IEEE 802 CALM Tutorial

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VII/VIIC Program Overview

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- 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	
		Define bandwidth needs – 75MHz
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	
		DSRC prototype program started
2005	Use cases published	VII Architecture published
	Network design begins	DSRC prototype hardware
		Field operation tests
2007	Joint USDOT/AASHTO Automaker decision to implement	
2009	RSU construction	Network construction
		OBU production
2011	VII starts	

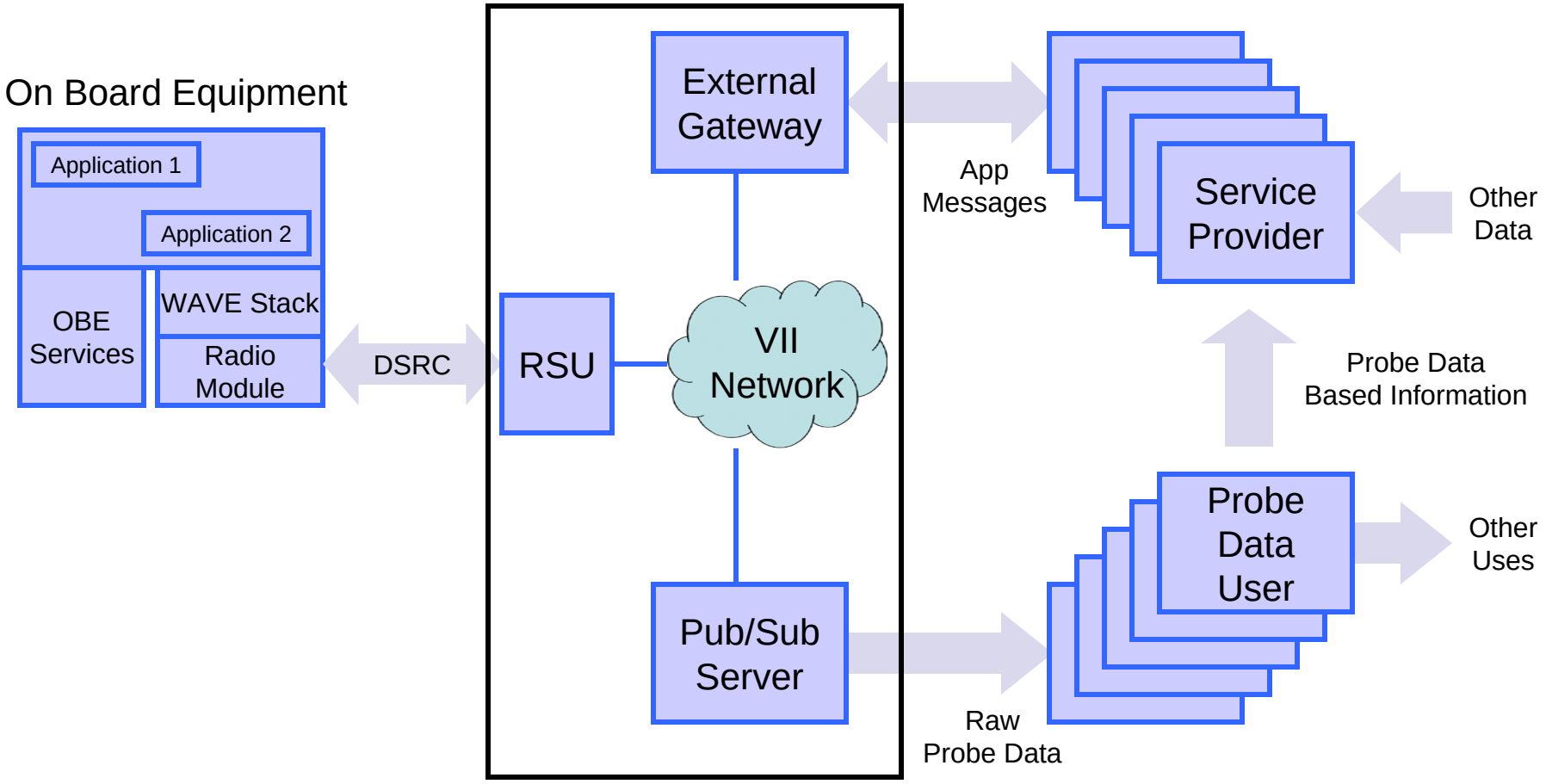
VII Consortium Overview

- 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



VIIC - Key Elements

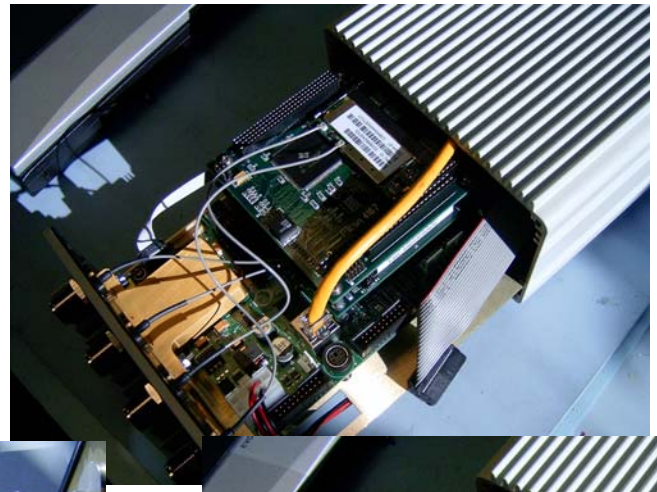
- Vehicle On-Board Equipment (OBE)
  - OSGi/JAVA-based application host platform
  - Vehicle Interface, HMI, and positioning Services
  - Embedded DSRC Radio, WAVE stack and Java Comm API
- Roadside Equipment (RSE)
  - DSRC Radio (802.11p) with GPS and router
  - Local controller (Signals, signs, etc)
- Network (IPv6)
- Publish and Subscribe Server for probe messages
- Network Service Interfaces
- External Services

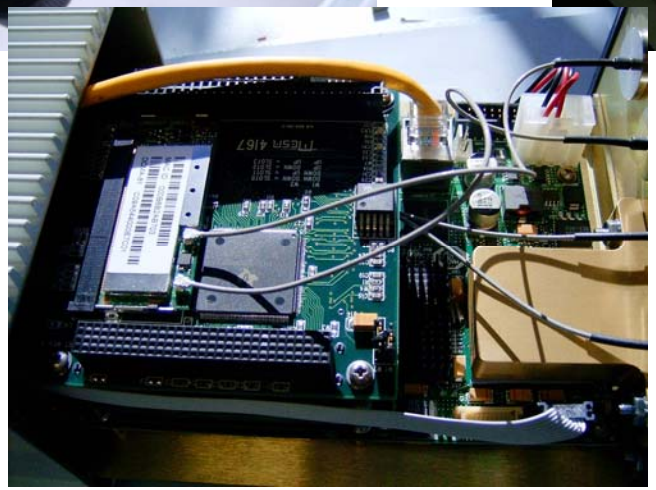
VIIC - Initial Application Development

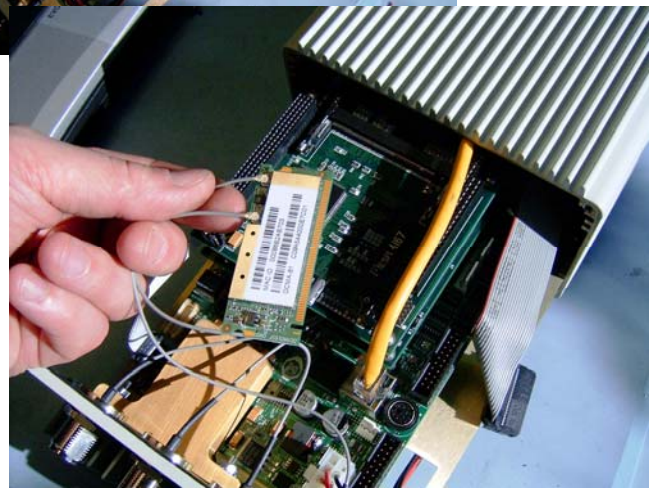
- Traffic Signal Violation Warning
- Stop Sign Violation Warning
- In-vehicle Signage (road advisory)
- In-vehicle Signage (local notification)
- Roadway Conditions (weather and potholes)
- Traffic Management and Control
- Alternate Route Guidance
- Traffic Information (OEM)
- Electronics Payments (tolls,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

VIIC Program Status

- Fully-functional prototype DSRC modules exist







*Pictures courtesy of TechnoCom, Inc.

Questions???

- Thank you for your attention