IEEE 802 CALM Tutorial
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VII/VIIC Program Overview
VII Program is an ITS Tier-1 Initiative for electronically connecting vehicles and the infrastructure via a nationwide communication infrastructure.

This new infrastructure will enable a number of new services that provide significant safety, mobility, and commercial benefits.
VII/VIIC Program Overview

- Convene a “VII Coalition” – auto manufacturers, AASHTO, USDOT – to resolve technical and policy issues that inhibit deployment

- Initiate a program (VIIC) to develop DSRC prototypes that will validate DSRC standards and provide equipment for testing elements of the VII concept

- Define a VII test concept and demonstrate value to all parties
VII/VIIC Program Overview

- OBJECTIVE - Go/No-Go Decision to Deploy VII
  - A joint decision by the US DOT and the Auto Industry to move forward in both infrastructure and vehicles
VII PROGRAM TIMELINE

1995
Developed initial requirements

1997
Frequency allocation request to FCC

1999
Frequency granted by FCC
Standards development started

2001
DSRC Industry Consortium formed
VII concept development

2003
First VII Working Group meeting

2005
Use cases published
DSRC prototype program started
Network design begins
VII Architecture published

2007
Joint USDOT/AASHTO Automaker decision to implement
DSRC prototype hardware
Field operation tests

2009
RSU construction
Network construction

2011
VII starts
OBU production
VII Consortium Overview

- VIIC incorporated 11/04
  - BMW, DCX, Ford, Honda, GM, VW, Toyota, Nissan members
  - Pre-competitive development of VII technologies
  - Single industry voice to government

- Cooperative agreement signed 12/05
  - Develop VII technologies to implementation readiness, validation through Proof of Concept.
  - Deploy a field trial evaluation
  - Contract is $56 million over three years
  - Organized as cost share program with multiple participants
VIIC/FHWA Cooperative Agreement

Objectives

- Analyze the requirements and define specific design elements of the VII Architecture.
- Design specific hardware to facilitate the implementation of VII.
- Develop software that can be employed either on the vehicle or in the infrastructure.
- Fabricate or procure equipment to be used in the test and evaluation of the VII Program.
- Testing specific elements and/or combinations of elements of the VII Architecture.
- Integrate elements of the VII Architecture to permit the evaluation of the design.
- Evaluate the effectiveness of specific designs with respect to the stated objectives of VII.
- Analyze data and results of the VII test program.
- Support high level deployment decision by OEMs and FHWA
VII Architecture Overview

On Board Equipment
- Application 1
- Application 2
- OBE Services
- WAVE Stack
- Radio Module

External Gateway

RSU

VII Network

Pub/Sub Server

Service Provider

Probe Data User

Other Data

Probe Data Based Information

App Messages

Raw Probe Data

Other Uses
Vehicle On-Board Equipment (OBE)
- OSGi/JAVA-based application host platform
- Vehicle Interface, HMI, and positioning Services
- Embedded DSRC Radio, WAVE stack and Java Comm API

Roadside Equipment (RSE)
- DSRC Radio (802.11p) with GPS and router
- Local controller (Signals, signs, etc)

Network (IPv6)
- Publish and Subscribe Server for probe messages
- Network Service Interfaces
- External Services
VIIC - Initial Application Development

- Traffic Signal Violation Warning
- Stop Sign Violation Warning
- In-vehicle Signage (road advisory)
- In-vehicle Signage (local notification)
- Roadway Conditions (weather and potholes)
- Traffic Management and Control
- Alternate Route Guidance
- Traffic Information (OEM)
- Electronics Payments (tolls, gasoline and parking)
VIIC Program Status

- Fully-functional prototype DSRC modules exist

*Pictures courtesy of TechnoCom, Inc.*
Questions???

Thank you for your attention