

Bringing autonomous shuttles into the real-world use in Japan : from operational perspective

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A venture of autonomous driving, funded by Softbank Corp.



BOLDLY

UPDATE MOBILITY

Establishment April 1st, 2016

CEO Yuki Saji

Main Business Consulting & operation for deployment of Autonomous shuttle

R&D of FMS for L4-L5 autonomous driving

What we do: From consultation, operation, to feedback to the government for policy making of autonomous shuttle

Flow of operation



- Environment Assessment
- Negotiation with public sectors

- Route Setting
- Vehicle Preparation

- 3D Map Creation
- Operation
- Training for operators

- Remote monitoring and control by in-house Daily & Dispatcher system

- Reporting
- Feedback to the government

Problem of transport in Japan: as a frontier of aging society

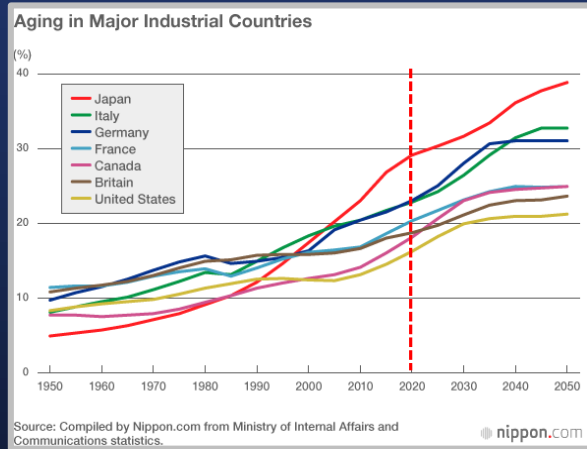
Abolished line in rural areas



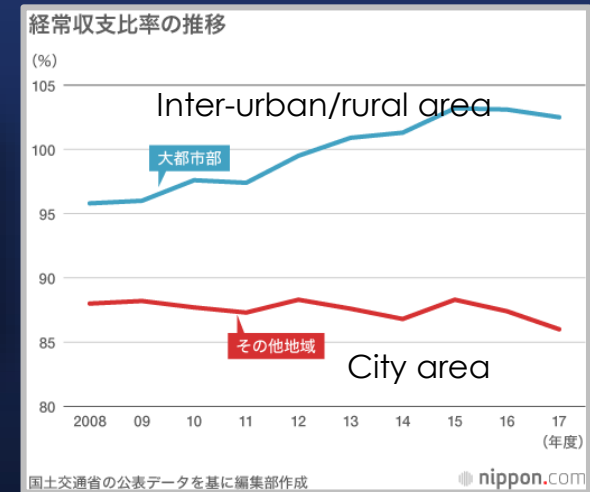
Aging / insufficient drivers



70%+ bus companies in deficit



People without personal transport
(Reaching 600,000 in 2035)



Current balance of bus companies

→ Need of sustainable public transport system

Our approach: Autonomous shuttle accessible by anybody, anywhere, anytime



<Inter-urban area>

Autonomous / BRT bus with capacity & on-time performance

<Within community>

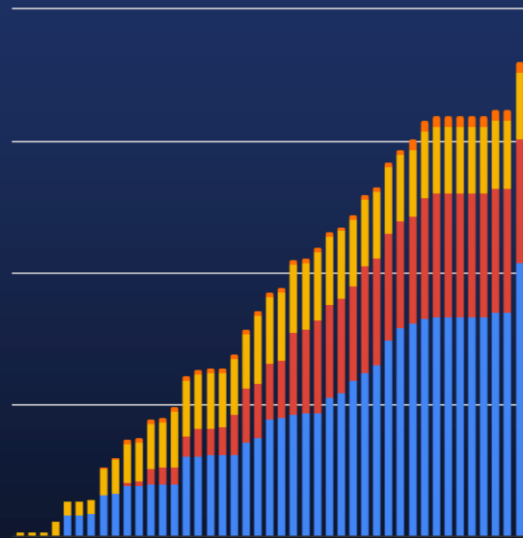
Mini shuttle/LSAD on regular basis, harmonized with other road users

Experience: with more people, in more places

Permission to circulate vehicle without steering on public road – 1st time in Japan, 2019



Experience on field test with autonomous shuttles – No.1 in Japan



50+ demos, with 18,412 passengers, Sept. 2020

Regular service of LSAD – 1st time in Japan, 2020



Haneda HiCity, Tokyo, Sept.



Town of Sakai, Ibaraki, Nov.

R&D: In-house *Dispatcher* system looking beyond Level 4



AI-based passenger monitoring



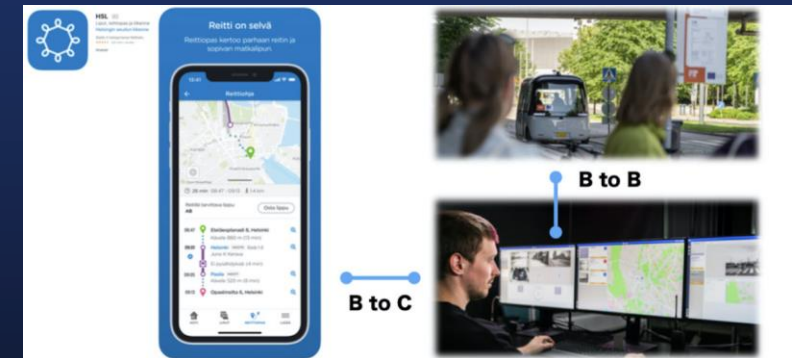
1:n real Time Monitoring/Control



Compatible with Level 4 Regulations



Connectable with any vehicle&App via open API
: connected with 18 different models



International presence
: employed for FABULOS project (with HSL&Sensible 4) in Helsinki

3 areas to work on, for real-world use of autonomous shuttles

Expansion of the field



New regulations towards driverless operation



Establishing sustainable model



#1 Expansion of the field

Current status



Global level

Vehicle performance & social recognition on limitation of it are on the way to mature



Japan unique

Road designed to separate VRUs and vehicles to protect VRUs

Our Proposal



Introduction of regulations to secure ODD:

- Exclusive/priority lane for autonomous vehicle
- Restriction of parking on shuttle path



To increase community road shared between pedestrian & new mobility of safety nationwide

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#2 New regulations towards driverless operation

Current status

Global level

No RACI defined yet among operator, remote control center and manufacturer

Japan unique

Laws on operation of steerless/driverless vehicles are strict, based on positive-list system

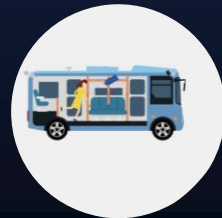
Our Proposal

Developing guidelines & qualification for operator and remote control center, defining:

- Tasks on on emergency
- Responsibility on accident, among operator, remote center and manufacturer
- Rules and scheme on 1:n monitoring

Deregulation on operation in accordance with the maturity of operation & vehicle performance:

- Reducing number of people onboard
- Freeing operator/safety guard from constant monitoring task



#3 Establishing sustainable model

Current status

Cost on introducing autonomous shuttle is not accessible for every organization/local government
– discontinued field test



Our Proposal

Making it local:

- To develop revenue scheme independent from passenger fare, via partnership with local entities
- To make multimodal & efficient transport system with traditional transportation
- To bring new type of employment, by handing-over operational tasks to local employees & training them



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