Summary of ITS World Congress Tokyo 2013, and Efforts by the Ministry of Internal Affairs and Communications of Japan towards the Advancement of ITS

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The ITS World Congress was held in Tokyo, Japan from Monday 14th through Friday 18th October 2013. This was an international conference on intelligent transport systems (ITS), which are systems to reduce traffic accidents and alleviate traffic jams using ICT.

At this year's event (the 20th ITS World Congress), many cutting edge technologies on the theme of "Open ITS to the Next" were introduced by way of conference sessions, exhibitions and demonstrations such as test drives. The event was enthusiastically attended by over 20,000 visitors from 65 different countries.

This article presents a summary of ITS World Congress Tokyo 2013, and introduces the efforts of the Ministry of Internal Affairs and Communications of Japan towards the advancement of ITS.

1. Opening ceremony

The ITS World Conference started off with the Tokyo International Forum on Monday, 14th October. Although the conference hall could accommodate 5,000 visitors, it was filled by many ITS stakeholders from Japan and overseas.

The opening address was delivered by Hiroyuki Watanabe, the chairman of ITS Japan. Mr. Watanabe expressed his enthusiasm for opening new doors in the automotive industry through the use of autonomous vehicles and Big Data. Opening statements by representatives from the three key regions of Asia, the United States and Europe were then delivered, followed by a video message from H.E. Mr. Shinzo Abe, Prime Minister of Japan, and a public acknowledgement of people who had worked hard to promote the spread of ITS.

2. Exhibitions, demonstrations, etc.

From Tuesday October 15 (the second day of the congress), the Tokyo Big Sight became the venue for conference sessions, exhibitions of the latest equipment, and demonstrations including test drives in actual vehicles.

At the conference sessions, participants from various fields of industry, government and academia introduced their latest work based on broad themes such as roads, traffic, telecommunications and industry.

In the exhibition hall, booths were set up by a total of 238 organizations including businesses and research organizations from all over the world, of which 114 were from Japan. These were used to introduce the latest initiatives through a combination of display panels, video displays, equipment demonstrations and simulators. At the booth run by the Ministry of Internal Affairs and Communications of Japan, we introduced the ITS that has been put to practical use in Japan, and the telecommunications technology used in these systems by linking together related businesses and the like under the three themes of (1) Guard Your Life, (2) Easy Travel, and (3) Improved Communication Technology. Many people were particularly interested in our diorama illustrating the telecommunications technology that

Fig. 1: Welcome address by ITS Japan chairman Hiroyuki Watanabe

Fig. 2: Video message from H.E. Mr. Shinzo Abe, Prime Minister of Japan

Fig. 3: Inside the exhibition hall

supports ITS in an easy-to-understand way, and our simple demonstration of 79-GHz high-resolution radar equipment.

Outside the exhibition hall, there were demonstrations of future ITS technologies — some that are ready for practical applications, and others that are aimed at being used further into the future. In particular, there were many organizations demonstrating the latest technology on the theme of autonomous vehicles and advanced driver support.

For example, in a course set within the grounds of the exhibition hall to simulate city roads and car parks, Honda demonstrated a vehicle that can drive autonomously by using communication between pedestrians and vehicles in addition to recognizing the road environment from radars and cameras mounted on the vehicle, and automatically parks in an available parking space while avoiding obstacles based on information from cameras situated in the car park.

Under the theme of advanced driving support technology for highways, Toyota demonstrated a vehicle that automatically operates the accelerator and steering so as to follow the car in front in a metropolitan expressway. This system uses cooperative adaptive cruise control (CACC), which is an enhancement of an existing technique called adaptive cruise control (ACC) where tools such as radars and cameras are used to keep a constant distance from the car in front. CACC can follow a vehicle more responsively because in addition to ACC, it also has the ability to instantaneously share acceleration and deceleration information by vehicle-to-vehicle communication. This autonomous vehicle demonstration used 700-MHz band radio waves which had been allocated by the Ministry of Internal Affairs and Communications for ITS.

In the ASV (Advanced Safety Vehicle) promotion study group, which studies how to promote the development, practical use and popularization of ASV, demonstrations were performed in the nearby urban region, using a combination of vehicle-to-vehicle communication and vehicle-to-infrastructure communication to prevent collisions at crossroads and collisions when turning right. This system also uses radio waves in the 700 MHz band. Since radio waves in this band are able to travel around obstacles and can communicate even in non-line-of-sight situations like the driver's blind spots, applications that take advantage of this characteristic were also introduced.

Fig. 4: The Ministry of Internal Affairs and Communications booth

Fig. 5: Diorama describing the ITS used in Japan

Fig. 6: Demonstration of 79-GHz high-resolution radar