

# Intelligent Operation Center (IOC) with Computer Vision and AI Prediction

for Energy Saving

AI-Ops

Cybersecurity

5.5G

AI Superhighway

ESG

Supercomputing

**AI+**

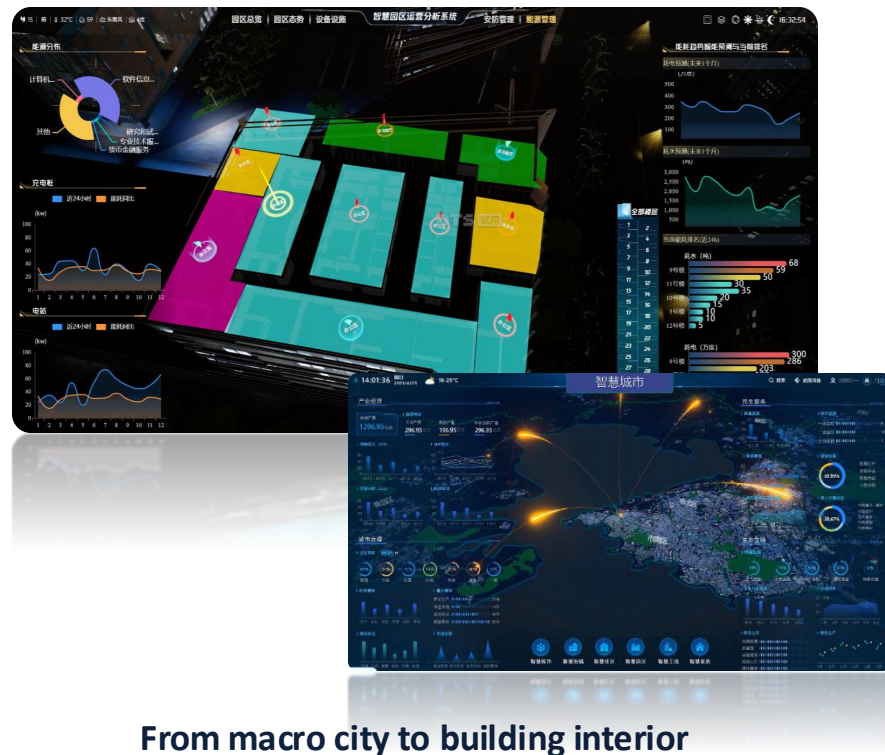
A large, stylized graphic of the text "AI+" in a bold, white, 3D font. The text is surrounded by vibrant, flowing ribbons in shades of blue, orange, and pink, creating a sense of motion and energy. Several translucent blue spheres are scattered around the graphic, adding to the futuristic aesthetic. The background is a deep blue with streaks of light, suggesting a high-tech or space-themed environment.

# HKT IOC Product Overview

## What is IOC?

### HKT IOC (Intelligent Operation Centre)

- Map-based centralized platform for monitoring, operation, and management of **city & campus properties and infrastructure**.
- Access and display **2D/2.5D/3D model/Live View/3D GIS map, CCTV (with VA functions), IoT data** and **Smart Energy system** in **one system**.
- Open to integrate with Computer Vision and AI prediction module** to enhance **decision-making** accuracy and efficiency. E.g., Security alarm, energy consumption and forecasts, etc.



From macro city to building interior

# HKT IOC Product Overview

## Pain Points & HKT Solution

### Traditional Control Centre



- **High manpower cost:** Staff on duty 7x24 to monitor several screens
- **Low efficiency:** Heavily rely on operator's intuition, observation and experience to analyze events
- **Decentralized management:** Different operation platforms without overall perspective
- **Unguaranteed technology & data:** Key technologies and software are heavily dependent on overseas countries, which may pose future security and operational risks.



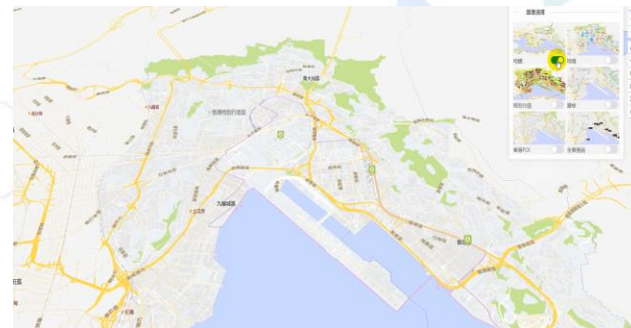
### HKT IOC



- **Manpower saving:** Collect data from multiple systems to automatically and immediately alert when events occur. No need for long-term manual monitoring
- **High efficiency:** Integrate cutting-edge technology. AIGC combined with Digital Twin empowers management
- **Overall view:** All-In-One 3D centralized platform with diverse information for quick and precise response
- **Reliable system:** The fully self-developed system supports localized deployment and ensures system and data security.

# Centralized 3D & GIS Platform

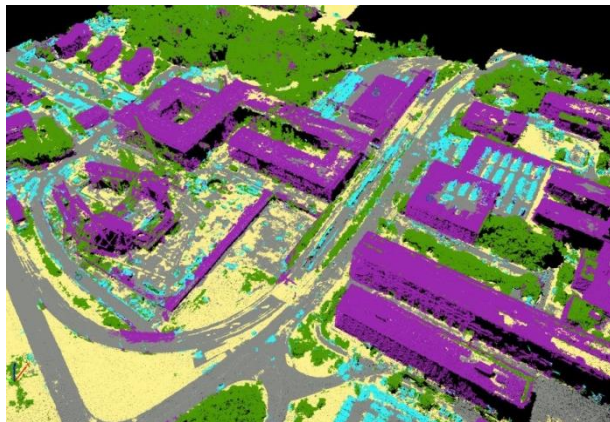
- Compatible with most of the data sources
- Open SDK for further 3<sup>rd</sup> party development
- Real-time data



GIS map



人工建模三維數據 BIM

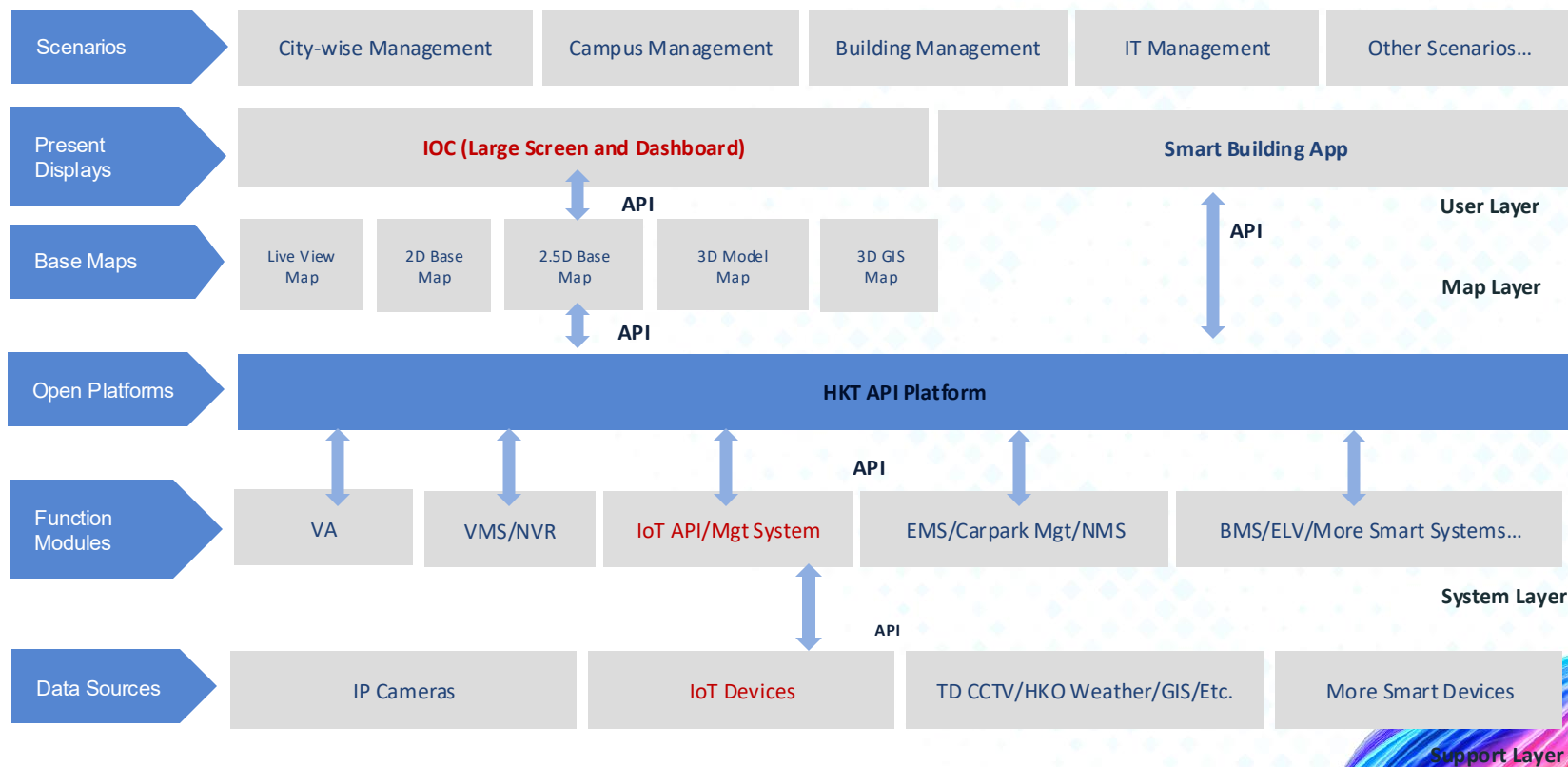


激光點雲三維數據 Point cloud data



傾斜攝影三維數據 Oblique photography data

# IoT & API Platform



# CCTV Surveillance & Computer Vision

## Abnormal Behavior Detection



## Falling Detection



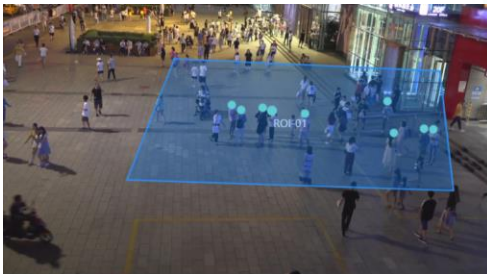
## Face Recognition & Body Attributes



## Smoke & Fire Detection



## Crowd Analysis



## Object Tracking



More AI algorithms ...

# AI Prediction for Energy Saving

Power  
consumption  
statistics

IOC enables **forecasting** of energy demand, provides **recommendations** for adjusting building operations based on occupancy patterns and weather conditions, and generates comprehensive **energy usage reports** to support sustainability initiatives and budget planning.

Energy data displayed by floor



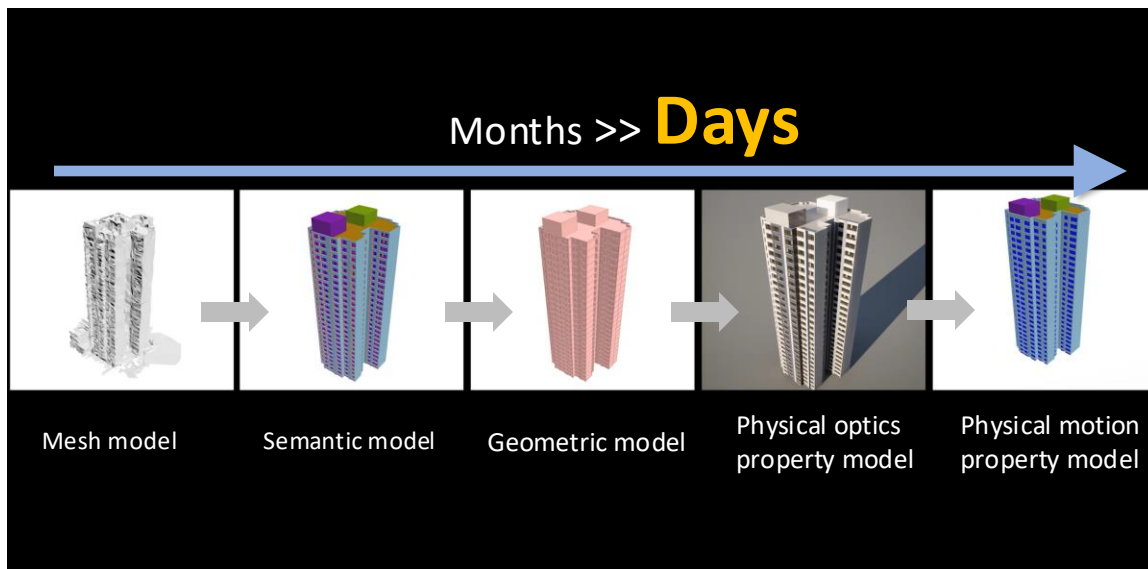
Energy  
consumption  
prediction

(Sample picture of energy management)

3D model for each floor

# AI-Powered 3D Modeling

## – Sematic, Structured, and Lightweight



(Sample picture of HKT office)



(Sample picture of 3D modeling)

Hong Kong Real Scene 3D Model



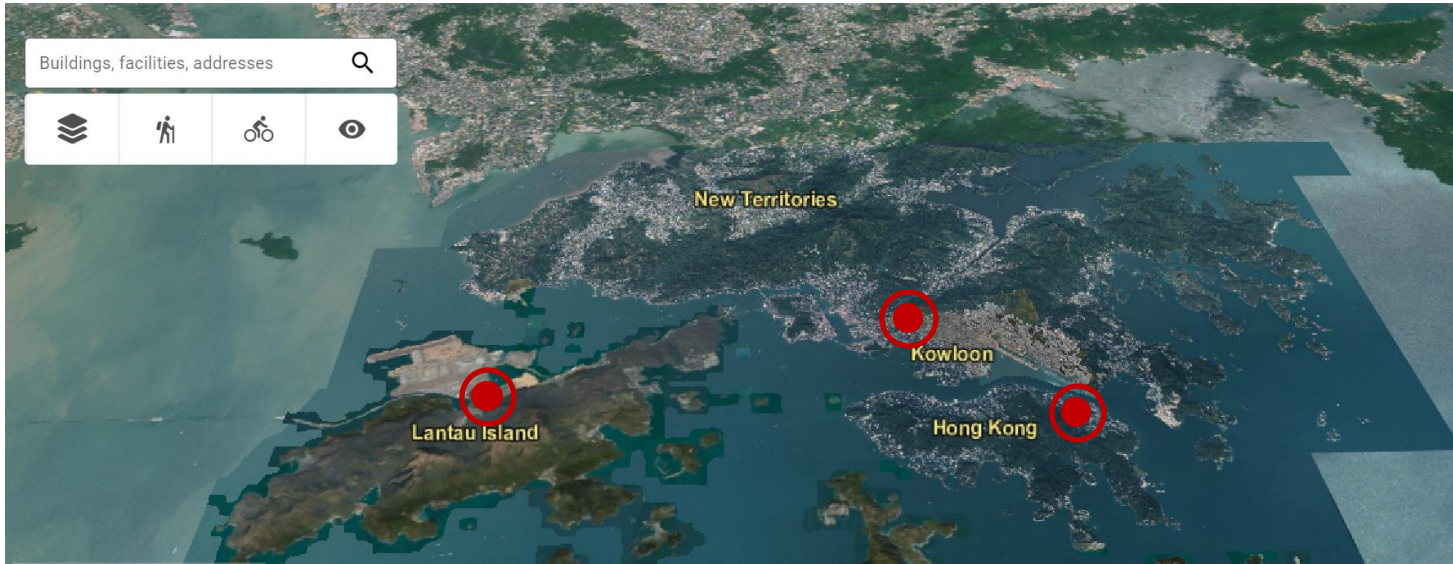
## ***Appendix - IOC System Functions***

# IOC System Functions

## City-wise Management and Monitoring

### Overall design

- City Overview
- Alerts pop up in 3D scene with accurate location information



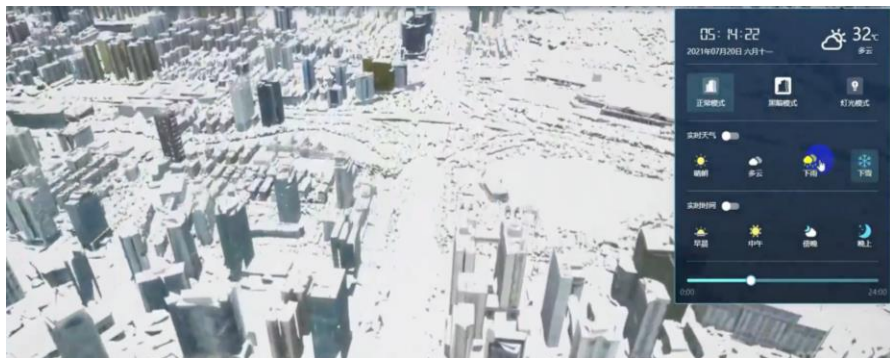
(Sample picture)

# IOC System Functions

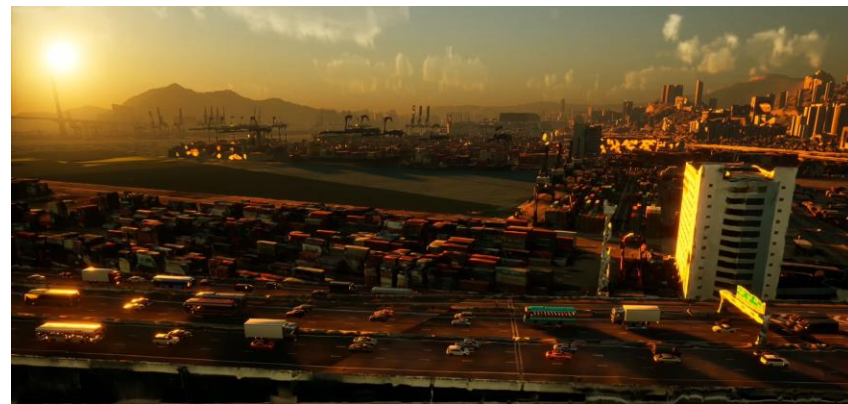
## City-wise Management and Monitoring

### AI simulation

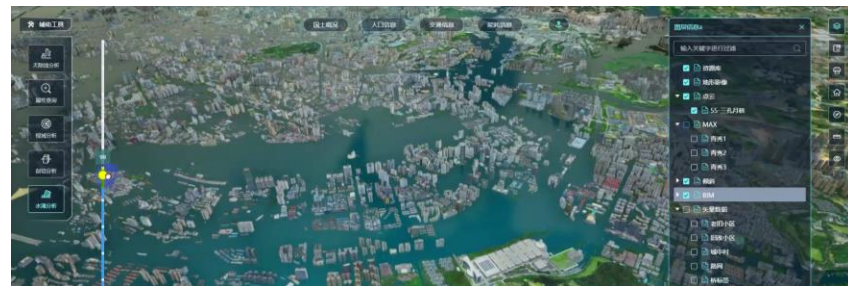
- Sunlight & weather simulation
- Flood simulation



(Sample picture of snow simulation)



(Sample picture of sunlight simulation)



(Sample picture of flood simulation)



# IOC System Functions

## Campus/Building Management

### Device management

- Ventilation, Fire, Plumbing & Drainage, Electricity
- ACS



(Sample picture of device management)



(Sample picture of ACS management & face recognition)

# IOC System Functions

## Campus/Building Management

### Vehicle/Carpark management

Vehicle  
information



Real-time  
CCTV

# IOC System Functions

## Campus/Building Management

### AI alert event management – Fire alert

AI alert

Location in 3D scene

Processing flow

The screenshot displays the IOC System interface for fire alert management. The main panel shows a 3D model of a building complex with a red circle highlighting the location of the fire alert. A yellow arrow points from the text 'Location in 3D scene' to this circle. The interface includes a sidebar on the left with a list of alerts, where the 'Fire alert' is highlighted. The 'Processing flow' section on the right shows the details of the alert, including the alert number, name, location, and status. The interface also features a top navigation bar with various system functions and a bottom bar with buttons for 'AI alert', 'Processing flow', and 'Fire alert'.

Alert Details:

- 告警编号: 321da5aad153d13a1da514
- 告警名称: 火灾
- 告警位置: 培训中心走廊
- 设备名称: 培训中心走廊4区烟感
- 上报时间: 2022-03-02 20:07:34

告警处理:

- 处理人员: 王小华
- 处理时间: 2022-3-2 20:12:22

执行人员: j区监控岗

执行情况: 已完成

指派时间: 2022-3-2 20:14:06

预案处理:

- 应急广播
- 门禁控制
- 短信通知
- 呼叫120
- 呼叫110

(Sample picture of fire alert event management)

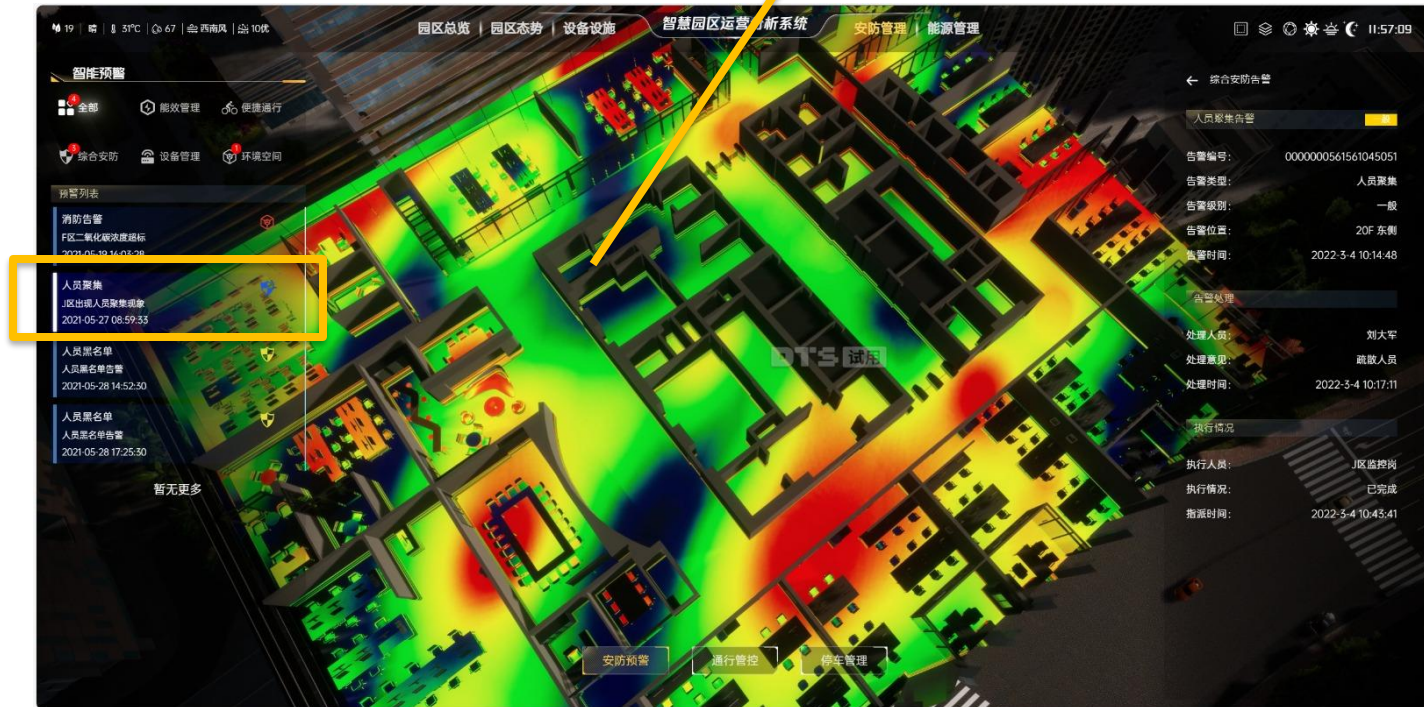
# IOC System Functions

## Campus/Building Management

### AI alert event management – Crowd detection

Heatmap in 3D scene

AI alert



(Sample picture of crowd heatmap)



***Thanks***