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Ir. William Lam, Building Engineering & Architectural Manager of OESD,
MTRC

“ BIM is a very powerful tool for the transportation industry, including railways. It can enhance the value of existing facilities, and the constructability of new stations and buildings. ”

Mr. Philip Leung, Architect of OESD
MTRC



COMPLEX BUILDINGS UNDERGROUND

Project: A New Subway Station

Location: Hong Kong

Type: Subway Station

3.4 Million Passengers and 800 Thousand Drawings

MTRC is the largest transport operators in Hong Kong, carrying 3.4 million passengers per day, around 40 percent of the market share of transportation in Hong Kong.

“Hong Kong is so crowded that some people may think it's beyond their comfort level,” says Ir. William Lam, Building Engineering & Architectural Manager of OESD, MTRC. “This imposes a huge challenge on transport operators, to move people around such a crowded city.”



The MTRC has 80 stations, requiring that it maintains more than 800 thousand legacy drawings to maintain. Plus, the corporation is building new stations, and several existing stations are undergoing substantial renovation. MTRC required a system that could enhance the workflow of the asset life-cycle, from design and construction to building maintenance.

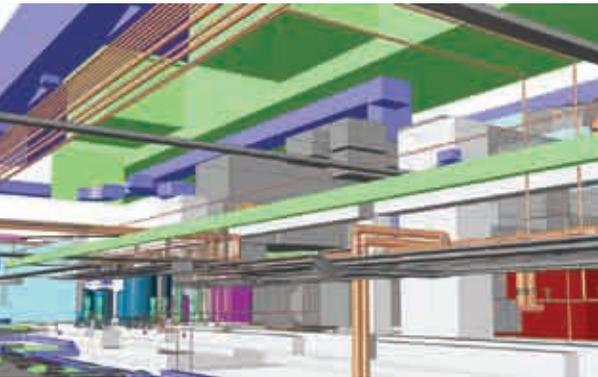
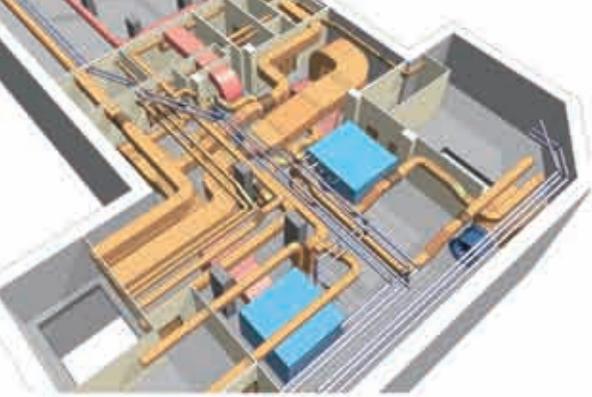
Existing stations modelled with Revit Architecture

Several existing stations are being modelled with Revit Architecture. “Not only can Revit allow designers to produce engineering drawings and perform the visualisation work, but the software can also include many kinds of non-graphical information, in model items such as advertisement panels or vending machines,” said Philip Leung, Architect of OESD, MTRC. “This will definitely be beneficial to us in facilities management in the long run.”

Communication with stakeholders

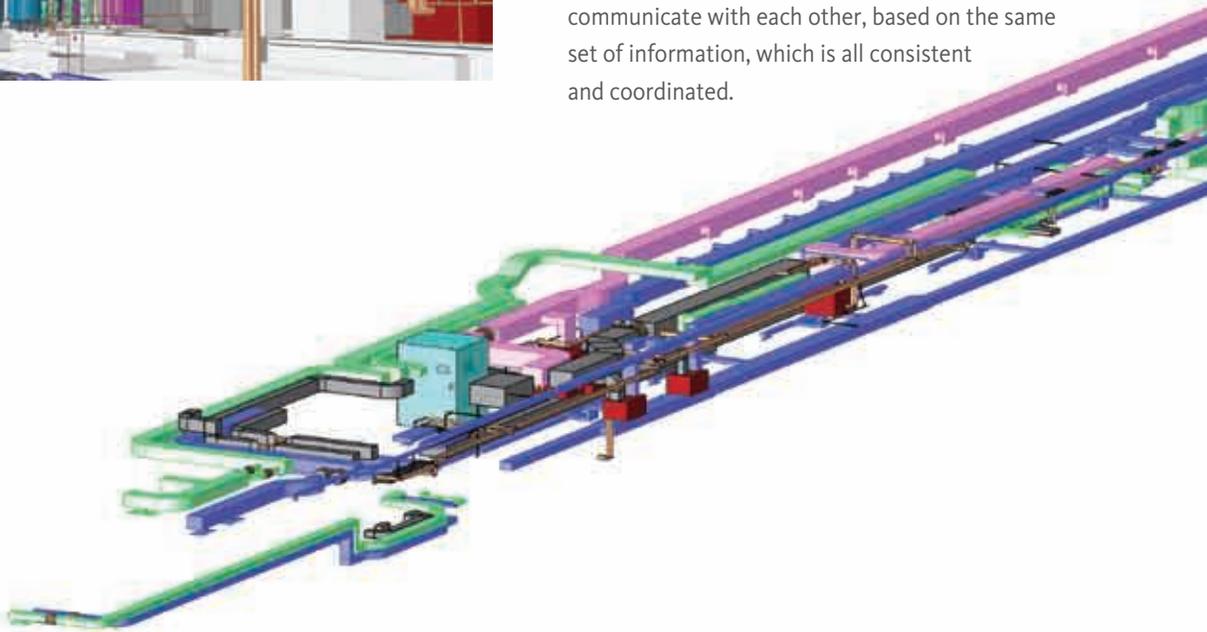
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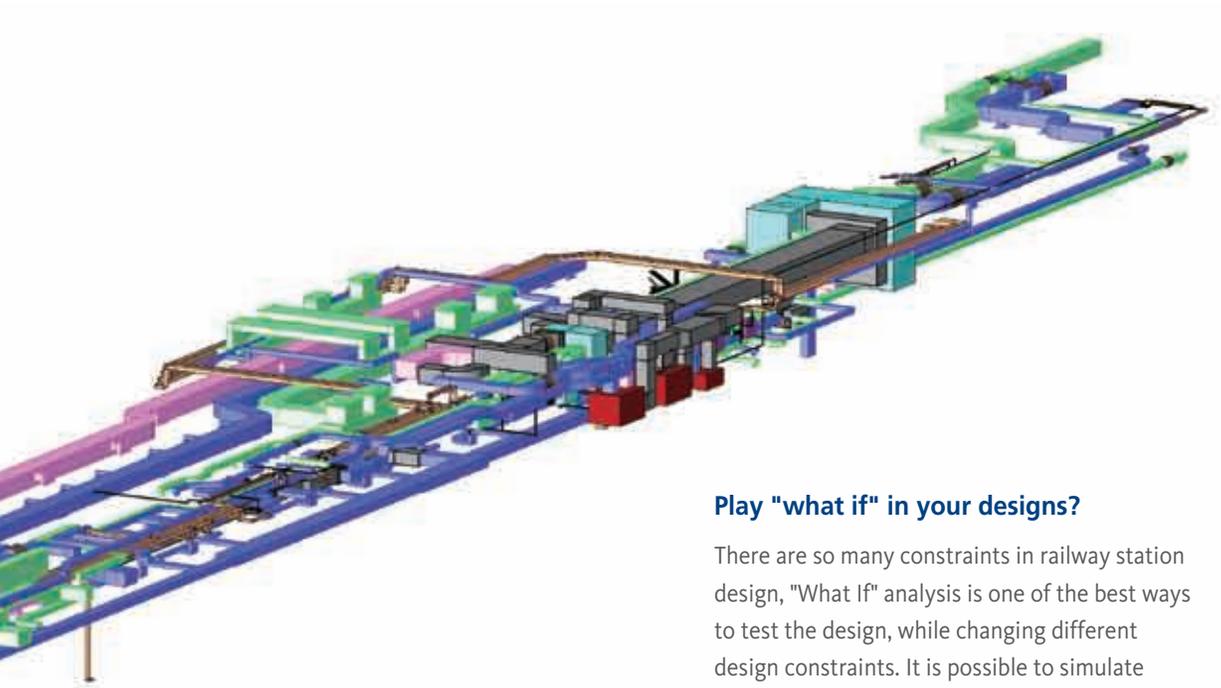
BIM is a much more efficient tool to produce day to day coordination works, and also to ensure information compatibility and to optimise building performance. It can handle information in much more effective way.



A protocol for communication

BIM, building information modeling, is a tool enabling people to talk to each other. In addition to serving the purpose of 2D CAD, 3D rendering, it contains material quantities and specifications. All information is based on the interrelationships between different building components. Stakeholders from different disciplines can communicate with each other, based on the same set of information, which is all consistent and coordinated.





A complete BIM subway station

The MTRC has built a complete BIM subway station, using Revit Architecture, Revit structure and Revit MEP. When the BIM was shown to the future station management team, they were actually “seeing” the future station for the first time.

“To our colleagues, this was the first time that they could visualise the station as a station before it was built,” said Mr. Leung. “They made comments, on whether there was enough signage and so forth. And, they were very happy about it. I can imagine it’s very difficult for them to understand two-dimensional drawings.”

Play “what if” in your designs?

There are so many constraints in railway station design, “What If” analysis is one of the best ways to test the design, while changing different design constraints. It is possible to simulate the result before the station is being built. “We can only demonstrate all this through the BIM model -- through the simulation,” says Mr. Leung. “Without it, we can’t tell the authority or our senior management that we can do this, or we can’t do that.”



ABOUT MTR CORPORATION



Carrying an average of 3.4 million passengers every weekday, the MTR is regarded as one of the world's leading railways for safety, reliability, customer service and cost efficiency.

The MTR Corporation was established in 1975 as the Mass Transit Railway Corporation with a mission to construct and operate, under prudent commercial principles, an urban metro system to help meet Hong Kong's public transport requirements. The sole shareholder was the Hong Kong Government.

The Company was re-established as the MTR Corporation Limited in June 2000 after the Hong Kong Special Administrative Region Government sold 23% of its issued share capital to private investors in an Initial Public Offering. MTR Corporation shares were listed on the Stock Exchange of Hong Kong on 5 October 2000.

The Corporation marked another major milestone on 2 December 2007 when the operations of the other Government-owned rail operator, the Kowloon-Canton Railway Corporation, were merged into the MTR, heralding a new era in the Hong Kong railway development.

Other than bringing more efficient and competitively-priced services to local rail passengers, the merger brings new growth opportunities to the MTR Corporation's businesses in and outside of Hong Kong.

The merged rail network comprises nine railway lines serving Hong Kong Island, Kowloon and the New Territories. In addition, a Light Rail network serves the local communities of Tuen Mun and Yuen Long in the New Territories while a fleet of buses provide convenient feeder services.

The Corporation also operates the Airport Express, a dedicated high-speed link providing the fastest connections to Hong Kong International Airport and the city's newest exhibition and conference centre, AsiaWorld-Expo.

From Hong Kong, passengers can travel with ease to Guangdong Province, Beijing and Shanghai in the Mainland of China using the MTR's intercity railway services.