



## International initiatives on ICT for mobility

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Brussels - November 6, 2008

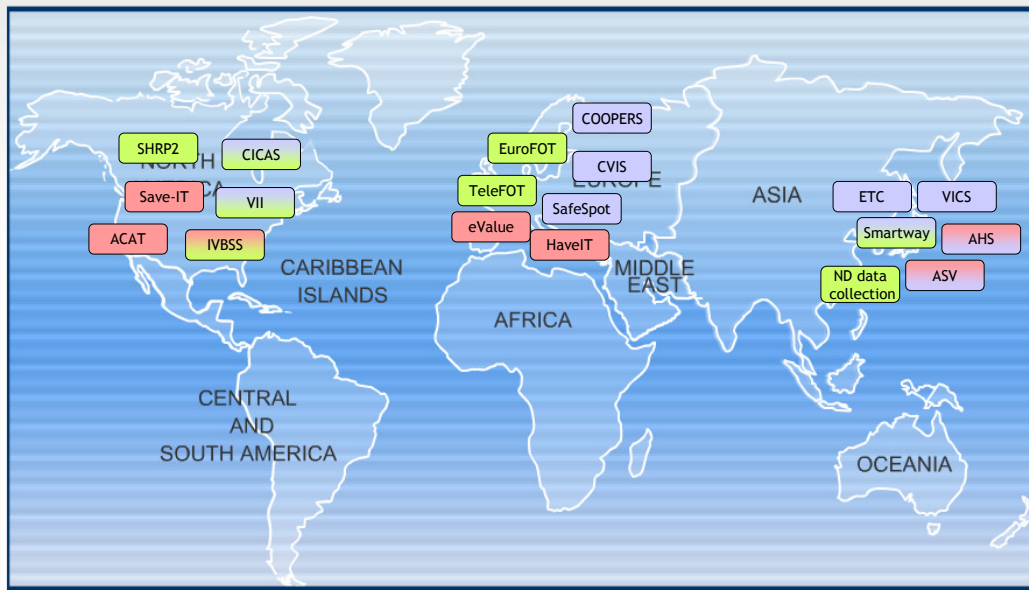
## Introduction



- Main sub-topics covered
  - Intelligent vehicle systems
  - Cooperative systems
  - Field Operational Tests/Naturalistic driving studies
- Focus
  - Ongoing major initiatives
  - US and Japan
  - Biased towards safety-related applications

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# Overview



Intelligent vehicle systems

Cooperative systems

FOT/ND

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# Europe



## Intelligent vehicle systems

- HAVE-IT, eValue

## Cooperative systems

- CVIS, SafeSpot, COOPERS, C2C consortium, COM-eSafety

## FOTs

- FESTA, EuroFOT, TeleFOT, FOTNet + national initiatives
- Naturalistic driving pre-studies: DaCoTa, PROLOG (RTD 2008)

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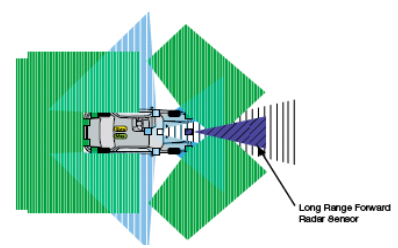
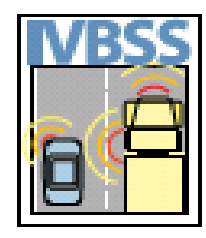
# USA



# Intelligent vehicle systems

## IVBSS (Integrated Vehicle-based Systems)

- **Objective:** Develop and test solutions for integrating ADAS -> accelerate deployment
- **Timeframe:** 2005-2009
- **Content:** Design -> prototype development -> FOT
- Led by UMTRI
- **Website:** [www.its.dot.gov/ivbss](http://www.its.dot.gov/ivbss)



# Intelligent vehicle systems



## Save-IT (Safety Vehicle Using Interface Technology)

- **Objective:** To develop, demonstrate, and evaluate adaptive interface solutions -> minimize distraction and enhance crash warning system effectiveness (similar to AIDE)
- **Timeframe:** ~2003-2008
- **Content:** Human factors research -> prototype vehicle development
- Led by UMTRI
- **Website:**  
» [www.volpe.dot.gov/hf/roadway/saveit/index.html](http://www.volpe.dot.gov/hf/roadway/saveit/index.html)

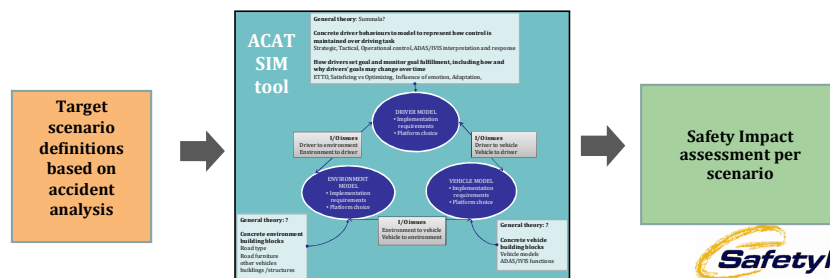


# Intelligent vehicle systems



## Advanced Collision Avoidance Technologies (ACAT)

- **Objective:** Develop methods for safety impact assessment of active safety systems
- Focus on detailed **scenario-based simulation** (this is not "standard" traffic simulation!)
- Not much public information available...



# Cooperative Systems



## Vehicle Infrastructure Integration (VII) program

- **Objective:** Promote development and deployment of V2I and V2V technologies which increase safety, efficiency, and convenience of the transportation system
- **Content:** Communication technologies, architectures, applications, business models, evaluation by FOTs etc.



# Cooperative Systems



## Vehicle Infrastructure Integration (VII) program (cont'd)

- **VII Consortium:** Automobile manufacturers, IT suppliers, U.S. Federal and state transportation departments, and professional associations
- Proof-of-concept tests in California and Michigan 2008
- SafeTrip-21 project
  - » Builds on VII research
  - » FOT in Connected Traveler testbed in San Francisco Bay Area - demo at ITS World 2008
- <http://www.vehicle-infrastructure.org/>

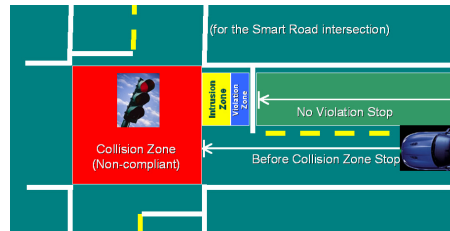


# Cooperative Systems



## Cooperative Intersection Collision Avoidance Initiative (CICAS)

- **Objective:** Reduce cross-path crashes at intersections through the application of ITS technologies
- **Timeframe:** 2004-2008
- **Content:** Design -> Prototype development -> FOT -> Deployment strategies
- **Website:** [www.its.dot.gov/cicas/](http://www.its.dot.gov/cicas/)



# Field Operational Tests



Completed several large-scale FOTs & ND studies: ACAS, RCDW, Volvo FOT, Drowsy FOT, 100-car study

Ongoing FOTs often part of development projects and programmes (e.g. IVBSS, CICAS, SafeTrip-21)



# Naturalistic driving



## SHRP 2 (Strategic Highway Research Program)

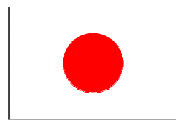
- General program on highway research
- **Includes major naturalistic driving studies**
- +2500 vehicles for 2 years across the US + 250 in Canada
  - » Continuous data recording
  - » 500 equipped with active safety systems
  - » Representative sample of crash data and near-crash data -> Database for future traffic safety research
- Website: [www.trb.org/SHRP2](http://www.trb.org/SHRP2)



# Japan



# Intelligent vehicle-/cooperative systems

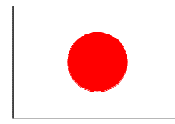


## Advanced Safety Vehicle (ASV)

- Launched 1991
- Focused initially on vehicle-based systems (Collision Avoidance, Lane keeping support, HMI development etc.)
- Today more focus towards V2V

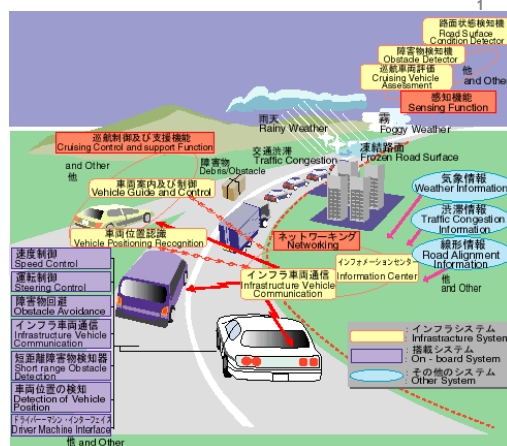


# Intelligent vehicle-/cooperative systems



## Advanced Cruise Assist Highway System (AHS)

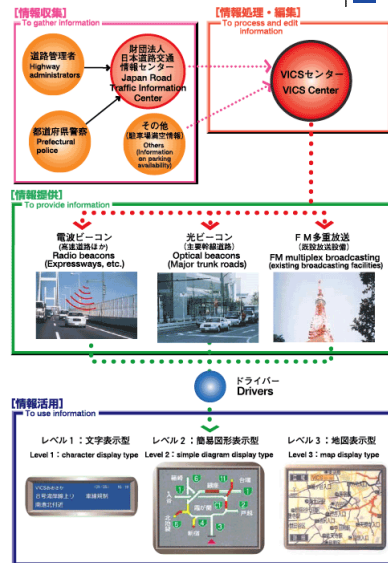
- Started 1989
- Driven by AHS Research Association since 1996
- Broad set of driver assistance functions largely based on V2I communication (information, vehicle control assistance, automation)



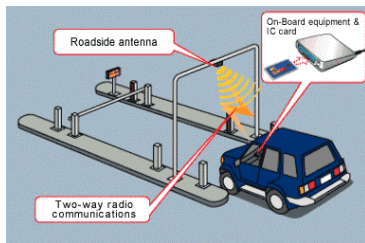
# Intelligent vehicle-/cooperative systems

## VICS (Vehicle Information and Communication System)

- Traffic information through radio- and IR beacons and FM
- Established 1995



## ETC (Electronic Toll Collection)



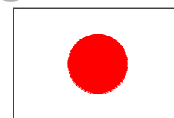
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# FOT for cooperative systems

## Smartway

- Development, test and deployment of ITS/cooperative systems *platform*
- 2007 field test: 60 vehicles on the Tokyo Metropolitan Expressways - cooperation with private sector
- Scaled up during 2008 to other sites
- Nationwide deployment 2009 and beyond
- [www.smartway2007.jp](http://www.smartway2007.jp)
- More information on Japanese ITS initiatives and strategies available at MLIT website: [www.mlit.go.jp/road/ITS/](http://www.mlit.go.jp/road/ITS/)

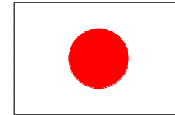


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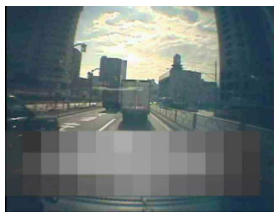
# Naturalistic driving



## Naturalistic data collection by stand-alone data recorders

- Equipped a large number of vehicles (150 000?) with simple data recorders - mainly commercial vehicles (e.g. taxis)
- Video and kinematic data
- Driven by insurance incentives
- Used for incident and accident analysis

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# Conclusions



Parallel development of Intelligent Vehicle Systems since the 1990's in all three regions

USA leading with respect to Intelligent Vehicle FOTs

Current major initiatives on Cooperative Systems in all three regions (EU project cluster, VII, AHS/Smartway) -> large-scale FOTs under way

Major initiatives on naturalistic data collection for driver behaviour and accident analysis in USA/Canada (SHRP2) and Japan. Preparatory activities will be started in Europe.

Interesting ongoing work on scenario-based simulation for safety impact assessment in the US (ACAT)



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Thank you for your attention!

