



International Telecommunication Union

# Business Models for Vehicle Infrastructure Integration (VII)

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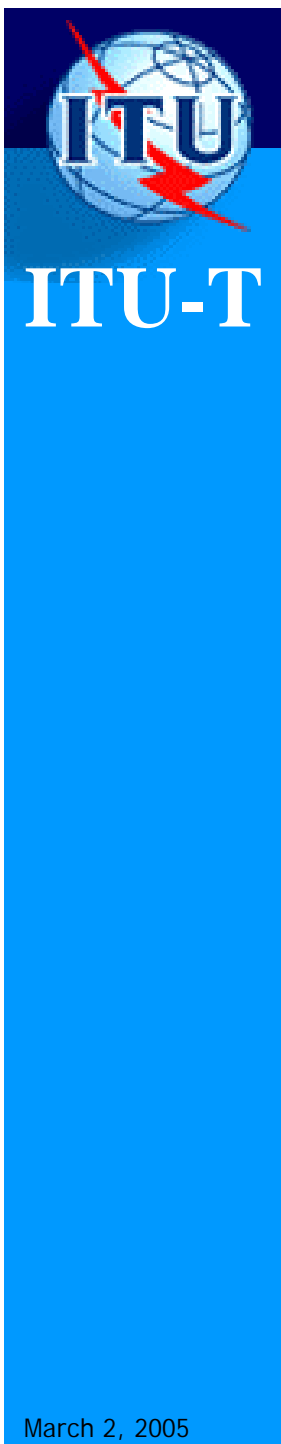
*"The Fully Networked Car, A Workshop on ICT in Vehicles"*  
ITU-T Geneva, 2-4 March 2005



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# Key Challenges for VII Business Models

- o Numerous business models for numerous stakeholders
- o VII environment requires that business models recognize the interdependency with other models
- o Relationship of commercial and government interests, which are different
- o “Chicken and egg” deployment issue
- o Most models are in early development and are not yet solidified



# US DOT's VII Initiative - Overview

- VII: 2-way, vehicle-to-vehicle and vehicle-to-roadside communication to support a new suite of services for improved safety, mobility, and commercial applications
- Within overall telematics and Intelligent Transportation Systems (ITS) environment, the US Department of Transportation is investigating VII potential
  - Will vehicle and infrastructure costs be warranted
  - Can deployment be synchronized appropriately
- What is government role in achieving safety and mobility (funding? deployment?)



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## Vehicle to Roadside Dedicated Short Range Communication (DSRC)

- o Licensed and Federal Communications Commission (FCC) controlled frequency 5.9GHz
- o Vehicle speeds up to 160 kph
- o 300m range
- o Low latency
- o High data rate
- o 8 levels of application priority
- o Standards under development

# VII Example Services

- Safety based on cooperative vehicle-to-vehicle and vehicle-to-roadway interaction
  - Reduced intersection collisions
  - Reduced lane and road departure
  - Warnings for road condition, accidents, curves, work zones
- Mobility improvement from shared information
  - Emergency management
  - Tailored traveler information (travel time, weather, routing)
  - Signal timing and other traffic management
  - Transit coordination
- Consumer convenience, entertainment, and business
  - Parking location assistance
  - Remote diagnostics
  - Electronic payment, toll collection, electronic clearance
  - Entertainment

# Stakeholder Opportunities

## Customers

- Improved safety
- Improved mobility
- Commercial and consumer applications

## Carriers

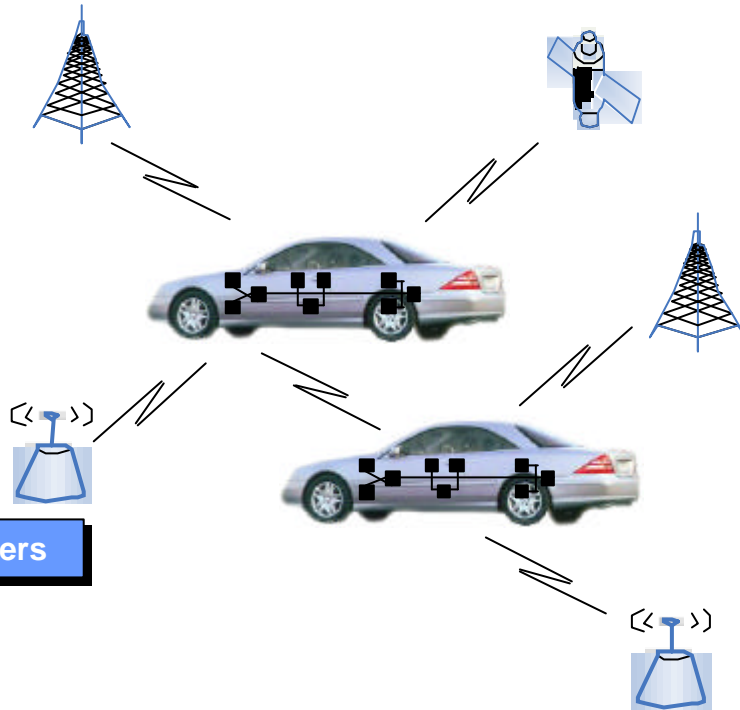
- Air time
- New Subscribers

## Vehicle Manufacturers

- Potential increased vehicle sales
- Additional service and device revenues
- Real-time vehicle data for improved service and reduced warranty costs
- Direct access to customer; improved CRM

## Highway Departments

- Improved traffic management
- Improved safety



## Government

- Improved safety
- Improved mobility

## Service/Content Providers

- Subscribers
- Service and hardware revenue
- Access to customer base

## Hardware Suppliers

- Sales

## Insurance Providers

- Improved safety
- Lowered regulation costs
- Better customer data



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# Issues to be Considered by All Stakeholders

- o Chicken and egg
- o Implementation (at once, gradual, highest priority locations, certain kinds of vehicles?)
- o Who pays for each component, especially infrastructure?
- o Operations and maintenance (who pays, who operates and maintains, who assures quality?)
- o What is long-term stability and existence?
- o Security responsibilities throughout system
- o Unplanned alternative technology disruption
- o Regulation, privacy, liability
- o Customer adoption rates



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# Business Model Concepts That Must be Addressed

- o Customer needs
- o Customer cost/benefits
- o Synergies and dependencies with other stakeholders or systems
- o Partners (to produce, supply, deliver, sell)
- o Competitors (direct and indirect)
- o Income model (reduce costs, generate revenue, regulatory or legal statutes)





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# Business Model Concepts to be Addressed (continued)

- o Cost structures
  - Front-heavy costs and back-loaded revenue
  - Concurrent cost and revenue
  - Back-loaded investment
  - Small initial investment and increased investment with adoption
- o Revenue structures
  - Up front revenue at installation with drop-off after
  - Slow and steady growth
  - Even revenue



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# Business Model Concepts to be Addressed (continued)

- o Selling model
- o Other costs and risks
  - Legal
  - Development and delivery mechanisms
  - Security and liability
  - Internationalization
  - Current forces that will facilitate
  - Current forces that will impede



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# Where Are We Now?

- Technology assessments are occurring now
- Rules of the game are taking shape now
- Stakeholders are talking with each other
- VII Consortium, a non-profit corporation formed November 2004
  - To evaluate deployment viability of national infrastructure and committed to making informed decisions about proceeding with VII
  - Open to all vehicle manufacturers
- VII Coalition
  - US DOT, states, vehicle manufacturers



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# What Needs to be Done?

- Holistic perspective
- Define clear vision that makes sense given value chain complexity and system component relationships
- Make key decisions
- Build each business case
- Define implementation roadmap
- Move from engineer and government focus to business focus: successful technology deployment depends on addressing customer and business issues