ITS Center
THE UNIVERSITY OF TOKYO
次世代モビリティ研究センター

Experimental vehicles, posters exhibited

Advanced Mobility Research Center
[Designing the Next Generation Transport Systems]
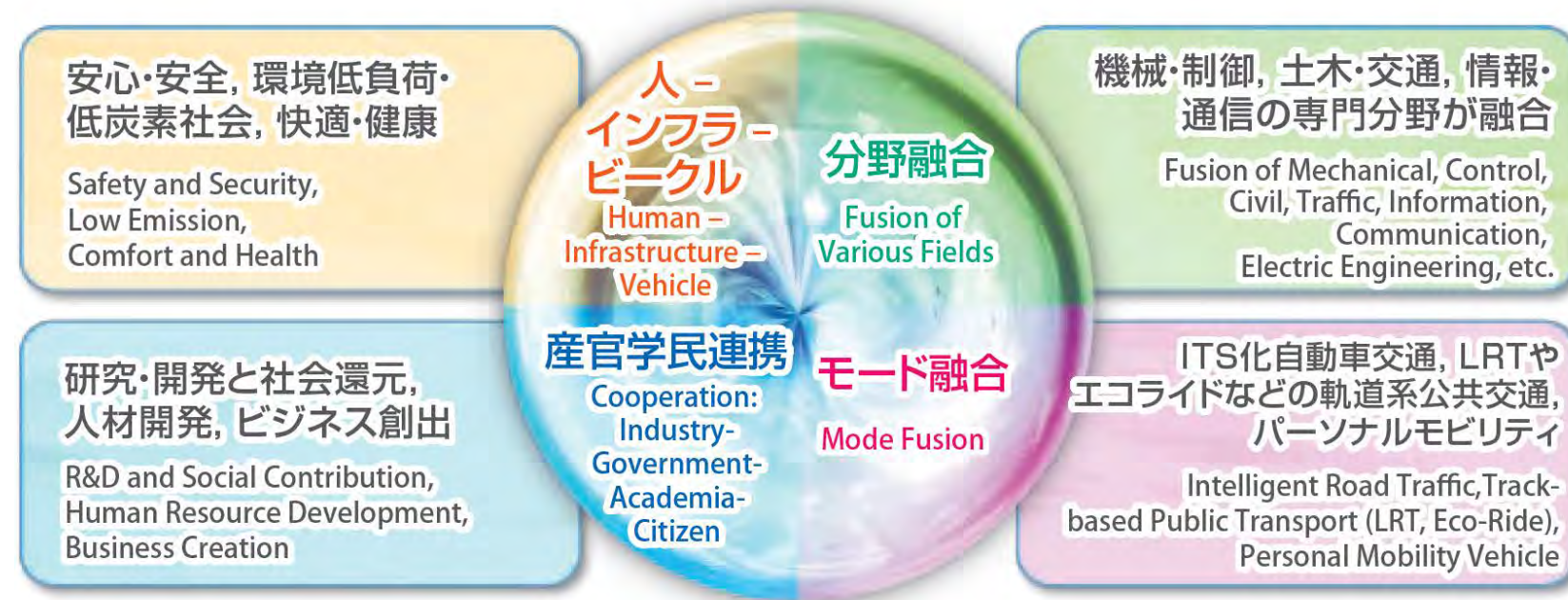
Intelligent Transport Systems

Y. SUDA / K. NAKANO / S. ONO (Dept. of Mechanical and Biofunctional Systems)
T. OISHI (Dept. of Informatics and Electronics)
T. OGUCHI / S. SAKAMOTO / K. SAKAI (Dept. of Human and Social Systems)

http://www.its.iis.u-tokyo.ac.jp/

- **ITS (Intelligent Transport Systems)** is an advanced transport system in which various fields, such as transport engineering, vehicle engineering, information technology, are integrated.
- The Advanced Mobility Research Center promotes research and development of ITS through collaboration of academia, public, and private sectors.

History

◆ 2003.4 "Sustainable ITS", a cooperative project among academia, industry, and the government, started in CCR
◆ 2005.3 "Collaborative Research Center for Advanced Mobility (ITS Center)" established in IIS (Director: Prof. Dr. Ikeuchi)
◆ 2009.4 Upgraded to "Advanced Mobility Research Center (ITS Center)," an university-authorized research center (Director: Prof. Dr. Kuwahara)
◆ 2014.4 "Advanced Mobility Research Center (ITS Center)" (Director: Prof. Dr. Suda)
◆ 2018.4 Director: Prof. Dr. Oguchi

Technology Fusion

Various Traffic Simulation Models (TS)
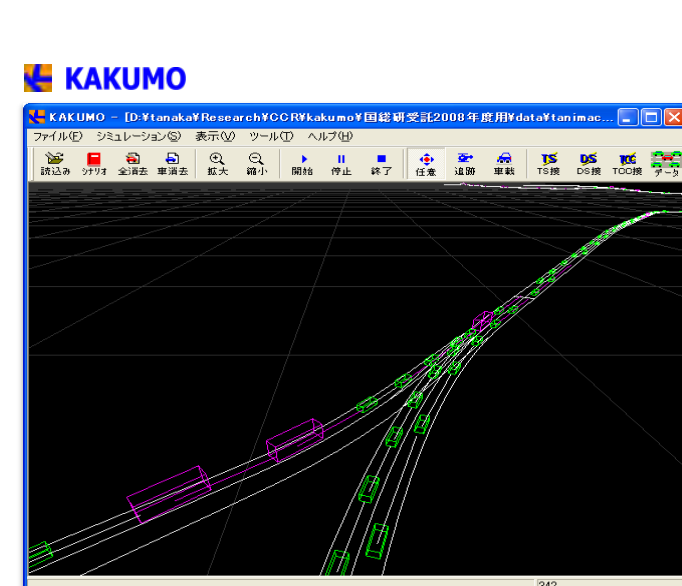
- Traffic simulators (TS) of various scales developed, to evaluate political options with high accuracy
- SOUND : A network traffic simulator, covering a wide network including expressways, while vehicles are considered individually .
- AVENUE : A street-level traffic simulator, based on the detailed maneuvers of individual vehicles, such as lane changing at an intersection. Used for evaluating traffic operation strategies, reducing congestion on streets, etc.
- KAKUMO : A micro traffic simulator, connecting TS and DS. It fills the gap of spatiotemporal resolution between TS and DS by calculating driver's behavior and vehicle dynamics of hundreds of vehicles around the test driver in DS. Simultaneously, the behavior of the test driver in DS is reflected to TS, and then the movements of surrounding vehicles and the traffic condition change interactively.

Street-level traffic simulator (mesoscopic)

Network traffic simulator (mesoscopic)

Microscopic traffic simulator (connecting DS and TS)

Virtual City Modeling

- Construct virtual space using 3D geometric data and videos obtained by several kinds of sensing systems and digital maps

Mobile sensing system

Real-video-based driving simulator

- Evacuation simulation
- Disaster prevention

Chiba Experiment Station （Kashiwa Campus）

- Experiment fields for automobiles and trains and a driving simulator for large vehicle.

Proving ground and traffic light

DS for large vehicles

Driver Sensing

- Analysis on driving operation and cortical brain activity using fNIRS.

Social Deployment

Next-Generation Infrastructure

- **Road Space Design**

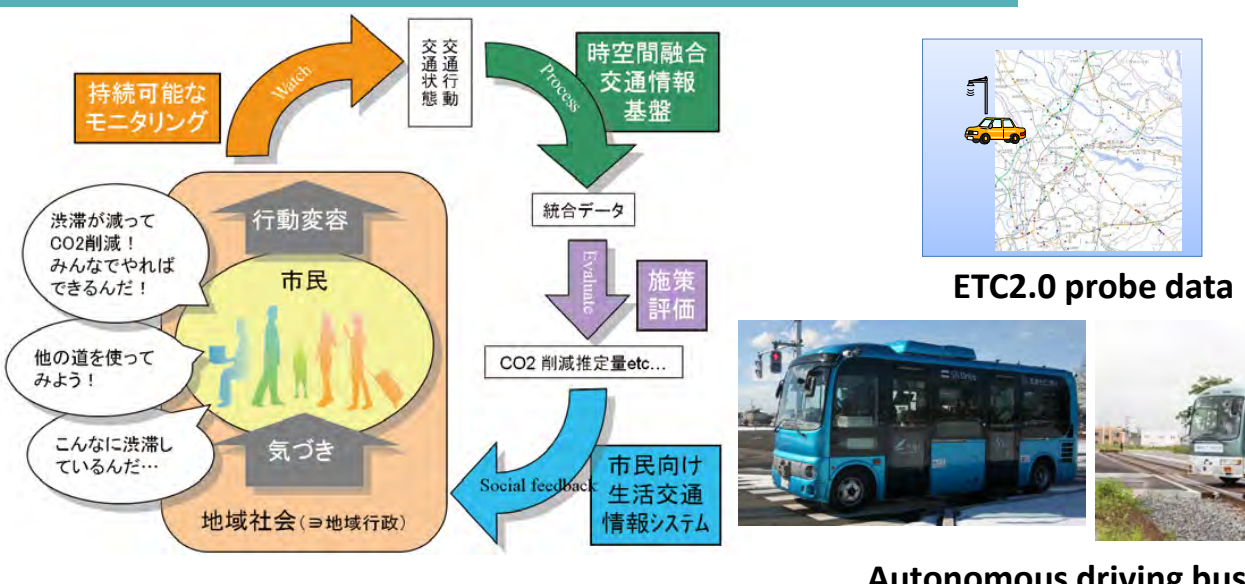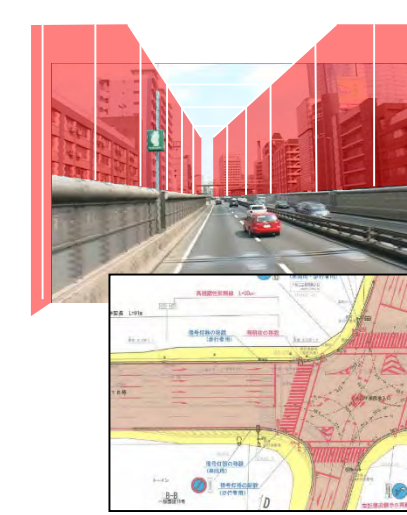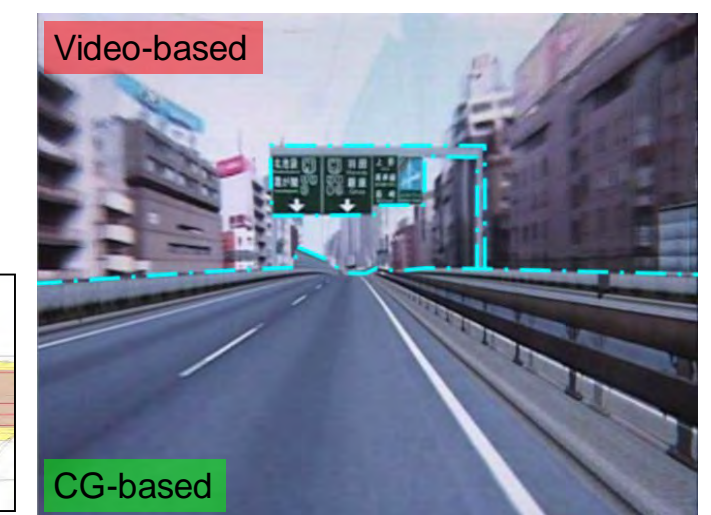"Optical Dots" developed for safe and comfort driving (Tokyo Metropolitan Expressway)

- **Public Address System in Tunnels**

Audio warning system developed for emergency evacuation in long tunnels (Tokyo Metropolitan Expressway)

Kashiwa ITS FOT Model City

ITS research activities launched for environment-friendly transport society in Kashiwa City, which is designated as one of the ITS FOT model cities by the Cabinet Office of Japan

ETC2.0 probe data
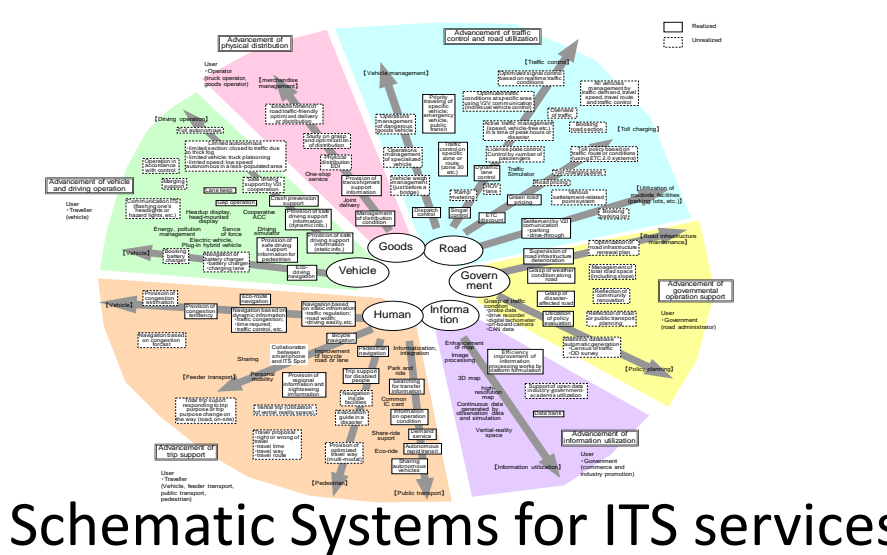

Autonomous driving bus

Smart Tourism

- A novel ITS service for tourism taking advantage of mixed-reality (MR) technologies, next-generation mobility, etc.
- We classify actions of tourists as four steps: (1) Motivation (2) Visiting (3) Impression (4) Revisit, and provide visual information services using WWW and MR system, and mobility aid service using EV and PMV.
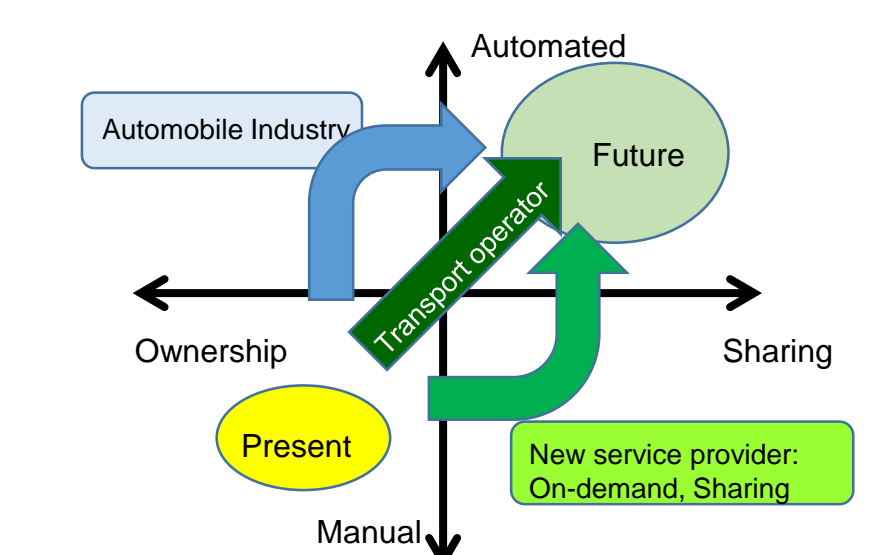

Next-Generation Mobility

- **Proposal on "Cooperative ITS"**

Schematic Systems for ITS services

- **Impact Analysis of Autonomous Driving**

Assessment of bipolarized mobility innovation scenarios, cross-field academic collaboration

Human Resource Development and Social Return Activities

- **ITS Seminar**: Series of seminars organized about three times a year, and ITS based on needs from local areas as well as central administration promoted
- **Lectures**: Not only lectures for students but also a special course for private sectors organized for developing human resource in ITS industry
- **Research Committee**: Informal discussions about latest ITS topics hosted every month inviting speakers from academia, industry, and government

Global Collaboration

ITS Center hosts an international symposium every year and exchanges faculty members and students with other universities and institutes through international collaboration as well as domestic collaboration.

Institute of Industrial Science, The University of Tokyo