Demonstration of First/Last Mile Transportation using Automated Vehicles
- Evaluation of Social Acceptance and Business Model -

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Background

Objective

Social implementation of new transportation system for public use by a small cart Automated driving technology for the first/last mile mobility
• Support for short distances between transportation hub (railway, bus, etc.) and home, or final destination or in areas
• Reduction of labor costs and Drivers shortage issue
• Demonstrating transportation service of first/last mile automated driving at level 4 (SAE J3016) and a remote type automated driving system (remote control operator and dispatcher)

Sponsor: Ministry of Economy, Trade and Industry (METI) and Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
Period, and budget: 3 years from 2016FY, approximately 400 million yen per year.
Team: Hitachi, Ltd., Yamaha Motor Co., Ltd., Toyota Tsusho Corporation, Keio University

Key points of project

• Establishment of automated driving technology
Demonstration of automated driving, safety and reliability of remote operation in real environment
• Clarification of business model (business feasibility)
Demonstrating the feasibility of service business and the way of continuity in the real regional model
• Establishment of social system
Discussion on institutional approach of technology and business aspects with relevant ministries, demonstration of infrastructure development
• Establishment of public acceptance
Demonstration for high utility value and user acceptance for stakeholders in actual area

Service image

1) Users (elderly, etc.) call automated driving vehicles and get on board
2) Automated driving
3) Users get off at a stop near the destination
4) Autonomous forwarding

Nearest station etc., Final Destination (Near home etc.)

“Smart E Cart” Small EV

Small Electric Vehicle (EV) with autonomous function
Advantage
• Available where no gas station in rural area
• EV can be charged during waiting time
• Easy and high efficiency at low speed
• Useful inside building
Disadvantage
• Range anxiety (depending on conditions)
Demonstration locations (3 locations chosen from 23 teams)

- **Route: Eiheiji station to Eiheiji temple**
  - Distance: About 6km
  - Abandoned line railroad
  - Eiheiji Town, Fukui-Pref.: Depopulated area model

- **Route: Wajima urban area, Mixed traffic**
  - Distance: About 1.5km
  - Wajima started automated vehicle project a few years ago by own budget
  - Wajima City, Ishikawa-Pref.: City area model

- **Route: Public building to beach**
  - Distance: About 2.5km
  - Stops: 8 cart stops
  - Several single tracks
  - Chatan Town, Okinawa-Pref.: Sightseeing area model

Experiments

- Remote type automated vehicle
- No operator inside in Wajima City
- No operator inside in Eiheiji Town

Plan, Future work

Evaluation in three locations for one month
- User acceptance for stakeholders and real users
- Business feasibility with local company
- Technology for remote type automated vehicle (1 vs 1, 1 vs 2, 1 vs n)
- Institutional approach

Reference