Overview of ITS and Vehicle Safety Communications in the world

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Outline

1. What is ITS?
2. Vehicle Safety Communications in the world
3. 1st International Seminar & Workshop on Vehicle Safety Communications
4. Conclusion
1. What is ITS?

Questions to be solved

<Environmental Problem>
Reduce CO₂: 15%
Reduce NOx: 30%

<Traffic Jam>
Loss: About 12 Trillion Yen
Reduce: 80%

<Traffic Accident>
Fatality: About 10,000
Reduce: 50%

In Japan

Info-communications

Advanced Transportations
Safety Smooth Comfortable Efficient Environmental Protection

ITS
US: TEA 21  ★ SAFETEA

**TEA 21**
I VI: R&D on traffic accident avoidance for each vehicle categories

**SAFETEA**
Recognized necessity of information exchange between vehicles and roadside

**ITS Info-communications**

Goal: 30% reduction of deaths by 2008

ITS America Board Meeting, adopted the goal of zero deaths, zero injuries and zero delay.

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Europe: e-Safety

- Established by EU
- Planned and Managed by ERTICO as a political activities for
development plan for vehicle safety in Europe.
- Target: Reduce 50% of fatal traffic accident by 2010.
- Main projects which influences to communication:
  ADASE: Advanced Drivers Assistance Systems in Europe
  CarTalk: Vehicle to vehicle communication systems for
  keep safety
  ActMAP: Dynamic updating of on-board digital maps
  ETSI TG37: ITS Communications
2. Vehicle Safety Communications in the world

- **US:**
  - DOT/FCC/ASTM/IEEE/ISO
  - VSCC (Vehicle Safety Communications Consortium)
  - UC Berkeley/ PATH

- **Europe:**
  - ADASE

- **Japan:**
  - ITS Info-communications Forum
  - AHSRA
  - JARI (Ex. J SK)
  - ASV

- **ITU/ISO**
  - ITU-R SG8 WP8A
  - ISO TC204 WG16

- FCC (Federal Communications Commission) allocated 5.85 – 5.925 GHz to ITS with priority safety.
- U.S. DOT funded ASTM to create the standards for 5.9GHz.
- Based on IEEE 802.11a, IEEE 802.11 has decided to start a study group for DSRC.
- Base for ISO TC204 WG16.
Vehicle Safety Communications Consortium

Preliminary Detailed Communications Requirements for Selected High-Priority Safety Application Scenarios

- Traffic signal violation warning
- Left turn assistant
- Cooperative forward collision warning
- Lane change warning
Europe: ADASE 2

ADASE 2 (Advanced Driver Assistance Systems in Europe) will be instrumental to ease the introduction and implementation of active safety systems by

- harmonizing and communicating these functions,
- identifying technological needs and focusing on essentials,
- preparing architectures, roadmaps, and standards.
Japan (1): ITS Info-communications Forum

V2V Deployment Scenarios

Scenario 1

ACC

Associated ACC

Enhancement

Stop & Go Collision Warning

point to point link for Safety

Scenario 2

Multi-purpose DSRC

ETC

Spin off

Intersection Collision Warning

point to multi-point link for Safety

Ad-hoc Network
Japan (2): Road-Vehicle Cooperation

“Roads” Communications “Vehicles”
Japan (3): AHSRA Deployment Plan

(A) Deployment of the infrastructure for information collection

(B) Deployment of message sign

(C) Deployment of current DSRC technology

(D) Development of next generation DSRC technology

Year

Amount of infrastructure deployment
Japan (4): JARI ITS-Center

Study Activities on Inter-vehicle Communication by JARI ITS-Center (ex-JSK)

(1) Feasibility Study
- Cooperative Driving using IVC

(2) Standardization Study
- Support ISO/TC204 activities
- Construct “Concept Reference Model for IVC”
  \( \rightarrow \text{Status: Drafting for Proposal} \)
- Experimental Study on Intersection Collision Warning using IVC
  \( \rightarrow \text{Status: Basic data acquisition for Proposal} \)

JARI: Japan Automobile Research Institute
JSK: Association of Electronic Technology for Automobile Traffic and Driving
3. 1st International Seminar and workshop on VSC

1. Objectives
   - Sharing information on Vehicle Safety Communications (VSC) at international level
   - Contribute for early deployment of Vehicle Safety Applications

2. Workshop Agenda
   - Objective of Vehicle Safety Communications
   - Understanding of Applications using Vehicle Safety Communications
   - Communications for Vehicle Safety
   - Communications for Vehicle Safety (Field tests)
   - Global Standards on ITS radio communications
4. Conclusion

**Toward the future ITS·VSC deployment**

- Joint VSC development of Europe-US-Japan
- VSC Information distribution from Japan to the world
- VSC Standards Development
- Request vehicle manufacturers to join for this VSC development program
- Cost & Benefit