

A photograph of a water treatment facility. In the foreground, a large circular tank is filled with water, reflecting the sky and the surrounding structures. A metal walkway with railings extends across the tank. In the background, there are green trees and a clear blue sky. The overall scene is bright and clean.

Smart Water Management Solutions

Building a Complete Smart IoT Solution for the Future with IoT and AI
Make IOT Smarter

UNITED AIOT SDN. BHD.



CATALOG

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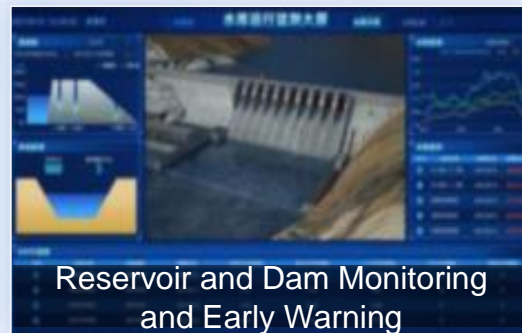


An aerial photograph of an industrial port area, featuring various buildings, docks, and ships. The image is overlaid with a semi-transparent blue filter and a network of glowing white lines and nodes, suggesting a digital or data-driven environment. The overall aesthetic is modern and technological.

01

Application Overview

The types and scales of new demands in water management scenarios such as rivers, lakes, seas, urban pipelines, geological disaster prediction, and water plants are increasingly growing. Traditional operation management methods and technologies can no longer meet social demands.



UIOTIN Smart Water Management solution



IoT



AI



Big Data



Satellite Positioning

- Offer a complete comprehensive solution, including system construction and operation services
- It has been widely applied in areas like geological disaster monitoring and smart reservoirs.



02

System
Architecture



Infrastructure Layer

Using IoT as the core of infrastructure construction, data collection and transmission are realized through various sensors.

Service Support Layer

Establishing various public and information services, including map services, statistical analysis, etc.; providing interfaces and services to various business systems.

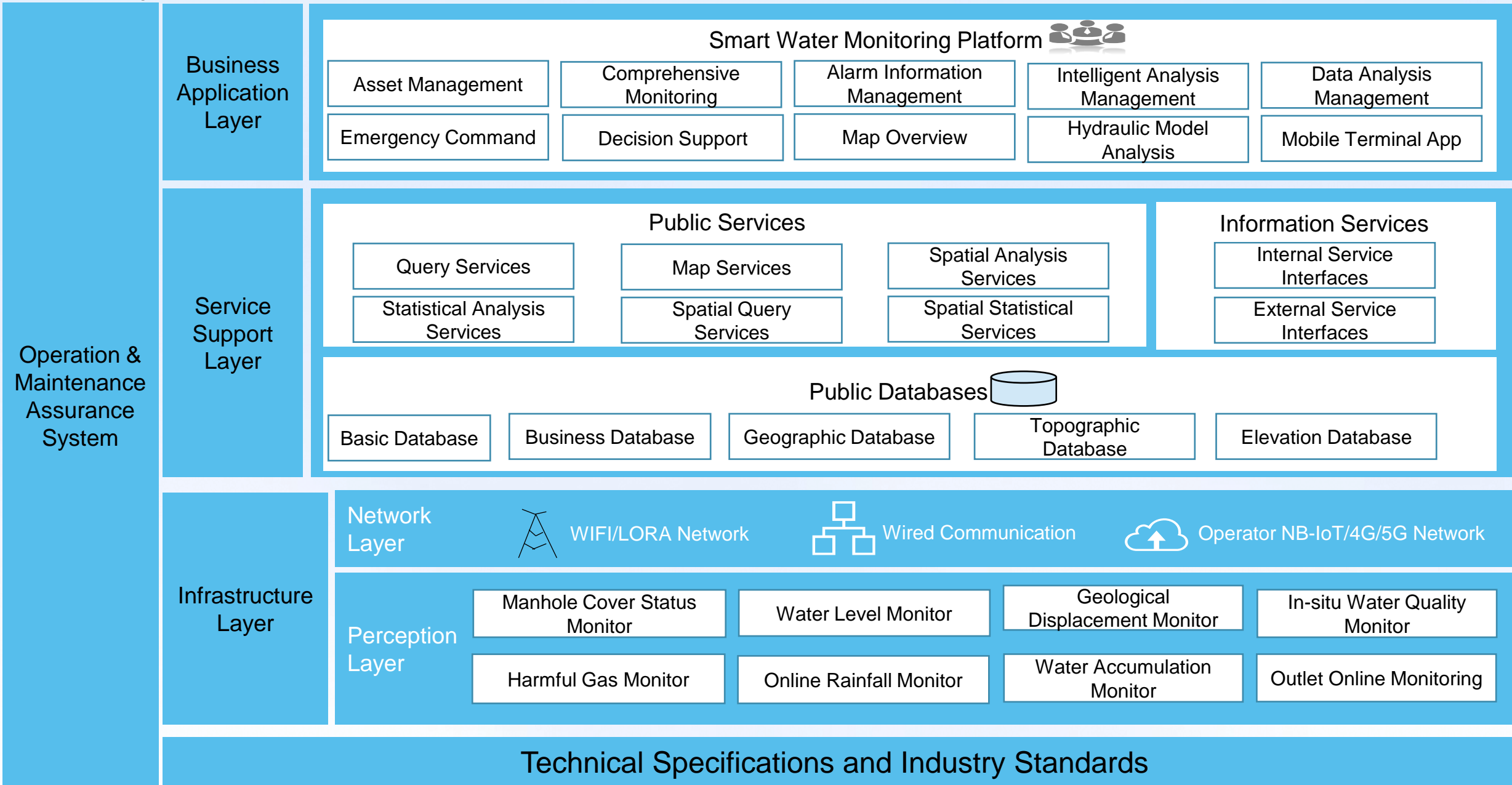
Business Application Layer

This is the entry point for end-users, enabling various user interactions, information extraction, and processing.

Standardization and Operation & Maintenance Assurance

Providing standardized guidelines in both technology and management, gradually forming an information standard. Simultaneously, an operation and maintenance assurance system must be constructed during the development to ensure system security, stability, and reliable operation.

System Architecture >> 01-System Framework





03

Platform Overview



Platform Overview >> 01-Platform Advantages



01

Through AI and video analysis technology, intelligent monitoring and operation of reservoirs and rivers are realized, reducing costs and improving response timeliness. Supports 10,000 monitoring IPC channels and video management access, providing real-time prediction, detection, and alerts for illegal activities and abnormal conditions such as water quality and waste in designated areas.

02

The platform supports thousands of mainstream water management sensors and alarm and control devices in the industry. Compared to other IoT platforms, our platform ensures broad applicability, low adaptation cost, and short development time based on various water management needs.

03

The cloud platform supports various online AI large models and our fine-tuned localized industry models. 2D/3D model import is supported, providing digital twin products and services for various scenarios through GIS+BIM technology, fully visualizing data.

04

Using the platform's mobile app or other mobile devices for online monitoring and management improves efficiency in inspection, maintenance, order dispatch, alerts, and other processes, reducing personnel costs.



Platform Overview >> 02-River Management and Monitoring Platform



The river management and monitoring early warning system collects real-time river data and status through sensors.

The river management and monitoring system collects accurate data and statuses of rivers in real-time using sensors for water level, water quality, displacement, and cameras. Real-time management and warnings for rivers are achieved through the cloud platform, mobile app, IP speakers, and alarms.

Rich in features

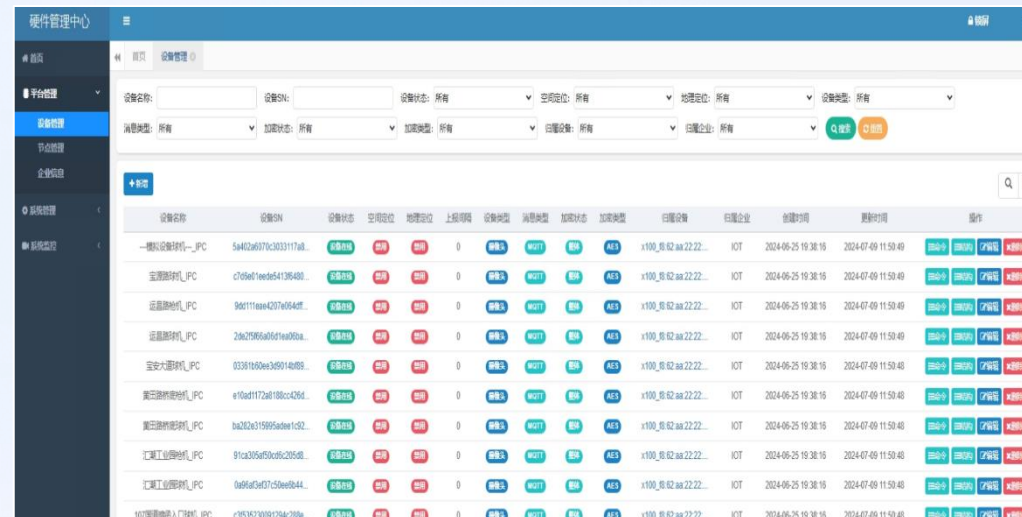
The cloud platform and app support event management, performance assessment, video surveillance, river management, water quality management, one-river-one-policy-one-file, emergency management, etc.

Multiple communication links

Monitoring and warning devices support 4G/5G full network / Beidou public communication and local LoRa-Mesh self-organizing network communication, achieving a backup monitoring and warning transmission network.

Intelligent linkage

The cloud platform and app can set up automatic linkages, linking various river events according to the customer's predetermined strategies. For example, automatic linkage and handling of events such as reaching a designated warning water level, sudden geological disasters, excessive water quality, sudden waste, and unauthorized swimming or fishing.



Platform Overview >> 03-Reservoir and Lake Safety Monitoring Platform



Dynamic real-time monitoring of water levels, water quality, dam displacement, and personnel control in small and medium-sized reservoirs. It provides intelligent analysis of reservoir capacity changes and early warnings for reservoir releases/flood discharges, assisting customers in ensuring safe reservoir management during flood seasons and meeting the requirements for smart, safe reservoirs.

Full-process Closed Loop

The cloud platform and app support event management, performance assessment, video surveillance, reservoir management, water quality management, one-reservoir-one-policy-one-file, etc., achieving a full-process closed loop from monitoring to warning, operation and maintenance, and emergency command. This ensures a full-process closed loop from the platform to mobile terminal emergency response.

High Efficiency, Low Cost

The system is fully compatible with existing mainstream monitoring devices in reservoirs, maximizing the use of existing resources. With the help of audio, image, and video files, the platform and mobile terminal support real-time, delay-free video calls, building real-time interaction between the reservoir and personnel. This strengthens the perfect combination of manual and technical defenses, addressing the current shortcomings where technical defense is strong but manual defense in information is weak.

Smart Inspection

The system retains both the personnel inspection actions and warning data within the system, implementing an internet express order dispatch model. This achieves a strong connection between personnel and the system, enhancing strong management control by the owner unit over personnel.



Platform Overview

04-Geological and Meteorological Disaster Monitoring and Warning Platform



meteorological

displacement

water level

... ..

Sensors

The Geological and Meteorological Disaster Monitoring and Warning Platform obtains environmental information through sensors like meteorological, displacement, and water level sensors, and integrates historical data on local disaster occurrences. By analyzing the data through AI large models, it predicts the probability of disaster occurrences. This information is provided in real-time to government departments for disaster prevention and inter-departmental coordination.

AI Prediction Model

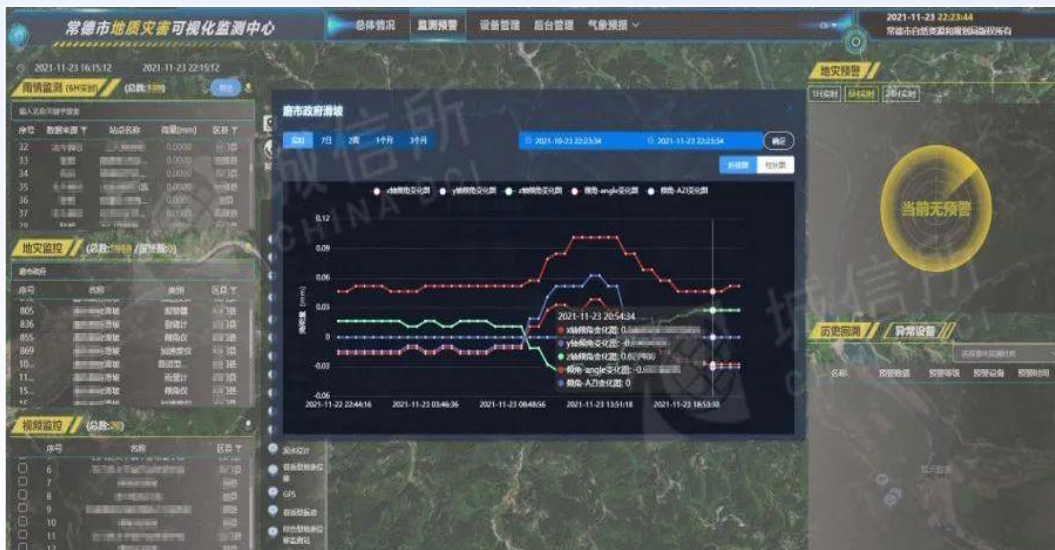
By collecting and deeply training data from local disaster occurrences, the AI prediction model is fine-tuned and trained. Combined with the analysis of data provided by current sensors, it provides timely and efficient references for subsequent disaster prediction alerts and decision-making.

High Efficiency, Low Cost

For key geological monitoring areas, the system undertakes tasks ranging from expert analysis and wide-ranging risk alerts to specific early warning responses, establishing a multi-level, progressively refined geological disaster meteorological warning interconnected system across provinces, cities, and counties.

Distributed Integration and Unified Management

The platform adopts an overall architecture mode of "distributed integration, unified management, centralized services," building a geological disaster meteorological risk warning system based on a distributed multi-layer data collection and integration technology framework, under the guidance and constraints of management methods, standards, and indicator systems.



Platform Overview >>

05-Urban Pipeline & Flooding Monitoring Management Platform



Urban Pipeline & Flooding Monitoring Management Platform

manhole cover status

pipeline liquid level

pipeline flow

... ..

collects data

Providing real-time understanding of the operation status within the pipeline network. It offers effective data support for the operation, scheduling, maintenance management, and quick response of the drainage network, enabling managers to understand the situation in time and make correct decisions.



Professional Sensing Devices

Most devices are designed with explosion-proof, waterproof, and dustproof features, tailored to the actual conditions of the pipeline network. Most devices use low-power designs, can be powered by internal batteries or external power, have a long lifespan, and are easy to install and maintain.

Comprehensive Monitoring Platform

Based on a complete data system, a support platform for data sharing, dispatch command, intelligent decision-making, information release, and intelligent collaboration is built, ensuring the effective operation of the smart pipeline monitoring platform, truly realizing immediate reporting upon changes, with reporting capable of positioning and traceability.

GIS Monitoring

Using GIS technology and 3D models, an underground drainage pipeline planning and analysis system, static sand table, etc., are constructed to achieve multi-dimensional visual presentation of the drainage system; a three-dimensional dynamic "one map" of the underground drainage pipeline is drawn, providing a global perspective of the city's underground pipeline network, with multi-dimensional, multi-angle, and multi-variate dynamic displays of geographic information spatial distribution.



Industrial smart IoT scenarios, gateways

cross-ecosystem access

rapid adaptation

deployment of IoT devices



- Supports LTE/5G cellular network access, local support for WIFI6, Bluetooth, LORA, UWB, and other wireless protocols, with a maximum support for 256 WIFI terminals.
- Supports expansion of LORA/LORAWAN, with self-developed video series compression and decompression cards, and self-developed encryption and decryption modules.
- Supports standard industrial rail, desktop, and wall-mounted installations.
- Supports local devices with built-in touch screens, WeChat mini-programs, mobile tablet apps, and cloud platform management.

Flow Meter



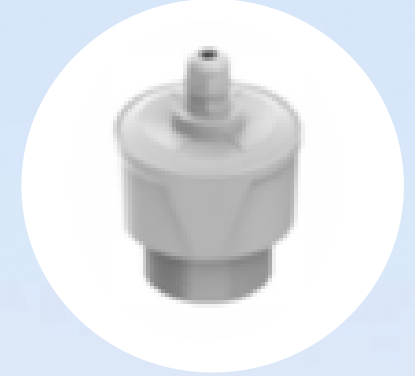
Measurement Range: 0.1L/S-99999.99m³/h
Accumulated Flow: Max 4290000000.00m³
Flow Measurement Accuracy: 1%-5%
Maximum Liquid Level Range: 1-3 meters optional
Liquid Level Measurement Accuracy: 0.5%
Data Communication Method: NB-IoT or 4G
Power Supply Voltage: DC24V (Solar Power Supply)

Wireless Liquid Level Transmitter



Measurement Range: 0~20m optional
Sleep Current: 40 microamps
Working Humidity: ≤95%RH without condensation
Measurement Medium: Non-viscous liquid
Liquid Level Measurement Accuracy: 0.5%
Data Communication Method: NB-IoT
Power Supply Voltage: DC24V (Battery Power Supply)

Radar Liquid Level Meter



Measurement Range: 0.15~8m optional
Measurement Accuracy: 1mm
Sleep Current: 50 microamps
Working Humidity: ≤95%RH without condensation
Data Communication Method: RS485 MODBUS
Power Supply Voltage: DC12V

Hyperspectral Water Quality Multi-Parameter Monitor



Collecting water reflectance characteristics from natural water bodies and monitoring the eutrophication trend through AI algorithms.

Hyperspectral Water Quality Monitoring Function: Supports multiple water quality monitoring indicators such as Chlorophyll-a, CODmn, Suspended Solids, Transparency, etc.; spectral wavelength 400~1000 nm; spectral resolution 1 nm; no need for chemical reagents; monitoring intervals can be set to seconds.

Liquid Level Monitoring Function: Monitoring height within 15 meters; 80 GHz millimeter wave radar technology; accuracy error less than 2 mm; unaffected by wind, rain, fog, high temperatures, etc.

Infrared Visible Light PTZ Camera Function: Supports up to 2560 × 1440@30 fps HD output; supports Smart265 high-efficiency compression algorithm.

Video GNSS Displacement Observation Sphere



Using high-precision GNSS, high-precision MEMS acceleration and tilt sensors, and HD 400W image sensors, the base station and observation station receive satellite data, which is processed by cloud servers to output millimeter-level three-dimensional (X, Y, Z) monitoring data of observation points. Video can be associated with monitoring points for key area linkage snapshots and remote video inspection.

Satellite Support: Supports full-band BD: B1+B2, GPS:L1+L2, GLONASS:L1+L2, Galileo, IRNSS, QZSS, SBAS

RTK Accuracy: Horizontal: $\pm (8 + 1 \times 10^{-6} \times D)$ mm, D is the baseline distance (unit: mm); Vertical: $\pm (15 + 1 \times 10^{-6} \times D)$ mm.

Static Accuracy: Horizontal: $\pm (2.5 + 0.5 \times 10^{-6} \times D)$ mm, D is the baseline distance (unit: mm); Vertical: $\pm (5.0 + 0.5 \times 10^{-6} \times D)$ mm.

Minimum Power Consumption: Less than 2W, Supports up to 2560 × 1440 @30 fps HD output

An aerial photograph of an industrial port area, featuring various buildings, docks, and ships. The image is overlaid with a semi-transparent blue filter and a network of glowing white lines and nodes, suggesting a digital or technological theme. The overall color palette is dominated by blues and greys.

04

Solution Highlights

Solution Highlights



5000+

Types of IoT
Devices Integrated



Over **50%** Lower

Solution
Development Time
Compared to
Industry Average



Over **30%** Lower

Solution
Development Cost
Compared to
Industry Average



Over **20%** Lower

AI Industry Model
Training and Fine-
tuning Cost



**Years of Technological
Accumulation and Innovation
Forge the Core Advantages of the
Solution**

Low Cost

Efficient

Stable

Secure

05

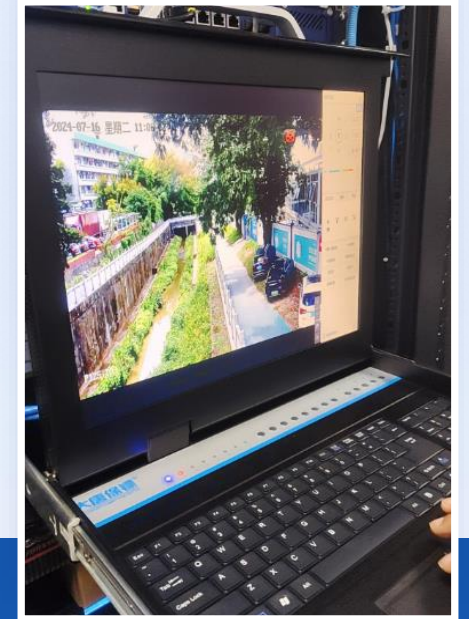
Industry Cases



Industry Cases >> 01-River Drainage Project



Thermal Well Temperature and Humidity Monitoring



Multi-parameter Water Quality Monitoring

hyperspectral water quality and level cameras

high-precision GNSS displacement cameras

regular PTZ cameras

high-precision radar water level meters

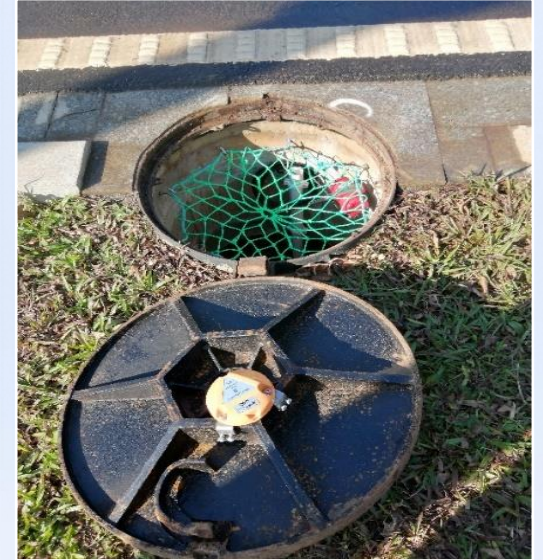
bullet cameras

- For real-time monitoring and data reporting of river water quality, water levels, and geological conditions
- Alarms are triggered according to customer strategies, and on-duty personnel are notified via SMS, email, and phone
- Safety management of designated river areas is monitored 24/7

Improving the efficiency and responsiveness of water departments,

GIS maps are used to directly display data and video information from monitoring devices around the river.

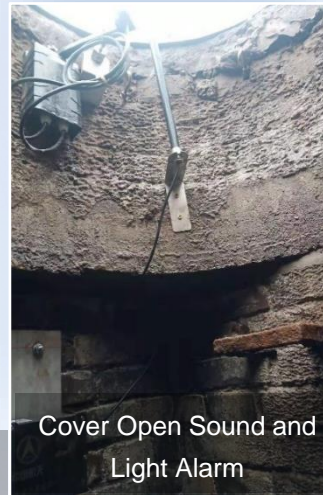
Industry Cases >> 02-Pipeline Flooding Project



Multi-parameter Water Quality Monitoring



Thermal Well Temperature and Humidity Monitoring



Cover Open Sound and Light Alarm Monitoring

Device Description

Management Monitoring

Operation and Maintenance

Waterlogging Situation Monitoring

This project plans to install cover status monitors, manhole liquid level monitors, thermal well temperature and humidity monitoring points, harmful gas monitoring points, flow monitoring points, and 9 water quality monitoring points to effectively manage the pipeline and the status of manhole covers along the route, underground water levels, and toxic and harmful gases.

Management Platform

Monitoring equipment is integrated and managed through a unified equipment management platform

Which provides Socket communication services, database storage services, Web Service, MQTT proxy services, and App callback services, facilitating the integration of monitoring device data with the management platform.

Industry Cases >> 03-High-Fidelity Digital Twin Water Project



Hydraulic Engineering



Hydrological Forecasting



Rehearsal Plan



Project Highlights

Data Baseboard

Simulation Scenario

Application Scenario

- Based on a high-fidelity digital twin simulation engine, combined with the data foundation of a unified water services map, and relying on typical application scenarios, build L2 and L3 level high-fidelity digital twin data baseboards.
- Construct a 3D simulation scenario with capabilities of layer tree management, path roaming, monitoring data integration, weather simulation, and "early warning, forecasting, rehearsal, and emergency plan."
- The built high-fidelity typical application scenarios can be shared with business units through overall packaging and expanded based on business departments.

Project Background

Taking the digital reconstruction of water services business processes as the main line.

Promote data convergence governance and application integration, supporting the integration and reconstruction of business processes such as "water intake, supply, use, and discharge" and the integration and reconstruction of current water services business application systems.

Core Business Objectives

Build a data foundation



Build a capability foundation



Build a service foundation

Provide coordinated and intensive support and services for the construction and development of smart water services.



UIOTIN

Thanks for watching

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