Objectives and potential applications of VSC part I

AHS

Road – Vehicle Cooperation

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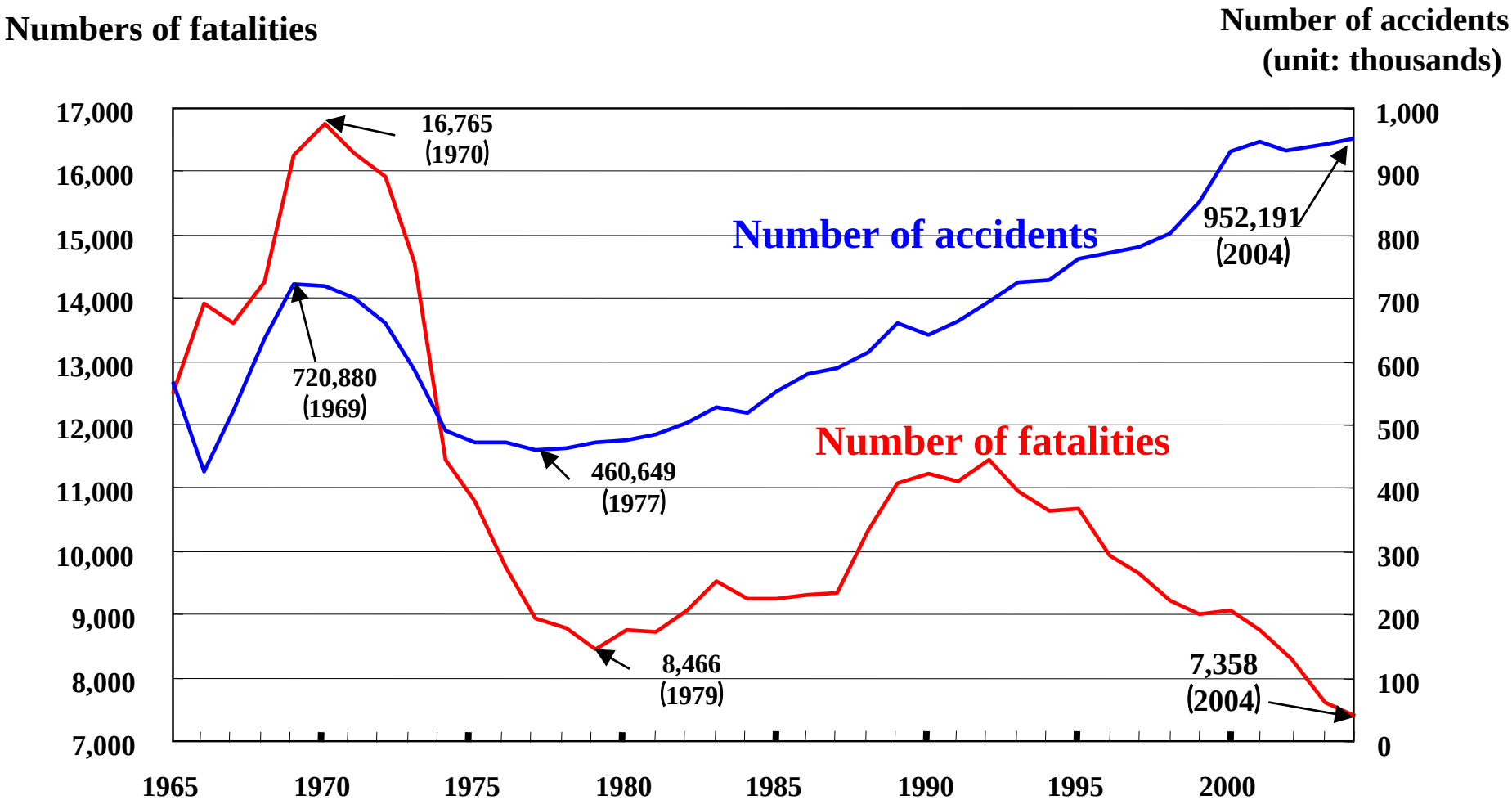
Advanced Cruise-Assist Highway System Research Association (AHSRA)

Contents

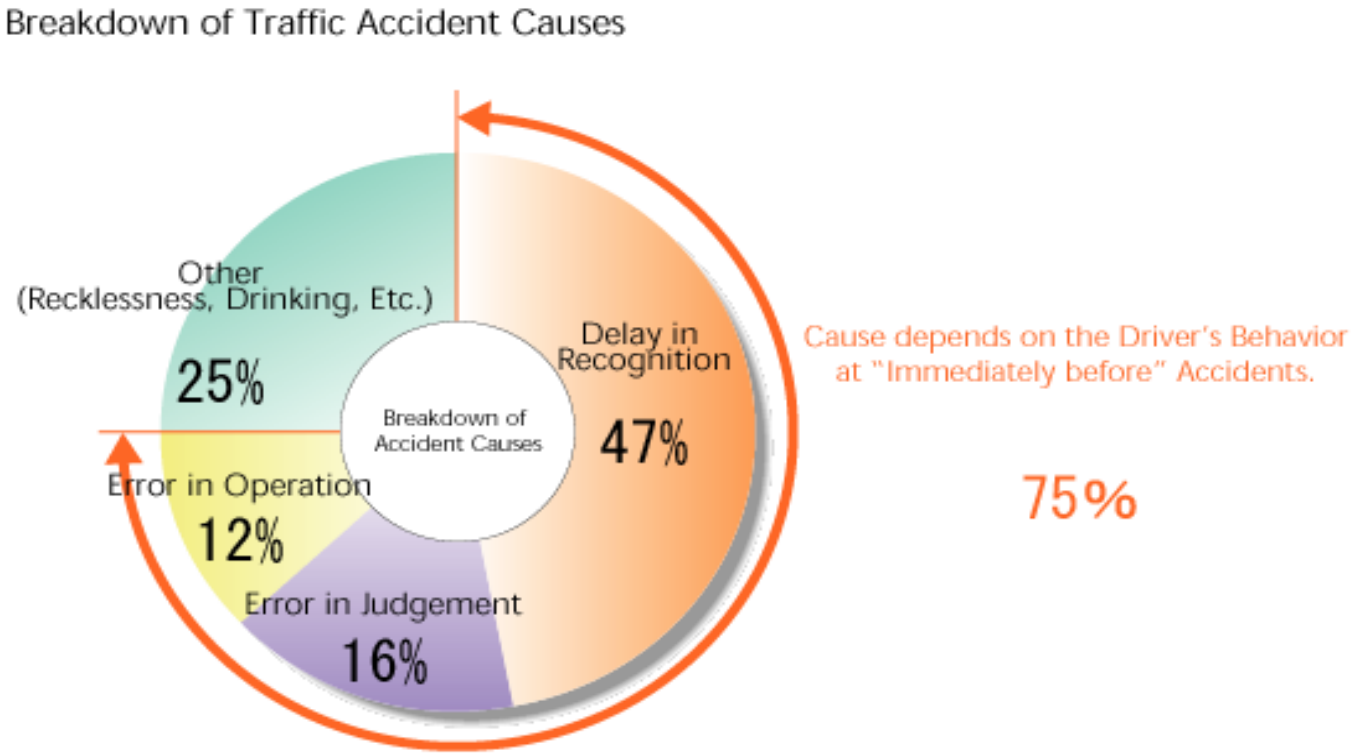
Trend of Traffic Accidents in Japan



from Traffic Accident Statistics

Breakdown of Causes in the Driver

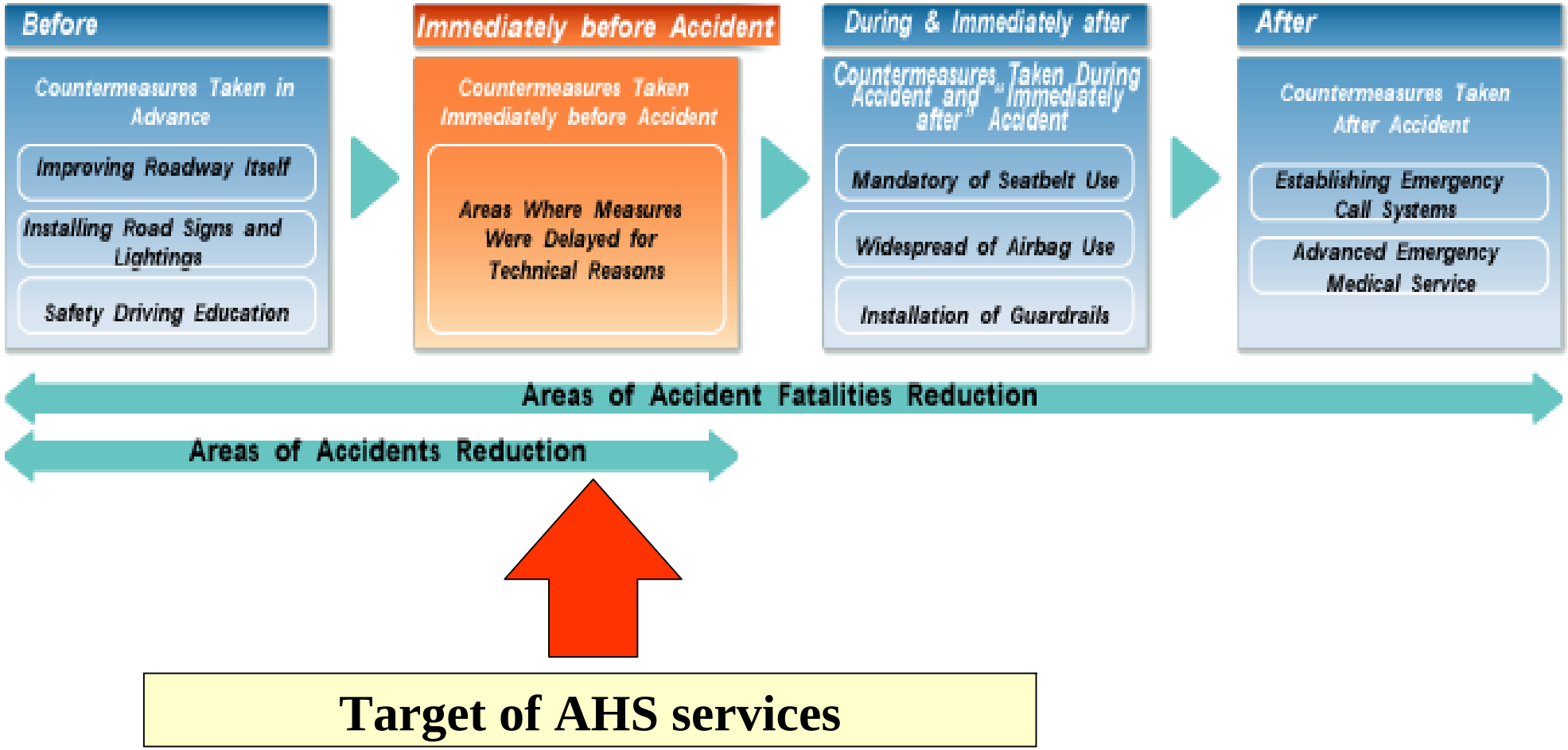
Cause of accident in 75% of cases was driver error immediately before accident.



Source: Institute for Traffic Accident Research and Data Analysis,
Traffic Accident Statistics 2000

Need for measures immediately before accidents

Classified Traffic Accident Countermeasures with temporal transition



Comparison of Features

Item	Vehicle Standalone	Vehicle Standalone	Road Infrastructure or Other Vehicle
Acquisition of information on vehicle vicinity	Strength	Strength	Limitation
Acquisition of information at distance, on blind spots	Impossible	Impossible	Possible
Usable locations	All	All	Only where installed
Flexibility of perspective	Small	Small	Great
Signal throughput	Short	Short	Long
Linkage to other information	Difficult	Difficult	Few limitations
Influence of weather	Affected	Affected	Not affected
Separate judgment for traffic condition	Strength	Strength	Limitation
Integrated judgment for traffic condition	Limitation	Limitation	Strength
Reflexive driving Support	Strength	Strength	Limitation
Deliberative driving Support	Limitation	Limitation	Strength

Strong Point

Weak Point

Cooperative Driving Support System

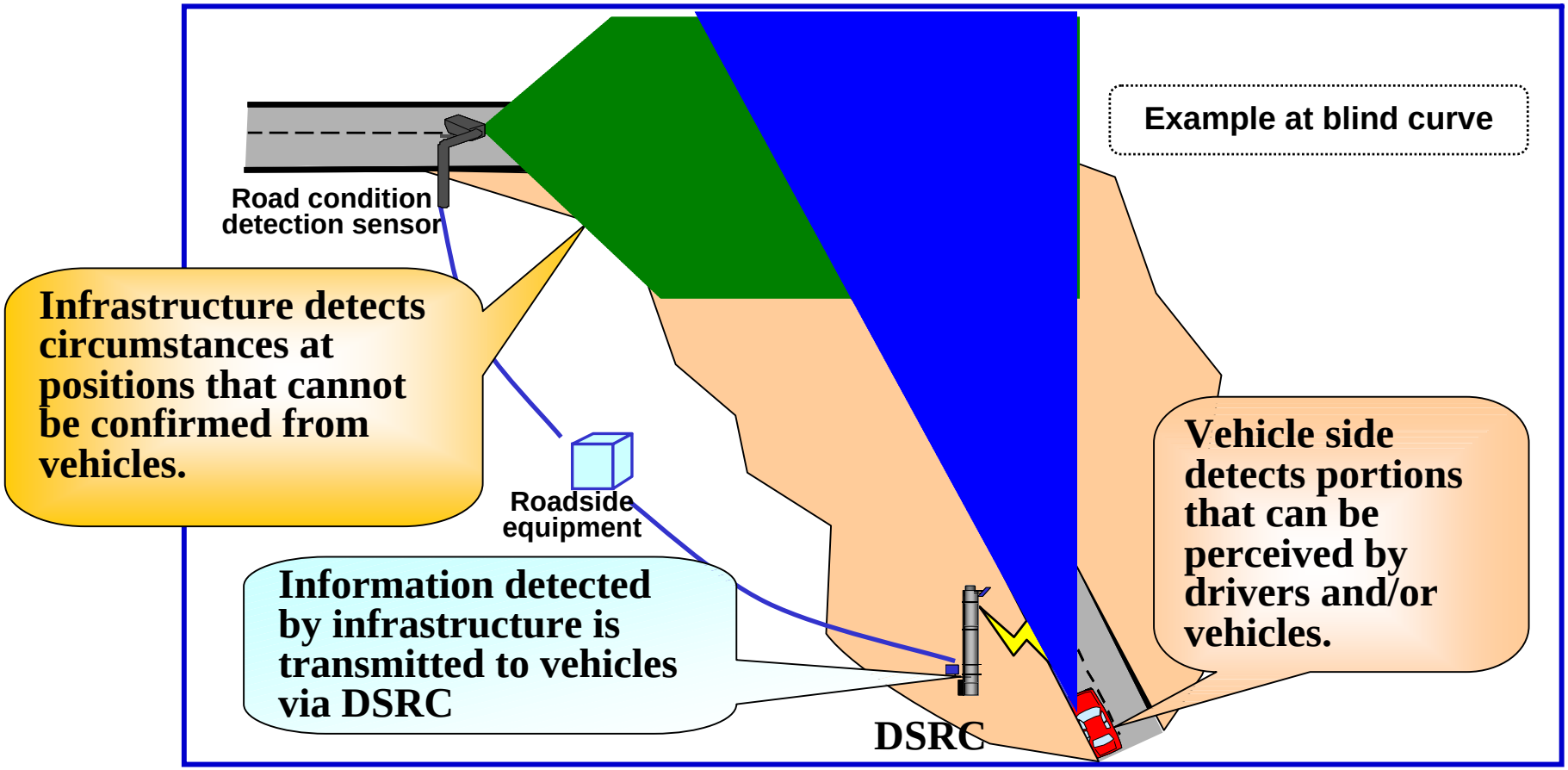
Cooperative Driving Support System

Real-time Driving Support
by Infrastructure & Vehicle cooperation

ASV : Advanced Safety Vehicle
R&D on Intelligent Vehicle

AHS : Advanced cruise-assist Highway System
R&D on Intelligent Road

Basic Concepts of AHS and ASV



Infrastructure

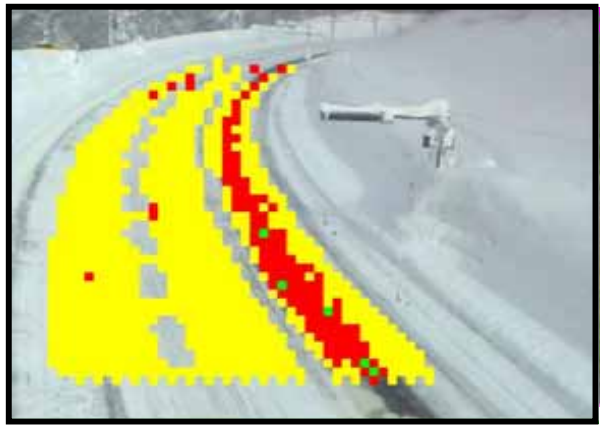
- Takes charge of the range that is difficult or impossible to perceive by drivers and/or vehicles.

Vehicle

- Vehicle side takes charge of portions that can be perceived by drivers and/or vehicle sensors.

Road Surface Sensor

Image from Camera



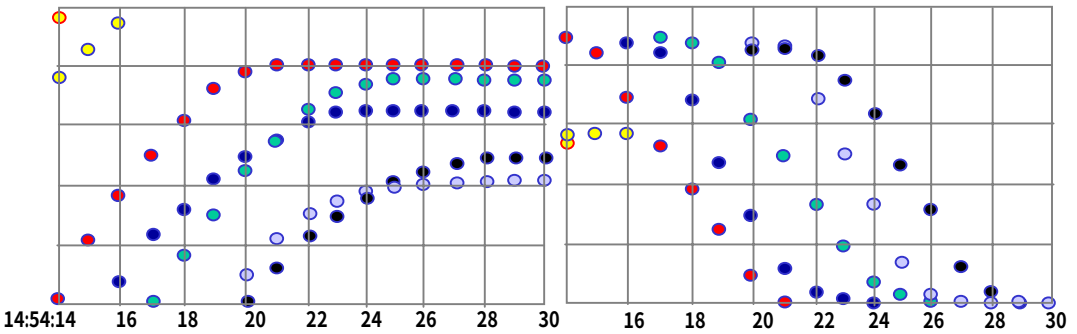
Processed Image

Making it possible to acquire information on the worst conditions within the area, which is useful for road management

Road Condition Sensor

Detecting Individual Vehicle Behavior

Image

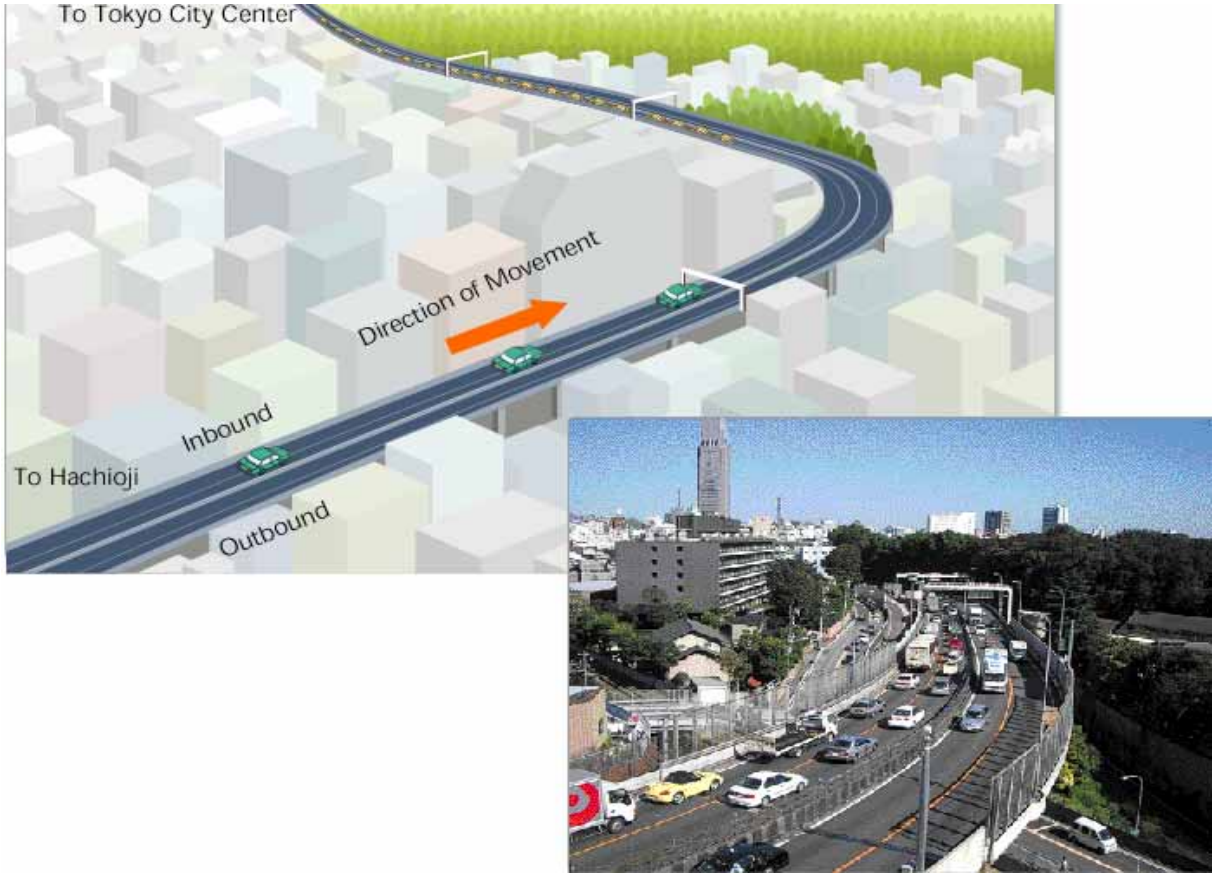


Position Speed

Analysis of Phenomena ⇒ Improve Road Facilities

Sangubashi Curve on Metropolitan Expressway

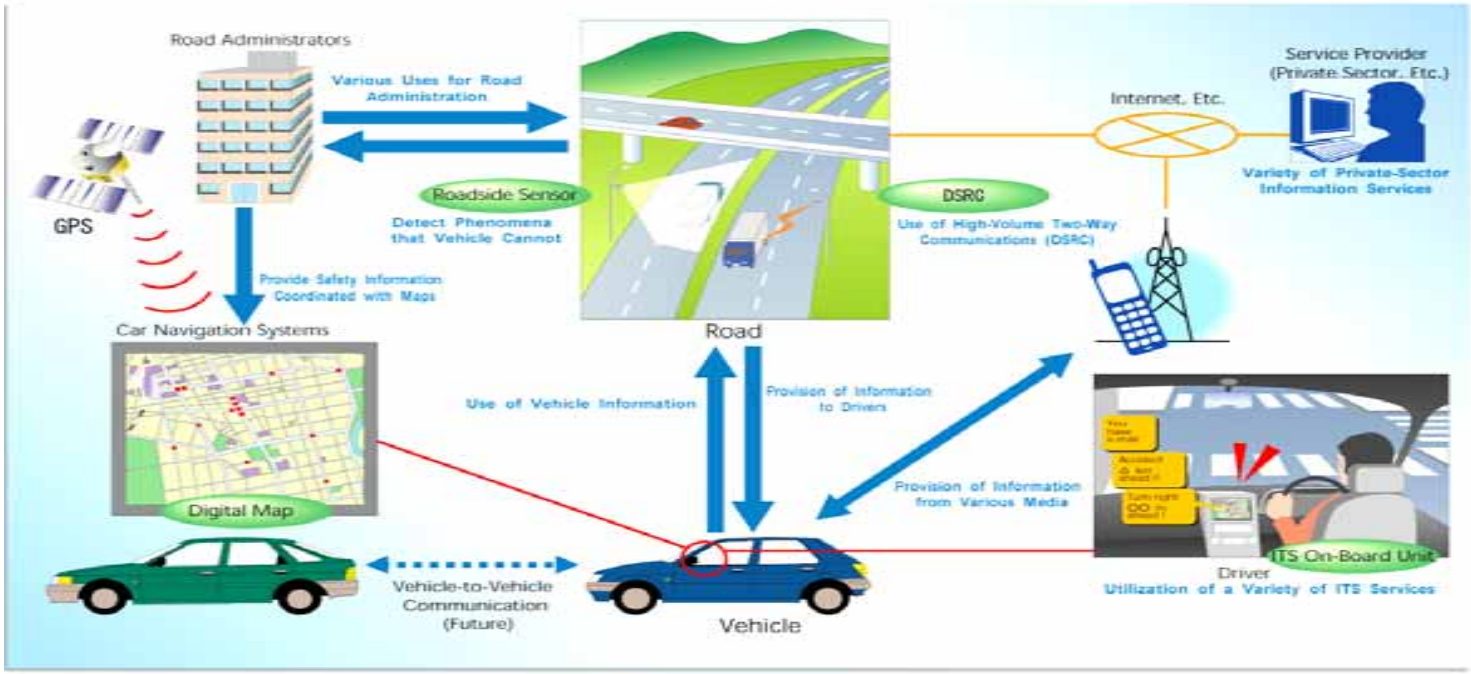
- **Sharply curved with a radius of 88m**
- **In 2002, 140 accidents occurred on this section**
- **Poor visibility because of buildings alongside the road**



Information of VICS

AHS Development Toward 2nd Stage ITS

ITS Enter the Second Stage Smartway was placed as a national strategy aiming to realize a full-fledged ITS society through the concrete objectives of Zero Fatal Traffic Accidents, Safe Driving Support for the Rapidly Growing Number of Elderly Drivers



Developments in AHS

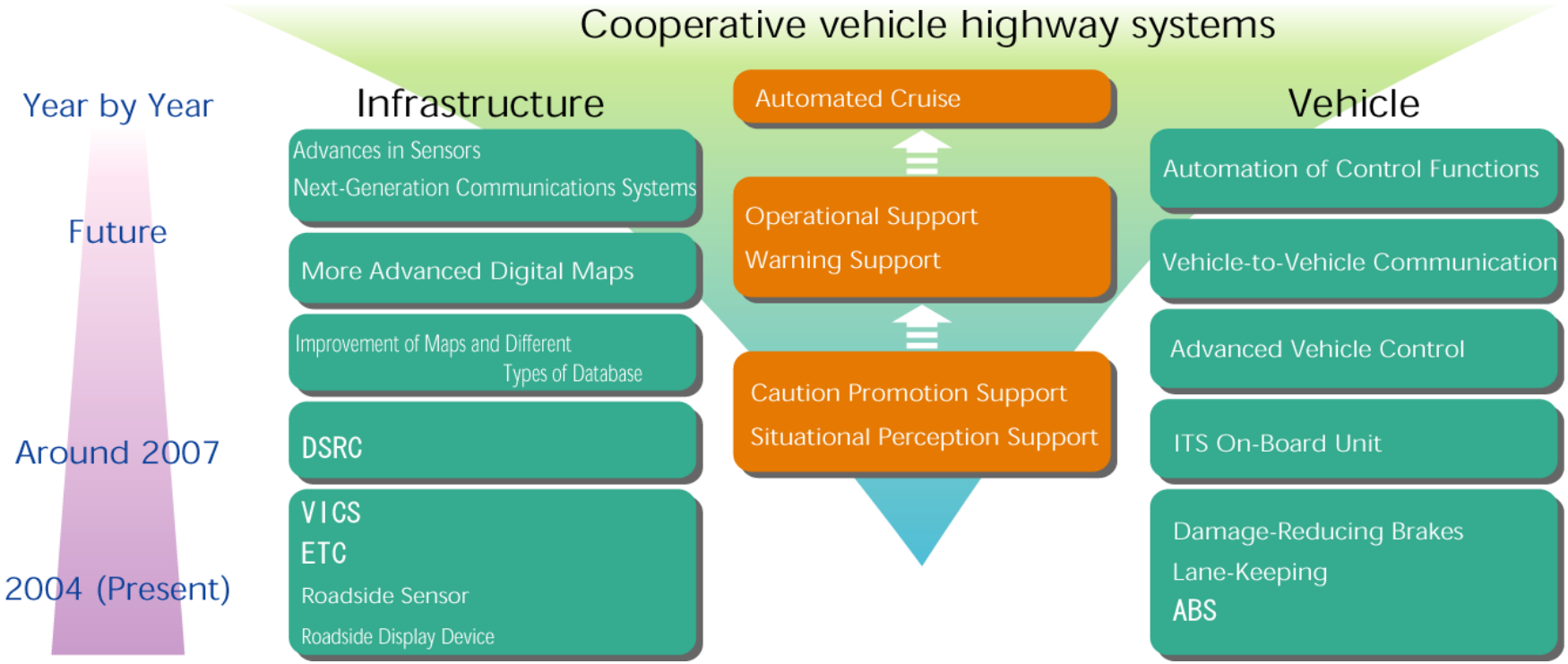
- Working Toward Zero Fatal Traffic Accidents
- Safe Driving Support for the Rapidly Growing Number of Elderly Drivers
- Aim to Reduce Congestion at Sag Sections, Tunnels, Etc.
- Collect Vehicle Information and Realize a Variety of Services

- Concept of vehicle-highway cooperation up to now and spread it to the world
- The effort to realize a full-fledged ITS society in 2007 is underway
- Early implementation is the goal for information provision,

Roadmap of Services Targeted

Roadmap for Cooperative vehicle highway systems

- Use and link to overall efforts for gradual practical application, by using results of research and development and technologies.
- To realize a highly sophisticated cooperative vehicle-highway systems as road and vehicle systems undergo their respective advances.



Cooperative Driving Support System