Improving the Quality and Efficiency of Airport Construction with Digital Building Technology

01 Overview of China Civil Aviation

02 Airport Digital Building Technology

03 Initiative

Overview of China Civil Aviation

Year 2000

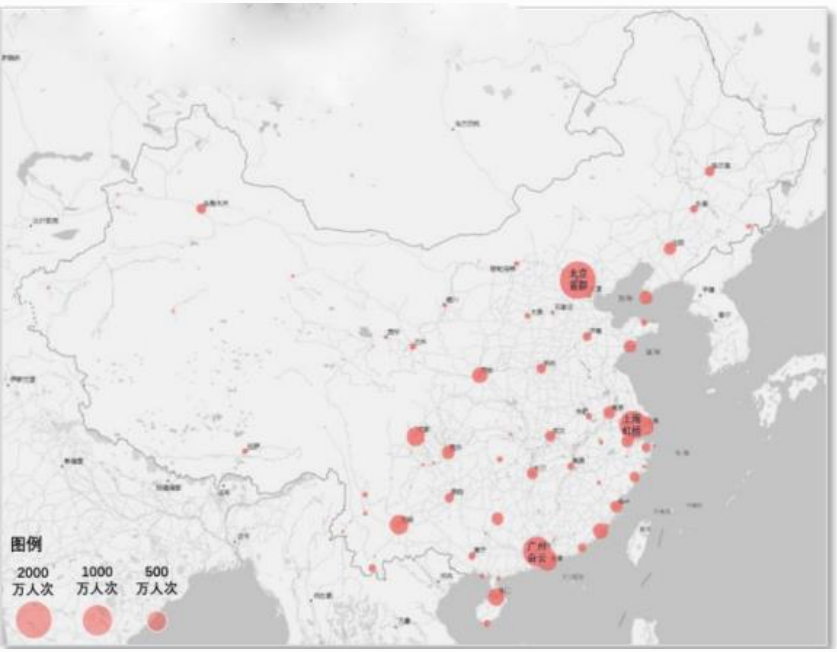
- 134 Airport
- 130mpax

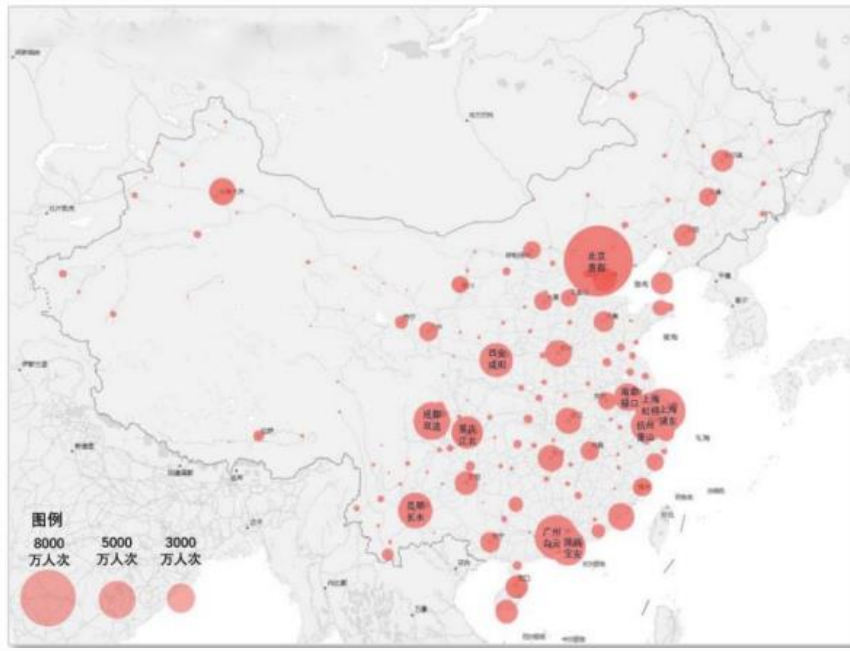
Year 2010

- 173 Airport
- 560mpax

Year 2024

- 260+ Airport
- 1350mpax



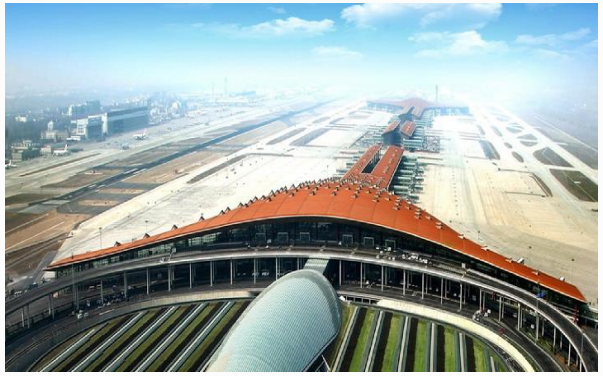


Overview of China Civil Aviation

39 Ten million-passengers airport

67 million-passengers airport

9 Top 50 busiest airports in the world



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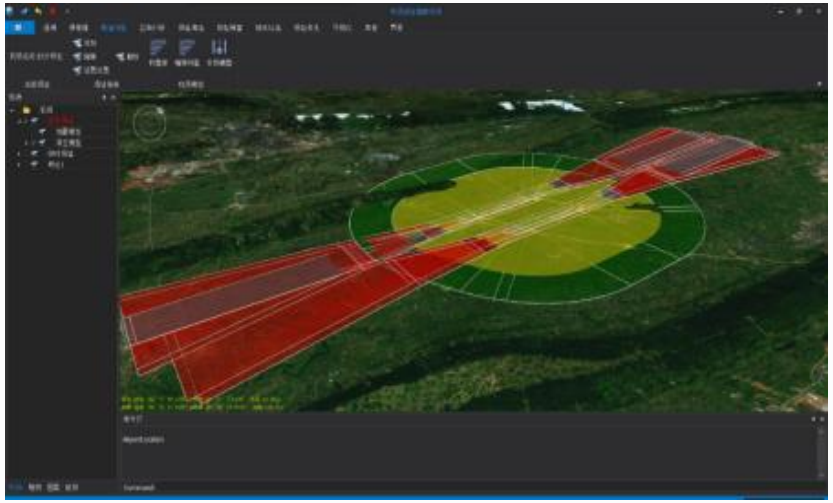
Airport Digital Building Technology

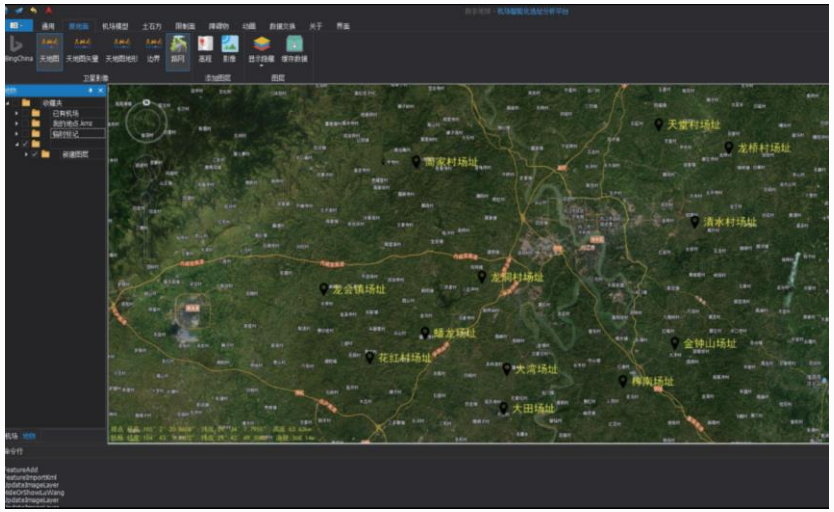
Focus on the construction of “smart” civil aviation
Realize the digitalization of the whole construction cycle of the airport.

- **Site selection**
  GIS+BIM+Big Data+UAV
- **Feasibility study/Mster plan**
  Air-ground integration simulation technology
- **Design**
  Building information Modeling
- **Construction**
  BIM Construction，Digital construction management
- **Management and maintenance**
  Digital monitoring and detection
- **Operation**
  Internet of Things (IoT), UAV, Airport GIS

Airport Digital Building Technology

Digital Site Selection





The traditional site survey + topographic map operation mode has been changed to digital site selection.

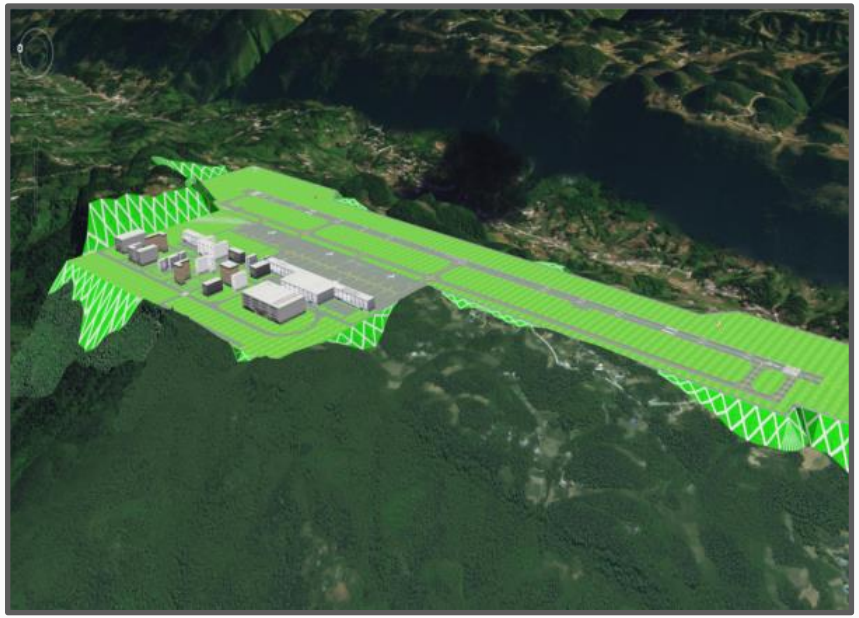
The **“GIS + BIM + Big Data+ UAV”** technology has been adopted, and various indicators have been quantified through the deep integration of various technologies to achieve “visualization and intelligence of site selection”.

Airport Digital Building Technology

Digital Site Selection - Engineering application case

Chongqing International Airport

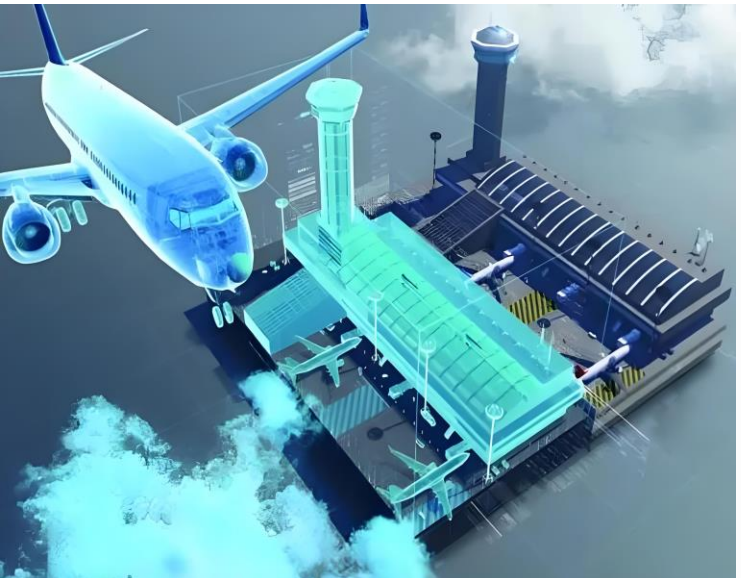
Jinzhai Airport



Enshi Airport

Airport Digital Building Technology

Digital Design



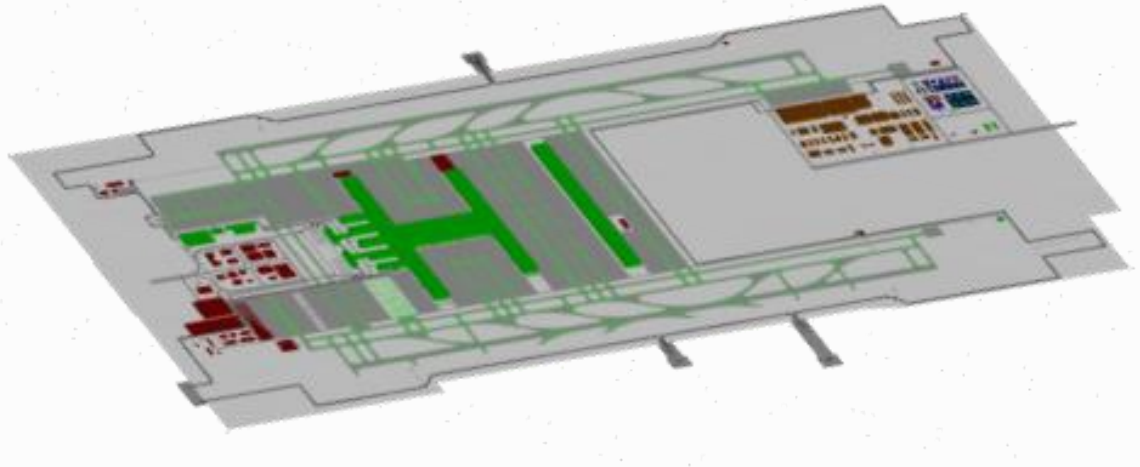
BIM

Building Information Modeling

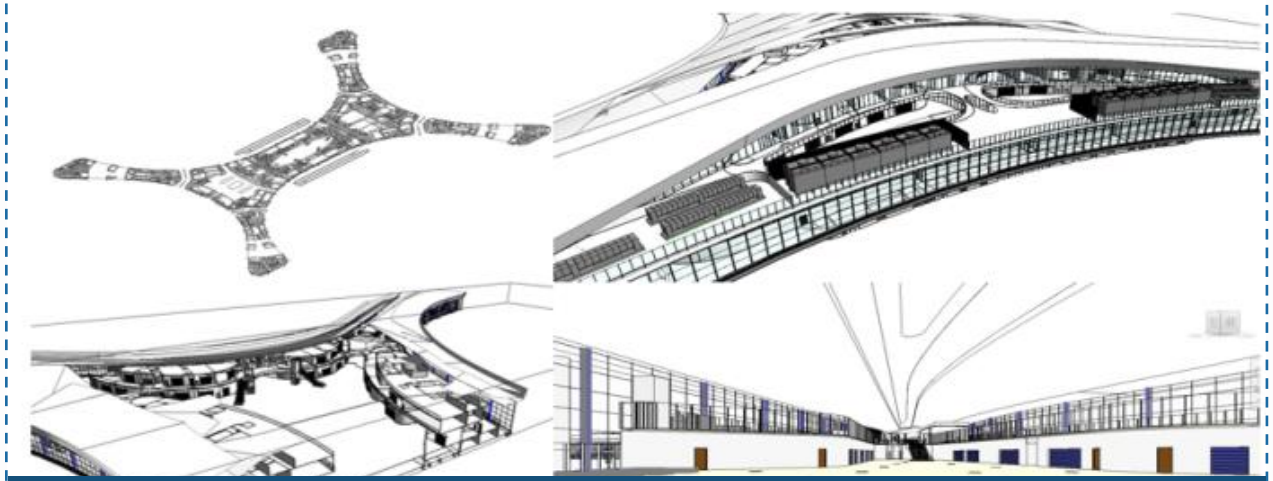
- **Full cycle application**
  Planning, design, construction, cost, quality control, measurement, etc.
- **Technical Focus**
  Standardized management
- **Software development**
  Airport design information application platform
- **All specialty**
  Includ geotechnical , pavement, architecture, structure, AGL, navigation, municipal, etc;

Airport Digital Building Technology

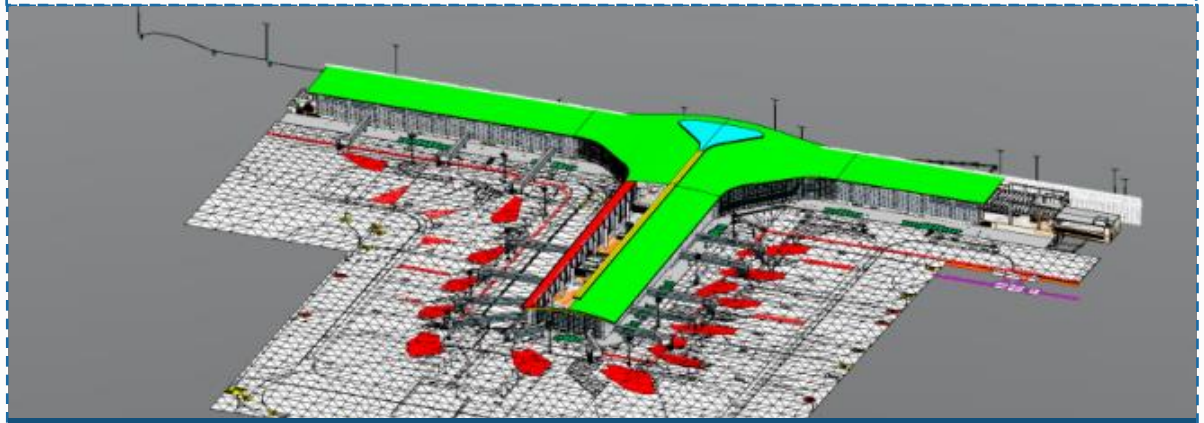
Digital Design - Engineering application case



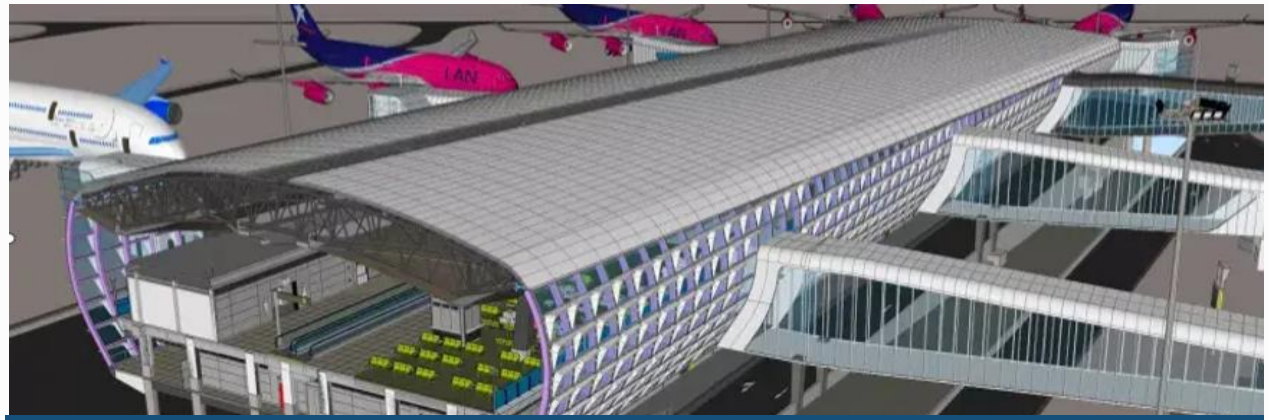
Ezhou Airport



Chongqing Airport Terminal



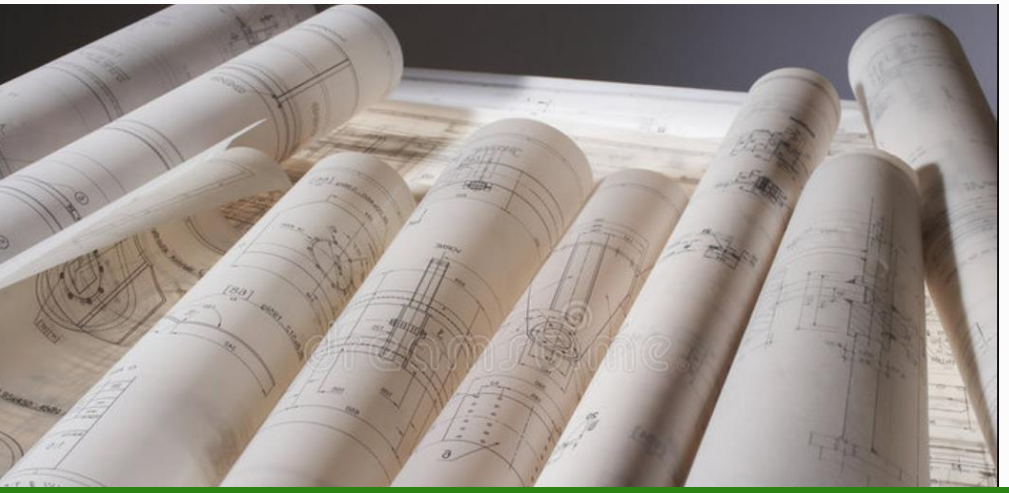
Guangzhou No.4 East Pier Apron Project



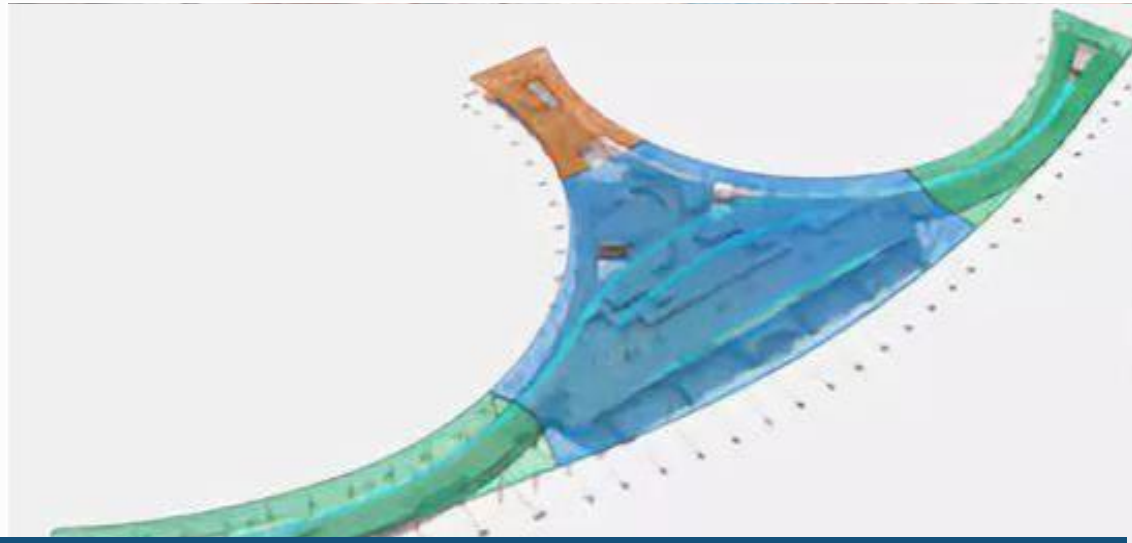
Shenzhen Airport

Airport Digital Building Technology

Digital Construction



Drawing-based construction



BIM Model-based construction

Airport Digital Building Technology

Digital Construction

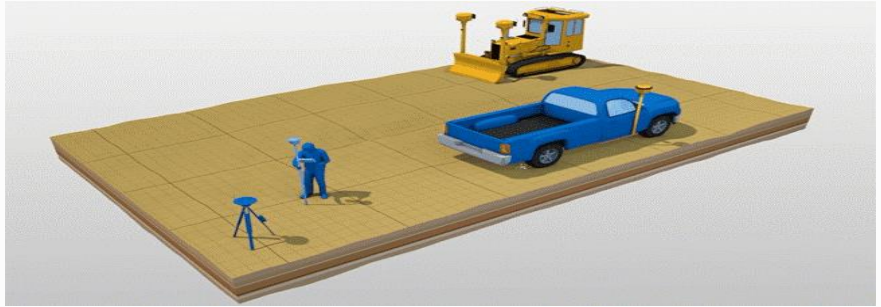
BIM + Satellite Positioning System

Digital site

- Video monitoring of personnel, vehicle equipment, materials and environment.
- Construction of all elements, the whole process of digital control.

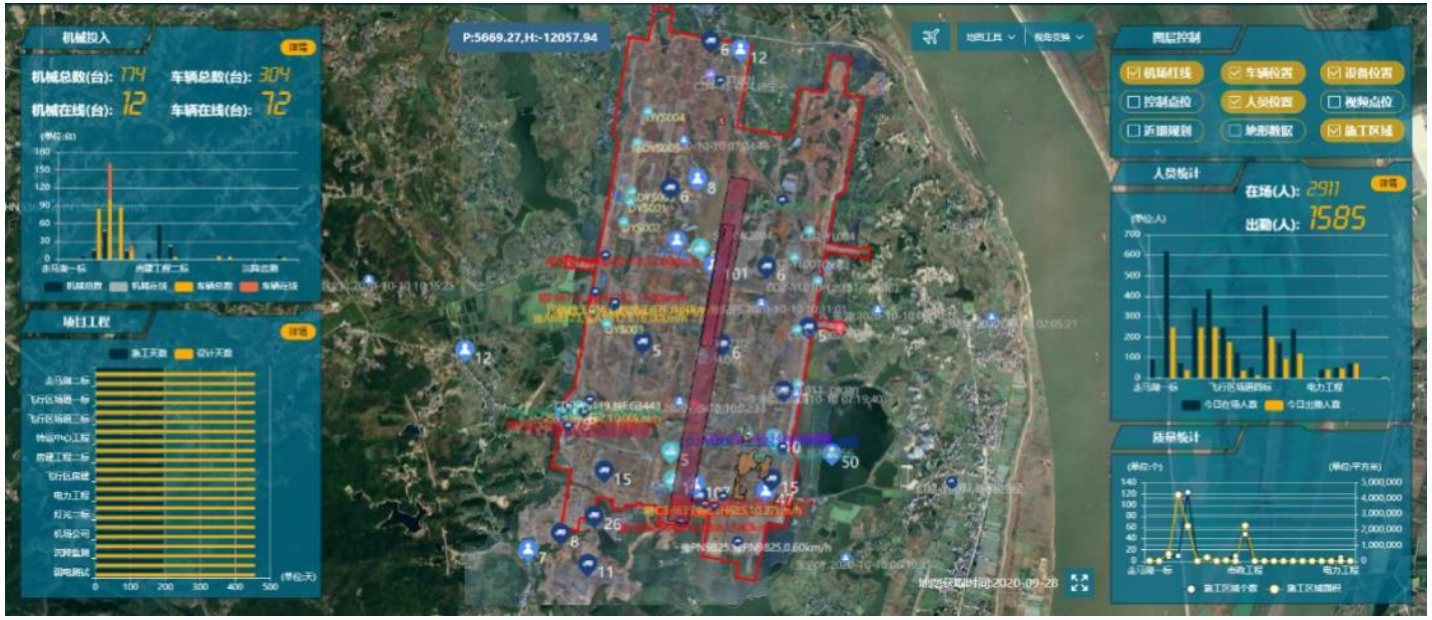
Digital construction

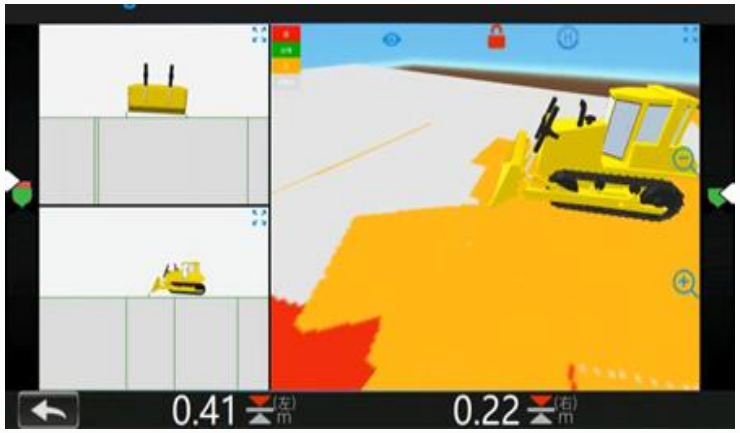
- High-precision satellite positioning systems and sensors.
- Utilizing IoT and automated mechanical control technologies.
- Mechanical equipment digital precision construction operations.
- The operational data is fed back to the platform in real time.

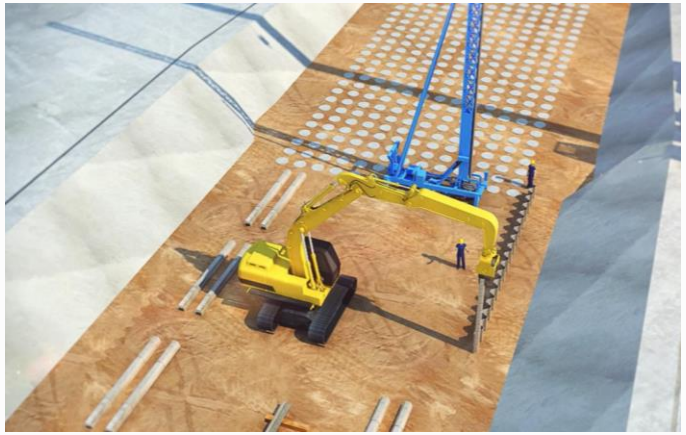


Airport Digital Building Technology

Digital Construction







Salient features

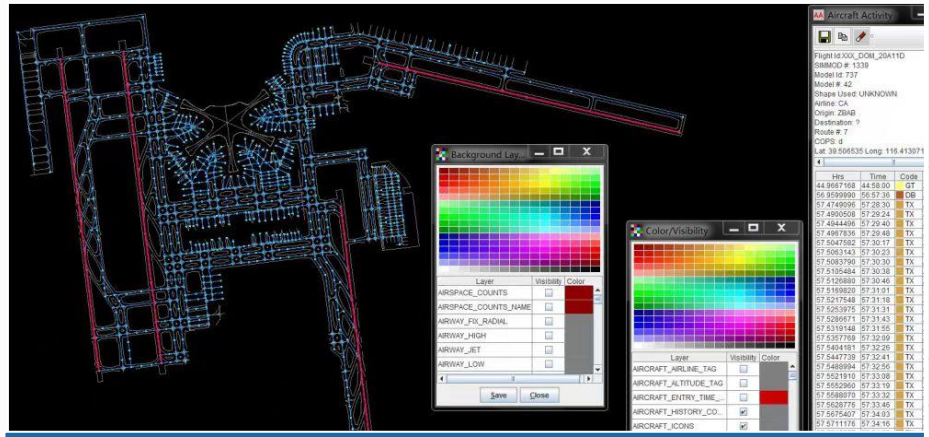
- Real-time data upload
- Data dynamic management
- Field interface visualization
- Data permanently saved and traceable

Salient effect

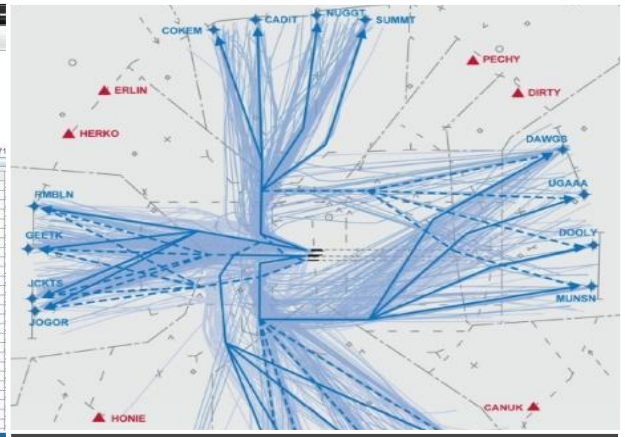
- Improving construction efficiency
- Reducing costs
- Enhances project safety management

Airport Digital Building Technology

Integrated Air-Ground Simulation Technology

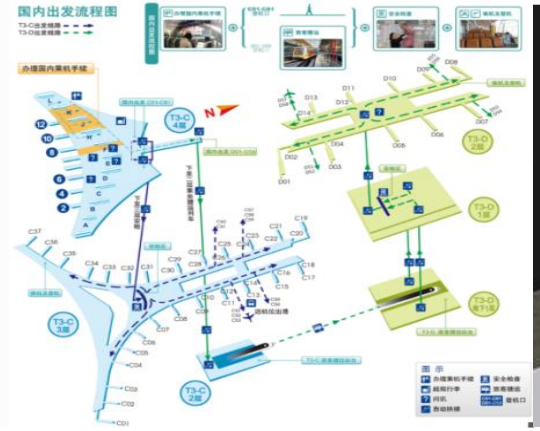


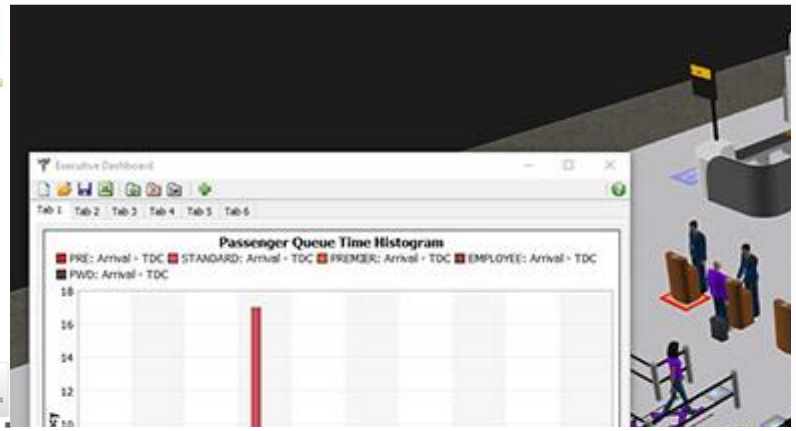
Airfield operation simulation



Air route airspace simulation

Landside traffic simulation



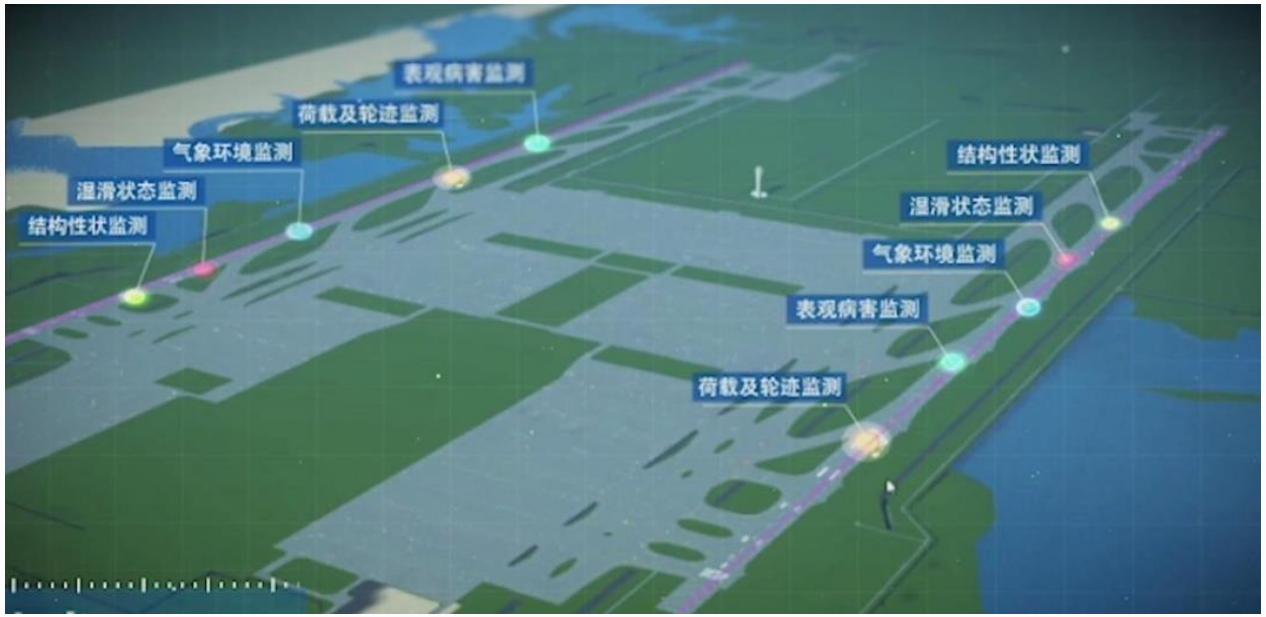


Terminal flow simulation

- Simulating the operations of **passengers, cargo, aircraft, and baggage** at airports.
- Optimize airspace, airfield ground, environmental impact, operational efficiency, etc.

Airport Digital Building Technology

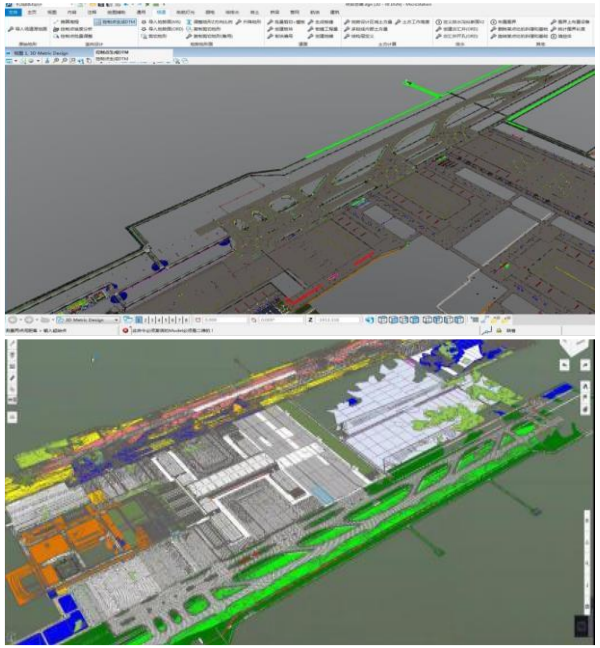
Digital Monitoring

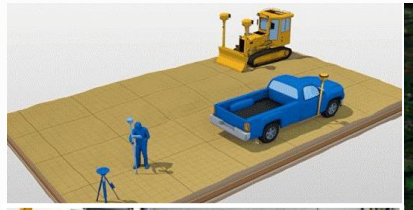


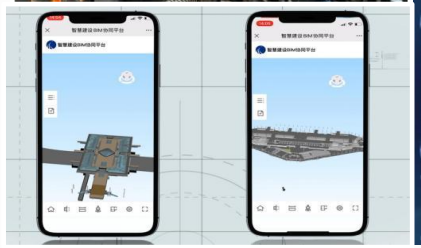
Intelligent sensing, satellite remote sensing, Beidou navigation and other advanced technologies are adopted to realize the **perception function of runway properties, carry out real-time online monitoring of the health status of the entire runway**.

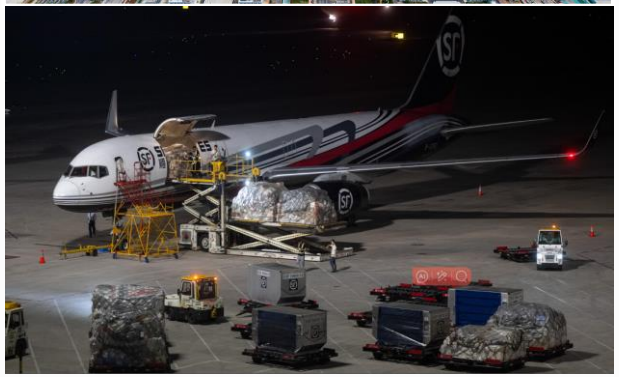
Airport Digital Building Technology

Typical case - Application of Digital Construction Technology Ezhou Airport









- The **fourth largest** professional international **air cargo hub** airport in the world and the **first in Asia**.
- Digital application runs through the **whole process** of construction and operation.
- The **First Truly Digital Airport.**

Airport Digital Building Technology

Typical case - Application of Digital Construction Technology Ezhou Airport

By adopting information management methods and refined BIM technology management, Ezhou Airport has achieved a **10%** reduction in project investment.

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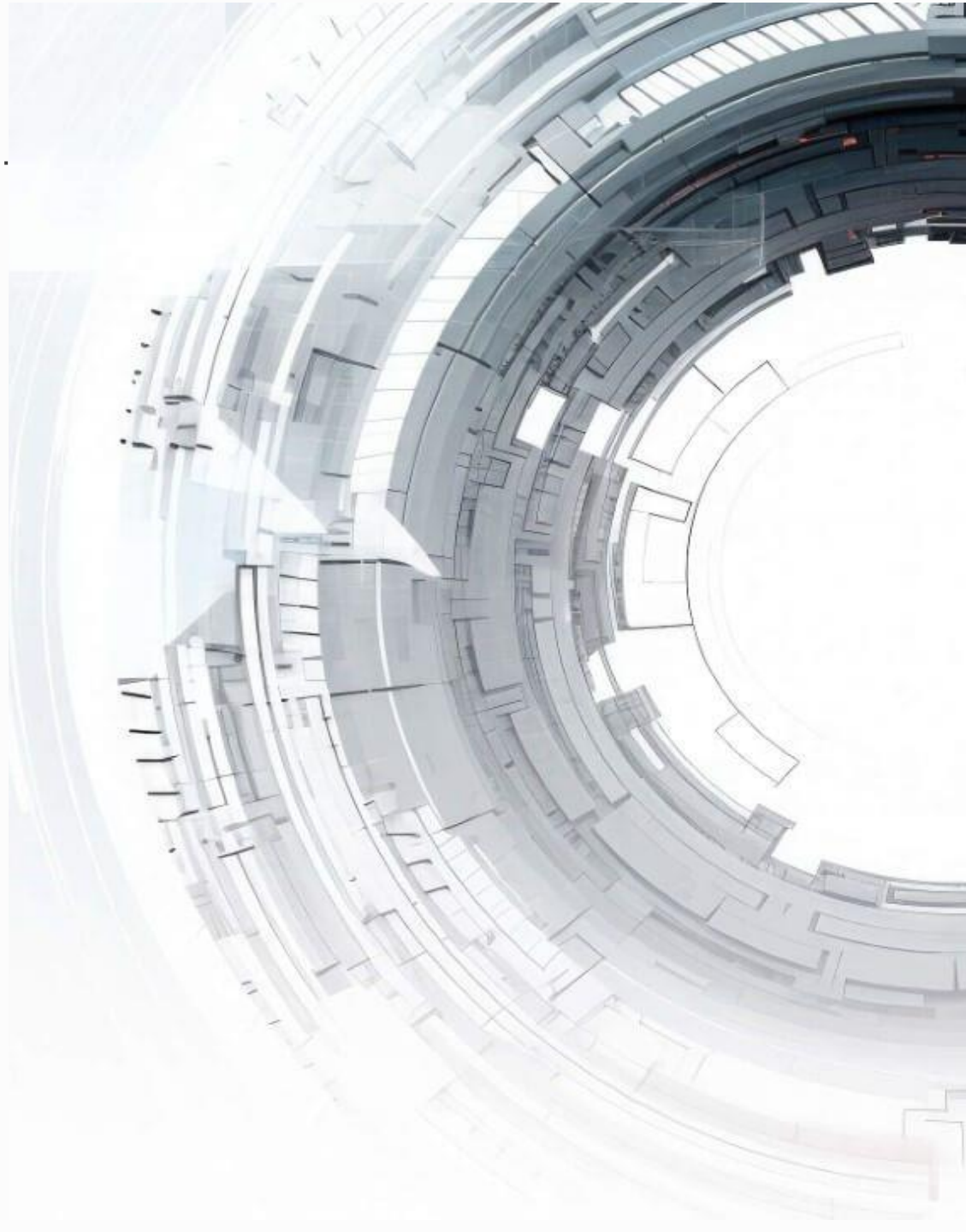
Initiative

Promote application of digital construction technology for airport construction lifecycle gradually establishing industry standards to ensure compatibility and interoperability among different technologies and systems

Encourage State Governments, industries, and research institutions worldwide to prioritize investment in digital construction technology. Initiate multinational collaborative projects to drive technological innovation and foster knowledge sharing.

Encourage industries and research institutions from all countries to participate in international conferences and exhibitions to showcase technological innovations in airport construction and share experiences for further advancements.



Thank you

2024.07

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