

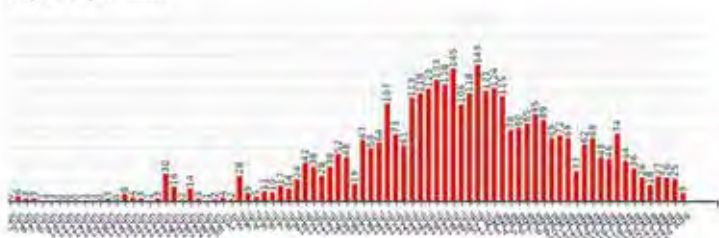


### Land Surveying Division

Sr Koo Tak Ming LSD Council Chairman

## LSD Council Activities

Daily number of new cases:



The third wave of the Covid-19 outbreak saw the number of daily cases reach as high as 149. To comply with the Prevention and Control of Disease (Wearing of Mask) Regulation, the LSD requires its members to wear masks when attending any Institute activity indoors. These activities include assessment interviews, CPD events, and meetings.

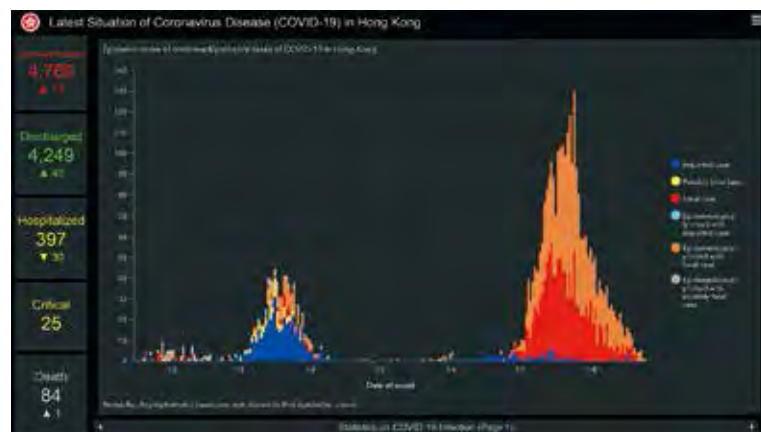
The LSD Council has adopted Zoom for its meetings and CPDs to achieve social distancing more effectively with a view to reducing the spread of Covid-19. It had to postpone some of the assessment panels scheduled for late July to mid-August under the tightened health measures. It shall reschedule all outstanding interviews, assessments, and meetings as soon as practicable, so as to minimize the impact on its activities. I hope that all members can brave this outbreak until it ends by maintaining their activities and services as much as possible.

## Spatial Data to Meet the Challenges & Opportunities for Hong Kong: Surveying and Landscape Architecture

At the Joint Institutes Webinar, COVID-19 – Challenges & Opportunities for HK – Surveying and Landscape Architecture, held from July-

August, I saw a consensus by members of the four Institutes demanding quality spatial data to support smart city planning, property/ infrastructure development, and other social needs. CSDI + Big Data are essential information provided by governments, but are also required before/during/after any private development. There must be a way for everyone to contribute to the spatial data database, so as to better accumulate intelligent spatial data for a smart and liveable city.

The graph below gives a simple example of Hong Kong data for COVID-19 in the Government's dashboard for the second and third waves of the pandemic.



Below is a much better picture of the situation from the same dataset when the spatial data component is put in context:



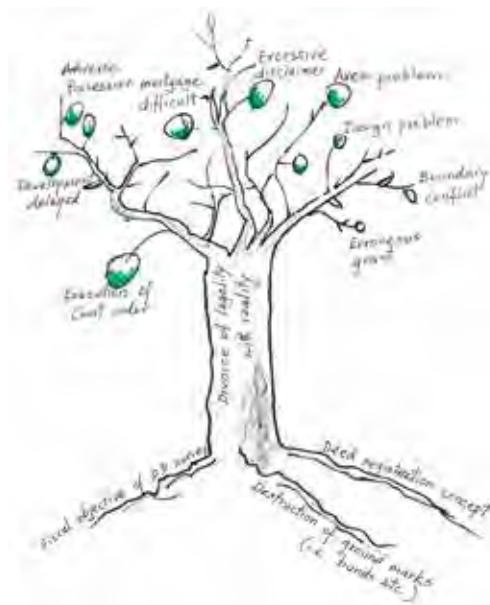
Residences of Confirmed/Probable Cases in the Past 14 days as of 5 June

### 從“地界迷津”到“丈量世界” by Sr LEUNG Shou Chun

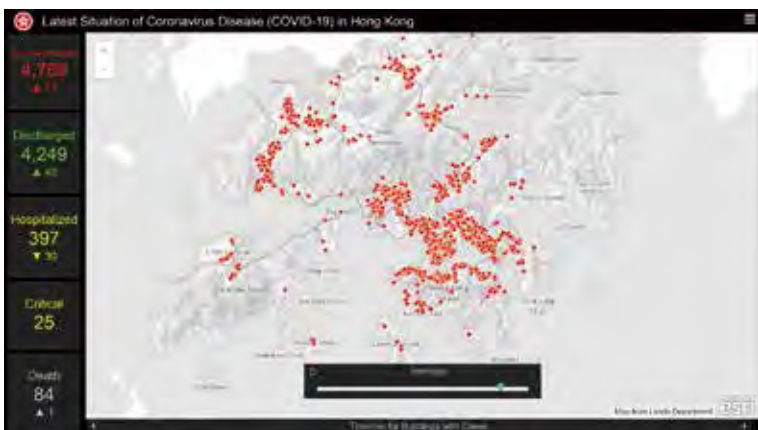
The LSD had the great pleasure to invite Sr LEUNG Shou Chun, MBE, FHKIS, FRICS, ALS, and RPS(LS), to give a CPD talk on 20 August. Sr LEUNG was once the President of the HKIS and has worked in the land surveying industry for over half a century in a professional capacity. He devoted most of his efforts to land boundary surveys and has personally handled hundreds of boundary dispute cases including serving as an expert witness in court dozens of times. Currently, he is the Institute's Chairman of the Land Boundary Committee.



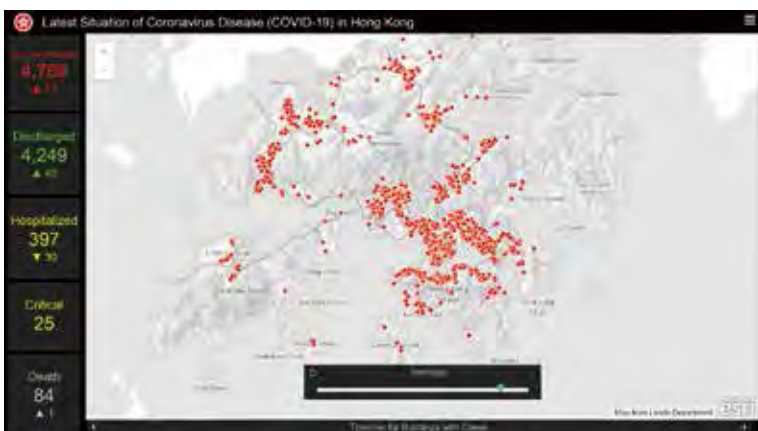
Sr LEUNG delivered his talk using drawings, poems, and figures to illustrate the land boundary situation in Hong Kong going back to 1900.



The Tree Showing the Causes and Impacts of Various Land Boundary Issues



Residences of Confirmed/Probable Cases in the Past 14 days as of 11 July



Residences of Confirmed/Probable Cases in the Past 14 days on 31 July

The enhanced spatial dataset helps everyone visualise the extent and spread of the virus on a simple map of Hong Kong. Highly sophisticated GIS tools are then built to further improve the use of the data by experts and the general public.

One needs to understand that geo-referencing the text data with spatial component data largely increases the use of such data and hugely benefits Hong Kong through better planning, design, development, and maintenance.

### Two Chinese Poems on Old Land Records and Limitations of Old Surveys

舊界原應再測量，  
奈何法例待商量。  
只知卸責違公義，  
結果無人理舊疆。

認地當年依實土，  
丈量只合充初稿。  
怎知下筆便難移，  
如此思維應檢討。

如此。目前的情況卻有如購買汽車，只確定了擁有權，但沒有其他資料或保證。

放心，這部汽車的擁有權是有證明的，  
哪管它是甚麼模樣呢！



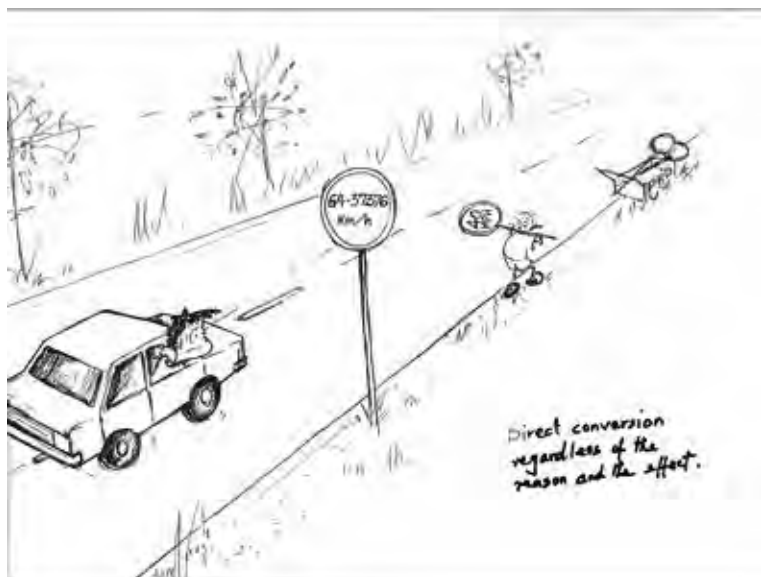
## Professional Services Advancement Support Scheme (PASS)

In March 2018, the LSD undertook a \$1.93 million Government-funded project to promote its professional services in Belt and Road countries.

One of the project's objectives was a five-day exhibition cum visit to Lahore and Islamabad in Pakistan from 7-11 March 2019 to promote Hong Kong land surveying technologies.

Later, one of the project's seminars, Workshop for Technology-Sharing to Local Practitioners on the Remote Sensing Technology, was delivered on 28 August. Sr Dr Charles Wong Man Sing, Associate Head of the Department of Land Surveying and Geo-Informatics at the Hong Kong Polytechnic University, shared the latest remote sensing interpretation techniques for automated collection from orbiting satellites, oblique airborne cameras, and drones.

The remote sensing platforms confer great potential for data collection and acquisition, in which state-of-the-art technologies, such as hyperspectral imaging and LiDAR data measurement, were recently adopted by surveying applications worldwide. This CPD shared the latest technologies of image interpretation and analysis, along with applications that used remote sensing in Hong Kong.



Problems of Converting Old or Imprecise Measurements for Modern Use

### Why Object Detection? Not Semantic Segmentation?



Object Detection by the Mobile Mapping Technique

### 3D Land Use Detection



Automatic Land Use Classification by Terrestrial Street Photos

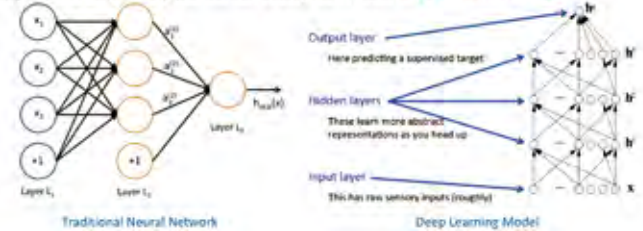
### Deep Learning Applications Face Recognition



Deep Learning Applications: Face/Feature Recognition

### Deep Learning and Neural Networks

- Deep learning is a subset of **machine learning** that uses multiple layers to progressively extract higher level features from raw input
- Algorithms inspired by the human brain, learn from **large amounts of data**



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Outline of Machine Learning

### Deep Learning Applications Semantic Segmentation



Object Extraction and Feature Classification through Deep Learning

There will be another workshop on the morning of 5 September 2020 and its topic is "The Latest Market Requirements: Practicing Qualifications, Procedures, Applications, and Market Opportunities in Belt and Road Countries: China, Sri Lanka, Pakistan and Kazakhstan". Experts/Delegates from those four countries will gather online for a cross-nation sharing session.

Last, a one-day PASS Conference is scheduled for December 2020 in Hong Kong. Stay tuned for the latest updates from the HKIS website.