Xtran Inc.

Demonstration in the Japanese market for the introduction of automated green slow mobility in the mobility sector

Purpose of the Project

This project is a demonstration experiment to introduce autonomous green slow mobility in Japan, aiming to address regional transportation challenges by providing affordable autonomous transportation in underserved areas. Depopulated regions face severe public transportation shortages, limiting the mobility for elderly and younger residents. To address this, we collaborates with Taiwan's Turing Drive Inc. to deploy a low-speed, ultra-compact autonomous driving system.
Beyond just vehicle introduction, the project focuses on spreading operational and maintenance expertise in local communities and promoting customization with SMEs, which is likely to lead to fostering a new industry. By identifying challenges through this experiment, it will establish a foundation for full-scale implementation in the coming years.

Details of Demonstration

In this demonstration project, we selected a test site, conducted research on potential autonomous driving areas, and prepared operational plans for other regions. In collaboration with Turing Drive Inc., we carried out autonomous driving tests at Miyakojima Underwater Park, utilizing the open-source software Autoware.
Xtran Co., Ltd. oversaw the entire project, along with conducting site research, evaluating the testing environment, and developing an operational support system. Turing Drive Inc. was responsible for preparing the test vehicle, installing sensors, and setting up the onboard system.
The project schedule included site selection, followed by vehicle preparation and 3D mapping. After the vehicle arrived at Miyakojima Underwater Park on November 28, 2024, software adjustments and test runs were conducted. Once preparations were complete, a public demonstration event was held on January 15, 2025.
This project confirmed the potential of green slow mobility autonomous driving and identified key challenges for future implementation.

Copyright (C) 2025 JETRO. All rights reserved.

Xtran Inc.

Demonstration in the Japanese market for the introduction of automated green slow mobility in the mobility sector

Project Outcome

The demonstration experiment identified key challenges and solutions in technology, software, and business models. On the hardware side, proximity sensors and in-vehicle computers affected control accuracy, indicating the need for additional LiDAR sensors. We realized that since unstable LTE communication impacted system reliability, it was necessary to introduce dedicated networks like local 5G or regional BWA. Additionally, vehicle improvements were required to ensure comfortable mobility in adverse weather.

On the software side, improvements were needed for navigating narrow spaces safely while maintaining the balance between speed and safety. Issues with vehicle behavior during reverse movement also required enhanced control algorithms.

From a business perspective, the high costs of advanced equipment and safety personnel for Level 3 autonomy posed challenges. We realized that the project had to introduce multiple Level 4 vehicles early and improve efficiency by lowering labor expenses in order to reduce costs.

Further demonstration experiments and technological advancements will establish a foundation for full-scale implementation.

Challenges and Solutions

Introducing high-performance equipment can address hardware issues, but the cost remains as an issue even in the case. Introducing dedicated communications requires infrastructure and cooperation with governments and businesses. Developing new slow mobility vehicles is also essential.

Software improvements for narrow roads and reverse movements are progressing, but AI control needs refinement. Data accumulation is crucial for optimizing safety and speed. Introducing Level 4 vehicles enables remote management, reducing labor costs and improving efficiency.

Future Plans

Demonstration experiments will continue to address challenges and enhance collaboration with Turing Drive Inc.

Working with local governments and operating as public transportation will enable last-mile mobility with minimal cost and maximum efficiency.

For tourism transportation, proper pricing and multiple vehicles will optimize labor costs, and balance profitability and expenses. These strategies will be tested in further experiments.

Copyright (C) 2025 JETRO. All rights reserved.