

The US DOT's Transit Connected Vehicle Program: What Planners Need to Know

Michael Abegg

*Transit Planning Manager,
Minnesota Valley Transit
Authority
Burnsville, MN*



**2012 MULTIMODAL OPERATIONS
PLANNING WORKSHOP**





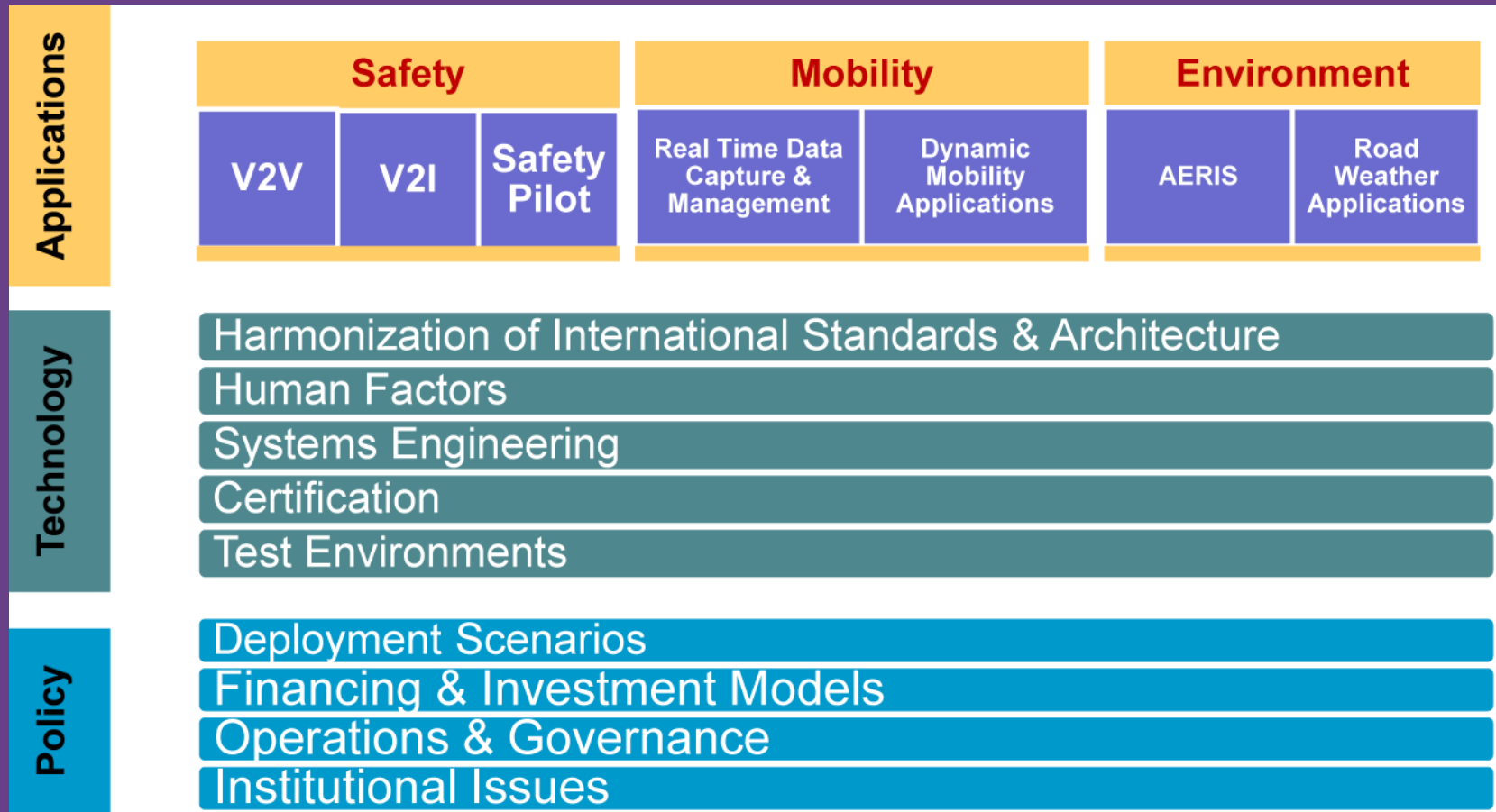
Surveys

- How many have heard of ITS-JPO?
- Who knows what these mean?
 - TCV Program
 - DMA
 - V2V & V2I
 - PCB



Program Structure

Program run out of USDOT's ITS-Joint Programs Office



Principles

- Safety First
 - Mitigate severity and/or prevent crashes
 - Minimize driver workload and not increase distraction
- Encompass all road users / prevent basic safety systems from being disabled
- Mobility and Environment uses encouraged but *do not* diminish Safety



Principles

- Aggressive goals: *National* scale and NA extensible – not just localized systems
- Privacy/Security
- Fee Structure:
 - no ongoing fees for mandatory safety apps
 - subscription fees allowed for Opt-in apps
 - universal taxes/fees allowed to finance system



Role of Private Sector

Bring Sexy Back



Auto Makers Lead the Charge

- Active Park Assist: Ford, Toyota
- GM: Center Lane Assist and Adaptive Cruise Control in proof of concept
- Similar in function to MVTA DAS



Auto Makers Lead the Charge

- Active
- GM: Cruis
- Simi



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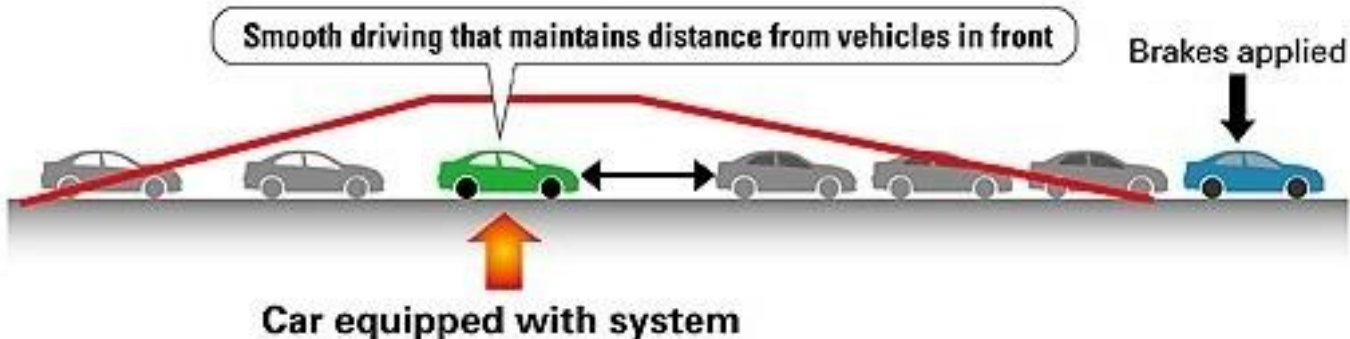
Changing the Paradigm

Image of congestion prevention effect with the system

When congestion occurs



When congestion minimizer system is used



Intensity of acceleration and deceleration when congestion occurs


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Transit Connected Vehicle Program

- Safety: 2009, 4,500 transit crashes, 2,500 injuries, 200 fatalities
- Mobility: 2010, 4.8 Billion hours wasted in traffic delays = 16 Hours per person
- Environment: Transit reduces CO emissions by 16.2 tonnes per year



TCV Unique?

- Vehicle size and stop/start are unique profile
 - Operate mostly in mixed traffic
 - Overlap with Commercial Vehicles:
 - Forward Collisions
 - Blind Spot Warning
 - Intersection Movement Assist
 - In-Vehicle Warnings - curve speed, construction zone, low-clearance
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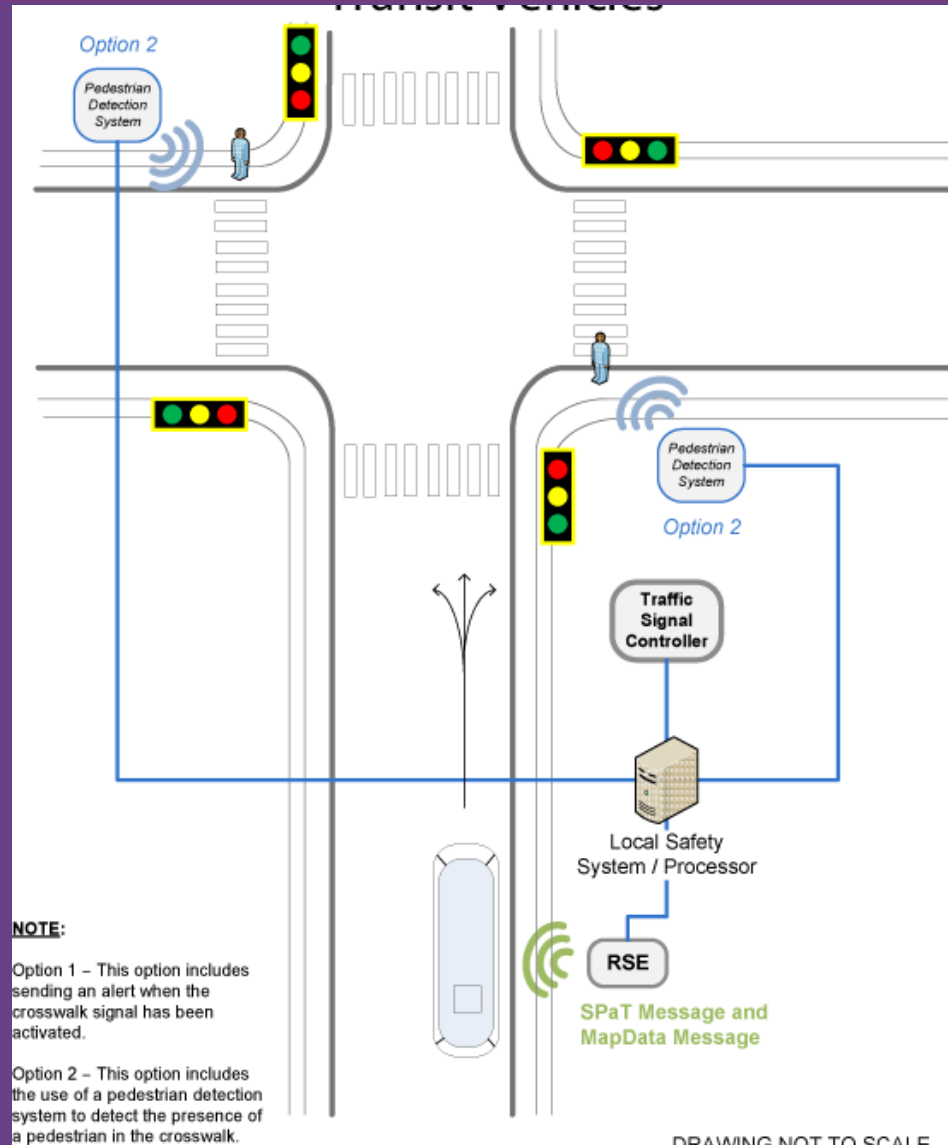
TCV Safety Applications

- V2I: Pedestrian Warning During Turns
- V2V: Light vehicle Right Turn in front of Stopped Transit Vehicle

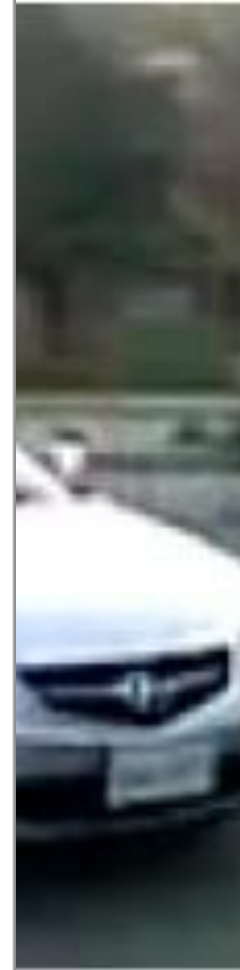
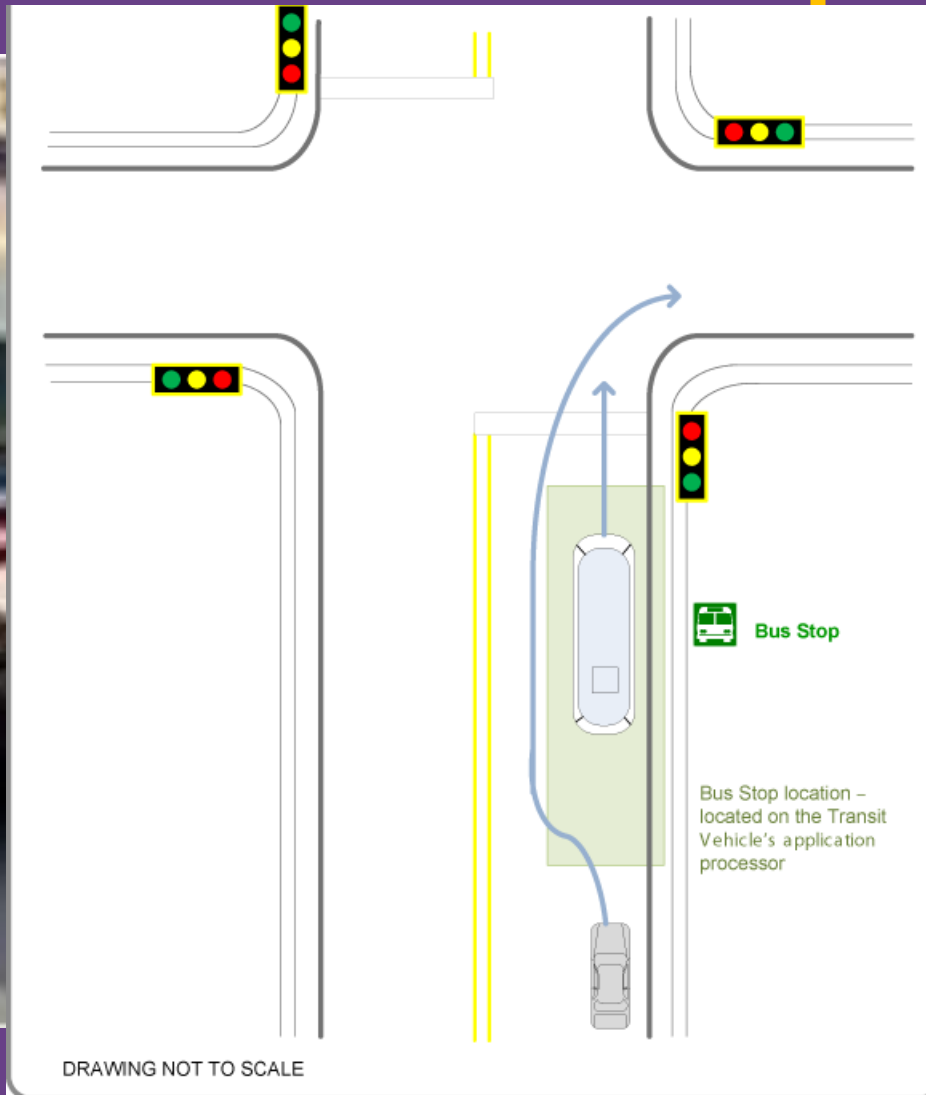
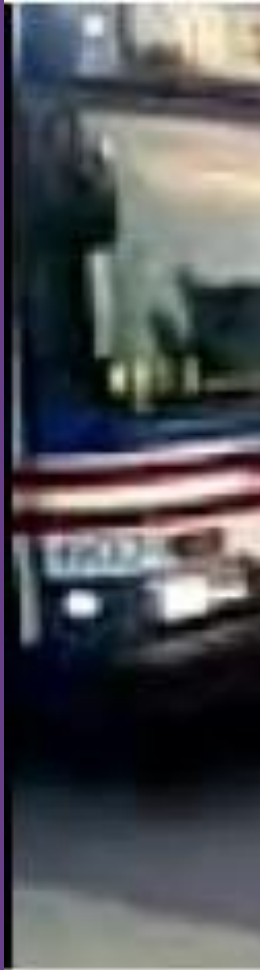


Pedestrian Warning System

Alert bus driver of pedestrian



Vehicle Turning in front of Stopped Transit Vehicle: Alert driver of vehicle presence

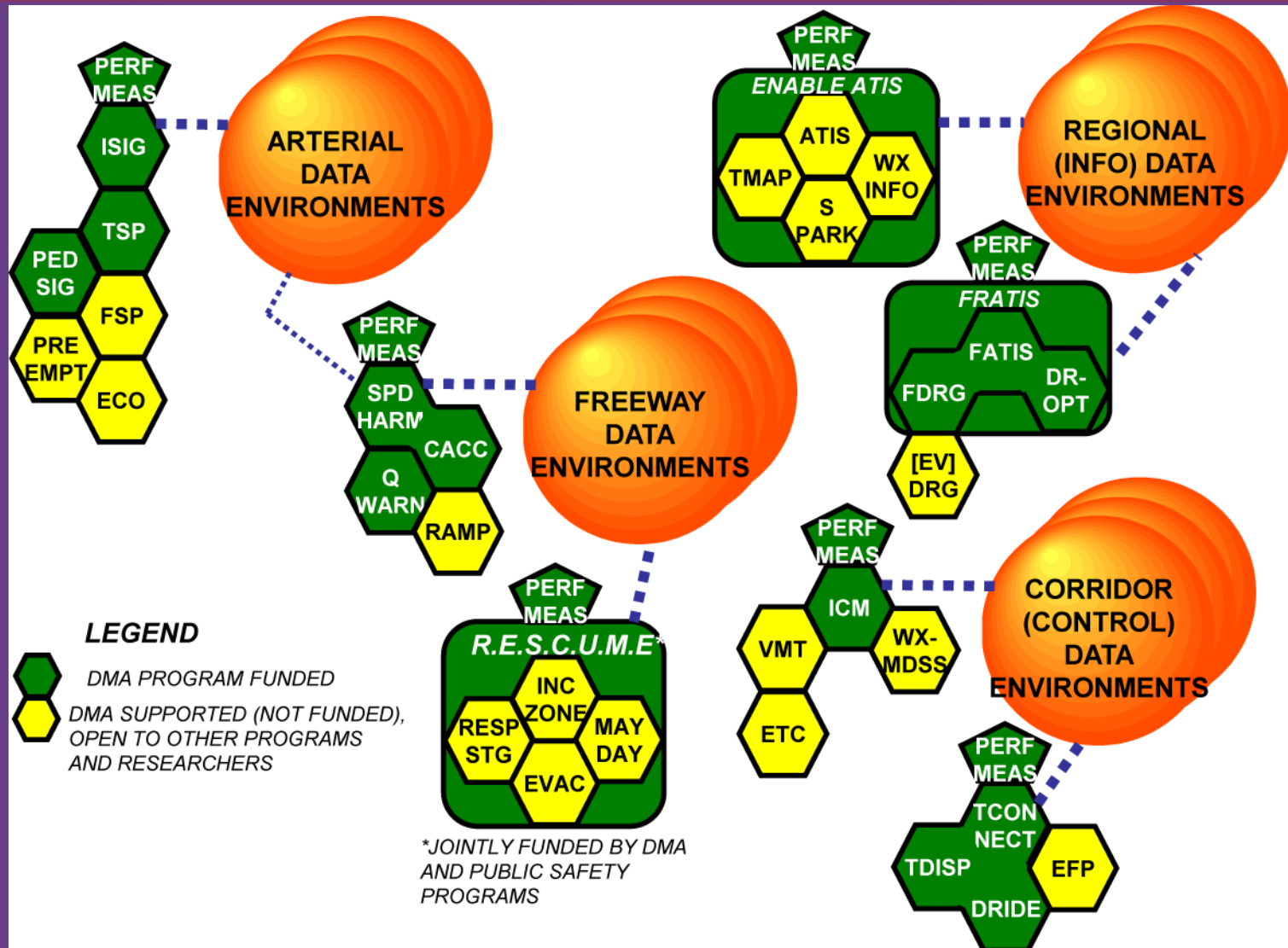


Environment

- No specific transit applications
- AERIS is general foundational Environment research
- Transit Ops, CIS, Data-Driven Planning, Fleet Management



High-Priority Mobility Applications



Transit Mobility Applications (IDTO)

- DCM - Data Capture & Management (intermodal)
- T-DISP - Dynamic Transit Dispatch
- T-CONNECT - Connection Protection
- D-RIDE - Dynamic Ridesharing



T-DISP: Dynamic Transit Operations

- Advanced demand-responsive transit services utilizing accuracy and immediacy of personal mobile devices
- Improved interface between demand-responsive and fixed-route transit
- Real-time traffic and vehicle capacity



T-CONNECT: Connection Protection

- Automated communication between traveler and transit provider data systems to improve probability of linked trips being completed successfully
- Hierarchy of rail, bus, demand response
- Traveler information



D-RIDE: Dynamic Ridesharing

- In-vehicle & personal mobile devices to provide dynamic Ridesharing
- Merger of social networking and slugging?



Challenge of Mobility Applications

- Evolutionary, not really Transformative?
- Role of private sector – what is it already doing or willing to do?



What's Next?

- Safety Pilots start this summer in Ann Arbor
- Transit as well as other CV elements
- 2,800 vehicles equipped with devices - cars, trucks, AATA buses - "Soccer moms are the perfect fit"
- Late 2013: end/voluntary/mandate decision



What can Planners and Schedulers Do?

- ADVOCATE and EDUCATE
- ITS Professional Capacity Building program
- "We do not have enough ITS experts with the domain knowledge. We need to attract people from various IT domains because this is becoming a multi-disciplinary field" - Siva Narla, ITE



Professional Capacity Building Program

- But not JUST IT domains - need transit people who can develop and deploy systems in the transit community
- Highly e-learning based - minimize travel costs while reinforcing technology basis
- ITS Standards / T3 Webinars /Peer-to-Peer
- www.pcb.its.dot.gov

