

COMPANY

Electrical and Mechanical Services
Department, HKSAR Government
WSP Hong Kong Limited

PROJECT

EMSD Headquarters - Customer Services Centre (CSC)

LOCATION

Customer Services Center (CSC), 4/F, EMSD Headquarters,
3 Kai Shing Street, Kowloon Bay, Hong Kong

TYPE

Renovation

SCHEDULED TIME OF COMPLETION

06/2017 – 08/2018

The first completed project using EMSD BIM-AM Standard in whole BIM life-cycle



About Electrical and Mechanical Services Department, HKSAR Government

EMSD discharges its services to the public in Hong Kong via two separate teams: Regulatory Services and Trading Services. Our Regulatory Services team regulates electrical, mechanical and gas safety, and railway safety, as well as energy efficiency, via law enforcement and public education. It also monitors the technical performance and development plans of the electricity supply companies, and gives professional and technical support to the Government's wide range of safety and environmental initiatives. Our Trading Services team provides electrical and mechanical, electronic engineering and building services to government departments and public bodies with the ultimate goal of improving the quality of life for the public.

About WSP Hong Kong Limited

WSP is one of the world's leading engineering professional services consulting firms, bringing together approximately 49,000 talented people globally. We are technical experts who design and provide strategic advice on sustainable solutions, engineering projects that will help societies grow for lifetimes to come.

WSP BIM team is one Hong Kong's leading BIM professional, with a team of 60 BIM specialists, we offer wide range of BIM services to our clients including BIM Management, Consultancy, Standard setup and training.

BIM PARTNERS

39 Plus Limited

Au Chow Electrical Company Limited

Planon Hong Kong Limited

AUTODESK PRODUCTS USED

Autodesk COBie Extension for Revit
BIM360

Navisworks

Recap Pro

Revit

Project Description

EMSD published the first BIM-AM Standards and Guidelines in 2017. To prove its practicality, EMSD chose a renovation project, which is the new Customer Services Centre (CSC) with 380 sq.m. on 4/F of EMSD Headquarters, as a pilot project to fully comply with the EMSD's BIM-AM Standards and Guidelines. BIM technology was adopted starting from design stage to building operation & maintenance stage. The EMSD's BIM-AM Standards and Guidelines were part of the Employer's Information Requirement (EIR) for BIM construction during the design stage.

Project Challenges

Despite of small project scale, this project had been set an aggressive schedule since the CSC needed to be launched on time for its business operation. Secondly, this project was the pilot project adopting the BIM-AM Standard as EIR, some appointed parties were not fully familiar with the requirement and had reluctance to adopt the BIM.

With the mindset of "Begin with the end", EMSD intended to use BIM not only for design analysis and construction coordination, but also the use of as-built BIM models for its BIM- Asset Management (BIM-AM) System with the integration of various electronic systems, including RFID technology and IoT sensors.

Solutions for challenges

To ensure effective project implementation under this tight schedule, a Common Data Environment (CDE) was setup up with using Autodesk BIM360 platform so all appointed parties could share data in real-time and well organized manner. A compressive BIM Project Execution Plan was prepared to explicitly explain to all parties by showing the way of BIM implementation.

Apart from workflow, some BIM-enabled productivity tools were adopted that includes a real time game engine to visualize the design instantly and Revit plug-in to improve drawing production. Furthermore, in order to improve effectiveness in preparing Asset Data complying BIM-AM Standards, a web-based productivity plug-in was developed to reduce the time for data inputting.

How does BIM benefit the project?

During design and construction stages, BIM has been fully used and a number of benefits were realized. For example, design analysis such as lighting analysis and barrier free analysis were performed so that end users without technical knowledge could easily understand the design and E&M system operation.

Upon completion of the project, a completed BIM model with Asset Data was successfully obtained to form an Asset Information Model (AIM) for building operation. The integration of AIM and IoT technology could achieve smart facility management, including smart toilet management and smart meeting room & carpark reservation, towards Smart Building initiatives.

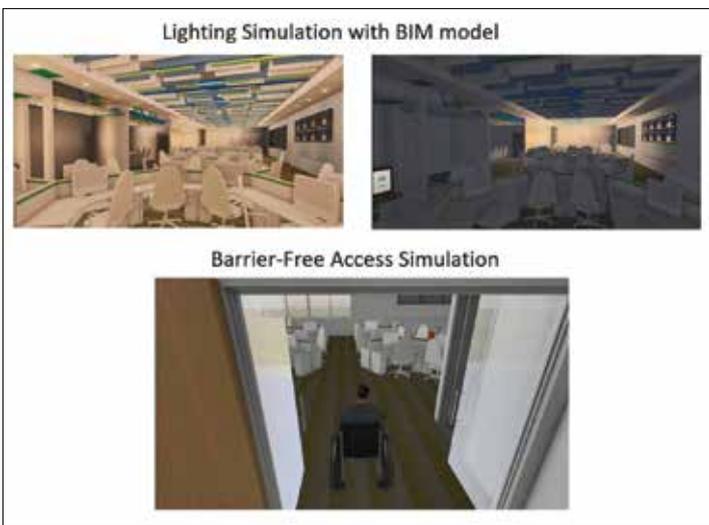
Better with BIM

With the mindset "begin with the end", a completed AIM model was successfully obtained for smart asset management with the integration of RFID and IoT technologies. The new concept of BIM-AM-IoT was introduced so it gives a new dimension to users in making better decision in building operation according to actual spatial utilization.

The asset data in AIM together with the operational data from IoT enable us to explore the application of big data analysis for smart building development.



The BIM project of Customer Services Center in EMSD Headquarters
Image Courtesy of Electrical and Mechanical Services Department, HKSAR Government and WSP Hong Kong Limited



BIM enabled Lighting and Barrier-free access Simulations
Image Courtesy of Electrical and Mechanical Services Department, HKSAR Government and WSP Hong Kong Limited



Fast Asset Locating with the use of QR codes and RFID Technology
Image Courtesy of Electrical and Mechanical Services Department, HKSAR Government and WSP Hong Kong Limited



The User Interface of Smart Toilet Management System in EMSD Headquarters
Image Courtesy of Electrical and Mechanical Services Department, HKSAR Government and WSP Hong Kong Limited



Data Analysis Dashboard of the Smart Toilet Management System
Image Courtesy of Electrical and Mechanical Services Department, HKSAR Government and WSP Hong Kong Limited