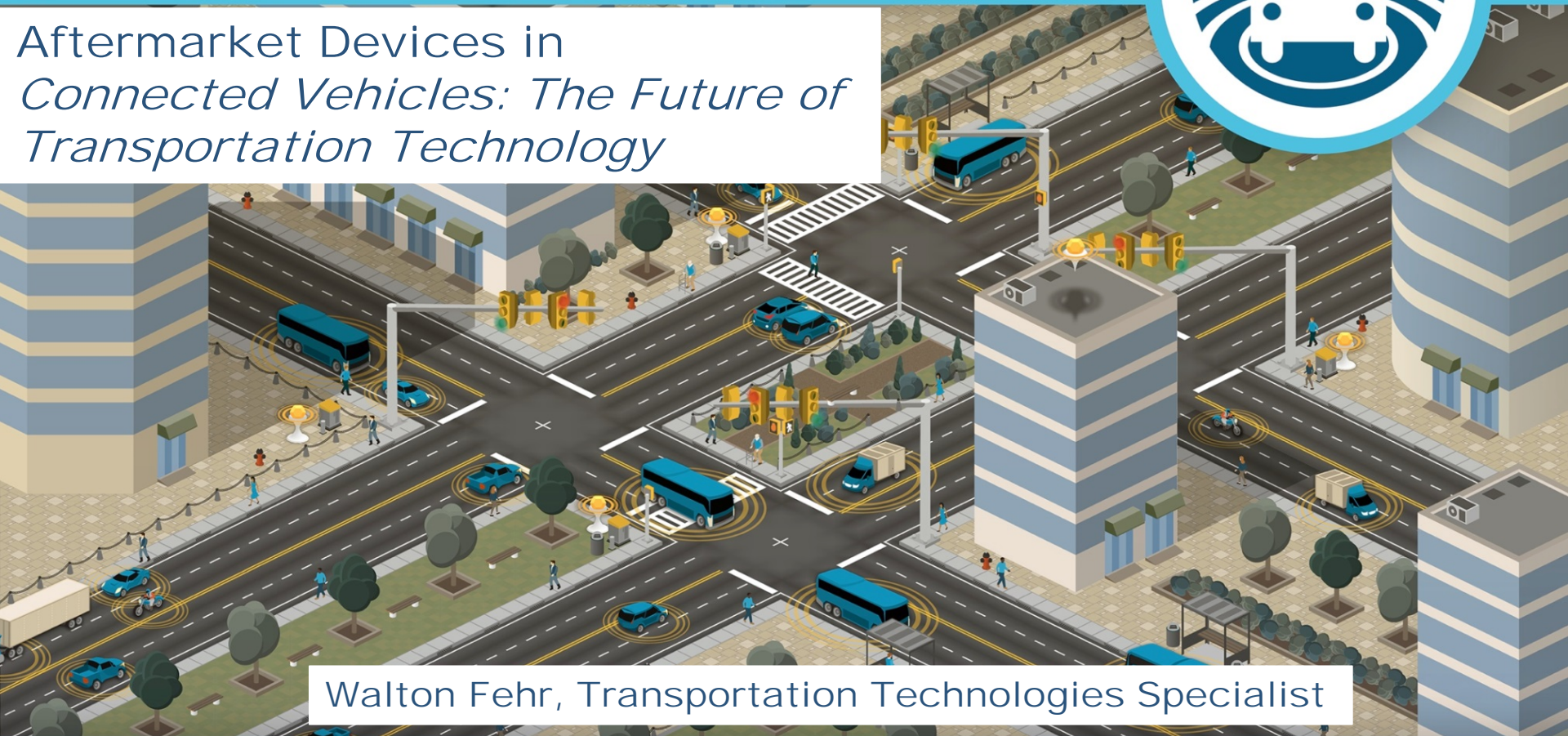




CONNECTED VEHICLE PILOT Deployment Program



Aftermarket Devices in
*Connected Vehicles: The Future of
Transportation Technology*



Walton Fehr, Transportation Technologies Specialist



WELCOME

Presenters –

- Walton Fehr, USDOT ITS Joint Program Office
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- Debra Bezzina, Senior Program Manager, UMTRI
 - dbezzina@umich.edu
- Michael Blicher, Managing Director, MCBNetwrx, LLC
 - mike.blicher@auto-talks.com

Topics –

- The role of Aftermarket Parts
 - Overview of our view of Connected Vehicles
 - Experience with building a large fleet
 - What it takes to build aftermarket devices



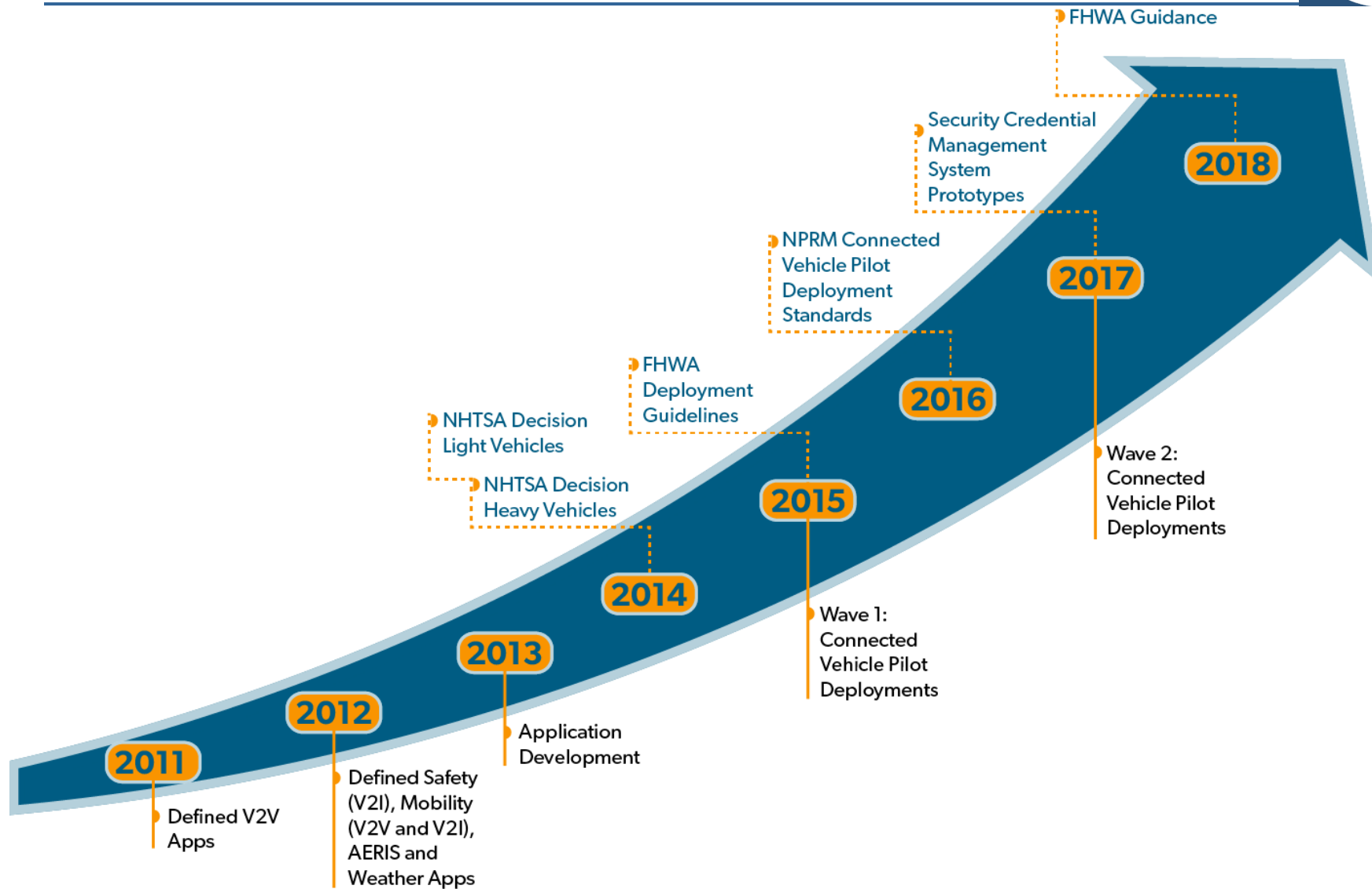


ROLE OF AFTERMARKET PARTS

- Aftermarket parts will be an important part of **accelerating the deployment** of connected vehicles
- Vehicle components are a part of a **larger system**
- All devices need to work well in the **automotive environment**
 - Appropriate for the environment
 - Meet performance requirements
 - Good human interface

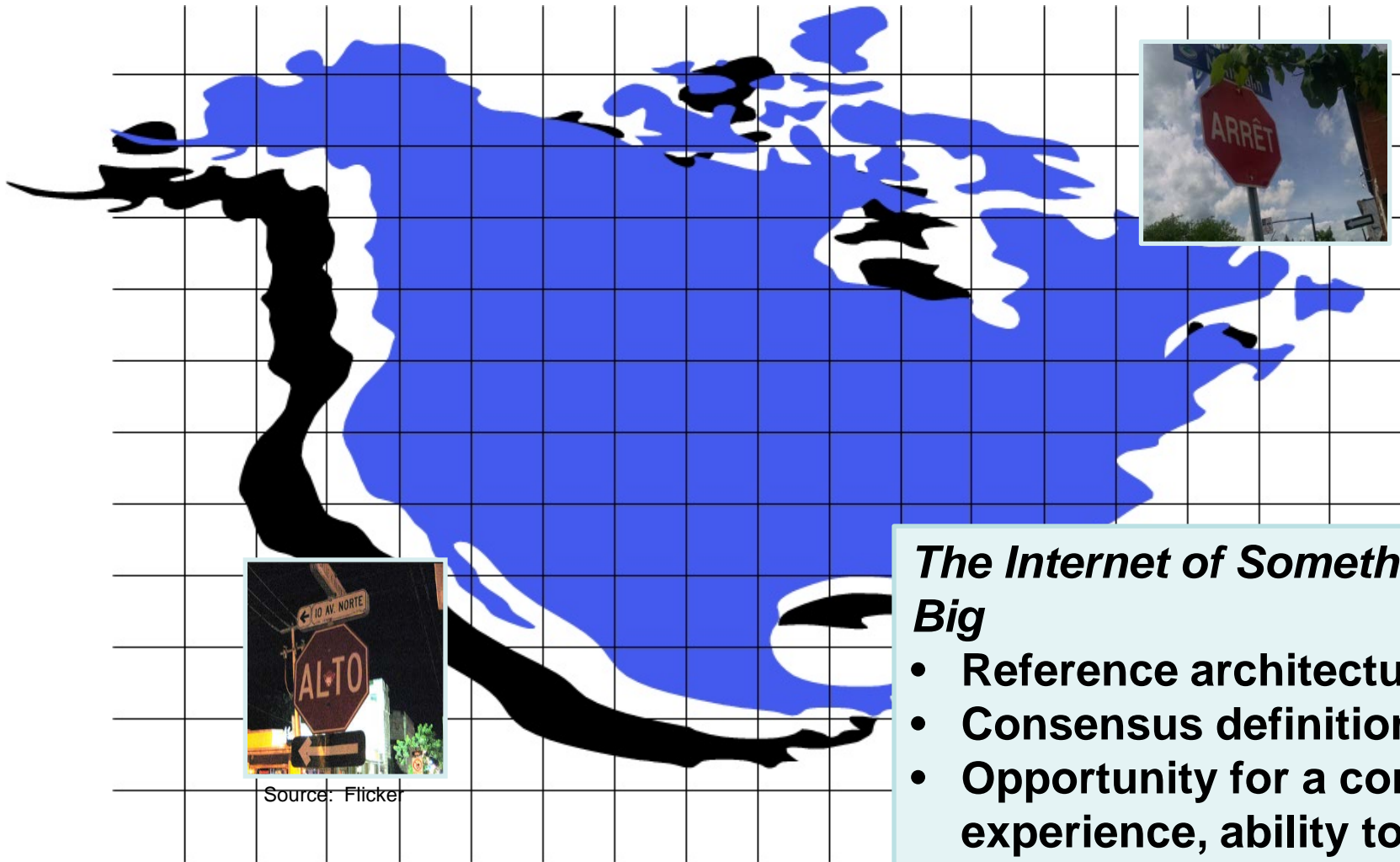


POLICY DECISIONS TIMELINE: CONNECTED VEHICLES





Uniform Implementations



Source: USDOT



Source: Flickr

The Internet of Something Big

- Reference architecture
- Consensus definitions
- Opportunity for a common experience, ability to do more





Examples of Something Big



Westward Expansion of the United States



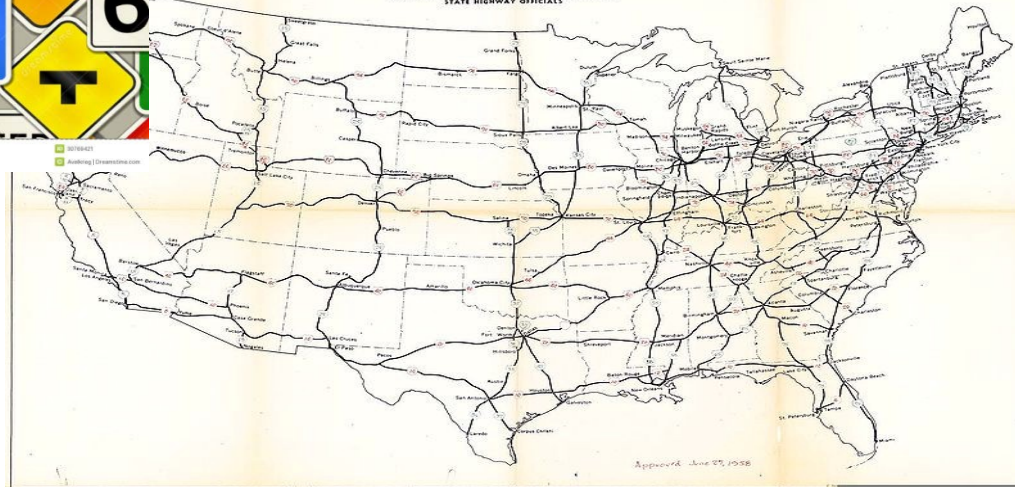
Statehood Eras

- Original 13
- 1791 - 1821
- 1836 - 1867
- 1876 - 1912

Gerry Bakker - September 2001
Source: NPS Publications

OFFICIAL ROUTE NUMBERING FOR THE NATIONAL SYSTEM OF INTERSTATE AND DEFENSE HIGHWAYS

AS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS



A VARIETY OF COMMUNICATION MEDIA, DATA NEEDS



Resources: wired and wireless, the Internet

- 3,000 miles, 3,000 meters, 300 meters, 3 meters.



Requirements: Two types of data distribution:

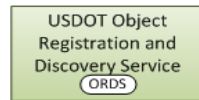
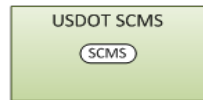
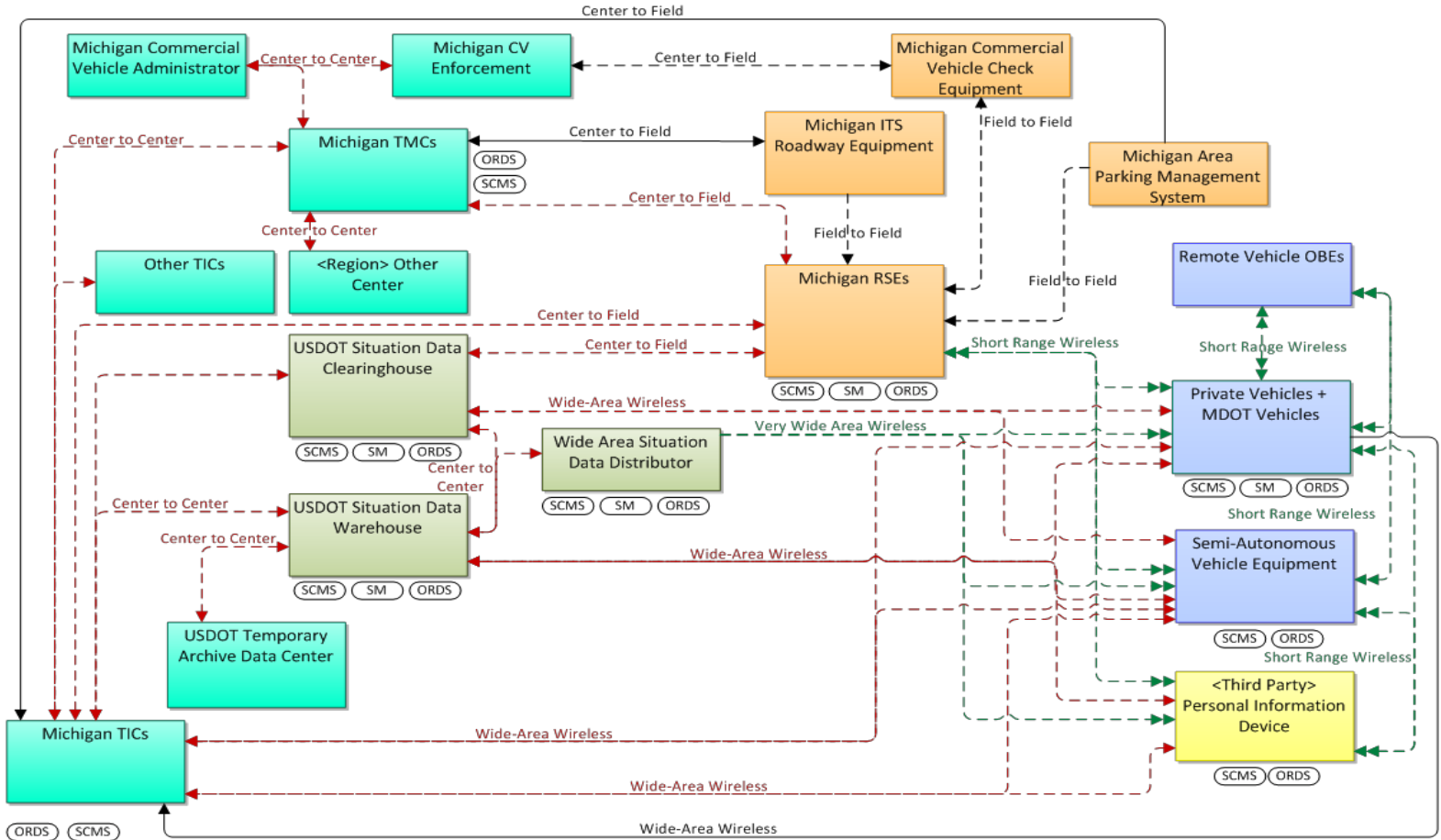
- To all, To one.



Physical View – Unified Implementation Layer 0



Physical Legend	
Flow Time Context (1)	
1 - Now	3 - Historical
2 - Recent	4 - Static
Flow Spatial Context (A)	
A - Adjacent	D - National
B - Local	E - Continental
C - Regional	
Flow Routing	
(d) - Routed through a Data Distribution System	
Flow Status	
Existing	Project
New Opportunity	
Flow Cardinality	
Unicast	Multicast
Broadcast	
Flow Control	
Transaction Initiated	
By left-hand party	Receipt acknowledged
Flow Security	
Clear text, No Authnt.	Encrypted, No Authnt.
Clear text, Authenticated	Encrypted, Authenticated
Elements	
Center	Field
Vehicle	Traveler
Support	People
Application Objects	
Existing	Project
Opportunity	



0: Integrated			
5	Physical View	Dec 24 2014	WLF





Focus on Key Interfaces

Promote Interoperability by forcing -

- All BSM's **meet performance requirements** (Vehicle Situation Data)
- All MAP's and SPaT's **created using the same interpretation** (Field Situation Data)
- All Traveler Situation Data **distributed using the USDOT Warehouse** (Travel Situation Data)





Common Understanding

As data moves toward the center of the system –

- It is assumed that every object that is part of, or is utilizing the services of the Unified Implementation of the Reference Architecture, has **a common understanding of time**, based on Coordinated Universal Time (UTC) as defined by the “International Telecommunications Union Recommendation TF.460-6”, to within 1 millisecond absolute to UTC.
- It is also assumed that every object that is part of, or is utilizing the services of the Unified Implementation of the Reference Architecture, has **a common understanding of location**, using the DE_Longitude, DE_Latitude and DE_Elevation units as specified in the “SAE J2735 - Dedicated Short Range Communications (DSRC) Message Set Dictionary”.

Familiar units are reconstructed at the edges





Testbeds

- http://www.its.dot.gov/testbed/testbed_affiliated.htm
 - Exchanging information
 - Sharing of deployment lessons learned
 - Developing a common technical platform

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- ▶ Safety
- ▶ Mobility
- ▶ Environment
- ▶ Road Weather
- ▶ Policy
- ▶ **Connected Vehicle Technology**
 - Standards
 - Human Factors Research
 - Core Systems
 - Certification
 - Test Bed
- ▶ CV Pilots Deployment Project
- ▶ Automated Vehicle Research
- ▶ Intermodal Research
- ▶ Exploratory Research
- ▶ ITS Cross-Cutting Support
- ▶ Success Stories

Quick Links

Stay Connected

Connected Vehicles Connected Vehicle Test Beds



Affiliated Test Beds

The Intelligent Transportation Systems Joint Program Office (ITS JPO) has organized an affiliation of 5.9GHz DSRC infrastructure device makers, operators of vehicle to infrastructure (V-I) installations, and developers of applications that use V-I communications.


Coordination

To learn more about this research contact:

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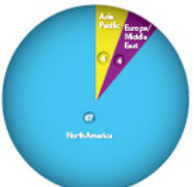
Shelley Feese
Affiliated Test Bed Coordination Lead
(540) 338-4701

Private Enterprise Collaborator Types




Collaborator Type	Count
Application Content	12
Connected Vehicle Technology Integration	10
Security Services	6
Engineering Services	10
Other	2

Collaborators by Region




Region	Count
North America	27
Asia Pacific	4
Europe/Middle East	4

Government Collaborator Types



Collaborator Type	Count
State Level	10
Federal	10

Collaborator Entity Types



Entity Type	Count
Academic	10
Other	10





Pilots

- <http://www.its.dot.gov/pilots/index.htm>

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 - Pilot Deployment Program
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Connected Vehicles CV Pilot Deployment Program

Latest News & Updates

- NEW Connected Vehicle Pilots Fact Sheet
- Wave 1/Phase 1 Site Technical Kickoff Meeting (Sep. 30 - Oct. 1) Presentations now available on-line 10/2/15
 - Day 1 from USDOT CV Pilot Deployment Team
 - Day 1 from New York City Team
 - Day 1 from Tampa (THEA)
 - Day 1 from ICF/Wyoming
 - Day 2 from USDOT CV Pilot Deployment Team
- U.S. Department of Transportation Announces up to \$42 Million in Next Generation Connected Vehicle 9/14/15

More news »

Ready for Deployment

On September 14th, 2015, the USDOT announced the selection of three connected vehicle deployment sites as Wave 1 participants in the Connected Vehicle Pilot Deployment Program. The three sites collectively envision a broad spectrum of

CV Pilots Portal

- ? Wave 1 Sites
- CV Applications
- Sample Deployment Concepts
- Publications