

# Development of Underground Utilities Information System (UUIS) in Hong Kong Special Administrative Region

Fei Man Chu, Huen Ki Chan and Ka Lam Yip (Hong Kong SAR, China)

**Key words:** Engineering survey; Land management; Spatial planning; Underground Utilities Information System

## SUMMARY

Every year the vast majority of seemingly routine street excavations occurring around the territory are adversely impacted by the lack of usable information about buried utility infrastructure. A project can be delayed for days and weeks because extra time is needed to figure out where utilities are buried so the works can be planned and performed without undue risk. A large-scale construction project can be stalled for months, incurring delay claims and variation orders that significantly increase costs, because the locations of utility installations were not properly recorded or depicted and were later found obstructing planned foundation and construction works. What these kinds of risks and delay in works projects have in common is that they all can be prevented if accurate, comprehensive underground utility information (UUI) is available for rapid integration and analysis in the planning and design stage.

In 2021, Development Bureau (DEVB), Highways Department (HyD) and Lands Department (LandsD) of HKSAR Government discussed the development of the Digital UU Information System of the whole territory. LandsD later took up the task to establish a database of underground utilities with a mechanism for regular updating of the database.

Based on a prototype developed by Highways Department, LandsD liaised with Works Departments and major utility undertakings to develop a common data standard for UU Information, developed an initial set of Digital UU Information Database for the whole territory in GIS format. In the first stage, massive utility data for the whole territory was collected from UU stakeholders. UU data digitalisation, extraction of UU attributes and conversion of data forming a sharable database were carried out in forming an initial set of 3D Digital UU Information Database. The initial 3D Digital UU Information Database was established progressively in April

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2023.

This paper presents the initial database completed in the project, including the preparation of the data specification, technical specifications, assumptions and rules, maintenance guidelines, determination of the project implementation approaches, data collection and the generation of the datasets. This paper also discusses design of the official platform to keep and disseminate data including the difficulties and challenges faced in the project.

The availability of digital UU data will facilitate the development of smart cities, realising the visions of the Smart City Blueprint for HKSAR and bringing benefits to society as a whole.

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