

A nighttime photograph of a dense urban skyline, likely Tokyo, with numerous skyscrapers and buildings illuminated by city lights. The image serves as the background for the entire slide.

Smart Pole / Smart City

Integrated management system solution

Contents

- PROJECT BACKGROUND
- SOLUTION
- APPLICATION
- VISUAL PLATFORM

PROJECT BACKGROUND

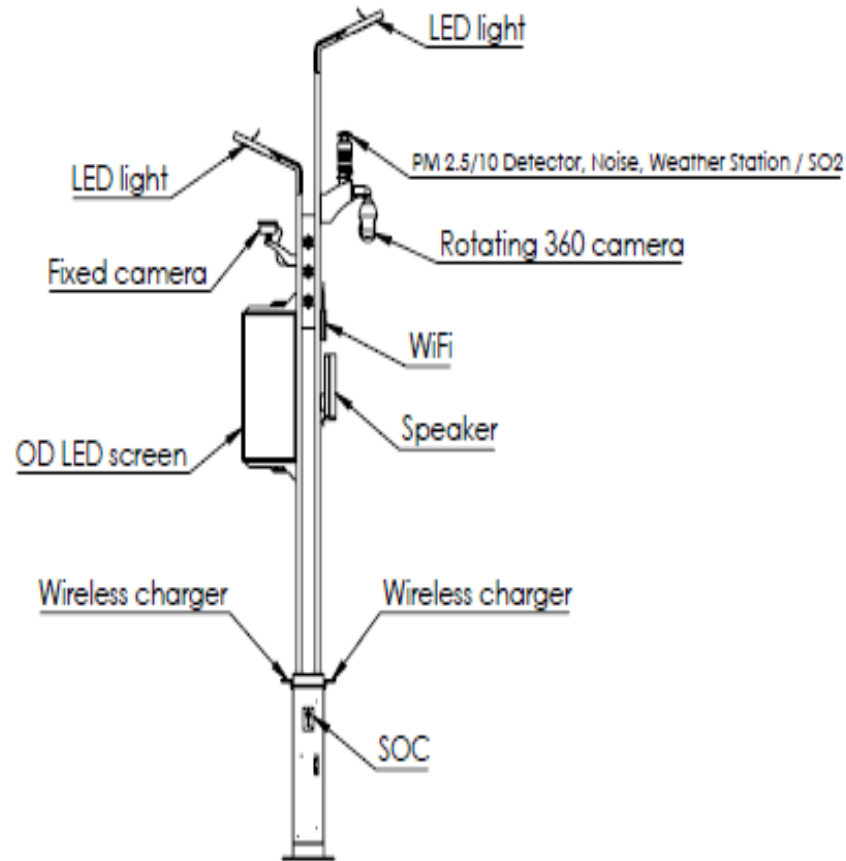




SOLUTION

Demand analysis

smart pole features



- Smart Lighting:** Enables remote control, intelligent dimming, and fault alerts, enhancing lighting efficiency and management standards.

- Environmental monitoring:** Real-time monitoring of air quality, noise, temperature, and humidity provides robust data support for urban environmental governance.

- Video Surveillance:** Equipped with high-definition cameras, it enables road monitoring and public security prevention, ensuring urban safety.

- Information Dissemination:** Fitted with display screens, it broadcasts government announcements, public service advertisements, and traffic guidance, facilitating the daily lives of citizens.

- Emergency Alert:** Offers an instant call feature to ensure the safety of citizens.

- Public Broadcasting:** A rich array of audio services can play delightful and soothing music throughout the city, nurturing the citizens' sentiments and enhancing their happiness index.

Demand analysis~

smart pole features



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SOLUTION

Function of smart pole

Integrate mounted devices,fully playing the function of smart lighting poles

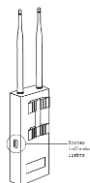
Smart lighting



Public broadcasting



WIFI



**LED
Information
release**



**Smart
gateways**



Smart security



**PM2.5/10, Noise
Weather Station**



**Environment
monitoring**



Charging



Emergency call



Smart lighting subsystem

Function of smart pole

Main function:

Solve the problem such as the monotony of on/off control methods, inaccuracies in lighting schedules, difficulties in patrol inspections, untimely fault resolution, and the inability to regulate lighting rates.

1

Remote control

2

Data monitoring

3

State analysis

4

Fault alarm

5

GIS

6

Report query

7

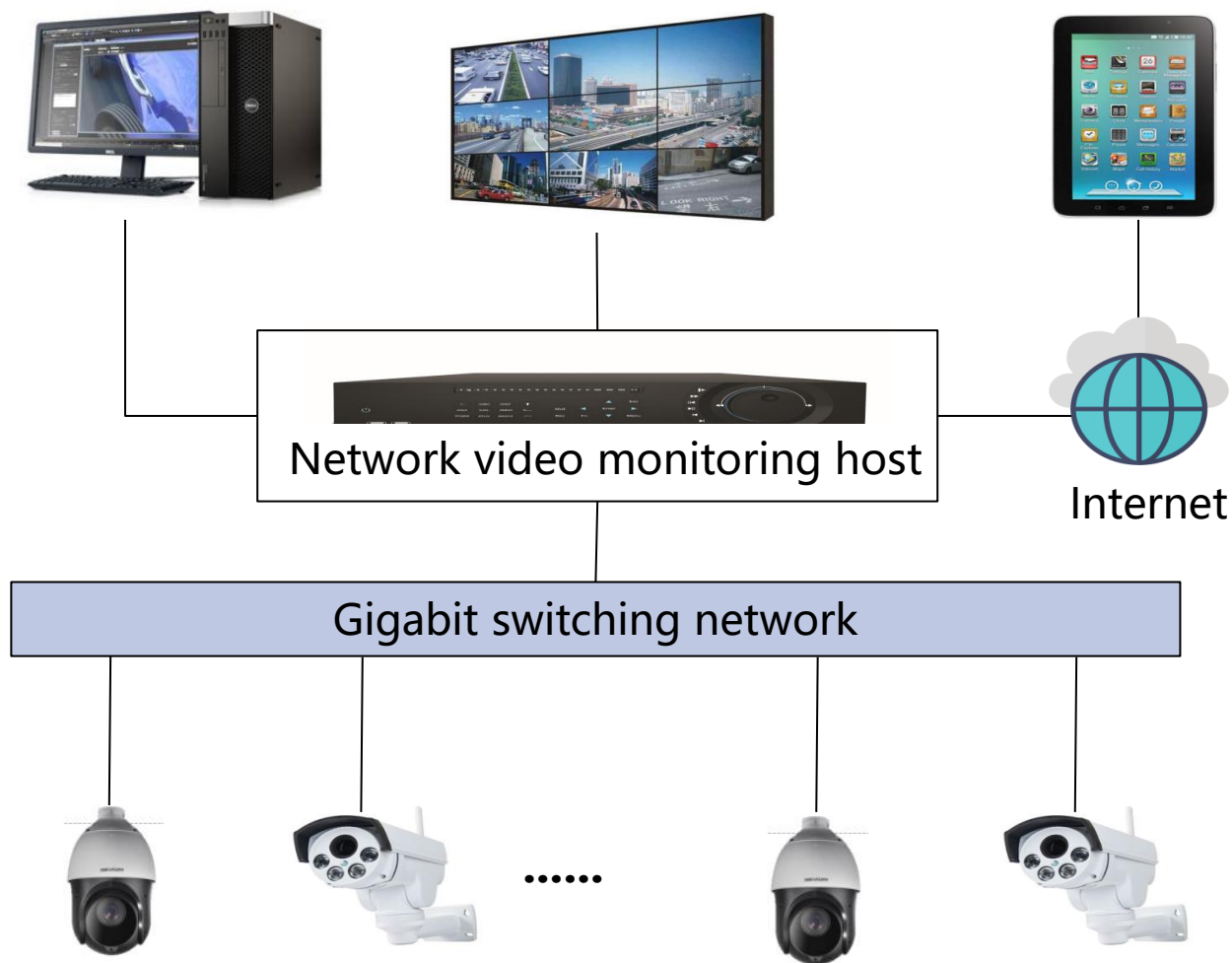
Concentrator log



Video surveillance subsystem

Function of smart pole

Sub-control center General monitoring center Mobile terminal



SERVER



NVR



CAMERA

Main function:

Outdoor LED screens linked to software platforms enable real-time video updates. They display ads, weather, and major events (e.g., festivals or official visits), meeting smart streetlight needs and supporting project revenue.

1 Information release

2 Cultural promotion

3 Information warning

4 Advertising

5 Traffic relief

6 Weather forecast



Main advantages:

- 1. LED streetlight screens maximize impact with minimal space, enabling multi-point placement. The demand for small outdoor LED displays on light poles is gradually increasing.
- 2. Compared to traditional lightbox ads, video playback is more effective. Dozens of ads can be displayed simultaneously, significantly increasing the utilization of pole advertising.
- 3. With national road traffic planning, the market outlook is promising. The government's focus on manufacturing indicates a bright future for new LED pole screens.
- 4. During the pandemic, pole screens played a critical role. Combined with broadcasts, they reminded residents to wear masks, avoid gatherings, report travel plans, and displayed hotline numbers, greatly aiding government epidemic control efforts.

Operations analysis:

Based on an annual revenue ofBaht per ad screen, the cost can be recovered in 2 years. Profits begin in the third year, reaching approximatelyBaht annually. With an 8-year lifespan per screen, total profits could amount to aroundBaht.

Form of advertising	Number of scroll plays		
frequency (/day)	144	216	504
10s (/month)	1.5k	2k	5k
10s (/month)	2.5k	3.5k	8k
Note: The promotional videos featured in this media kit are provided by the advertising unit or individual. If video production is required, additional fees will be charged based on mutual agreement. Video production costs: 10 seconds for..... Baht, 15 seconds forBaht, and 30 seconds forBaht. Fees are subject to negotiation based on video length and special effects.			
Based on an average daily usage of 12 hours per device, the average power consumption is 1-3 kWh/day/unit. Including personnel maintenance and management costs, the total annual operational and maintenance expenses amount to approximatelyBaht.			

Main function:

A system that digitally encodes audio signals from broadcasts, transmits them as data packets over a network, and then decodes them back into audio signals at the terminal is called a digital IP network..

1

Long-distance
transmission

3

Partitioned
task playback

2

Packet
broadcast

4

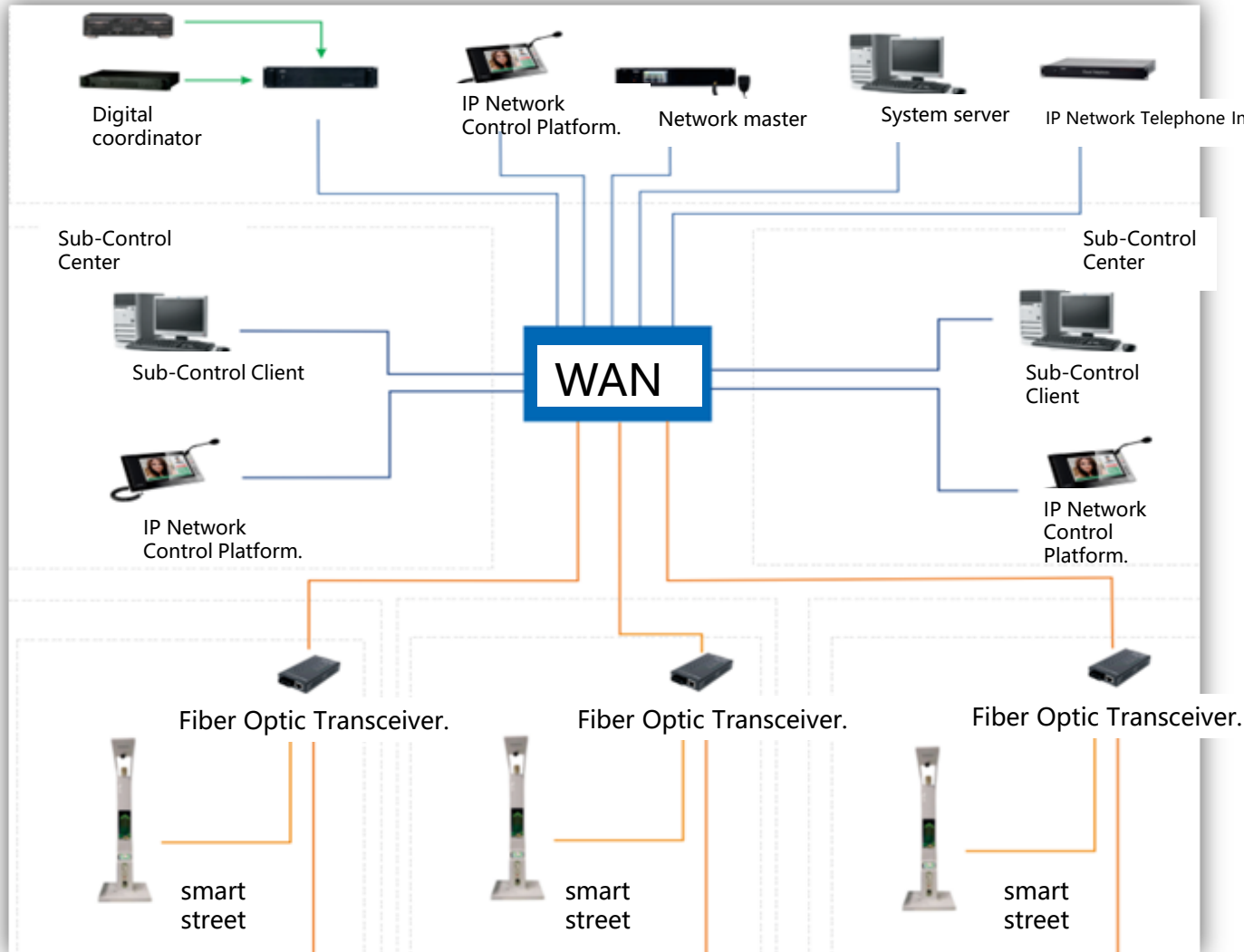
Emergency call
warning



Emergency help subsystem

Function of smart pole

The streetlight features an information call and emergency alert button. In case of emergencies, pressing the button enables real-time communication with relevant management departments for immediate assistance.



System function:

1. Diverse audio services cater to public needs, playing pleasant and relaxing music across the city to nurture citizens' sentiments and enhance their happiness index.
2. On-site announcements and real-time command. In emergencies, the command center can issue urgent broadcasts via the IP network visualization host, notifying all or selected broadcast points.
3. Preemptive deterrence and remote intervention. Remote warnings can prevent illegal activities before they occur and minimize losses during incidents, reducing crime rates and improving social security.
4. Smart audio enhances emergency response. With unmanned functionality, it integrates video analysis to trigger pre-set audio in specific areas, fostering a safe and harmonious city.
5. Integrated daily and emergency broadcasting. It ensures timely information dissemination, including background music, announcements, missing person alerts, and fire safety broadcasts.
6. One-touch emergency calls provide better and safer information and security for the public.
7. Linked surveillance. When an IP network audio post receives an alarm signal, the corresponding video feed automatically pops up on the monitoring center's screen.
8. Easy deployment and flexible control. Devices can connect to the system backend via the network, allowing real-time monitoring and flexible parameter configuration.

Main function:

It can monitor up to 11 types of conventional meteorological data and 7 types of environmental data, including temperature, humidity, air pressure, rainfall, radiation, UV levels, noise, wind direction, wind speed, PM2.5, PM10, CO, NO, NO2, SO2, O3, H2S, and VOC. The data can be released in real-time through the city's public platform, aiding citizens' travel plans. Additionally, it provides foundational meteorological data to the weather bureau and environmental pollution analysis data to the environmental protection agency.

1

Real-time
monitoring

2

Real-time
publication

3

Statistical
analysis of data



smart poles features

01

Professional Smart Pole Gateway,
Certified Login.

02

Supports multiple wireless
networking methods.

03

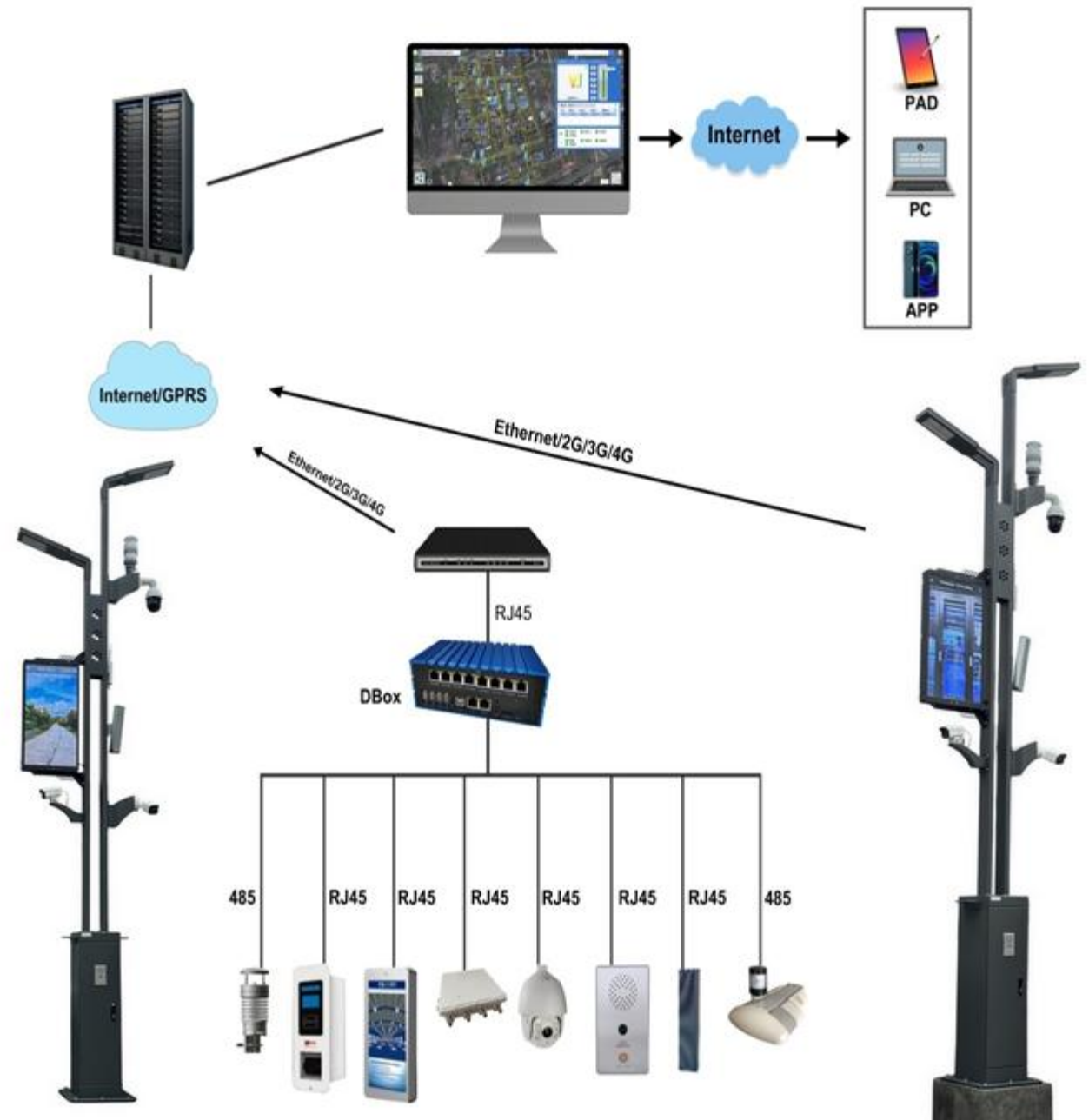
Convenient multi-network interface
management.

04

Integrated data collection, efficient
and cost-effective.

05

Rich protocol integration, secure
and convenient.



smart lighting energy saving benefits

Adjust lighting or alternate lamp activation during different times and road sections to reduce energy consumption.

Reduce operation and maintenance costs

Shift from regular patrol inspections to on-duty monitoring of alarms.

The wisdom of the joint rod to avoid repeated construction

One-time investment, shared use across multiple departments.

Beautify the urban environment

Enhance urban aesthetics and boost public happiness through smart city initiatives.

Operating income



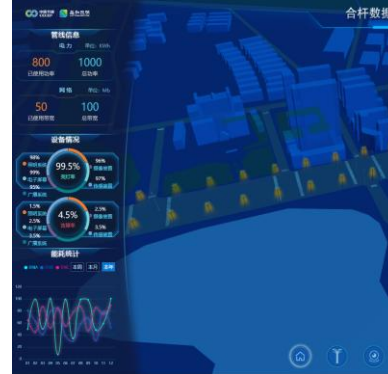
Site Operations

Smart poles equipped with micro base stations are becoming a target for major operators, as the issue of erecting poles is increasingly prominent.



Service operation

Deploying smart broadcasting equipment enables timely, effective, and widespread information dissemination, issuing notifications and policy awareness, significantly enhancing the efficiency of information coverage.



Data operation

Smart poles equipped with environmental monitoring, WiFi, and GIS data integration can connect to relevant departments and units.



Advertising operation

Smart poles equipped with multimedia displays can broadcast public service information and collaborate with businesses to generate advertising revenue, serving as a profitable operational model.

Traditional streetlights consume significant energy, and poor management leads to substantial power waste.



Faults are difficult to locate, resulting in high maintenance labor costs.



Failures cannot be detected promptly, making it challenging to improve safety measures.



No energy consumption data monitoring or management, and no capability for remote control or centralized management.

Critical equipment of smart pole



Smart Pole Gateway:

1. Enables multi-device integration: Including cameras, billboards, weather stations, charging piles, single-lamp controllers, network broadcasting, and one-touch alarms, facilitating device interaction and data collection.
2. Features video streaming, remote camera control, and intelligent streetlight management.
3. Supports multiple communication protocols: Onvif, Modbus, RS485, etc.
4. Accommodates various transmission methods: MQTT, HTTP, etc.
5. Local WEB visual scheduling for real-time debugging and monitoring of device operations.
6. Supports automatic recognition and IP management of external devices.
7. Industrial-grade design ensures stable operation in harsh environments.

Picture of smart pole



Picture of smart pole



VISUAL PLATFORM



环境监测



LED显示屏



网络广播

网络广播	播放文件名称
网络音响	雾霾严重, 做好防护
网络音响	雨天路滑, 注意安全
网络音响	紧急降温, 注意保暖
网络音响	雾霾严重, 做好防护
网络音响	雨天路滑, 注意安全
网络音响	紧急降温, 注意保暖

智慧泊车

泊位总数 199



■ 已用泊位数 99个

名称	状态	时间	充电量	金额
充电桩1	充电中	1: 00	3	10
充电桩1	充电中	1: 00	3	10
充电桩1	充电中	1: 00	3	10
充电桩1	充电中	1: 00	3	10
充电桩1	充电中	1: 00	3	10
充电桩1	充电中	1: 00	3	10

智慧灯杆设备统计

终端 100	气象站 100	摄像头 100
气象站 100	WiFi设备 100	显示屏 100
充电桩 100	显示屏 100	网络音响 100
一键呼叫 100	网络音响 100	

设备名称	在线状态	是否故障
垃圾桶1	在线	是
垃圾桶2	在线	否
垃圾桶3	在线	否
井盖1	在线	否
井盖2	在线	否
井盖2	在线	否

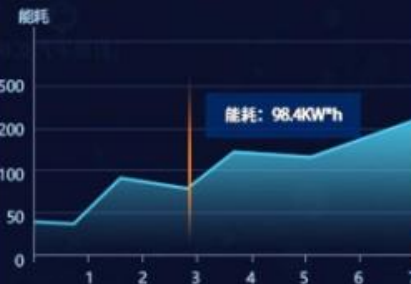
实时警报

355

设备名称	警报类型	时间
垃圾桶	倾倒	2020-9-29 11:34
井盖	井盖打开	2020-9-29 11:34
单灯	灯具故障	2020-9-29 11:34
集控	配电柜断电	2020-9-29 11:34
井盖	井盖打开	2020-9-29 11:34
垃圾桶	倾倒	2020-9-29 11:34
单灯	灯具故障	2020-9-29 11:34

用电统计

37.63 241.33 2589.35
昨日能耗 本月能耗 今年总能耗



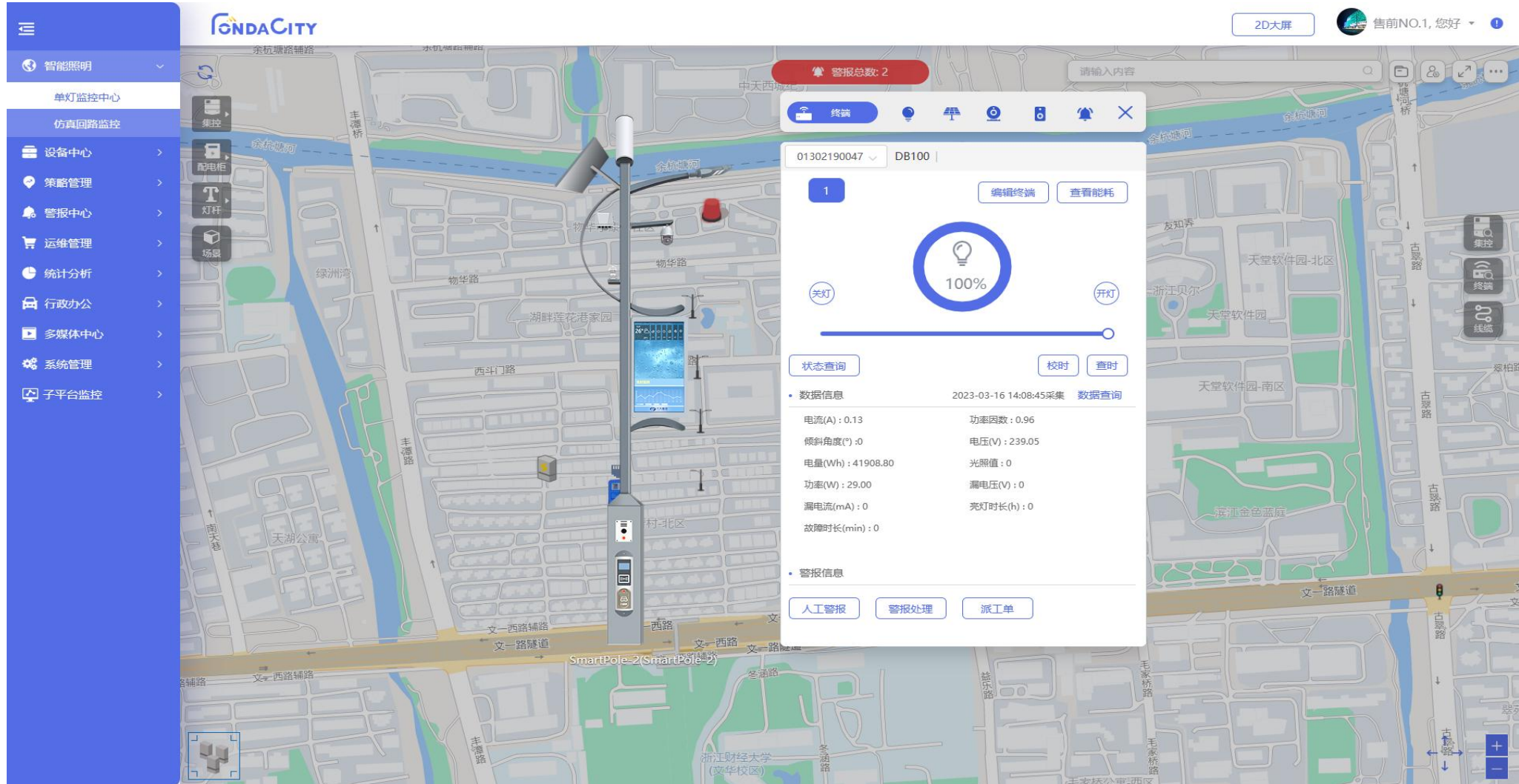
一键呼救

今日呼叫
198累计呼叫
198

■ 无呼入 50个
■ 呼叫中 20个
■ 接听中 30个
■ 繁忙中 10个

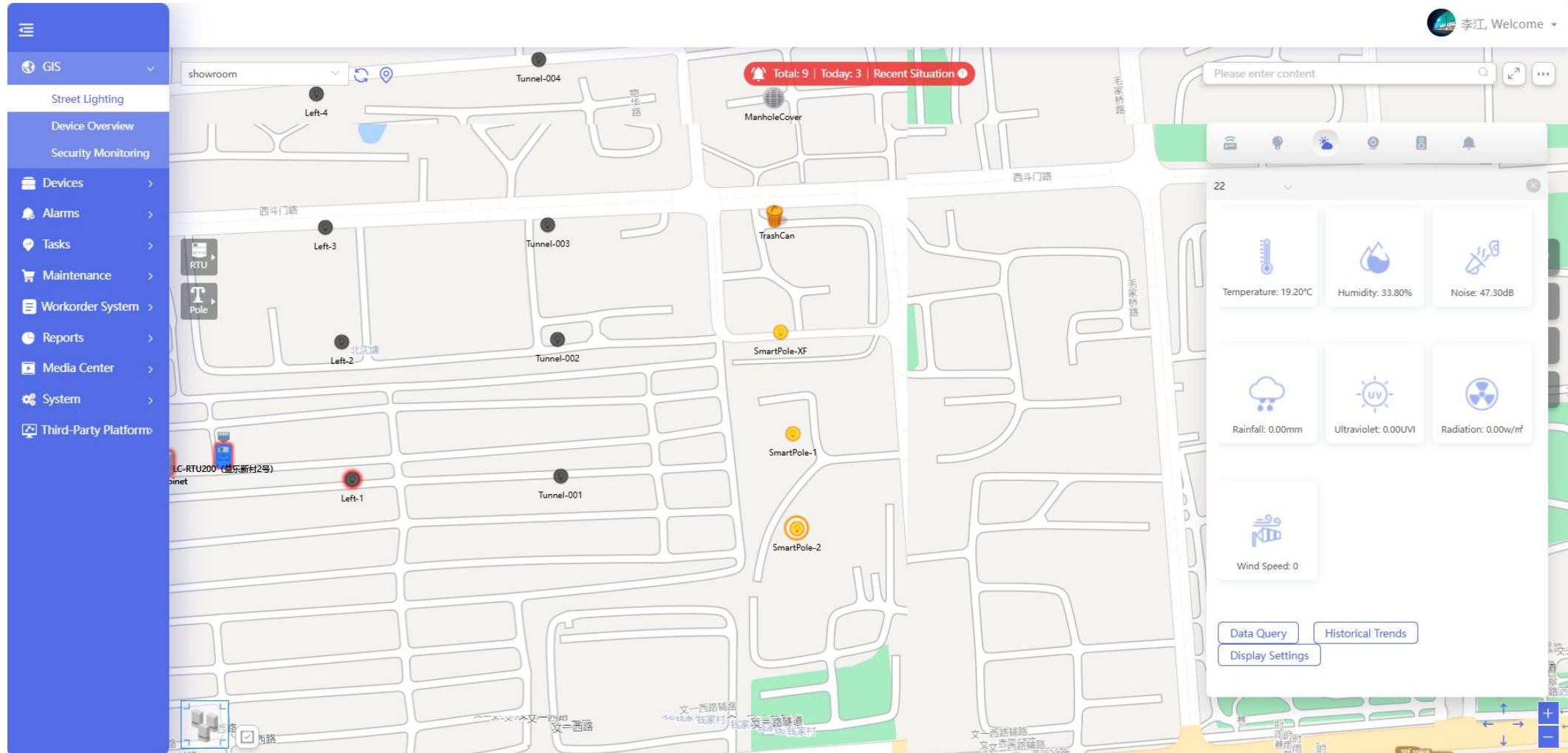
Visual platform

GIS mapping provides an intuitive and convenient overview of device distribution and information, supporting the viewing and control of smart pole attachments.



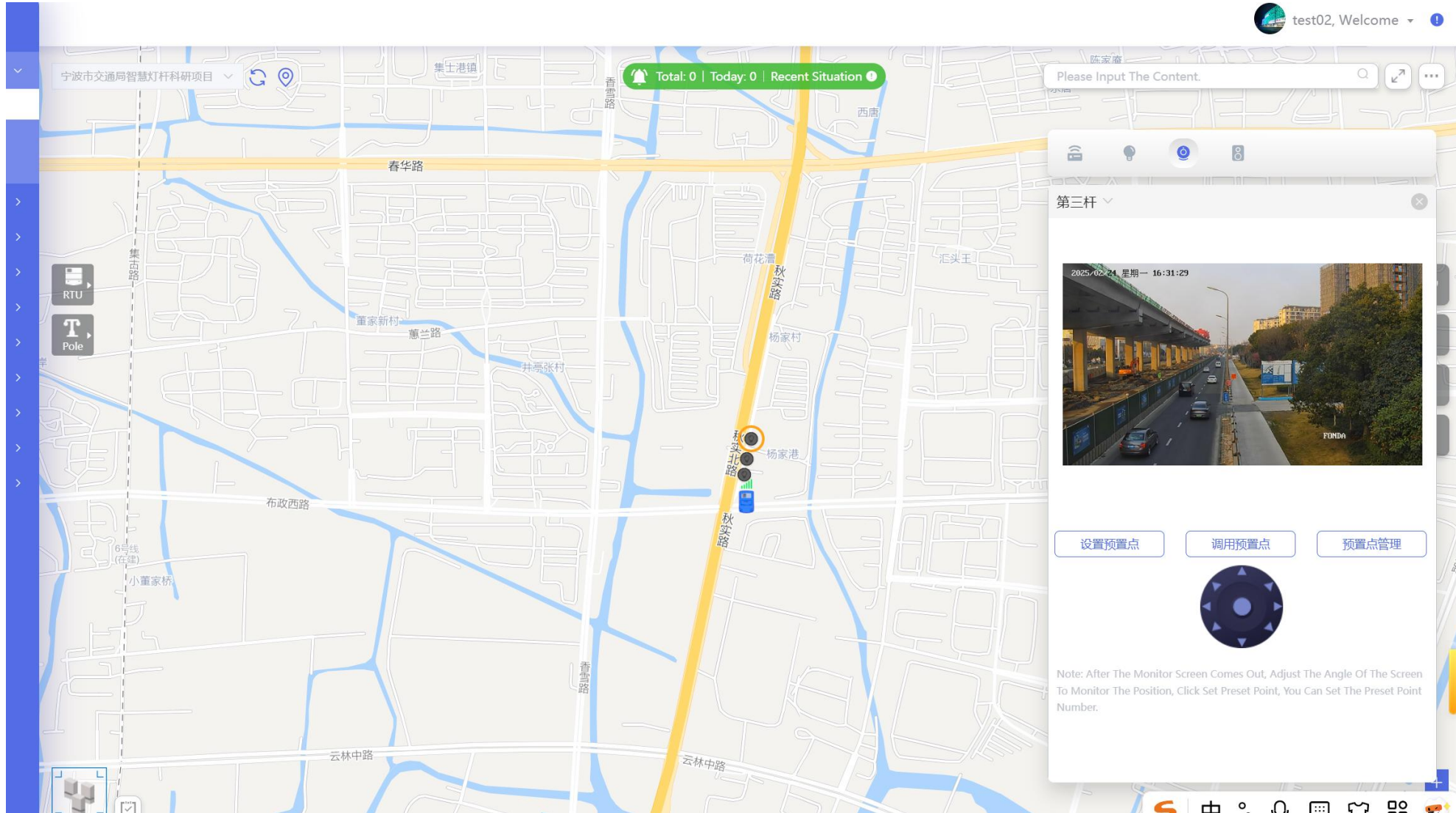
Visual platform

Environmental monitoring allows for real-time updates of local meteorological data, which can be synchronized with display screens for continuous weather updates.



Visual platform

Video surveillance enables real-time monitoring, automatic video storage, and integration with alarm systems.



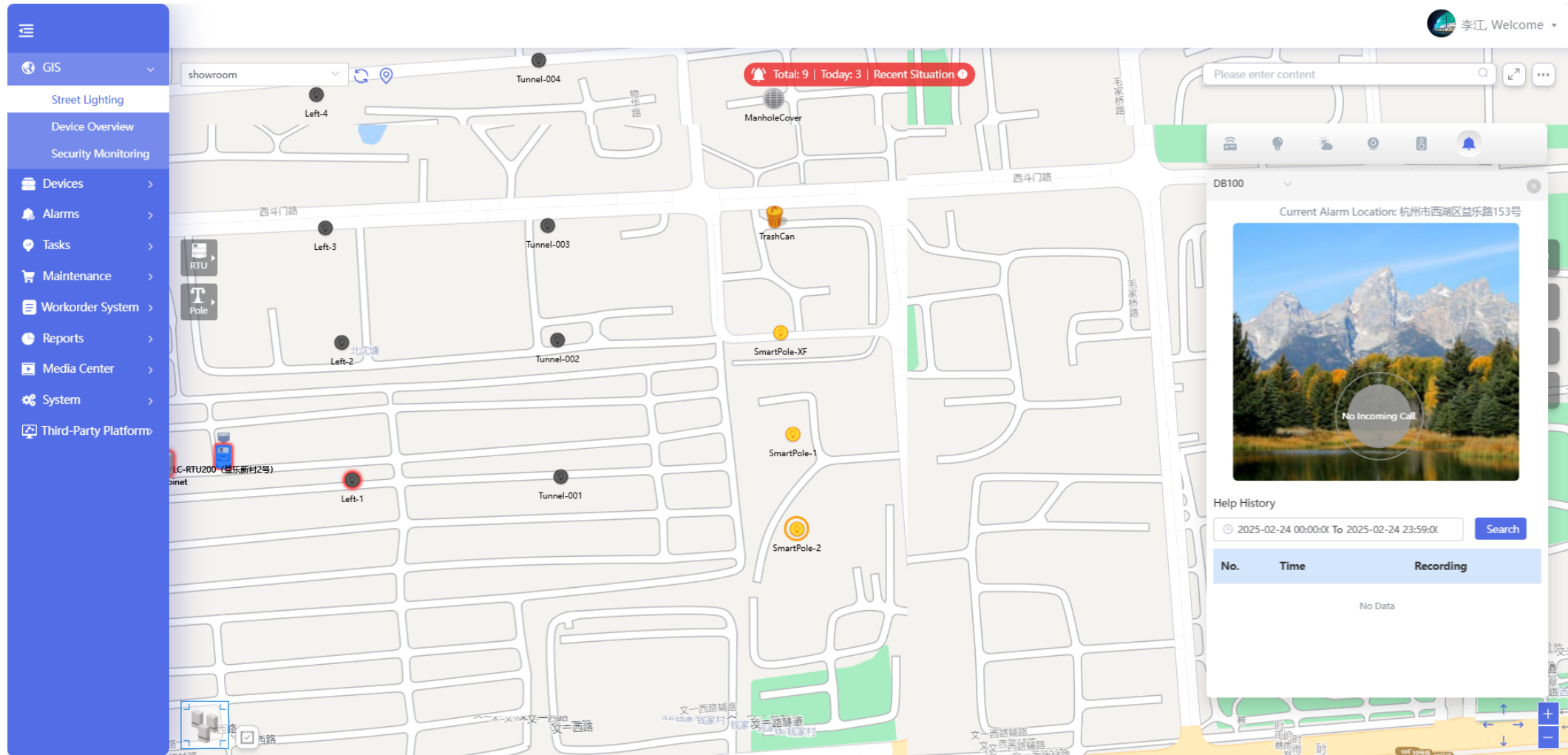
Network audio columns can play uploaded audio files as needed and allow remote broadcasting in emergencies via the main unit.

The screenshot displays a web-based management interface for network audio columns. On the left is a blue sidebar menu with the following items: GIS, Street Lighting, Device Overview, Security Monitoring, Devices, Alarms, Tasks, Maintenance, Workorder System, Reports, Media Center, System, and Third-Party Platform. The main area features a map with various locations marked: Left-1, Left-2, Left-3, Left-4, Tunnel-001, Tunnel-002, Tunnel-003, Tunnel-004, ManholeCover, TrashCan, SmartPole-XF, SmartPole-1, and SmartPole-2. A red banner at the top of the map indicates 'Total: 9 | Today: 3 | Recent Situation'. A search bar at the top left of the map contains the text 'showroom'. In the top right corner, there is a user profile for '李江, Welcome' and a search bar with the placeholder 'Please enter content'. On the right side, a 'Speaker-DB...' window is open, showing a 'Media List' tab. This window includes buttons for 'Play Immediately', 'Audition', and 'Modulation'. The 'Media List' table has columns for 'Radio', 'No.', and 'File Name' and contains 9 entries:

Radio	No.	File Name
☐	1	贝加尔标准音质-240723.mp3
☐	2	诺谷Plus - 归途的光.mp3
☐	3	笑纳.mp3
☐	4	知更鸟, HOYO-MiX, Chevy - 希望有...
☐	5	浅影阿、汐音社 - 探故知.mp3
☐	6	思念.mp3
☐	7	徐小明 - 大号是中华.mp3
☐	8	张杰, HOYO-MiX - 不眠之夜.mp3
☐	9	张学友 - 偷心.mp3

Visual platform

Emergency assistance: In case of sudden incidents, the streetlight's inquiry call and emergency alarm button can be pressed to enable real-time communication with relevant management departments for prompt help.



Visual platform

Device management supports individual and batch addition, deletion, and registration of smart pole attachments, including cameras, advertising screens, speakers, one-touch help buttons, and charging stations.

The image displays two screenshots of the GNDACITY Visual platform interface. The top screenshot shows the '设备管理' (Device Management) page, which includes a table of devices and a '新增设备' (Add New Device) modal window. The bottom screenshot shows the '设备总览' (Device Overview) page, which provides a summary of device status and performance metrics.

设备管理 (Device Management) Table:

序号	名称	UID	型号	通信协议	所属设备	地址	区域	操作
1	044023210050	044023210050	16LTE-C1	TCP-D-light	文一路路	浙江嘉兴南湖街道...		
2	044023240093	044023240093	CAT18K7	F2				
3	000373732913	000373732913	CAT22	F2	迎宾大道过灯	西湖区文一路西96...		
4	16NB	044023240056	71LTE	TCP-D-light	Tunnel-001			
5	Tunnel-004	000008110006	12R	PLC FEMS	Tunnel-004			
6	Tunnel-003	000008110219	12R	PLC FEMS	Tunnel-003			
7	Tunnel-002	00000811007A	12R	PLC FEMS	Tunnel-002			
8	Tunnel-001	000008110141	12R	PLC FEMS				
9	LCU16Z	0320232400F1	LCU16Z	FEMS	Leti-4			
10	DB100	01302190047F	12R	PLC FEMS	SmartPole-2	杭州市西湖区显示...		

新增设备 (Add New Device) Modal:

所属设备: showroom

类型: 摄像头

生产厂商: [选择设备类型]

名称: [输入设备名称]

编号: [输入设备编号]

序列号: [输入设备序列号]

品牌: [选择品牌]

OSD名称: [输入OSD名称]

RTMP: [输入RTMP地址]

连接: [选择连接方式]

地址: [输入地址]

端口: [输入端口]

区域: [选择区域]

通信: [选择通信方式]

快速新增 确定

设备总览 (Device Overview) Dashboard:

设备总览

- 集中控制器: 4 (在线: 2, 离线: 2, 报警: 1, 在线率: 50%)
- 直连终端: 9 (在线: 0, 离线: 9, 报警: 1, 节点丢失: 1, 在线率: 0%)
- 非直连终端: 11 (可控: 3, 非可控: 8, 节点丢失: 0, 报警: 0, 实时可控率: 27.27%)
- 终端下灯具: 21 (亮灯灯具: 7, 亮灯率: 33.33%)

Visual platform

Multimedia Center: Manages materials for network audio and advertising screen tasks, allowing upload and review of audio, video, images, and text.

智能照明

设备中心

策略管理

警报中心

运维管理

统计分析

行政办公

多媒体中心

节目管理

公共广播发布中心

系统管理

子平台监控

NDACITY

节目管理 × 网络音响管理 ×

媒体库 发布信息

文件名称:

已审核 未审核

序号 文件名称

☐ 1 蔡国庆 - 365个祝福.mp3

智能照明

设备中心

策略管理

警报中心

运维管理

统计分析

行政办公

多媒体中心

NDACITY

节目管理 × 网络音响管理 ×

网络音响设备管理

终端名称(编号):

查询

序号 编号 名称

还没有数据~

共 0 条 10条/页 < 1 > 前往 1 页

序号 文件名称 类型

☐ 1 SaraEvans-NightLight.mp3 mp3

☐ 2 周杰伦-花海.mp3 mp3

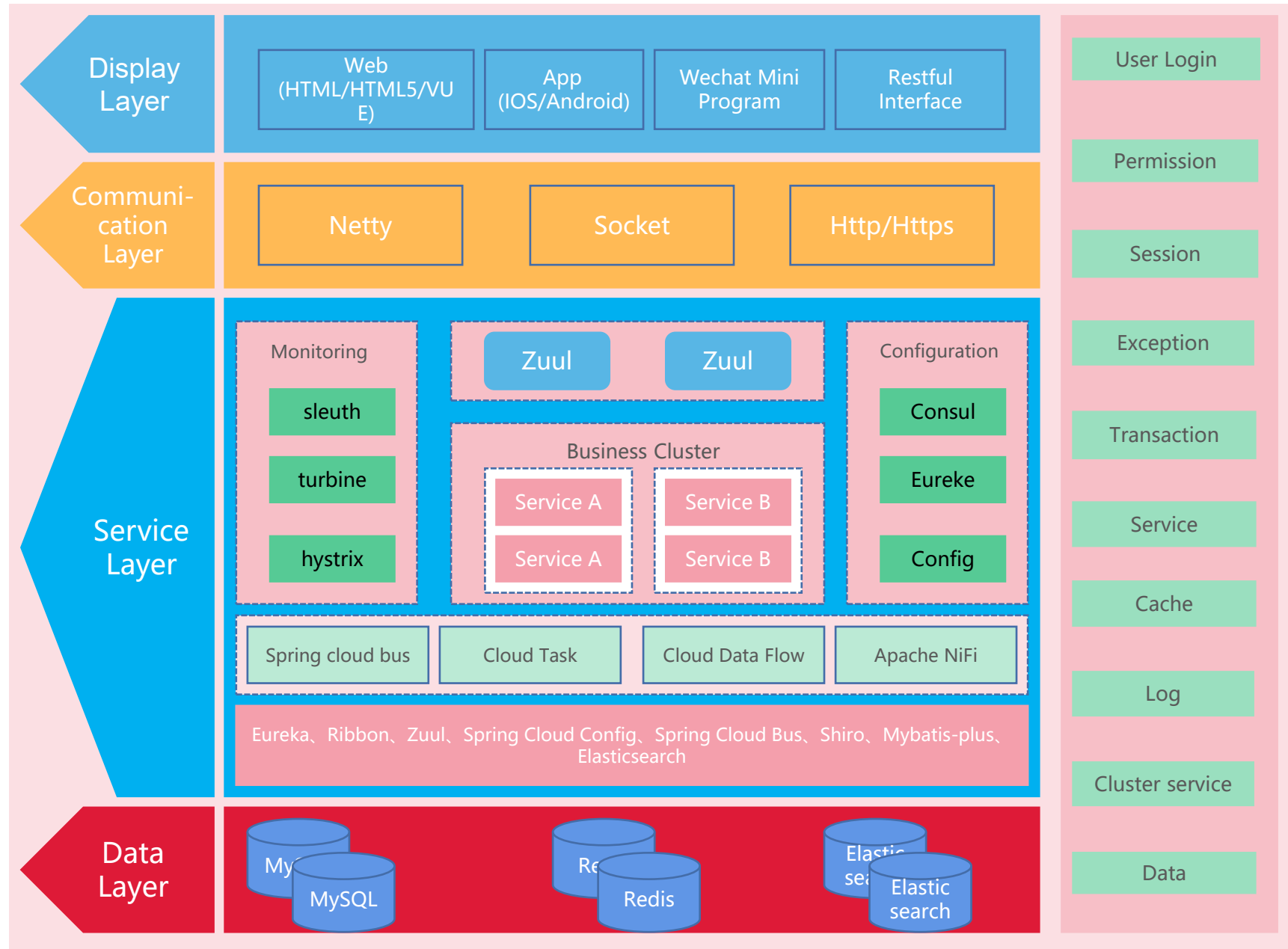
☐ 3 张杰-年轻的战场.mp3 mp3

☐ 4 正泰集团宣传片_221027_英文版音频.mp3 mp3

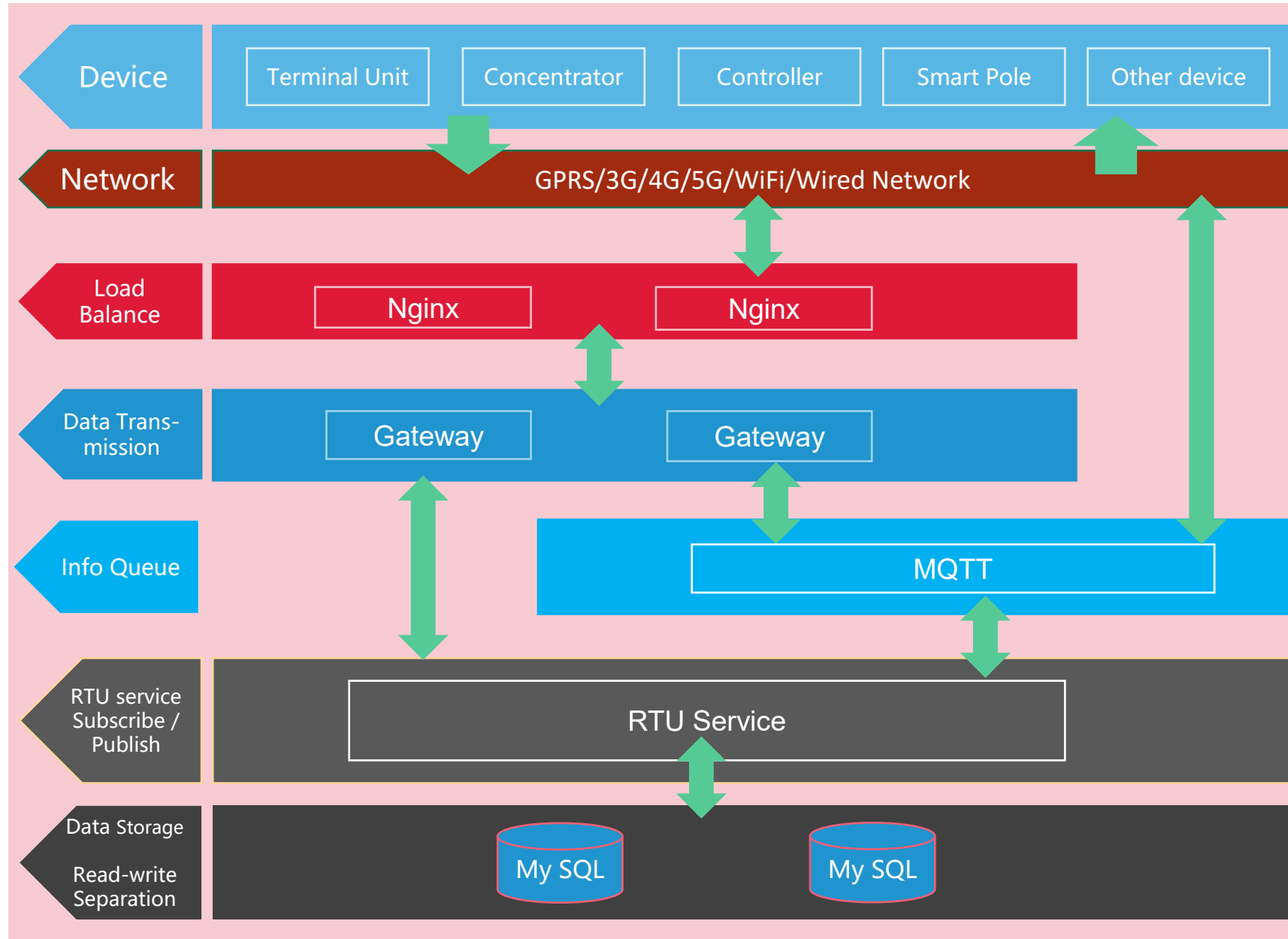
☐ 5 汐音社-无疾而终的暗恋.mp3 mp3

☐ 6 沐泽-女孩.mp3 mp3

TECHNICAL ARCHITECTURE

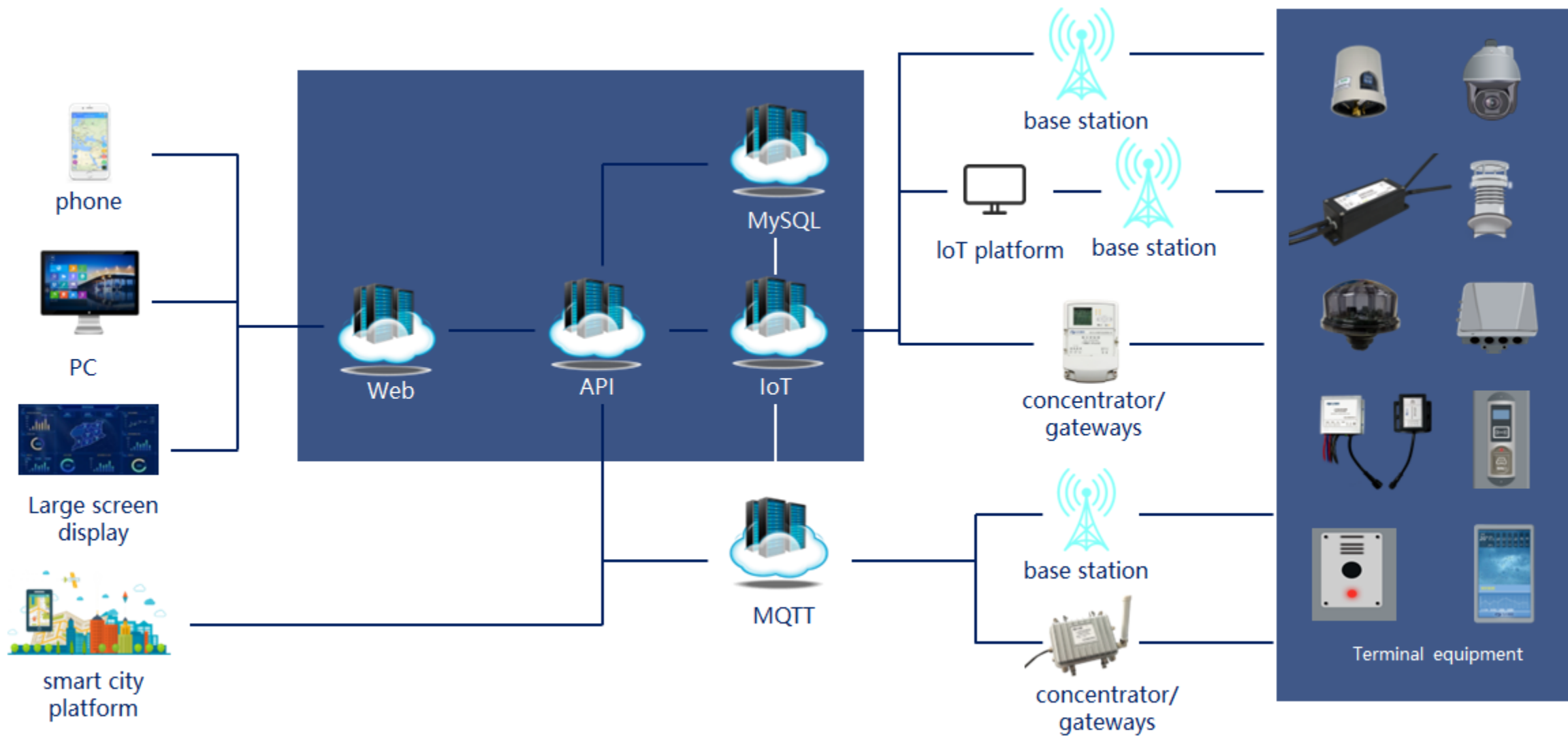


ARCHITECTURE OF ACCESS LAYER



Deployment architecture

Management system architecture



Platform architecture

Management system architecture

Terminal interaction



APP



PC



APP



APP

function

Large Screen Display

3D Real-World Mapping

Mobile APP

GIS

Engineering information management

Project management

smart poles management

Video surveillance

Media management

Equipment management

Task management

O&M management

Asset/ledger management

Fault/alarm management

Work order management

Log management

Energy consumption report management

Data analysis

Transport layer

Ethernet/APN



device layer



Management system features



Cloud-based architecture supports high-concurrency data access.



Multiple data integrations can also connect to the "City Brain" system to enhance the scientific decision-making of managers.



Distributed deployment system, capable of expanding system capacity to accommodate hundreds of millions of IoT nodes and data interactions.



The system features a user-friendly protocol conversion layer, seamlessly compatible with various communication devices, and offers open platform interfaces to support rapid and seamless integration of third-party systems.



Secure communication protocol authentication; equipped with network boundary security protection, network attack prevention subsystems, and related security systems to ensure platform network security.

Compatibility design

Management system features

Unified Protocol

- Custom Standards, Verified to Support Products from Domestic Mainstream Hardware Manufacturers.

Convenient Protocol Conversion Layer

- Seamlessly compatible with various communication devices, including PLC, Zigbee, NB-IOT/LoRa, and other LoRaWAN technologies, as well as 2G/3G/4G communications.

Standardized Software Interfaces

- Supports integration with other hardware and software systems for functional expansion and system integration interface management.

Compatible with Multiple Systems

- Supports original system access (API) and direct hardware integration (SDK).

Scalable Design

- Supports System Expansion.

Distributed data processing

- Supports high-concurrency data access, enabling the connection and data interaction of hundreds of millions of IoT nodes.

Security design

Management system features

Information Security Regulations

The platform's information security design complies with various national and industry security standards and regulations.

Transmission Security Level

The platform's design ensures the security of information transmission and the confidentiality of usage, meeting the requirements of information security level protection not less than Level 2.



Application Security

Application security is ensured through identity authentication, transmission encryption, and log auditing.

Transmission Encryption

The management platform controls intelligent devices via wired networks, utilizing IP protocols for mutual communication and management.

Network Security

The system ensures network security by configuring secure transmission protocols, closing unnecessary ports, port security, secure network services, and session security.

Storage Security

During data transmission, the system should include functionality to monitor data integrity and employ encryption or other protective measures to ensure the confidentiality of data storage.

THANK YOU