

# Navigating a city without getting lost

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Professor Yeh and his research team showcase their invention -- Smart Address Plate, setting a new standard for smart cities in the world. Credit: @The University of Hong Kong

How often do you get lost in a city even when using GPS? Has a taxi hailed using a mobile app been unable to find your correct location? The reason is because GPS has an average error of 10 to 30 meters, and other

indoor navigation techniques using WiFi and Gateway have positioning errors, too.

Professor Anthony Yeh Gar-On and his research team at the Department of Urban Planning and Design of the University of Hong Kong (HKU) offers a novel solution to this problem with the invention of SAP, a sensing device which, when installed in front of buildings, shops or offices, can help users within its proximity to know their own locations through a mobile application. With the full system consisting of a Smart Address Plate (SAP), Smart Address Coding System, and Smart Address Plate Management System (SAP-MS), there is no need to worry about getting lost ever again. The management of smart cities can also be further enhanced.

SAP is a Bluetooth Low Energy (BLE) proximity sensing device that stores a unique geo-coded Smart Address ID of a building, shop or office associated with it. When a user is within the confidence range of the , the user will know its exact location, and can reach its final destination guided by the app.

Professor Yeh believes it is important for every building in Hong Kong to have a unique Smart Address ID. One easy way is for buildings to be assigned with a unique geo-coded address ID that can be positioned on a digital map. Professor Yeh's team has developed a new postal-building Smart Address Coding System for all buildings in Hong Kong by combining a new postal code with the global georeferenced coordinates of a building. Shops, offices, and car parks in a building can be tagged to this postal-building Smart Address for use in navigation, positioning, delivery, management and big data.

With the installation of the Smart Address Plate in the front doors of buildings, shops or offices, supplemented with information from the Smart address Plate Management System (SAP-MS), people can find

their location and the route to a destination on the street or in a shopping mall easily, without the need to ask for directions.

SAP-MS can provide more tailored services to buildings, shops and offices. It contains the Smart Address Plate Databases linked with a digital floor plan and navigation system that is connected to the Smart Address Plates via a gateway system. Apart from providing more accurate location information to occupants and visitors, property management staff can use the SAP-MS to carry out real-time updates of information such as occupants, names of shops, functions and events etc. The system can issue alerts to users in the event of a change in meeting room or even change of boarding gates in airports. It can also be used to monitor the condition of the SAP such as power supply, whether or not they are functioning properly, or if they are removed or stolen. The SAP-MS of rooms in a building can be linked up with the whole district SAP-MS network and finally, the city SAP-MS network to become one complete smart city address management system. Whether people are navigating inside a [building](#) or navigating in a city, they can all be connected with the same system for smarter navigation and urban [management](#).

Possible uses of the invention include enabling delivery persons, firemen, and ambulance assistants to find the location of an address more quickly and accurately, saving time and lives. Furthermore, it can also be used in conjunction with other devices to automatically open doors for persons with disability, locate parking spaces, inform and guide people to a changed boarding gate or train platform, as well as to prepare for future driverless cars and robots in a smart city.

Provided by The University of Hong Kong

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