SuperMap

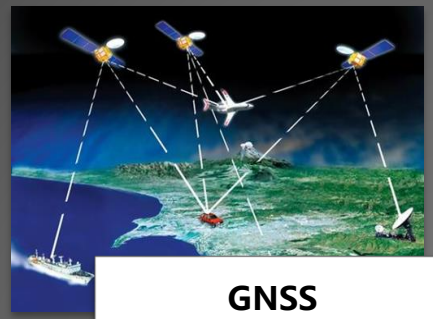
New Generation of 3D GIS in Smart Cities

Xiaoyu Zhang

Air
Weather
Climate
Building
Bridge
Park
Boat
Road
River

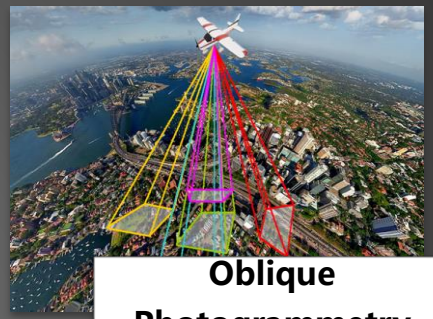
New technology Empower Smart City Construction

UAV



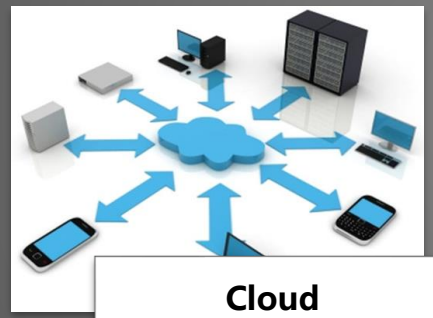
GNSS

BIM



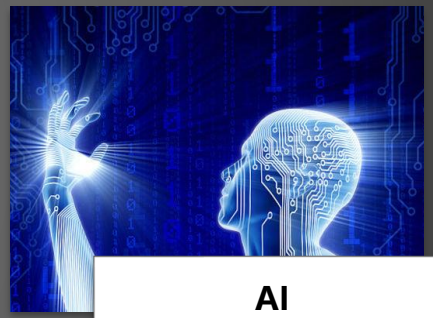
Oblique Photogrammetry

IoT

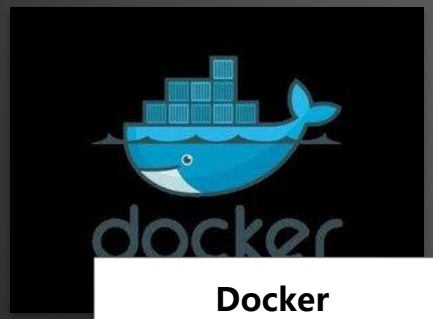


Cloud

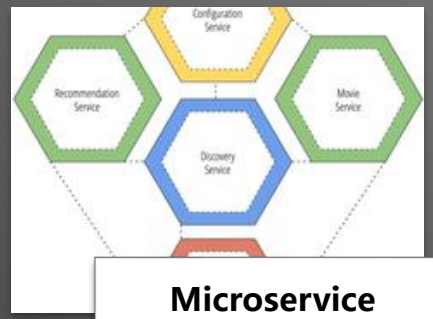
Big Data



AI



Docker



Microservice

Blockchain

Database

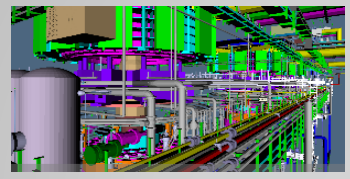
New Generation of 3D GIS

Applications of New Generation of 3D GIS

New Technologies of 3D Interactive and Output

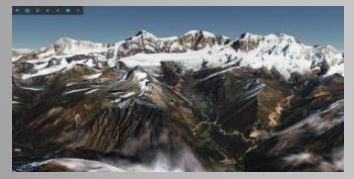
WebGL | VR/AR | 3D

Oblique Photogrammetry

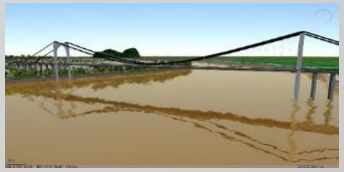

BIM

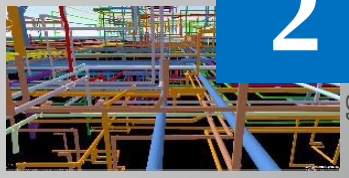
Point Cloud

3D Field


3D Terrain Data

Manual Model


Symbolic 3D Scene


3D Data of Underground Pipelines

Multi-source 3D data fusion technology

2D&3D Integration

Data Models Integration | Symbolic 3D Scene | Analysis | Soft... ities

3

IT Technology Experience

2

Multi-source Data

1

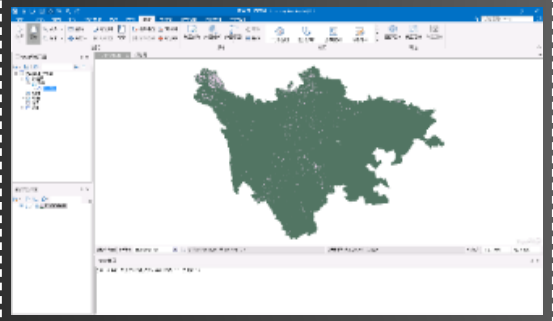
Data Models

Big Data Analysis and Cloud Storage

Cloud Storage

Unified Standard Spatial Big Data management engine

PostgreSQL



Vector Big Data Storage

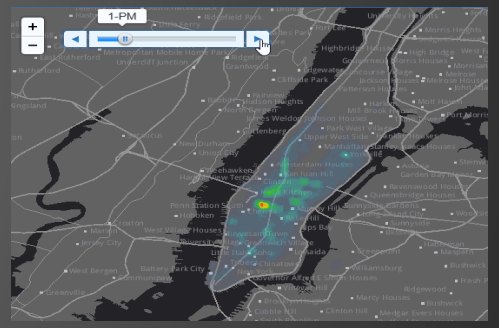
mongoDB

2D Cache Big Data Storage

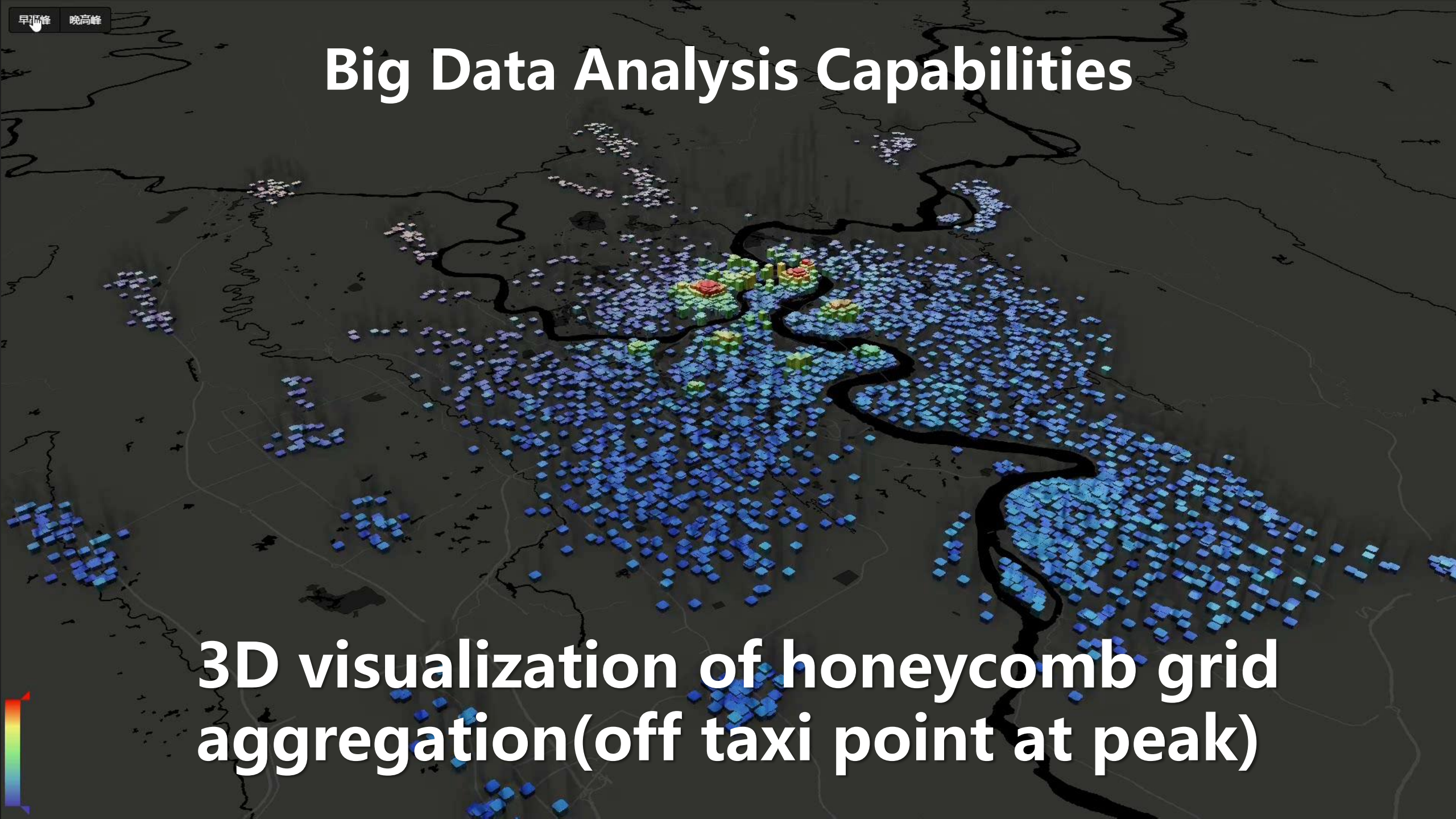
elasticsearch

Stream Data Storage

hadoop HDFS



Unstructured big data storage


早高峰
晚高峰
Big Data Analysis Capabilities
3D visualization of honeycomb grid aggregation(off taxi point at peak)

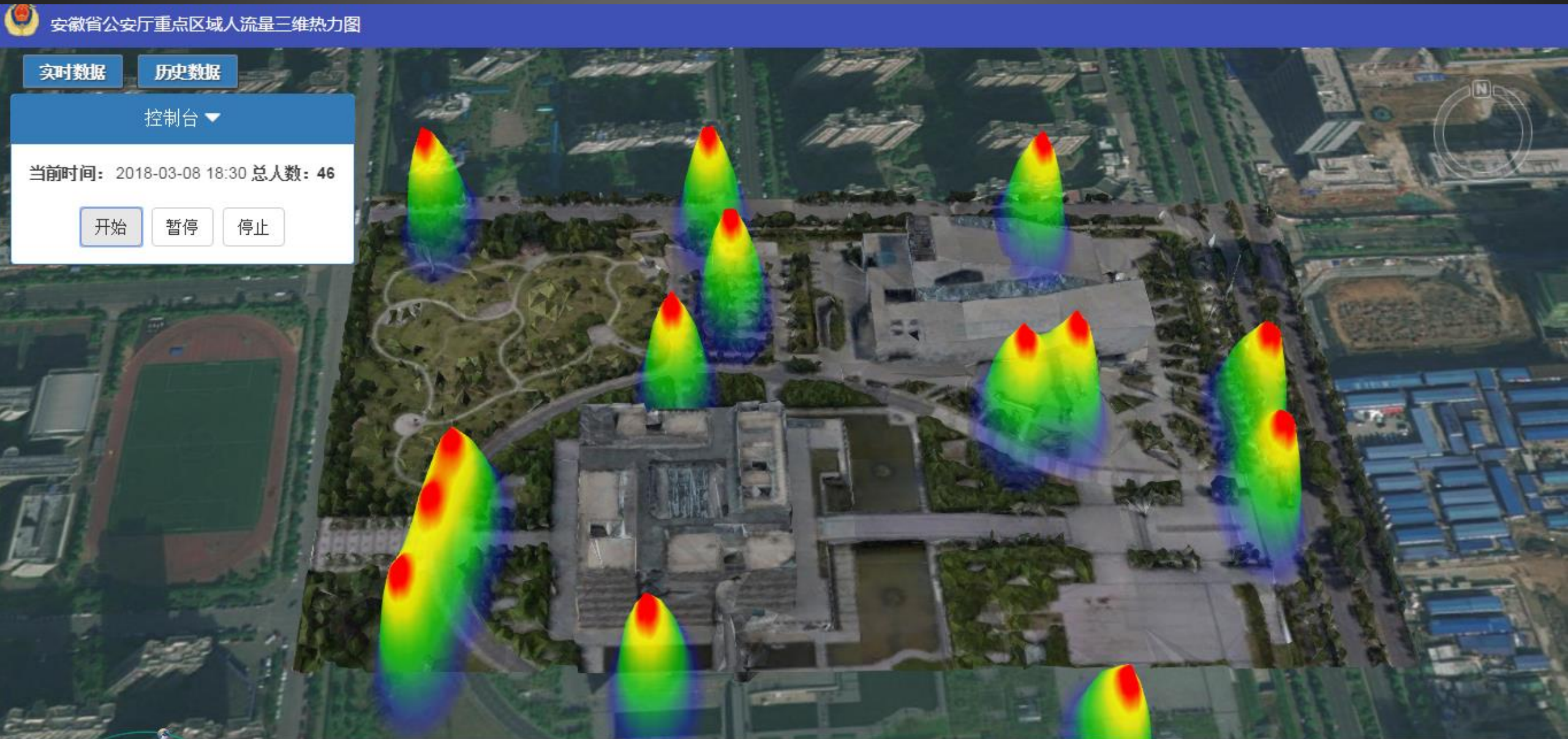
1.查询数据 2.显示数据 查询数据会弹出两个alert，第二个较慢，点击显示数据后，才会出现地图

Big Data Analysis Capabilities

Dynamic Trajectory: Taxi in Chongqing

Big Data Analysis of Population

Heat Map of Population flow



2D & 3D Integration System

Smart City: Support Multi-source 3D Data

Road + BIM

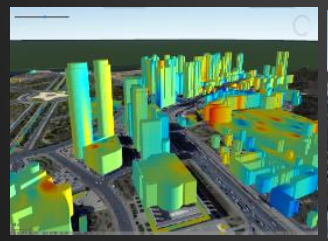
Terrain + BIM

3D Model

Video + BIM

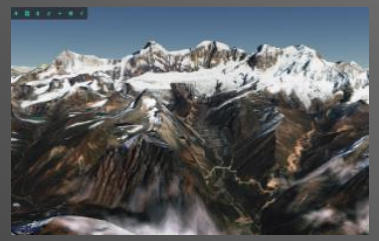
Street View

Spatial 3D Model (S3M)



Field Data

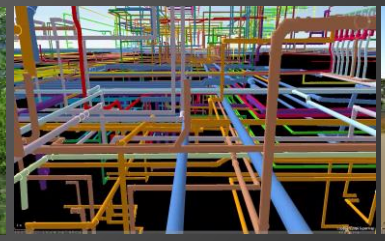
Oblique photogrammetry



Terrain

BIM

Point Cloud

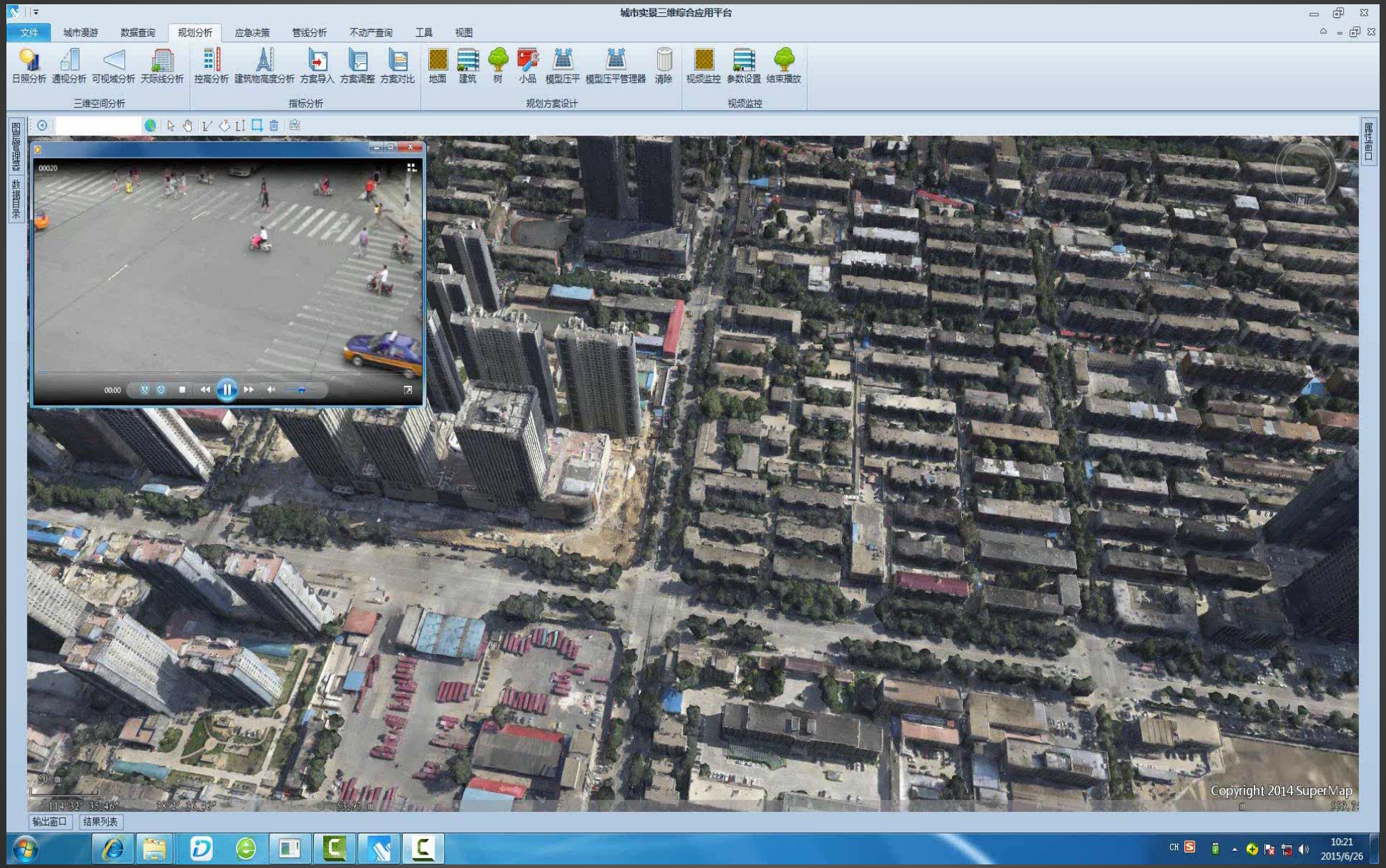


Pipeline

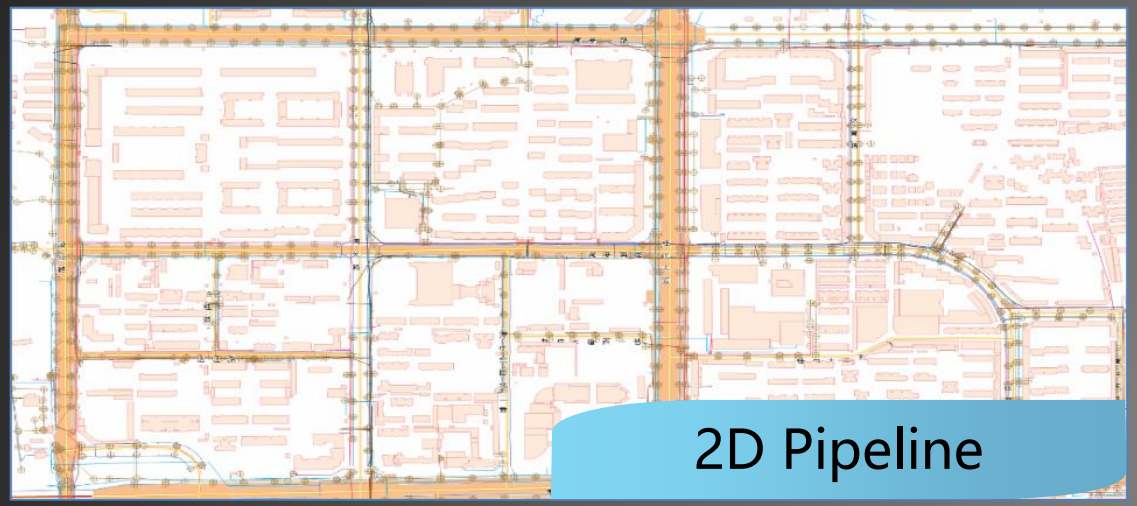
Water Surface

Connect Real-time Data from Cameras and Sensors

Connect Real-time Data from the Camera (Video)



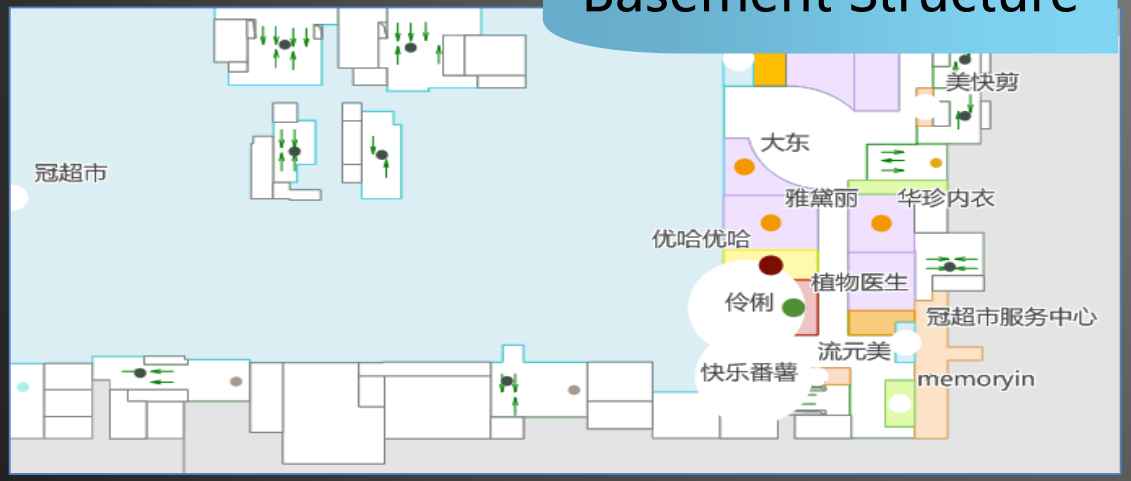
Above Ground and Underground Integration Display



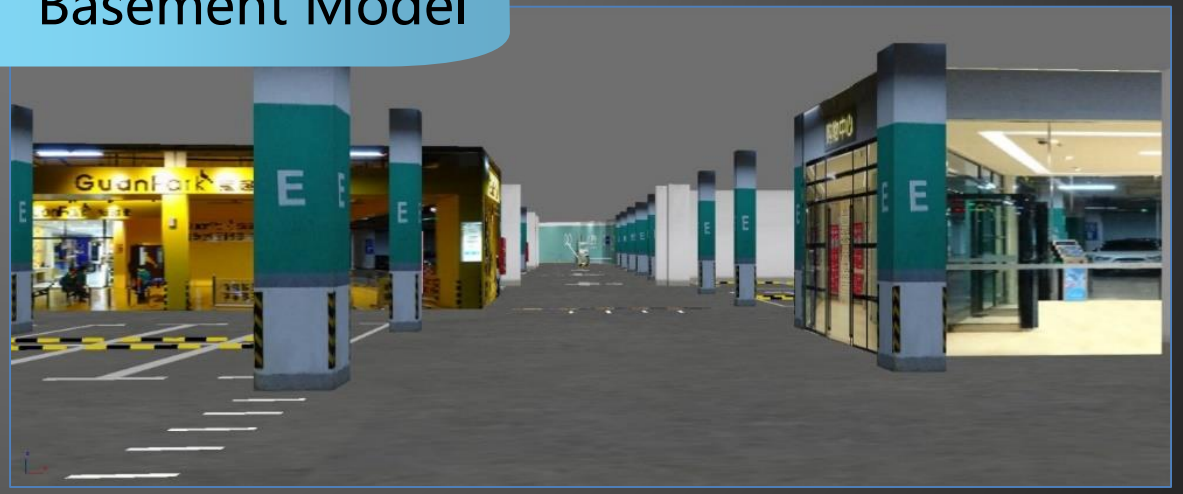
2D Pipeline

3D Pipeline

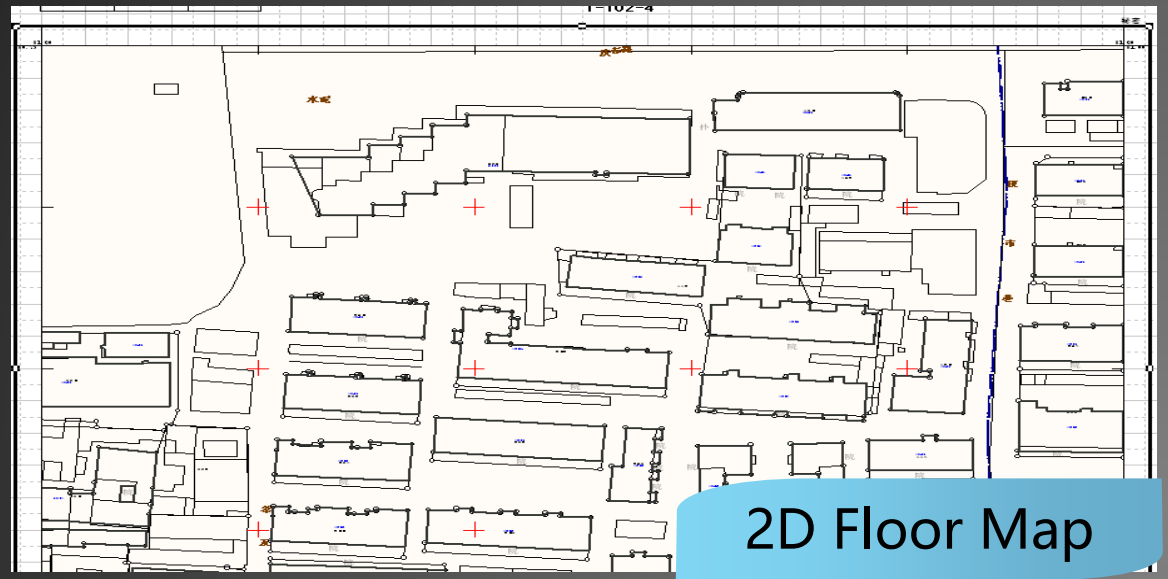
Basement Structure



Basement Model

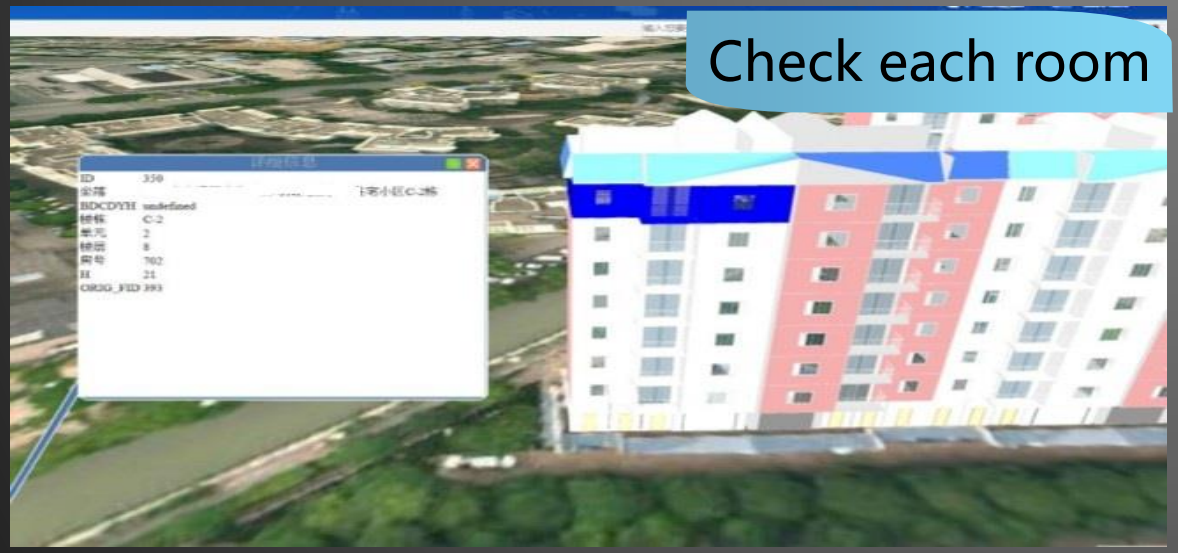


2D & 3D Integration Display



2D Floor Map

Information Query



Check each room

3D thematic map

Urban Planning and Urban Design

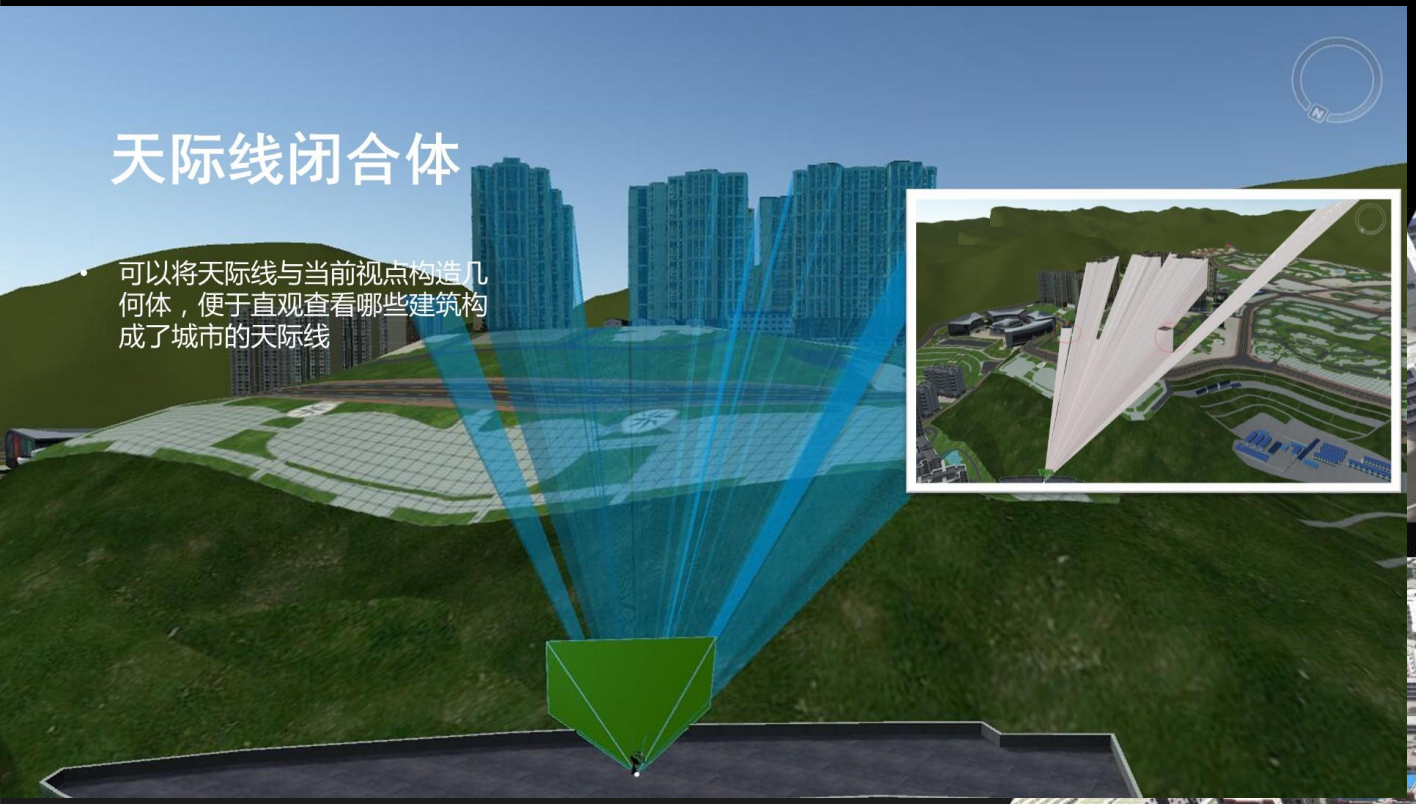
City Map

Planning model

BIM Model

3D Map of Urban Planning and Design

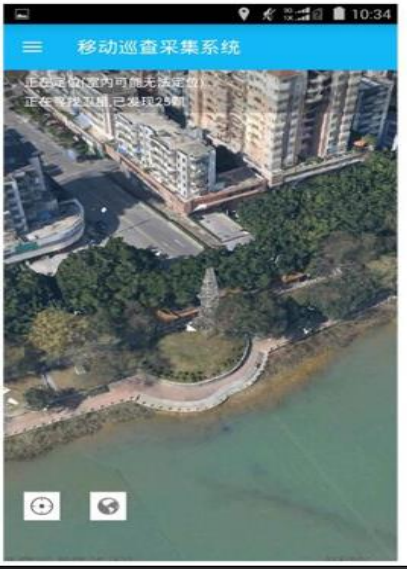
3D Analysis Capability



Dashboard System

从化区警用二三维地理信息综合平台
Police Two And Three-dimensional Geographic Information Integrated Platform
首页 | 2017-08-15 11:27:19 | 您好！system 退出
名称：上门订做维修床垫沙发
地址：街口街新城东路五巷

从化区警用二三维地理信息综合平台
Police Two And Three-dimensional Geographic Information Integrated Platform
首页 | 2017-06-07 17:27:28 | 您好！system 退出
实时监控
空间查询
警情定位


10:34
移动巡查采集系统

11:21
人口核查编辑
点此扫描身份证

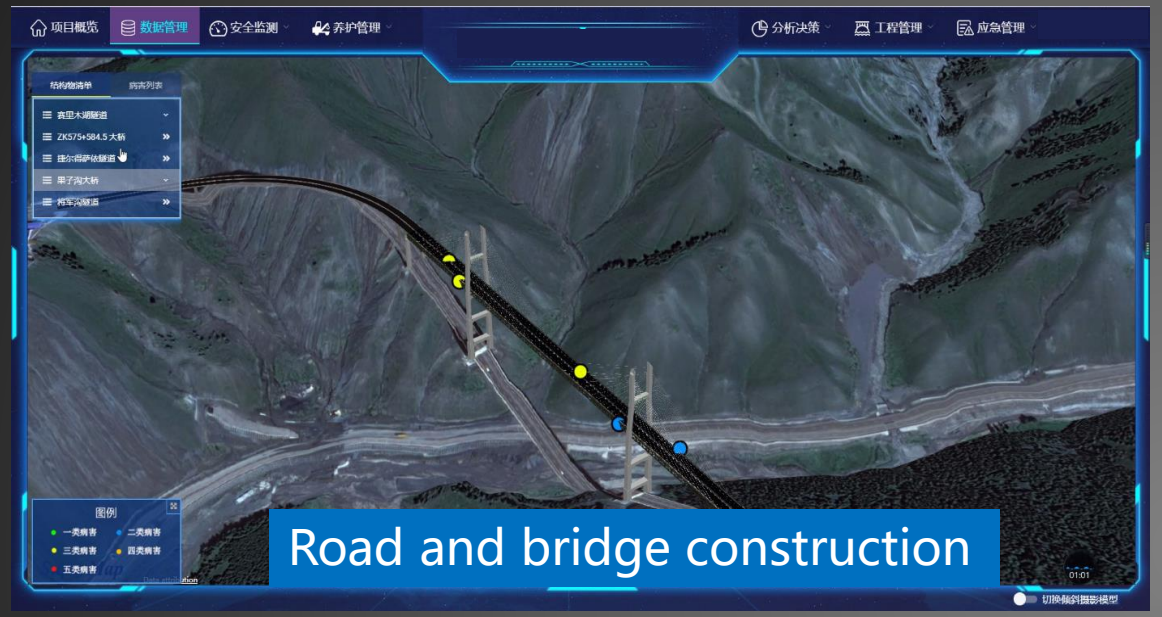
10:35
二代身份证扫描
正在初始化连接
姓名:
性别:
民族:
出生日期:
身份证号:
住址:
签发机关:
有效期限:
数据已保存

从化区警用二三维地理信息综合平台
Police Two And Three-dimensional Geographic Information Integrated Platform
首页 | 2017-08-15 13:54:45 | 您好！system 退出
卡口编号：4401
卡口名称：105国道小海BP加油站路段卡口
车牌号码：粤AT908H
车辆类型：大型汽车
抓拍时间：2017-07-18 17:45:14
车速：65

Dashboard - City Comprehensive Information Statistics

Chongqing Public Information Resource Sharing Platform

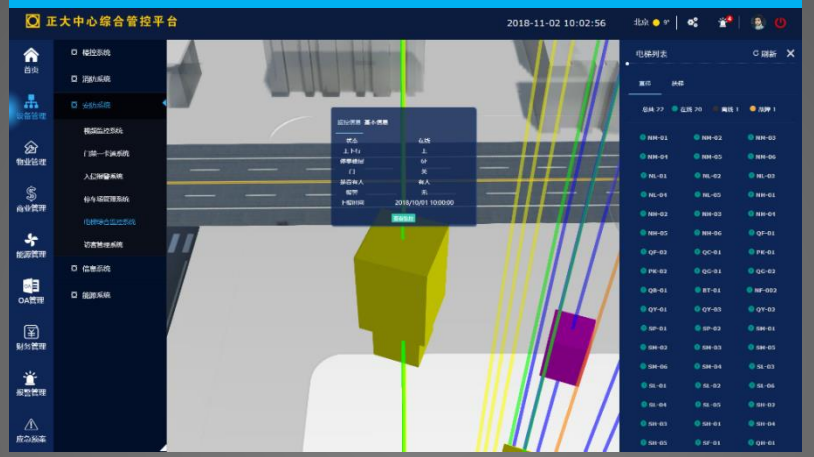
BIM+GIS Service Smart City Management Application



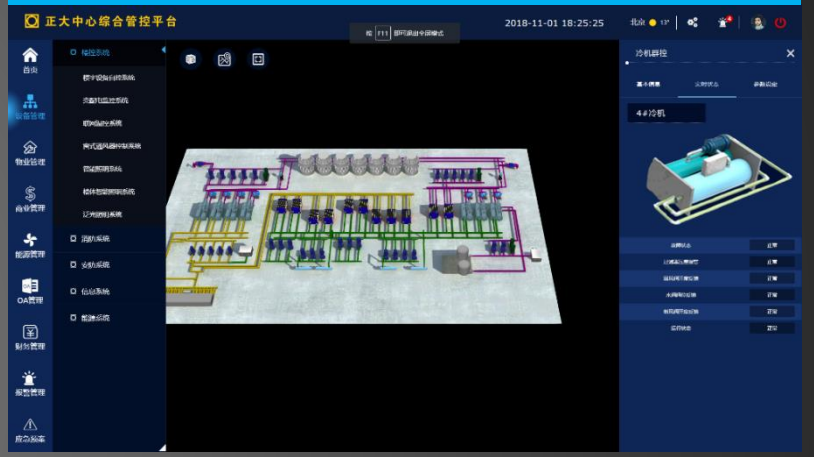
Network Topology Management Based on GIS

Integrated Management of Equipment, Systems and Space

Real-time Monitoring of Operating Status



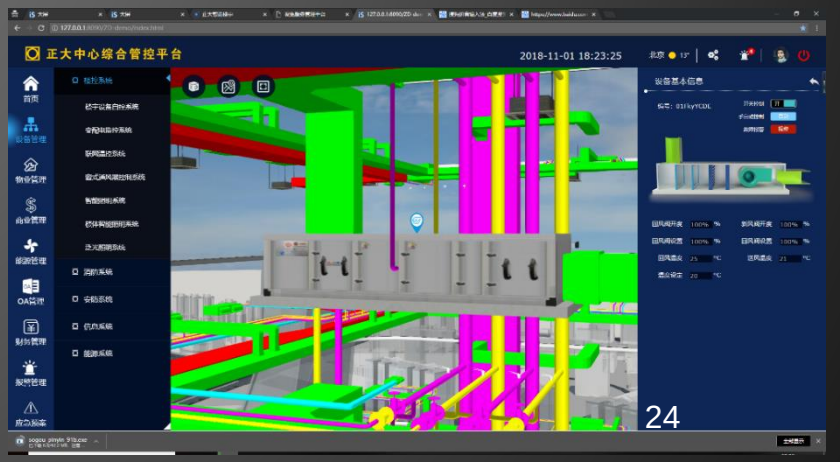
Device Topology Configuration Management



Concealed Equipment Visual Operation and Maintenance

Real-time Environmental Awareness

Fine Management of Equipment Systems



BIM-based Visual Management

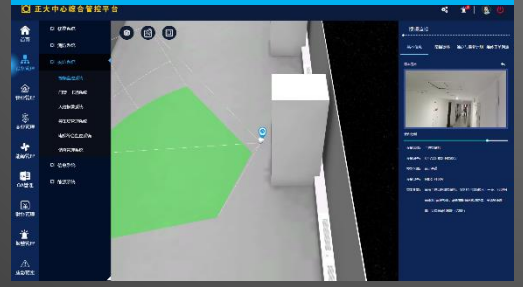
视Video Positioning and Monitoring

Video Linkage

Personnel Positioning

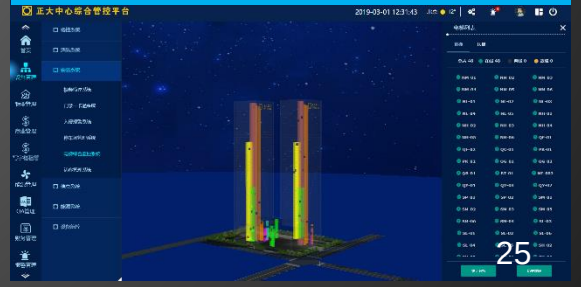
Monitoring of Parking Lot

Monitoring Visual Field



Intrusion Alarm

Elevator Management

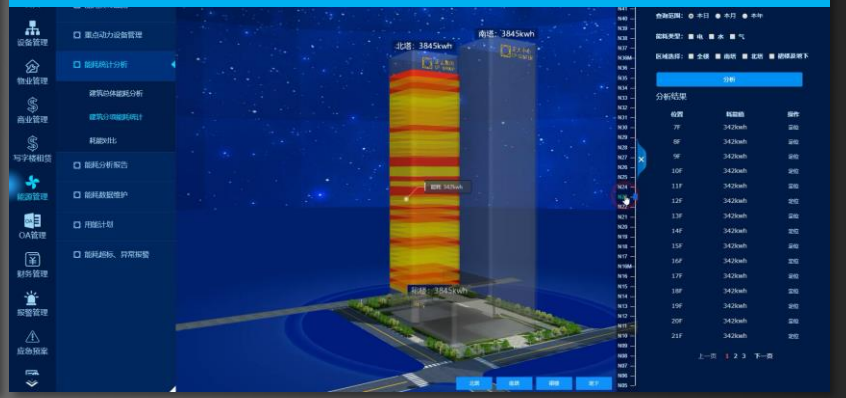


Integrated Business Management

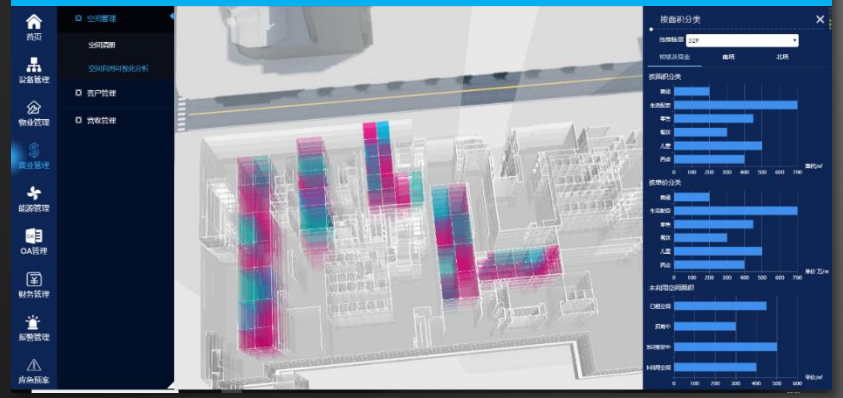
Business and Revenue Management

Real-time Alarm Management

Dynamic Energy Management



Store Analysis



Remote Device Control

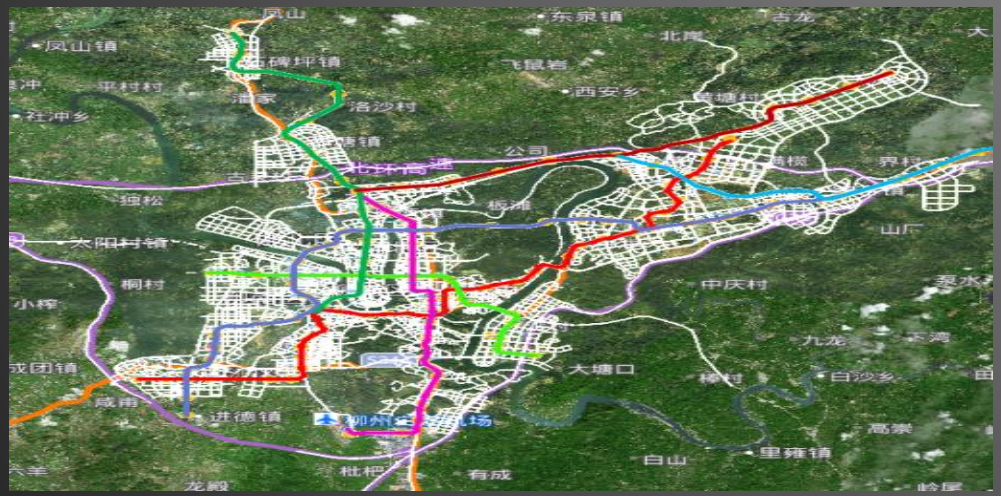
Comprehensive Inspection Management

AI-based Analysis Capabilities

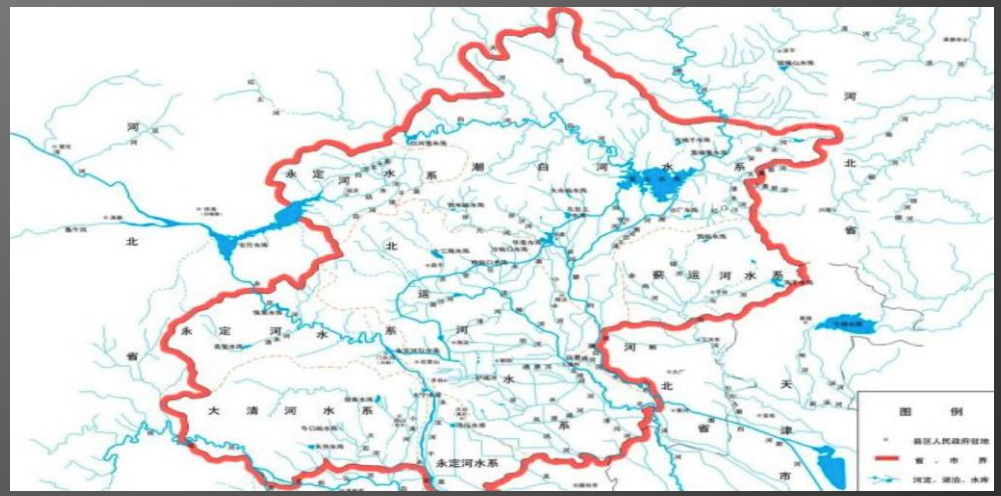
Reflecting Urban Changes Based on Big Data and Artificial Intelligence Technologies

Urban Range Change Trend

Urban Green Space Change Trend



Urban Road Change Trend



Urban Water Change Trend

AI+GIS -- Image Target Detection based on Deep Learning (Pool)

AI+GIS -- Ground Extraction of Oblique Photogrammatry Buildings Based on Deep Learning

Comparative Analysis of Urban Architecture

Mobile Application

Front-end and Back-end Integrated Construction

Front-end

- Law Enforcement, Inspection
- Task Management
- Statistical Analysis
- Track Record

Wi Fi

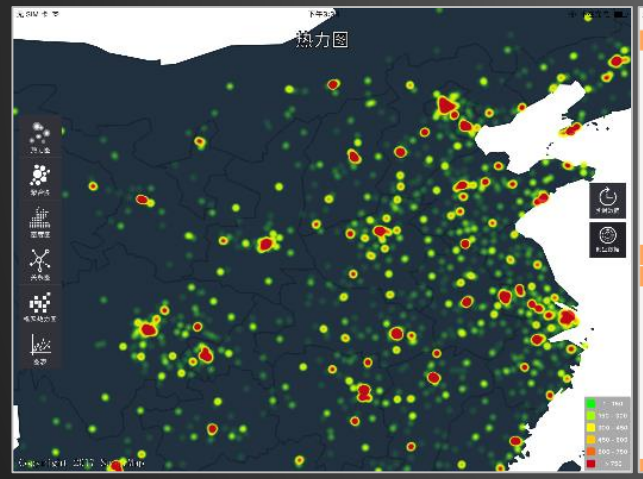
Data and Information Transmission

Back-end

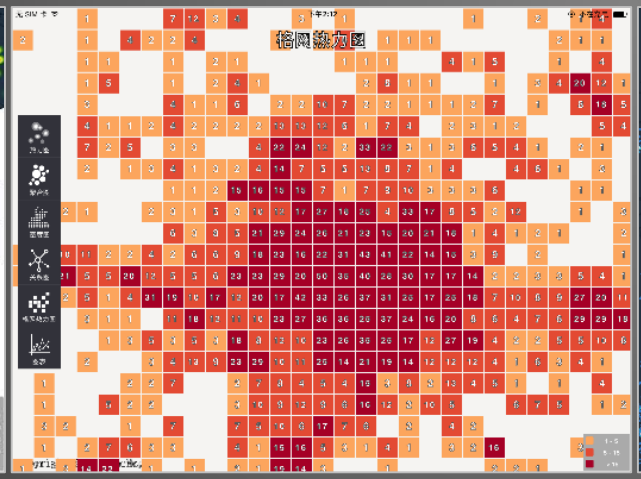
- Business Management
- Scheduling and Command
- Strategic Analysis
- Assessment

Data Insight

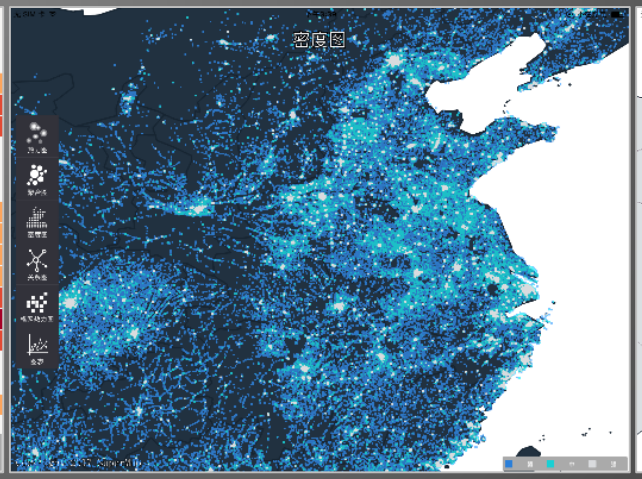
The System Analyzes the Task Data and Conducts Data Mining Through Density Charts, Heat Maps, Relationship Diagrams, Aggregation Diagrams, and Statistical Charts Such As Histograms, Pie Charts, and Line Charts to Achieve Data Insight.



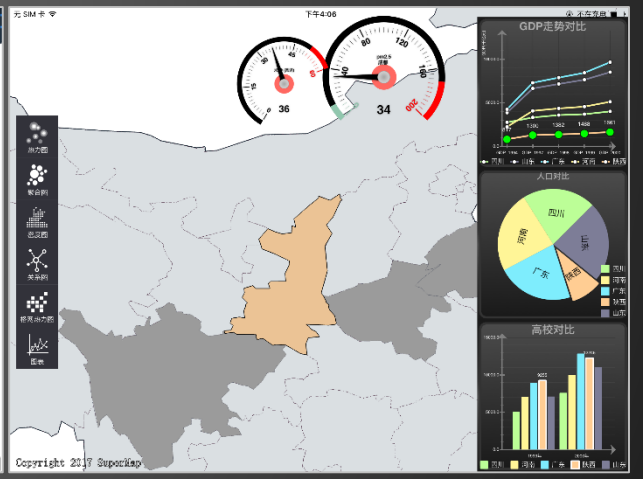
Heat Map



Grid Heat Map



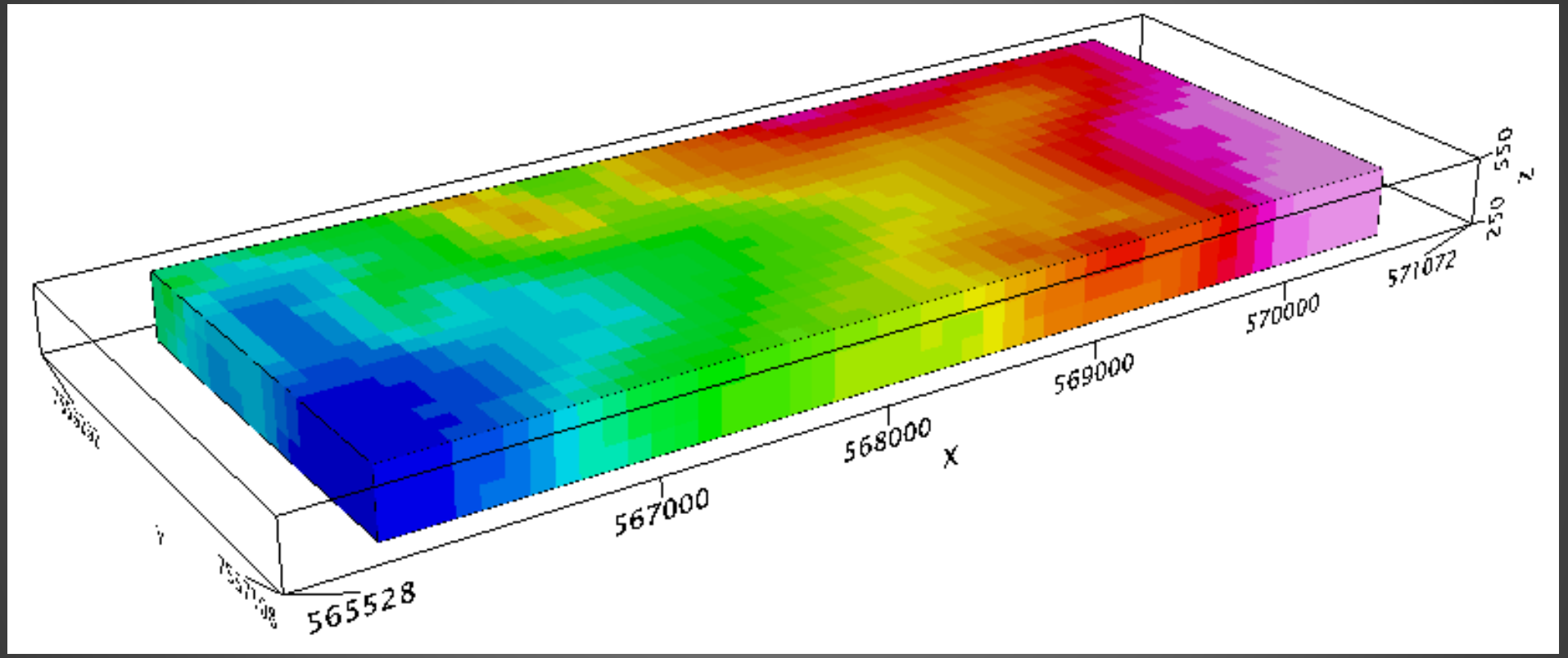
Density Map



Statistical Charts

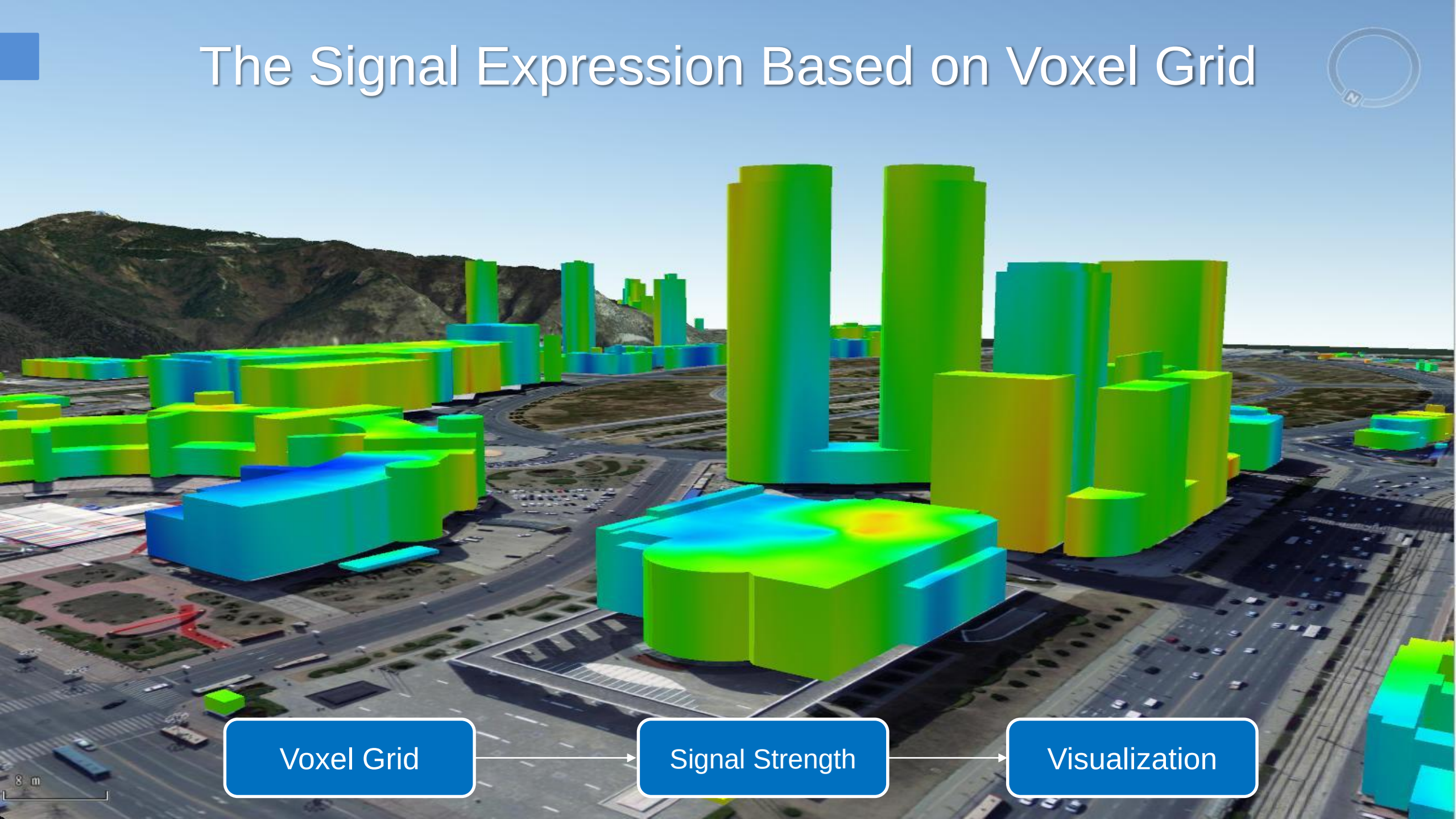
5 Application in Communication Industry

Grid to Voxel Grid



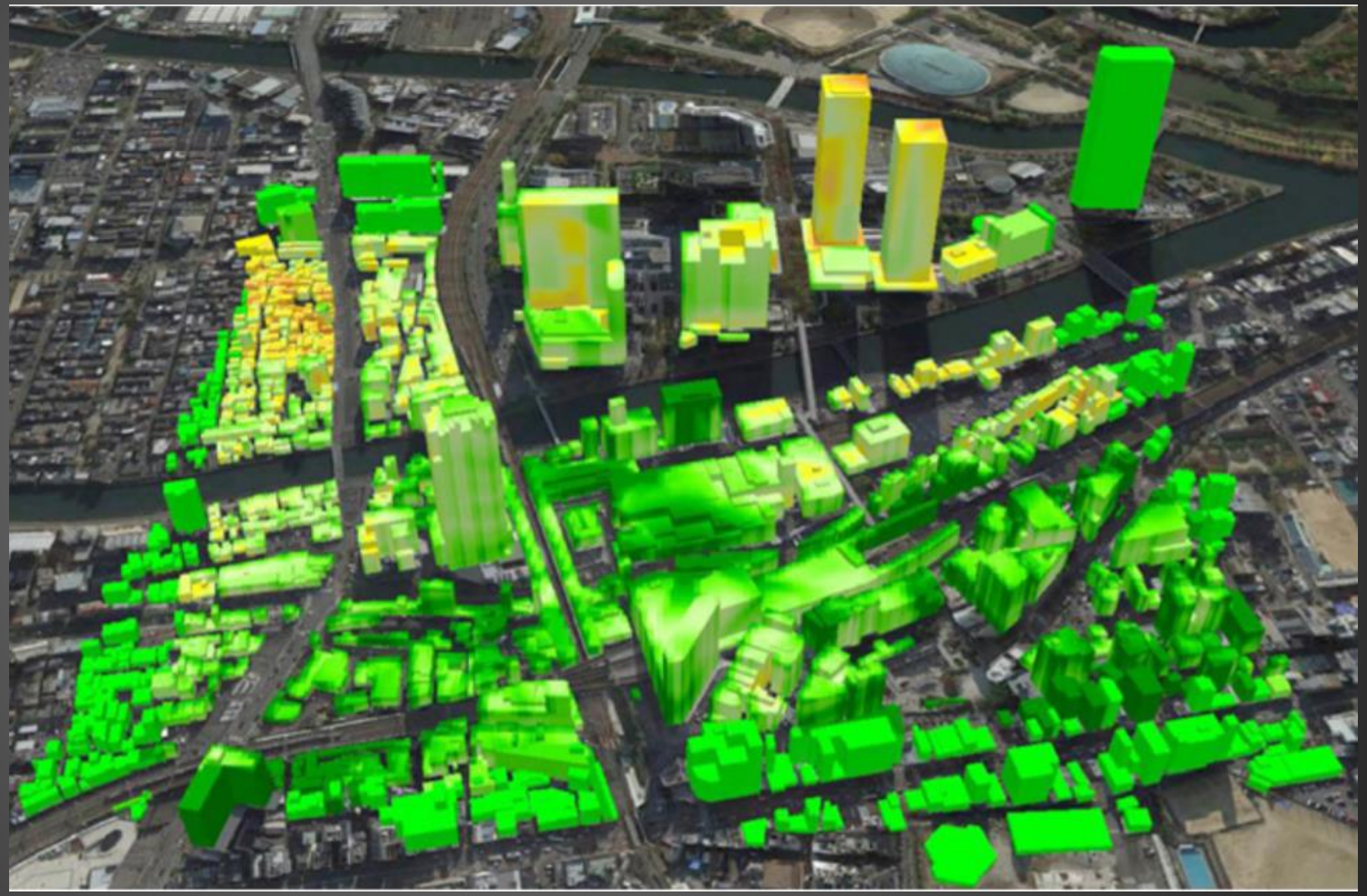
3D expression for signal strength

The Signal Expression Based on Voxel Grid

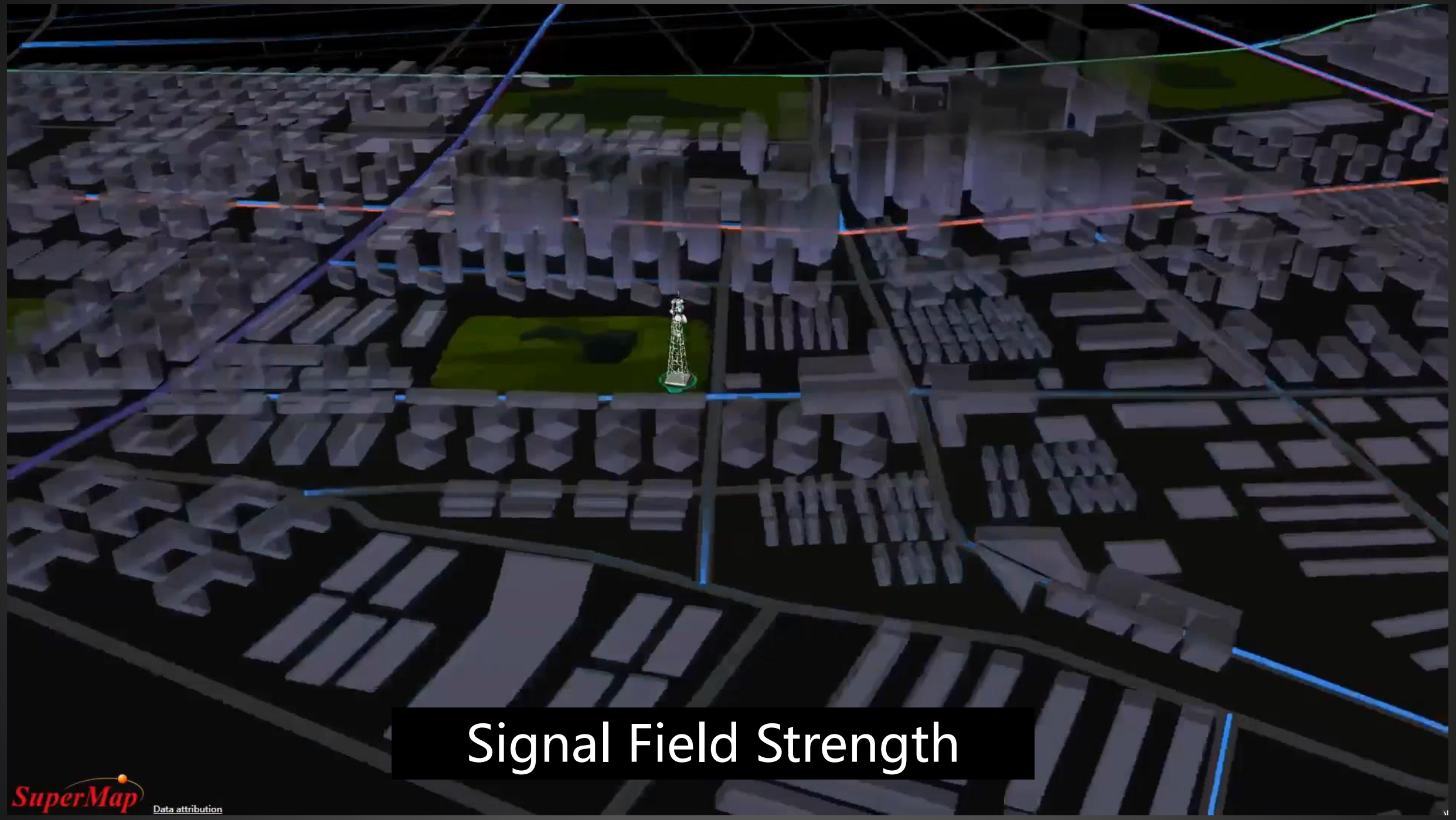


Expression of 5G

- Simulate the coverage index from different height of buildings.



84 m
MapQuest, OpenStreetMap and Contributors, CC-BY-SA
东经 121°30′ 42.87″ 北纬 31°17′ 56.82″ 高度 0.00 m
Copyright 2018 Su
相机高度 768.23 m


Signal Field Strength
SuperMap
Data attribution

Demonstration

SuperMap iDesktop

SuperMap iDesktop .NET

AfricaGIS 2019

Innovations in **Geospatial Technologies** for **Achieving Sustainable Development Goals** in **Africa**

Kigali Conference and Exhibition Village, Rwanda
18 – 22 November 2019

SuperMap

Welcome to our booth

Thank you !