



Toyota LQ Concept Looks Towards Personalised Mobility Solutions

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- LQ concept to be displayed at Future Expo within Tokyo Motor Show
- BEV concept vehicle equipped with Toyota-developed, SAE Level four equivalent automated driving system
- Toyota to offer a public test-drive experience, using LQ concept in Tokyo

Toyota will display the LQ concept at Future Expo, a special exhibition running at the Tokyo Motor Show this October. The next generation of the Toyota Concept-i, first seen at the 2017 Consumer Electronics Show in 2017, LQ is equipped with automated driving capabilities and the latest version of Toyota's on-board artificial intelligence agent named Yui - an interactive agent designed to learn from the driver and deliver a personalised mobility experience.

The development of the LQ concept underlines Toyota's commitments as a mobility company, with the vehicle an embodiment of its beliefs that, when people are free to move, anything is possible. Toyota's vision is based on an understanding that mobility goes beyond physical transportation to include the human need to be moved and engaged emotionally.

"In the past, our love for cars was built on their ability to take us to distant places and enable our adventures," said LQ development leader Daisuke Ido.

"Advanced technology gives us the power to match customer lifestyles with new opportunities for excitement and engagement. With the LQ, we are proud to propose a vehicle that can deliver a personalised experience, meet each driver's unique mobility needs and build an even stronger bond between car and driver."

LQ's on-board artificial intelligence agent, Yui, and its automated driving technology have been developed in partnership with Toyota Research Institute. Both elements combine to create a unique mobility experience; an experience that builds the relationship between vehicle and driver by learning from and responding to individual preferences and needs. The LQ name expresses Toyota's hope that this approach will "cue" the development of future vehicles that enhance the relationship between car and driver.

Features of LQ's artificial intelligence agent, Yui, include an air conditioned seating system that self-adjusts according to driver levels of alertness and relaxation - a world first in seating technology. LQ's automated driving function offers an automated valet parking feature and augmented reality head-up display (AR-HUD).

Following its debut at Future Expo, Toyota today announced that Toyota Yui Project Tours 2020 – a public test-drive event scheduled – will take place between June and September 2020, in Tokyo.

More details on the Toyota Yui Project Tours 2020 will be announced on a dedicated website: <https://toyota-yuiproject.com/en/>

Main Features

The main features and technologies of the LQ include:

1.Yui Mobility Expert and AI Agent

LQ features an on-board artificial intelligence agent named, Yui, that provides a personalised mobility experience based on the driver's emotional state and alertness. In order to ensure safety and comfort, the AI can engage with the driver using interactive voice communications, in-seat functions designed to increase alertness or reduce stress, in-vehicle illumination, air conditioning, fragrances and other human-machine interactions (HMI). Yui can also select and play music based on the driving environment and provide real-time information on topics of interest to the driver.

Going forward, Toyota will continue to work on expanding Yui's implementation, through integration with other products such as smartphones.

2.Technology designed to provide safety, peace of mind and a comfortable mobility experience

i)Automated Driving: The LQ is equipped with an SAE Level 4 equivalent automated driving function.

ii)Automated Valet Parking System (Jointly developed with Panasonic Corporation)

The system eliminates the need to search for parking spaces, by automatically driving between a drop-off spot and an assigned parking space, improving accessibility for those with mobility limitations and anyone who has difficulty parking. The system also maximises space in the car park, by reducing clearance between adjacent vehicles to 20 centimetres.

Automated parking uses an in-vehicle system that identifies the current position of the vehicle by using multiple cameras, sonar and radar, 2D road mapping, cameras installed in the car park and a control centre. Vehicle sensors and car park cameras also monitor for other vehicles and pedestrians on the automated driving route, automatically stopping the vehicle when another vehicle or a pedestrian is detected.

iii)AR-HUD (Jointly developed with Panasonic Corporation)

LQ's augmented reality head-up display (AR-HUD) uses augmented reality (AR) to expand the information display area of the head-up display (HUD), supporting safe driving by reducing driver eye movement.

Driving information such as lane warnings, road signs, and route guidance can be displayed in a three-dimensional and easy to understand manner over the scenery seen through the windscreen

iv) Seat with alertness and relaxation functions (world-first) (Jointly developed with Toyota Boshoku Corporation)

LQ's advanced seating system consists of multiple inflatable air bladders embedded into the seat, with an in-seat air conditioning system to help keep the driver awake or relaxed depending on the driving situation.

When the system recognizes that the driver is tired, it inflates the air bladder in the seat back to support an upright sitting posture and directs cool air from the ventilation system located in the seat.

When conditions allow the driver to relax, such as in automated driving mode, the air bladder in the seat back gradually inflates and contracts to encourage abdominal breathing.

3. Other advanced equipment and technology

i) New HMI functions

LQ uses the roof and floor mat areas as an intuitive communications platform to share information between the vehicle and passengers. Embedded lighting displays different colours to indicate automated or manual driving mode and lights up different foot wells, to indicate which passenger Yui is addressing.

LQ can also communicate information such as road surface conditions to people inside and outside of the vehicle, using the Digital Micromirror Device (DMD) installed in its headlights. The system can activate one million tiny embedded mirrors to project complex figures on the road ahead.

ii) Organic LED meter display (Toyota first)

A first for Toyota, LQ's dashboard and dials are displayed using organic LEDs (OLEDs). The advanced instrument panel design wraps around the driver, while ensuring high visibility.

iii) Air purification coating (Jointly developed with Aisin Chemical Co., Ltd. and Cataler Corporation)

LQ features a newly-developed catalyst coating that decomposes ozone into oxygen on the radiator fan, allowing ozone near the ground surface - a cause of photochemical smog - to be decomposed as the vehicle moves. Toyota has measured the effect of the coating as purifying about 60 per cent of ozone contained in 1,000 litres of air, over the course of a one hour drive.

Toyota expects this technology to help clean harmful emissions like ozone from the air during drives and is considering the coating for use in commercial vehicles in the future.

4. Design

The LQ cabin is designed with a futuristic, forward-projecting silhouette that puts Yui at the centre of the instrument panel, with lines that flow from the inside of the vehicle and out across its exterior.

The minimalist interior is smooth and sleek, with key elements like air conditioning vents hidden behind invisible registers. The exterior doors feature glass that seamlessly connects with the interior of the vehicle, creating an integrated, elegant design.

LQ Main Specifications

Length/Width/Height(mm)	4,530 / 1,840 / 1,480
Wheelbase(mm)	2,700
Occupancy(Persons)	4
Powertrain	BEV
Vehicle weight(kg)	1,680
EV cruising rang(km)	Approximately 186 miles

View additional Tokyo Motor Show 2019 news releases, images and more here:
<https://global.toyota/en/mobility/toyota-brand/features/tms/2019/>

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