



Land Surveying Division

Sr Paul Tsui LSD Council Chairman

Land Surveyors and BIM (Part II)

In last month's issue, the LSD continued to explore the role of land surveyors in BIM adoption throughout the life cycle of a construction project. This month is the turn of Sr Ricky Lai to share his experiences in dealing with BIM in his work and the Government's view of land surveyors' adoption of BIM. Ricky is currently the Chief Land Surveyor of the Survey Division of the Civil Engineering and Development Department (CEDD). He wants land surveyors working in Government departments to not only actively help implement its BIM adoption policy, but also play a key role in promoting and facilitating the use of BIM.

As Ricky said, the CEDD is firmly committed to the promotion and adoption of BIM technology with a view to improving overall productivity in its capital works projects and asset management. The Survey Division has formed a BIM Support Team to coordinate the implementation of BIM among the project offices; prepare BIM standards, specifications, guidelines, and templates for BIM works contract documents; and provide advice to engineers on the contractual requirements related to BIM adoption. The CEDD prepared a new chapter on BIM in the Engineering Survey Practice Guides, which was published in 2021. Although the chapter covers engineering survey practices for BIM uses under existing conditions modelling and as-built BIM only, Ricky believes that land surveyors' input for BIM adoption is not limited to BIM data capture and modelling-related BIM uses, but extends to BIM data management.

The latest Technical Circular of the Development Bureau for BIM adoption has appealed to the Works Departments to critically review their project data requirements, data exchange workflow, and project data management strategy, so as to facilitate the establishment

of a departmental common data environment (CDE) and development of relevant standards for information exchanges amongst inter-departmental CDEs. As Ricky sees it, land surveyors' professional knowledge and strength in spatial information management have undoubtedly contributed to the design, development, and implementation of departmental CDEs. One advantage of land surveyors' input is the possible integrated use of geospatial and BIM data, which can open up new opportunities for business process optimisation during the different phases of the construction and asset life cycle. At the same time, it would be challenging for land surveyors to bridge the gap between the geospatial and construction domains as far as information exchanges and technological integrations are concerned.

Furthermore, Sr Lai shared the following: surveyors working in the building and civil engineering construction industries are familiar with the Government's BIM adoption policy, as first promulgated by the Development Bureau in 2017, which states that public works projects worth at least \$30 million are required to employ BIM technology for project delivery. A total of 20 BIM uses are specified for adoption on an optional or mandatory basis during their planning, design, and construction stages. This policy has been reviewed by the Government and the scope of mandatory BIM uses has expanded year after year. To affirm the Government's commitment to further BIM adoption, the Development Bureau also published the BIM Harmonisation Guidelines for Capital Works Projects in Hong Kong, which encompasses aligned BIM standards across all Works Departments and supports the Lands Department's production of 3D digital maps.

Land surveyors have actively followed the Government's BIM policy and led the promotion of integrating GIS and BIM, or GeoBIM, for the development of a smart city and application of digital twinning in Hong Kong. While the applications of BIM are multi-disciplinary, land surveyors' competencies in

spatial data acquisition, modelling, analysis, and management are exceptional and crucial to the realisation of greater BIM adoption. To attach importance to the development of BIM in Hong Kong and reflect the key role played by land surveyors, the LSD Council has endorsed BIM as a new specialisation for the Division. As such, members' BIM-related practices are regarded as a specialisation and APC candidates may choose BIM as their training area for earning practical experience.

When submitting the HKIS's views to the Government on the 2021 and 2022 Policy Addresses, the LSD proposed that:

- a) The Government should continue to promote BIM in the construction industry and allocate resources for its capacity development, establishment of standards, and data sharing.
- b) A central BIM data repository should be established to facilitate the management and exchange of open BIM data.
- c) In order to expedite the use of BIM and its drive for the Hong Kong Smart City Blueprint, the Government should immediately set up a task force to construct as-built BIM models of a basic level of information need (LOIN) standard for all existing high-rise buildings/infrastructure in Hong Kong using the available advanced surveying technologies.

I hope that the Government will seriously consider the above suggestions, which will certainly make Hong Kong a world leader in BIM-enabled smart city development.

Having realised land surveyors' involvement in the ongoing development of BIM, as driven by the Government and construction industry, members may agree that land surveyors should keep their knowledge of BIM updated and take advantage of the LSD's unique competency in applying BIM technologies so that it could set the pace of BIM's rapid development and seize the opportunities to make its contributions and inputs known.

Paying Tribute to Sr Hak Chan

It is with my great sadness to share with you that the LSD's friend and fellow member, Sr Hak Chan, passed away on 18 July. He was the Lands Department's Deputy Director, Survey and Mapping Office (SMO), from 1995 to 2002 before his retirement. He actively contributed to the industry even during retirement. Sr Chan was HKIS President during 2001-2002 and served as LSD Chairman for two terms from 1994 to 1996. During his presidency, he made significant contributions to the surveying profession. He played a crucial and indispensable role in the history of GIS development in Hong Kong. During the late 1980s, he led the SMO in the development of a computerised land information system (CLIS) and transitioned the production of basic and cadastral maps from paper to digital using GIS technology. He also founded the SMO's Land Information Centre (LIC) to continuously update and maintain the office's digital topographic map and cadastral records. Many important and innovative GIS applications used today evolved from the CLIS's GIS data. Sr Chan's legendary contributions to GIS make him the widely acknowledged Father of GIS in Hong Kong. His passing is a great loss to Hong Kong's GIS community.

Please join me to convey our sincere condolences to Sr Chan's family and pay our highest tributes to this most respected HKIS member.



CPD Highlights

Integrated 3D Mapping: From Planetary Surfaces to Metropolitan Areas

Closer to Earth, Sr Prof WU further shed light on his research on integrated 3D mapping in metropolitan areas to generate 3D city models of CityGML a format based on images and laser scanning data collected from an aerial mobile mapping system (MMS), and backpack platforms.

Sr Kenny CHAN chaired the Q&A session after the CPD. This eye-opening talk successfully concluded after Sr Prof WU answered several on-track and outside-the-box questions.



On 21 July, Sr Prof WU Bo, a leading international expert on photogrammetry and remote sensing, conducted a virtual CPD with HKIS members on the latest developments in integrated 3D mapping for planetary surfaces and metropolitan areas.

Sr Prof WU first reviewed the 3D mapping technologies and several mathematical models behind the integrated 3D mapping approaches. He then shared his mapping experiences with landing site selections during the lunar and Mars missions.

