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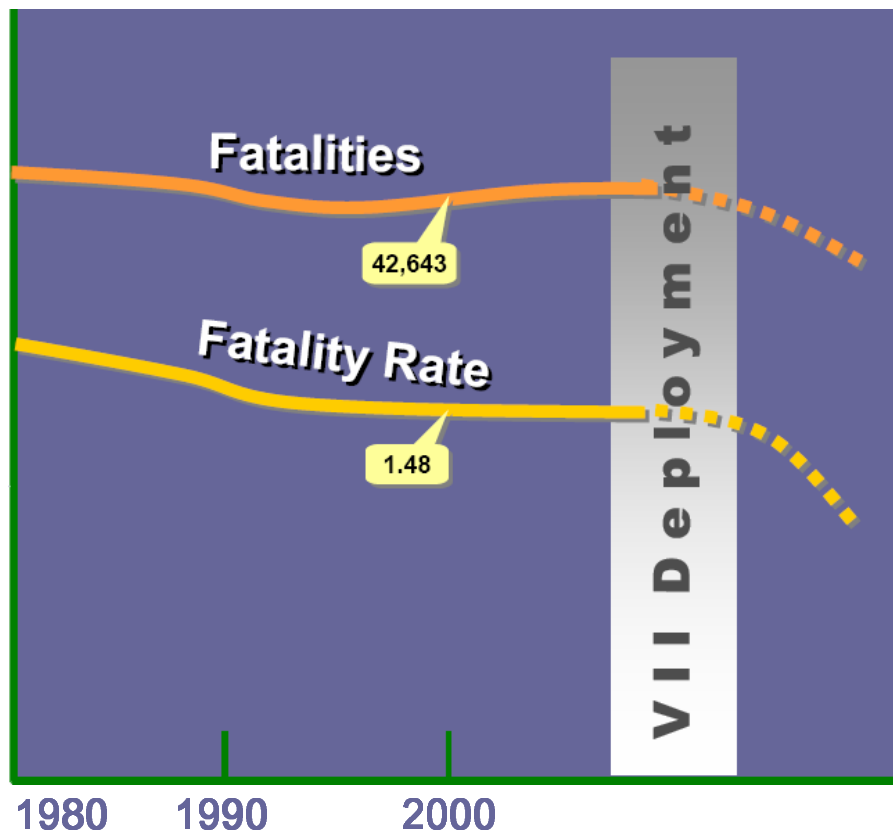
Vehicle Infrastructure Integration (VII)

05 October 2006

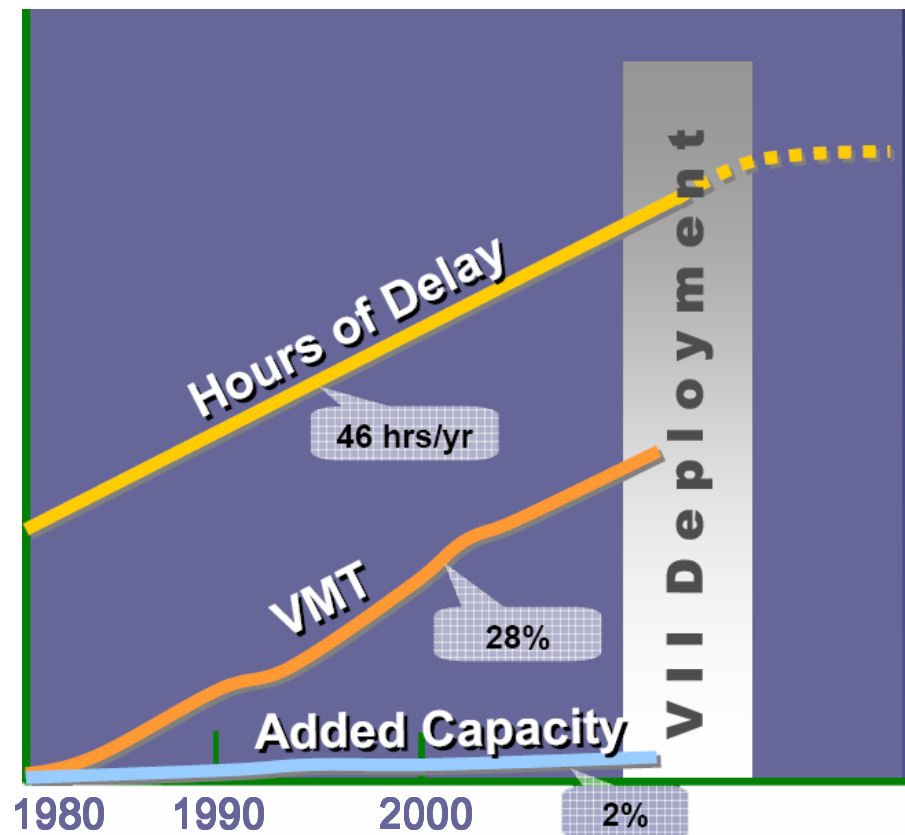


Why VII? Vehicle Safety & Mobility

Safety



Mobility



Source: ITS Joint Program Office, US Department of Transportation

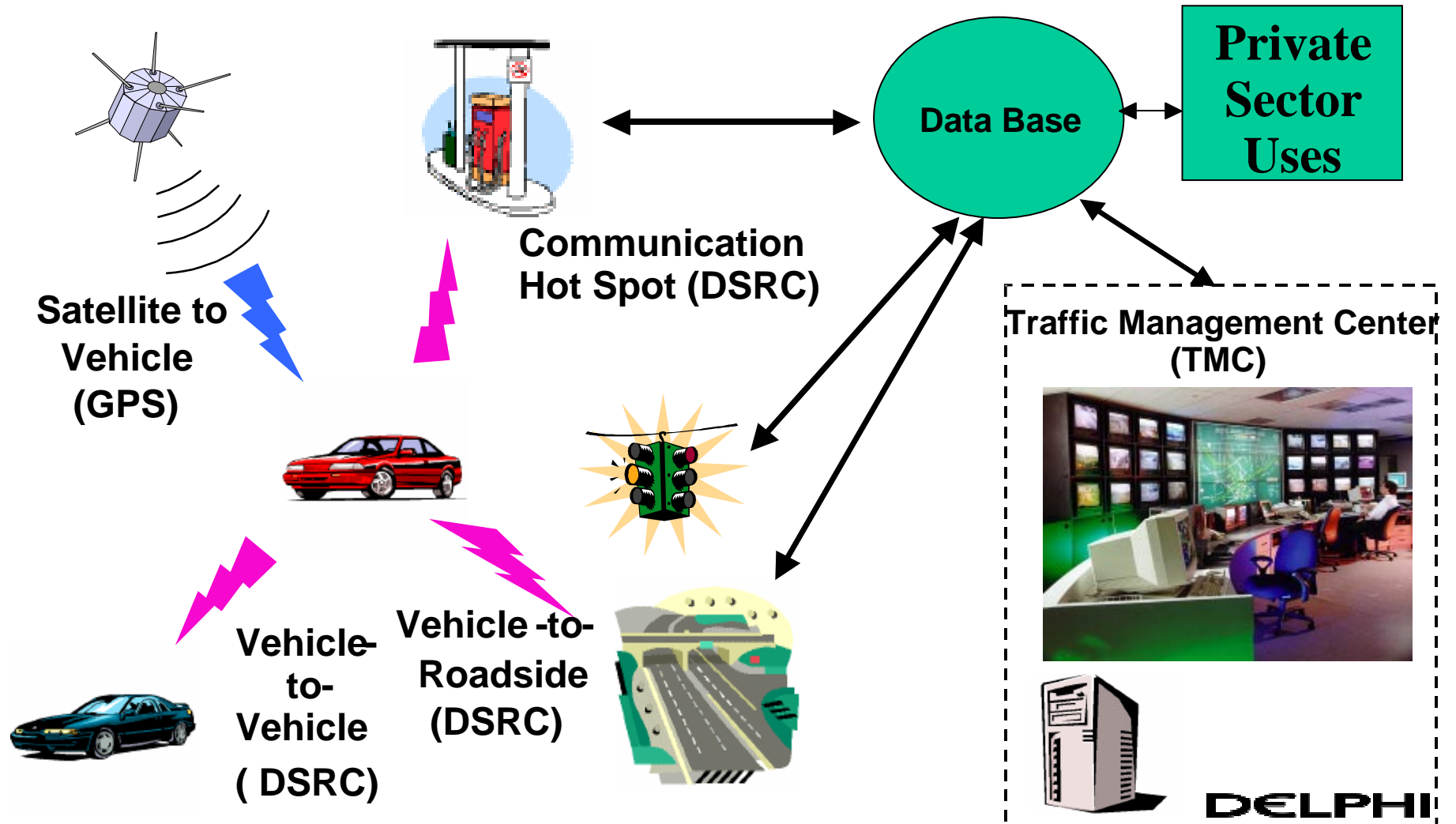
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VII Applications Fall Into Three Categories

- **Highway Safety - Reduce Fatalities**
 - Cooperative vehicle-roadway effort to mitigate deaths, injuries & property damage
 - Primary Approach
 - » Intersection cooperation
 - » Lane / road departure
 - » Vehicle-vehicle cooperation
- **Vehicle Mobility – Improved Traffic Flow**
 - Cooperative information sharing to improve traffic flow and enhance driving experience
 - » Aggregate real-time probe data into map database
 - » Driver advisories, incident detection, optimized signal phasing
 - City, County and States can track service trucks and emergency vehicles
- **Consumer and Commercial Services**
 - Media downloads
 - Information services
 - Fleet management
 - Etc.

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How Does VII Work?



Program Timing

- Phase One – Field Operational Testing (FOT), 2006 to 2008
 - OEM's are in the process of setting up test regions around their facilities
 - » DCX, GM, Ford, Nissan, VW
 - State DOT's are setting up test sites
 - » Michigan, Florida, California, Minnesota
 - Suppliers setting up test sites
 - » Delphi, Motorola
 - Funding coming from the FHWA and state DOT's
 - A Proof of Concept is being set up in the Southeast Michigan area
- Decision to Deploy Nationwide expected late 2008
- Phase Two – Deployment, 2009 to 2016+
 - FHWA, DOT's will start installing access points in 2009
 - OEM production estimated start 2011 ramp to all vehicles by 2016+

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VII-Consortium (VII-C)

- VII-C is a group of OEM's working together to coordinate the Proof of Concept test activity
- Working with the Government (Federal, State and Local) and suppliers
 - Vehicle Hardware
 - Data available from the vehicle
 - Radio signal interface to the roadside units
- VII-C Current Membership
 - Ford
 - Nissan
 - DaimlerChrysler
 - BMW
 - Honda
 - VW
 - Toyota
 - GM

Delphi's Involvement

- The VIIC has organized the tasks in groups
 - System
 - On Board Equipment (OBE)
 - Radio (DSRC)
 - Applications
 - Security
 - ...
- Delphi is currently working in two of these areas
 - On Board Equipment
 - Applications

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On Board Equipment

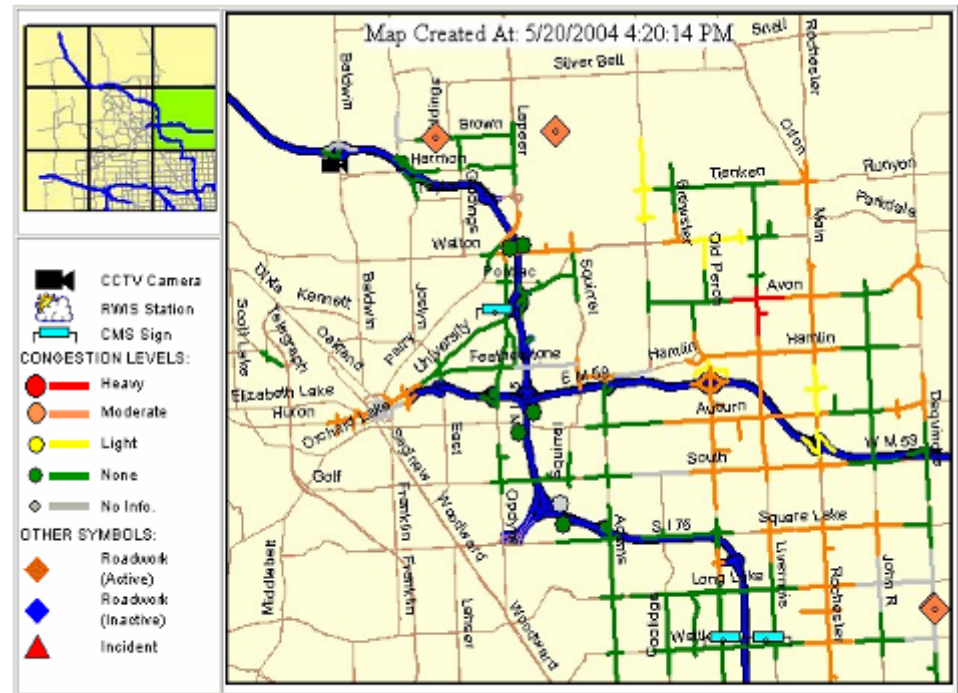
- Responsible for defining and selecting the vehicle equipment to be used for the Proof of Concept
- The team has been working for several months on the selection process

Applications

- In Vehicle Messaging
- Navigation
- Delphi has a test/demonstration area in Kokomo for probe data and pothole detection

Improving Mobility: Using Vehicles as Data Probes

- Transit authorities want data from vehicles in order to better manage traffic flow and resource utilization
- Existing infrastructure is inadequate
 - Too few locations monitored
 - Equipment is unreliable
 - Can't detect critical parameters
 - No nation-wide solution
- Information of interest from vehicles includes
 - Travel velocity
 - ABS activation
 - Wiper activation
 - Outside temperature
 - Pothole detection



[Click here for the full Oakland County map](#)



<http://www2.rcocweb.org/>

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Sample Applications

#	Name	Lead
1	Emergency Brake Warning	CAMP
2	Traffic Signal Violation Warning	CAMP
3	Stop Sign Violation Warning	CAMP
4	Curve Speed Warning	VIIC
5	Display Local Signage	VIIC
6	Present OEM Off-Board Navigation	VIIC
7	Present OEM Reroute Information	VIIC
8	Present Spontaneous Traffic Information	VIIC
9	Electronic Payments: Parking / General	VIIC
10	Electronic Payments: Gasoline	VIIC

#	Name	Lead
11	Electronic Payment: Toll Roads	USDOT
12	Traveler Information	USDOT
13	Ramp Metering	USDOT
14	Signal Timing Optimization	USDOT
15	Pothole Detection	USDOT
16	Winter Maintenance	USDOT
17	Corridor Management Planning Assistance	USDOT
18	Corridor Management Load Balancing	USDOT
19	Weather Information Traveler Notification	USDOT
20	Weather Information Improved Weather Observing	USDOT

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Additional Activity

- ITS America with supporting OEM's and Suppliers is Demonstrating the Technology
 - Convergence, October 2006
 - ITS World Congress in London 8-12 Oct 2006
 - CES 2007
 - Several State locations throughout 2007 to be determined
 - CES 2008
 - ITS World Congress in New York Nov 2008



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Questions?

