

VII Consortium

“Driving Toward Deployment”

**Transpo 2010
December 13th, 2010**

VII Consortium (VIIC) – Who we are

- ▶ Industry consortium (Michigan 501 (c6) non-profit) consists of nine light-duty vehicle manufacturers



TOYOTA



HONDA



VIIC 2010 Strategic Plan

VIIC Actions Toward Deployment

Next Steps

VIIC 2010 Strategic Plan

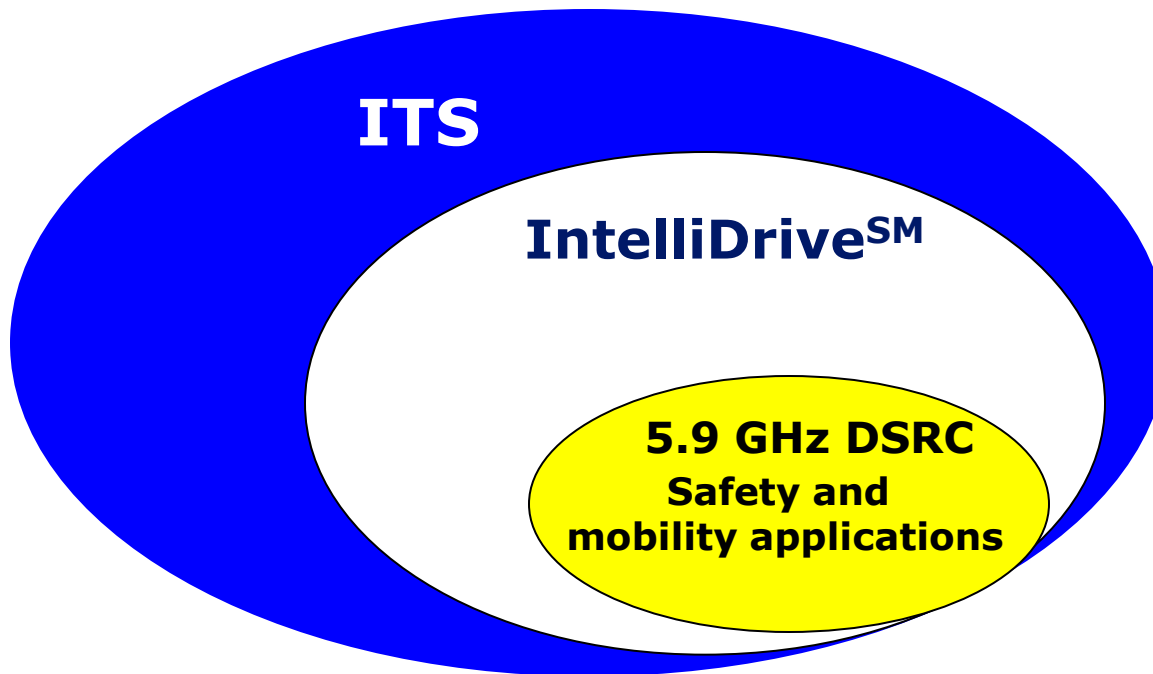
- ▶ **VIIC Mission**
- ▶ **VIIC Focus within IntelliDriveSM**
- ▶ **VIIC 2010 – 2014 Strategic Goals**
- ▶ **VIIC Strategy Moving Forward**

VIIC 2010 Strategic Plan - Mission

The VII Consortium mission is to **identify requirements and champion automotive industry positions for the coordinated national deployment of 5.9 GHz DSRC systems for cooperative safety and other applications.**

VIIC focus within IntelliDriveSM

The IntelliDriveSM initiative encompasses a wide range of evolving technologies developed by many government, industry, and academic partners. The VIIC is primarily focused on deployment of cooperative safety and mobility applications based on 5.9 GHz DSRC .



VIIC Strategic Goals

Our 2010 – 2014 strategic goals are:

- ▶ Complete the development of standards for 5.9 GHz DSRC systems.
- ▶ Identify vehicle manufacturer and infrastructure decision criteria to deploy 5.9 GHz DSRC systems and potential funding models.
- ▶ Establish governance requirements for deployment and operation of 5.9 GHz DSRC system.
- ▶ Identify the potential risks associated with system operation, intellectual property, regulatory and legal compliance.
- ▶ Formulate benefits assessment criteria.
- ▶ Provide leadership and public outreach to communicate benefits and generate high levels of interest in the deployment of 5.9 GHz DSRC.

Moving Forward

- ▶ **Shifting Focus:** The focus of the primary stakeholders is shifting from research toward deployment. Plans for a coordinated nationwide deployment of infrastructure and motor vehicles must be in place to assure that a stable long-term operational 5.9 GHz DSRC system for cooperative safety exists.
- ▶ **Protecting Safety:** The VIIC is committed to ensure that, regardless of other applications using the same spectrum, there exist the necessary conditions to assure the successful operation of cooperative safety applications.
- ▶ **Collaboration:** The VIIC believes that a collaborative relationship with principal stakeholders is critical. We intend to work collaboratively with all principal stakeholders to maximize the potential for success.
- ▶ **Outreach:** The VIIC will reach out to public interest groups to explain the potential safety benefits of 5.9 GHz DSRC systems.
- ▶ **International Harmonization:** VIIC places a high priority on harmonization of standards and policies related to DSRC cooperative safety.

2010 Actions Toward Deployment

- ▶ Initial industry input to the USDOT Safety Policy Roadmap on a section by section basis
- ▶ Joint work with CAMP to assess communication needs to support V2V and V2I security
- ▶ Completed research on feasibility of retrofitting 5.9 GHz DSRC safety devices
- ▶ Initiated research on feasibility of aftermarket 5.9 GHz DSRC safety devices
- ▶ In the process of defining industry's role in harmonization of 5.9 GHz DSRC standards and requirements

Wireless Security Communications Assessment

Satellite Radio, Digital Radio, Wi-Max, Cellular Network, Roadside 5.9 GHz DSRC and Wi-Fi were evaluated

A one-way communication link from the CA to the vehicles/devices is required to provide a current Certificate Revocation List

A secure, two-way communication link from the vehicles/devices to the CA is required to report misbehavior, and to request and receive certificate updates and/or decryption keys

Only three potential wireless options support these security communications requirements, but all have issues:

- Cellular issues: Privacy, cost, lack of stable technology
- 5.9 GHz DSRC issue: Need to deploy a nationwide network of RSEs
- Wi-Fi issues: Privacy, cost, lack of coherent nationwide network, stationary connection

Current Status for Security Communications

- ▶ Security system concepts appropriate to support V2V safety have been developed
- ▶ V-CA communications requirements have been identified
- ▶ Stable, nationwide, secure two-way communication is necessary for deployment of cooperative safety technologies.
- ▶ All three potential wireless communications technologies that appear able to support security for V2V and V2I safety have both strengths and weaknesses
- ▶ Currently DSRC is the focus to support safety (V2V and V2I)

Vehicle-Certificate Authority Access Time to Maintain Full Participation in the V2V Safety System

Equipped Vehicle Penetration	10%	50%	100%
Communication Access (Days)	10	2	1

**This starts to define a minimum nationwide
infrastructure footprint**

Retrofit Research

VIIC research was conducted under the Cooperative Agreement with the USDOT and consisted of three main activities:

- 1) Collect and analyze the *technical requirements for and capabilities of retrofit 5.9 GHz devices*
- 2) Work with Volpe to provide a basis for *estimating the safety benefits expected for retrofit devices*
- 3) *Identify impacts of retrofit devices* that need to be incorporated into the benefit/cost analysis and deployment activities

Result: The viability of retrofitting 5.9 GHz DSRC cooperative safety systems was demonstrated

Aftermarket DSRC Safety Devices

VIIC has recently initiated research under the Cooperative Agreement with the USDOT to study the *unique issues associated with aftermarket devices*

Aftermarket devices are those devices capable of being carried into or easily installed into existing vehicles without authorized interconnection with the vehicles' electrical networks.

- ▶ The technical policy team for this project is in place and actively working on the first phase of research
- ▶ Research is programmed to conclude by the end of 2011

Harmonization

Nationwide acceptance of 5.9 GHz DSRC standards are a given

NAFTA acceptance is also essential

Global harmonized standards will enable OEMs to bring cooperative safety systems to markets worldwide more quickly and at a reduced cost

Global harmonized standards enable:

- Common Vehicle Hardware for communication
- Common Electrical architecture

Harmonization – Current Status

Harmonization is a high priority for VIIC members

- ▶ Some technical meetings have taken place between the US and Europe with both government and industry participation.
- ▶ VIIC is in the process of defining framework for industry participation in harmonization of both technical standards and policy issues. This framework includes extending current bilateral discussions to include Asian and emerging market interests.

Driving Towards Deployment Next Steps

Key Policy Issues to address in the next 12 Months:

- ▶ Governance
- ▶ Certification and Security
- ▶ Harmonization
- ▶ Others as identified

Thank You