Road administrators' view for realizing automated driving systems By 2020

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Field operational tests in rural areas

Test-vehicles

Bus

1) DeNA

Autonomous technology

- Identify own position by GPS and IMU.
- Drive according to a predetermined route.
- Acquire point-clouds data.

Capacity: **6 (seated) (Total 10)**
Speed: **10km/h**

2) Advanced Smart Mobility

V2I technology

- Identify own position and drive a predetermined route using GPS, magnetic markers and gyro sensors.

Capacity: **20**
Speed: **35km/h**

Passenger-car

3) Yamaha Motor

V2I technology

- Drive a predetermined route by following embedded magnetic-induction lines.

Capacity: **4–6**
Speed: **12km/h**

4) Aisan Technology

Autonomous technology

- Drive a predetermined route using a high-precision 3D map.
- Detect surrounding conditions by LIDAR.

Capacity: **4**
Speed: **40km/h**

GPS: Global Positioning System
IMU: Inertial Measurement Unit

LIDAR: Light/Laser Imaging Detection and Ranging

Items verified during testing

(1) Road condition


(Road in hilled rural area)

(1)Structure
(2)Administration
(3)Support for mixed traffic
(4)Space for transport centers

(2) Environment


(Snowy road)

(1)Weather conditions
(2)Network Status

(3) Cost


(Electromagnetic guidelines placement)

(1)Vehicle introduction / maintenance costs
(2)Non-vehicle costs

(4) Social acceptance


(Passenger vehicle)

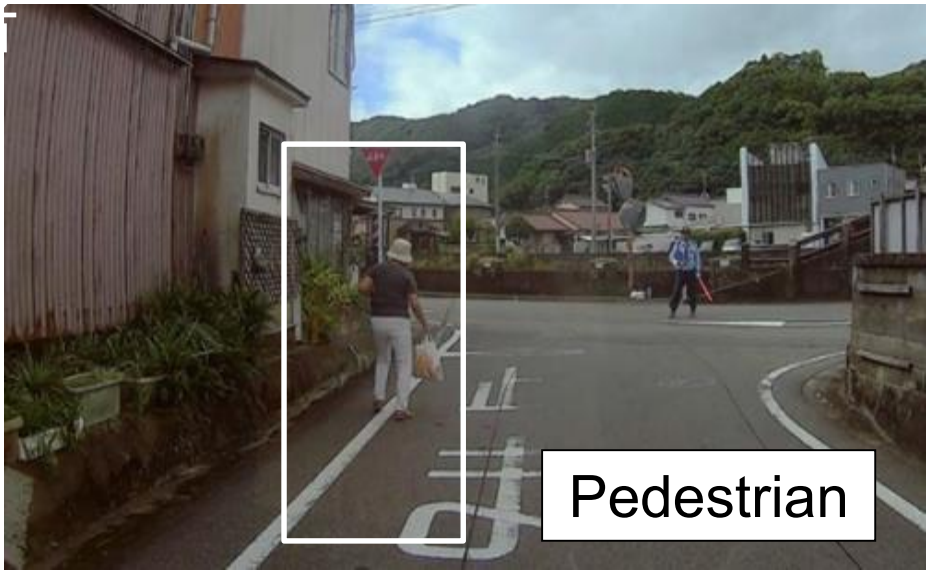
(1)Comfort
(2)Convenience

(5) Effect on local community


(Good transport on Bus)

(1)Increasing social opportunities for senior
(2)Expanded collection and shipment of crops etc.

Lessons learned in FY 2017' trials



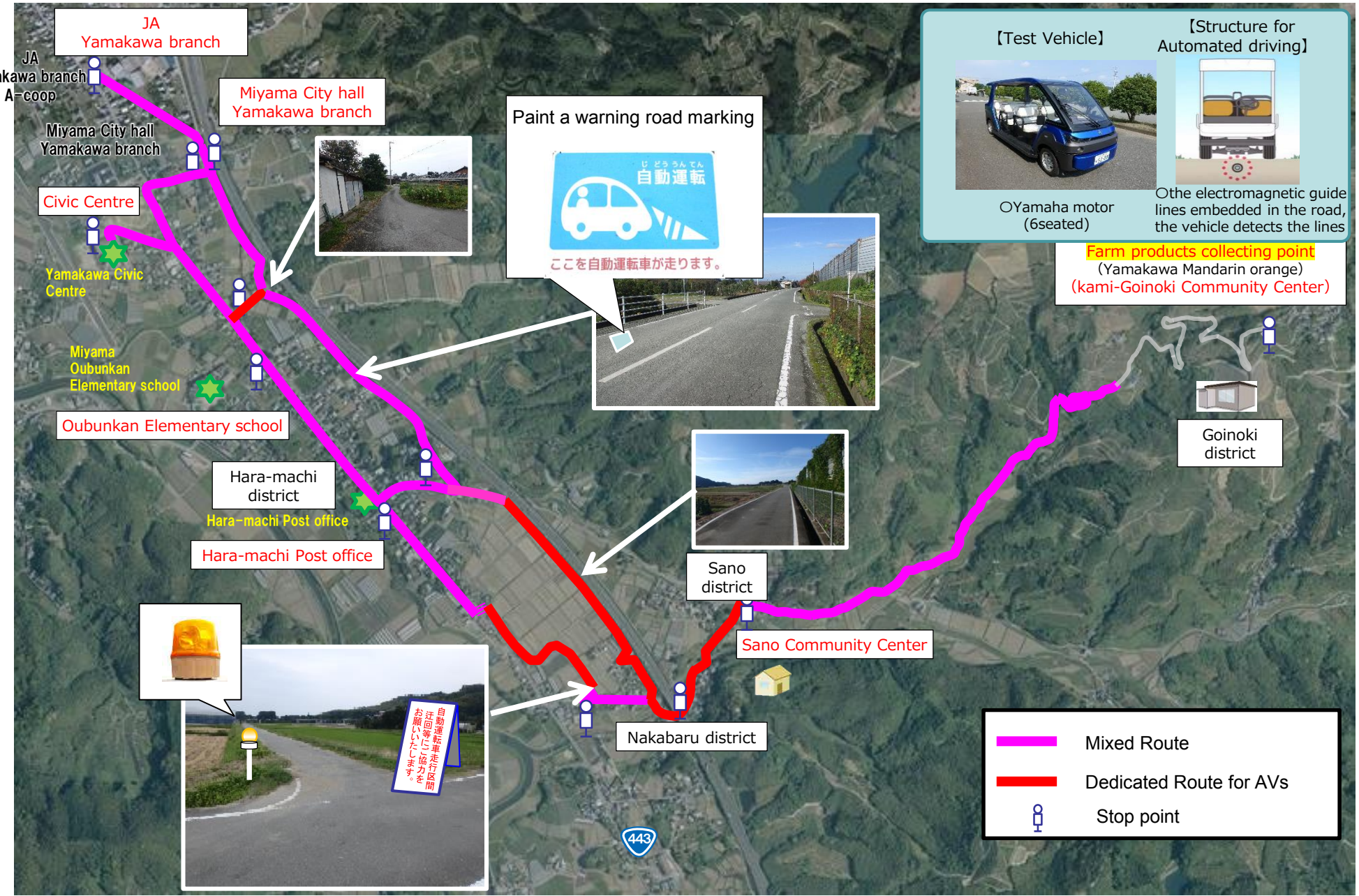
Field tests in FY2018 or later

	Proving tests
FY2017	**Short-term proving test (approximately 1 week)** • **Primarily technical verification and study of business models** • **Conducted at 13 locations nationwide** (total driving distance: approximately 2,200km Participants: approximately 1,400)
FY 2018～	**Long-term proving test (approximately 1 - 2 months)** • **Primarily the establishment of a business model** • **Rapid implementation in society starting the following year** **(Approximately 5 - 6 locations in FY 2018)**

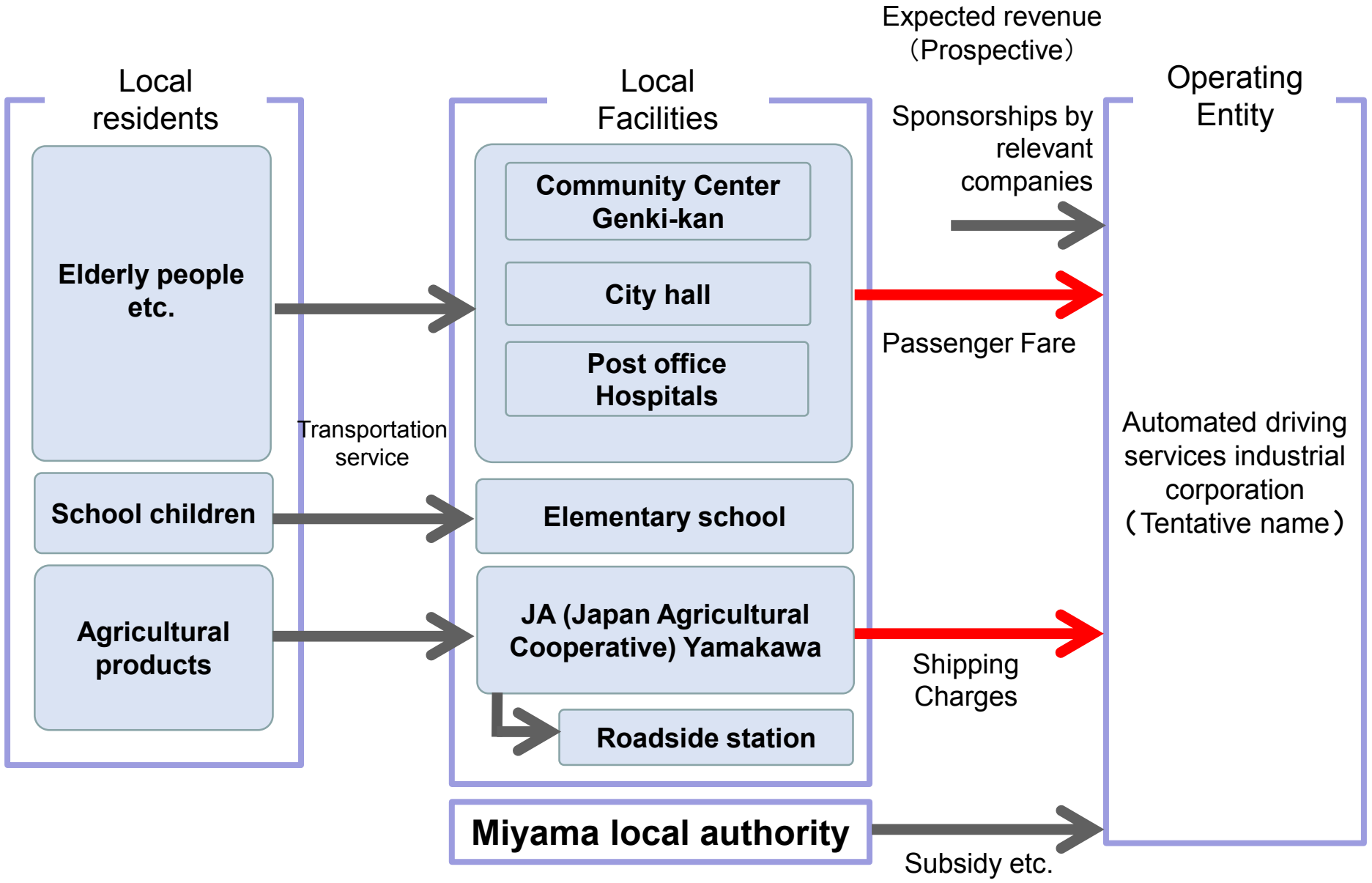
The goal will be implementation of automated driving service in society by 2020, centering on "Michi no Eki" etc.

Field test in Miyama city has started since Nov 2, 2018

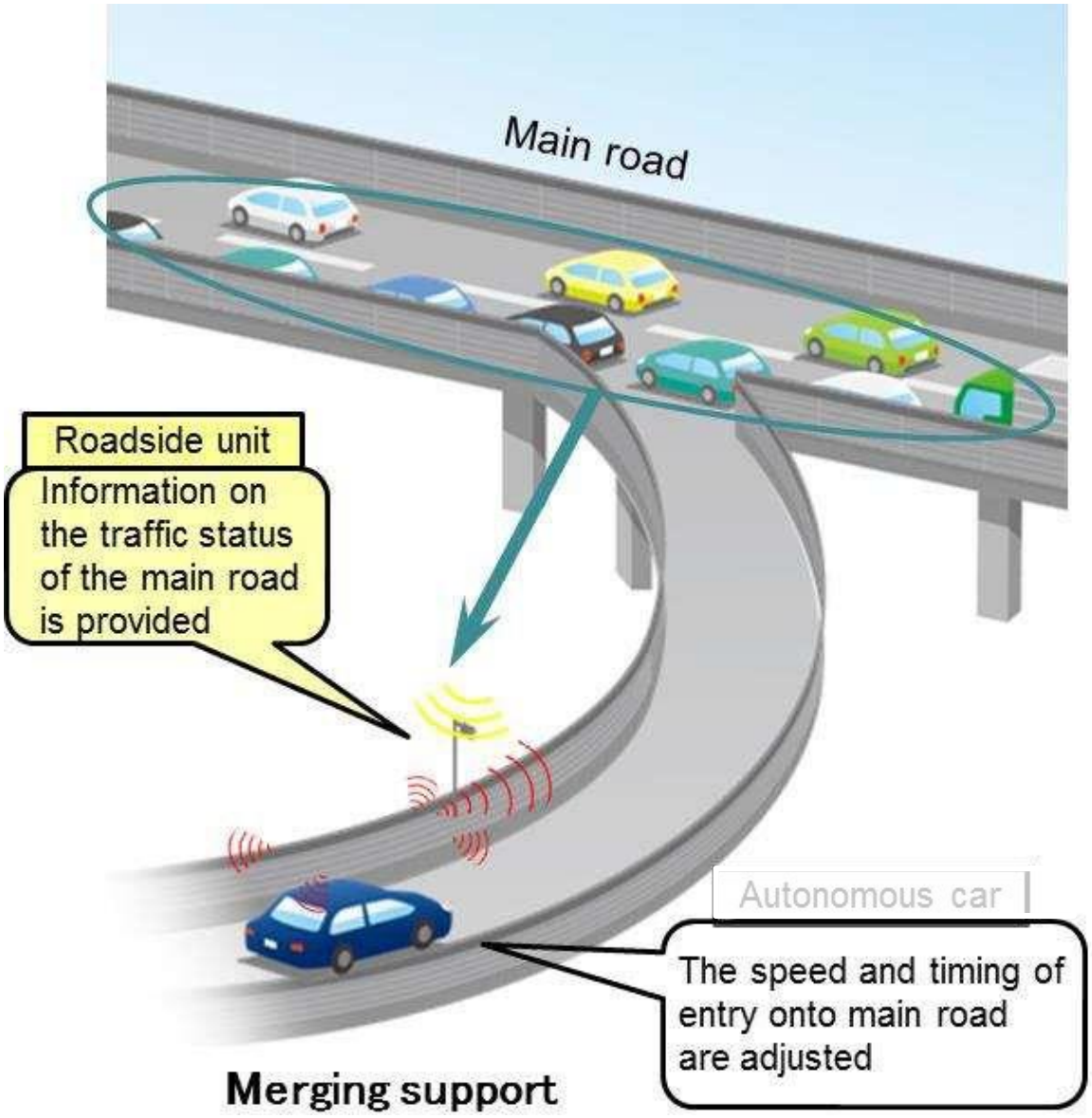
One-way length : approx 6 km



Focus on feasibility of the planned business models



R&D at the merging section



Difficult situations for AVs

- **Merging locations**
- **Obstacles on road**
- **Sudden accidents and disasters**

Public-private joint research has been carried out since Jan. 2018.

- 29 companies participate in this project.

Field test for snowplows

- 60% are snow areas
- A shortage of snowplow operators
- Aging society in rural areas