COMPANY
The Hong Kong University of Science and Technology - Campus Development Office

PROJECT
Shaping a Digital Future - BIM, Space and Asset

LOCATION
The Hong Kong University of Science and Technology

TYPE
Asset Management

SCHEDULED TIME OF COMPLETION
2021 (First digital phase)

Shaping a Digital Future - BIM, Space and Asset

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

About The Hong Kong University of Science and Technology

Established in 1991, the Hong Kong University of Science and Technology (HKUST) is a world-class international research university with 57 hectares site area. There are about 70 buildings with rapid facility growth and enhancement demands over the three decades.

Our campus has a clearly defined geographical area, which is a prototype and living lab of smart cities. Our community is very diverse, with many different stakeholders.

At HKUST, we are committed to inspire the students to be well-rounded, innovative and entrepreneurial. CDO brings together the graduate students and professionals who exchange innovative and expert views on emerging technologies. With their imaginative perspectives, the BIM workflow and process are transformed with the emerging technologies of cloud computing, web applications, data analysis, etc.

BIM PARTNER

Undergraduates

AUTODESK PRODUCTS USED

AutoCAD
AutoCAD Map 3D
BIM 360 Design
Civil 3D
Dynamo Studio
Forge
InfraWorks
Navisworks
ReCap Pro
Revit

Project Description

Digitalization, BIM and space programming all play a strategic role in campus development and asset management in order to provide an inspirational and sustainable campus to work, study and live, according to Catherine Lau, Senior Space and Design Manager of the Campus Development Office, who has had this aspiration since working for the campus. “Our work scope covers capital works, minor works, space analysis, defects and asset management with different goals to manage, analyse and improve the campus facilities.”

Project Challenges

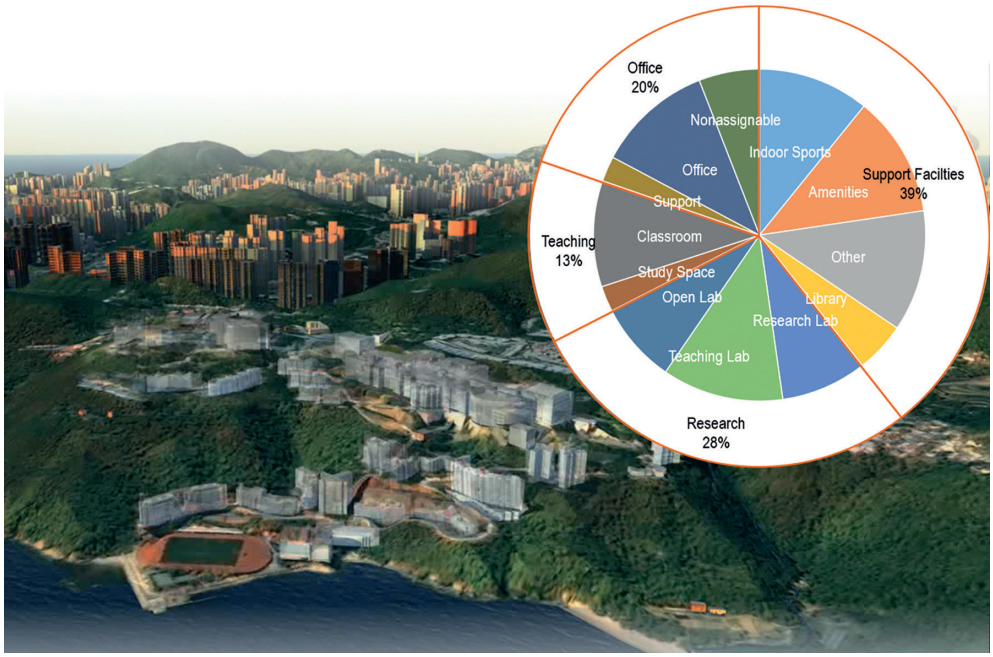
The Campus Development Office manages campus space data from multiple sources. To achieve the 3D space management, there are two solutions: one is by setting up a platform for 3D GIS and the other is to leverage BIM. We make use of both solutions to connect between the virtual world and the real world, by integrating the aerial photo, drone imagery government maps and statutory plans. The seamless integration of the real world 3D information, GIS, BIM and space data enables efficient use of space data.

Our Digital Team embraces changes and expanding horizons will always bring wonders to our work and life.
Image Courtesy of The Hong Kong University of Science and Technology - Campus Development Office

Solutions for challenges

“We need a common platform that is accessible by our team and frontline members to understand each space. The information in the central database should be well-organized and viewed in web browser.” added Catherine. To digitize the campus and develop the platform, we do this by empowering our students to digitalize around six thousand drawings. These are the data sources for our facility, floor, space, etc.

To deal with multiple sources of information exchange and integration, robot automation using python and



A critical step for data analysis and robotics automation.
Image Courtesy of The Hong Kong University of Science and Technology - Campus Development Office

Our digital team worked efficiently together, staging and accomplishing tasks quickly.
Image Courtesy of The Hong Kong University of Science and Technology - Campus Development Office

node.js are used for pilot data analysis and robotic process automation to further increase the efficiency.

How does BIM benefit the project?

"BIM brings benefits to our campus, the team, key stakeholders and even the surrounding environment. We will further apply BIM in other projects to enhance the efficiency of our works." said Catherine.

Forge viewer and BIM360 are convenient tools to quickly review the BIM models, to validate sheets and data within the web browser. The continuous change

Our community is diversified, with different kinds of members, buildings and spaces.
Image Courtesy of The Hong Kong University of Science and Technology - Campus Development Office

of facilities and space are another big challenge. BIM can be a common platform to store the information. As opposed to the conventional way of onsite measuring and photo recording, we use photogrammetry to view and measure the space to allow remote working.

Better with BIM

"Connecting the real world and filling data gaps, we can filter off some spaces and items in a building, which do not need to be displayed for analysis." added Catherine. "Many of us still prefer to work with the latest photo, more than BIM models. This is a tool that can visualize data (real world) and fill data gaps (virtual), labor cost to up keep the models will be reduced."

She reckoned that embracing changes, working with the young students and expanding horizons will always bring wonders to our life, and fill every day with enjoyment and hope.

BIM360 is our preferred platform with multi-level of files, access without software, without barrier.
Image Courtesy of The Hong Kong University of Science and Technology - Campus Development Office

"Typical FM services we are concerned into building hardware, including elevator, lift, essential assets, energy and sustainability." shared by Catherine. "Essential assets we are talking about if some facilities broken down that will affect our services. We need to identify. Another areas we concerned are user experience, including events, catering, residence, transportation" added Catherine.

"That's why we brought together students they have insights and innovative ideas. They drive the industry's transformation and shape our campus towards a more efficient and sustainable era."

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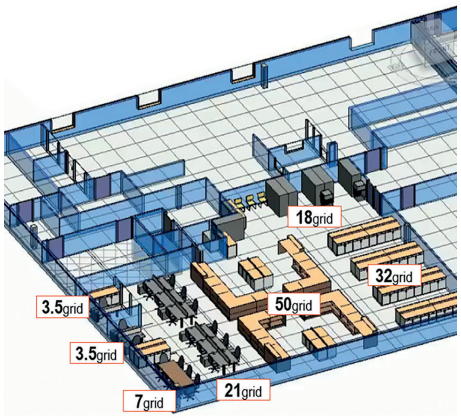

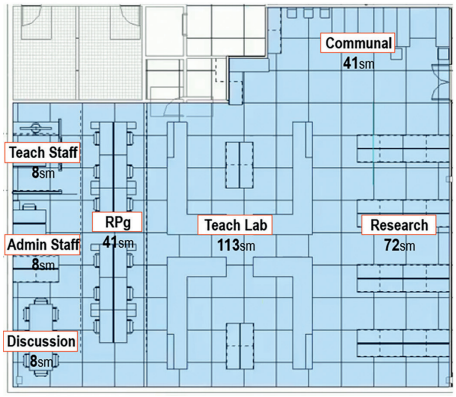

In our physical campus, many of us count space by ceiling grids.
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