



Land Surveying Division  
Sr Paul Tsui LSD Council Chairman

## Changing Role of Land Surveyors

As the omicron variant of the Covid-19 virus triggered the fifth wave of the pandemic in Hong Kong, I recall working with a group of land surveyors from the Lands Department to build the interactive map dashboard of the Latest Situation of Coronavirus Disease in Hong Kong (<https://chp-dashboard.geodata.gov.hk/>) early during the pandemic (2020).

The dashboard was the first of many that would follow in cities around the world. To this day, it remains one of the most important official channels for informing the public on the latest pandemic developments in Hong Kong with some 62 million accumulative views as of this writing.

Recently, there was an upsurge in the number of locations named in the Government's compulsory testing notices (CTNs). To keep the public updated on the CTNs and enable those affected to report for testing promptly so that any infected person could be treated and quarantined from the general population, the CTNs include specific premises/locations that the dashboard also features. Also, the dashboard provides information on the locations of community testing centres/mobile specimen collection stations so that people would know where to go for their Covid-19 tests.



Interface of the Dashboard – Compulsory Testing/Testing Services

Managing the dashboard is a team of land surveyors who process and geocode the raw data coming from the Government health authorities and update the data on the dashboard every day. Also, HKIS Past President Sr Winnie Shiu now works for the Food and Health Bureau as Principal Advisor. In this capacity, she joins health professionals to combat the pandemic using her professional knowledge of spatial data and Geo IT.

Within the Development Bureau, Sr YC Chan leads the Spatial Data Office to coordinate the sharing of geospatial data among various bureaux and departments under common spatial data infrastructure (CSDI) and manage the Geospatial Lab. These are good examples of the new role of spatial data scientist that land surveyors have assumed today.

## 恭賀新禧

雖然我們要在疫情的陰霾下迎接虎年的來臨，我衷心祝願大家新年快樂及身體健康，最後，我謹代表土地測量組理事會全人恭賀所有會員龍精虎猛、虎虎生威；在事業上虎年進步、如虎添翼。



### CPD Highlights

#### High Frequent Earth Observation Based on Urban Skyline and Passenger Aircraft – A New Remote-Sensing Approach for Emergency Response

During his presentation, Dr Wang Chisheng of Shenzhen University remotely shared with the HKIS a novel, low cost, highly-revisited, and anti-cloud remote-sensing approach based on volunteered geographic information (VGI) and crowdsourced images from the ground, urban skylines, and passenger aircraft.

Dr Wang also introduced the background of and current developments in VGI and illustrated the principles and applications of volunteer passenger aircraft remote-sensing and dynamic Earth observations based on urban skylines, as well as InSAR crowdsourcing annotation that he and his research team developed. Later, he explained the great potential of this approach to help forecast and provide a rapid response to emergencies such as city fires, landslides, and floods.

During the Q&A session, Dr Wang shared his experiences in providing incentives and means to the general public to engage.

#### Dynamic earth observation based on urban skyline

**Data acquisition**

- The multi-camera combination observation method requires more sensors, but the imaging data time is consistent in each direction, and no complex scanning structure is required.
- The scanning imaging observation approach does not require sensors in each direction, but requires a scanning structure, while imaging with a certain scan period delay.
- Both data acquisition methods are based on fixed-tilt imaging of the skyline observation platform.

#### Dynamic earth observation based on urban skyline

**Remote sensing product**

- After geometric correction and photogrammetry processing, dynamic orthophotos of the observation area can be obtained with large scale ultrahigh resolution.
- The overlapping observation images of multiple observation points of the combined skyline forms a three-dimensional observation, thus solving the three-dimensional point cloud and obtaining urban point cloud data.

**Point cloud**

#### InSAR crowdsourcing annotation

Flowchart of the InSAR crowdsourcing annotation system, platforms and related offline processing and analysis.

#### InSAR crowdsourcing annotation

Examples of the validation task area with PS-InSAR derived displacement rates in the eight districts.

Time-series displacements of the eight examples demonstrated.

#### Volunteered passenger aircraft remote sensing

##### Case2—Flood mapping

**Flooding area mapping**

**Flooding area classification**

**Validated by SAR**