

# YOKOHAMA'S MAJOR INDUSTRIES MOBILITY

## *Hotbed of innovation in next-generation mobility*

Tourists visiting Yokohama might soon be able to move from one sightseeing spot to another on self-driving minibuses. The latest of a growing number of next-generation mobility field tests conducted in Yokohama, the pilot program announced by the city in partnership with NTT Docomo Inc., Japan's top share mobile phone operator, and Mirai Share Co., Ltd., a smart mobility startup, involves a fleet of 10 on-demand, artificial intelligence (AI)-driven minibuses that shuttle tourists between sightseeing spots in the Minato Mirai 21 and Kannai Districts. The program is scheduled to start field testing in October 2018. Using this service, tourists will be able to easily hail self-driving minibuses from an app on their smartphone.

The City of Yokohama has become a hotbed of open innovation projects involving Internet of Things (IoT), artificial intelligence (AI), robotics etc., and has recently seen a number of exciting developments spearheaded by the IoT Open Innovation Platform Yokohama (ITOP Yokohama), the city's digital innovation platform, and major industry partners. In particular, Yokohama is now recognized as one of the leading cities to host various field tests involving self-driving technology, due to a combination of favorable factors: the city's long-held tradition of public-private sector collaboration and its well-established automotive industry cluster.

NISSAN MOTOR CO., LTD., often cited as the face of the Yokohama automotive sector, has taken a leading role in collaborating with the municipal government in mobility-related experiments. As an effort to encourage low-carbon emission transportation, NISSAN MOTOR and the climate change policy headquarters of the city have collaborated since 2013 to field test Choimobi Yokohama, an eco-friendly miniature vehicle with zero CO2 emissions. Since March of 2017, these vehicles have been chauffeuring Yokohama residents through an experimental roundtrip car-sharing (hourly car-rental) program. In December 2017, NISSAN MOTOR and DeNA Co., Ltd., a mobile portal and e-commerce website provider that also owns the local professional baseball team Yokohama DeNA BayStars, announced that they will be starting field tests in the Minato Mirai 21 District for Easy Ride, a smart mobility ride-hailing service that deploys a fleet of self-driving cabs. Their goal is to launch full-fledged service in the city in the early 2020s.

DeNA has also been working with the municipal government since April 2017 on a project to resolve local traffic challenges using driverless vehicle services and AI, and the Kanazawa Zoo in the southernmost district of the city has been running a driverless bus service as a field test. The city of Yokohama has proudly hosted more than 300 pilot projects in the past 10 years with various industrial partners, attesting to its true passion for innovation and collaboration.



## A thriving automotive cluster gearing up for collaborative opportunities

Yokohama has long been a center for automotive and automotive parts industries. Major establishments of leading Japanese companies, such as NISSAN MOTOR's global headquarters and laboratories, Mazda Motor Corporation's R&D center, Panasonic Corporation's Automotive Sales Division and Panasonic ITS Co., Ltd. which develops car electronics and navigation systems, are all located in the region. Thirteen of the world's 30 top international automotive parts suppliers or their subsidiaries, such as Robert Bosch GmbH, Continental Aktiengesellschaft, ZF Friedrichshafen AG, and Adient plc have also chosen Yokohama as the location for their Japanese headquarters or research institutions. These companies are engaged in R&D in the fields of IT, new material and batteries, in order to play an active role in innovative motorization, automation, and Mobility as a Service (MaaS) developments. NISSAN MOTOR has established its Mobility Service Institute adjacent to its Yokohama headquarters, and DENSO CORPORATION its Agile Development Center near Shin-Yokohama station. France-based Faurecia's Japanese subsidiary announced in 2018 that it will open a technology development center in Yokohama to accelerate its joint development efforts with Japanese auto-manufacturers.

Efforts are underway by many of these top automotive companies to identify and form partnerships with promising venture businesses in the region and to spur open innovation with non-automotive industries. These auto-makers are hoping to better position themselves in the era of Industry 4.0 by taking in the latest technologies being developed by these venture firms, namely in areas such as AI, new materials, and robotics. ITOP Yokohama, the city's IT innovation platform, supports collaboration among venture businesses, small and medium-sized enterprises (SMEs), major companies, universities and research institutions by providing spaces for networking, knowledge exchange, and joint human resources development.

Besides the acceleration in partnerships with major auto-manufacturers, some of the emerging mobility firms in Yokohama are attracting attention in Japan and abroad for their in-house technologies. For example, WHILL, Inc., a hardware venture business which develops electric wheelchairs and other personal mobility devices, won the Best of Innovation Award at the 2018 Consumer Electronics Show (CES). Another example is ITD Lab Corporation, a Tokyo Institute of Technology (TITECH) startup venture specialized in the development of stereo cameras, an important part of self-driving and collision prevention systems for automobiles and drones.

Yokohama's robust research community is also playing a crucial role in furthering the competitiveness of the city's mobility sector. TITECH and Keio University have campuses and laboratories based in Yokohama that are conducting cutting-edge research on futuristic vehicles and mobility. Yokohama National University (YNU) has established a Next Urban Laboratory that aims to foster collaboration between regional actors and promote research projects in various interdisciplinary fields including mobility. Nearly 40 organizations, including companies such as NISSAN MOTOR, IHI Corporation, Komatsu Ltd. and Hitachi, Ltd., local universities, research institutes, local government offices and financial institutions have all joined this project as official partners. Furthermore, YNU is a satellite member of a large-scale Center of Innovation (COI) program called the "Center for Co-evolutionary Research for Sustainable Communities (C2RSC)," which is headquartered in Kyushu University and jointly run by government, industry, and academia partners from around the nation. The program conducts various R&D projects under the broad themes of energy, mobility and civic service, and YNU operates a satellite COI focused on smart & multimodal mobility (SMMM). The central aim of the YNU COI satellite is to conduct research that will lead to the development of a mobility solution that is sustainable, safe, secure, and easily available, which will lay the ground for building an inclusive city for all residents.

### Initiatives

**ITOP Yokohama:** An innovation platform for collaboration and exchange, project implementation, and human resources development to spur the growth of new businesses in IoT, big data, AI, and robotics, while capitalizing on Yokohama's existing manufacturing and IT industries. In order to qualify for membership, companies/organizations/universities must be interested in engaging in open innovation to design new products or services using IoT etc., and either already work with SMEs or plan to involve SMEs in their prospective projects.

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