

Oct 10, 2019

Panasonic to Showcase Booth at 26th ITS World Congress Singapore 2019

Panasonic introduces a wide range of its ITS business initiatives from automotive terminals to transportation infrastructure and smart towns

Osaka, Japan - Panasonic Corporation will showcase a booth at the ITS World Congress Singapore 2019.

The Panasonic Group is involved in a broad range of ITS businesses ranging from automotive terminals to transport infrastructure and smart towns. Panasonic's initiatives include technology development such as wireless and imaging technologies to prevent traffic accidents and realize a self-driving society, as well as services and solutions aimed at achieving more comfortable mobility.

The highlights of Panasonic's booth this year will include the following: "79 GHz Band 3D Imaging Radar", which makes it possible to identify the shapes of cars, cyclists, pedestrians, etc., even in bad weather conditions, which is difficult to achieve with conventional sensor; "60 GHz Wi-Fi instant connectivity", which visualizes blind spots at intersections, road bends, etc., by instantaneously sharing automotive and road infrastructure sensor data in the road infrastructure; and the "Mobile Battery Sharing Service" aimed at realizing a sustainable society, whose empirical study has started in Indonesia. Panasonic's booth will exhibit seven items including those mentioned above.

Open period: October 21-25, 2019

Location: Suntec Singapore Convention and Exhibition Centre (Singapore)

Theme: "Smart Mobility, Empowering Cities"



[Highlights of Panasonic's Booth]

■ 79 GHz Band 3D Imaging Radar, which enables identification of the shapes of obstacles even under bad weather conditions

Millimeter-wave radars are expected as a sensor that enables detection of incoming vehicle even at night or under bad weather conditions and realize a driving safety support system. However, conventional millimeter-wave radars can only detect objects two-dimensionally (2D) in horizontal and vertical angles, it is difficult to estimate the shapes of objects. By applying our proprietary unequally spaced antenna layout technique and MIMO*1 signal processing technique at the 79 GHz band, a virtual array that can achieve high resolution in both horizontal and vertical directions is configured.

Depending on this technique, Panasonic has succeeded in identifying the shapes of objects by achieving highly accurate three-dimensional (3D) detection with vertical angle in addition to range and horizontal angle while using equivalent number of antennas compared to that of conventional 2D radar. This enables identification of the shapes of cars, cyclists, pedestrians, etc., at more than 30 m ahead even at night or under bad weather conditions where recognition is difficult using conventional optical sensors (cameras, LiDAR, etc.). In the future, the 79 GHz Band 3D Imaging Radar is expected to be used as an automotive radar for recognizing obstacles around the vehicle and as an infrastructure radar for monitoring intersection traffic, etc., towards realizing a self-driving society.

*1: Multi-Input and Multi-Output. This is a technique that can improve communication quality by using multiple transmit and receive antennas. By applying this technique to radars, the position (direction) of obstacles can be estimated accurately.

■ 60 GHz Wi-Fi instant connectivity*2

Town digitization and visualization to realize a better life requires the efficient collection of huge amounts of sensor data across town. Although the widespread use of 5G enables high-throughput data communication, the utilization of unlicensed frequencies is also essential to building networks for collecting all data. In addition to the utilization of DSRC*3 and 4G/5G, Panasonic is also working on the utilization of 60 GHz band millimeter-wave Wi-Fi in the ITS field to complement DSRC and 4G/5G.

60 GHz Wi-Fi (compliant with the IEEE802.11ad standards) enables high-speed communication that is over 10 times faster than existing Wi-Fi and allows for the hassle-free and seamless transmission/reception of contents with high-volume data such as video and 3D maps. However, its short communication range poses a challenge for utilization in the ITS field, which involves vehicles traveling at high-speed. By applying antenna directivity control and wireless link control technologies, Panasonic has achieved instantaneous connection in the communication area even during high-speed mobility, thereby applying 60 GHz Wi-Fi to the ITS field successfully for the first time. Based on this achievement, Panasonic has started related experiments on public roads inside the Nanyang Technological University in Singapore. The experiments include the instantaneous transmission of blind spot data detected by sensors at the edge of the roadside to vehicles, as well as the instantaneous upload of the data captured in the town by automotive sensors such as dashboard recorders and its analysis at the edge of the roadside. The details of this technology are also available at the Technical Tour*4 held by the ITS World Congress.

*2: The Wi-Fi Alliance provides a certification program entitled "WiGig" as a millimeter-wave Wi-Fi using the 60 GHz band.

*3: Abbreviation of Dedicated Short Range Communications. In Japan, it is widely used for ETC (electronic toll collection system) and is now applied to operation management, etc.

*4: The details are available at the Technical Tour on "Testing and Research of Autonomous and Connected Vehicle Deployment on Public Roads" held at Nanyang Technological University.

[Panasonic Booth:List of Exhibited Items]

In addition to the above-mentioned wireless technologies, Panasonic's booth will also showcase three items related to imaging technologies, a "Walkable Unit" concept, and solutions for electric mobility in Indonesia.

	Exhibit items	Overview
1	79 GHz Band 3D Imaging Radar	79 GHz band radar technology mounted in autonomous driving vehicles, etc., to detect obstacles around the vehicle. The addition of this detection function in the vertical direction has enabled three-dimensional detection, making it possible to identify shapes such as pedestrians and cars even under conditions that prove difficult for conventional cameras (e.g. bad weather).
2	60 GHz Wi-Fi instant connectivity	Proposal to reduce accidents through the digitization and visualization of towns by fusing the 5G network and 60 GHz millimeter-wave Wi-Fi. A next-generation wireless communication system that offers information on blind spots at intersections through communication with pedestrian terminals in addition to roadside edge and automotive devices.
3	Visual Mapping & Localization	Autonomous driving requires highly accurate and real-time localization of the vehicle. The utilization of multiple automotive cameras for a 360° view around the vehicle has achieved localization without additional sensors.
4	Real-time Perception using Lightweight AI	This is an image detection technology using a low-price automotive ECU to promote the use of ADAS and autonomous driving. By collecting images captured by automotive cameras in a cloud once and carrying out pre-processing, this technology has enabled real-time object detection using an AI algorithm.
5	Simulation for AI	Object detection using an AI algorithm has issues related to the learning of rare conditions such as heavy rain. This item introduces a method of efficient machine learning that involves generating such conditions using CG (computer graphics).
6	Walkable Unit	By using models and conceptual videos, this item introduces the concept of mobility that can be employed by a "walkable town" that promotes encounters, exchanges, and stays by diverse people and has space and communities that create new connections.
7	Mobile Battery Sharing Service	An empirical study towards promoting electric mobility has started in Indonesia. Panasonic is working on resolving issues related to cruising ranges and charging time through services to share detachable and portable batteries among users. Panasonic aims to realize a sustainable society by contributing to the promotion of electric mobility, thereby reducing environmental impacts.

[URL of the ITS World Congress]

The exhibit overview will be released on the URLs below after the opening of the World Congress. Please also visit these sites.

https://www.panasonic.com/jp/business/p-its/singapore_2019.html

https://www.panasonic.com/global/business/p-its/singapore_2019.html

About Panasonic

Panasonic Corporation is a worldwide leader in the development of diverse electronics technologies and solutions for customers in the consumer electronics, housing, automotive, and B2B businesses. The company, which celebrated its 100th anniversary in 2018, has expanded globally and now operates 591 subsidiaries and 88 associated companies worldwide, recording consolidated net sales of 7.982 trillion yen for the year ended March 31, 2018. Committed to pursuing new value through innovation across divisional lines, the company uses its technologies to create a better life and a better world for its customers. To learn more about Panasonic:

<https://www.panasonic.com/global>.

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