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Overseas Study and Research Reports

Report on participating in the 2011 International Bridge, Tunnel and Turnpike Association (IBTTA), 79th Annual Meeting

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1. Introduction

The 79th IBTTA Annual Meeting was held between 11 ~ 14, September 2011 in Berlin, Germany at the InterContinental Hotel. The theme of the meeting was "Making the Difference," emphasizing future toll collection will utilize the latest collection technology along with the best operational management methods in order to provide road users with safer roads, better quality services and more sustainable environment. The seminar was divided into a general assembly session and breakout sessions. The breakout sessions focused on four major topics: interoperability, tolling infrastructure around the world, communications



and environmental/social responsibility.

During this year's Annual Meeting, Far Eastern Electronic Toll Collection Co., General Manager, Li Hao-zheng was invited as a guest speaker to introduce Taiwan's electronic toll collection (ETC) experience, which allowed more countries to recognize Taiwan. Although Taiwan only has 5 years of experience in electronic toll collection, but we are already quite advanced in toll collection and operations. Especially our 99.997% successful toll collection rate is in pace with world trends, hence, this was a good opportunity to market Taiwan.

Taiwan's electronic toll collection system for freeway is expected to use distance-based electronic toll collection in 2013. At that time, this Bureau will be in the important stage of promoting total freeway electronic collection. By participating in this year's Annual Meeting, we were able to understand the development of toll collection trends around the world as well as the practical experience of other countries, which is good future reference for our electronic toll collection business.

2.Tour Activities

During the Annual Meeting, a tour was arranged to see Germany's heavy vehicle toll collection control technology. Germany's heavy vehicle toll collection system is operated by Toll Collect and its system is the world's first automated toll collection system that combines GPS (Global Positioning



Toll collect's enforcement vehicle (BAG)



Toll collector describes the interior facilities of the BAG



System) and GSM (Global System For Mobile Communications) technology. On Germany's motorway, toll is only collected on heavy vehicles weighing more than 12 tons and control duties are also carried out by Toll Collect. If a heavy vehicle passes through Germany on its toll roads without applying, the vehicle will be penalized upon inspection. On our visit, we rode in Toll Collect's enforcement vehicle (BAG) and performed real live heavy vehicle control duties. The way it was done was first randomly selecting a heavy vehicle. Once the controller has selected the vehicle to be inspected, the control vehicle is driven to the left rear side of the inspected vehicle. The control equipment will then try to detect the inspected vehicle's OBU and will immediately display such information as the inspected vehicle's license plate, whether or not it has applied, the route it has applied for, and whether the debit was successful or not. If the control vehicle is unable to detect the inspected vehicle's OBU, the controller can directly input the inspected vehicle's license plate to get its related information, which can be used to decide whether or not the vehicle is in violation.

In the future, the highways in Taiwan will also adopt multi-lane free flow tolling system during the distance-based toll collection stage. However, law enforcement work on domestic roads is under the National Police Agency, Ministry of Interior (MOI) while toll collection is under the Ministry of Transportation and Communications (MOTC), i.e. toll collection and law enforcement belong to different units. On the other hand, Germany's Toll Collect is not only responsible for toll collection, but also has to carry out law enforcement work. Therefore, if there is no strong and powerful law enforcement in place, it will affect the toll collection company's revenue.

In addition, the Annual Meeting also arranged a post-meeting technical tour to Prague, Czech Republic to visit their heavy vehicle toll collection system. The visit was arranged by kapsch TrafficCom, which operates the nation's toll collection system. Arrangements were made to visit an electronic toll gate on the Czech D1 highway. The gate was a single gate and was rather lightweight in design. The DSRC related collection equipment could be seen from a close distance. The equipment includes the vehicle classification unit, the vehicle detection unit, transceiver, camera, and auxiliary lighting.



Czech D1 highway free traffic toll gate

3.Thoughts and Recommendations

- (1).With the development of modern technology, electronic toll collection (ETC) technology has progressed greatly. Therefore, the key factor affecting the success of ETC is no longer the technology, but rather the system's operation and marketing. How to educate the public on the concept of users paying for usage and the advantages of electronic toll collection are all very important. Hence, applying the so-called traffic 3E policy: Engineering, Education, and Enforcement should be quite appropriate to the distance-based ETC that will soon be implemented in Taiwan. In terms of engineering, Far Eastern Electronic Toll Collection Co., Ltd. is responsible for building the toll collection system, which is already being done. As for education, top priority should be given to communicating with the public using all available media, so that road users understand the meaning of distance-based toll collection, buy in with the principle of users paying for usage, and in the end, using means of enforcement to promote road users to support policy implementation. Therefore, to make distance-based ETC a success in Taiwan, close implementation of the 3Es is the key to successful implementation.



- (2).The future of ETC should focus on fully developing its functions and data usage. ETC is only a tool for collecting tolls on the highway. How to utilize the advantages of this tool in traffic management to make highway driving more efficient, is worth thinking. For example: after full implementation of ETC, differentiated toll fees can be implemented during off-peak and peak hours, instead of just suspending nighttime toll collection. This can give more flexibility to overall traffic control measures. Moreover, the ETC data can be used for transportation trip characteristics analysis as well as further promoting the development of the Intelligent Transportation System (ITS), such as travel time measurement system (TTMS).
- (3).During this year's Annual Meeting, the topic of sustainability received considerable attention. Regarding the three elements of transportation: people, vehicles, roads, my recommended feasible measures are as follows.
- a)."People": Can be divided into people who use the roads, "road users," and "operators" who provide the tools for toll collection. For "road users," the government can utilize pricing as a means to increase tolls and road usage or differentiated rates. Non-pricing means can include restricting road access or areas during specific times, managing road demand and utilization, thereby reducing the negative effects brought about from traffic. Meanwhile, operators should enhance the efficiency and performance of their toll collection operations.
 - b)."Vehicles": Buy reusable energy, use alternative fuels, reduce waste and recycle to reduce greenhouse gas emissions.
 - c)."Roads": Decrease infrastructure constructions, use electronic toll collection, reduce vehicles from idling or stopping and re-starting to lessen carbon dioxide emissions. All levels of government should encourage and promote the sustainable development and maintenance of roads and transportation systems.
- (4).From the tours of the heavy vehicle enforcement system of other countries, I have found that heavy penalties are more likely to get road users to follow the system, especially when we begin to promote distance-based toll collection in the future. In addition to the related toll



collection laws that need to be amended, how to perform enforcement work after the existing toll collection stations are closed down is a major change, hence, it is recommended that the types of mobile law enforcement performed in other countries be taken into consideration.