Pioneering path towards electrifying public bus networks
- challenge of a bus operator -

May 17th, 2024

Michinori Holdings, Inc.

Corporate Outlook

Name:	Michinori Holdings, Inc.
Headquarter:	Tokyo, Japan
Established:	March 16th, 2009
Shareholder:	Japan Platform of Industrial Transformation, Inc. (JPiX) 100%
Group CEO:	Jun Matsumoto (Mr.)
Employee:	17 in Headquarter and 5,000+ across operation companies

Main Business Areas

Transport

- City Bus
- Intercity Bus
- Charter Bus
- Taxi
- Railway
- Monorail
- Cable Car
- Car Ferry
- Jet Foil

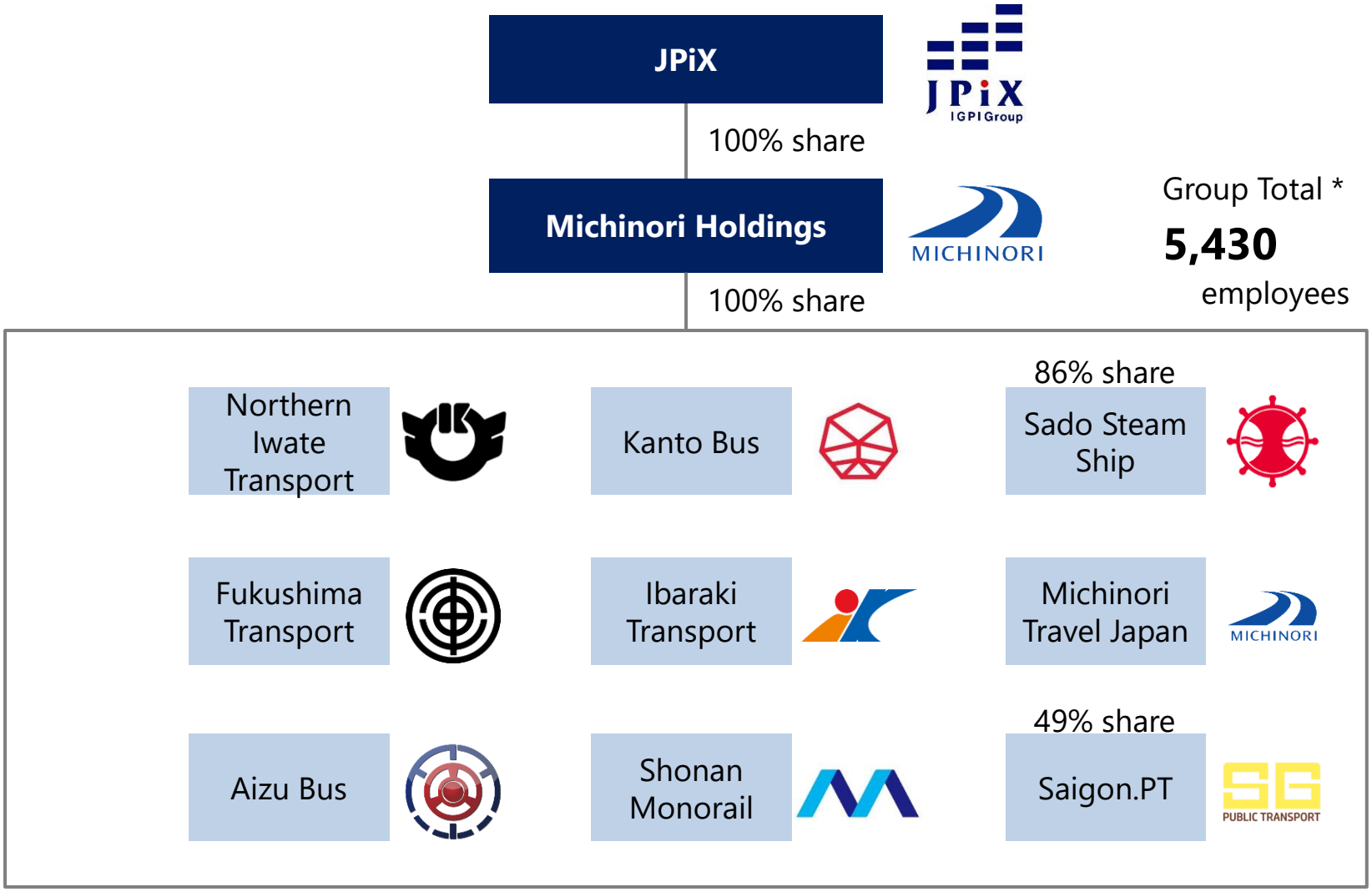
Tourism

- Hotel
- Travel Agency

Vehicle Maintenance

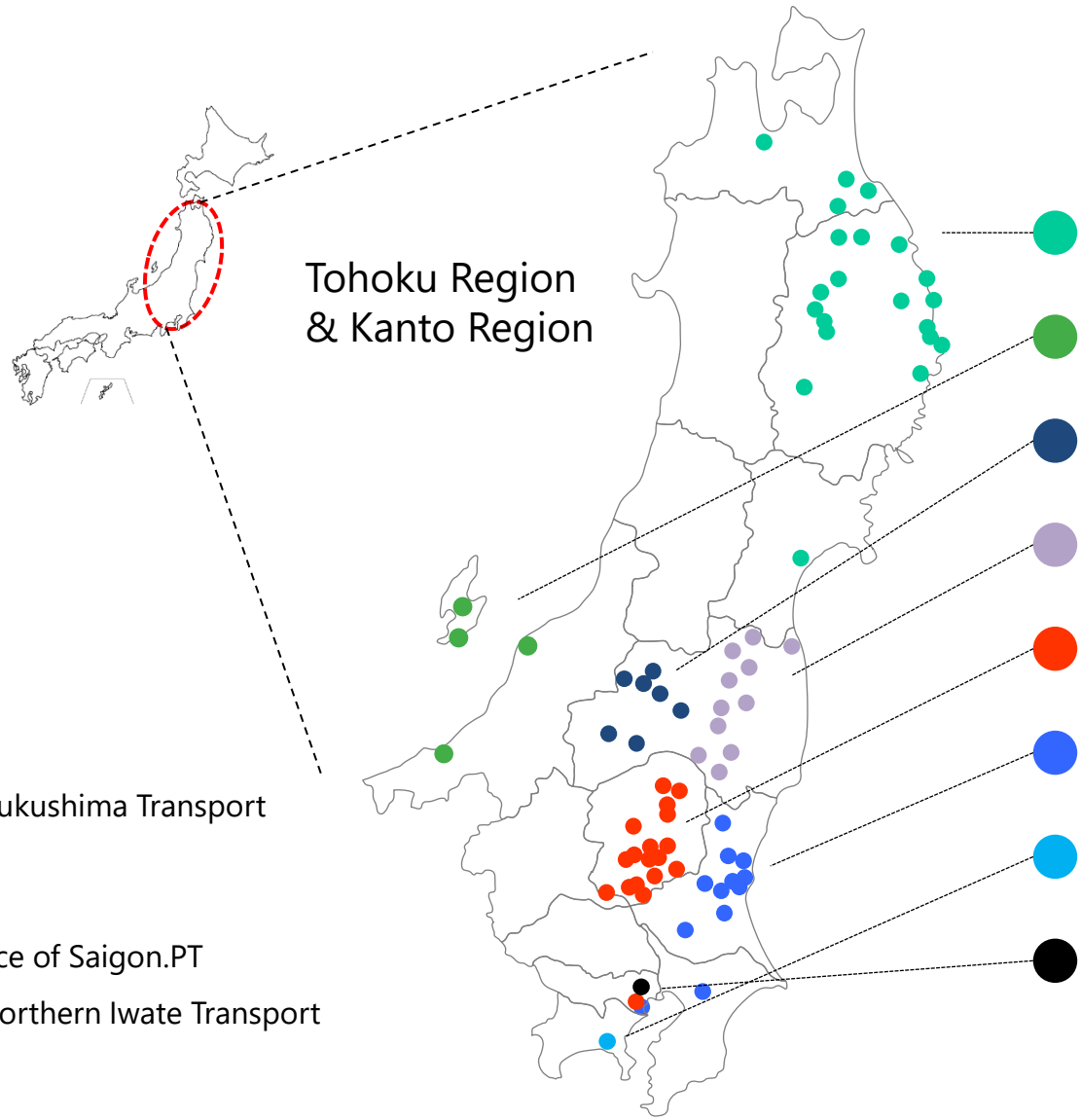
- Inspection
- Maintenance

Group Structure



* Number of employees and vehicles etc. of group companies in Japan are as of March 31st, 2023
Number of employees and vehicles etc. of group company out of Japan are as of April 1st, 2024

Bases of Michinori Group



- Northern Iwate Transport
- Sado Steam Ship
- Aizu Bus
- Fukushima Transport
- Kanto Bus
- Ibaraki Transport
- Shonan Monorail
- Michinori Holdings
  Michinori Travel Japan

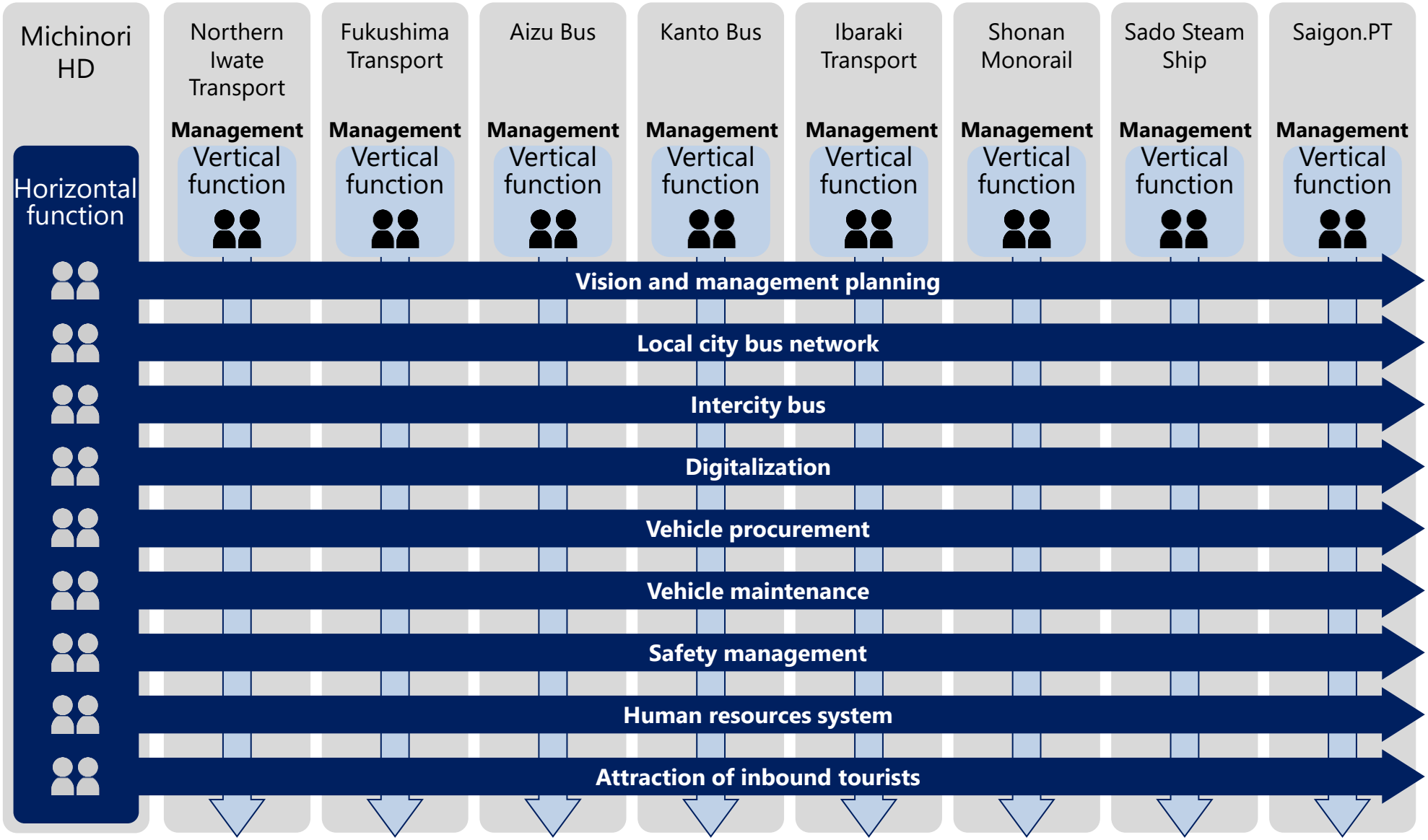
Other part of Japan

- Osaka office of Fukushima Transport

Out of Japan

- Ho Chi Minh office of Saigon.PT
- Taipei office of Northern Iwate Transport (Tourist office)

Group Management by Vertical x Horizontal Axes



Key Projects for Sustainable Public Transport

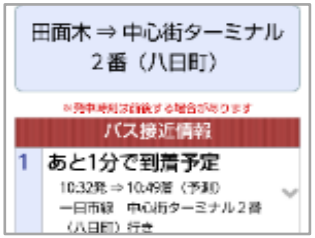
Solving social issues and improving productivity

Usability Improvement

- MaaS

- Cashless Payments

- Bus Location System/ Real-time Search



- Demand Responsible Transport

Operation Improvement

- Autonomous Driving

- Bus Electrification/ Energy Management

- Optimization of scheduling/work shift

- Digital Roll Call

E-Bus Implementation

We have accumulated experience and knowledge to ensure the bus operations quality with E-buses through the gradual implementation over 10 years

2012

Northern Iwate Transport

1 Retrofitted E-Bus (40kWh)

- Michinori group's first E-bus
- Usability monitoring
- Battery partial replacement in 2022

2017

Aizu Bus

3 E-Buses (217kWh)

- Operation of multiple E-bus
- First full E-Bus (not retrofitted)
- 3 out of over 70 buses at the depot

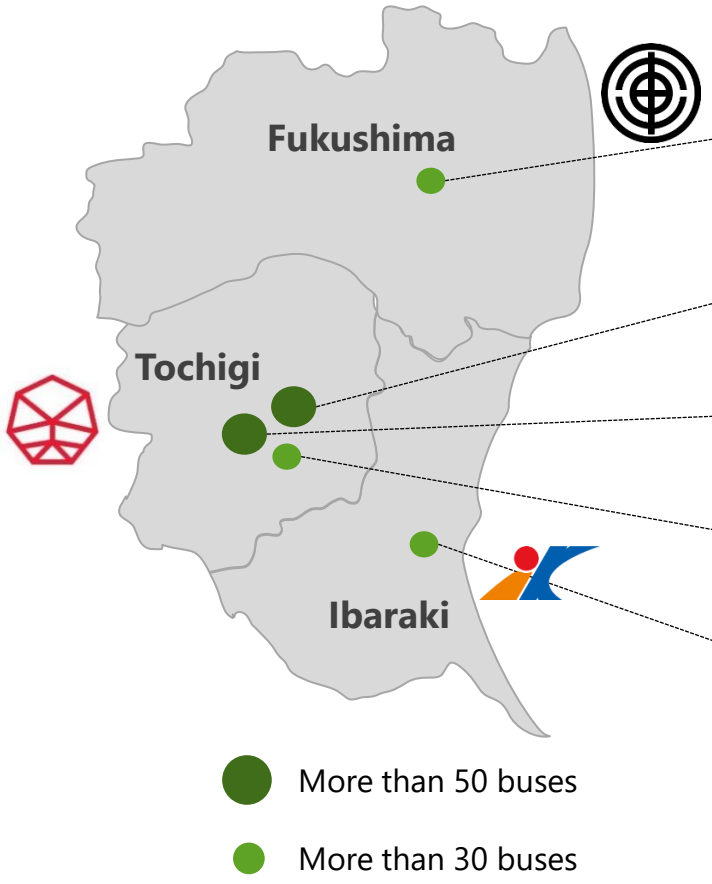
2023 ~ 2030

Fukushima Transport
Kanto Bus
Ibaraki Transport

218 E-Buses (287kWh)

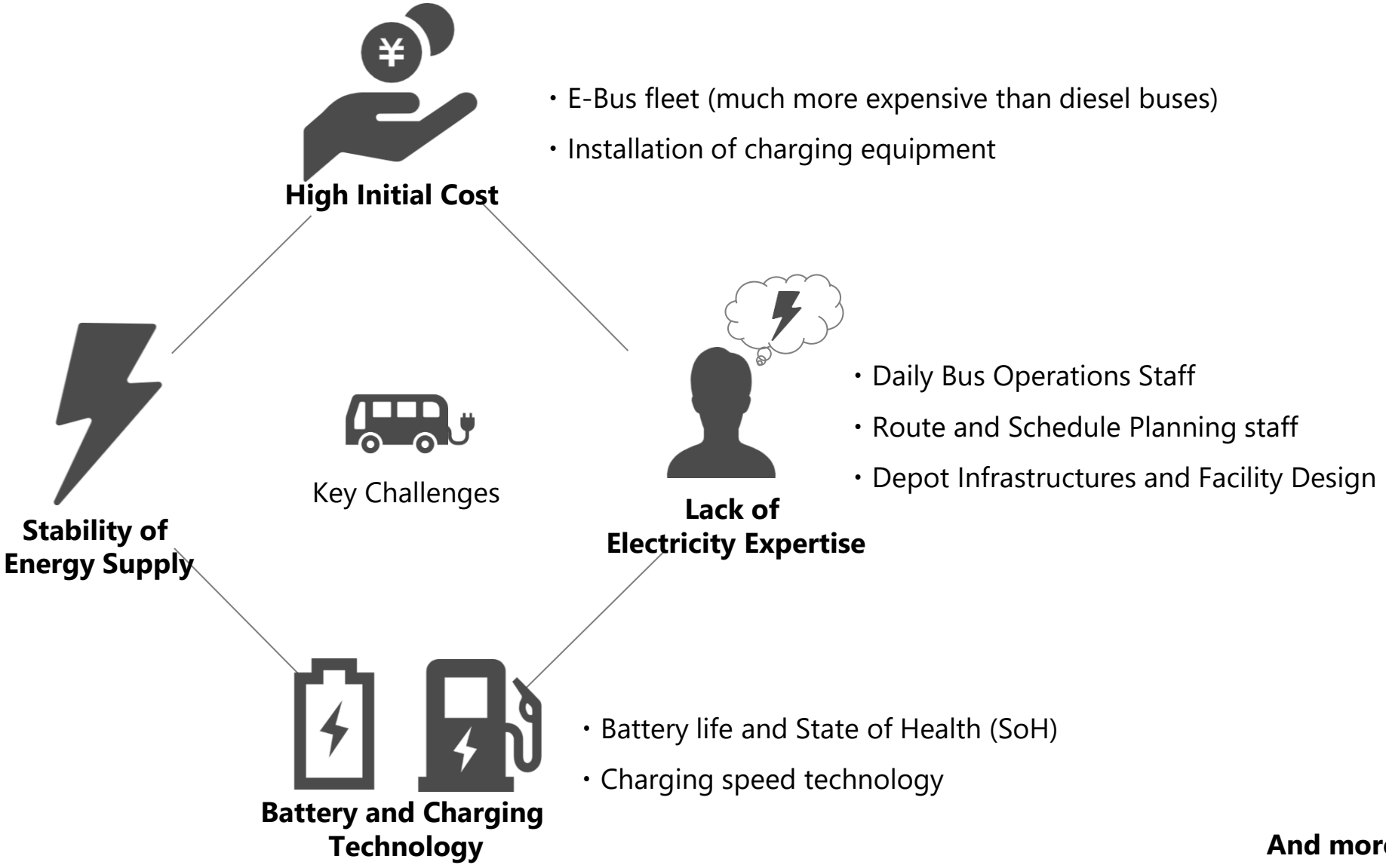
- 3 operators in 3 different prefectures
- Electrification of all buses at five depots
- Bus-EMS development for a full-scale adoption supported by the national government (METI/NEDO)

Adoption Plan from 2023 and Beyond



Depot	Number of E-Bus	Schedule
Otsuki	30	2023～2026
Yanaze	53	2023～2029
Komanyu	71	2023～2029
Utsunomiya	34	2023～2029
Koibuchi	30	2023～2029
Total	218	

Key Challenges in E-Buses Adoption



Key Challenges in E-Buses Adoption

High Initial Cost

- E-Bus fleet (much more expensive than diesel buses)
- Installation of charging equipment

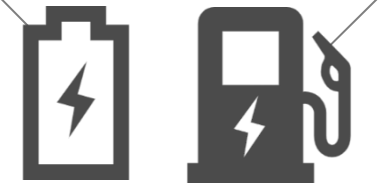
Stability of Energy Supply

Key Challenges

Lack of Electricity Expertise

- Daily Bus Operations Staff
- Route and Schedule Planning staff
- Depot Infrastructures and Facility Design

Principal issues for bus operators to handle

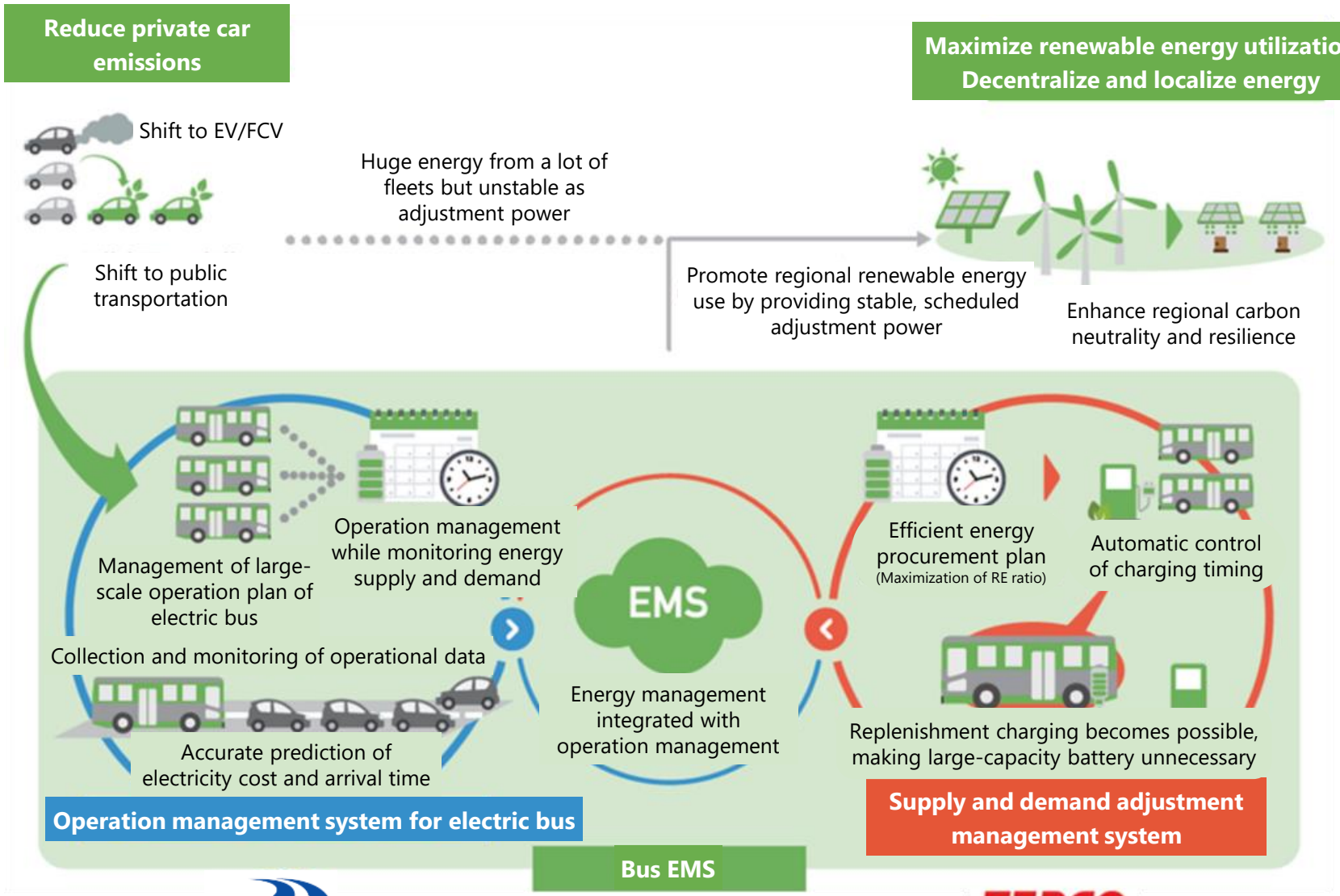


Battery and Charging Technology

- Battery life and State of Health (SoH)
- Charging speed technology

And more …

Concept of Bus-EMS



Cooperation of All Value Chain Stakeholders is Crucial

Thank you !

Feel free to contact us:

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