Building information model is an engineering data model based on three-dimensional digital technology that integrates various relevant information of construction projects.

Special design and refinement

The mechanical and electrical industry involves a wide range of fields, including high and low voltage, heating and cooling air conditioning equipment, water supply and drainage equipment, fire protection equipment, and other systems are involved. In the traditional design model, each professional engineer designs independently, then integrates and optimizes it, and there is little cooperation between each profession. In the construction process of the project, many conflicts will occur between different disciplines. Some conflicts have little impact and can be resolved during the construction process. However, from the long-term development trend, it is inevitable that it will affect the progress of the entire project, and the pipe processing and secondary rework phenomena will increase, affecting the overall cost of the project. The introduction of BIM means into the design industry will allow all majors to be responsible for the same design. BIM is introduced into the design industry, allowing all majors to carry out collaborative design and work using a unified platform, so that the architectural, structural, and electrical and mechanical majors can quickly achieve the purpose of information sharing.

Construction organization visualization

Through the virtualization and visualization of the BIM model, construction difficulties and key points can be grasped in advance, and secondary construction can be avoided. By simulating and displaying construction techniques and introducing and explaining three-dimensional models, the efficiency of joint excavation of various fields such as civil engineering, mechanical and electrical equipment, and decoration is improved. At the same time, the use of BIM technology in combination with construction planning, construction simulation, and on-site monitoring further optimizes the management of the construction process, reducing construction quality and temperature problems, structural safety problems, rework and correction, and further optimizes the management of the construction process.

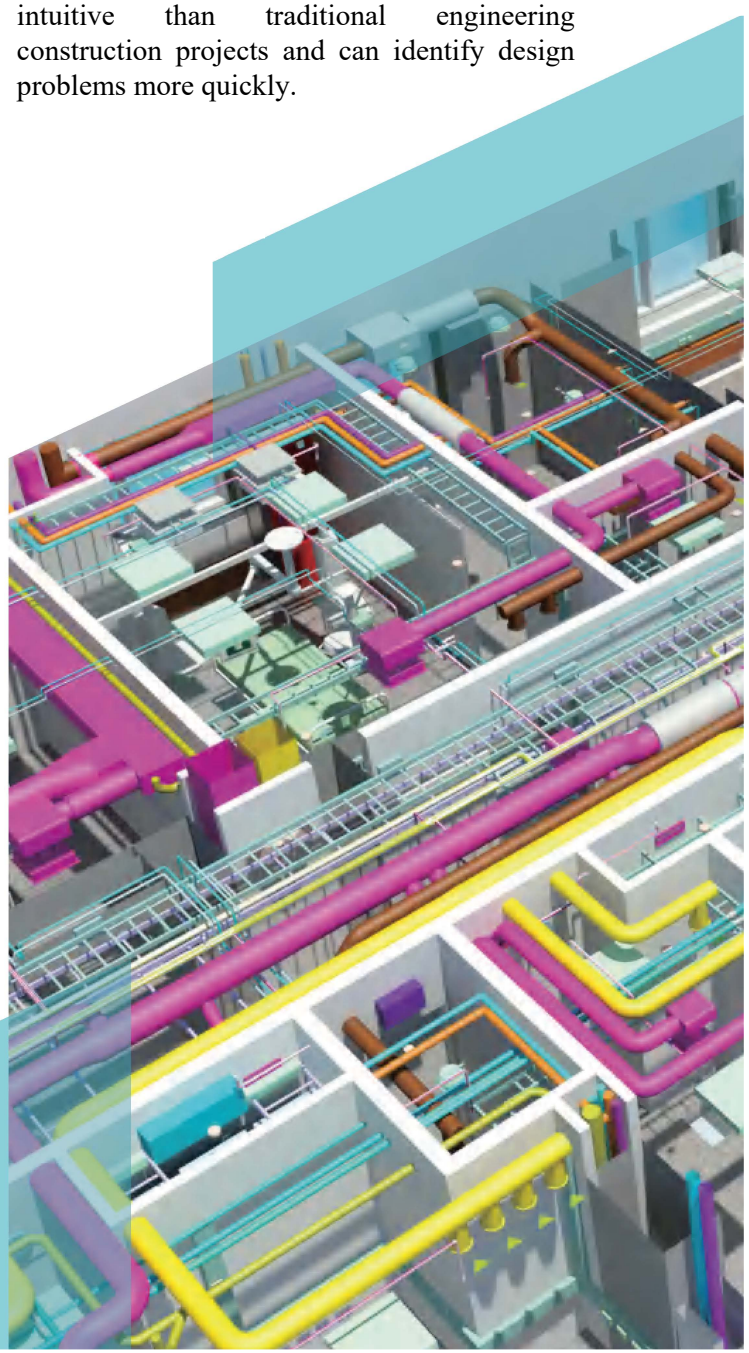
Precise material control

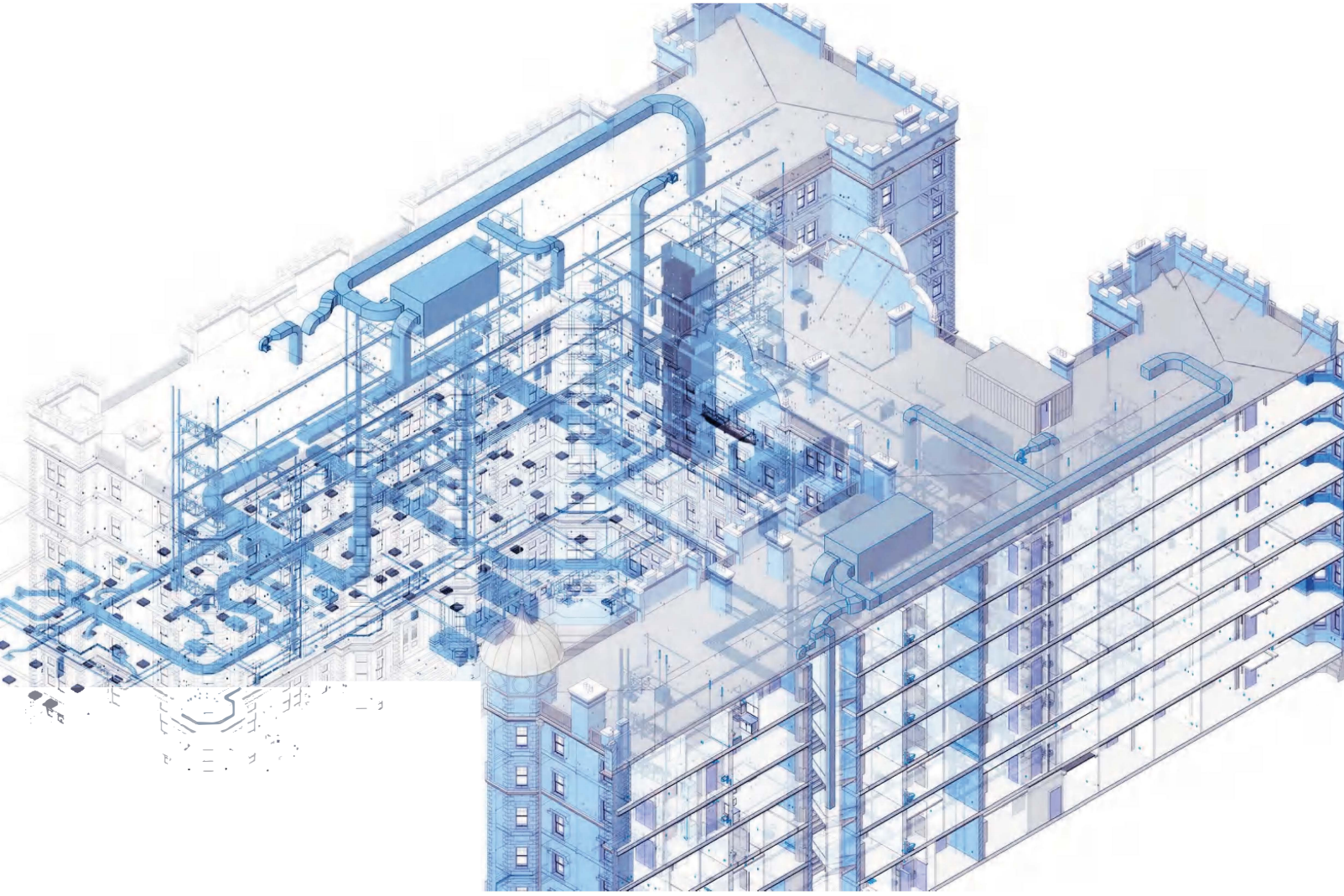
Use BIM to generate accurate project statistics, required material tables, material drawings, etc., and submit them to the factory. Direct transportation to the site after prefabrication can realize mechanized installation of the project. By utilizing BIM technology to inspect and control the quality and safety of the entire process, the following benefits can be obtained in realizing the industrialization of the entire process:

- Accurately grasp the budget and save materials
- Modular production
- During the construction process, reduce interference from environmental factors and shorten the construction period
- No waste is generated when processing materials on-site
- Ensure the quality of construction and the safety of construction

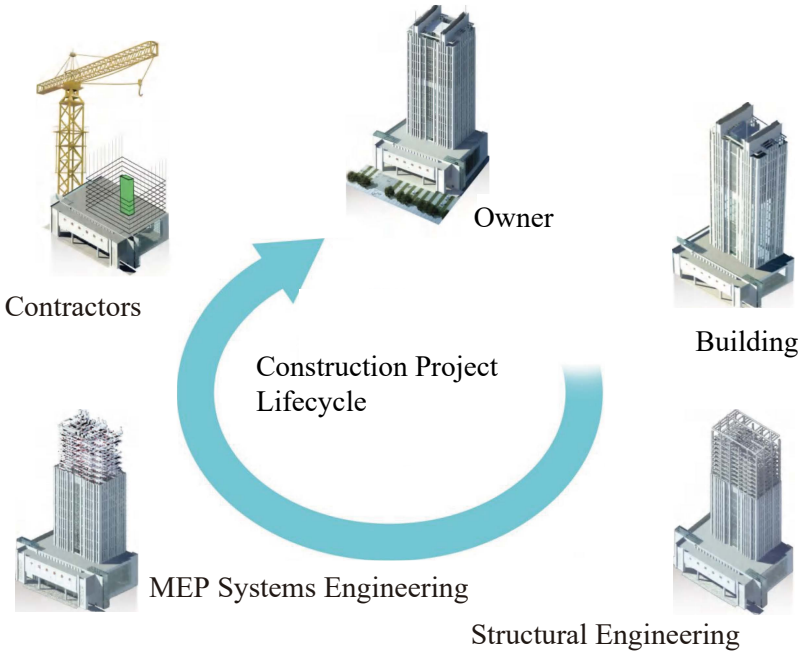
Intelligent on-site management

BIM is used to monitor the entire process, input information (equipment arrival time, installation time, etc.), and verify materials, realizing digitalization and information management of the entire process. According to the CAD drawings of each major, BIM engineers of each major use the central file work method to carry out professional modeling. Select engineers with a certain amount of experience in construction sites to quickly find problems on the drawings during the modeling process, communicate with the designers, and make changes to the drawings. It can reduce rework during the construction stage. This method is more intuitive than traditional engineering construction projects and can identify design problems more quickly.





BIM or Building Information Management is the creation of a three-dimensional building model based on various related information data of a construction project, and simulating the characteristics of the building through digital information simulation. It has eight characteristics: information completeness, information relevance, information consistency, visualization, collaboration, simulation, optimization, and graphability.



Planning stage

It is primarily used for current state modeling, cost budgeting, phasing, site analysis, and space planning.

Design stage

It is primarily used to substantiate design plans at the planning stage, including scheme design, engineering analysis, sustainability assessment, specification verification, etc.

Construction stage

It mainly plays a role in coordinating with the design stage, including site use planning, labor system design, digital processing, material site tracking, management and planning, etc. In the operation stage, it is mainly used to record and model the construction stage, including maintenance planning, building system analysis, asset management, space management/tracking, disaster planning, etc.

Operation and maintenance management

BIM technology can effectively manage the operation and maintenance of a building during its lifespan. BIM technology has the ability to spatially locate and record data, and when applied to operation and maintenance management systems, it can quickly and accurately locate components of construction equipment, conduct material accessibility analysis, select sustainable materials, perform preventive maintenance, and develop effective maintenance plans.