

BRONZE

Digitalisation Journey for Smart Drainage Services Delivery in Drainage Services Department



INTRODUCTION OF ORGANISATION

Drainage Services Department's (DSD's) vision is to provide world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong. Since the establishment in September 1989, DSD has strived to upgrade sewage treatment and flood protection levels in Hong Kong, and has acquired noticeable achievement. The completion of three drainage tunnels in Tsuen Wan, Lai Chi Kok and Hong Kong West, Happy Valley Underground Stormwater Storage Scheme, Regulation of Shenzhen River Stage IV and the Kai Tak River Improvement Works are examples of our encouraging achievements in recent years. Moreover, Harbour Area Treatment Scheme Stage 2A was fully commissioned in 2015, which greatly improved the water quality of Victoria Harbour.

In future, we will continue to implement various large-scale projects to uplift the flood protection level and sewage treatment capacity, so as to alleviate

the flood risk and improve the hygiene in the areas concerned.

THREE WINNING FACTS

DSD is a pioneer in digital transformation of the core business to provide world-class drainage services to the public. Advanced BIM applications has promoted digitalisation for planning, design and implementation of drainage projects. 7 pilot projects applying BIM technology to enhance the design and construction process were started as early as 2013. A departmental BIM Management System was then established in 2017 to ensure the consistent high quality of BIM deliverables. In 2018, the BIM Support Team was set up to act as the core body to supervise and oversee the BIM implementation and management. Meanwhile DSD also set up the BIM@D Technology and Training Centre to further promote the use of digital and BIM technology.



DSD has widely adoption of BIM, Digital Works Supervision System (DWSS), Artificial Intelligence (AI) and Internet of Things (IoT) for smart drainage project delivery as early as in 2018.

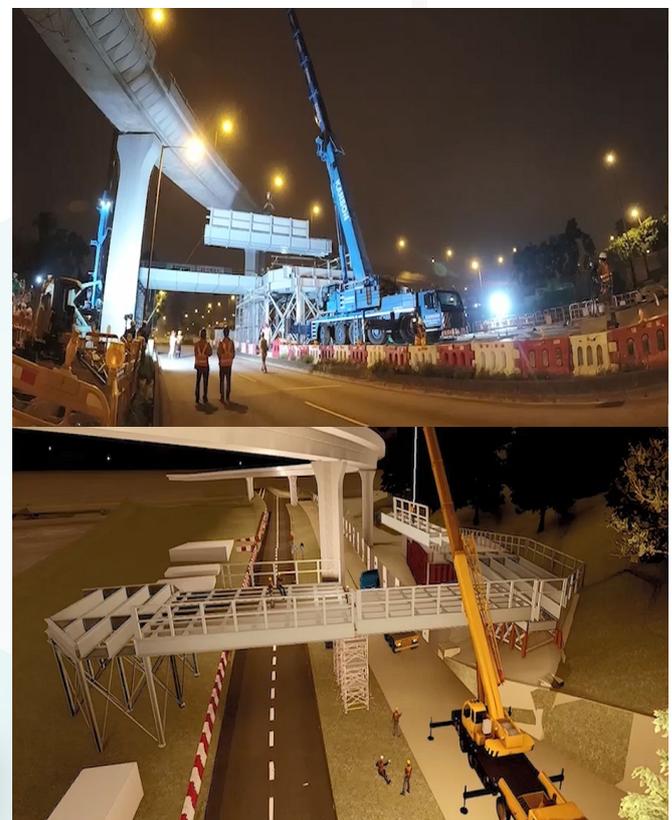
Pilot scheme of mobile electronic system was launched in several works contracts to facilitate site inspection. These works contracts include the first DSD “Construction 2.0” pilot contract, Contract No. DC/2018/03 – “Expansion under Sha Tau Kok Sewage Treatment Works Phase 1 and Village Sewerage in Tong To”. A tailor-made site management app enabling digitalised environment for supervision record (Digital Works Supervision System), were adopted to facilitate smart drainage project delivery with the aid of technologies including Artificial Intelligence (AI) and Internet of Things (IoT).

In another works contract, Contract No. DC/2018/05 – “Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction”, successful applications of innovative construction methods such as Modular Integrated Construction (MiC) and Design for Manufacture and Assembly (DfMA) have proven indispensable for a more effective construction solution, enabled by a more accurate estimation of construction materials and concurrent off-site fabrication activities.

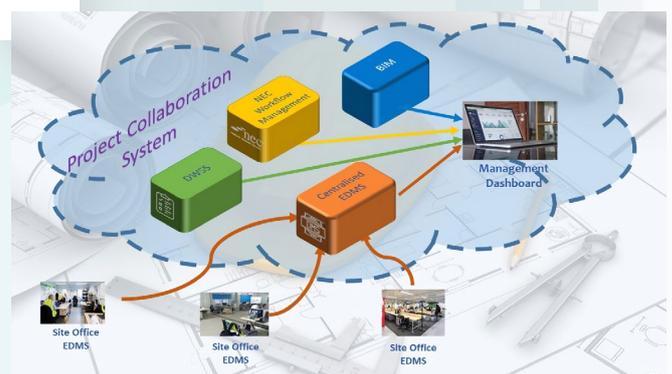
A step further, we are developing a Project Collaboration System (PCS). Key components of the PCS include a standardised Electronic Document Management System (EDMS) for site offices, DWSS, NEC and management information dashboard. The PCS will serve as a common and secure project collaboration platform among the DSD, consultants and contractors. This one-stop operating platform provides a very effective way for managing our facilities to enhance the productivity, quality, safety and environmental performance. The PCS is scheduled to roll out by phases in next few years and paves an important cornerstone for DSD to further develop an integrated works management platform for wider adoption of innovations and smart devices and effective analysis and application of the vast amounts of data collected.



The tailor-made site management app and digitalised daily site supervision (i.e. Digital Works Supervision System)



Adoption of BIM facilitated application of Design for Manufacture and Assembly (DfMA) and Modular Integrated Construction (MiC)



System Architecture of the Project Collaboration System (PCS)