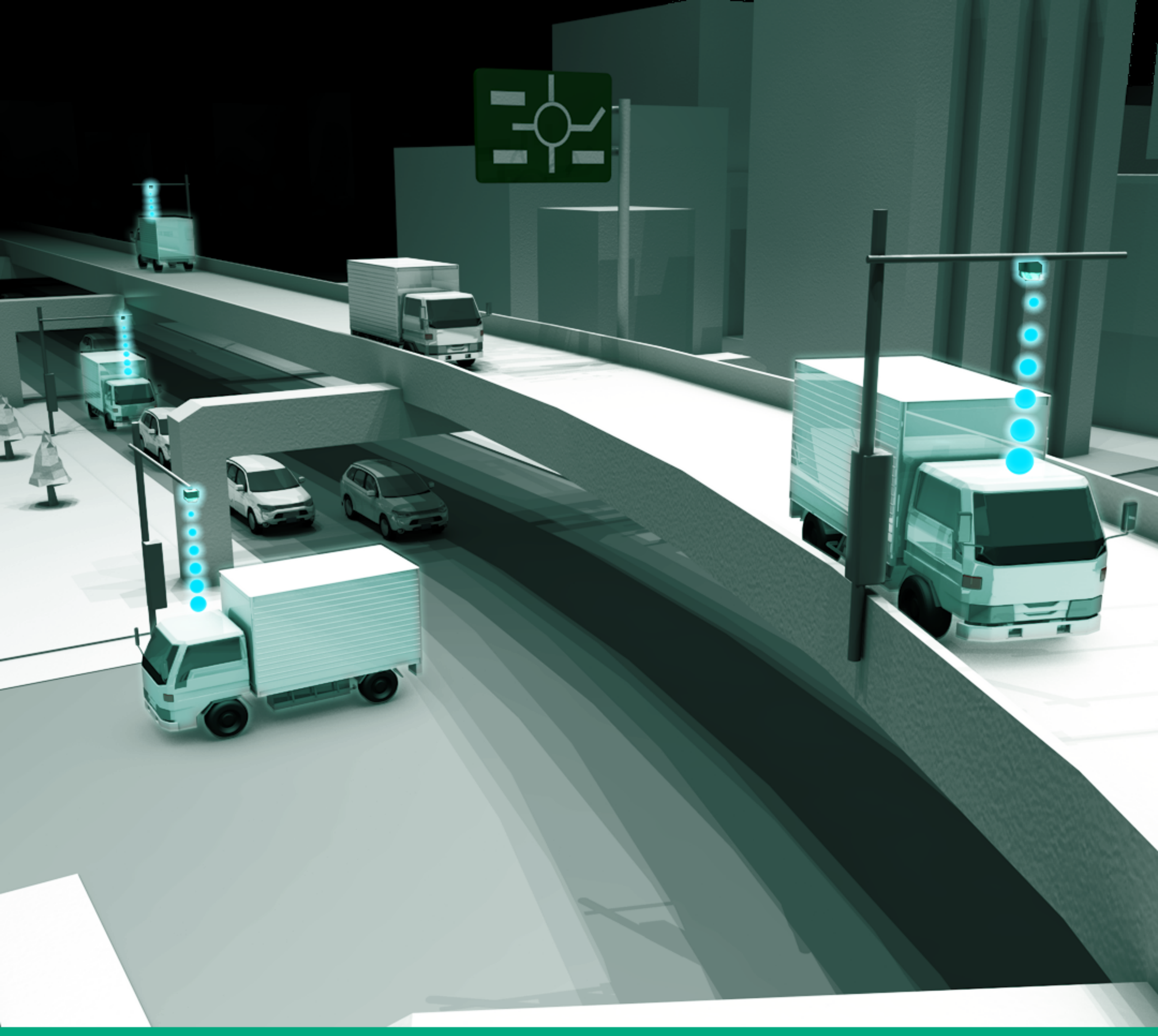

Fleet Management System

An active ‘ITS big data solution’ uses
a next-gen ETC2.0 on-board unit with GPS
to improve an efficiency in logistics management.

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Fleet Management System

REFERENCE EXHIBIT

Technical Advantage

Big Data Utilization by ITS Infrastructure

In Japan, ITS Infrastructure with ETC/DSRC has been deployed nationwide,. Users can get more valuable services than before by using Next Generation ETC2.0 on-board unit connected to the Infrastructure.

Probe data Collection

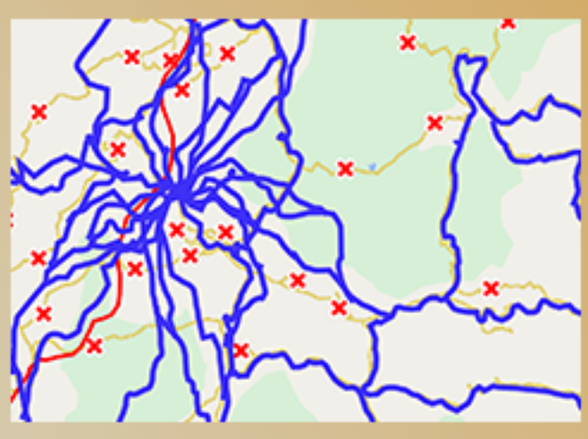
Logistics vehicles monitoring

ETC2.0 on-board unit with GPS

Road maintenance

Road Information [using ITS Spot]

Traffic congestion Information



Supply chain and BCP

ETC

Total shipment of ETC on - board unit over 50 million

Assist for Safety Driving

Toll Collection

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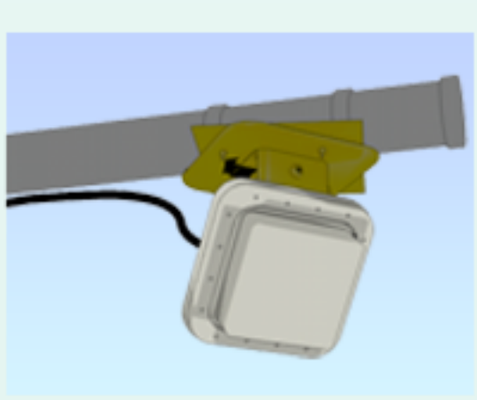
REFERENCE EXHIBIT

Equipments

1. ETC2.0 on-board unit with GPS
   - 5.8 GHz band DSRC wireless communication
   - recording probe data about 80km
   - compatible with ETC
   - the antenna with a built-in speaker [PAT.P3923464]
   - easy installation to vehicles
2. DSRC roadside unit
   - 5.8 GHz band DSRC wireless communication
   - 1,600 points on expressways and 1,600 points on national roads nationwide
   - By installing receive only type road side unit, user can get more detail information.

vehicle



ITS Spot (RSU)

Already installed almost 1,600 points on expressways and 1,600 points on national roads

ETC2.0 on-board unit

installed on the users' own vehicles

Field operational test for improving an efficiency in logistics vehicles management with ETC2.0

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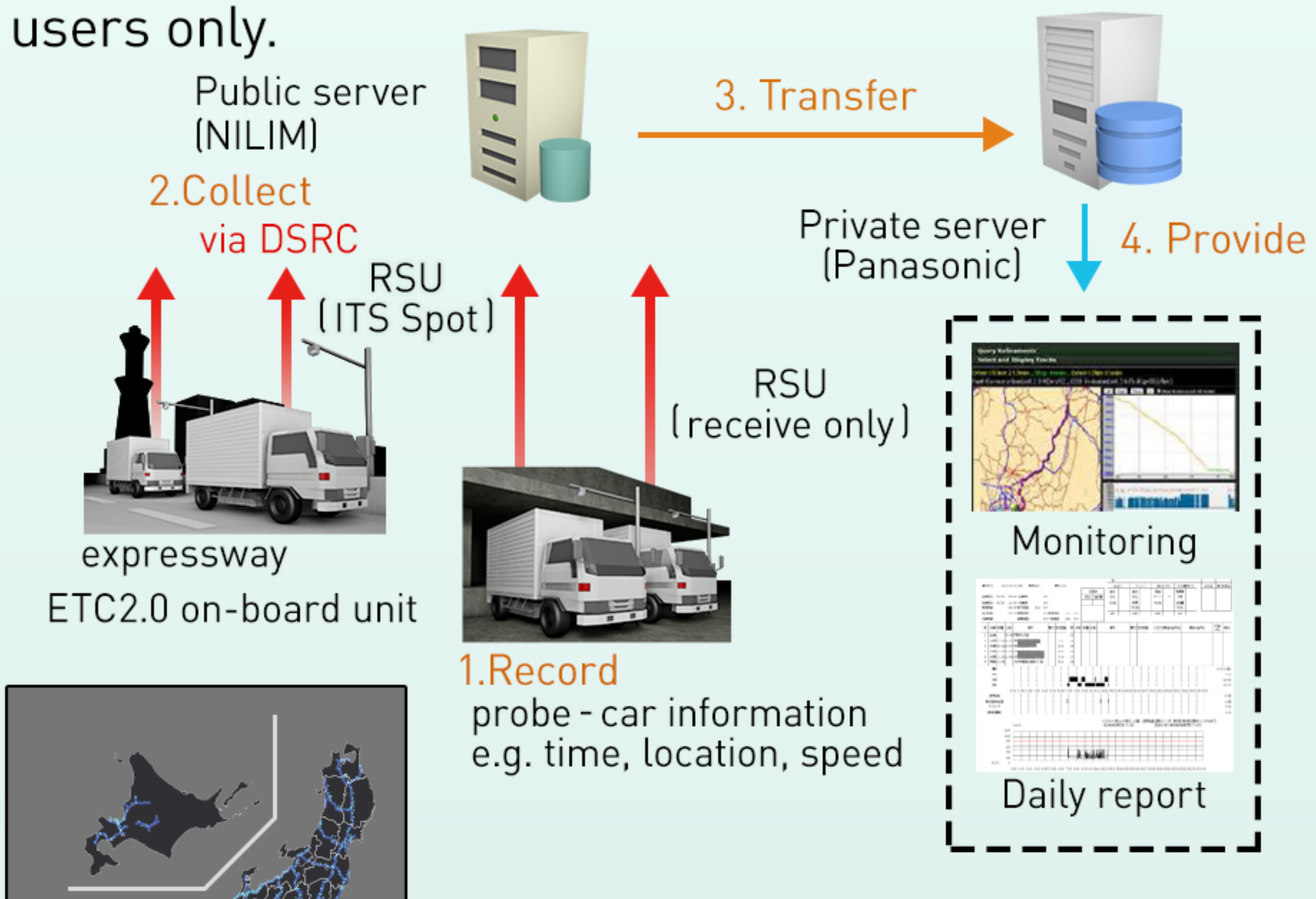
Fleet Management System

REFERENCE EXHIBIT

System Architecture

1. Recording probe data
   Probe data such as time, location and speed are recorded on ETC2.0 on-board unit with GPS function.
2. Collecting probe data
   Probe data is collected via roadside unit using DSRC uplink protocol when vehicles pass by roadside unit.
3. Transferring probe data
   Probe data is transferred from Public Server to Private Server.
4. Providing the services
   Probe data is processed at Server and is provided to authorized users only.



ITS Spot
about 1,600 points
on expressways

Field operational test for improving an efficiency in logistics vehicles management with ETC2.0

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Fleet Management System

REFERENCE EXHIBIT

Applications

Examples of application using probe data of logistics vehicles

1. Logistics Vehicles Monitoring

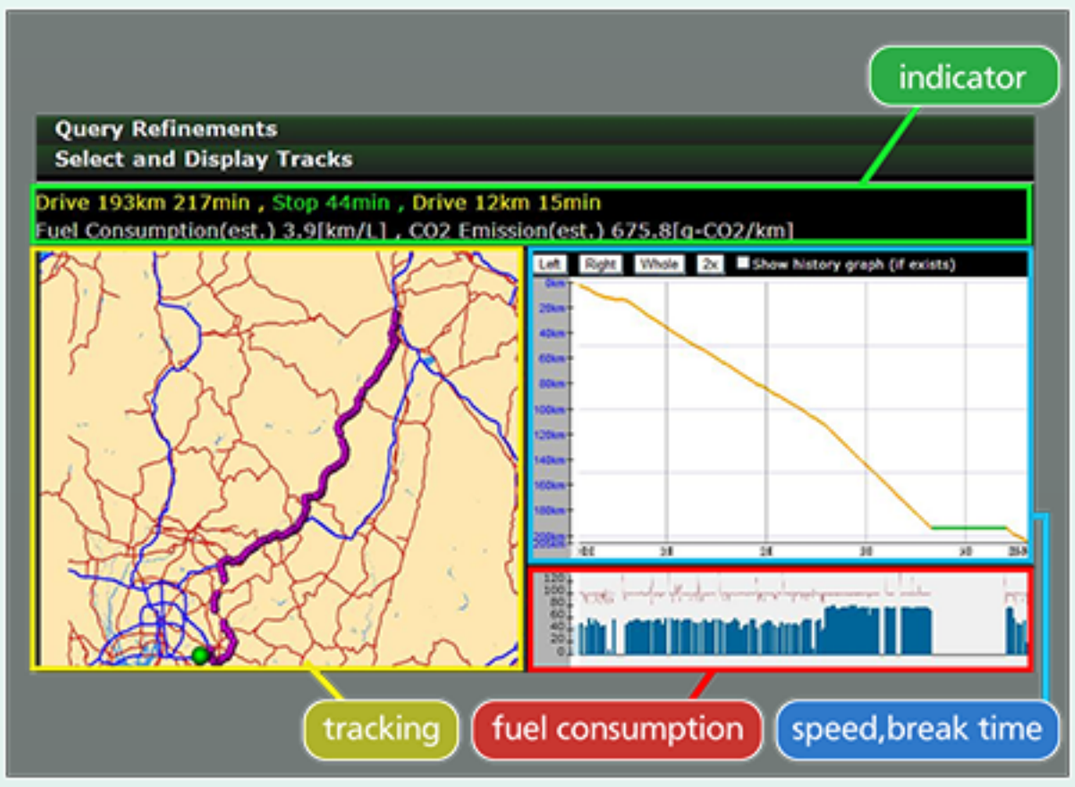
   Essential information for logistics manager such as tracking, speed, break-time, fuel consumption and emergent braking are provided with probe data.

2. Road Maintenance

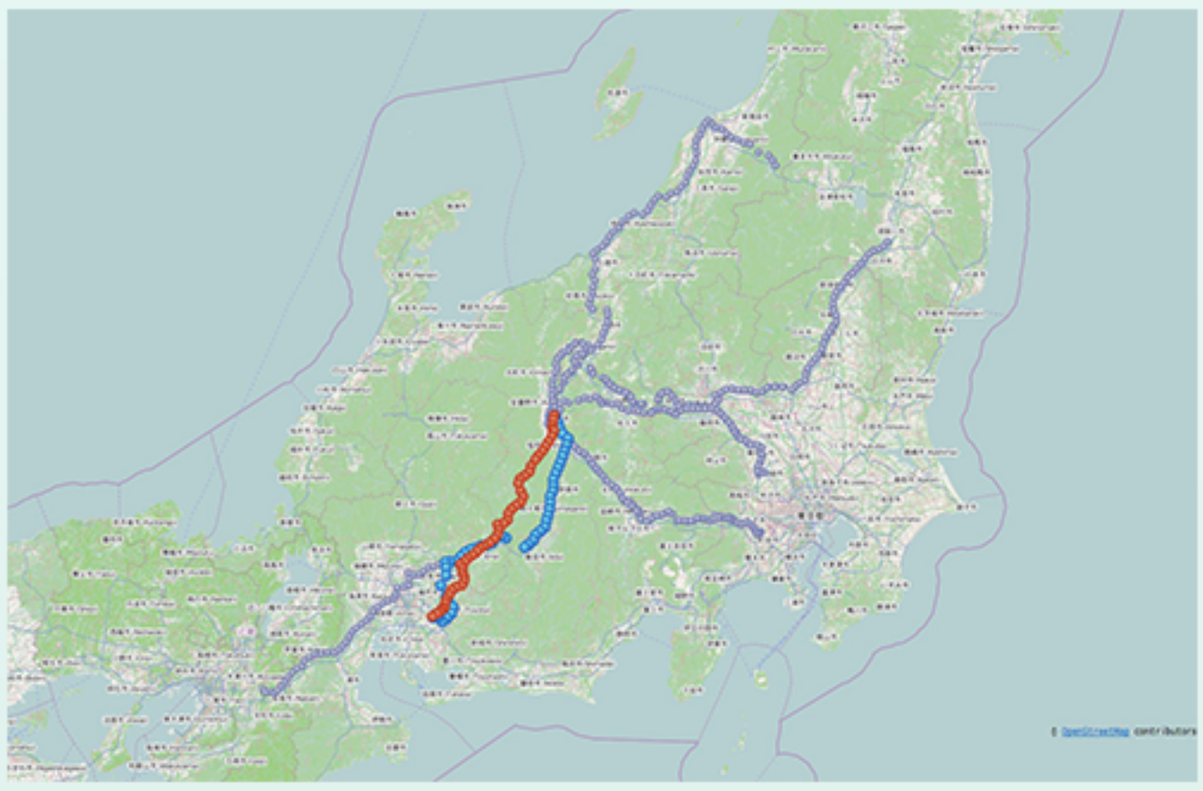
   Essential information for road manager such as damage of road construction of road pavement and bridge are provided with probe data.

   e.g. Damage of road pavement is proportional to the 4th power of a vehicle weight.

Example of Logistics Vehicles Monitoring



Example of Road Maintenance



Field operational test for improving an efficiency in logistics vehicles management with ETC2.0

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