Michigan IntelliDrive℠ Working Group Meeting Packet

September 27, 2010

1. Agenda
2. Meeting Notes
3. Attendance List
4. Presentations

MDOT IntelliDrive[SM] Working Group Meeting

When: September 27, 2010 from 1 to 5 p.m.

Where: Michigan International Speedway (http://www.mispeedway.com/)
12626 U.S. Highway 12
Brooklyn, MI 49230-9068

Directions: Take US-12 to Brooklyn Highway north to the tunnel entrance to the guard, who will give directions to the Michigan Room which is located within the infield suites near the starting line.

Agenda:

- Welcome and Introductions
- Recap of last working group meeting and summary of TRB ITS Subcommittee Meeting
- 2014 ITS World Congress Update
- Update on USDOT V2V Safety Pilot and overview of RFI response for Performance Measures & Performance-based Management
- Brainstorm Session: Attracting more users to Michigan test beds
- Michigan IntelliDrive[SM] Showcase Presentations
    - Connected Vehicle Trade Association
    - Halo Technologies
    - URS
    - Connected Vehicle Proving Center
    - Wayne State University
    - Parsons Brinckerhoff
    - Somat Engineering
    - Automotive Insight
    - University of Michigan Transportation Research Institute
    - Michigan International Speedway
- MIS Facility Tour

Michigan IntelliDrive[SM] Working Group Meeting Notes

September 27, 2010

Location and Time: Michigan International Speedway, 1-5 PM

Attendees: See separate list

Welcome and introductions – Dan Dubois, MIS
Dan briefly welcomed the group to MIS.

Recap of last working group meeting – Kurt Coduti, MDOT
Kurt briefly summarized the June 28 meeting, including review of MDOT IntelliDrive[SM] initiatives and Michigan's strengths as a leader in IntelliDrive[SM] development and testing.

TRB ITS meeting recap – Lee Mixon, Mixon-Hill
Lee provided an overview of the TRB meeting that was held the previous week. He summarized all the *IntelliDrive* research areas that the TRB committee discussed (full list in his slides, which are attached). These will be prioritized and some recommended for inclusion in the cooperative research programs within TRB.

Update on USDOT initiatives – Steve Cook, MDOT
Steve reviewed two important elements of the USDOT program. He discussed the 2013 NHTSA regulatory decision on V2V, which is focused on DSRC and safety features. The V2V safety pilot should be launched next spring, and MDOT and other working group members want to position Michigan as the best location for this pilot. A second pilot program, the Dynamic Mobility Applications Program, is scheduled for next fall and will focus on V2I.

Brainstorming session – Richard Wallace, Center for Automotive Research
Richard led the working group through a SWOT analysis focused on how best to attract users to the multiple Michigan *IntelliDrive* test beds and facilities. Working group members participated quite actively.

Strengths

- Local automotive industry
- Weather – sun, snow, ice, etc. (four seasons)
- International border
- Organized, leadership
- Urban, rural, and suburban locations
- Embedded software development expertise
- Strong universities
- ITS Michigan
- DOT leadership
- Large fleets

- Local agency participation
- Multiple traffic operation centers
- Existing IntelliDrive^{SM} infrastructure

Weaknesses

- Lack of tolling infrastructure
- Lack of ramp metering, HOV, HOT
- Lack of significant public transport (rail)
- Not near DC
- Weather (disruptive)
- Need more OEM participation
- Need more outreach/understanding of IntelliDrive^{SM} (among politicians and public)
- Not well articulated or compelling test bed mission
- Different visions, lack of momentum
- Lack of assessment with real situations
- Not all stakeholders and standards in place

Opportunities

- Could establish blueprint for other states
- V2V field test
- Can expose work to users/implementers/manufacturers
- Get "base hits" from assets
- Create compendium of assets

Threats

- Only five states are working on this
- Change in political administration
- Could risk paying attention/being adaptable with respect to new technologies
- Unclear budget future
- Rulemaking not beginning until 2013

Gaps

- Need better defined collaborative relationships
- Lack a sufficiently high number of equipped vehicles
- Absent stakeholders
- What needs to be done to move forward?
- Other technologies – narrowly DSRC focused
- Existing knowledge gap – need to know who to talk to (advertise contacts within MDOT, other organizations)
- Identify more users, how engage them and bring them to meetings

How to attract more users

- Compelling value equation

- "Road Show"
    - Mobile test bed display, real-time
    - Creativity
- More effective marketing/outreach
- Conduct survey of user needs
    - What are unmet needs?
- Remote support for application development

Working Group Member Organization Showcase
At the previous working group meeting, members were invited to apply to give a brief presentation on how their organization could contribute to "Team Michigan." Many members applied, and ten were selected to present. Other will present at upcoming meetings. These presentations are briefly summarized below, with the actual presentations (sometimes edited) included as attachments.

Connected Vehicle Trade Association – Scott McCormick, CVTA
History: 1999 to 2004, developed specifications and divested them to other standards organizations (including ISO). Then VII Consortium was formed which included automakers as well as USDOT. In 2005, CVTA was formed to bring together various trade sectors (12 industries, 12 founding companies). In 2006-2008, CVTA worked with CAR to create the CVPC, which later became part of UM-Dearborn.

CVTA is a C6 nonprofit trade association. This means that it has the ability to lobby. It was formed to advance the interests of the various industries/organizations involved in vehicle communications. Members include companies, universities, standards organizations, and public agencies. Beginning last year, automakers are now eligible to join. CVTA has 50 members that are either active or pending. CVTA has significant involvement and relationships in major policy arenas including congressional advisory boards, steering committees, standards organizations, DOT, DOE, FHWA, and is involved in numerous working groups. Through these, CVTA is able to provide industry expertise to agencies, hold workshops, engage relevant industry sectors, and suggest language for relevant legislation.

Halo Technologies – Scott McCormick, CVTA
Halo specializes in software design and wireless communications and has experience developing V2V and V2I software for DOTs and other ITS stakeholders. Halo focuses on use of smartphones for vehicle communication applications. These devices have many advantages such as high rates of adoption, already sizeable penetration, many sensors already included (GPS, accelerometer, magnetometer, camera), use already existing infrastructure, include wireless connection options, and can be automatically and remotely updated.

Development of Cogo which uses reusable code (saves work on coding, and less buggy), common interfaces, allows a single server to handle different apps, and takes advantage of the opportunity for growth/networking effects. Cogo can be used to meet the needs of communication that is not time-sensitive and non-proprietary (some areas of weather, emissions, and traffic/transit management). An example of this is pothole detection, which may require a response, but not an immediate one, or may be monitored over time to watch for places where road surfaces are rapidly degrading.

URS – Marc Start, URS
Marc discussed Minnesota DOT mileage based user fees. The 2007 Minnesota study found that these fees can account for proportional wear-and-tear on road surfaces, could improve transportation system efficiency/ environmental outcomes, privacy issues can be dealt with (encryption), and there are no significant legal impediments to MBUFs. Currently planned is a 2011 test deployment in the Minneapolis-St. Paul Metro area with 500 participants.

Marc also mentioned URS's work on a system in the U.K. that has dynamic road signs and planning and the challenge of replicating those displays within the vehicle in addition to providing other information.

Connected Vehicle Proving Center – Steve Underwood, UM-Dearborn
Steve focused on the impetus and philosophy of the CVPC and recommended that the audience obtain and read the book, *Reinventing the Automobile*. It focuses on the convergence of three major trends related to urbanization, connectivity, and electrification. Future motor vehicles will be powered by electric motors, controlled electronically "by wire," "connected," and personalized. Steve also mentioned the component programs of the CVPC.

Wayne State University – Hongwei Zhang, WSU
He discussed the importance of engaging computer programmers in ITS work.

Parsons Brinckerhoff – Scott Shogan, PB
PB designed network infrastructure for early MDOT demonstrations and more recently determined shortcomings of these demonstrations and evaluated how they may be overcome (shortcomings included most effort/money was spent on technical development, limited ability to demonstrate core applications, and a passive user experience). To overcome some of these deficiencies, PB began developing a simulator in 2009. The simulator takes advantage of commercial gaming software and off-the-shelf equipment (chassis, workstations, monitors). A survey indicated that those who used the simulator found it helped them understand IntelliDrive^{SM} and thought it would positively impact their industry.

Somat Engineering – Mark Crawford, Somat
Mark discussed the increasing awareness of GHG emissions and the concept of carbon footprints. Carbon footprints can be grouped around destinations and some high profile events have examined their carbon impacts (Vancouver Olympics, South Africa World Cup). Calculating carbon footprints, however, takes a lot of effort, especially for such large events.

Destination Carbon Footprint (DCF) sums all GHG emissions for all travelers to a destination for a particular time period, bridging the gap between individual transportation decisions and social shared experiences at travel destinations. It allows collaboration between individuals to reduce collective GHG emissions. In addition, it allows event organizers to have more complete information on the GHG emissions associated with selecting a particular venue. In both cases, such information can influence behavior and allow users to better optimize their decisions, reducing emissions.

Automotive Insight – Scott Shultz, AI
Scott discussed opportunities to leverage smartphones to augment safety until DSRC is in place. Smartphones have advantages in high penetration, capabilities (GPS, computing power, USB,

sensors), large displays, audible output, remote and automatic upgradeability, fast communication links (3G, 4G), and short hardware cycles. Other options include use of tolling/insurance tracking devices, navigation devices, and radar detectors.

Challenges include: safety is a hard sell (example of Droid application with fewer than 50 downloads at $10), location challenges (antenna performance, reported position, driver attention), conflict with designed human-machine interface (nuisance alarms), more complexity (multiple operating modes, interoperability of systems), and liability/privacy/security issues are not simpler than those of DSRC based systems.

Automotive Insight is interested in developing a field trial that uses aftermarket devices and is considering market studies to understand consumer preferences and behavior.

University of Michigan Transportation Research Institute - Ralph Robinson, UMTRI
The Integrated Vehicle-Based Safety Systems (IVBSS) light vehicle study included 108 drivers, 6 weeks each, 16 vehicles (4 prototype crash warning systems), with a cumulative total of 220,000 miles driven. The IVBSS heavy truck vehicle study included 20 drivers and 10 tractors with a cumulative total of 600,000 miles driven.

Ralph noted that Michigan has a strong start in developing and testing IntelliDrive^{SM} technologies, with many partnerships, programs, and test beds. Michigan stakeholders and partners include USDOT, OEMs, tier 1 suppliers, global companies, transportation operators and more.

Michigan International Speedway – Kevin Kelly, MIS
Kevin Showed maps of MIS and highlighted unique features that could be useful for testing IntelliDrive^{SM} applications. He then led attendees on a tour of the facility.

Next Working Group Meeting
Kurt announced that the next meeting will be held December 13, 2010 from 9:00 am to noon at Ricardo (40000 Ricardo Drive, Van Buren Township, MI).

MDOT IntelliDrive Working Group Meeting

	Name	Organization	09/27/10
1.	Kurt Coduti	MDOT	
2.	Richard Walley	CAR	
3.	STEVE COOK	MDOT	
4.	RALPH ROBINSON	UMTRI	
5.	Ivan Krechmer	Cambridge Systematics	
6.	DICK BEAUBIEN	HRC	
7.	Nick Caruso	US Army	
8.	Matt Klawon	URS Corporation	
9.	Lee Nederveld	MDOT	
10.	Collin Castle	MDOT	
11.	Rick Kramer	DTMB	
12.	Bill Pemble	DTMB	
13.	Marc Start	URS Corporation	
14.	MONROE PENDELTON	STATE OF MICHIGAN DTMB	
15.	Francois Dion	UMTRI	
16.	Philip Headley	Continental	
17.	CHRIS DEMIN	RICARDO	
18.	Koji Mori	Denso	
19.	Hongwei Zhang	Wayne state University	
20.	Gorette Yung	MDOT	
21.	MARK CRAWFORD	SOMAT ELLIN BERING	
22.	MIKE TOTH	MDOT	
23.	MARTY LONTZ	MDOT - Bur. of Trans. Planning	
24.	NILES ANNELIN	MDOT - POLICY	
25.	FRANK P[illegible]	Booz Allen Hamilton	
26.	SCOTT SHOGAN	PARSONS BRINCKERHOFF	
27.	Dave Dobson	DDOBSON@Proxim.com	
28.	DANIEL DIONNE	TRANSCORE	

Name	Organization
28. Joshua Cregger	Center for Automotive Research
29. Kevin Kelly	MIS.
30. Scott McCormick	CVTA
31. Steve Underwood	CVPC Univ M. Dearborn.
32. Nader Afshar	Persis Consulting Co.
33. Shari Herman	Siemens
34. Scott Shultz	Automotive Insight
35. Tom Smart	" "
36. Morrie Hoever	FHWA - Michigan Div.
37. Suzette Peplinski	MDOT - Grand Region
38. Jennifer Foley	MDOT - University Region
39. Elise Kappmann	MDOT - University Region
40. Wendy Ramirez	MDOT - Brighton TSC (University Region)
41. Michael Fabie	Bowe Allen Hamilton
42. Todd Anuskiewicz	UMTRI
43. Kyle Williams	Robert Bosch LLC
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Michigan IntelliDrive℠ Working Group Presentations

IntelliDrive℠ Working Group Meeting

September 27, 2010

Kurt Coduti, P.E.
Michigan Department of Transportation
Statewide ITS Program Office

Welcome & Introductions

- **Welcome from MIS**
- **Agenda**
  - Recap from last meeting
  - TRB ITS subcommittee meeting
  - 2014 ITS World Congress
  - USDOT/MDOT IntelliDrive^{SM} Update
  - Brainstorming: Attracting more use of Mi Test Beds
  - **Michigan IntelliDrive^{SM} Showcase Presentations**
  - MIS Facility Tour

Safer. Smarter. Greener.

Recap of last meeting…

- Primary Objectives of Working Group
- MDOT IntelliDrive^{SM} Initiatives
  - DUAP (70 fleet vehicles), Slippery Roads, Critical Highway Infrastructure Monitoring, etc.
- Michigan's IntelliDrive^{SM} Capabilities/Resources
  - $ millions invested in test facilities
  - Large IntelliDrive^{SM} related consortia
  - Home of automotive industry
  - Substantial economic impacts
- USDOT IntelliDrive^{SM} Update

TRB ITS Subcommittee Meeting: IntelliDrive^{SM} Research Needs for Public Agencies

- Research topics generated in the areas of:
  - Planning
  - Asset Management
  - Weather
  - DOT Structure/Organization
  - Performance Measures
  - Traffic Signals
- Refine and submit research statements to TRB (various committees, NCHRP, etc.

Next Meeting

- **When:** December 13, 2010 – 9 a.m. to noon
- **Where:** Ricardo

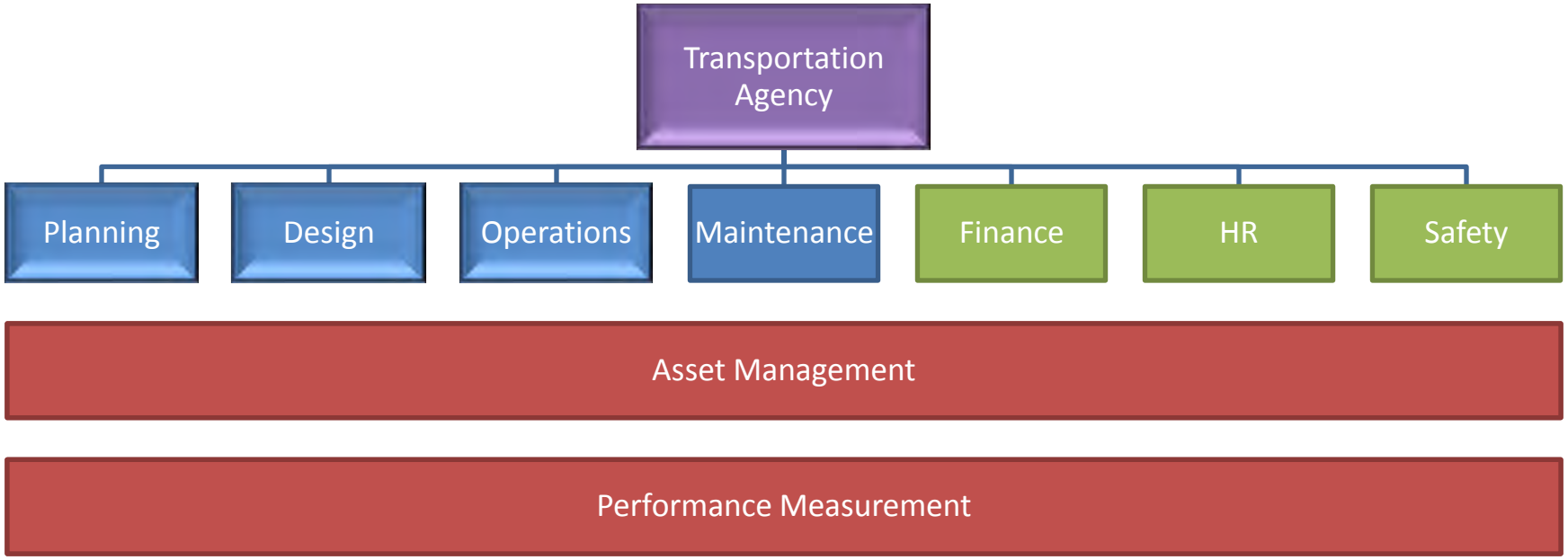
  40000 Ricardo Drive
  Van Buren Township, MI

MDOT Listserv invitation in November 2010

TRB ITS Committee Workshop on Research Needs for IntelliDrive Applications for the Public Sector

Preliminary Findings

Concurrent Breakout Sessions

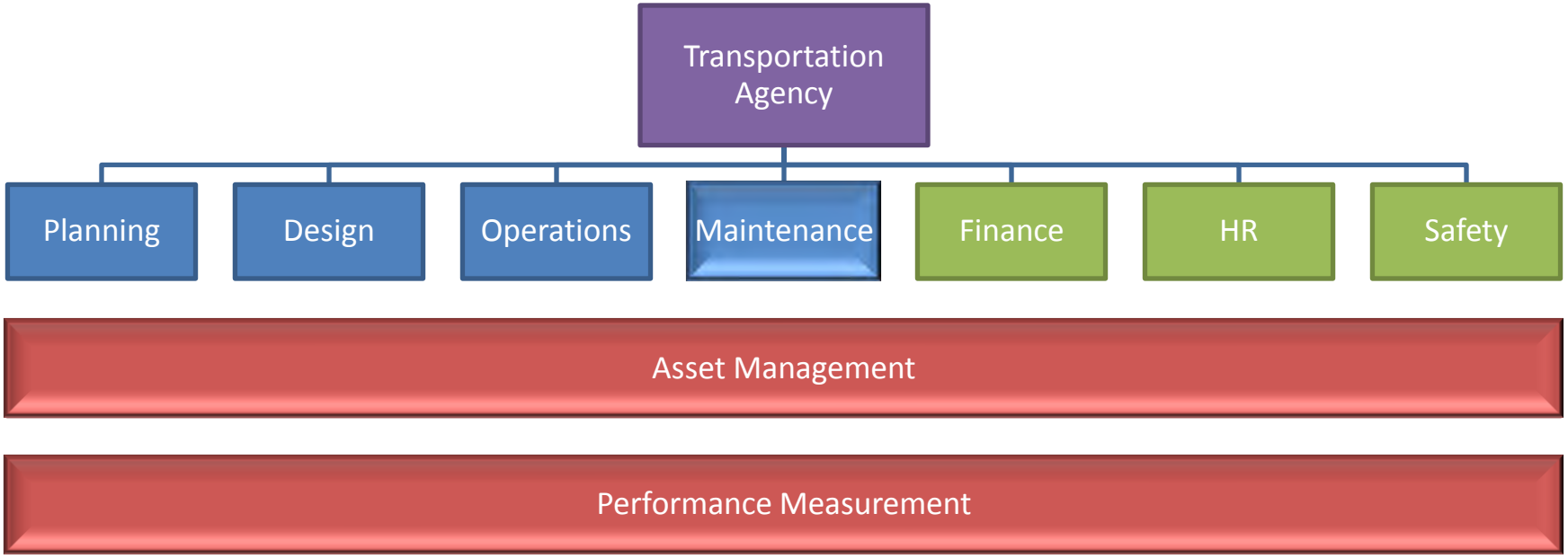


A – Agency Organizational Structure

B – IntelliDrive and Planning/Design

C – IntelliDrive and Operations: Traffic Signals

Concurrent Breakout Sessions



D – Weather Issues

E – Asset Management

F – Performance Measures

Organizational Structure A1

- How Does IntelliDrive Affect Existing DOT Organizational Functions?
  - State of the art review
  - Data collection - surveys, interviews, focus groups
  - Conclusions & recommendations
  - Final Report
  - Timeline: 18 months
- Other Ideas
  - Skill sets needed for Team
  - New functions & authorities that might come about
  - Support mission for agencies (customer needs)
  - Training & Education
  - Legislative analysis

Organizational Structure A2

- Develop IntelliDrive Data Scenario & Functions
  - State of the art review
  - Data collection - surveys, interviews, focus groups
  - Organizational functions based on both data & apps
  - How does it fit within existing organization
  - Timeline: 24 months
- Workforce Impacts of IntelliDrive
  - State of the art review
  - Data collection – surveys, interviews, focus groups
  - What skill sets are needed, what do we have, gap analysis
  - Mapping gaps to current org
  - Timeline: 24 months

Other Ideas: changing role of IT within organization, what are organizational efficiencies (cost savings) from IntellIDrive, impact on regional organizations

IntelliDrive & Planning – B1

Themes Session 1

- Richer data will enhance existing modeling
- Modeling will adapt and change with richer data
- Land use and traveler behavior will change

IntelliDrive & Planning – B2

Themes Session 2

Origin & Destination Data

IntelliDrive IntelliDrive data replace/enhance origin and destination studies which are currently expensive and labor intensive.

Safety Data

Current safety data is not accurate, reliable, timely or detailed enough and can be enhanced with IntelliDrive data for improved safety planning.

Getting the message out

Elected officials and general public do not understand IntelliDrive and the impacts to transportation

Investment Justification

Currently data used for planning and investment decisions is difficult to obtain (expensive) and not validated post project

IntelliDrive & Traffic Signals Research Topics Generated - C

- Smart Adaptive Signal Systems
- Traffic Control Logic (detector augmentation)
- Smart Cruise Control (EcoDrive)
- Multi-Modal Priority and Preemption
- Pedestrian Detection and Operations
- Performance Measures
- Safety (CICAS and other ideas)
  - Dilemma Zone and Red Light Running
- Driver Behavior with In-Vehicle Signing
- Weather Responsive Signal Timing
- Incident Management (Lane Blockages)
- Legal and Policy Implications of SPaT

Traffic Control Logic - C

- Objective
  - Utilize IntellDrive^{SM}information in traffic control (core) logic (calling phases, extension, gap out, pedestrian intervals, etc.)
  - Augment or replace traditional detection
  - Determine how to transition from traditional detection into IntellDrive^{SM} based detection

Smart Adaptive Signals - C

- Objectives
  - Utilize IntellDrive^{SM} data to develop new and improved control algorithms
  - Identify available and applicable data
  - Considers network level control (strategic) such as coordination (cycle, splits, offset, queue management)

Multi-Modal Priority - C

- Objective
  - Identify strategies for providing priority for emergency vehicles, transit, etc. using IntellDrive^{SM} data
  - Manage multiple priority requests using position, acceleration, etc.
  - Provide feedback to approaching vehicles
  - Consider corridor/route
  - Integrate new data (passenger count, schedule adherence,…)

IntelliDrive Weather-Responsive - D Traffic Control (Day 1 *and* Day 2)

- Problem: Traffic control devices account for road weather conditions
- Objective: use IntelliDrive and other weather data to improve traffic control algorithms before, during and after inclement weather.

Automated IntelliDrive-based - D Weather Alerts

- Problem: Current DSS does not use IntelliDrive data.
- Objective: Use wealth of road weather data from IntelliDrive and associated data to determine timely appropriate alerts for various users and operators
  - e.g., TMCs, travelers, freight/fleet managers

IntelliDrive Weather-related Data - D for Improved Driver Behavior Representation in Transportation Models

- Problem: Driver behavior is not sufficiently represented in transportation models during inclement weather.
- Objective: Develop recommendation for incorporating driver response during inclement weather into **aggregate** and **disaggregate** transportation models.

Alt Fuel Vehicle Operational Efficiency & IntelliDrive Road Weather Data -D

- Problem: Weather extremes may negatively impact the operational efficiency of alt fuel vehicles.
- Objective: Address logistics for supporting alt fuel vehicles (asset management) utilizing information from IntelliDrive observations from vehicles taking into account the impacts of weather.

Day 1 Breakout Session - E

- Research Topic #1: What assets (i.e. roadside signs) can be eliminated and must remain with IntelliDrive?
- Research Topic #2: Can IntelliDrive enhance or replace current commercial vehicle management and infrastructure operated by state agencies?
- Research Topic #3: Can new methodologies be developed to use IntelliDrive data to help:
  a. Prioritize operational actions or programs?
  b. Predict the potential damage of existing assets by acts of nature through modeling and forecasting to refine operational scenarios and planning?

Day 2 Breakout Session - E

- Research Topic #1: Can IntelliDrive assist with or automate the traffic signal warrant process?
- Research Topic #2: Can IntelliDrive be used to facilitate fleet management through vehicle communications related to vehicle maintenance needs?
- Research Topic #3: Can IntelliDrive be used to enhance or modify commercial driver behavior?

PM Session Problem - F Statement Summary Day 1

- We would like to explore what new PMs will come to be, enabled by IntelliDrive^{SM}, that we are not aware of currently.
  - Also, improvement of existing PMs
- We need to define how IntelliDrive^{SM} data feed short and long range policy decisions.

PM Session Problem - F Statement Summary Day 1

- We would like to explore the potential technical and institutional performance measures that can be extracted from IntelliDrive^{SM} data.
  - Specifically arterial PMs
- How would IntelliDrive^{SM} support and enable multimodal performance measures across the network?

PM Session Problem - F Statement Summary Day 2

- IntelliDrive is both a challenge and opportunity for PMs (too much data, how do we align to needs).
- How will real time PMs impact network and traveler behavior?

PM Session Problem - F Statement Summary Day 2

- What are the data gaps today and how do we fill the gaps with IntelliDrive^{SM}? Address for today as well as the future.
- There is a need to mine IntelliDrive^{SM} data for Safety Performance Measures.

Next Steps

- Committee will further develop research statements
- Committee will publish a compendium
- Lee Mixon lee.mixon@mixonhill.com

Working Group Meeting

September 27, 2010

Steve Cook, P.E.
Michigan Department of Transportation
Statewide ITS/IntelliDrive^{SM} Program Office

USDOT IntelliDrive^{SM} Update

- Potential 2013 NHTSA regulatory decision on V2V covering passenger cars, trucks, and busses.
- DSRC-enabled devices are the focus for safety applications, whereas non-DSRC enabled devices for mobility and environmental applications.
- Major focus of USDOT is on V2V, V2I not excluded from research and development efforts.
- Primary objectives of V2V safety pilot include:
  - Demonstrating real-world V2V
  - Implementation using multiple transportation modes
  - Assessing driver acceptance
  - Exploration of after-market and retrofit systems
- Secondary objectives include:
  - Enabling V2I safety applications (Intersections, Speed Management, Lane Departure, Enforcement and Operational Safety for Transit and Commercial Vehicles) and leveraging data for mobility and environmental applications.

USDOT's Dynamic Mobility Applications Program

One or more projects will be awarded in 2011 to demonstrate the use of IntelliDriveSM data sources for multi-modal performance measurement and performance-based management.

- Test Beds
- Dynamic mobility Data collection; DUAP
- Challenges:
  - Mature infrastructure for data collection
  - Strong Leadership
  - Partnering with Automakers
- Public sector organizations as the lead organizations
- Demonstration Test Site and Open data Access
- DUAP 2, what is it?

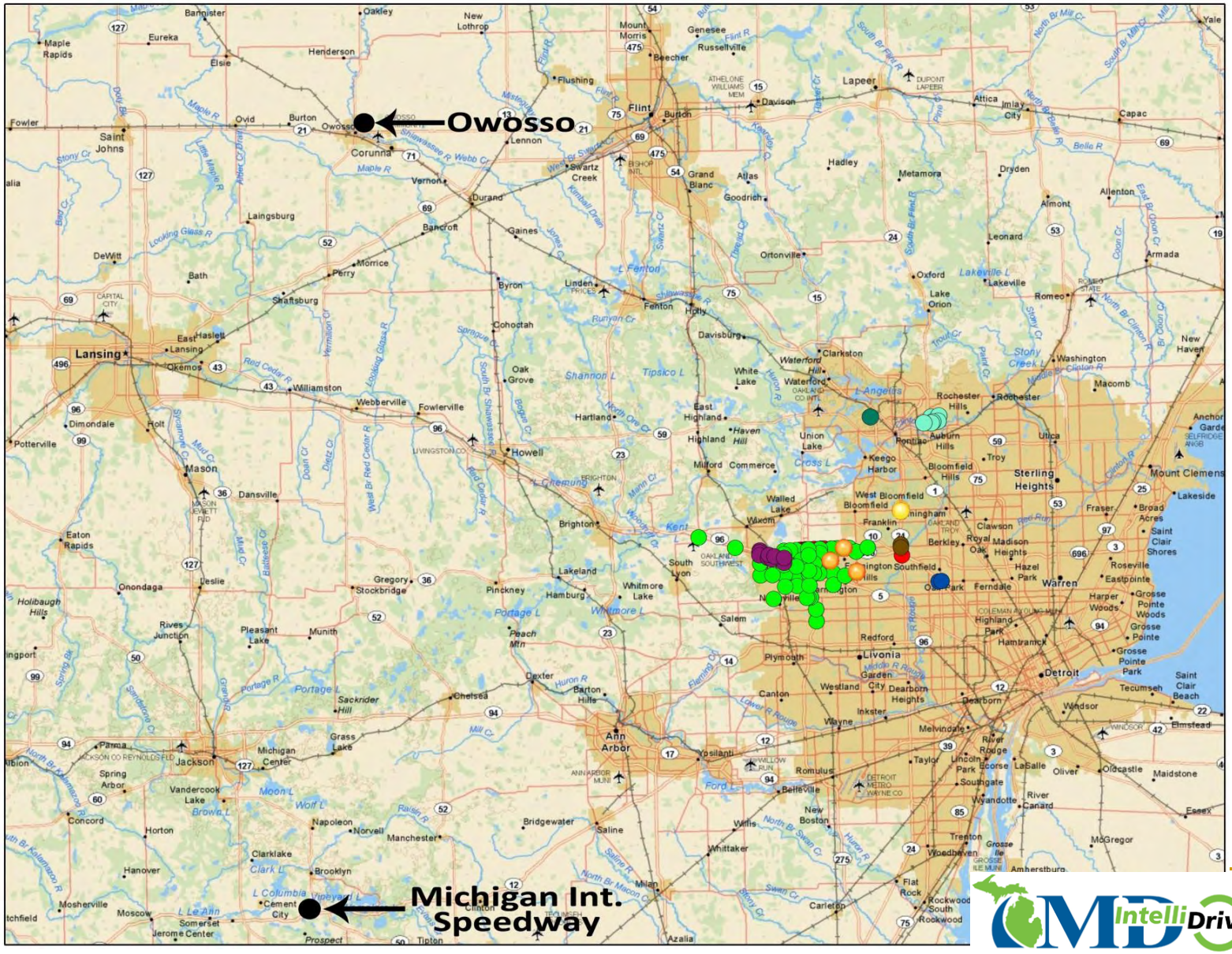
Working Group Meeting: Brainstorming on Test Bed Use

September 27, 2010

Richard Wallace

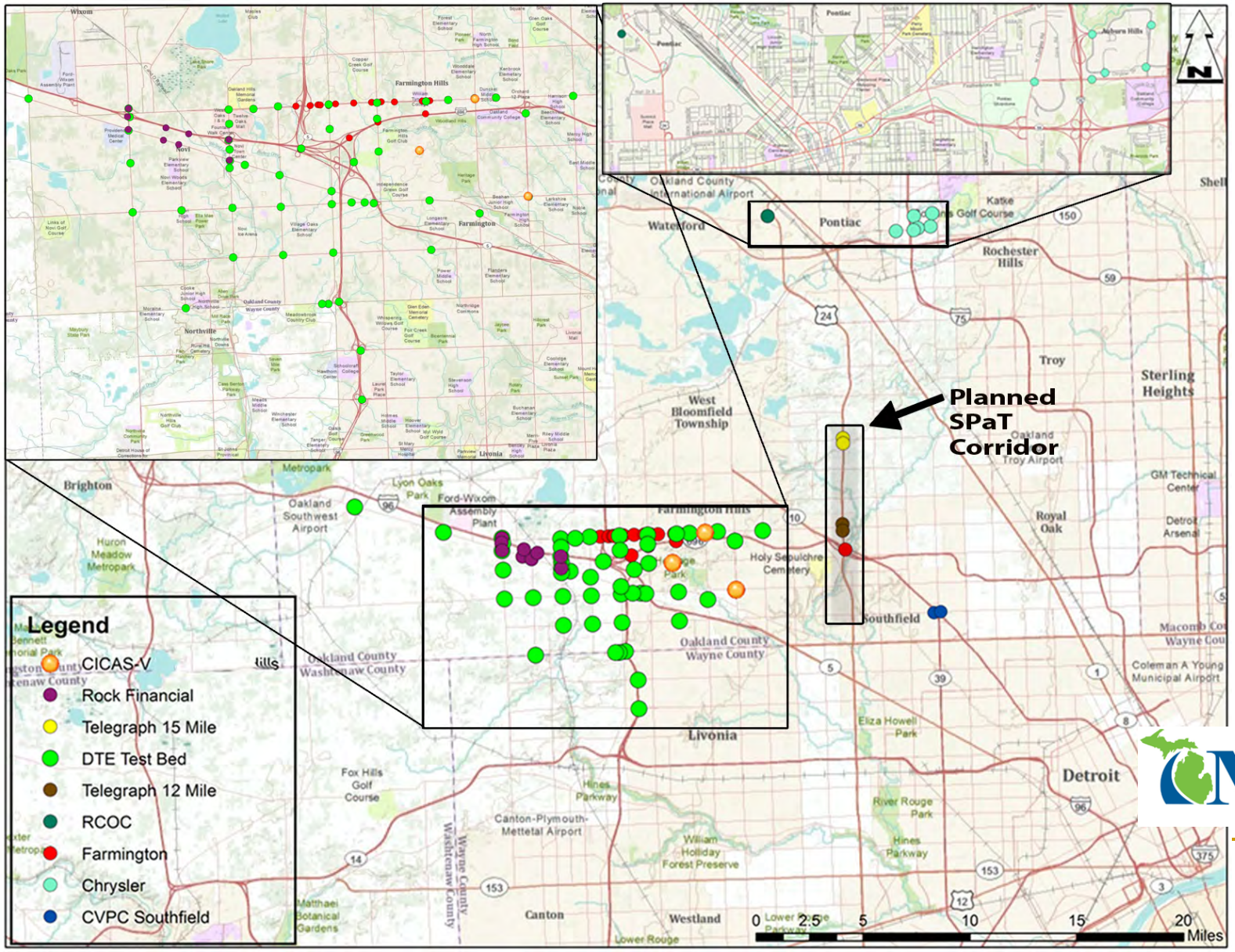
Center for Automotive Research

Connected Vehicle Test Opportunities in Michigan



MDOT IntelliDrive Safer. Smarter. Greener.

Connected Vehicle Test Beds in Michigan



Michigan Test Bed SWOT Analysis

- Strengths
- Weaknesses
- Opportunities
- Threats
- Where are the gaps?
- How do we attract more users?

CVTA

CONNECTED VEHICLE TRADE ASSOCIATION

Communication Collaboration Consensus

Overview Presentation

September, 2010

Agenda

- A Brief History
- Who We Are
- Why We Were Formed
- Involvement and Relationships
- Activities
- 2009-2010 Initiatives
- 2011 Plans

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A Brief History

- In late 1999, twelve automakers, supported by 30+ major companies worldwide formed the Automotive Multimedia Interface Collaboration (AMI-C) and developed ~3,500 pages of specifications for how devices would communicate inside the vehicle.
- At the conclusion of this effort in early 2004, the specifications were moved to the major standard organizations over a 1.5 year period.
  - The SAE J2735 DSRC Message Set is an extension of the AMI-C spec
  - The OSGi Standard is a combination of the AMI-C communication spec and the original OSGi framework
  - The Bluetooth Headset Profile is the AMI-C Bluetooth Spec
  - The ISO Network Protocols are the AMI-C Network Protocols
  - The VII Architecture spec is based on the AMI-C Architecture Spec.
- AMI-C was placed in denouement for future use if needed.
  - Only automakers were members of AMI-C, all other companies were contributors

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A Brief History, continued

- The VII (Vehicle Infrastructure Interface) Consortium was formed in 2004 and created a Cooperative Agreement with the USDOT for $45+ million to develop and test a generic DSRC communications solution.
  - The original purpose of the VIIC was to recommend a deployment decision.
- The automakers asked that a non-profit trade association be formed to bring together all the various industry sectors needed to build out a complete system. CVTA was incorporated in early 2005 with 12 founding companies from each major industry.
- During this time, CAMP worked on the CICAS project, and UMTRI lead the IVBSS project. Both have ongoing tasks.
- IN 2006-2008, CVTA and CAR developed the Connected Vehicle Proving Center, now a part of U of M Dearborn
- In 2009, with the conclusion of the majority of the pre-competitive research by the VIIC, and realizing the need to include cellular and WiFi communication protocols, the US DOT initiative was renamed IntelliDrive®

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Who We Are:
Connected Vehicle Trade Association

- CVTA is an international, non-profit trade association formed to advance the interests of industries and organizations involved in vehicle communications
- Membership is open to companies, universities, standards bodies and public agencies globally
- The Board of Directors was established with one representative from each industry involved

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Vision and Mission

- Vision - A world where safe, efficient, effective travel is enabled through real-time vehicle connectivity.
- Mission - Promoting the value of the Connected Vehicle by:
  - Establishing a leadership position in promoting the awareness of the benefits of the CVTA vision
  - Promoting the deployment of Connected Vehicle solutions for safety, mobility, convenience and commercial applications
  - Identifying opportunities for public and private sector participants in the Connected Vehicle ecosystem
  - Integrating vehicle efficiency and energy programs with the connected vehicle environment
  - Establishing an ongoing dialog with public and private decision makers

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Board and Membership

- Board of Directors are comprised of:
  - Delphi
  - Kapsch
  - Cisco
  - OSS Nokalva
  - TransUnion
  - Magneti Marelli
  - NAVTEQ
  - Road America
  - Motorola
  - Sprint
  - Octo Telematics
  - ISO
  - Dykema
  - Booz Allen
  - Telcordia
  - Control Point
  - Hughes Telematics
  - LexisNexus

  - CVTA presently has 50 Active or Pending Members:
  - 30 Corporate (26 Active, 4 Pending)
  - 4 Education (3 Active, 1 Pending,)
  - 9 Association (6 Active, 3 Pending)
  - 1 Advisory Member (Audi)

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Membership

- Corporate Members
  - Aeris
  - Aisin Seiki (IA)
  - ATX/Cross Country (IA)
  - Booz Allen Hamilton
  - Cisco
  - City of Novi
  - Continental
  - Delphi
  - Dykema Gossett
  - Hughes Telematics
  - Intel
  - ISO
  - Johnson Controls (IA)
  - Kapsch
  - Lear (IA)
  - LexisNexis
  - Magneti Marelli
  - Molex
  - Motorola
  - MTS Technologies
  - NAVTEQ
  - Octo Telematics
  - Oracle
  - OSS Nokalva
  - Progressive
  - ProSyst Gmbh
  - QNX
  - Road America
  - Sprint
  - Telcordia
  - TransUnion
  - Wind River
  - Vector CanTech (IA)
  - Zoom InfoSystems (IA)
- Associate Members/Alliances/MOUs
  - 1394 Trade Association
  - AEEMA (Australia)
  - Canadian Advanced Technology Association (CATA)
  - Center for Automotive Research
  - Connected Vehicle Proving Center
  - Doisha University (Japan)
  - ETRI
  - ETSI
  - Instituto Superiore Mario Boella (Italy)
  - KOTBA (Korea)
  - ISO
  - ITU-T
  - NaviForum (China)
  - Networked Vehicle Foundation
  - OmniAir Consortium
  - OSGi Alliance
  - SAE International
  - Telematics Valley (Europe)
  - University of Michigan Transportation Research Institute (UMTRI)
  - University of New Hampshire
  - VITAL (California)
- Provisional Members (In-process of joining)
  - Audi
  - Progressive
  - WebTech Wireless
  - Cogenia Partners
  - Mobile Data Resources, Inc
  - Defiance Technologies
  - HCL, Inc.

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Involvement and Relationships

- Member of the Congressional ITS Caucus Industry Advisory Board
- Member of the Joint Commercial/Military Integrated Vehicle Technology Transfer Steering Committee (IVTT)
- Member of the United Nations ITU-T Advisory Panel on Vehicle Communications Standards
- Member of the US Technical Advisory Group to ISO
- Member of TIA – TR48 working group
- Co-Founder and Chairman of the Global Telematics Forum with Europe, Korea, Australia and China
- Support and advance the development of DOT & DOE Programs
- Member of CEA/SEMA/CVTA Automotive Working Group
- Advisor to FHWA for their Long Range Safety Research Program

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Activities

- Provides industry expertise to State, Federal and International transportation agencies
- Assembles teams of relevant parties to respond to RFI's
- Holds workshops to address policy, business and technical issues
- Engages relevant industry sectors in a timely and appropriate manner to advance vehicle communications
- Provides suggested language to Transportation, Energy and other bills

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2009-2010 Initiatives

- Held 1st International Summit on the State of the Connected Vehicle in April, 2009
- Worked with Congressman Peters and Senator Stabenow to craft relevant language in the $3 billion DOE Advanced Vehicle Technology Bill
- Held Energy Funding Workshop with DOE, Oakridge National Laboratories and automakers
- Held the Executive Workshop on Usage Based Insurance in Miami on February 24, 2010
- Will hold Second International Summit on the State of the Connected Vehicle in Detroit in September 29-30, 2010
- Support and educate the Congressional staff in advance of the Transportation Reauthorization Bill and Energy Bill
- Held day-long Board Retreat with Peter Appel and John Horsley to discuss Federal and State direction
- Work with AASHTO to advance state's knowledge and use of relevant connected vehicle technologies
- Continue leadership role of the Global Telematics Forum with Europe and Asia

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2011 Plans

- Holding three focused executive workshops (members and invitation only):
  - Data - February, 2011 – Miami, Fl
  - Devices – Summer, 2011 – Detroit, Mi
  - Communications – Fall, 2011 - California
- Will hold 3rd International Summit at the Rock Financial Center – Fall, 2011
- Planning deployment of major multi-state Insurance Pilot (formal announcement to be made in early 2011)
- Continue support of DOT and FHWA Initiatives.
- Continue to work closely with DOE and Federal Labs as for Vehicle to Grid Initiatives when Energy Bill funding is released

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Cogo
An ITS Platform for Smartphones

Halo Technologies

September, 2010

Who Are We?

We are a solutions based technology company with expertise in:

- Software Design
- Wireless Communications

Our ITS Credentials Include V to V and V to I Software Application Development for:

- State DOTs
- ITS Consultants
- ITS America
- Michigan ITS Show 2008/2009

What We Deliver

Cogo - An ITS Application Framework for Smartphones

Created to **rapidly advance** the **deployment** of IntelliDrive^{SM} mobility applications.

Consists of:

Both a Client-Side and a Server-Side Application Framework

What We Solve

Cogo addresses the following IntelliDrive^{SM} critical success factors:

- Effective Communications
- Interoperable Technology
- Sustainable Approach
- Publicly Acceptable

Why Smartphones?

- **Carry-in Device with Free Navigation**

  Users now have a reason to dock their phone
- **Sensor Rich**

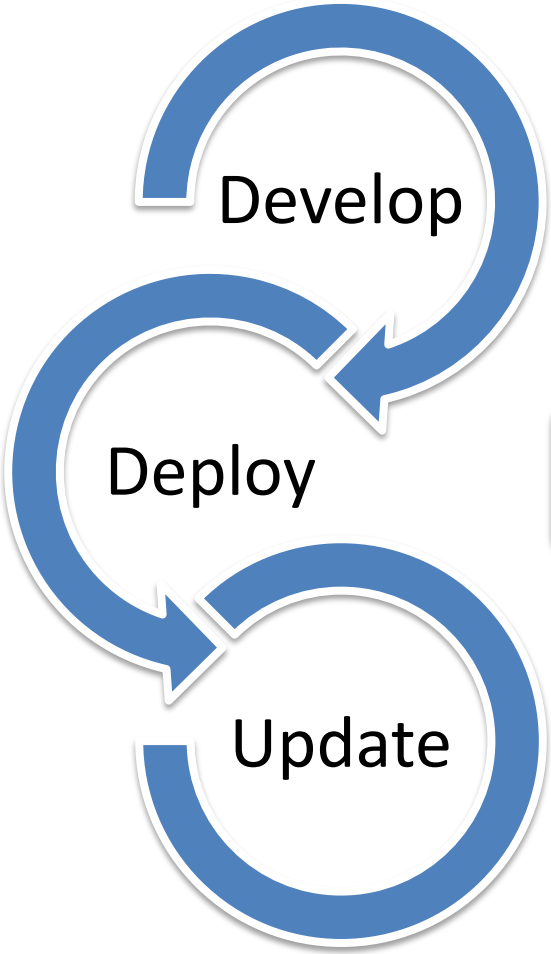
  GPS, Accelerometer, Magnetometer, Camera, etc.
- **Existing Cellular Infrastructure**
- **Wireless Connectivity**

  Wi-Fi, Bluetooth, etc.

Account for 45% of all U.S. cell-phone sales

Increasing to 60% by the end of 2010

Why Smartphones?



- SDK
- Apps

- Online Markets
- App Distribution

- Over The Air
- Automatic

Application Framework

Client

- User Interface
- Applications
- Software Abstraction
- Hardware Abstraction
- Hardware
- Phone OS

Server

- Web Portal
- Software Abstraction
- Database

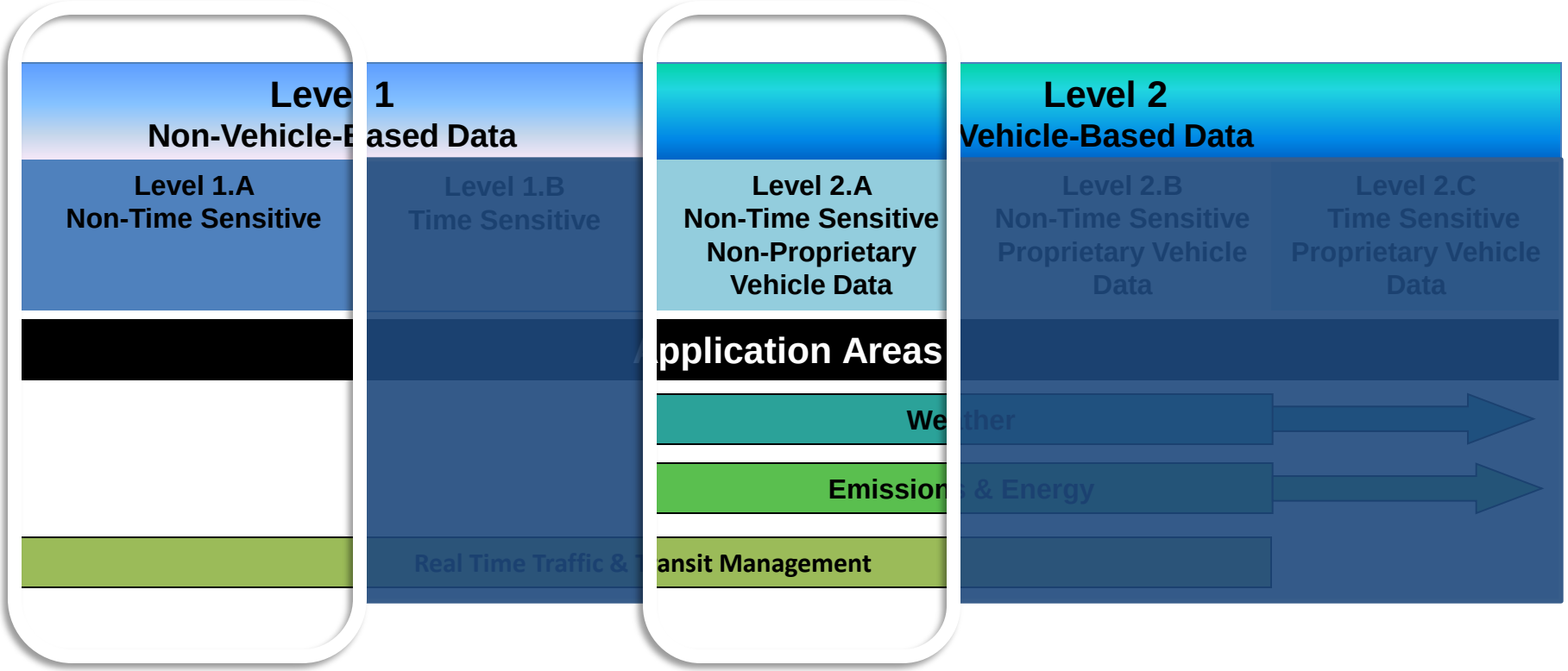
Cogo Features

Rapid Development and Deployment of Applications

- **Reusable Code** (independent **applications share core functions**)
- **Common Interface**
- **Unified Server Communication** (one server can handle **all current and future** apps)
- **Fewer Bugs** (reusable code is already debugged)
- **Growth** (each new app **adds to the power of the framework**)

Where Does Cogo Fit?

Non-Time Sensitive and Non-Proprietary Data

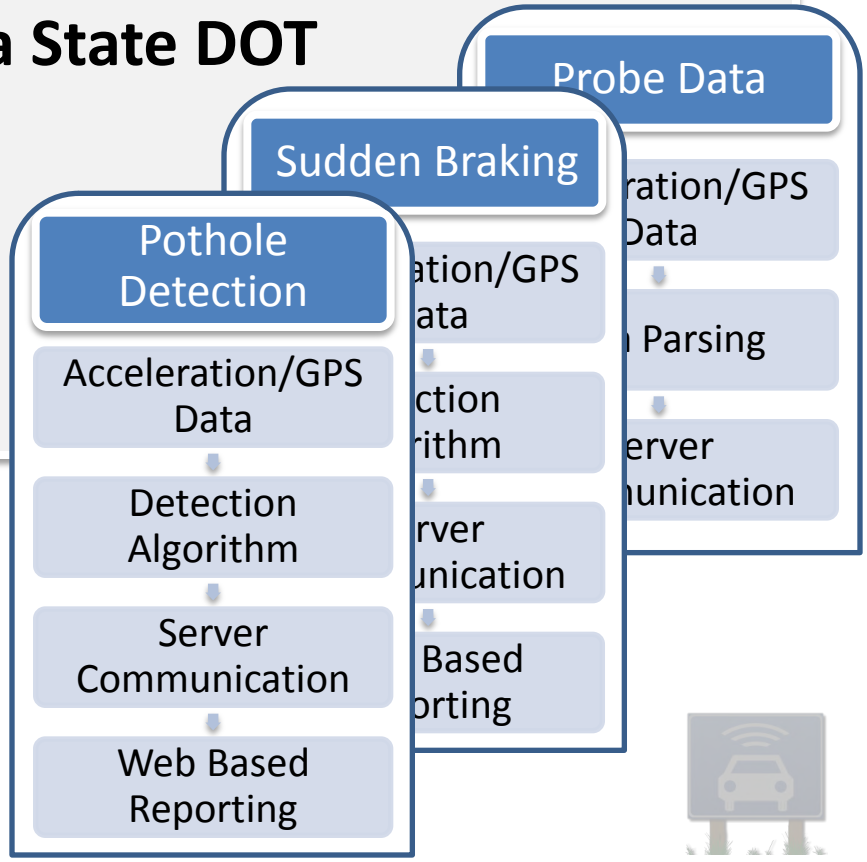


IntelliDrive[SM] Taxonomy

Source: Mike Schagrin ITS America Annual Meeting 2009

Cogo Project Status

- **First Implementation Completed**
- **Currently Beta Testing with a State DOT**
- **Utilized to Implement:**
  - Pothole Detection
  - Sudden Braking Detection (non EEBL)
  - Probe Data Mining



Cogo : Pothole Detection

Pothole Detection

Acceleration/GPS Data

↓

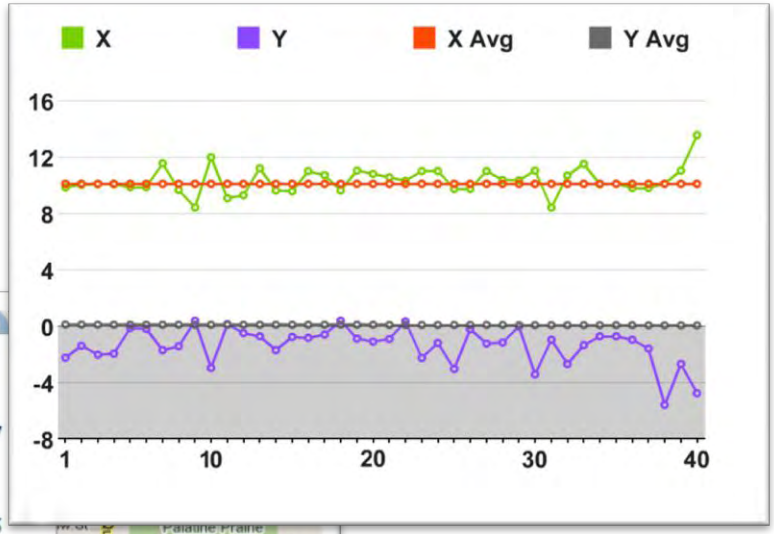
Detection Algorithm

↓

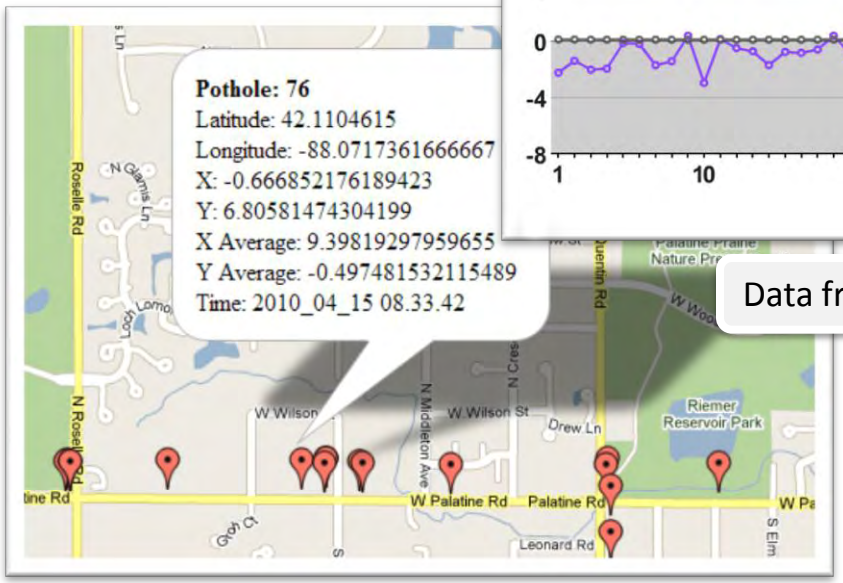
Server Communication

↓

Web Based Reporting



Data from a Detection



Pothole Detection Mapping

Cogo Benefits

- Currently Supports more than 20 ITS Mobility Applications
- **Fast** Application Development
- **Trusted and Stable** Applications
- **Instant Deployment and Updates** through app stores
- Access to a **Critical Mass of Users** (10% of driving population)
- **Cheaper and Faster Deployment** than Existing Systems

Questions?

For more information please contact:
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