Next-Generation Intelligent Transport Systems (ITS) utilizing ICT

November 17, 2014

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Contents

*MIC: Ministry of Internal Affairs and Communications in Japan

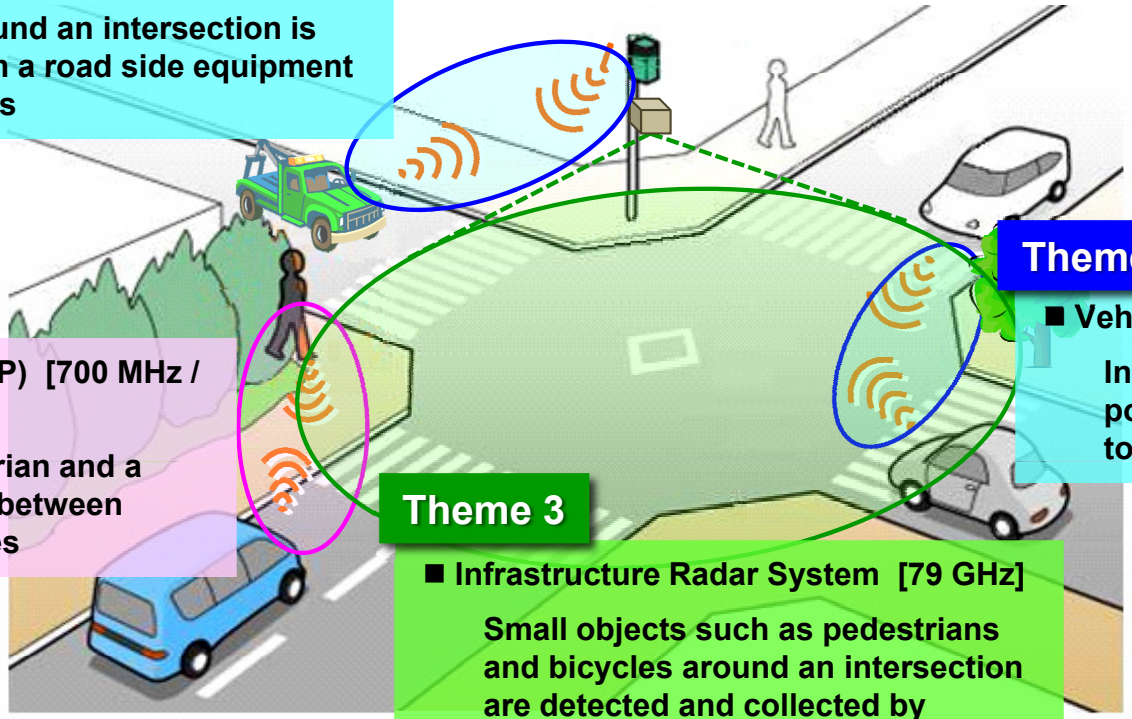
Next-Generation ITS utilizing ICT

- MIC plans to realize an advanced Safety Driving Support system.
- The system can prevent traffic accidents on the basis of information transmitted by V2X (V2V, V2I, and V2P) communications, as well as information collected by Infrastructure Radars.
- The feasibility of systems are going to be demonstrated on public roads.

Theme 1

■ Vehicle-to-Infrastructure (V2I) [700 MHz]

Information around an intersection is transmitted from a road side equipment (RSE) to vehicles



Theme 2

■ Vehicle-to-Pedestrian (V2P) [700 MHz / cell-phone]

Information of a pedestrian and a vehicle are transmitted between pedestrians and vehicles

Theme 1

■ Vehicle-to-Vehicle (V2V) [700 MHz]

Information such as speed and position of a vehicle is transmitted to other vehicles

Theme 3

■ Infrastructure Radar System [79 GHz]

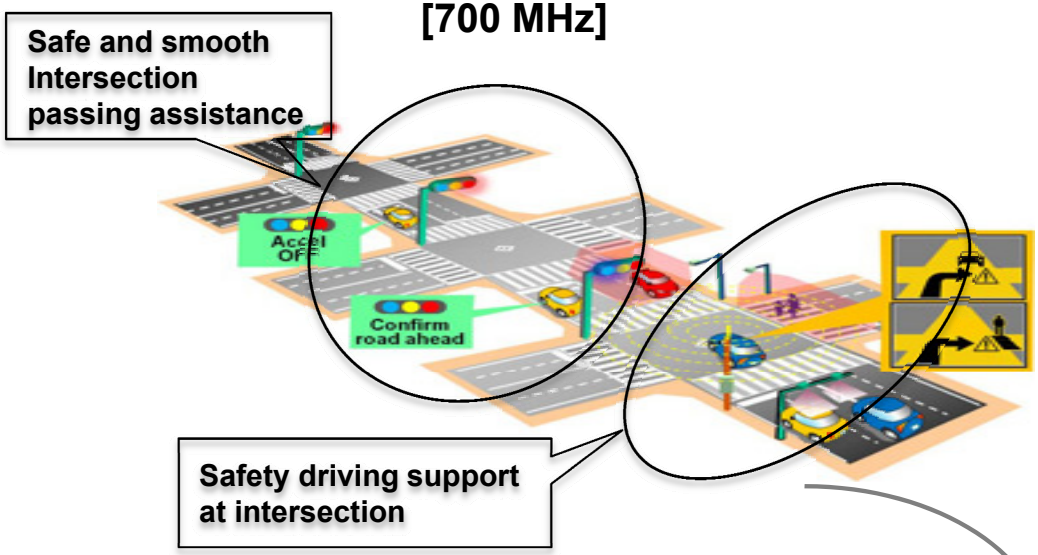
Small objects such as pedestrians and bicycles around an intersection are detected and collected by infrastructure radar

Theme 1: Vehicle-to-Vehicle / Infrastructure Communication (V2I, V2V)

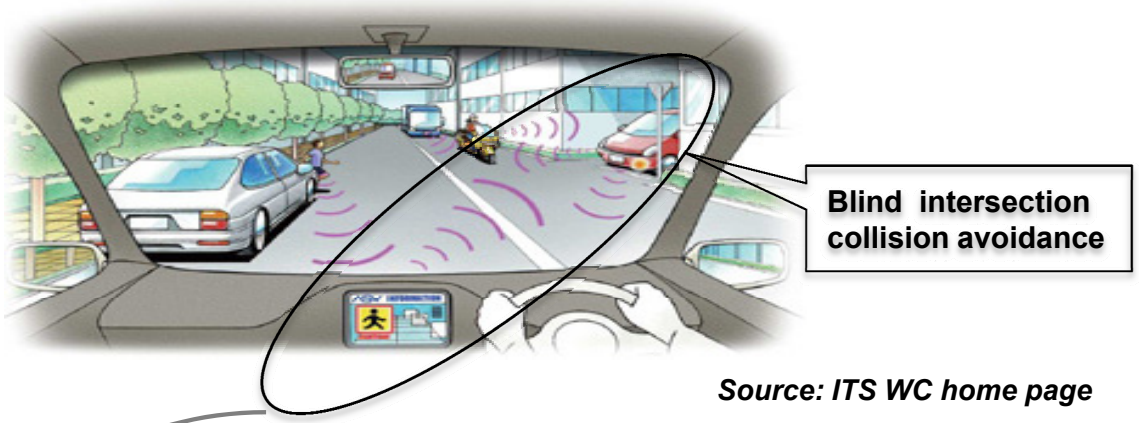
Towards Automated-Driving System using Communication Technology

- V2V / V2I communications contribute the realization of the Cooperative Driving Support system
- Enhanced and sophisticated driving support system are required for Automated-Driving system

Vehicle-to-Infrastructure (V2I) Communication [700 MHz]



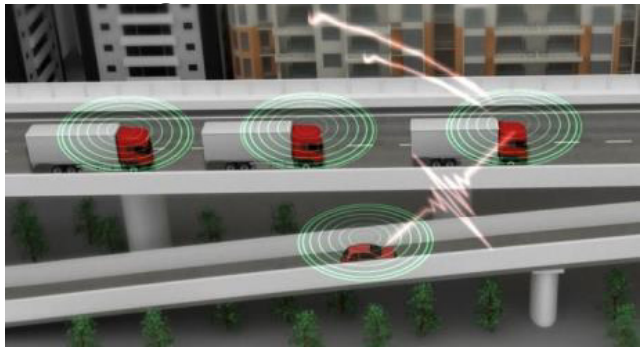
Vehicle–to–Vehicle (V2V) Communication [700 MHz]



Source: ITS WC home page

Enhanced and Sophisticated

Cooperative Automated-driving



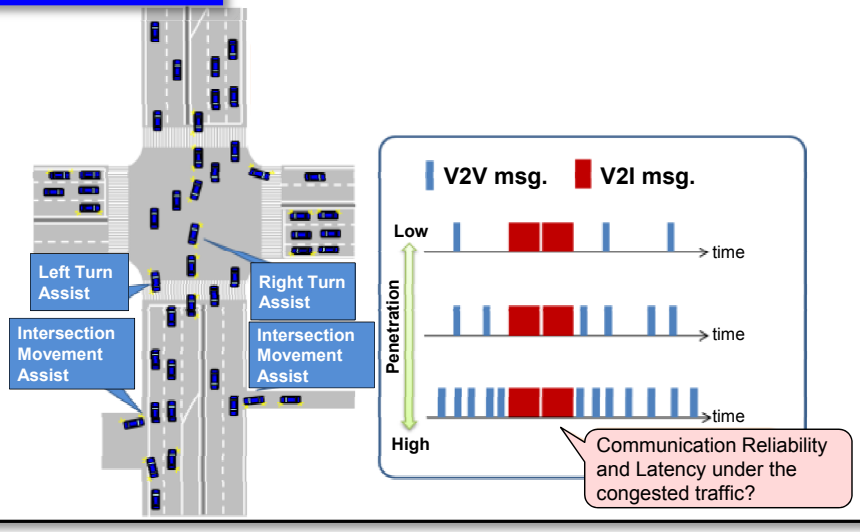
Commercial Vehicle Automatic Driving

Theme 1: Vehicle-to-Vehicle / Infrastructure Communication (V2I, V2V)

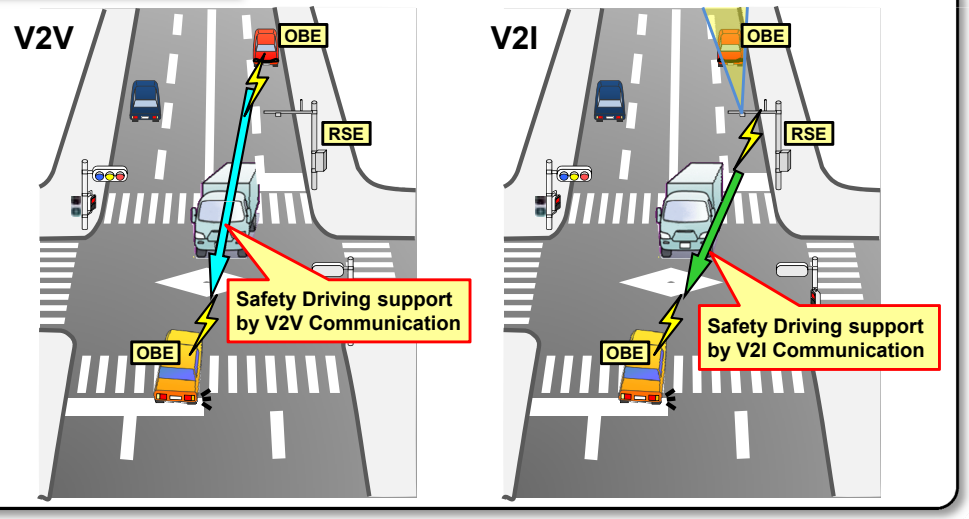
MIC Theme 1

Development of Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication Technology for Automated-Driving System

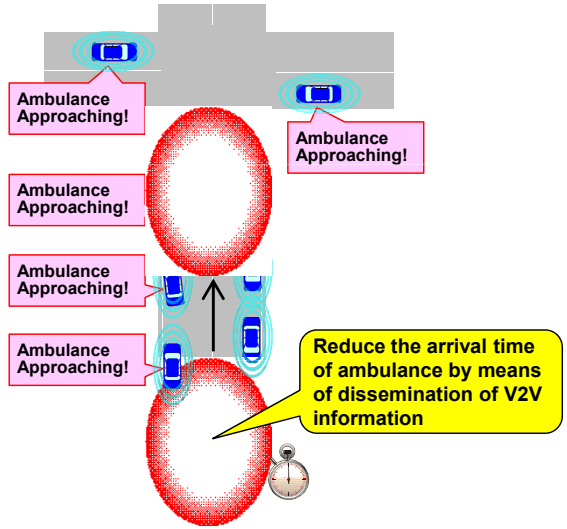
Sub-Theme (a) Research on Communication Technology



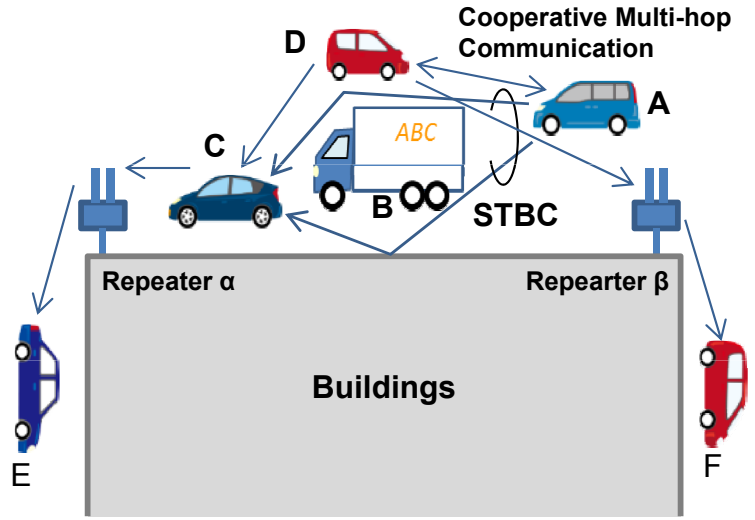
Sub-Theme (b) Research on Cooperative Driving Support Service



Sub-Theme (c) Research on Penetration Promotion of Driving Support System



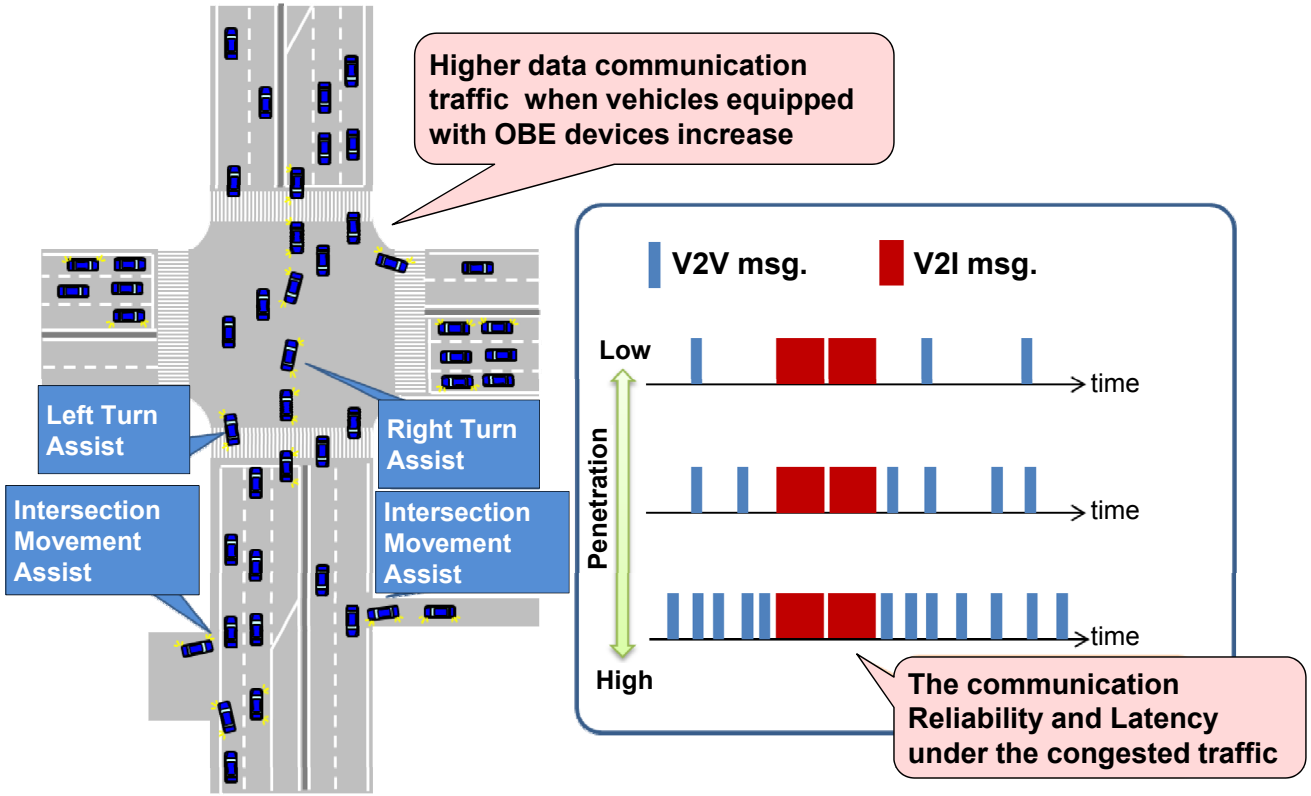
Sub-Theme (d) Research on Reliable and Low-Delay Network Technology for Automated-Driving System



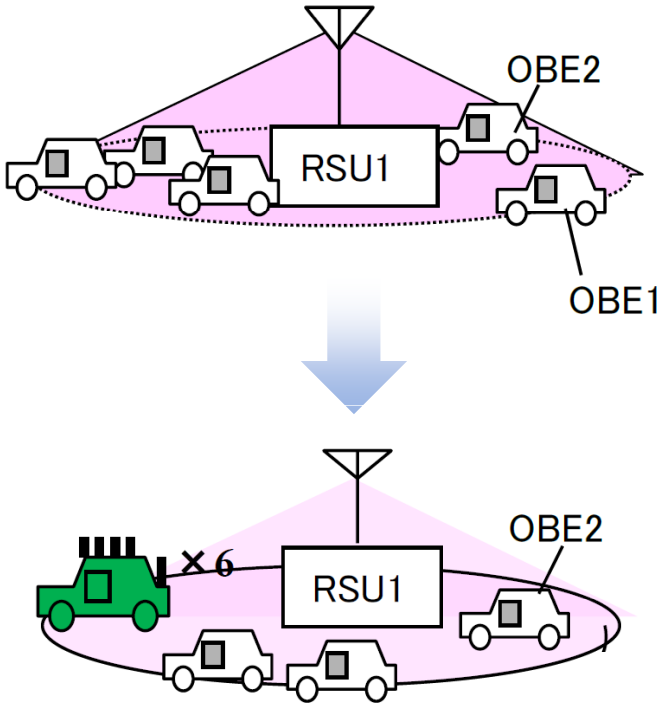
Sub-Theme (a) - Research on Communication technology

Objective

Verify the V2V and V2I communication performance and scalability under the condition that a large number of vehicles exist in the high density



Increase a number of vehicles and measure the packet delivery ratio and transmit delay

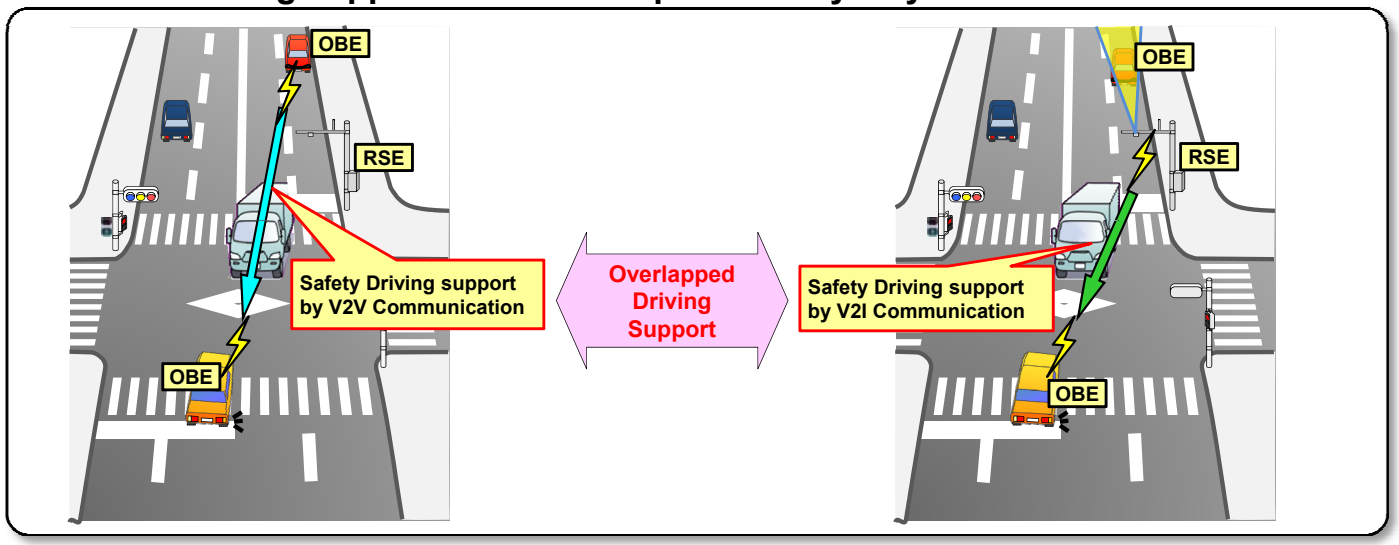


Sub-Theme (b) - Research on Cooperative Driving Support Service

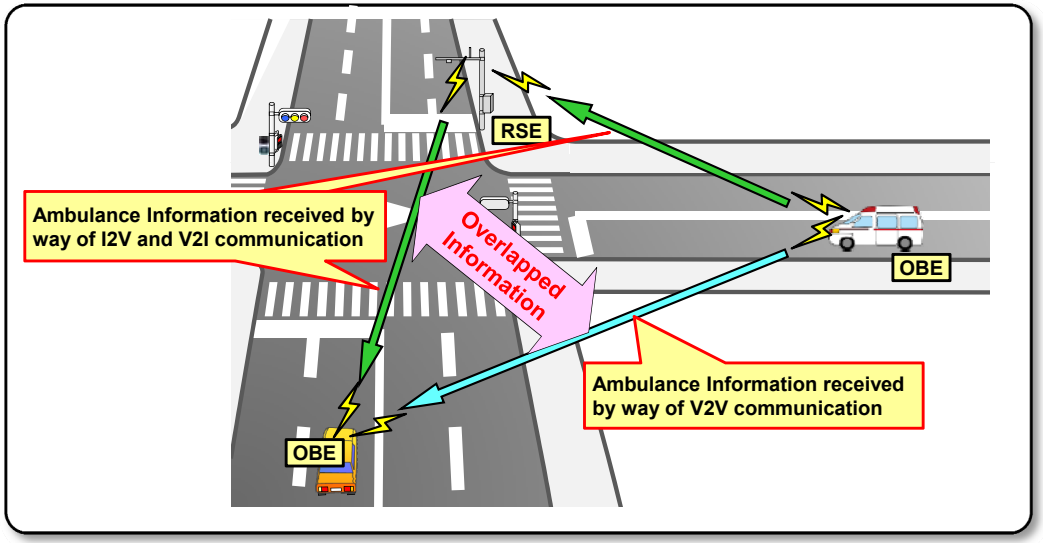
Objective

Examine how to provide drivers with driving support service under the condition that V2V and V2I communications co-exist or plural V2V and V2I services occurs

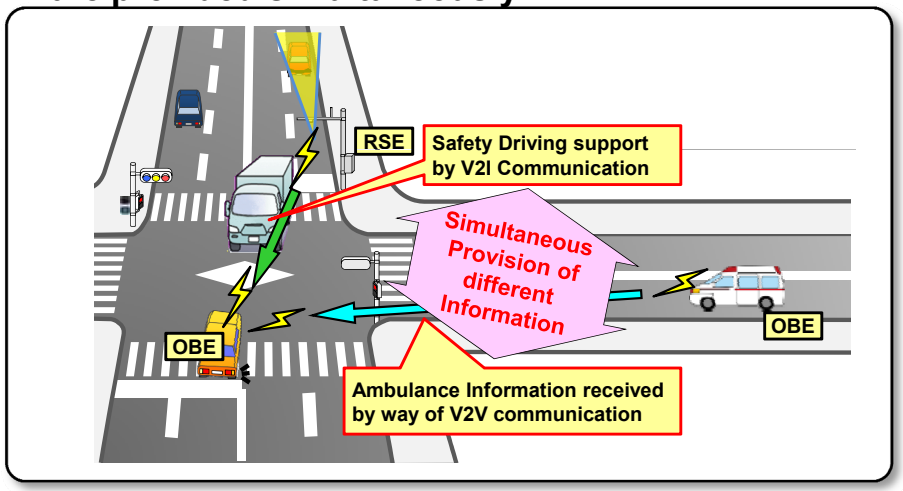
Case: Same Driving support services are provided by way of both V2V and V2I



Case: Ambulance information are provided by way of both V2V and V2I



Case: Driving support service and ambulance information are provided simultaneously

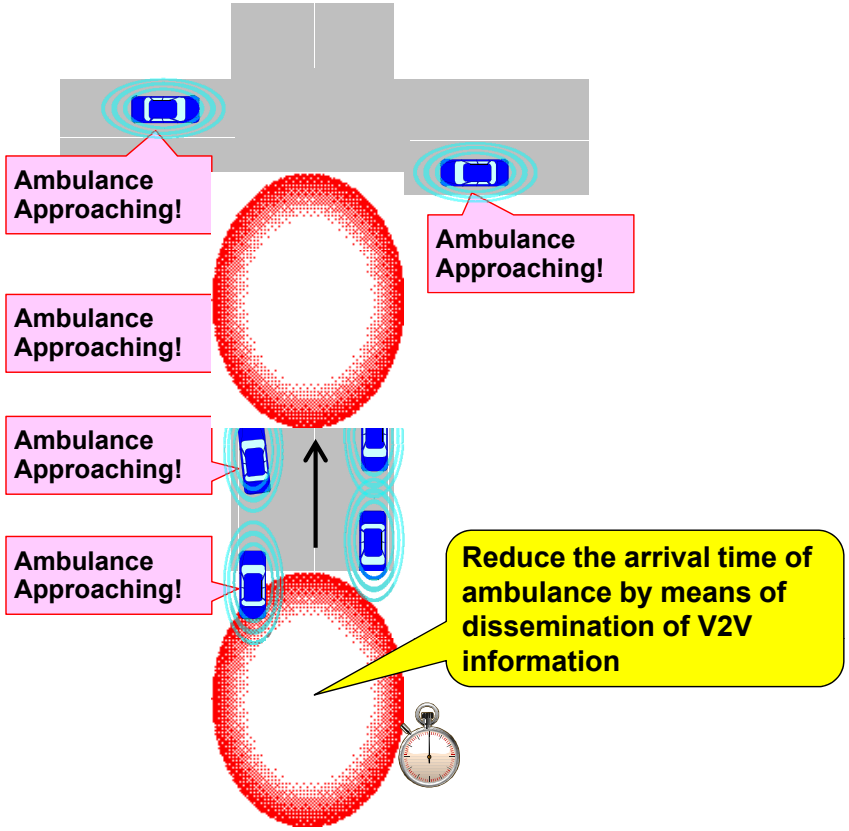


Sub-Theme (c) - Research on Penetration Promotion of Driving Support System

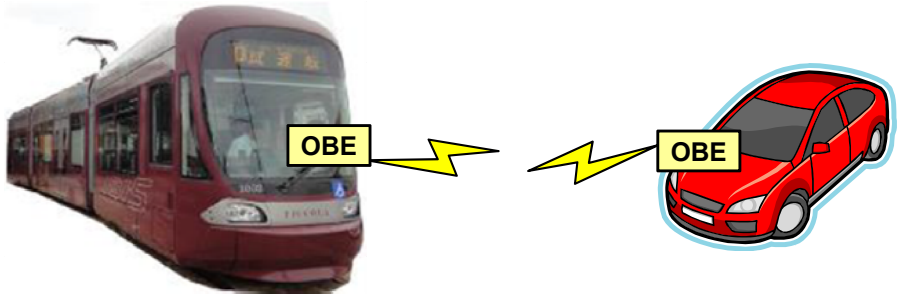
Objective

Examine the effectiveness of V2V communication system when deployed in public vehicles (ambulance, fire truck, tramcar, etc.) for future penetration of V2V system

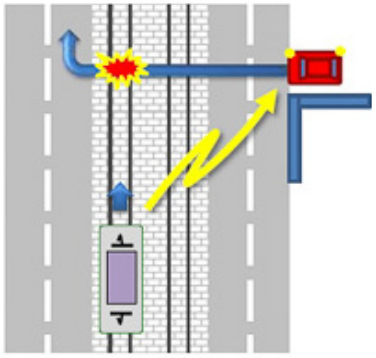
Assistance for emergency vehicle traveling



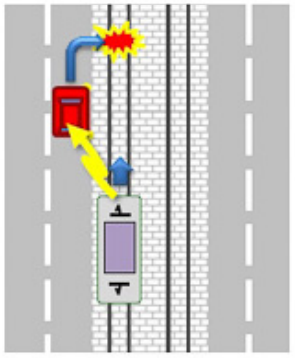
Collision prevention between tramcar and vehicle



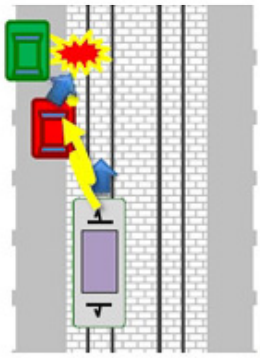
Provision of information at the corner



Provision of information in right turn



Provision of information in overtaking



Source: http://www.hiroden.co.jp/what/new/pdf/130904_press/press_news.pdf

Field Operational Test Area

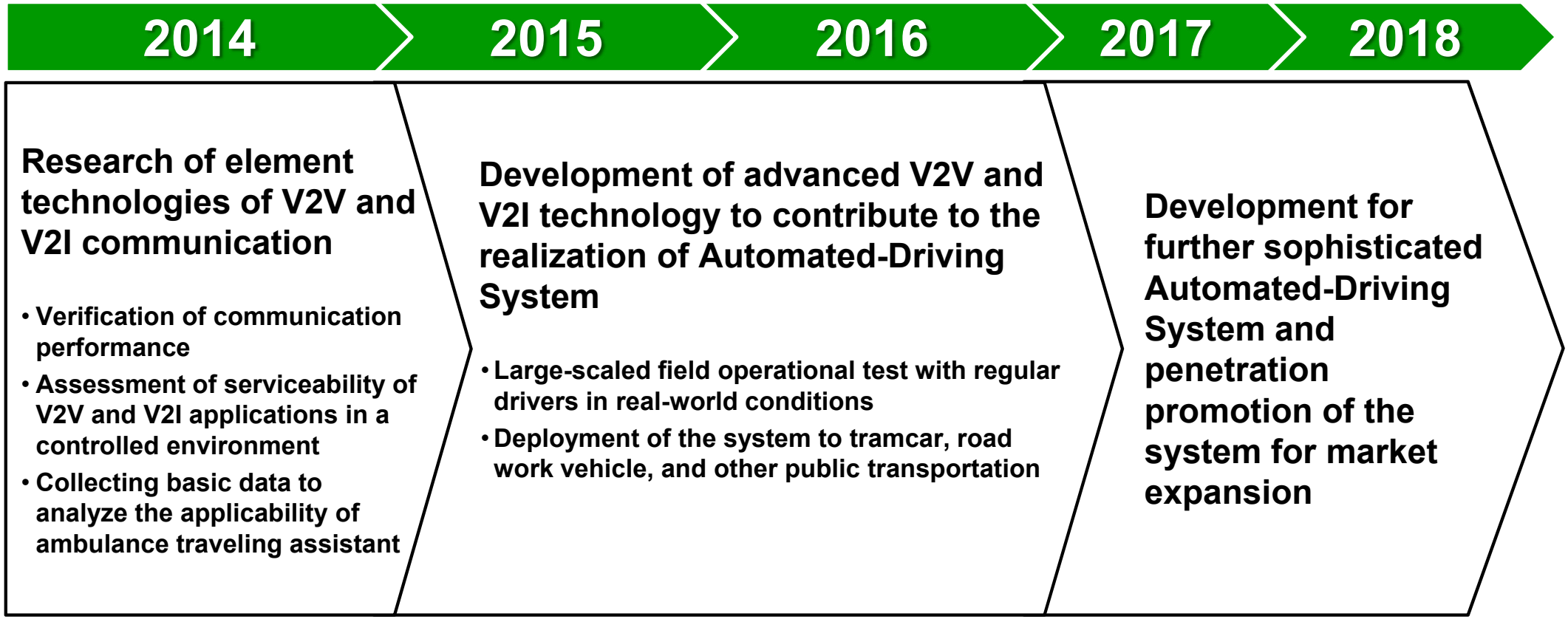
Nagoya

Yokosuka

Kobe

Hiroshima

Roadmap of Research Theme 1

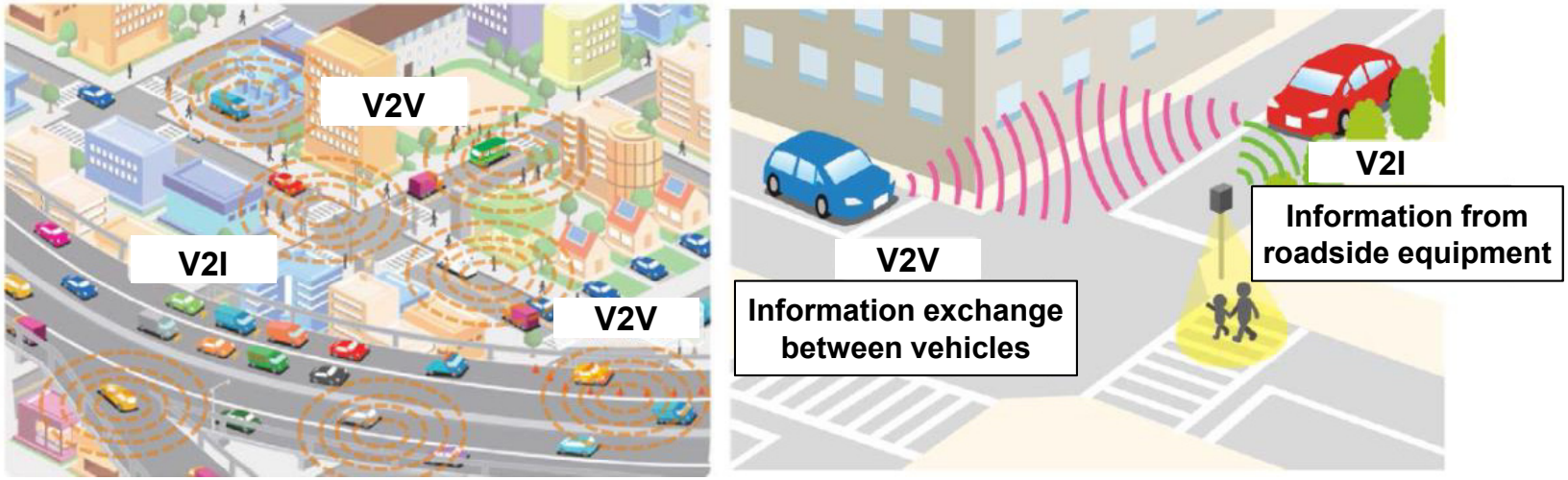


ITS-Connect Promotion Consortium

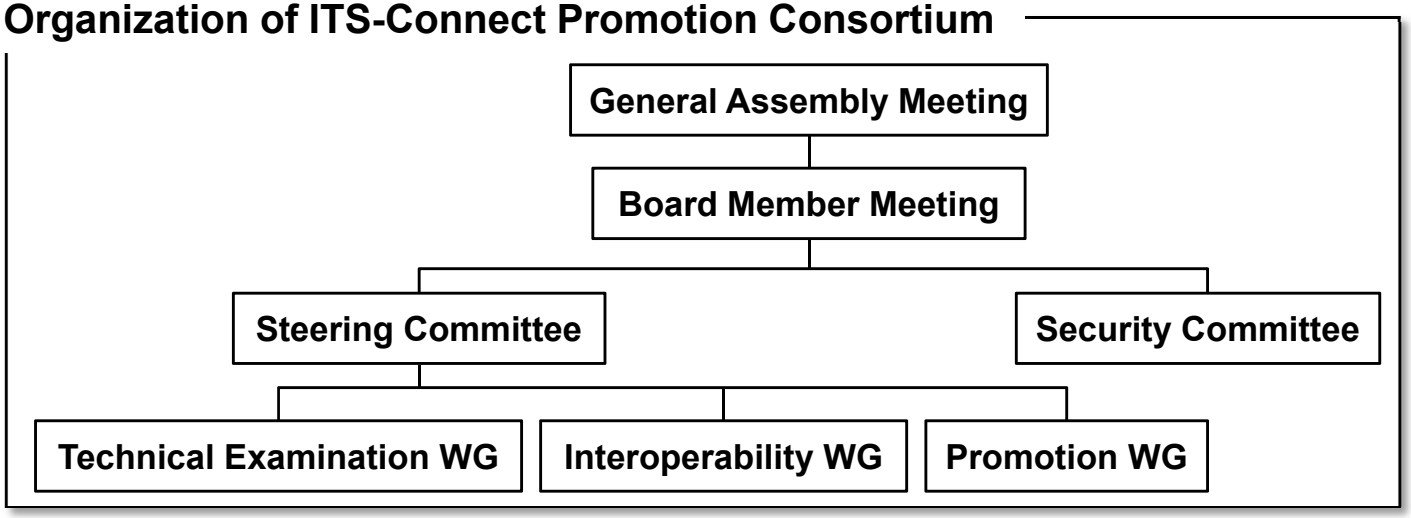
Objective

- Promote R&D and FOT activities of Cooperative Driving Support System utilizing ITS towards the practical use and penetration of the system
- Planning of system operation, management of specification documents, supporting interoperability test, public-relations and promotion of the system

ITS-Connect (Cooperative Driving Support System)



- Organization of ITS-Connect Promotion Consortium



- Established on Oct. 28, 2014
- 9 board members

住友電工 DENSO TOYOTA
豊田通商 Pioneer RENESAS
HITACHI MITSUBISHI ELECTRIC Panasonic

- 2 regular members

mazda OKI

Panasonic

Thank you for your attention!