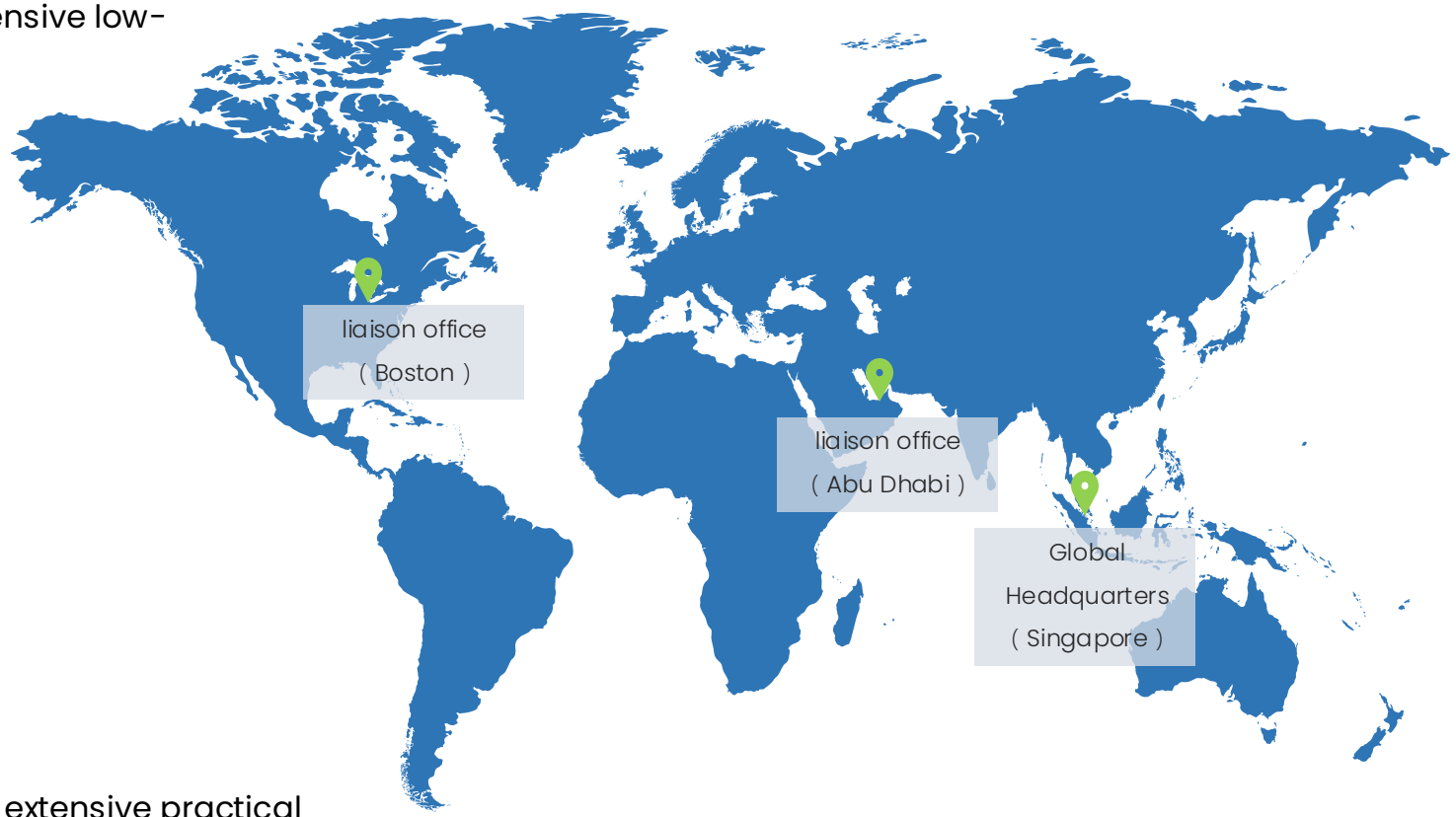

HOLLYWAY
Low altitude comprehensive solution provider
www.hollywaytec.com
AUTOMATICS Next-Gen Drone Autonomy

About Hollyway

Hollyway is a Singapore-based high-tech innovator specializing in AI-powered smart drone solutions. We deliver comprehensive low-altitude infrastructure solutions for diverse industries.

With an experienced R&D team and strategic partners, Hollyway offers customized, integrated 'machine, network, and cloud' solutions for a wide range of industrial users. These solutions incorporate 4D holographic real-time maps, industrial drones, fully automated docks, and IoT cloud platform. Our self-developed equipment and exceptional solutions have proven to be highly satisfactory to our customers, including the Winter Olympics, Asia Games, and many well-known enterprises.



Hollyway operates robotic automated factories and has extensive practical experience now. A considerable production volume has been achieved. We firmly believe that numerous tasks, which may initially appear complex, arduous, and nearly impossible, can indeed be tackled through foresight and pioneering technology.

WHY

Why do you need to pay attention to Hollyway, the new technological powerhouse?

We know
you are probably facing various challenges :

How to improve efficiency while reducing labor costs?
How to quickly receive accurate, intelligent, and secure assistance in complex, urgent, and difficult situations?
How to find a one-stop solution provider that offers fully automated, advanced, and reliable hardware, as well as flight control software services?
……

The ordinary solutions may always fail to meet your expectations

But now, you have **Hollyway!**

Redefining Drone-in-a-Box standards

Hollyway drives the future of intelligent drone technology

Hollyway has established unique technical standards such as AUTOMATICS and DaaSS (Drone-as-a-Safety-Service). While drones and docks serve as the physical platforms, our true value lies in delivering end-to-end autonomous inspection solutions tailored to diverse industrial needs.

What tangible benefits and value does Hollyway deliver to industrial clients?

Boosted Efficiency

Industry-Tailored Solutions

Cost Reduction

Competitive Leadership

All-in-One Stability

Safety and Assurance

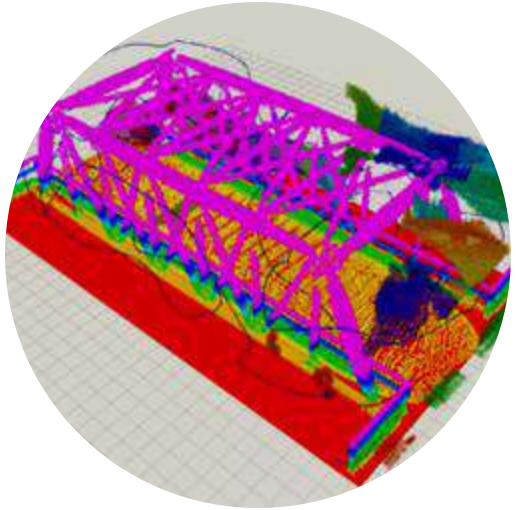
HOW

How does Hollyway achieve solutions through advanced technology?

Comprehensive Solution Introduction

1. Installation and Deployment of Low-altitude Infrastructure

2.Scanning and Mapping:
Activating the Power of Low-altitude Synergy



3.Perception Capability:
Leveraging Drone Perception and Cognition by integrating AI

All-In-House Developed & Manufactured Hardware For Solutions

A complete hardware set

Iron Series

A complete hardware set

Hive Series

Advanced Intelligent Drones

Incomparable Autonomous Flight Performance

- omnidirectional visual perception and obstacle avoidance
- support visual positioning
- support multi-drone collaboration and long-distance leapfrog inspection
- dimensions: 465*465*345mm
- weight: 2100g (battery loaded) ~ 1120g (battery unloaded)

Excellent Endurance

- maximum battery life 52 minutes

Reliability and Safety

- IP55 protection, resistant to rain, sand, snow, and force 7 wind
- no blind spots in the view, high maneuverability
- working environment temperature -35~60℃
- anti interference flight in strong electromagnetic interference areas

Super Intelligence

- onboard AI with computing power up to 100Tops

Stable and Uninterrupted Communication

- 4G/5G and microwave image transmission dual-link communication seamless switching
- multi-GNSS compatibility（GPS/Galileo/GLONASS/BeiDou）

Multi-purpose Payloads

- equipped with visible light infrared pod\visible light pod\speaker pod

Hardware

Iron drone

Visible light and infrared pod

- 48 million visible light pixels
- 640x512 infrared resolution
- support 3D modeling photography

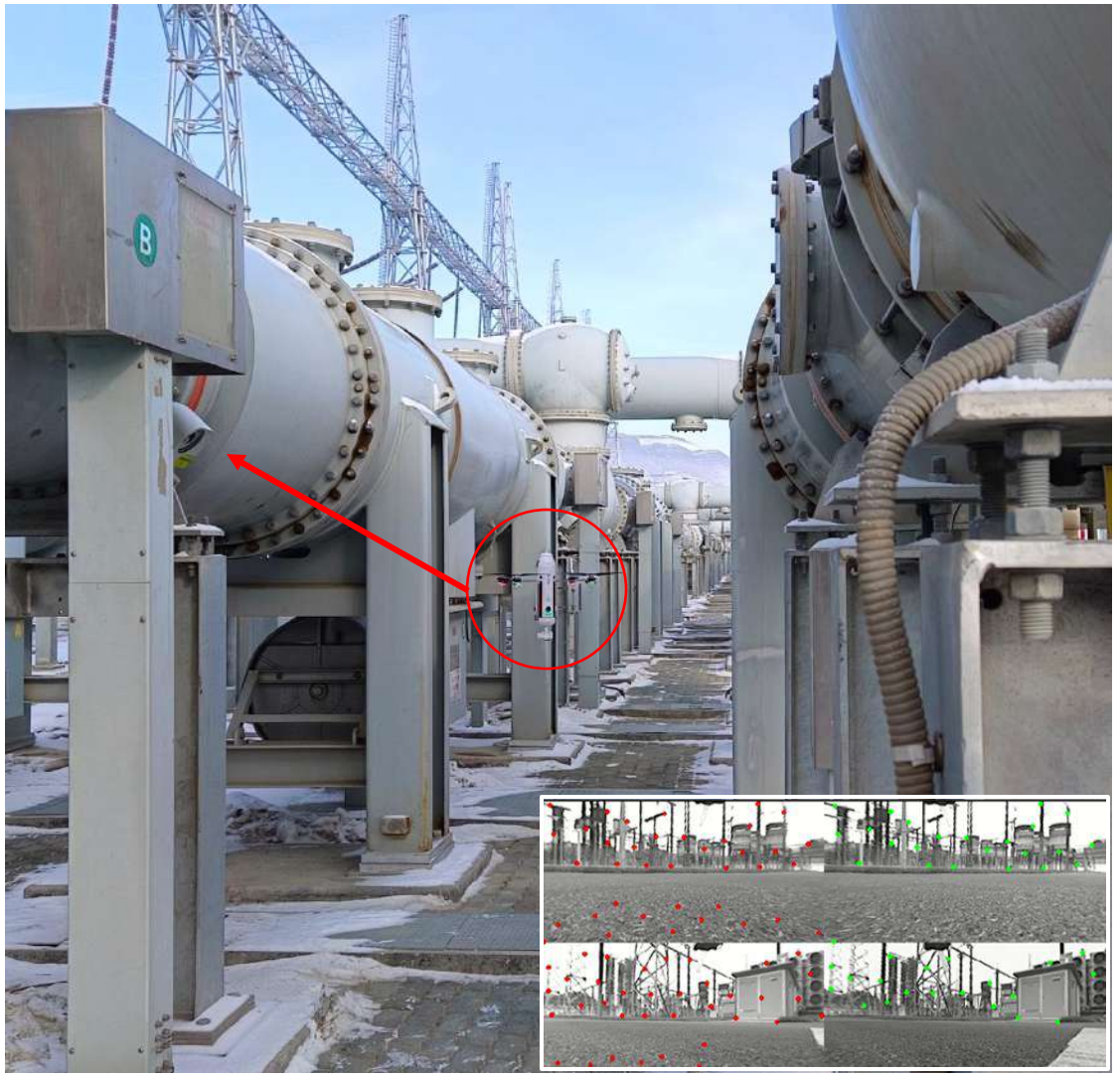
Visible light pod

- 1 inch CMOS
- 20 million visible light pixels
- support precise 3D modeling photography

Speaker pod

- maximum volume120dB@1M
- Max. range: 150 m (70 dBm Tx power)
- Real time call, text-to-speech playback
- Multiple recording modes

Transformer substation senario



Unique And Automated Docks

Hardware

Iron Dock

Practical & unique innovative components

- built in air conditioning and UPS suitable for various extreme industrial scenarios
- award winning design
- 3D dimensions: (open)98*149*161cm

Automatic replacement of batteries and payloads

- equipped with 4 sets of drone batteries and 2 types of drone sensor pods
- automatic drone battery and pod swap in under a minute

Iron Dock (close\open)

High-strength industrial safety

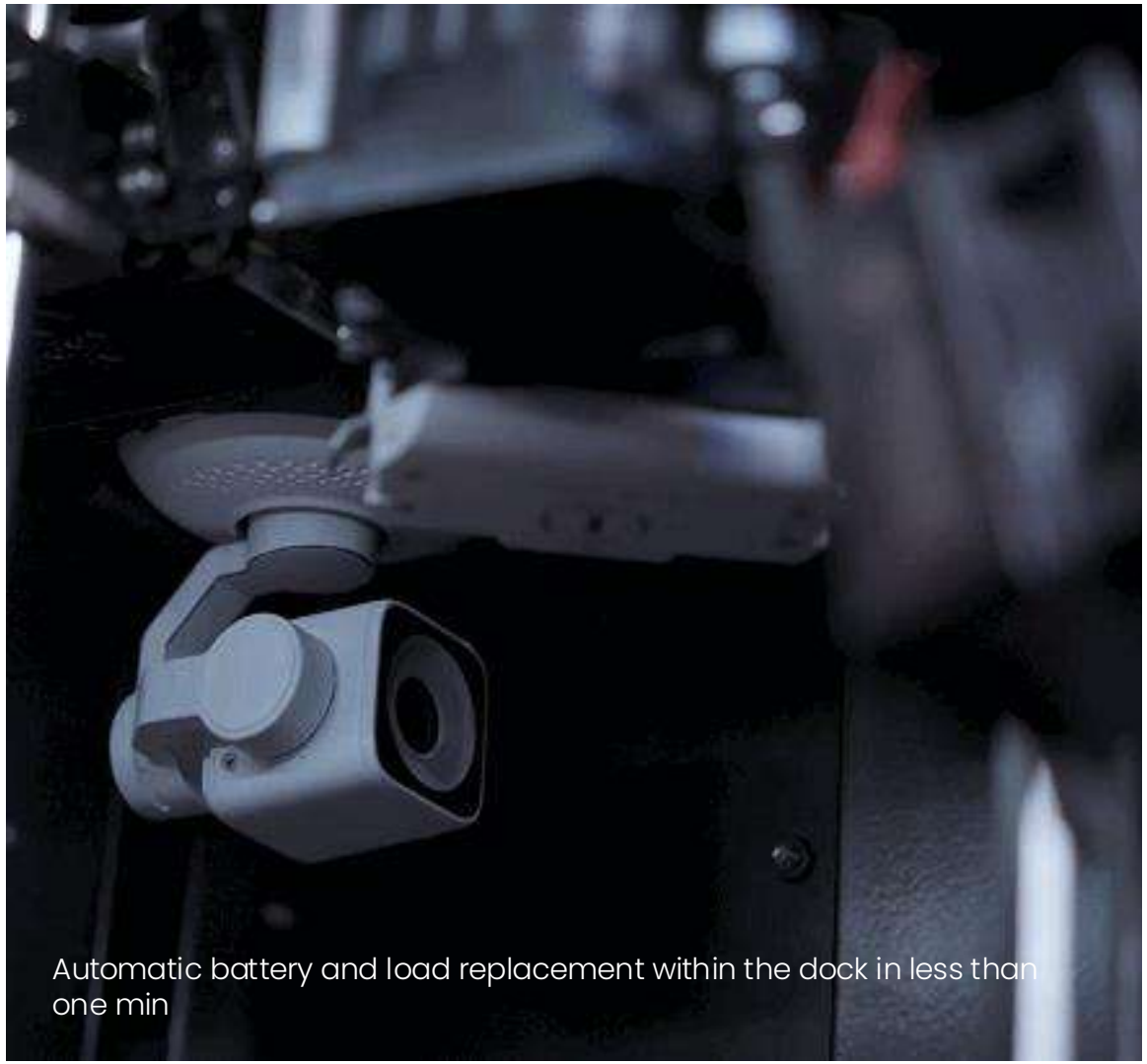
- industrial protection level IP55
- core electronic equipment industrial protection level IP65
- support working in an environment of -35~60 ℃

Precise positioning

- drone docks feature automated self-construction of RTK base stations
- enhance the positioning accuracy of drones to centimeter-level precision

Enhances environmental aesthetics and large-scale deployment

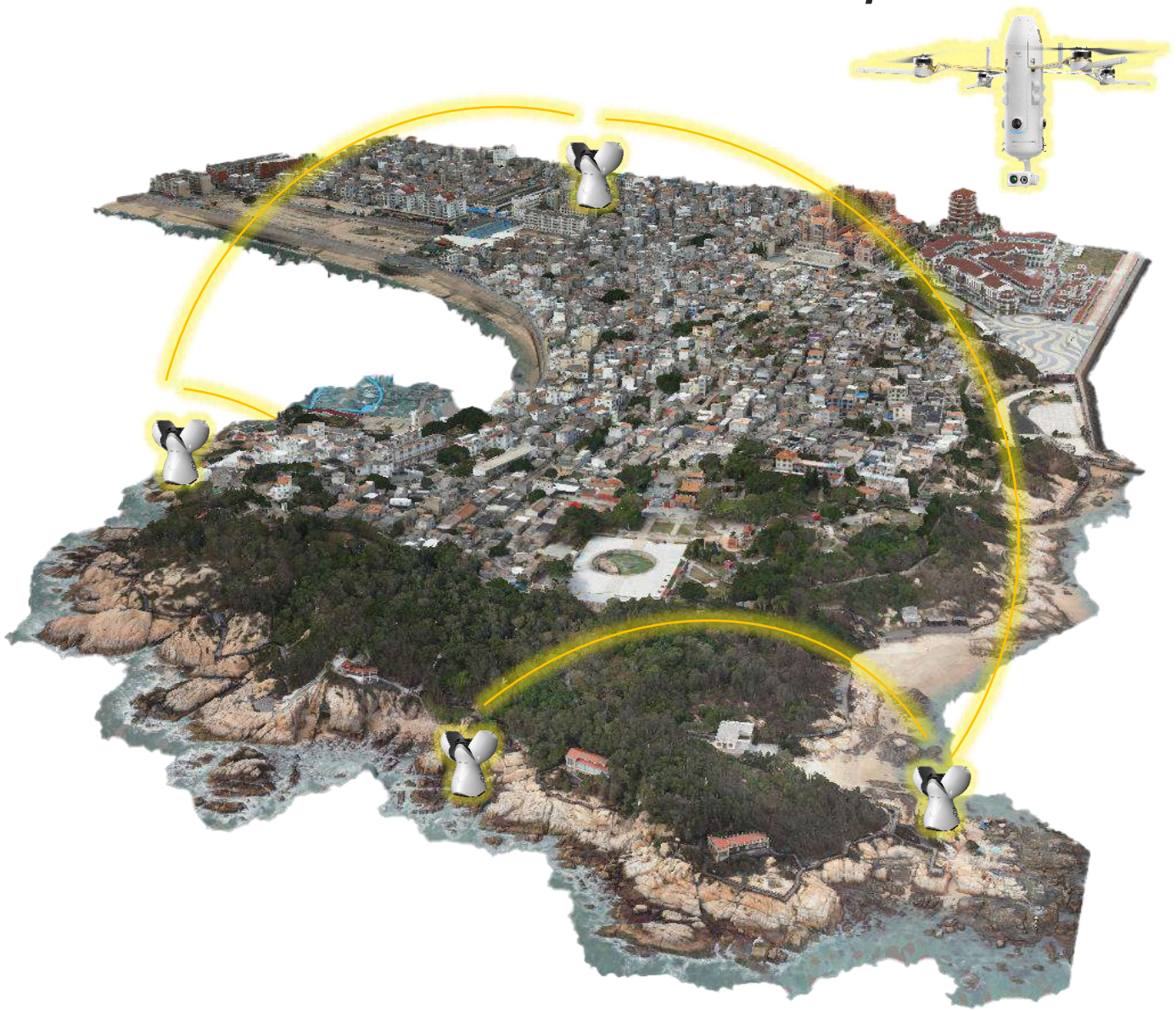
Powering the age of fully autonomous drone solutions with advanced technology

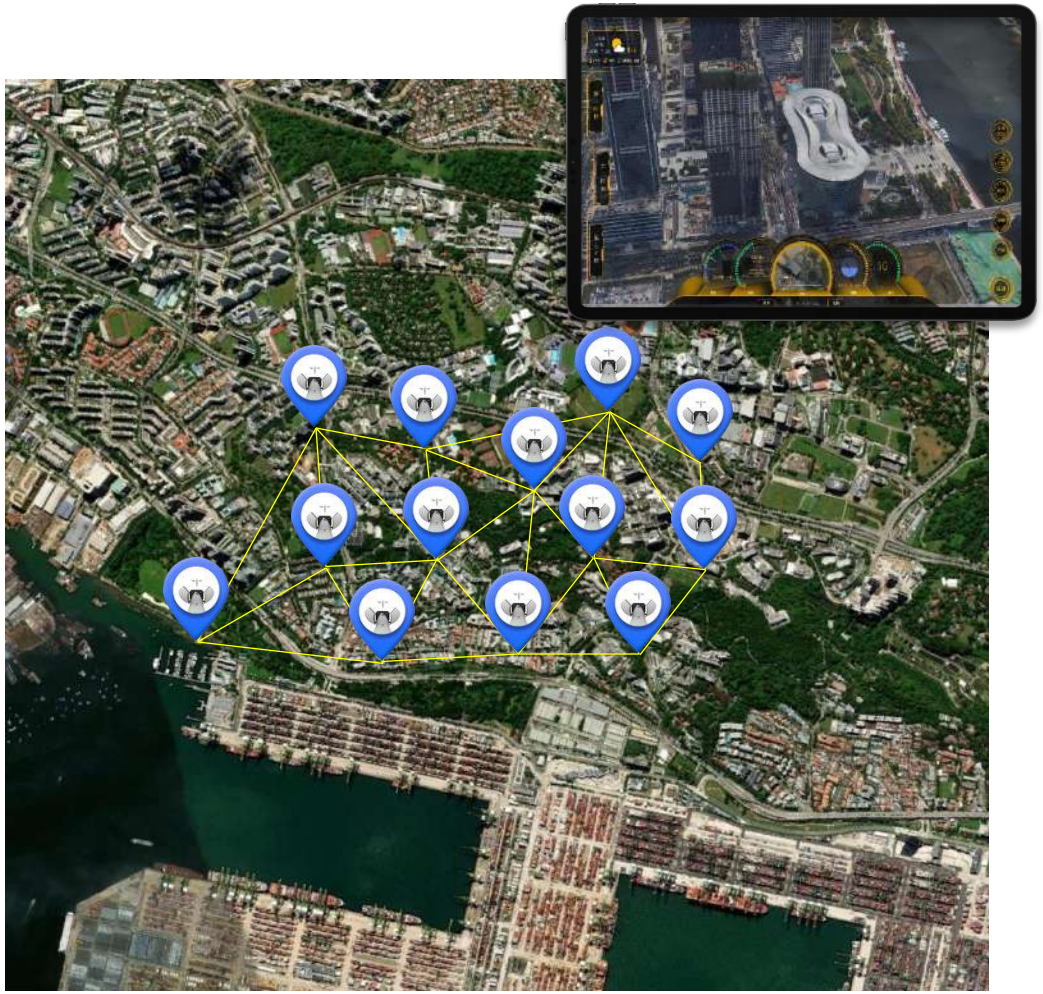


24/7 full automation inspection

mobile networks (4G/5G) and microwave communication seamless switching

Grid cluster colloboration: 24/7 continuous, uninterrupted inspection



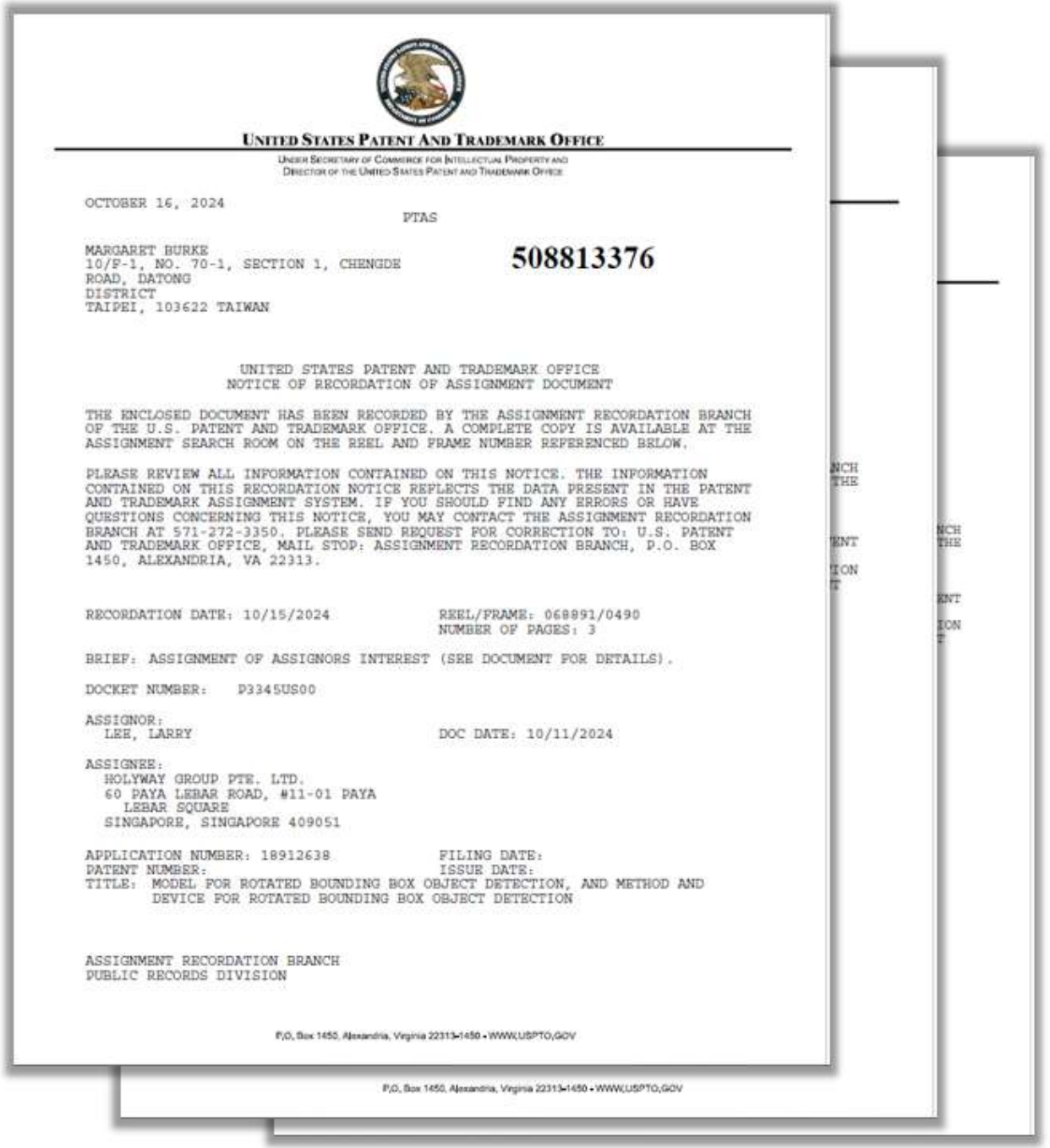


By deploying multiple Drone-in-a-Box docking stations, which mean grid cluster collaboration, drones can autonomously take off and land at different sites(the nearest dock) to replace batterries automatically

Self-developed IP rights, continuously obtaining US patents

The list of US patent applications includes but is not limited to the following——

- Model for rotated bounding box object detection, and method and device for rotated bounding box object detection
- An automatic side-opening drone docking station and control method
- Control equipment of a drone doking station\Method and System for Replacing Power in drone dock based on machine vision
- A method for data transmission and communication between mobile devices such as iPad, remote control, and drones
- Control Method And Device For Addressing Power Saturation Of Drones
- A method for returning the propeller blades of a multi rotor drone
- Drone Docking Station Battery Replacement Method, Device, And Computer Storage Medium
- Drone Motor Stall Monitoring Method, Device, And Storage Medium



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

OCTOBER 16, 2024

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508813376

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LEE, LARRY
DOC DATE: 10/11/2024

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SINGAPORE, SINGAPORE 409051

APPLICATION NUMBER: 18912638
FILING DATE:
PATENT NUMBER:
ISSUE DATE:
TITLE: MODEL FOR ROTATED BOUNDING BOX OBJECT DETECTION, AND METHOD AND DEVICE FOR ROTATED BOUNDING BOX OBJECT DETECTION

ASSIGNMENT RECORDATION BRANCH
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Design in a class of its own

The LDA(London Design Awards) is an international design competition that acknowledges outstanding contributions from practical and innovative design teams. Hollyway's design has not only won the golden award at the LDA, but it has also garnered continued recognition from various international awards.

London Design Awards

The Hollyway Fully Autonomous Drone inspection System

Golden Winner

New York Product Design Award
Silver Winner

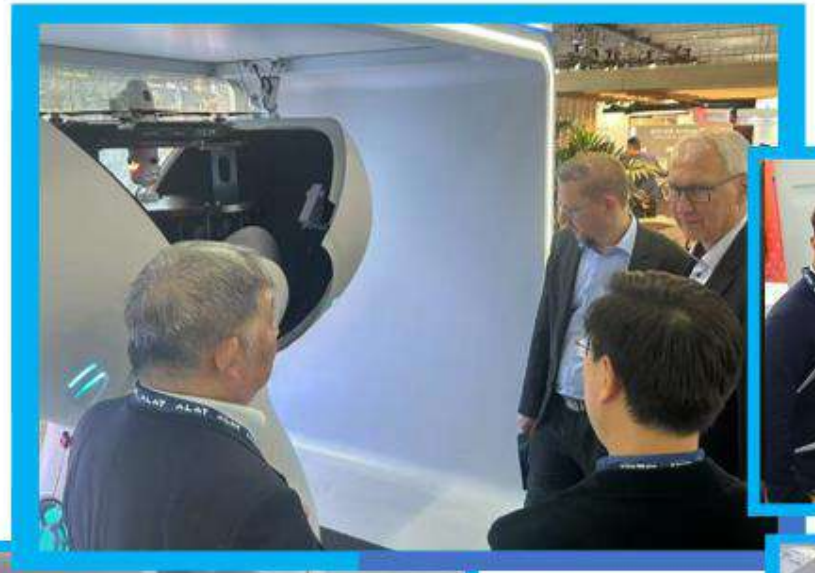
French Design Awards
Golden Winner

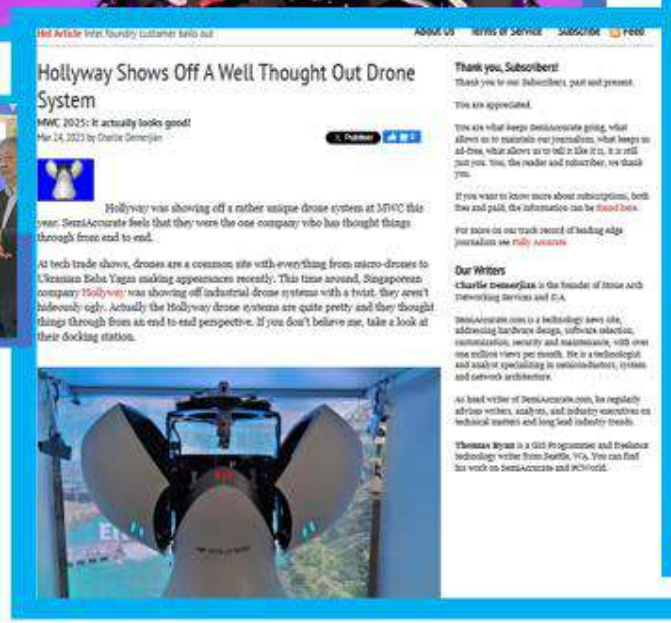
International Design Award™

Continues to WOW the market

Hollyway is rapidly expanding its global footprint. Although new to markets like North America, the Middle East, and Europe, it has already generated significant media attention and garnered strong interest from partners and end-users — particularly when compared to traditional drone equipment providers.

We firmly believe Hollyway is poised to become a game-changer in the drone industry, redefining the "Drone-in-a-Box" concept while pioneering the global adoption of fully automated, AI-powered solutions.





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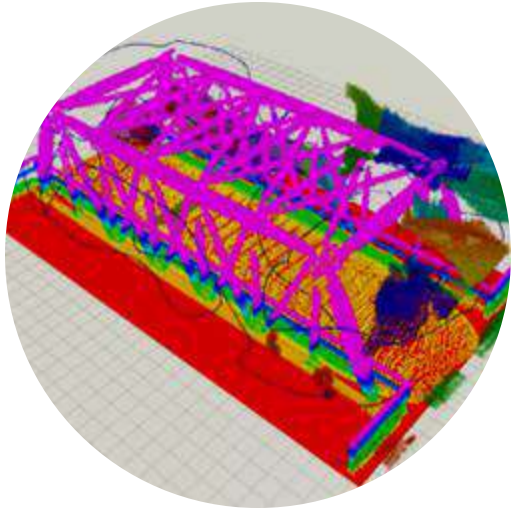
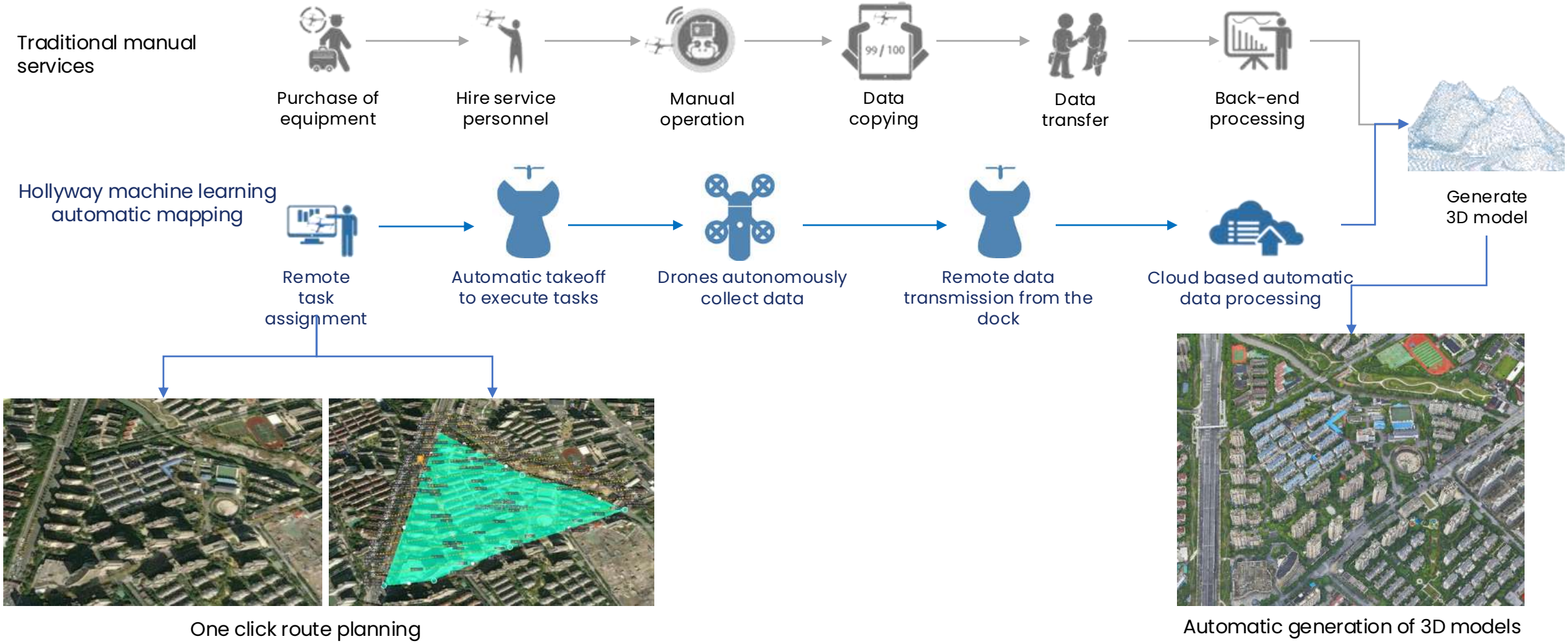


3.Perception Capability:
Leveraging Drone Perception and Cognition by integrating AI

We do not only provide ‘hands or feet’ hardware like traditional suppliers, but rather offer professional solutions tailored to specific needs, with the ‘brain’ — H.O.P.E. Hollyway Operation Platform and Ecosystem

Machine mapping assists in digital management in the industry. Hollyway has better understanding of how to optimize the workflow through 3D digital models.

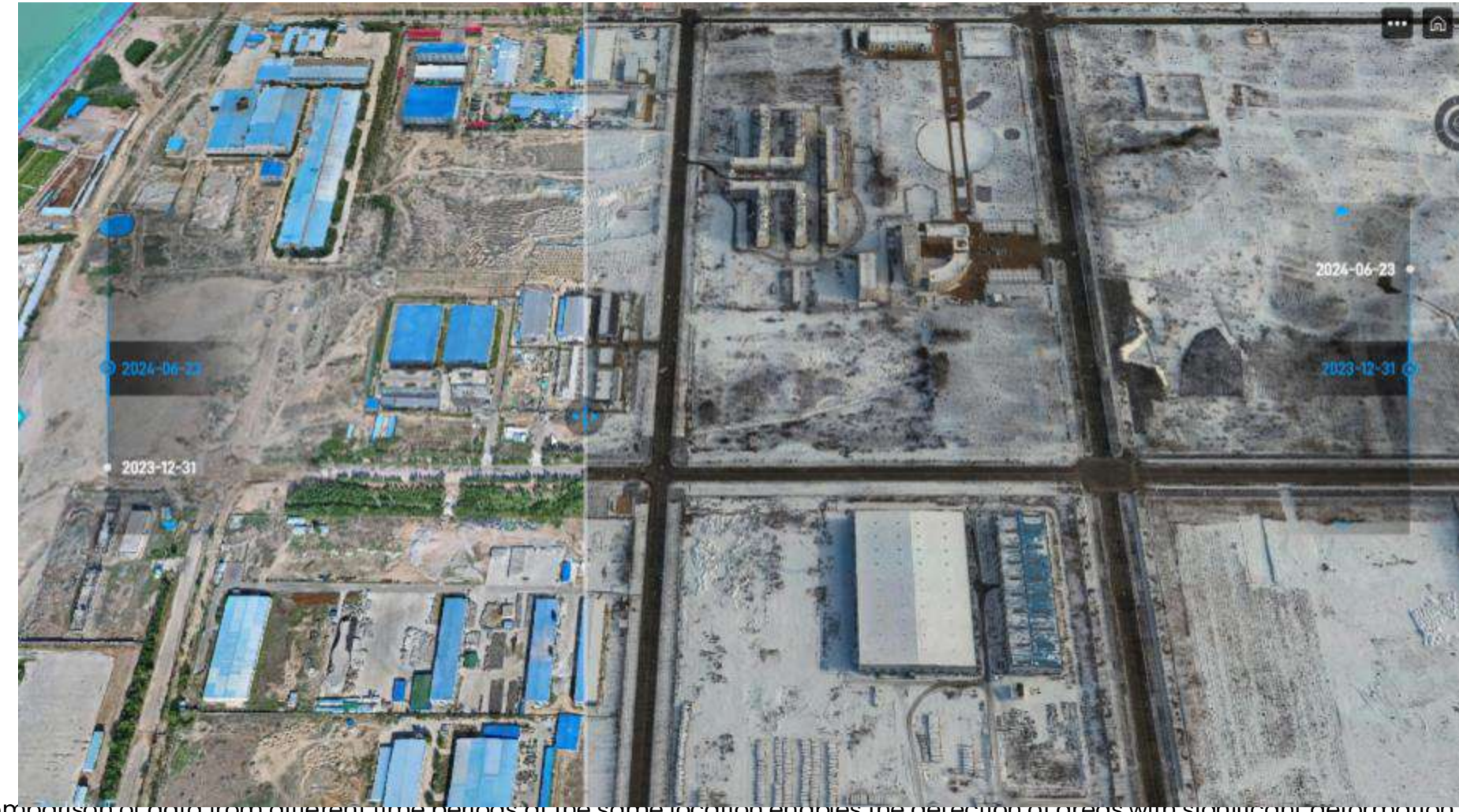


One click route planning

Automatic generation of 3D models

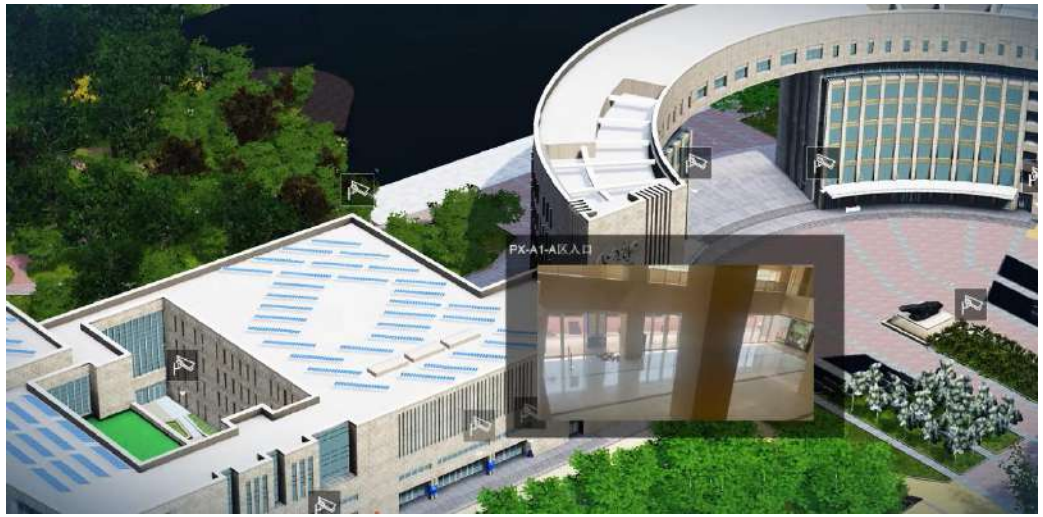
Comparative analysis of two phases of image data

Periodic automatic update comparison

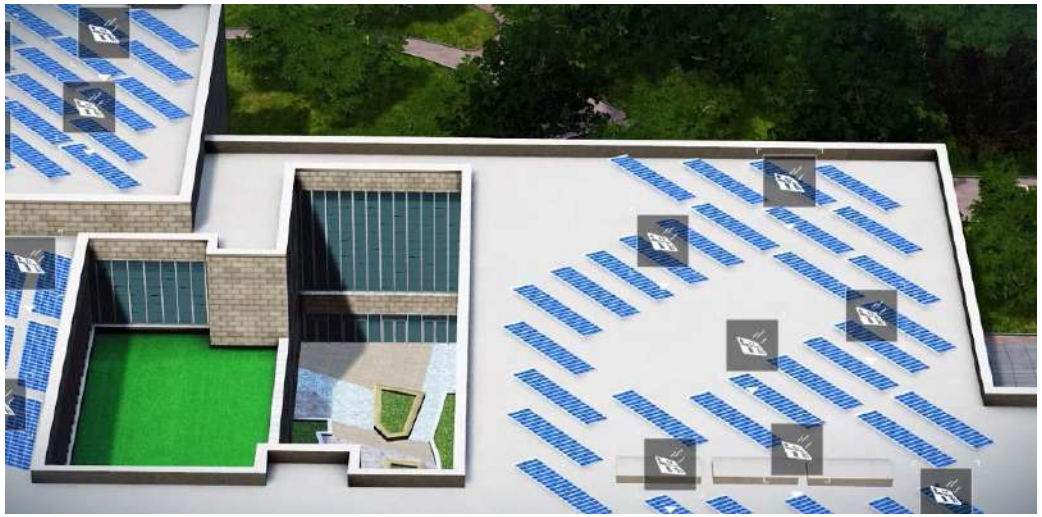


- Automatic comparison of data from different time periods at the same location enables the detection of areas with significant deformation, providing effective and timely warnings for issues such as lost goods or damaged facilities, thereby mitigating potential risks
- At the same time, the platform supports IoT access function, and the overall system supports multiple information access to achieve data warning and detection

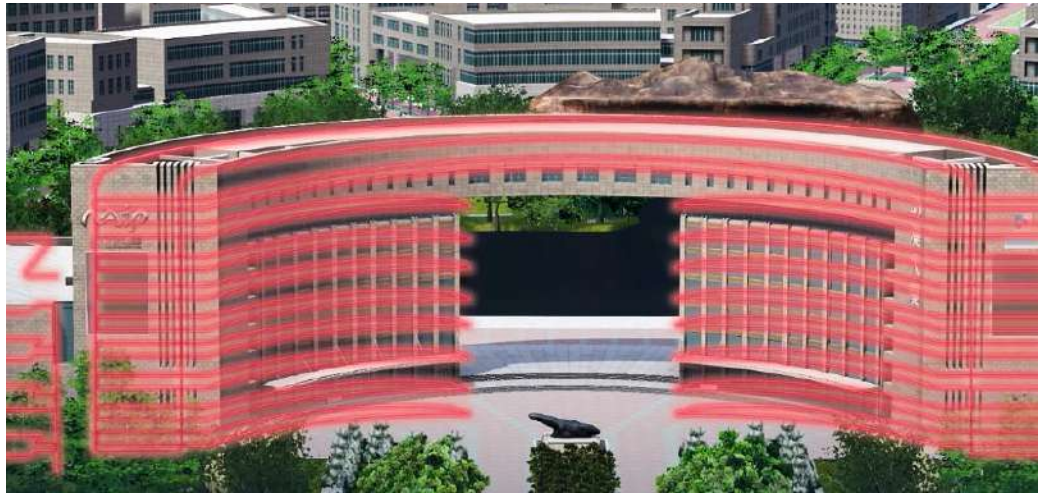
Realize refined management of urban individualization



Real time access to monitoring data



Infrastructure data entry (such as photovoltaic panels)



Infrastructure data entry (such as heating pipeline)

Model segmentation and personnel office information input

Integrating 3D scan and 3D Gaussian technology to meet the needs of multi scene models

Method for Ancient Architecture Reservation（3D Scan）

Rapid 3D reconstruction of fire scene（3D Gaussian）

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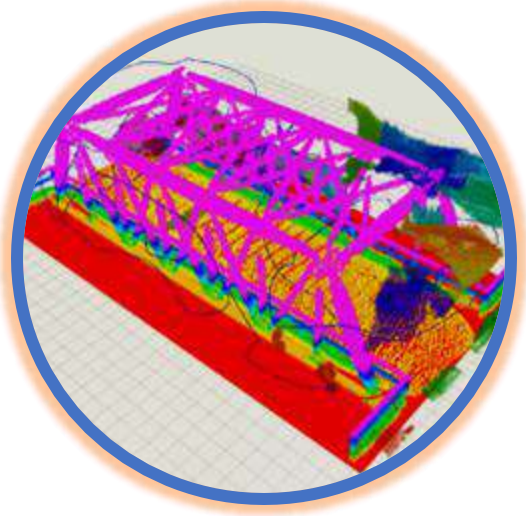
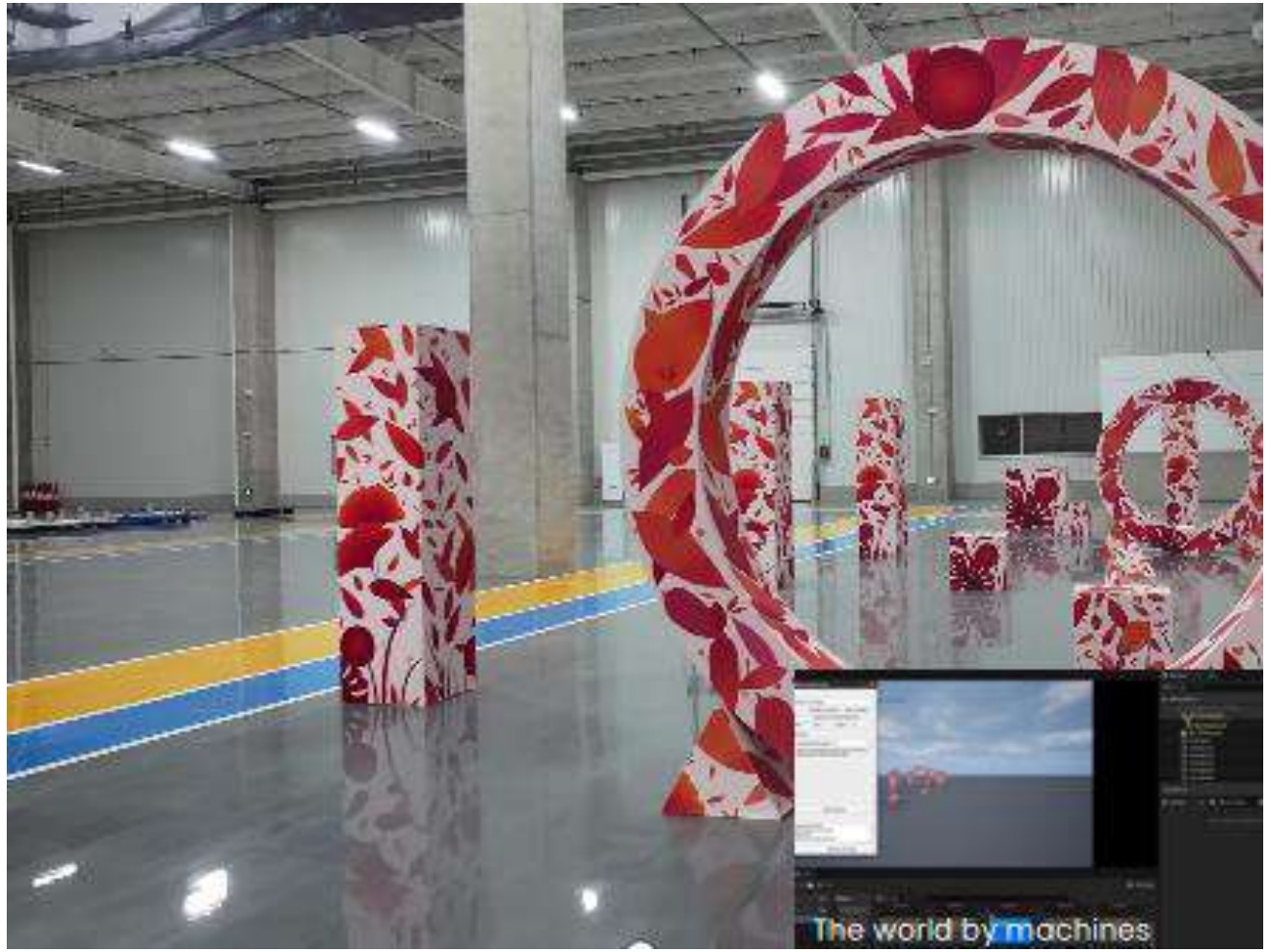
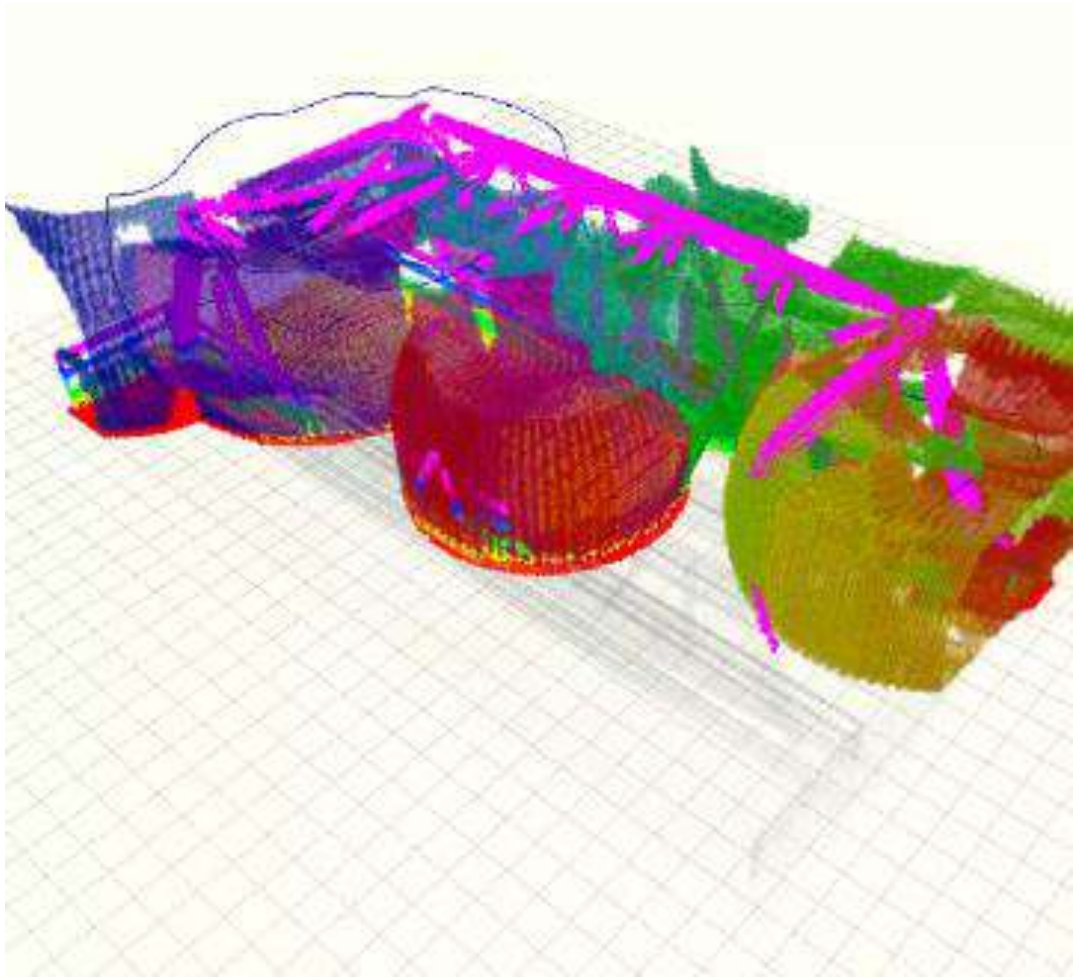


3.Perception Capability: Leveraging Drone Perception and Cognition by integrating AI

Explore the unknown world anytime, anywhere

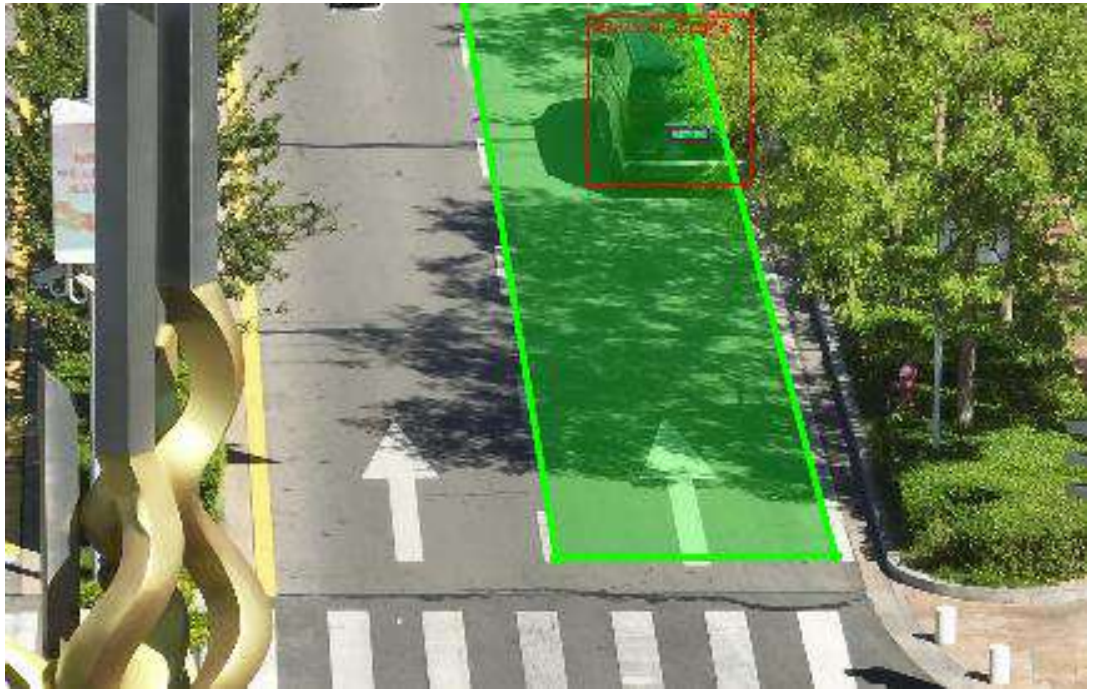


Centimeter accurate visual positioning for drones in indoor test environments



Real-time 360° omnidirectional obstacle sensing via 3D modeling

AI scenario-based semantic understanding



AI-powered semantic understanding service for traffic violation scenarios

Using urban traffic as a use case, the system delineates illegal roadway zones within the city model to enable scenario-based semantic understanding customization services for the platform.
By collaborating with traffic surveillance systems, the UAV can be dispatched to dynamically track specific vehicles as soon as they are detected.

Robust software and AI capabilities

We excel at integrated hardware-software solutions. H.O.P.E.(Hollyway Operation Platform Ecosystem) 4d holographic platform boasts a rich array of industry-specific algorithms, a comprehensive industry database, and the capability for rapid customer-specific AI customization. You can quickly and easily switch to your industry-dedicated sub-platform from H.O.P.E., without the need for high learning and training costs. Consequently, the need for a pilot is eliminated, and with just a single operator, most inspection and reporting tasks can be easily accomplished.

Software Platform
H.O.P.E.

Core platform H.O.P.E.

Supports PC, laptop, iPad usage

H.O.P.E. Power Grid

H.O.P.E. Smart City

H.O.P.E. Emergency

H.O.P.E. Smart Forestry

WHAT

Diversified low altitude application scenarios are the areas that Hollyway excels in

Hollyway has extensive algorithmic expertise and practical experience across a wide range of industry sectors

Smart City

Provides tools in urban governance, traffic management, environmental monitoring, road\traffic monitoring, construction project monitoring, helping managers make scientific decisions and improve city management efficiency

Emergency

First Response Drones enable faster on-scene arrival than any other means in fires and accidents; Provide assistance in disaster reconnaissance and search & rescue operations by delivering real-time situational awareness

Power Grid

Drones can efficiently inspect power facilities such as transmission lines and substations, ensuring the safe and stable operation of the power system;Liberating workers from grueling, time-consuming, and dangerous conventional work conditions

Oil and Gas

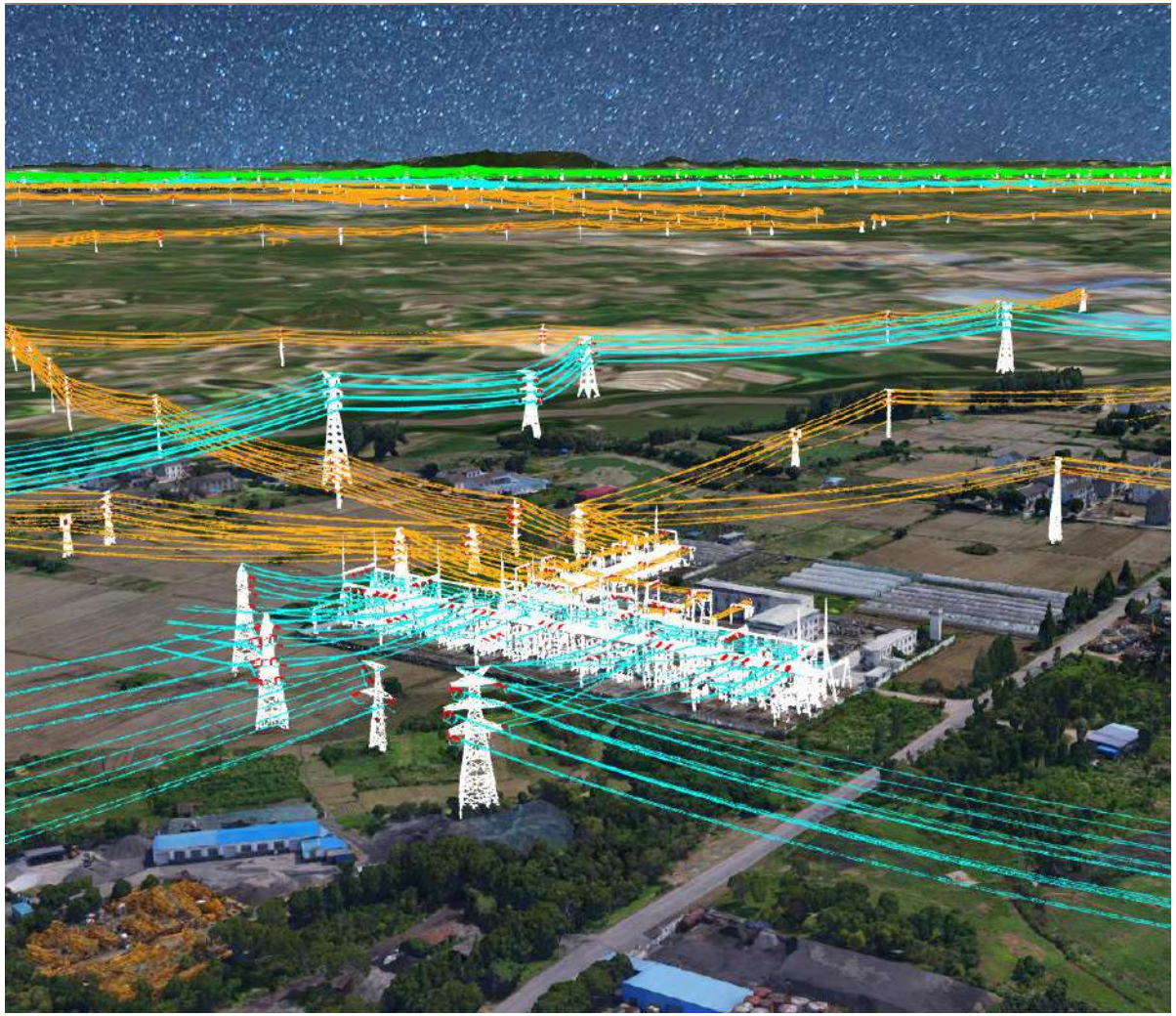
pipelines and other facilities inspections are conducted in areas that are difficult to reach manually to promptly identify safety hazards and ensure the safety of energy supply

Renewable Energy

Drones can efficiently and accurately inspect key equipment in the field of hydropower stations, wind power stations, solar energy, photovoltaics

For various industrial and commercial clients, as well as government, we hope to gain a deeper understanding of your specific needs and tailor the most suitable comprehensive solution for you.
Whether you are already a user of unmanned aircraft systems or a potential user, we will wholeheartedly provide you with the highest quality products and services.

Power grid solutions



Centimeter level 3D model construction of power grid, helping the power grid obtain digital twins

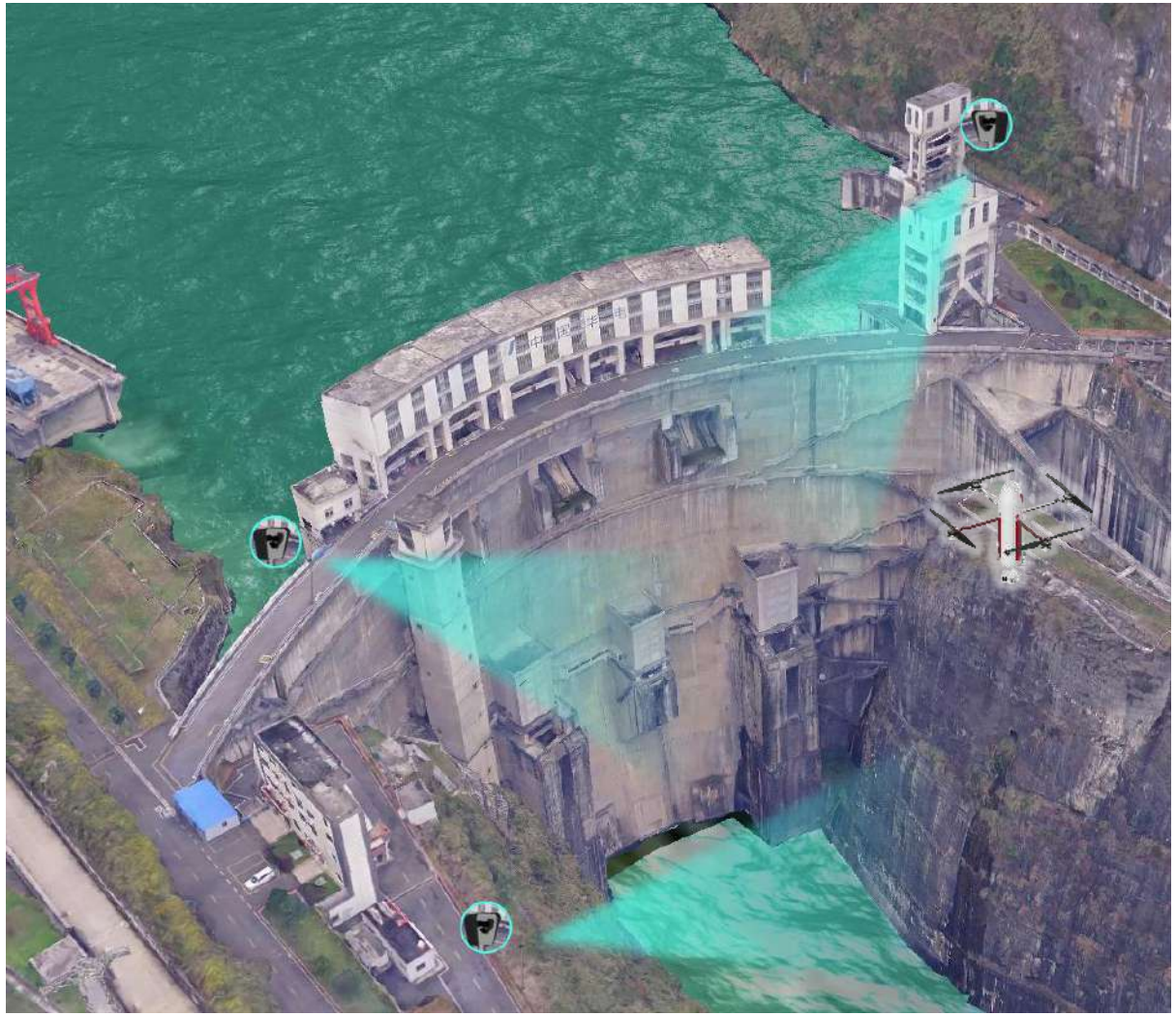
Through AI capabilities, drones can accurately locate defects in power armour clamp during inspections

Intelligent temperature measurement at key positions of substation power equipment

Visual positioning and stable flight of drones in strong electromagnetic environments

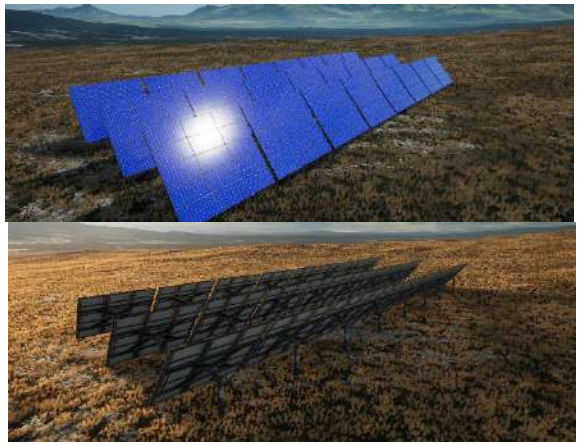
AI intelligent reading of device meter pointers

Renewable energy solutions

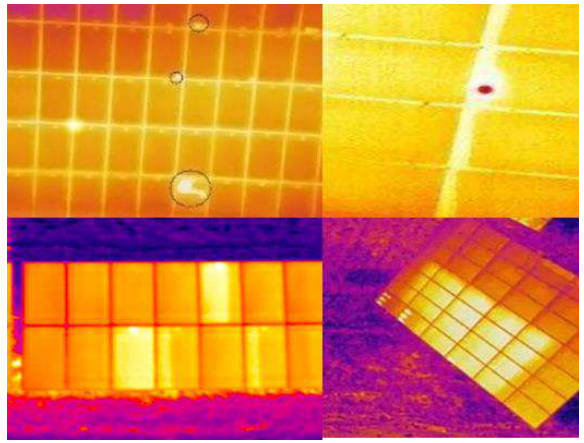


Implement a system to facilitate the linkage inspection between existing cameras and drones within the power station.

Wind inspection AI automatically recognizes the orientation of the wind turbine, and multiple captured images can be automatically spliced into complete wind turbine blades. The platform AI intelligently analyzes various types of defects in the wind turbine



Simulate lighting and photovoltaic panel rotation to predict power generation



Accurate infrared detection of photovoltaic hot spot defects

Oil and gas industry solutions

Identification of pipeline damage

Ground cracking identification

Identification, warning of vehicle occupation around the site

Instrument fouling identification

Abnormal personnel intrusion

Real time temperature monitoring, timely warning upon discovering anomalies

Gas leakage alarm

Smart city solutions

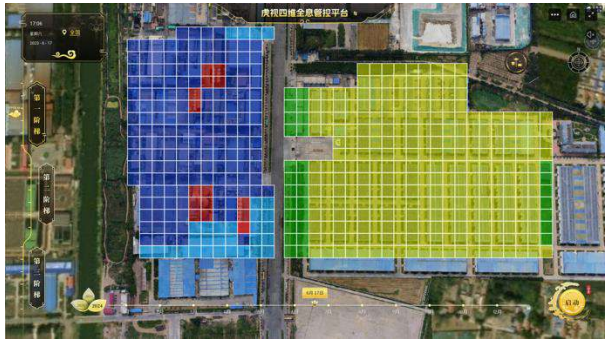
We have extensive experience in assisting government agencies to enhance urban governance through digitalization and operational efficiency, particularly in transportation, emergency management, and public safety.

Municipal administration

- Infrastructure and road facility inspection
- Road collapse inspection
- Waste incineration
- Floating objects on the water surface
- Lakeside safety inspection
- Inspection of bare green belts and dead trees

Safe production

- Intelligent supervision of illegal work
- Illegal parking of hazardous chemical transport vehicles
- Inspection of illegal stacking of combustibles



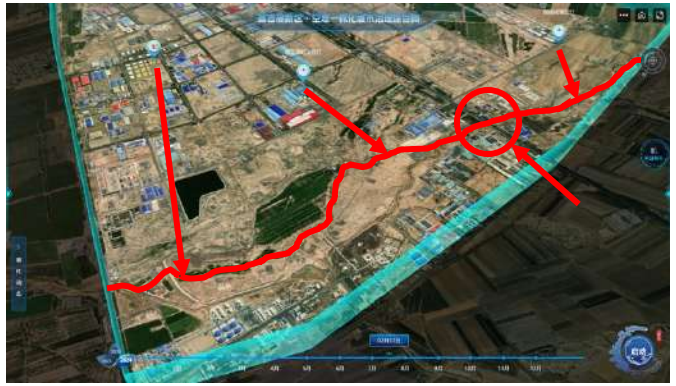
Ecological environment

- Air pollution source detection
- Gas concentration detection

Urban management

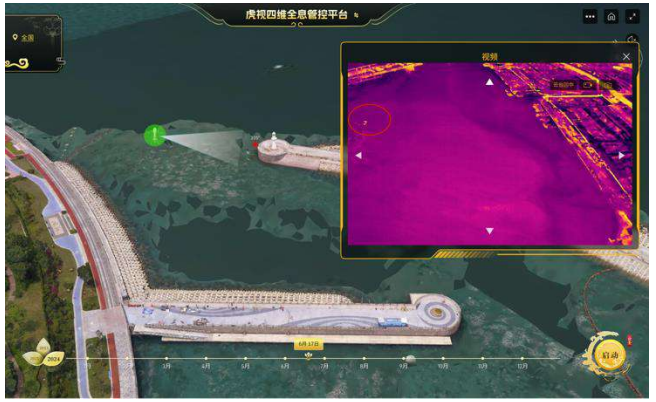
- Comparison of illegal construction sites
- Illegal land use and illegal construction
- Supervision of mobile vendors
- Illegal parking of electric bikes

Smart city solutions



Emergency flood control

- Location of mountain flood siltation and blockage points
- Assist on-site personnel evacuation and rescue
- Post disaster analysis



Waters

- Water ecological management
- River garbage dumping inspection
- Intelligent perception analysis of flood season disasters
- Water level warning

Urban forest area

- Fire recognition
- Dead wood identification
- Identification for theft prevention and damage protection

Smart transportation

- Highway inspection
- Road pothole recognition
- Statistics of pedestrian and vehicular traffic flow
- Intelligent warning and evidence collection for accidents
- Vehicle Tracking

Emergency solutions

In process

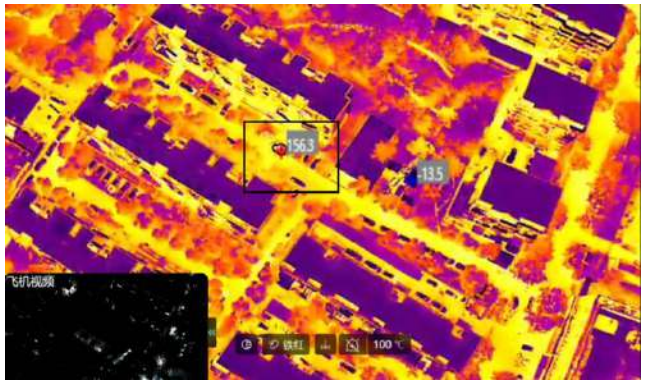
- Linkage with the emergency response platform, access to water source information such as fire hydrants, real-time information exchange, and immediate response

- Emergency mode 25s rapid takeoff

- Real time on-site display

- Two phases of imaging assist in post disaster assessment

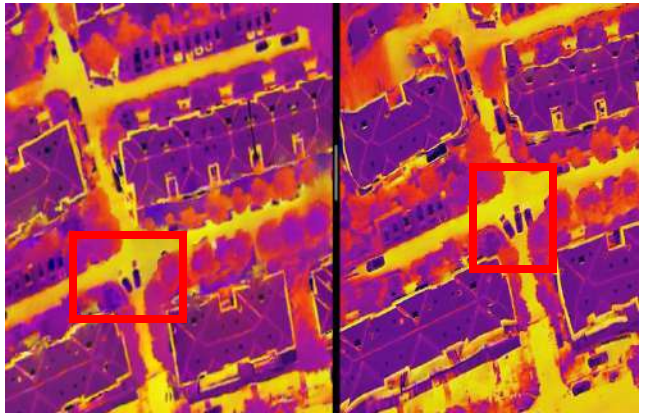
in advance



- AI intelligent fire recognition, infrared high temperature warning

- AI recognition determines illegal activities

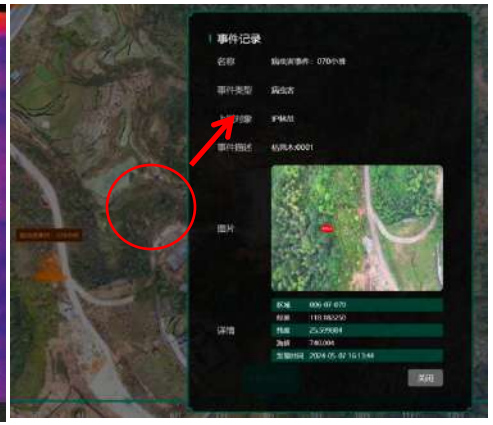
- AI identifies obstructions in fire lanes



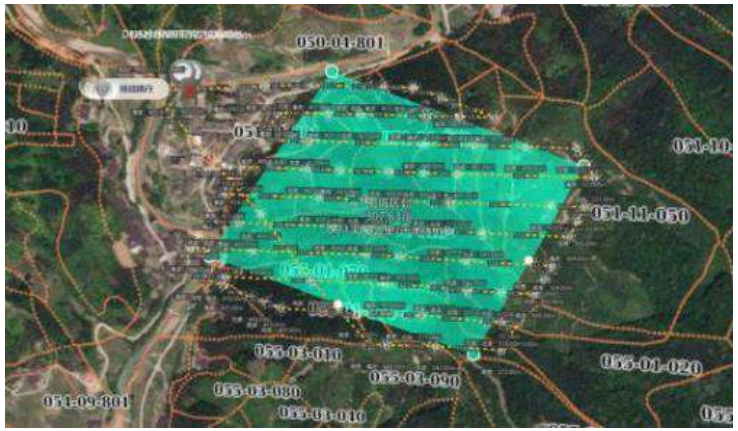
- Comparing two phases of imagery for the inspection of nighttime occupation in life passages.

Forestry patrol solutions

- Fire prevention and pest control patrol: One click generation of simulated ground flight routes centered around the hangar, with unmanned aerial vehicles conducting autonomous operations along fixed routes



- Equipped with a forestry AI big model to achieve intelligent recognition of dead trees, fireworks, etc., the platform automatically alerts and pushes detailed reports; Timely statistics and management of various events, which can be viewed by clicking on the event icon on the 3D map



- Inspection and patrol: One click generation of surface patterns to verify flight routes

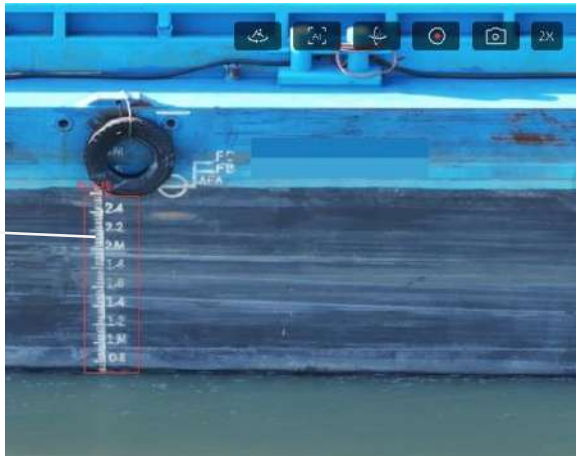
- Differential comparison of two phases of images - comparing the same area quickly identifying changes in image spots, and determining illegal logging problems

- Based on the comparison of two phases of images, one click intelligent calculation of the area of theft and destruction

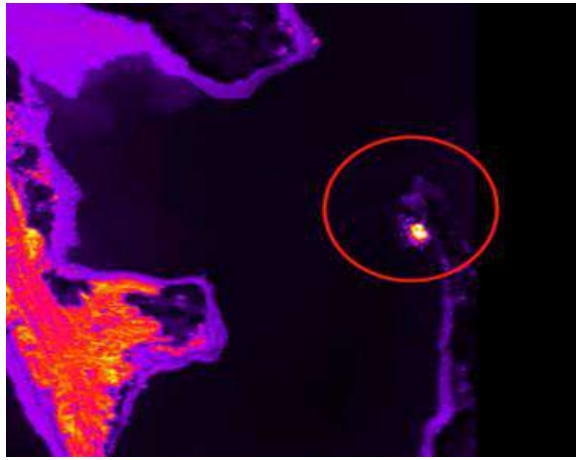
Water management solutions

Construct a 3D model of the water management scene and integrate a variety of IoT devices for unified control.

leapfrog inspection quickly patrol long-distance rivers



Ship hull waterline inspection



Monitoring illegal pollution discharge through infrared at night

After the personnel fell into the water, the drone quickly arrived at the scene to check the situation

Thanks for Watching

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