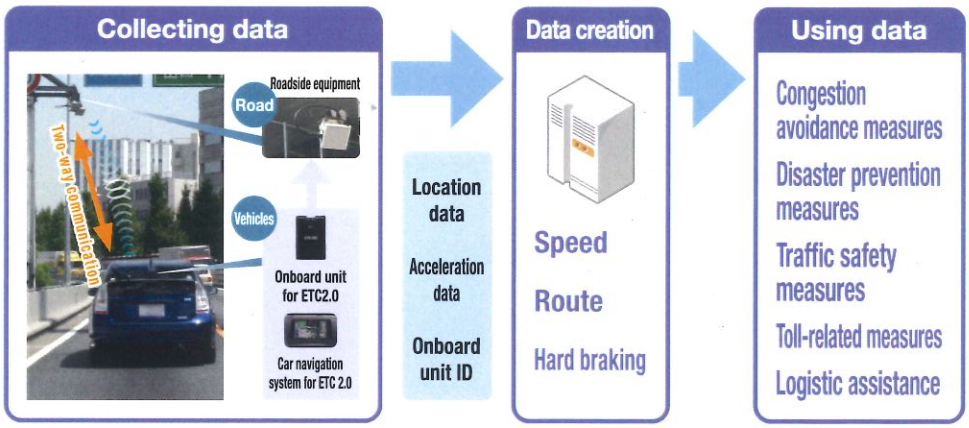
This brochure is an excerpt from the panels exhibited at the MLIT's booth.

Various drive assist services

ETC 2.0

ETC2.0 enables collaborative link-up between vehicles and roads to make a variety of services possible



ETC2.0 is a system that enables a variety of services in addition to toll collection for toll roads etc.
High-speed, large capacity two-way communication between roadside antennae and onboard units makes it possible to provide detour information to help avoid traffic congestion and information contributing to driving safety.
Information collected by ETC2.0 such as vehicle route and speed data is utilized variously for road policy planning.

During congestion

During snowfall

Disaster prevention measures

ETC 2.0

Collecting and providing passage records in the event of a disaster to assist affected areas

In the event of a disaster, passage records of vehicles equipped with an onboard unit for ETC 2.0 and other vehicles is collected, and road passability information is provided to assist in emergency response activities such as evacuation and rescue in affected areas and the transportation of relief supplies.

A map showing road passability information in the event of a heavy rain disaster
Example: Disaster conditions in the southern part of Kumamoto Prefecture during the July 2020 heavy rain disaster

Road made impassable due to bridge washout

Prefectural road in Kumamoto
Closed for more than four months

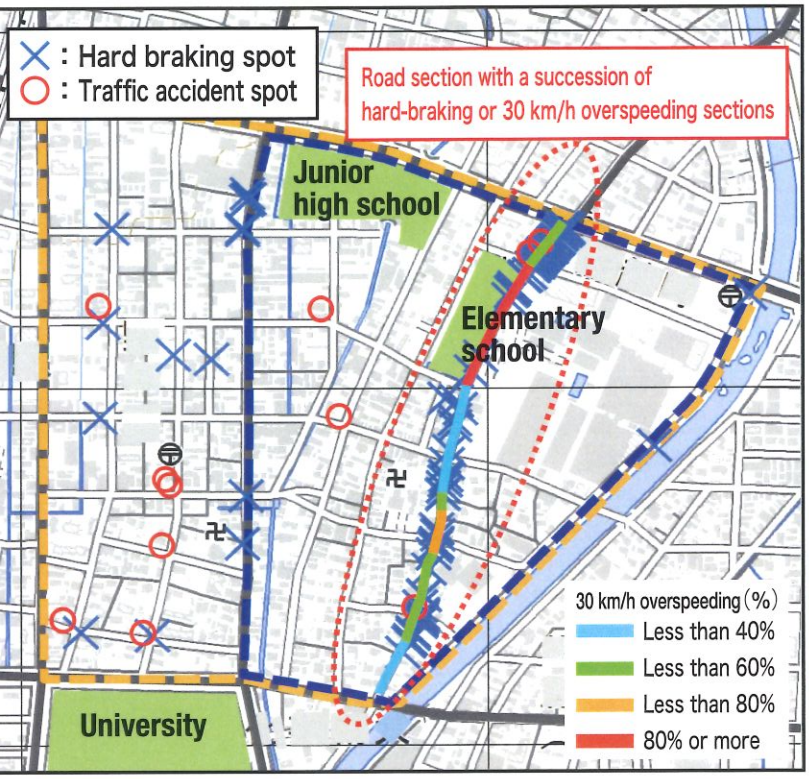
Road closure due to a landslide

National Route 3
Closed for 14 days

Traffic safety measures for community roads

ETC 2.0

Utilizing big data for effective implementation of traffic safety measures at dangerous spots



ETC2.0 is capable of collecting not only route information, but also data on details such as hard-braking spots and vehicle speed.
Utilization of these data makes it possible to identify potentially dangerous spots causing overspeeding, hard braking and shortcuts and to devise and implement effective and efficient traffic safety measures.

Planning and implementing effective and efficient traffic safety measures

Reducing vehicle speed

Speed humps

Road constrictions

Providing obstacles at entrances

Rising bollards

Making space available for pedestrians

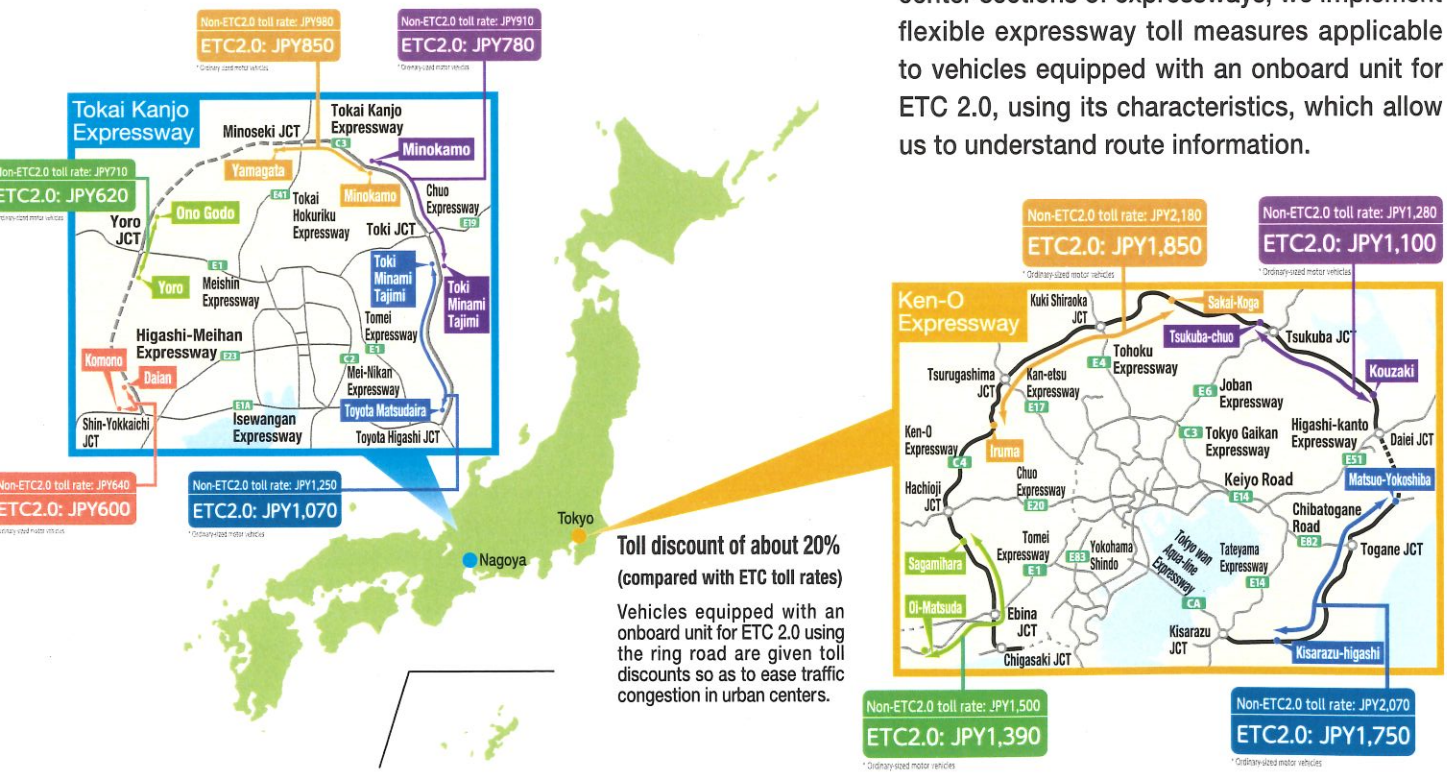
Colored shoulder pavement

Smart use of roads

ETC 2.0

Assisting in the sophistication of road transportation demand management

In order to ease traffic congestion in the urban center sections of expressways, we implement flexible expressway toll measures applicable to vehicles equipped with an onboard unit for ETC 2.0, using its characteristics, which allow us to understand route information.



g logistic productivity

ETC2.0

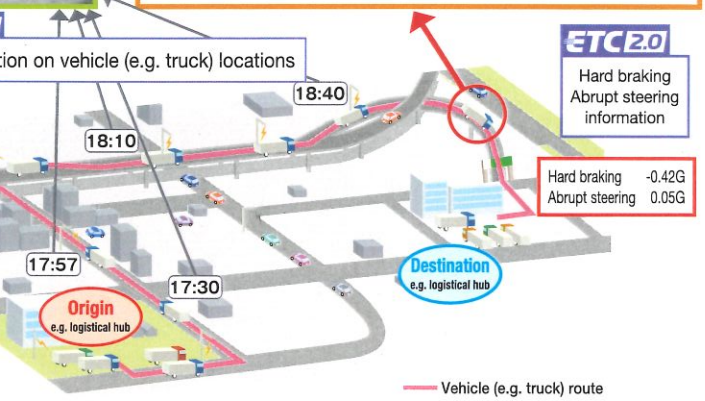
g applications of ETC2.0 to provide a variety of new services

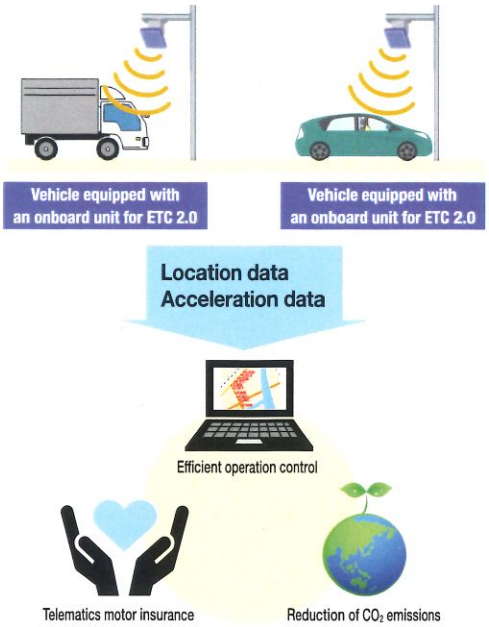
ion assistance service

information and vehicle route and other data collected by ETC2.0 ogistic service providers so that they can be utilized for purposes assignment planning and arrival time estimation.

Identifying dangerous driving spots from relevant information such as hard braking

Ensuring driver's safety





Utilization for automotive insurance and eco-driving assistance services

Because ETC2.0 enables the collection of information such as drivers' driving characteristics, it is finding new applications such as telematics motor insurance and eco-driving assistance services.

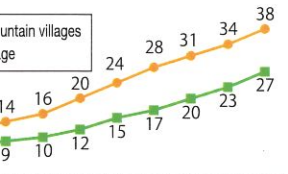
state of rural areas

AUTOMATED DRIVING SERVICE

populations of rural areas
orating mobility environment

15 years faster than national average

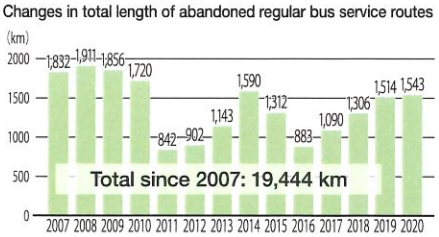
roportion of the population aged 65 or over)



sts and Forestry in Japan, Fiscal Year 2020 (Forestry Agency)

Public transport has declined, so it is no longer possible to go shopping or go to hospitals

Changes in total length of abandoned regular bus service routes

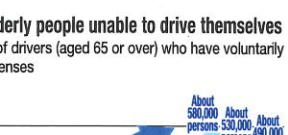


Source: White Paper on Transport Policy (Ministry of Land, Infrastructure, Transport and Tourism)

Automated driving service goes into full gear in rural areas in many parts of the country

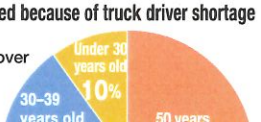
derly people unable to drive themselves

f drivers (aged 65 or over) who have voluntarily enses



Goods cannot be delivered because of truck driver shortage

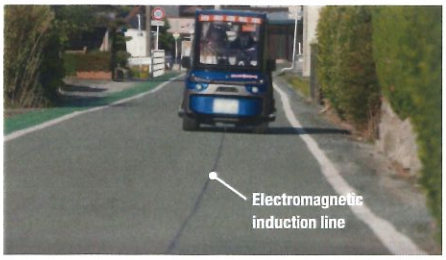
About 40% of truck drivers are aged 50 or over



ted driving service

ted driving service supports the mobility of elderly people in rural areas

ehicles are safe even in heavy snow regions in winter. These vehicles a growing number of applications such as shopping, going to and s, and visiting facilities for elderly people and banks.



Automated vehicles recognize their positions by detecting electromagnetic induction lines laid on the road surface.

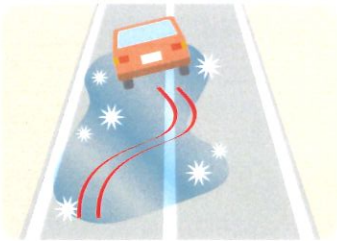
Automated driving service is also utilized as a means of shipping agricultural produce to local markets and transporting tourists, thus contributing to community revitalization.

nent-private joint research

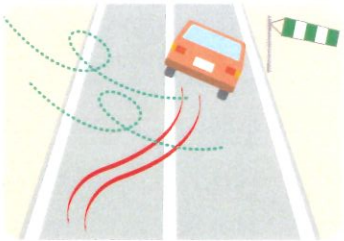
ent-private joint research to promote widespread use of automated driving

ring ways to support from the road in order to push the limits of the current technology

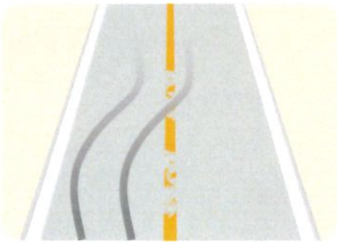
Limits of current automated driving technology



road surface freezing



high wind



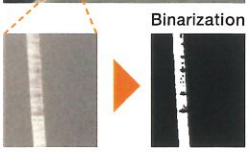
Support from the road

Maintenance

Example:
Management of recognizable demarcation lines for automated driving

Binarization

Appropriate redrawing in view of the state of peeling



Providing information

Wind speed and road surface information near tunnel exit