4. 付録（APPENDEX）

4.2 DSRC の多様な利用

(Development of DSRC, a National VII Architecture, and a VII Development Analysis)

：U.S.A.

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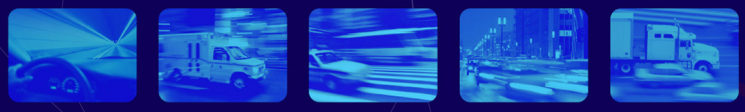

Development of DSRC, a National VII Architecture, and a VII Deployment Analysis

Michael Freitas
10th U.S. – Japan ITS Workshop
November 2, 2005

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Topics Covered

- What is VII
- Development of DSRC
- National VII Architecture,
- VII Deployment Analysis

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Vehicle Infrastructure Integration

Definition: The establishment of vehicle to vehicle and vehicle to roadside communication capability nationwide

Purpose: To enable a number of new services that provide significant mobility, safety and commercial benefits

- Cooperative Safety Systems
- Active Probe Vehicles
- Commercial Applications
- Mobility Management

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Communications Technology

- A number of technologies could be used to provide communication capability for the non-safety applications
  - WiFi
  - Cellular
  - Dedicate Short Range Communication (DSRC)
- DSRC at 5.9 Ghz is a primary technology being considered
- DSRC was specifically designed to support a number of safety applications
- Other possible communication modes do not require public sector involvement

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Dedicated Short Range Communications - DSRC

- FCC has allocated 75MHz at 5.9GHz for
  - Safety Applications (1st priority)
  - Mobility Applications
  - Private Applications
- DSRC 802.11p Standards Complete
  - Based on variation of WiFi -- 802.11a
  - Low Latency/fast connecting/priority attributes
  - FCC has ruled on licensing – Dec. '03
  - Prototype development underway
  - Testing new devices in 2006

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VII Architecture

- Preliminary VII Architecture Developed
- Architecture Based on DSRC Communication System
- Primary Purpose
  - Provide a Basis for Communication Loading Analysis
  - Provide a Basis for Stakeholder Input
- Architecture Components
  - Roadside Equipment (DSRC, GPS, Processor, I/O Controller)
  - Onboard Equipment (DSRC, GPS, Processor, DVI)
  - Network (Switch, Network Management, Interface to Users)

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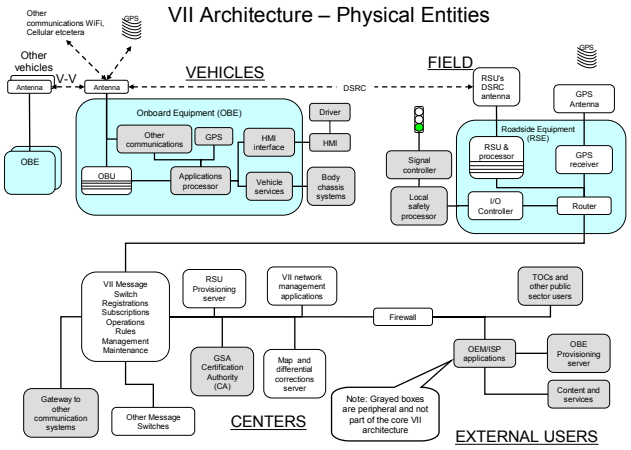
VII Architecture



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Simple Block Diagram

Driver

Vehicle Data

End User

Driver HMI

Subscriber Applications

On Board Unit

Message Switch

5.9 DSRC

Road Side Unit

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Basic VII Deployment Concept

- Time From "Deployment Decision" to "Basic Nationwide Capability" Would Be 2 to 3 Years
  - **Nationwide Deployment of Roadside Units**
  - **New Vehicles Equipped With On-board Units**
- Streamlined Infrastructure Deployment Process
- Initial Deployment Analysis Complete
- Based on Concept of Initial Nationwide Coverage Footprint

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Nationwide Footprint

- Metropolitan Areas Areas
  - Top 50 Urban Areas
  - 50% of all signalized intersections
  - All urban freeway interchanges
  - 60,000 to 100,000 roadside units
- Rural Areas
  - Some coverage in all 50 States
  - All Interstate intersections
  - All intersection of NHS routes
  - 18,000-23,000 units
- Special Locations
  - Defined by each State = 2500
- Total Initial Deployment
  - 80,000-125,000 Units
- Full Long Term Deployment – 200,000 – 250,000 units

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The Year Ahead

- DSRC Prototype Tested and Final Standard Approved
- Prototype System Design Complete
- Field Test Plan Finalized
- Privacy Policy Established
- Business Model Proposed
- Development of Day 1 Applications Underway

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