

## Tokyo 2020 to showcase transportation innovation

### The upcoming Olympic Games provide a great opportunity to display the latest mobility developments, writes Megan Lampinen

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Tokyo's reputation for efficient urban transport will come in handy as it prepares to host the 2020 Summer Olympic and Paralympic Games. The event, also referred to as Tokyo 2020, runs from 24 July through 9 August and is expected to attract around 15 million visitors, temporarily doubling the number of individuals in the city centre. The challenge of effectively transporting all these people is a big one.

With these Games, there is no single Olympic Park; rather, events are spread far and wide. There are even some venues located outside of Tokyo. Organisers are also keen to reuse some of the infrastructure that was built when Tokyo previously hosted the Games in 1964. Some stadiums are being refurbished while existing sporting facilities in the older part of the city are also being prepared. At the same time, many of the Games will take place around the Bay, a more recent development on reclaimed land. All of these factors suggest that the need for people to move between one place and another will be stronger than ever. Smart technology, clean vehicles and efficient transport management will be pushed to the limit.

### Smartphone applications

Help comes in many guises, including smartphone apps. The bulk of city visitors during the Games will rely on public transport, but according to research findings from the Japan Tourism Agency, public transport information at airports is a source of difficulty for two-thirds of foreign visitors. Panasonic, a long-time sponsor of the Olympic Games, is developing smartphone technology to make that easier, starting with the Tokyo Metro map.

In collaboration with route-information provider Jorudan, Panasonic has been trialling a new travel board at Haneda airport, which shows popular destinations and recommended routes across various modes of transport, including taxi, train and metro. The smartphone app translates all the information from the board into an individual's own language and then provides directions. If it works as intended, it could smooth those first journeys for many overseas visitors.

### Fuel cells

Fuel cell technology is set to play a starring role in the Tokyo Games and the government envisions fleets of hydrogen-powered cars and buses ferrying athletes and visitors from venue to venue. Toyota, an official mobility partner of the International Olympic Committee (IOC)

and the International Paralympic Committee (IPC), has said it aims to make Tokyo 2020 ‘a turning point’ in realising a hydrogen society. The automaker will provide a fleet of Mirai fuel cell sedans for official use, along with a number of Sora fuel cell buses and fuel cell forklifts. At the moment there are a small number of Sora models in use, but the aim is to provide these models to the Tokyo Metro. By 2020 it hopes to have about 100 hydrogen buses in operation in the city. The exposure gained through the Olympic operations could make a big difference.

“One idea behind these Games is to showcase how hydrogen can contribute to sustainable societies and transport in the future as well as the near term. It will show that this is possible, that the technology is absolutely ready and it can work with both collective mobility and individual mobility,” a Toyota spokesman told *Automotive World*.

## Mobility for all

The Olympic Games will also serve as a showcase for new Mobility as a Service (MaaS) concepts, including Toyota’s e-Palette. This battery electric vehicle has been specifically designed for MaaS. Public feedback on the design has been varied, with some suggesting the vehicles resemble transparent shipping containers. The size is flexible and reflective of their specific use case. Potentially they could be used to transport both goods and people. The model will debut at the 2020 Games.

The e-Palette supports one of the main pillars of Toyota’s – and Japan’s – Olympic message: mobility for all. “This is about ease of access to mobility, and that’s both for people with impairments and those without. The Paralympic Games can bring to light some of the mobility challenges that people with impairments have in a very direct way,” Toyota explained.

Japan is working to the target of universal access, which means somebody with impairments should be able to travel anywhere easily. For instance, buses and shuttles will need to dock at ground level or the level of a platform. The JPN Taxi, which Toyota launched in October 2017, is designed to easily accommodate passengers with wheelchairs and the floor of the vehicle is low, so it’s easier to enter and exit. Toyota is working to build up the fleet of these in time for the 2020 Games.

Mobility on demand is part of this wider concept. Toyota is harnessing connectivity in order to make sure that the transport system can understand what the city’s needs are and where to dispatch vehicles. It is in charge of the official fleet of vehicles that the IOC uses during the Games, and they are in heavy demand. These official vehicles need to transport athletes, athletes’ families, officials, umpires, technical staff, journalists, VIPs, etc – about 100,000 people in all. It takes an advanced transport management system to handle that volume and complexity.

“We are developing the software for the management system that will help visualise where transportation is needed and at what time. The fleet will be connected so they will have data

communication modules and translogs,” the automaker elaborated. “We will be able to visualise the conditions and smoothly tailor the transport dispatch to the demand.”

## Autonomous

A range of highly automated and autonomous vehicles (AV) are also scheduled to hit the streets of Tokyo in time for the Games. “From Level 3, where the vehicle can monitor the driving environment, but a driver is still necessary, to Level 5, where the vehicle is fully automated, AVs are set to come under the spotlight at Tokyo 2020,” observed Masatoshi Shioda, Ipsos Head of Business Consulting in Japan.

Baidu and Softbank plan to launch self-driving mini buses in 2019. Local taxi company Hinomaru Kotsu has been working with autonomous driving technology developer ZMP on a self-driving taxi. Road tests are currently underway, prompting expectations for a launch of the service just ahead of the Games. Tokyo-headquartered Ascent Robotics is working to deliver a Level 4 AV in time for an Olympic showcase. The company says its artificial intelligence builds on human neuroscience to more accurately mimic causal reasoning.

Toyota will operate several vehicles equipped with different levels of automated driving, including some SAE Level 2 vehicles for conveying individuals along the freeway. It will also perform verification testing and demonstrations of an SAE Level 4 autonomous vehicle in the city’s Water Front City and Haneda areas.

## Legacy

These high-profile sporting events provide a great opportunity for a region to showcase the latest transportation developments. At the same time, they can offer the chance to attract new investment and update the city’s transportation system. One legacy from the 1964 Games is the Shinkansen high-speed train system. The 2020 Games could lay the ground work for a zero-emission, highly automated network of vehicles.

However, if Japan intends for these innovations to become a permanent fixture on its roads, significant legal barriers still need to be overcome. “Hoping to promote AVs as a key feature for economic growth through Tokyo 2020, the Japanese government ambitiously aims to submit related legislation to the Diet as early as 2019,” Shioda observed. “While the scale of autonomous driving at Tokyo 2020 depends largely on the Japanese government’s ability to overcome these legal barriers, two things are certain about the event – it will be a transportation innovation showcase that will catalyse not only competition among global automakers and technology companies, but also governments in other countries towards automated technology. Japan will reinforce its reputation for having one of the world’s most efficient transport systems.”

*[This article was featured in our October 2018 special report, ‘The future of mobility in Tokyo’, which is now available for download.](#)*