

Minutes of the 2nd Meeting
Multi-functional Smart Lampposts
Technical Advisory Ad Hoc Committee

Date: 10 September 2019 (Tuesday)

Time: 9:30 a.m. – 11:30 a.m.

Venue: Conference Room, 15/F Wanchai Tower, Wan Chai (followed by a site visit to smart lampposts at Shing Kai Road)

Present:

Convenor

Mr Victor LAM Government Chief Information Officer

Members (*list by order of surname*)

Mr Vincent CHAN Partner, Ernst & Young Advisory Services Limited

Dr K P CHOW Associate Professor, Department of Computer Science,
The University of Hong Kong

Mr Francis FONG Honorary President, Hong Kong Information
Technology Federation

Mr Stephen HO Honorary Chairman, Communications Association of
Hong Kong

Ir Prof Joseph NG Professor and Director of the Research Centre for
Ubiquitous Computing, Department of Computer
Science, Hong Kong Baptist University

Mr Ronald PONG Chairman, IT Governance Committee, Smart City
Consortium

Dr Lawrence POON General Manager, Hong Kong Productivity Council

Dr K F TSANG Associate Professor, Department of Electrical
Engineering, City University of Hong Kong

Mr Stephen Kai-yi WONG Privacy Commissioner for Personal Data

Mr Wilson WONG Chief Executive Officer, Hong Kong Internet Registration Corporation Limited

OGCIO Representatives

Mr Tony WONG Assistant Government Chief Information Officer (Industry Development) [AGCIO(ID)]

Mr Jason PUN Assistant Government Chief Information Officer (Cyber Security and Digital Identity) [AGCIO(CSD)]

Attendance from Departments for Agenda Items 3 - 5

Lands Department:

Mr James WONG Senior Land Surveyor / Geodetic

Mr Stephen WAI Assistant Director, Principal Business & Project Development, Logistics and Supply Chain MultiTech R&D Centre Limited (Technical Advisor to Lands Department)

Transport Department:

Mr CS LEE Chief Engineer/Traffic Survey & Support

Mr Gary LEUNG Engineer/Projects 2

Ms Priscilla SUM Engineer/Smart Mobility 12

In Attendance

Ms Clara WONG Assistant Legal Counsel, Office of the Privacy Commissioner for Personal Data

Mr Alan LO Principal Assistant Secretary for Innovation and Technology (4), ITB

Mr Nelson IP Chief Engineer / Lighting, HyD

Mr Rex TONG Chief Systems Manager (Smart City), OGCIO

Ms Sue KO Systems Manager (Security)13, OGCI0
Ms Peggy POON Systems Manager (Smart City)2, OGCI0

Secretary

Mr Dantes TANG Senior Systems Manager (Smart City)2, OGCI0

Discussion:

Opening Remarks

Convenor welcomed all Members to the second meeting of the Multi-functional Smart Lampposts Technical Advisory Ad Hoc Committee, particularly Mr Vincent CHAN who was unable to attend the first meeting. He also thanked the representatives from Lands Department and Transport Department to join the meeting and present their smart lamppost applications to Members.

Minutes of the Last Meeting

2. The minutes of the 1st meeting held on 12 August 2019 were circulated to Members for comment and confirmation. It was then uploaded to the thematic webpage on OGCI0 website for public reference on 26 August 2019.

Update on Recent Development

3. AGCI0(ID) briefed Members the recent development regarding the public procession at Kwun Tong on 24 August which had caused all 20 smart lampposts at Sheung Yuet Road in varying degrees of damage.

4. AGCI0(ID) reported that while public lighting services were resumed on 27 August, all data network and power supply supporting the smart devices and equipment were disabled. As a result, only some of the passive devices, such as

those positioning tags, were still in operation. In the light of public concern, all the damaged devices would not be reinstated before completion of the work of this Committee. Members advised that the device and function list published on the Public Sector Information (PSI) Portal (data.gov.hk) should be updated to reflect the latest status.

(Post Meeting Note: The function list on the PSI Portal was updated accordingly.)

Briefing on Smart Lamppost Applications (Part 1)

5. Convenor informed Members that four smart lamppost applications were arranged for discussion in this meeting while other applications would be covered in the following meeting.

6. Mr James WONG representing the Lands Department briefed Members on the Radio Frequency Identification (RFID) tags installed in the smart lampposts to transmit information, such as the lamppost number and location details. The technical specifications of the RFID tags were also presented to Members for information. One potential usage of the RFID tags was to provide navigation services for visually impaired persons with special designed smart blind canes. Subject to the capability of the RFID readers of users (e.g. the smart blind canes), location information could be transmitted from the RFID tags at a range up to 10 metres. Mr James WONG emphasised that the RFID tag was a passive device for broadcasting location related information with no capability of collecting data. Mr James WONG also highlighted that the operation frequency of the RFID tags was 920-925 MHz and the user's reader ID could not be recorded.

7. Mr CS LEE representing the Transport Department (TD) briefed Members about three applications for traffic monitoring, including Automatic License Plate Recognition (ALPR), Bluetooth Detector and Traffic Snapshot Images, and their respective security and privacy protection measures.

8. The ALPR application was aimed at collecting car plate numbers for vehicle classification survey, which could ensure accurate classification results even for vehicles of similar shape / size such as private car & taxi, private light bus & public light bus, non-franchised bus & single deck franchised bus, for annual

traffic census and transport planning purposes. The collected car plate numbers would be hashed by the edge computer within the smart lampposts, and would be erased after transmitting to TD's backend system through dedicated and encrypted network connection. TD would compare the hashed car plate numbers with a set of hashed vehicle classification data from their backend system and erase the collected data immediately after the matching and statistic compilation. No visual images of license plate numbers or drivers would be collected by the application. Mr CS LEE highlighted that the Privacy Impact Assessment for the ALPR application had been conducted and no personal privacy issue was identified. Due to public concern, the ALPR application was not activated in the smart lampposts.

9. The Bluetooth Detector was aimed at estimating average journey time and vehicular speed by comparing partial Media Access Control (MAC) addresses (i.e. 6 out of 12 hexadecimal digits) associated with Bluetooth devices in the passing vehicles at different locations. Generally, Bluetooth Detectors would be installed at particular locations of a road section (e.g. starting and destination points). Data collected would be transmitted to TD's backend system through dedicated and encrypted network connection. Data matching with specific algorithms would be carried out at TD's backend system. By analysing available data samples (of Bluetooth devices passing two points), the system would be able to illustrate the general traffic situation with estimated average journey time and vehicular speed between two locations during a particular time. Irrelevant Bluetooth signals, such as the signals from immobile Bluetooth beacons of the smart lampposts or signals from pedestrians moving in different directions, would be filtered out to minimise discrepancies in calculation. Mr CS LEE highlighted that only partial MAC addresses would be collected and no visual images would be captured, and all data would be erased after the analysis. No personal privacy issue was identified in the Privacy Impact Assessment. Due to public concern, the Bluetooth Detector was not activated in the smart lampposts.

10. The Traffic Snapshot Images would provide low resolution photo images for the general public to view the latest traffic condition at a specific road section. Cameras would aim at the carriageway and only capture low resolution images of 320 x 240 pixels. The edge computer in the smart lampposts would overlay the logo of TD, camera ID, capture date, time and location on the images which would

then be transmitted to TD's backend system and disseminated to the public every two minutes via TD's website (www.td.gov.hk) and mobile application (HKeMobility), as well as the PSI Portal as open data. Such data would be erased from the edge computer in the smart lampposts and TD's backend system immediately after dissemination. No personal privacy issue was identified in the Privacy Impact Assessment. Currently, two smart lampposts were installed with cameras to provide the traffic snapshot images to the general public.

Views/Comments from Members

11. Having more in-depth understanding on the purposes, technical details as well as the security and privacy protection measures of the four applications on the smart lampposts, Members expressed their views and suggestions as follows:

RFID Tag

- Members noted that the tag is a passive device with no capability of collecting data and there is no privacy concern;
- wider promotion to the general public is recommended, in particular to clear the misconception and confusion of the public with other radio frequency reader devices;

ALPR

- more transparency on use of data and workflow documentation to ensure the hashed car plate number could not be used for purposes other than car type survey, given that original value of the hashed car plate numbers could theoretically be reverted;
- explore alternative technologies, such as radar, to identify car type for the vehicle classification survey without the need to capture car plate numbers, which is sensitive in nature;

Bluetooth Detector

- wider promotion to the general public with use cases of other major cities, on the use of Bluetooth Detector as a commonly adopted technology to measure real-time traffic situation;

- explore alternative technologies, such as radar, to achieve the purpose without the need to detect and capture data of Bluetooth devices, which is sensitive in nature, as there may be privacy concern on collection of Bluetooth MAC addresses (even partially) particularly for the fear of being used for law enforcement action (e.g. speeding prosecution);

Traffic Snapshot Image

- more transparency on the scope & functional requirements / technical specifications of the cameras, the data collection workflow documentation, and devising checking mechanism to ensure only low resolution images would be collected from the cameras and delivered to the user department;

General Recommendations

- need to fully comply with Personal Data (Privacy) Ordinance and with transparency, including opening up the scope of work of the Security Risk Assessment and Audit and Privacy Impact Assessment exercises for public reference;
- make available the scope & functional requirements / technical specifications of the devices on smart lampposts to the public for general reference, and with Chinese translation to further improve transparency;
- consider the level of details to be disclosed to avoid exposing security threats to the devices and applications concerned;
- make the change management procedures of devices and applications on smart lampposts fully transparent and consider ways to engage public participation/monitoring; and
- wider promotion on the purposes and technical details of the smart lamppost devices and applications with simple language (in Chinese) and easy to reference materials, for example use cases in other cities, data collection and operational workflows, diagrams, short Q&As, larger poster with QR code on the lamppost body linking to short video/animation to illustrate the security and privacy protection measures, etc.

12. Convenor thanked Members for their professional advices and valuable suggestions, and remarked that representatives of relevant departments would be invited to brief Members on other smart lamppost applications in the following meeting.

Site Visit to Smart Lampposts at Shing Kai Road

13. Members visited the smart lampposts installed at Shing Kai Road in Kai Tak, to inspect the internal structure of the smart lampposts and the smart devices, including the RFID tag, traffic snapshot camera, edge computer and network equipment, etc. This arrangement enabled Members to gain a more comprehensive view on the smart lamppost design and operation. The site visit ended at 11:45 a.m..

**Office of the Government Chief Information Officer
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