies are also issues with infrastructure-based countermeasures, particularly the issues related to understanding how the countermeasures will perform. It is necessary to understand how a particular feature or countermeasure works, the reliability of its performance, the range in road characteristics that factor into which strategies will be effective in a given location, and as mentioned above, identifying the extent of the existing system with those characteristics.

Infrastructure improvements discussed in this section include the following:

- Upgrade infrastructure to mitigate crashes and reduce injury severity.
- Adopt advanced cross-cutting technologies. Improve design practices to maximize safety benefits.
- Ensure agency policies and procedures incorporate safety considerations throughout the highway project development process.

TowardZeroDeaths.org 38 Back to TOC

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Safer Infrastructure

- Upgrade infrastructure to mitigate crashes and reduce injury severity.
- Adopt advanced cross-cutting technologies.
- Improve design practices to maximize safety benefits.
- Ensure agency policies and procedures incorporate safety considerations throughout the highway project development process.

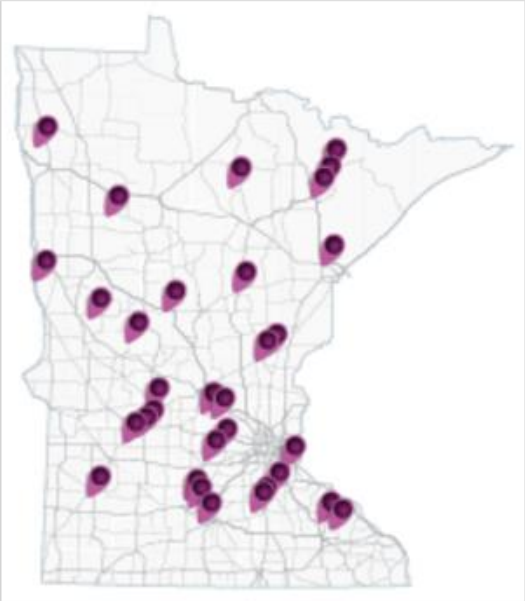
Safer Infrastructure: Short term

- Lane Departures
  - Install retroreflective signing and pavement markings to reduce the risk of lane departures
  - Install shoulder and centerline rumble strips and stripes to reduce the risk of lane departure fatalities
- Intersections
  - Improve signing, markings, and lighting to increase driver awareness of intersections
  - Improve signal timing by adding protective left-turn phases, improving clearance intervals, and coordinating signals

Safer Infrastructure: next steps

- Intersections
  - Redesign intersections to reduce conflicts and to reduce exposure to crashes, including constructing restricted crossing U-turn intersections, roundabouts or removing skews
  - Install technologies that warn drivers of potential conflicts and/or assist them in choosing appropriate gaps in traffic at intersections
  - Implement innovative intersection and interchange designs to reduce the risk of fatalities

Safer Infrastructure: next steps



Rural Intersection Warning System locations

Safer Vulnerable Users

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Safer Vulnerable Users

- Pedestrians
- Bicyclists (or pedalcyclists, including all wheeled and pedal-powered vehicles)
- Motorcyclists
- Individuals whose work takes place on the roadway
  - Construction and maintenance workers
  - Emergency medical and incident responders
  - Law enforcement personnel

Safer Vulnerable Users

- Pedestrians
  - Implement infrastructure/roadway improvements to support speed management to reduce risk of pedestrian fatalities
- Bicyclists
  - Develop and use new design guidelines to reduce risk of bicyclist fatalities

Safer Vulnerable Users

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Safer Vulnerable Users

24 NATIONAL AWARDS

300 ACTIVE WALKING SCHOOL BUS GROUPS

MILES WALKED **123,000**

and more than 200,000 since we started counting in 2014

5,700 students from nearly 200 schools participated in WALK MORE IN FOUR

20,500 STUDENTS TAUGHT SAFETY IN WALK 'N ROLL ASSEMBLY

165,000 CAR TRIPS REDUCED

and more than 250,000 since we introduced the app in 2014

12 million CALORIES BURNED

6 TOP WALKING AND BIKING SCHOOLS

40 million grams of CO2 emissions eliminated

10% INCREASE IN SCHOOLS WITH SAFE ROUTING MAPS

in first 4 months since new software was released

SNAP Student Neighborhood Access Program

UDOT

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Improved Safety Management

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Improved Safety Management

- Safety Partnerships and Planning
- Data, Data Systems, and Analysis Tools
- Develop a Skilled Highway Safety Workforce

Improved Safety Management

- Data, Data Systems, and Analysis Tools
  - Develop data analysis methods and tools for use at the state, regional, and local levels across different stakeholders, including cost-benefit analysis for behavioral programs
  - Implement analysis tools that support data-driven decision making, including the Highway Safety Manual, the Interactive Highway Safety Design Model, road safety assessment programs, and mapping tools

Improved Safety Management

CMF
CRASH MODIFICATION FACTORS CLEARINGHOUSE

IHSDM

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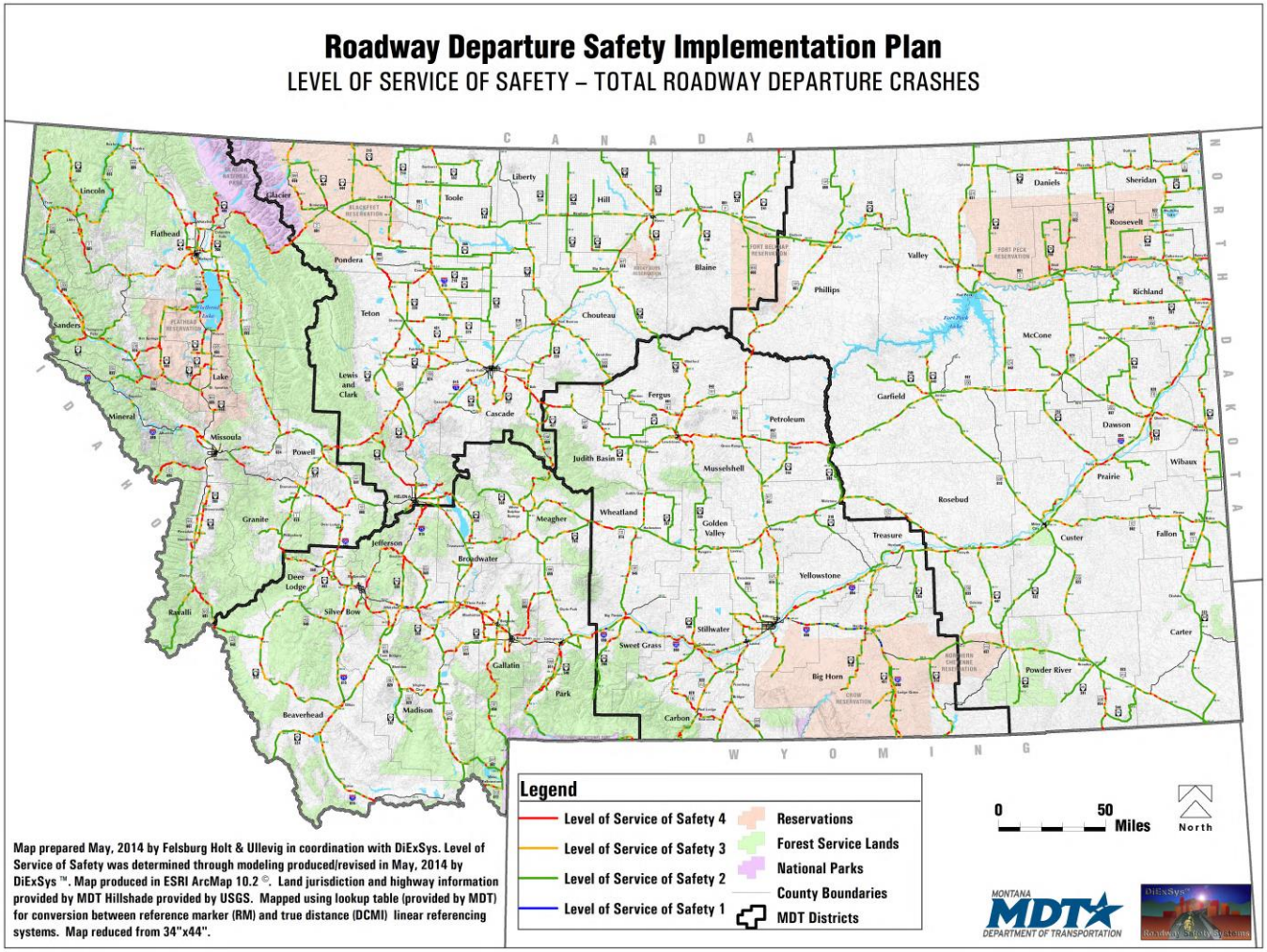
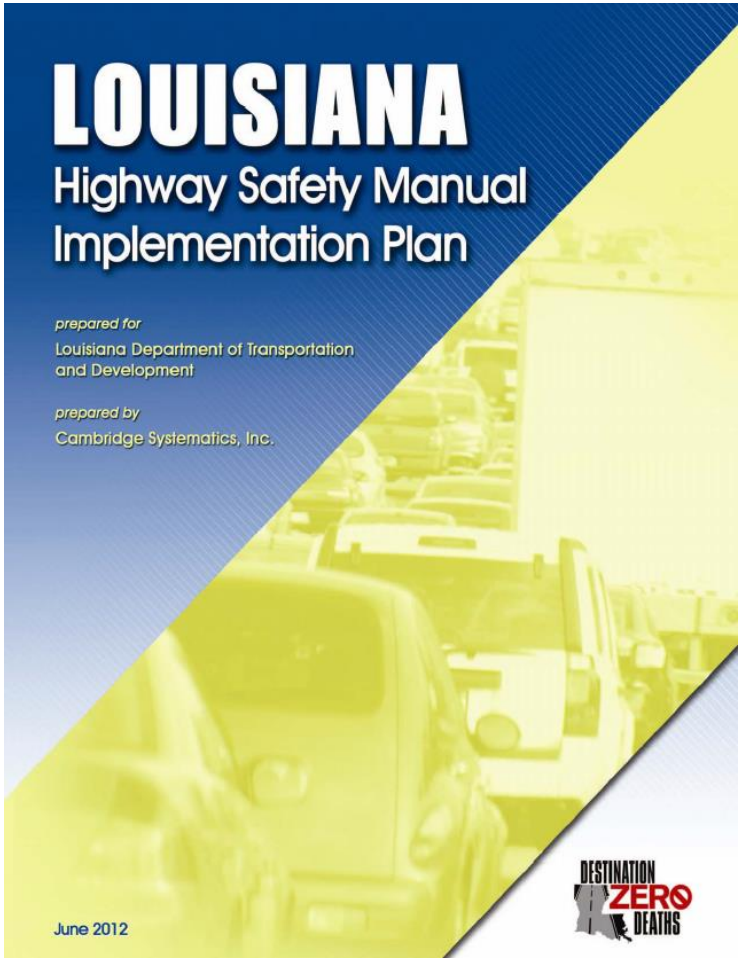
Improved Safety Management



Improved Safety Management



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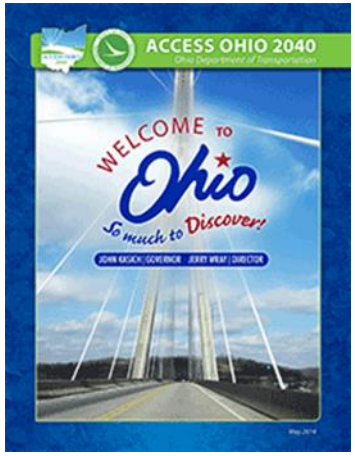
Improved Safety Management

- Long range transportation planning
  - Ohio DOT used HSM tools to determine future safety impacts
- Near-term transportation planning
  - Virginia DOT uses HSM to establish a project prioritization and scoring process



SMART SCALE
Funding the Right Transportation Projects in Virginia

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Improved Safety Management

- Develop a Skilled Highway Safety Workforce
  - Plan for succession of staff with highway safety knowledge
  - Develop and promote core competencies for specific positions within organizations

Improved Safety Management

Workforce Development Education and Training Matrix

Highway Safety Management Process	Projects Delivery Functions	Information Needs/Activity	Data	Planning	Programming	Design	Traffic Operations	Transportation Systems Safety	Construction	Maintenance	Performance Management	Local Programs	Research	Communications	Leadership/Executive	Available Training & Resources
Leverage & Manage Data	Data Acquisition	Data Needs														FHWA is developing a safety data and analysis training Traffic Records 101
		Data Collection														Traffic Records 101 (NHTSA)
		Data Integration to perform safety analysis														Traffic Records 101 (NHTSA)
Incorporate federal program rules	Federal rules	Federal Planning and Safety Performance Requirements														Federal Aid 101 (would need to be adapted to safety and planning); FHWA final rule webinars
Develop Short, Medium & Long-term Vision, & Performance Goals/Objectives	Strategic Highway Safety Planning	Goal, Measurable Objectives/Performance Targets, Emphasis Areas														SHSP Evaluation, State Specific Presentations on the SHSP
		Implementation Plan														SHSP Implementation
		Eligibilty/screening policy criteria														HSIP Webinars

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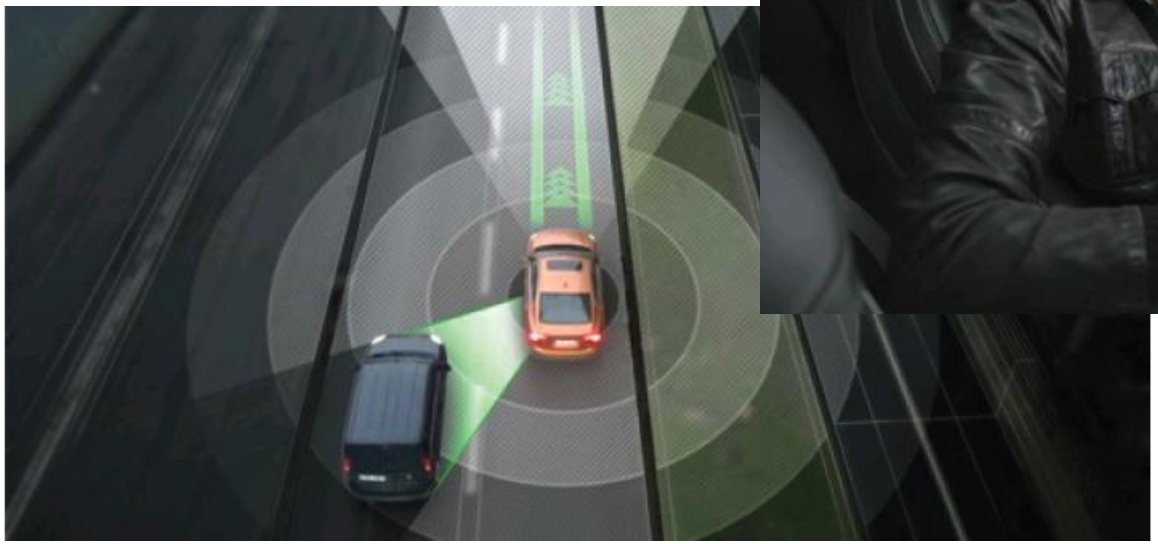
What's next?

Infrastructure: the next generation

"Our vision is that by 2020 no one should be killed or seriously injured in a new Volvo car."

Håkan Samuelsson, President and CEO, Volvo Cars

Infrastructure: the next generation



Source: Volvo

Infrastructure: the next generation

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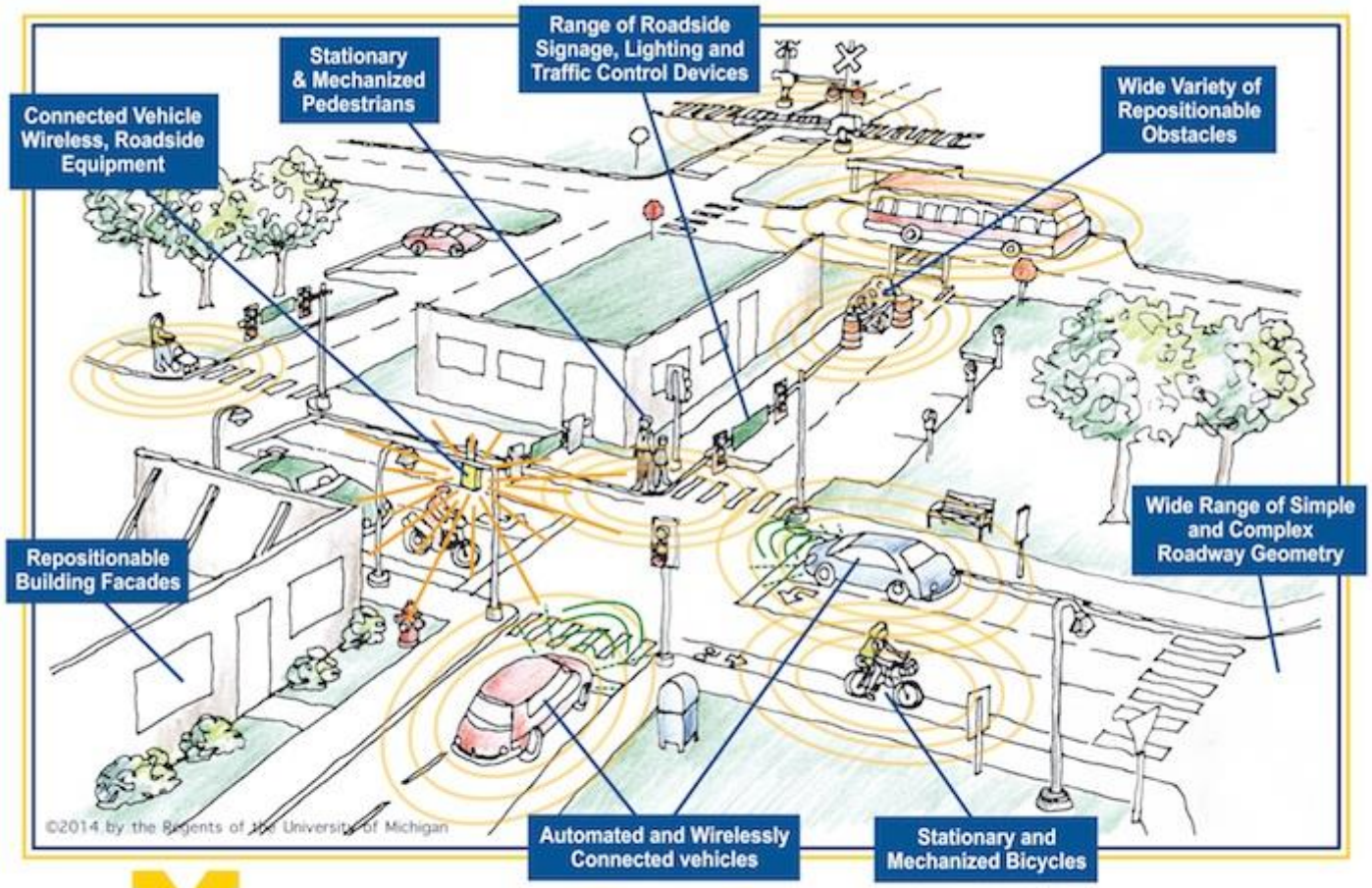
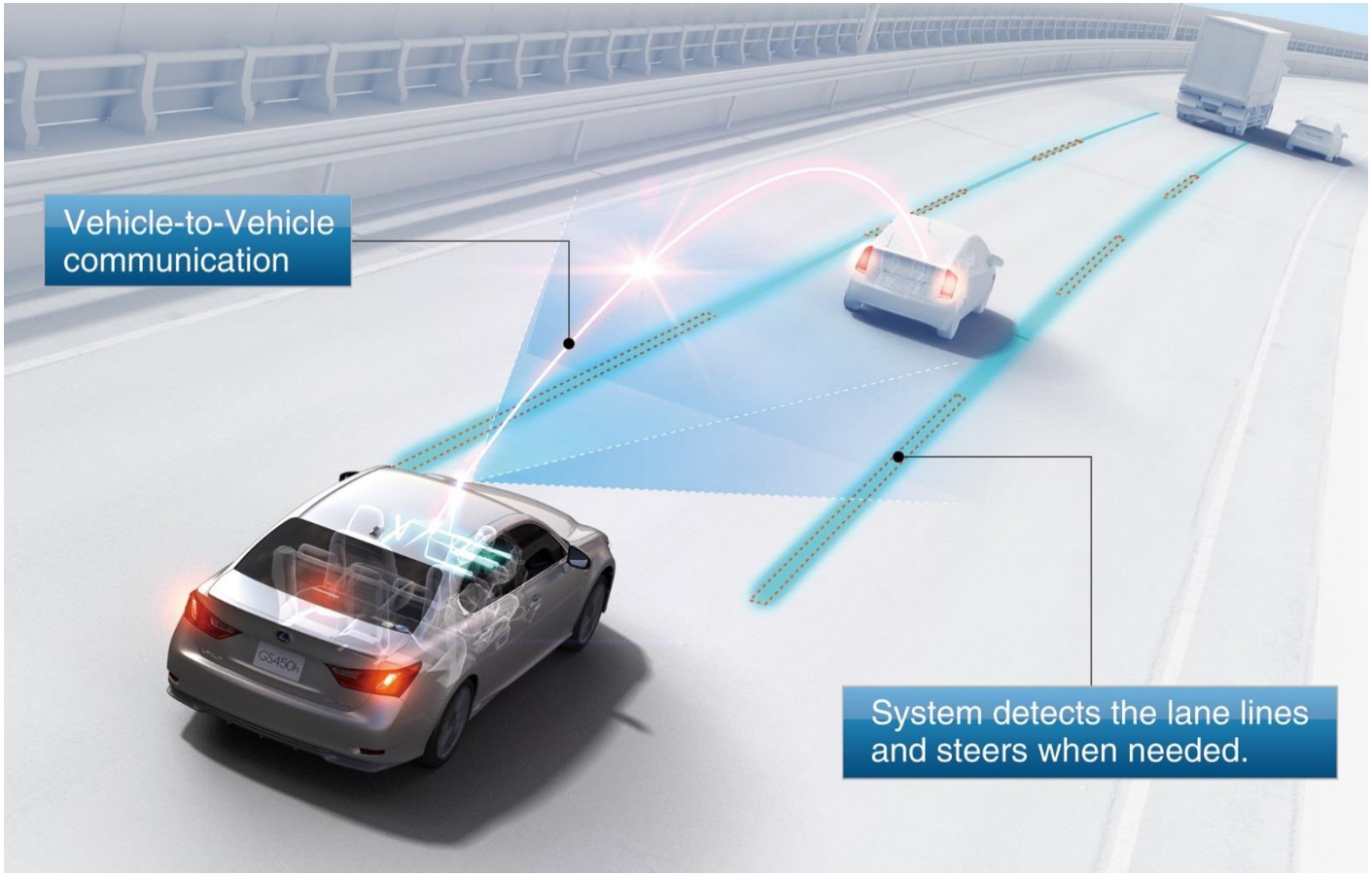
Infrastructure: the next generation



MOBILITY TRANSFORMATION CENTER
UNIVERSITY OF MICHIGAN

Mcity

Infrastructure: the next generation



Source: Toyota

Infrastructure: the next generation

EuroRAP
EUROPEAN ROAD ASSESSMENT PROGRAMME

ROADS THAT CARS CAN READ

A Quality Standard for Road Markings and Traffic Signs on Major Rural Roads

Infrastructure: the next generation

Hosted by: National Center for Rural Road Safety

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Next Steps

Toward Zero Deaths
National Strategy on Highway Safety

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- Keep up the great work
  - Investigate
  - Innovate
  - Implement

VISION ZERO
zero deaths
zero serious injuries

TZD®
Toward Zero Deaths

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Think Forward

THE SUM OF ALL OUR EFFORTS IS

ZERO

Toward Zero Deaths®
National Strategy on Highway Safety

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