



# **Empowering the Construction of Smart Airports, Reshaping the Future of Aviation Development**

29<sup>th</sup> June 2023



## Today's speaker from BUCG

### **Zhang Fenglin, Beijing Urban Construction Group**

Vice President of BUCG International

General Manager of Airport Sector

Member of Chartered Institute of Building (CIOB)

Member of Royal Institution of Chartered Surveyors (RICS)



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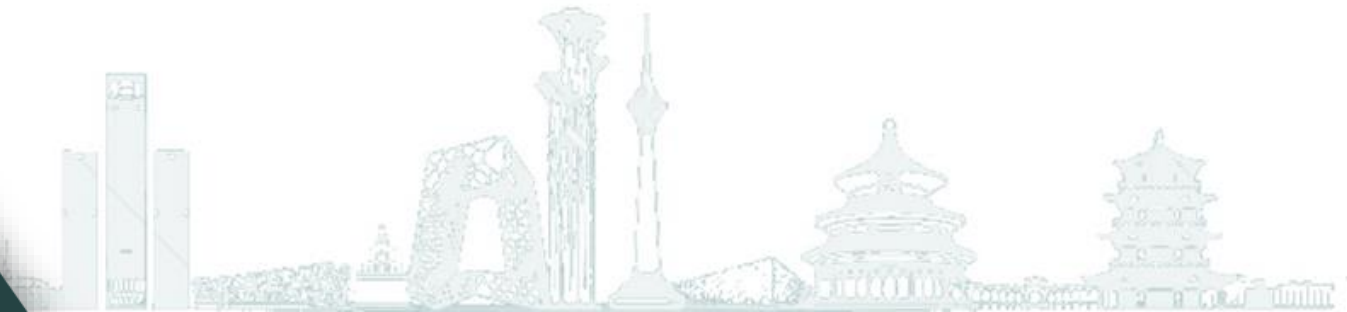
## **1** About BUCG



## **2** Our Advantages



## **3** Our Pursuit of Excellence





Part **1** **About BUCG**



## About BUGG |

- One of the "**Top 500** Enterprises of China"
- Ranked **13th** among Global Contractors by ENR
- Ranked **98th** among International Contractors by ENR
- Has been honored as "China's **Most Influential** Enterprise"
- **25** wholly-owned and majority-owned subsidiaries
- **35,000** employees



Service

Engineering

Design

Real Estate

Landscaping

Investment &  
Financing

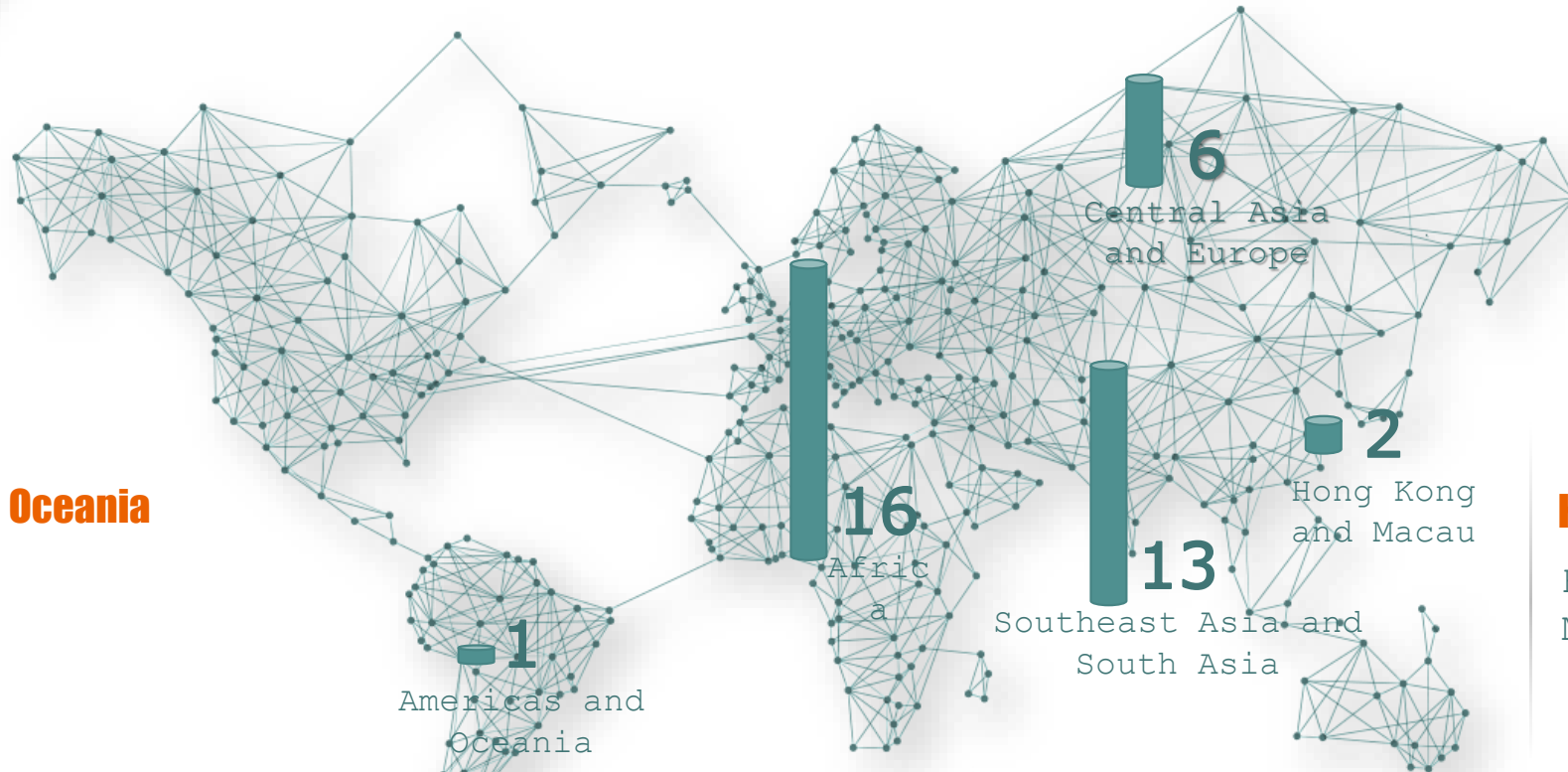
Property  
Management

International

Culture &  
Tourism



# About BUGG |



## Americas and Oceania

Bolivia

## Africa

Mozambique	Niger	Cameroon
Algeria	Democratic Republic of the Congo	Benin
Kenya	Ethiopia	Ghana
Burkina Faso		Sierra Leone
		...

## Central Asia and Europe

Belarus  
Serbia  
Kazakhstan  
...

## Hong Kong and Macau region

Hong Kong  
Macau

## Southeast Asia and South Asia

Indonesia	Cambodia	Timor-Leste
Maldives	Pakistan	Laos
Malaysia	Philippines	Thailand
Bangladesh	Singapore	...

## About BUCG |



**Highways**



**Public Works**



**Flagship product**

**Airports**



**Water Works**



**Rail Transport**

- **Chengdu Tianfu Airport**
- **Phnom Penh New International Airport**
- **Beijing Capital Airport and Daxing Airport**
- **Gwadar New International Airport**
- **Kunming Changshui Airport**
- **Maafaru Airport**
- **Xiamen Gaoqi Airport**
- **Nanchang Changbei Airport**
- **Shahjalal International Airport**
- **Velana International Airport**
- **Xiamen New Airport**
- **Hefei Xinqiao Airport**
- **Hong Kong International Airport**
- **Taiyuan Wusu Airport**

# About BUGG |

## With our Partners



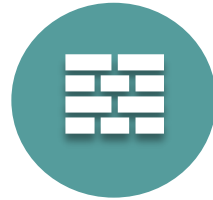
### Strategic Advice

+



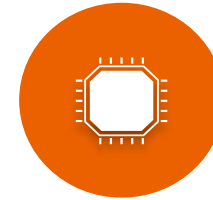
### Design & Engineering

+



### Construction

+



### Equipment Supply & Maintenance

+



### Operation

- Business strategy
- Forecasting
- Masterplanning
- Environmental impact assessment
- Planning advice
- Capacity assessment
- Contracts/PPP
- Commercial strategy
- Procurement strategy
- Simulation and Emulation

- Airport planning
- Architectural design
- Interior design
- Retail planning and design
- Civil engineering
- Building engineering
- Cost management
- Baggage and cargo systems
- Airspace design/ATC
- Surface transport
- Communication systems
- Security systems
- Aviation Fuel systems

- Construction management
- Programme management
- Procurement
- Cost management
- Logistics management
- Supply chain delivery management
- Skills transfer & training
- Health and safety
- Quality management

- Airside navigational aids
- Aircraft maintenance equipment
- Airside lighting
- Airside vehicles
- Runway maintenance vehicles
- Fuel systems
- Fire protection equipment
- Security equipment including body scanners
- Baggage handling systems
- Terminal furniture

- ORAT- operational readiness
- Operational strategy
- Operations management
- Skills and training
- Retail concession management
- IT/Airport systems management



Part  **2** **Our Advantages**



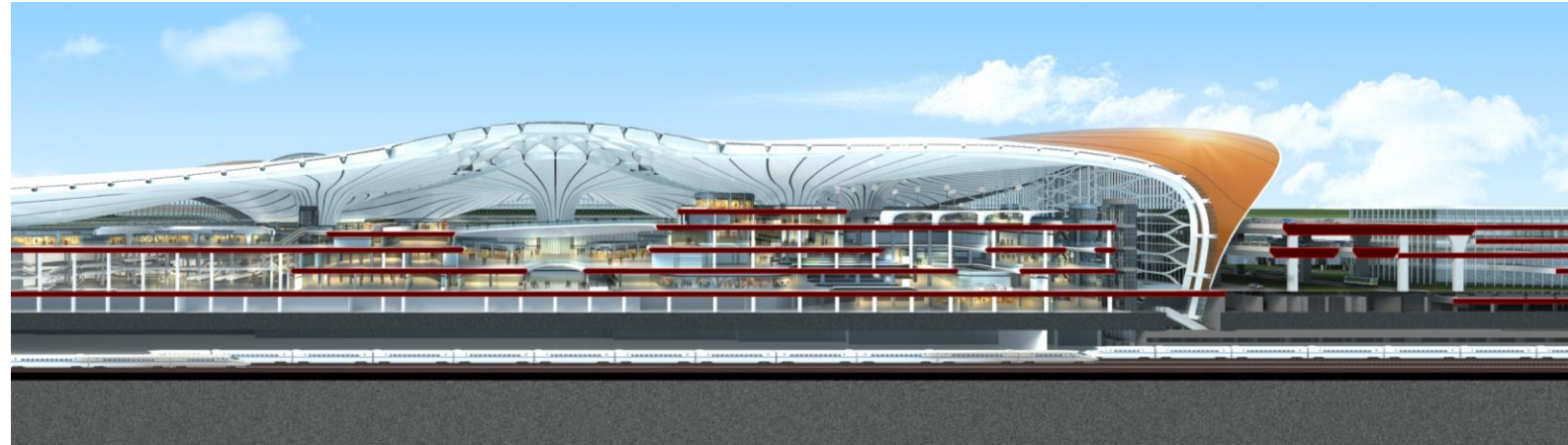
# Our Advantages |

## Beijing Daxing Airport

VEDIO

### High Efficiency

- 3 floors of departures + 2 floors of arrivals
- Innovative designs such as the five-finger corridor radial configuration and the mixed flow of domestic passengers entering and leaving the port make the process efficiency of the terminal building world-class.



### Integrated Transportation Hub

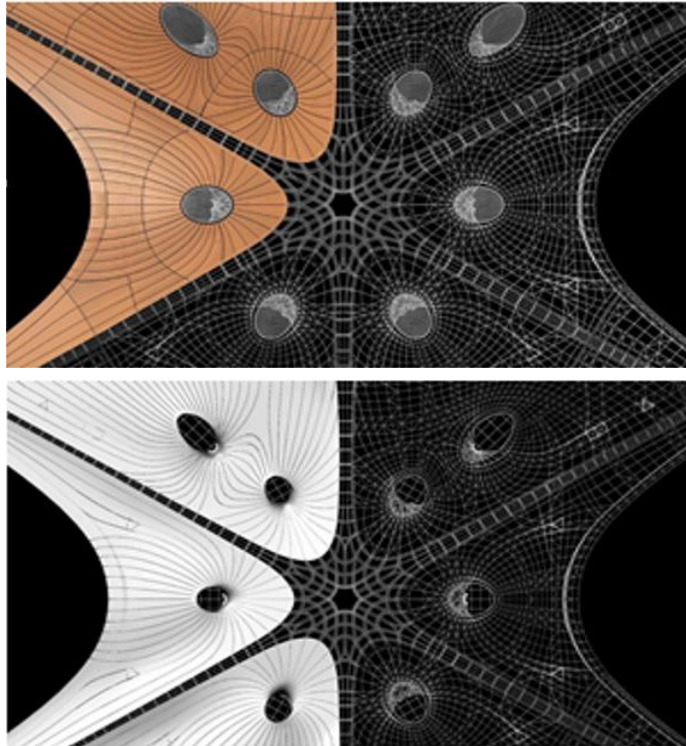
- “Zero-distance transfer” to High-speed rail, subway, fast rail, etc.
- Mixed-flow design saving about 8% of the land space
- Centralized five-finger corridor configuration, passengers can walk no more than 600 meters from the center of the terminal to the farthest boarding gate and the walking time is less than 8 minutes.
- Solar radiation heat of each facade is reduced by more than 70%, and the area of this part of the facade accounts for more than 50% of the entire facade.

# Our Advantages |

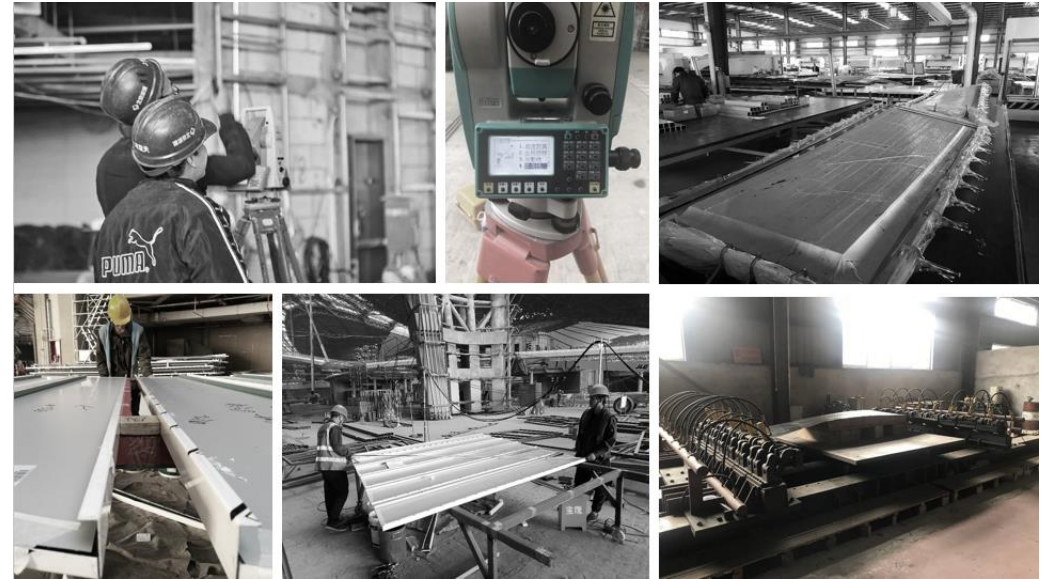
## Beijing Daxing Airport

### Integrated Digital Design & Construction Technology

The terminal building adopts BIM design in its architectural and structural design, achieving the integration of the architectural appearance, structure, and interior design with large-span and irregular free-form surfaces



Precise alignment of roof structure, decorative panels and ceiling panels



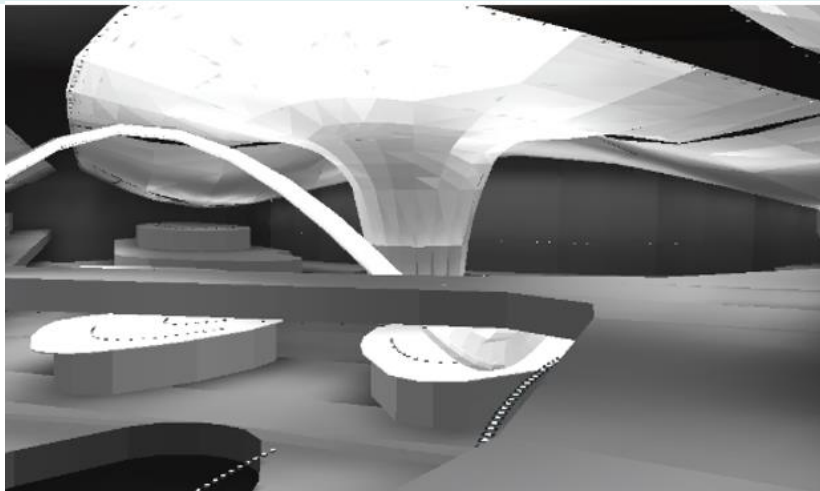
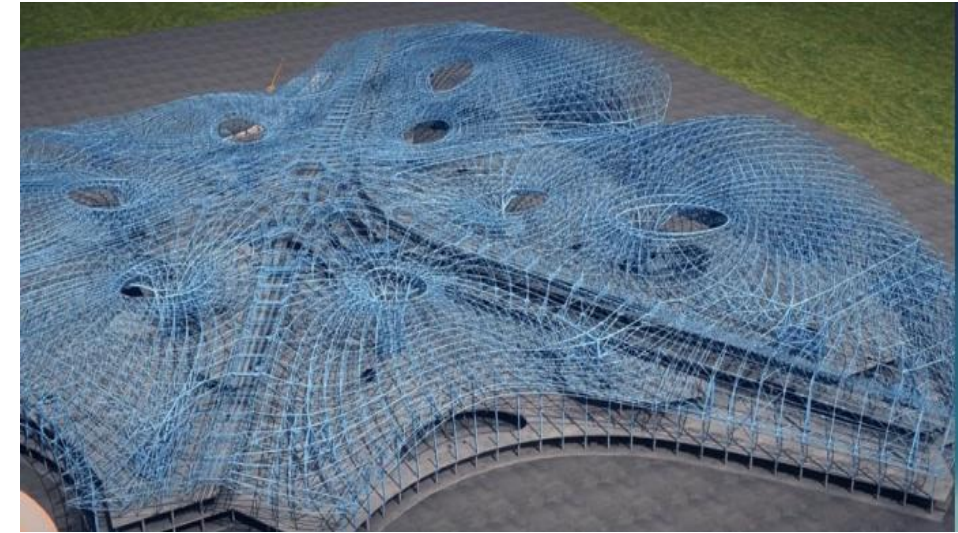
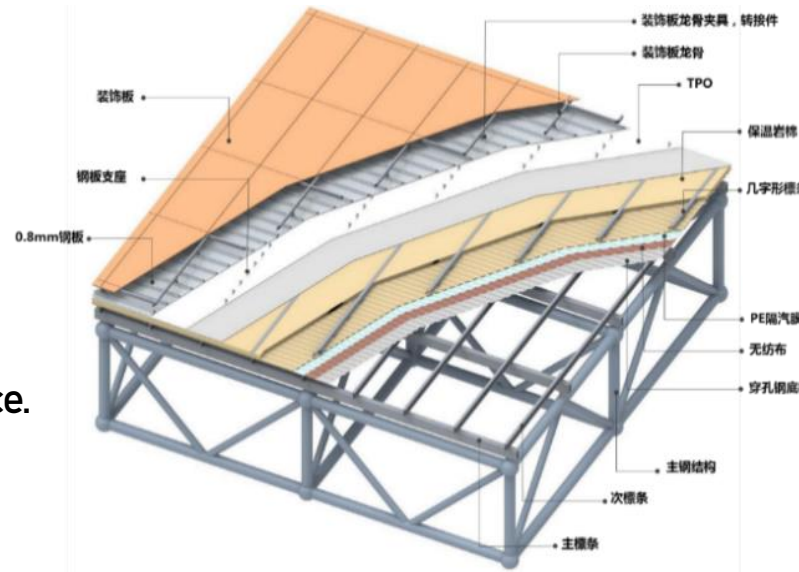
### End-to-end Digital Technology for Processing and Construction

Leveraging industrial advantages, a significant portion of the manufacturing processes is completed in factories. Components are then transported to the construction site with designated labels. Through digital measurements and on-site assembly using positioning tools, the process is efficient and precise.

# Our Advantages | Beijing Daxing Airport

## New Materials and New Technologies

- Dual-metal Roofing System
- Improves energy efficiency, noise reduction, and wind uplift resistance.
- High reliability and durability.



Simulation diagram of reflection effect



Terminal lighting actual situation

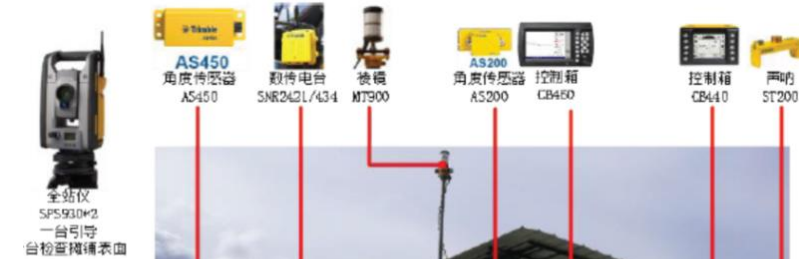
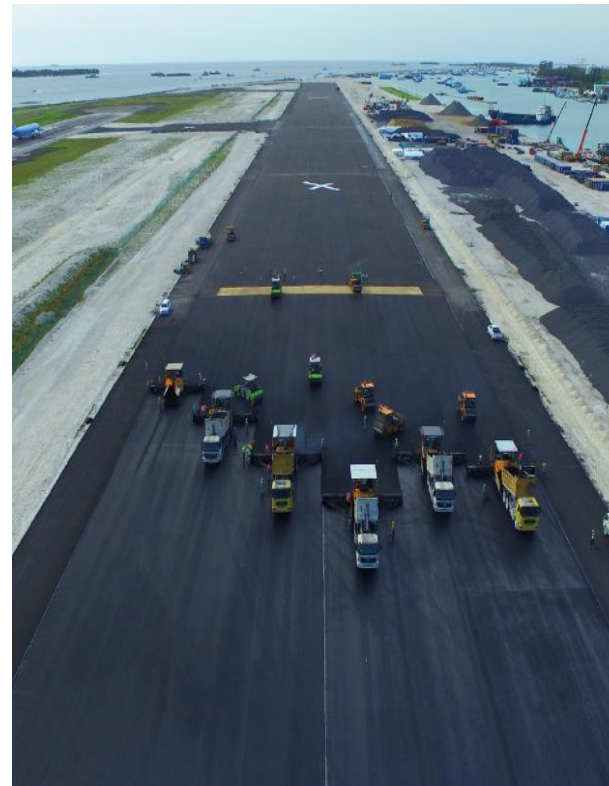
## Digital Simulation Technology

- By establishing a metal sun shading mesh, sky and daylight digital models, parameterized control and intelligent optimization are carried out.
- The direct sunlight blocking rate is 59%, and the daylight factor reduction rate is 37%.

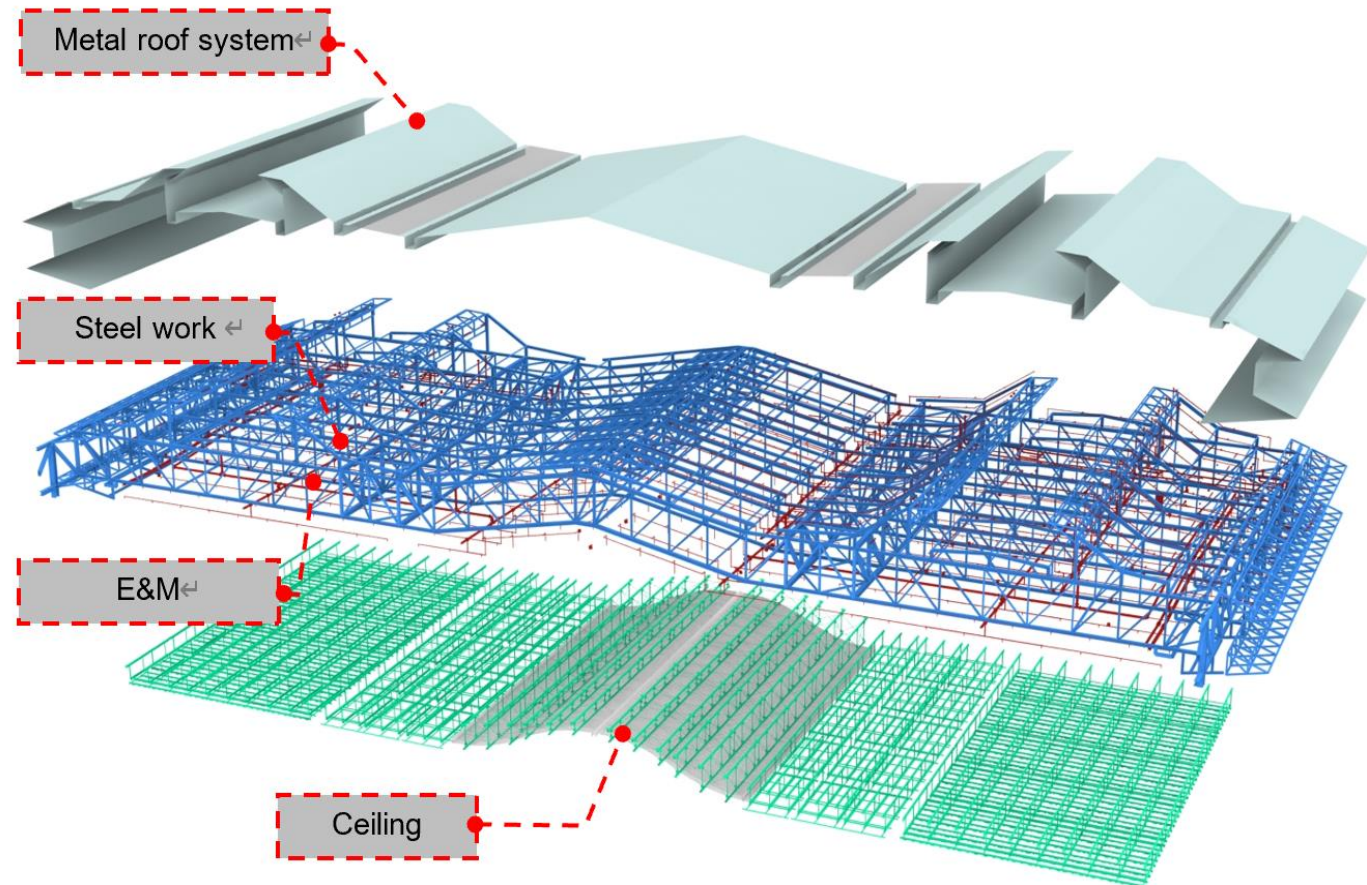
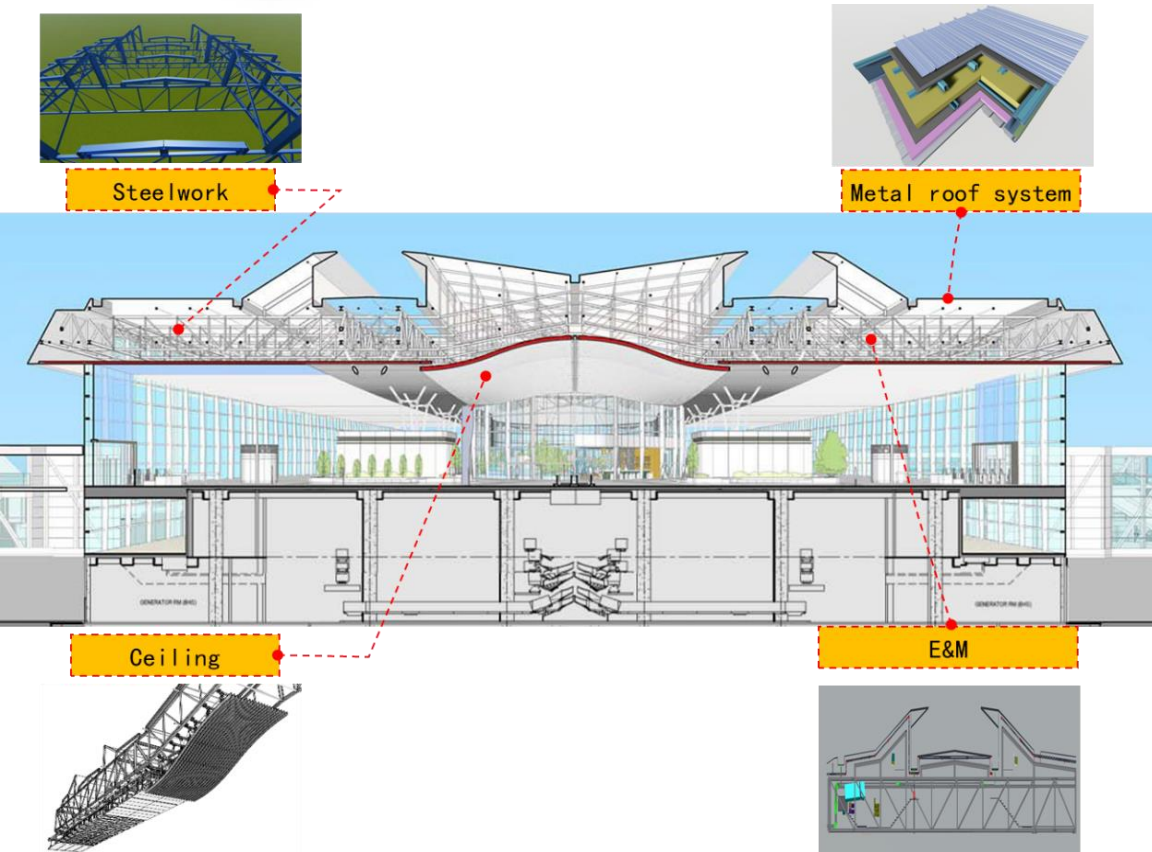
# Our Advantages | Maldives Velana International Airport

## Digital Construction of the 4F Runway (Trimble Connect Platform)

- Improve quality and reduce construction time.
- Ensuring the accuracy and consistency of construction.
- Reducing errors and lowering costs.
- Real-time data analysis ensures safety.
- Reducing emissions and protect the environment.

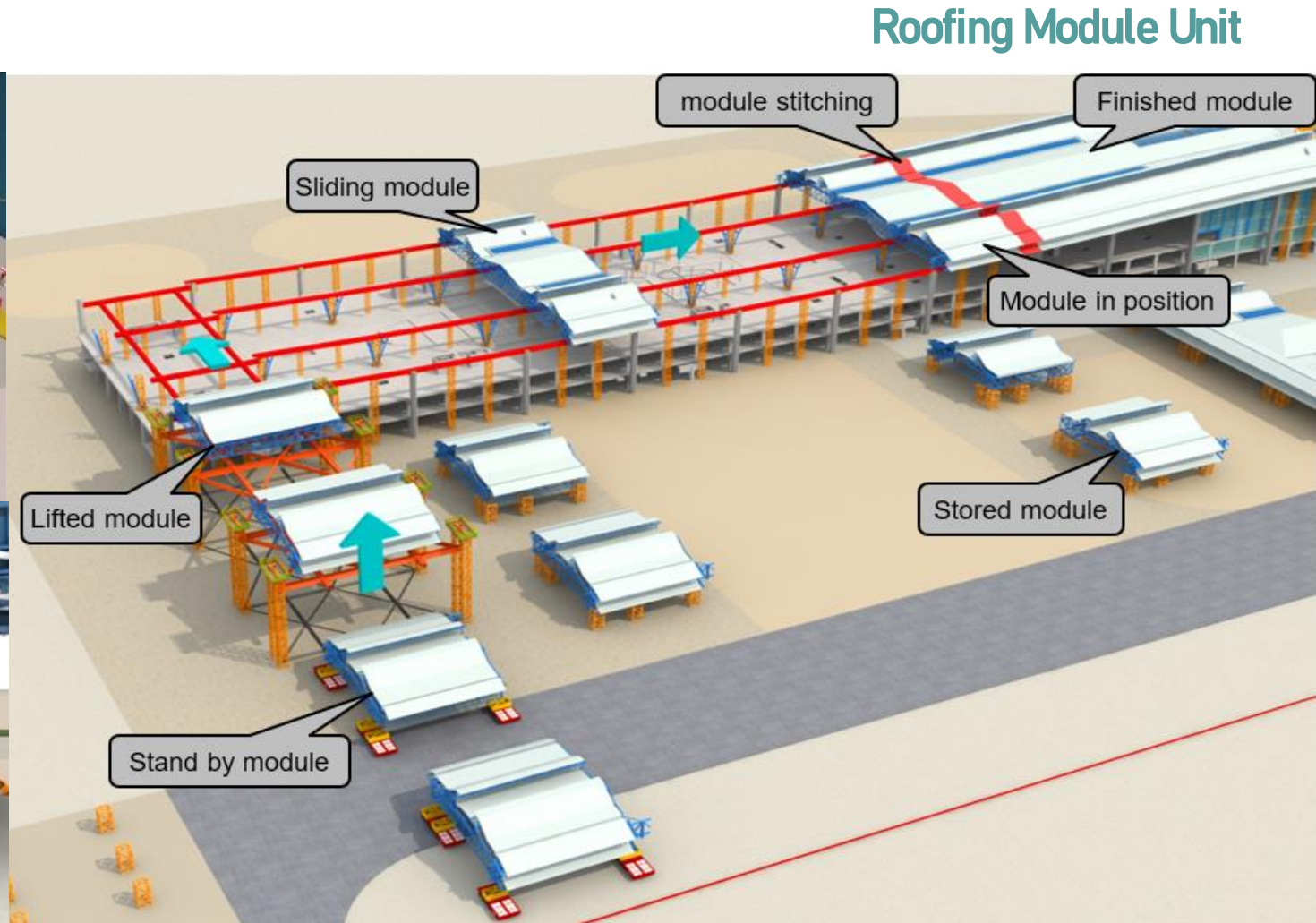
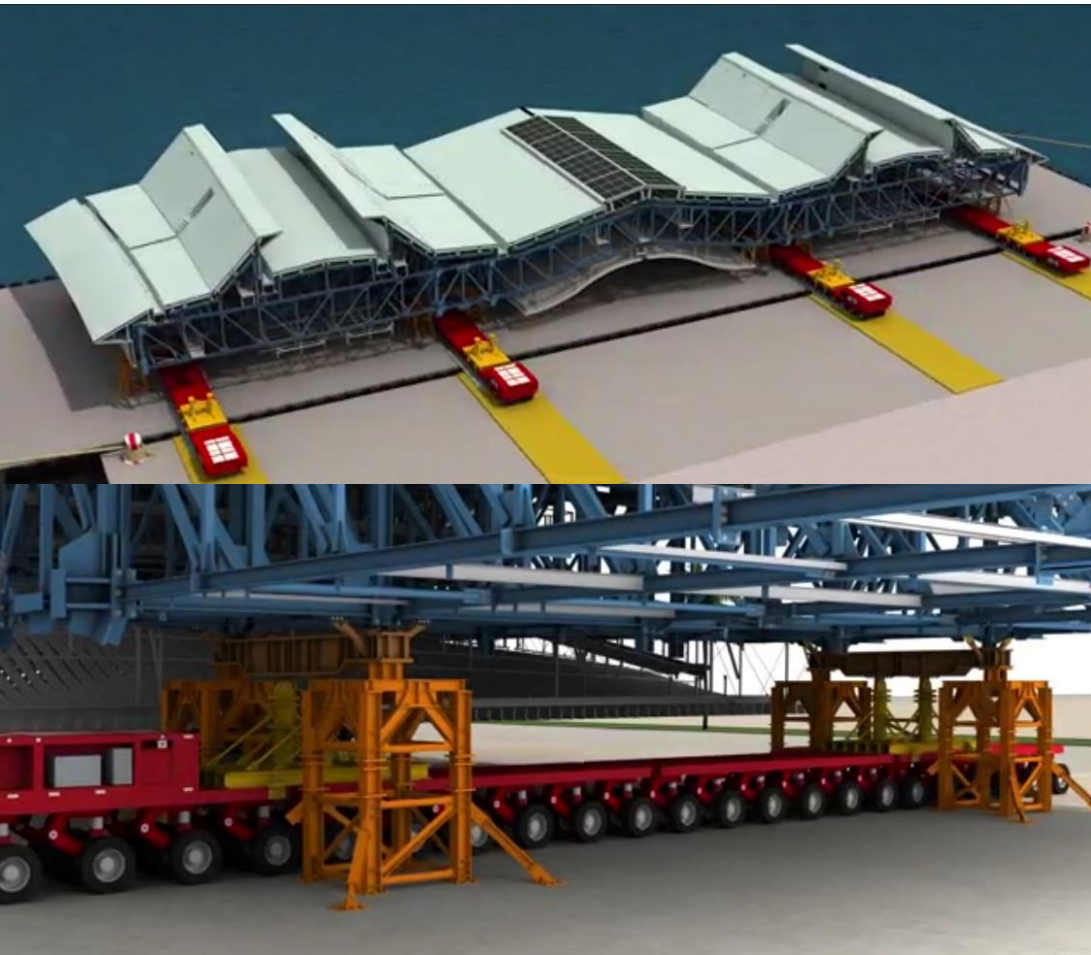


# Our Advantages | Hongkong Airport



- From top to bottom: Roofing system - Steel structure - Mechanical and electrical - Roof ceiling.
- The largest module unit has a width of **36** meters, a span of **96** meters, and weighs **1300** tons.

# Our Advantages | Hongkong Airport



## Roofing Module Unit

Assembly → Water transport → Land transport → Lifting → Sliding → Installation.

Dongguan Port

Barge

SPMT

Lift Frame

Crawler

Reserved position

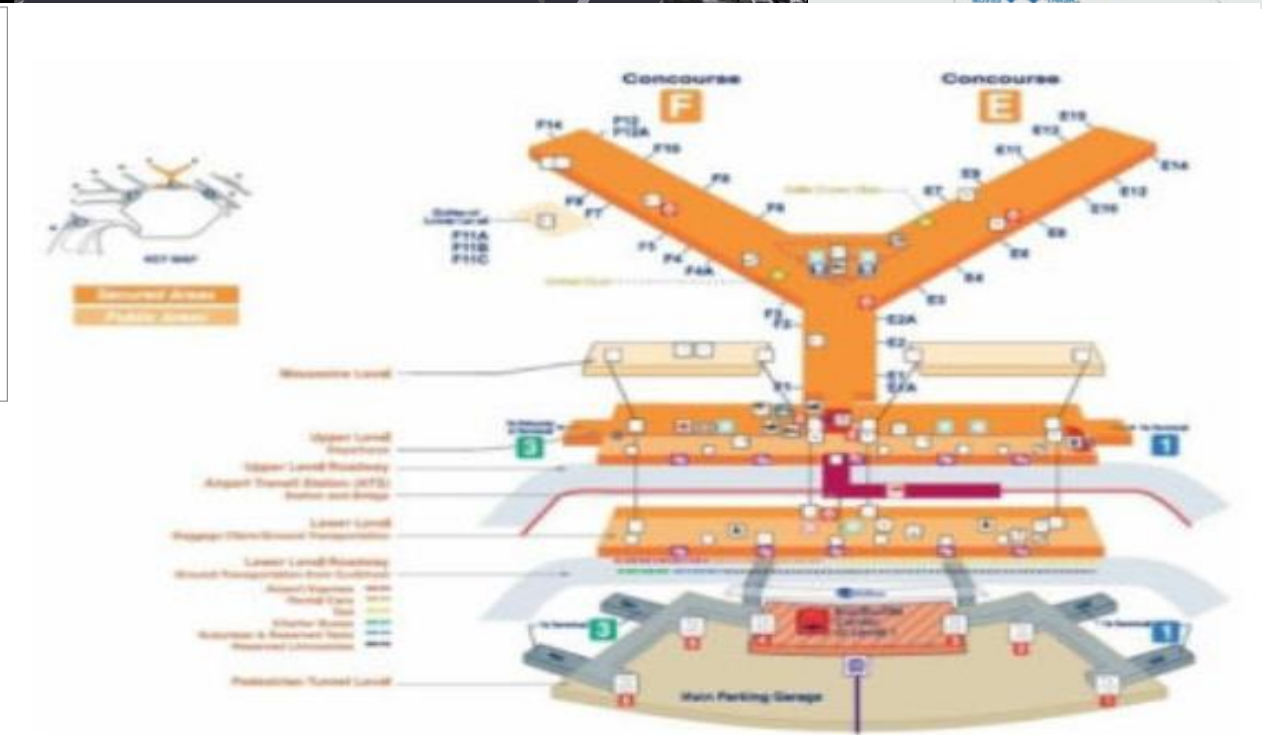
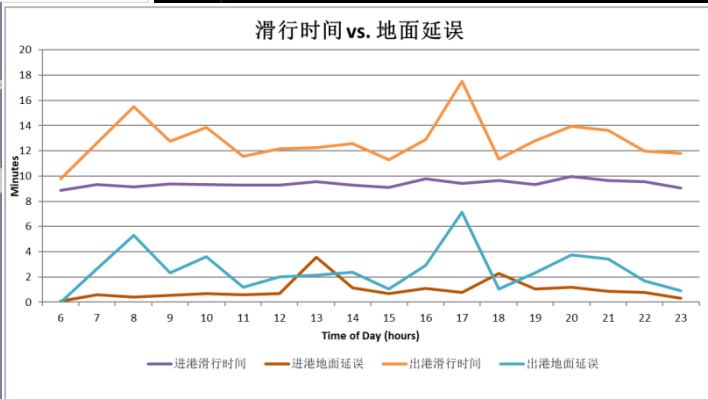
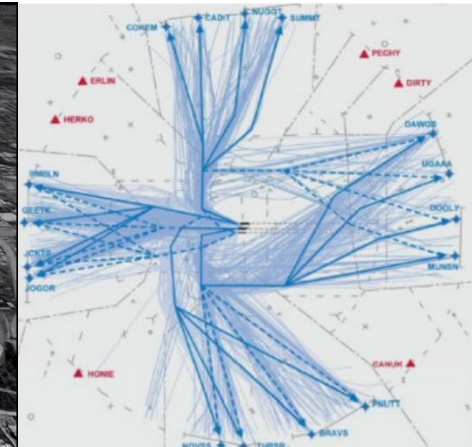
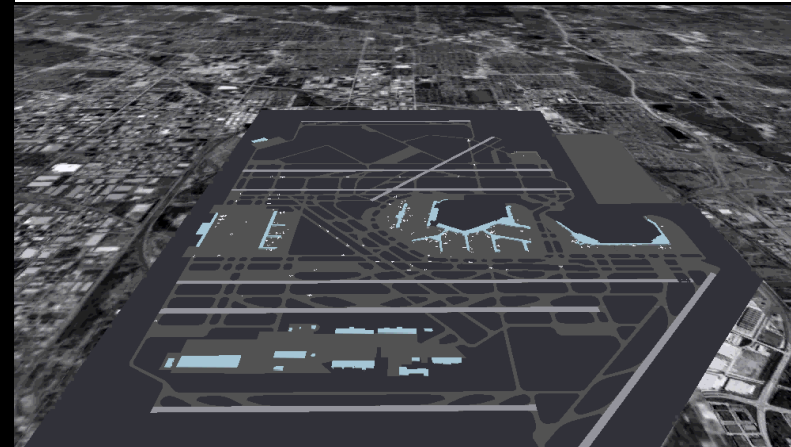
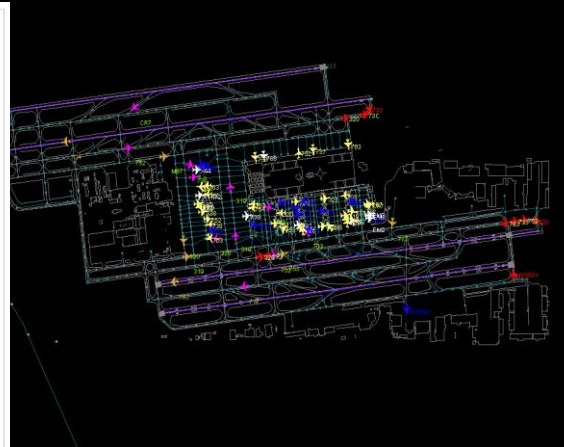
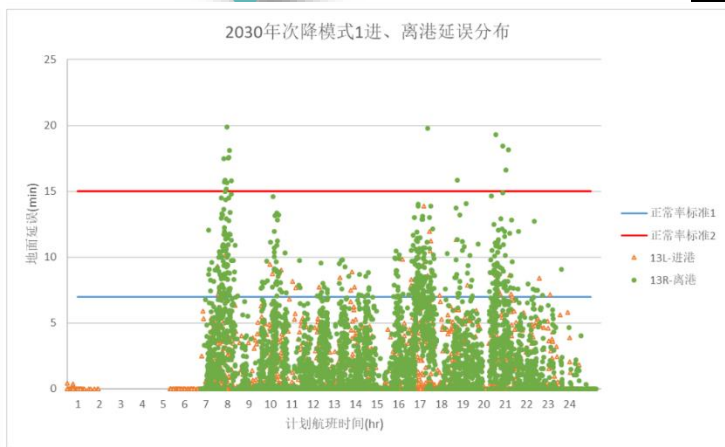




Part **3** **Our Pursuit of  
Excellence**

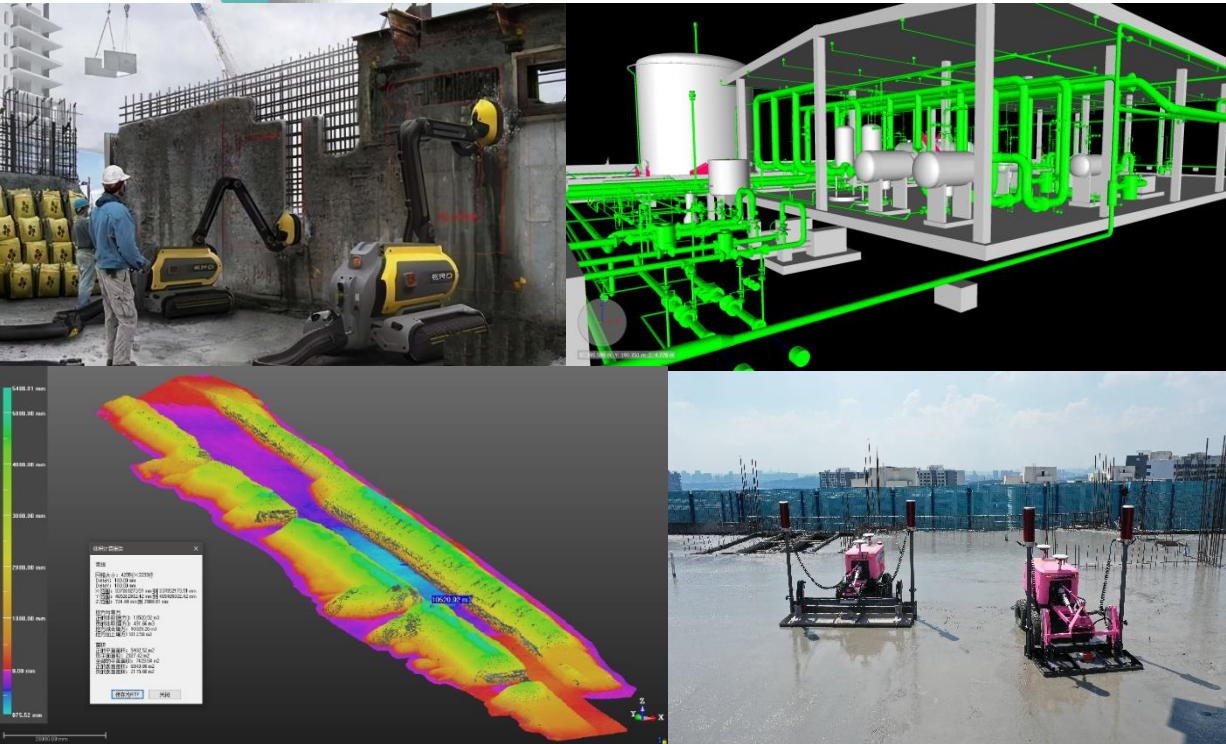


# Our Pursuit of Excellence | Simulation Technology

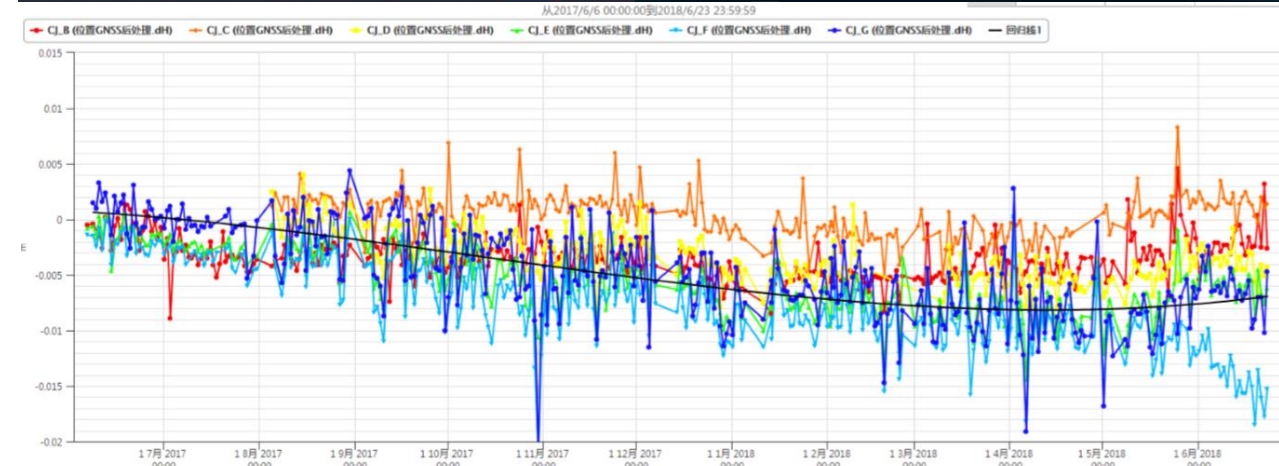


- Terminal route simulation.
- Aerodrome operation simulation.
- Terminal operation simulation.
- Land-side traffic simulation.

# Our Pursuit of Excellence | Smart Construction Technology



- Data management and analysis
- Building Information Modeling
- Internet of Things (IoT) technology
- Intelligent sensing technology
- 5G network technology
- Automation and robotics technology
- VR and AR technology
- Data security management



- Improved decision-making efficiency and accuracy.
- Enhanced construction quality and efficiency.
- Reduced accidents and optimized resource utilization.
- Minimized human errors and influences.
- Enhanced skills and competency levels of construction personnel.
- Emphasis on data security.

# Our Pursuit of Excellence | Sustainable Development

Adhering to sustainable development is an important initiative for Beijing Urban Construction to fulfill its social responsibility. In the field of airport construction, we not only uphold the concept of sustainable development together with our partners but also provide comprehensive sustainable development planning and construction services. Furthermore, we promote the establishment of extensive cooperation mechanisms with stakeholders regarding sustainable development.



Climate Change



Waste Management



Air Quality



Noise



Water



Biodiversity

- Airport sustainable development planning and design
- Green materials procurement
- Sustainable construction
- Sustainable operation
- Energy management
- Waste management
- Water resources management
- Ecological environmental protection





We are looking forward to building  
a better community with you.

