Land Surveying Division

Sr Koo Tak Ming LSD Council Chairman

LSD Theme of the Year

The Council conducted a Zoom Meeting on Tuesday, 5 January, to discuss its plans for 2021. It focused on its expertise in providing high-precision spatial data via various surveying technologies (e.g. UAS, 3D Laser, and LiDAR). It also promoted its specialty through the CSDI, BIM, GIS, and SmartCity initiatives. It announced some of its plans to the GC/Boards during the HKIS Retreat 2021 on 23 January.

Participants at the HKIS Retreat 2021

Interviews for Membership Applications via Reciprocal Agreements

The new round of 2021 interviews kicked off on 28 January for applicants with the following anti-Covid measures:

1) Candidates/assessors were asked to complete online health declaration forms before attending their interviews.
2) Assessors and candidates wore surgical masks during the interviews.
3) Partitions were installed between the assessors and candidates.
4) Hand sanitisers with 70-80% alcohol and air disinfectant sprays were provided in the meeting rooms.
5) Preliminary body temperature checks were conducted at the Wing On Centre's G/F office lobby.

The Interview Panel (L-R): Sr Ricky LAI, Sr TM KOO, and Sr Paul TSUI

Unmanned Aircraft System (UAS) for Surveyors

An unmanned aircraft (or aerial) system (UAS) normally contains: (1) a human-operated control system; (2) an unmanned aircraft vehicle (UAV); and (3) a command and control system to link (1) and (2).

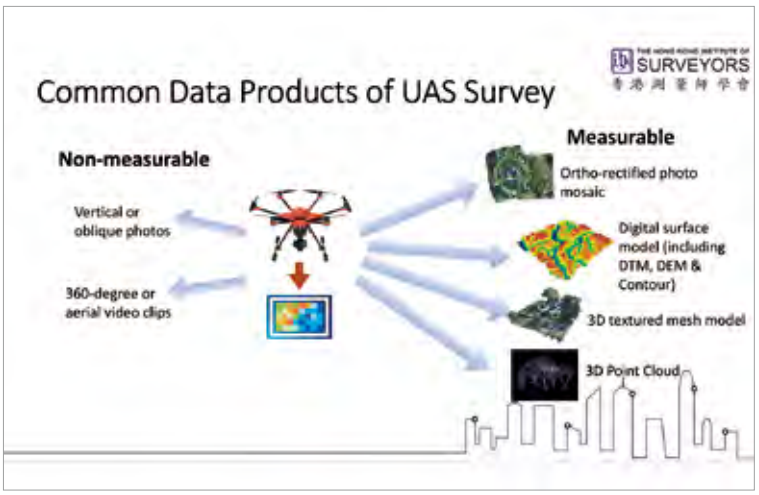
These systems include, but are not limited to, remotely-piloted air systems (RPAS), in which a UAV is remotely controlled by a 'pilot' using a radio data link. A UAS can also include an autonomous or semi-autonomous UAV. In recent years, there has been a tendency to refer to any UAV as a drone, but the term is not entirely appropriate. UAVs can vary in size from hand-launched to purpose-built or adapted vehicles that are the size of conventional fixed or rotary wing aircraft.

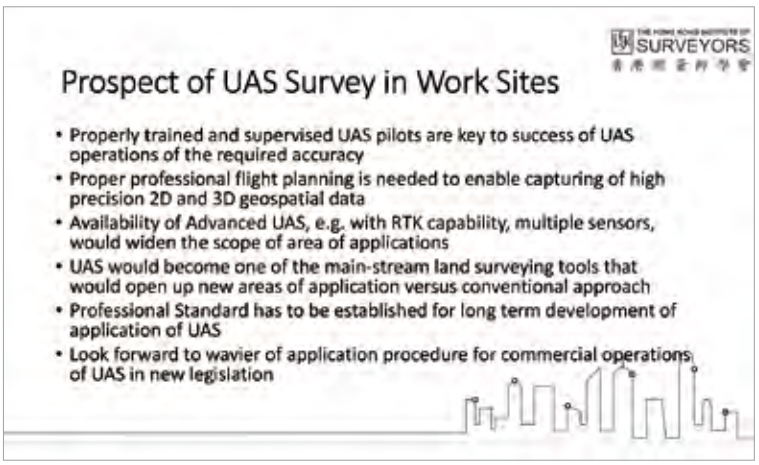
UASs are increasingly deployed by Hong Kong's construction industry for surveying and inspection purposes with enhanced productivity, safety, time, and cost benefits. With advancements in technology, UASs have shrunk in size, improved their performances, and become more affordable.

UAS is a popular surveying and inspection technology for construction surveyors. The HKIS was invited to co-organise the online Forum on Unmanned Aircraft Systems (UAS) Adoption in the Construction Industry, led by CITAC of CIC, on Thursday, 28 January. The Forum's main objective was to collect views and suggestions to facilitate wider UAS adoption by Hong Kong's construction industry. It will convey the useful and constructive suggestions it collected from industry stakeholders to the CAD for its reference so that it may refine the regulations for UASs to meet the specific needs of the construction industry.

Speakers (L-R): Mr Lock CHOW, Mr Simon NG, Sr Paul TSUI, Sr Victor NG, and Ir Dr Richard PANG (moderator)

In his opening remarks at the Forum, Sr Paul TSUI pointed out that the non-measurable and measurable deliverables of UASs were important products of UAS-conducted surveys by LSs and QSs. A UAS was also an effective inspection tool for every type of site visualisation and record.





As surveyors are involved in the different aspects of UAS operations, a Working Group on UAS will be formed to align these operations and uses for the HKIS.

Specification of Underground Utilities Surveys

A task force for the Construction Materials category under the HK Accreditation Service (HKAS) was formed. The terms of reference for this task force included assisting the working party to which it will report on the various aspects of underground utility surveys:

i. drafting technical criteria that conformity assessment bodies shall meet;
ii. recommending the interpretation and harmonisation of assessment standards;
iii. identifying and evaluating the qualifications of potential assessors;
iv. identifying the training needs of conformity assessment bodies and potential assessors; and
v. other technical aspects including the evaluation of test procedures for purposes of accreditation.

The LSD was invited to join the technical committee of the "Development of Specifications and Standards for Underground Utility (UU) Surveys Based on Non-destructive Testing, Surveying, Imaging, and Diagnostic (NDTSID) Approaches" project, which was underwritten by the Innovation Technology Fund (ITF) in 2018. The project is an effort to transfer knowledge from basic/applied research to practical use in Hong Kong and elsewhere. The project was led by Ir Dr Wallace LAI Wai-lok, of the LSGI at PolyU.

Prior to the completion of three (PCL/EML, GPR, and acoustic leak survey) out of six specifications for the project, the technical committee met via Zoom on 8 January to finalise the remaining two (visual inspection and laser scanning/infrared) before submitting to the HOKLAS task force for its endorsement.

Useful Links:

https://www.itc.gov.hk/en/quality/hkas/about/wptf.html

https://www.polyu.edu.hk/lsgi/uusspec/en/publications/

Standardisation of Underground Utility Survey Methods and Associated HOKLAS Accreditation

Underground pipe burst? Pipe leak? How often are these problems heard in Hong Kong's spider web underground? Wallace LAI of the LSGI gave a CPD talk on 14 January to answer all of these questions and propose a possible solution to each problem.

(L-R): Mr Haodong ZHANG, Sr TM KOO, Ir Dr Wallace and Sr Dr Lesly LAM

In the last two years, Dr LAI has conducted six rounds of consultations and meetings with various Government departments and the industry for this project. Eventually, the stakeholders developed a consensus on the 4M1E (manpower, methods, machines, materials, and environment) specifications for the procurement and accreditation of the NDTSID approaches.

Six approaches will be accredited by the Government's Hong Kong Accreditation Services under the Hong Kong Laboratory Accreditation Scheme (HOKLAS). They will benchmark the expected and practically viable standards of the NDTSID technologies in the underground utility sector.

The six NDTSID methods are electromagnetic pipe cable detection, ground penetrating radar, laser scanning, visual inspection by robotic CCTV/manhole survey, acoustic leak detection, and flow survey & monitoring.