AGRITEK

INTELLIGENCE IN AGRICULTURE

Overview

Agritek is a leading hi-tech company specializing in M2M technologies. The company boasts a successful portfolio of developments, including a smart agriculture platform, a smart city cloud platform, and a city-level smart parking cloud platform, along with other tailored cloud solutions. Agritek's hardware products are accredited with CCC, EU, CE certifications and adaptable for UL, CSA standards, and the company holds numerous intellectual property rights. Its technologies and products have found extensive application in smart city integrations. Committed to advancing DATA development in rural areas, Agritek leverages its technical expertise to contribute significantly to global digital transformation efforts.

How Agritek can help with agriculture

01 AI monitored fine planting to improve agricultural products quality

02 Automatic control to lower the planting cost;

03 Information management make the planting easier

04 Quantitative data based decision-making and scientific planting.

AG CLOUD

Agriculture
Big Data
Platform

POLICY REGULATION

1.Food supervision
2.Land transactions
3.Planting areas distribution
4.Decision analysis and regulation
5.Natural resource statistics

AG INPUT

1.Precision AG Services
2.Product Demand Forecasting
3.Provide more accurate models with customer info

AG SERVICES

1.AG service docking
2.AG machinery operation planning
3.AG financial services
4.AG insurance services

PLANTING

1.Planting model
2.Equipment precise control
3.pest control
4.Pre-warning system
5.Planting guidance program

DISTRIBUTION

1.AG products e-commerce Order
2.AG Symmetrical supply and demand information
3.AG complex

TERMINAL RETAIL

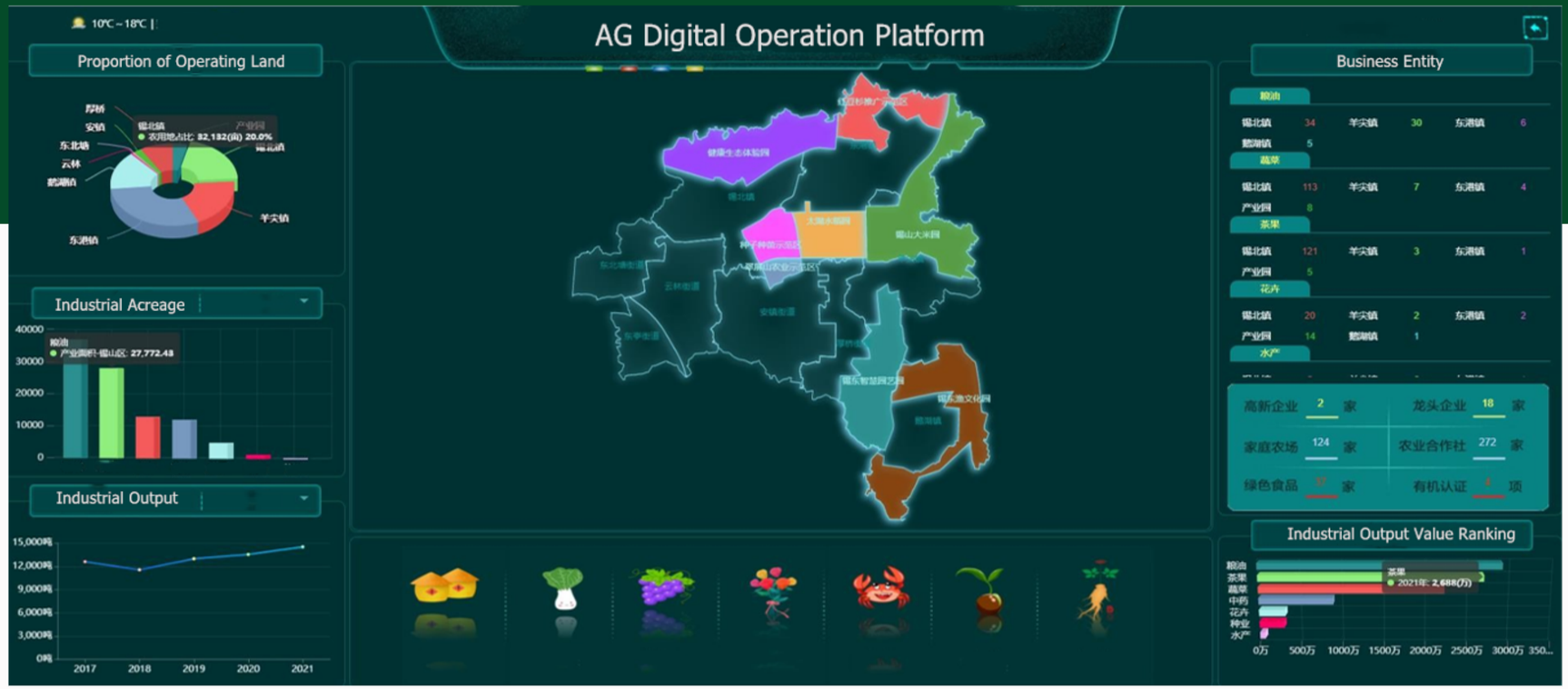
1.Product traceability
2.Branding
3.Marketing
4.Integration of production and marketing

Case 1: AGRITEK AG digital operation platform

This case describes the application of 5G technology both indoors and outdoors in a specific area. Indoors, 5G coverage extends to modern agricultural exhibition halls and office buildings, covering 20,000 square meters. Outdoors, good 5G signal coverage is present on the east side of the park, while the central and western areas experience weaker signals, ranging from -100 to -108dBm. To enhance outdoor 5G coverage for areas like rice gardens and blueberry farms, as well as for future digital and unmanned farm development, a new base station has been constructed in the park. This ensures a Service Level Agreement (SLA) of ≥ 99.9%, supporting real-time backhaul and control of drones and agricultural machinery through the 5G network.

Surrounding parks	Building condition	5G coverage	5G Level
Taihu Rice Garden	Indoor	Wuxi_XS_AZ JB Village_E5H_2641	-80~-100, normal coverage
Bueberry Field	Outdoor	Wuxi_XS_AZ JB Village_E5H_2641	-80~-100, normal coverage
Modern agriculture exhibition hall and office building	Office building and exhibition hall, with an area of about 10,000 square meters	-	Off-line

AGRITEK DIGITAL OPERATION PLATFORM



This is an agricultural big data management platform for five types of users, including government units, competent parks, operating enterprises, technical experts, and consumer terminals, which adopts the application middle platform and microservice technology architecture and takes into account the characteristics of data security and agricultural services.

The platform is built with "one platform, two networks, and three types of services." It includes six major applications, including agricultural resources digital management system, digital production and operation management system, agricultural monitoring and forecasting system, agricultural intelligent operation system, agricultural comprehensive service platform, and 5G smart agricultural application, to realize the digitalization, management grid, application hierarchy and data efficiency of agricultural resources in the region.

AGRITEK DIGITAL OPERATION PLATFORM

Large Screen | Tablet | Computer | Mobilephone

Business platform

Agricultural resources digital management	Digital production and operation management	Agricultural monitoring and forecasting	Agricultural intelligent operation	Agricultural comprehensive service
Resource directory, resource management, data service, etc..	Production planning, warehouse management, production statistics, etc..	Device management, weather monitoring, maturity prediction, etc..	Status awareness, automatic control, remote control, etc..	Comprehensive office, information release, project management, etc.

Tech-center

Basic components	Microservice platform	Product components	Data platform
Authentication management, log analysis, service monitoring, etc..	Production planning, warehouse management, production statistics, etc..	Service governance, lifecycle management, microservice architecture, etc.	Data collection, data integration, data analysis, etc.

Information IoT

Wired network	Wireless network
Private network, public network	5G, Wi-Fi, NB-IoT, etc..

Information Device

Data sensor	Video image	Other device
Wet temperature sensor, CO2 sensor, illuminance sensor, fertilizer solution pH value, soil pH value, etc.	Dome camera, panoramic camera, VR glasses	UAVs, smart agricultural machinery, mobile terminals, etc.

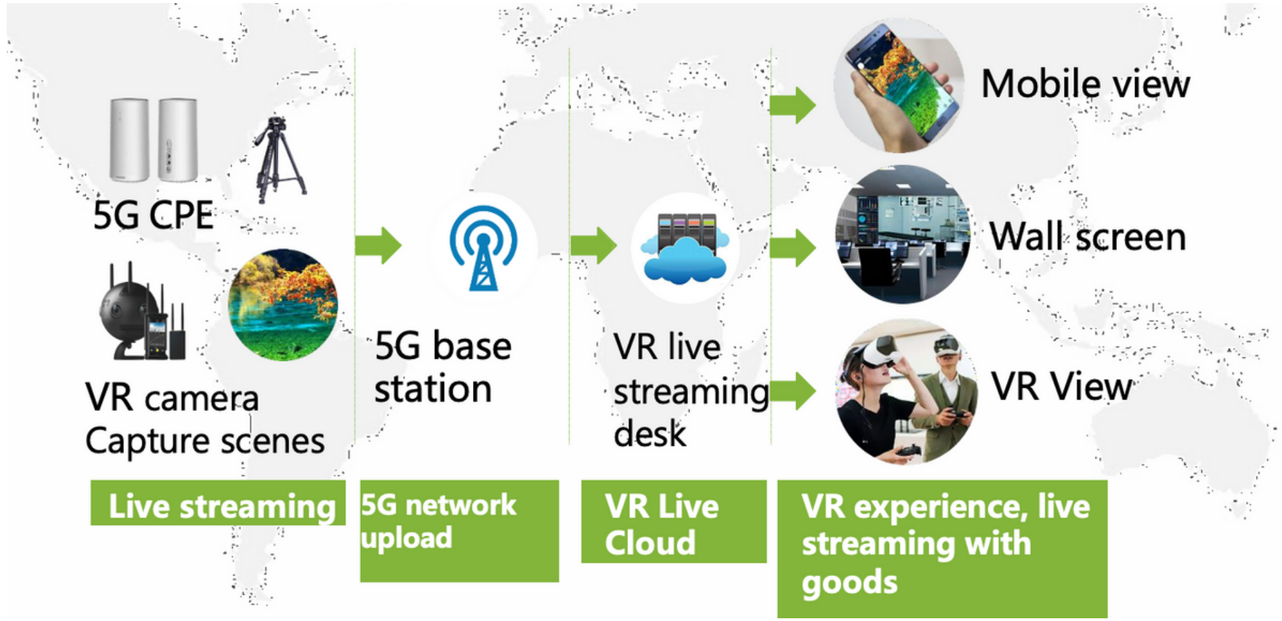
AGRITEK digital operation platform

The 5G application is a remote video diagnosis system utilizing 5G and 360° panoramic cameras in agricultural settings, like greenhouses. These cameras capture real-time images of crops and surroundings, transmitting them to a cloud platform via 5G. This setup enables farmers, technicians, and experts to view clear, live video feeds online. This technology addresses the limitations of traditional crop surveillance, such as poor video quality and delayed processing. It provides a detailed, reliable view of the field conditions, allowing experts to offer real-time advice on crop management, disease, and pest control, and also supports intelligent AI data-driven decision-making in the future.

Name	specification
8KPanoramic cameras	Size 66.5mm*66.5mm*160mm, weight 1060 grams, IP67 protection, waterproof, dustproof and shockproof; 4*F2.28 aspheric fisheye lens, 4*12 million CMOS; Web-side remote management, web-side management within LAN, multi-level permission and resource management, scheduled live broadcast Working environment temperature -40 to 55 degrees Celsius; Automatic heating in low temperature environment, active heat dissipation in high temperature environment; Aluminum alloy integrated body; Built-in nine-axis IMU sensor; Support DC/POE dual-mode power supply; Support 4K 30fps in-camera stitching live broadcast, 8K 24fps live broadcast, 8K 7fps in-machine stitching live broadcast, support H.265/H.264 Encoding, RTMP/RTMPS/RTSP/GB28181 live streaming protocol.
VRGlass	VR all-in-one, smart VR glasses, 3D headset, can be used for gaming equipment

The 5G application with VR (Virtual Reality) involves setting up 5G panoramic cameras in specific areas to enhance experiences in a modern agricultural exhibition hall. This setup offers visitors an immersive viewing experience through multimedia interactive projections. Additionally, it enables 8K panoramic live broadcasting of agricultural product sales and major events in the agricultural park. These broadcasts are accessible via VR through platforms like WeChat public accounts and mini-programs, offering a novel way of marketing and online event viewing, thereby providing innovative marketing methods and strategies.

5G + VR VIRTUAL EXPERIENCE

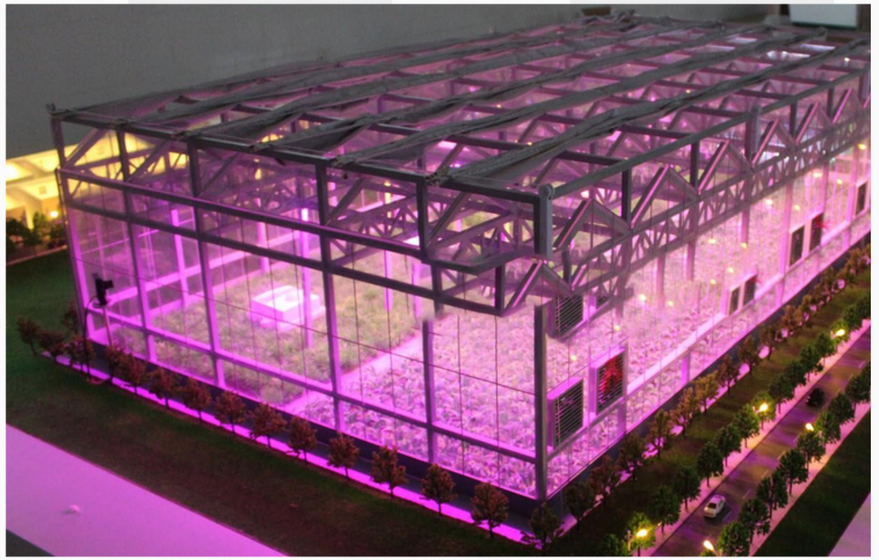


5G APPLICATION: CLOUD SERVICE + CLOUD DEDICATED LINE

The platform deploys multiple cloud servers;
Build a number of cloud special lines, the rice garden cloud special line (10M) dispatch the intelligent irrigation system inside the rice garden, and the information display machine room cloud special line (50M) is used for modern agricultural exhibition Data interaction between the museum and the agricultural digital integrated service operation platform. Other information nodes are accessed through the 5G private network.

	Specific configuration	Usage description
ITEM	General purpose 8vCPUs | 16GiB, system disk ordinary IO 100G, The data disk is 500G in normal IO	Project deployment access
	General-purpose 8vCPUs|16GiB, system disk ordinary IO 100G, The data disk has a common IO of 1000G	Data storage
	Shared bandwidth 10M	Data access
	Backup sever (full backup 2 times per month)	Data backup
	Direct Connect 10M	Dispatch of rice garden intelligent irrigation system
	Direct Connect 50M	Data interaction between the modern agricultural exhibition hall and the agricultural digital integrated service operation platform

Case 2: AGRITEK in school campuses



The Modern Intelligent Planting Teaching and Display System is a high-tech educational tool that combines knowledge, demonstration, art, and interactivity. It allows students to scan QR codes on plant labels to access information about the plant's image, family, distribution, habits, and uses. Additionally, the system showcases real-time environmental data like air temperature, humidity, and carbon dioxide levels in the display area. It also features automatic irrigation and fan controls, demonstrating modern agricultural automation systems. This interactive system enhances students' understanding of agricultural science, modern farming trends, and stimulates their interest in learning, thereby enriching teaching methods and improving educational quality and efficiency.

Campus Case 1

DIT launched the "Innovative Life Laboratory Course" project, featuring a modern greenhouse and mushroom room equipped with advanced systems. These include environmental sensors, intelligent controls, and integrated water and fertilizer management. The project utilizes real-time digital technology for precise environmental monitoring, automated controls to reduce labor, and detailed plantation management for thorough operational records. Additionally, it employs QR codes for easy access to detailed crop growth information.

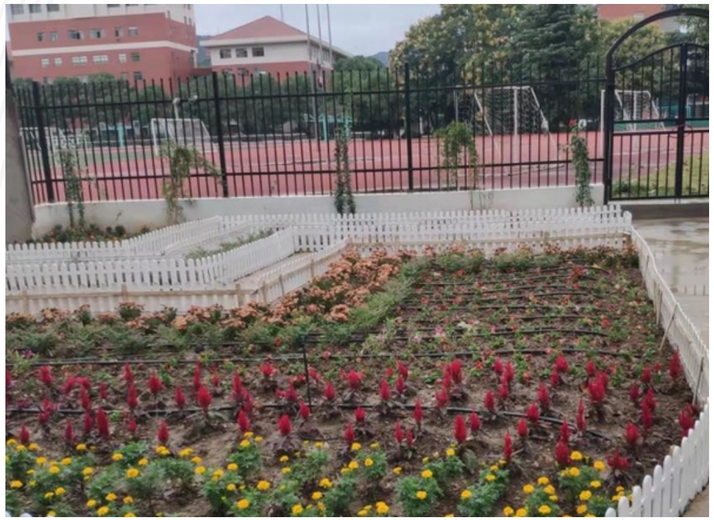
Mushroom room

Smart greenhouse

Smart fertigation

Campus Case 2

The project includes various specialized learning areas: a site for flower planting and maintenance courses, an outdoor lecture hall for introductory garden design, practice areas for green lawn maintenance, and spaces for courses in potted and horticultural crop production and pruning. It also features classrooms for water treatment, automatic irrigation, and IoT-related courses, along with facilities for cuttings, nursery breeding, handicraft practice rooms, and horticultural corridors.



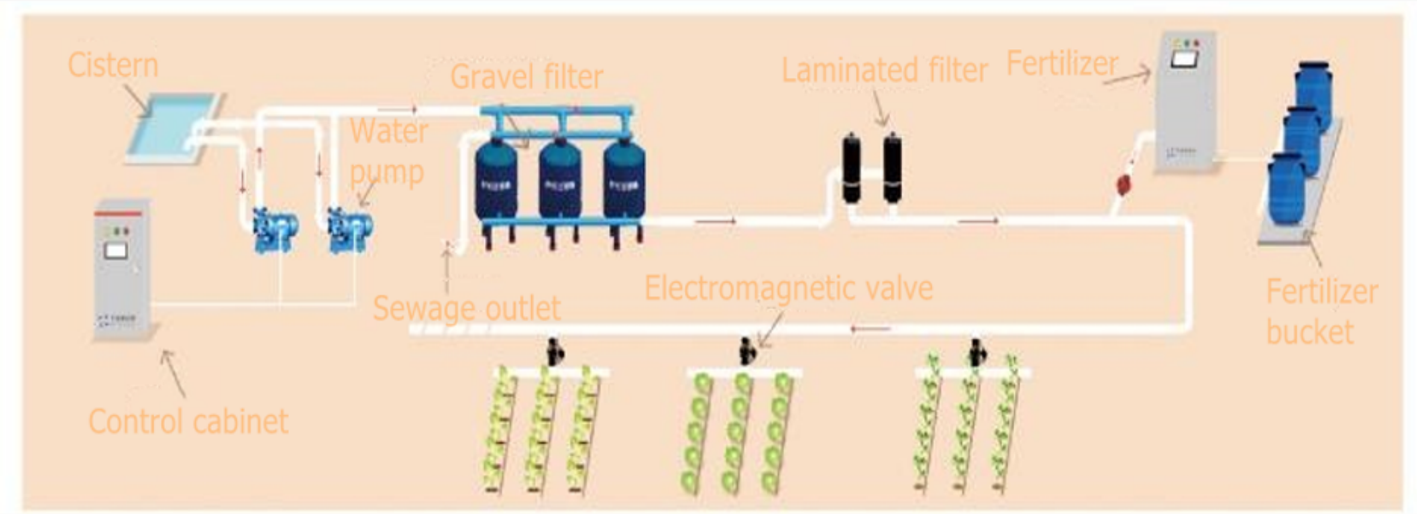
Water and fertilizer integration

Landscape

Automatic weather station

Individual Module 1: Smart fertigation

- Fertilization and irrigation are integrated, saving investment
- Multiple modes, wide adaptability
- The module design is easy to assemble and maintain
- High-precision control, water control and fertilizer control
- Large flow, large area fertilization
- Automatic cleaning to avoid clogged lines



The integrated water and fertilizer solution features a specially designed, modular controller that is sensitive, precise, stable, and user-friendly. It supports efficient irrigation and fertilization across various agricultural settings, from small greenhouses to large agricultural parks, accommodating diverse crop cultivation and irrigation methods.

Individual Module 2: Doctor AG

Dr. AG's intelligent management system, their core product, includes air temperature and humidity monitoring hardware and a software system. Users install the hardware in their sheds to automatically collect environmental data and receive alerts if conditions exceed set thresholds. The device is solar-powered with a built-in NB-IoT communication module, making it easy to use without additional electricity or internet connections. The system offers features like production management, intelligent planting alerts, agricultural material procurement, invoicing, inventory management, and expert online Q&A. This helps farmers enhance operational efficiency, reduce costs, and improve product quality.

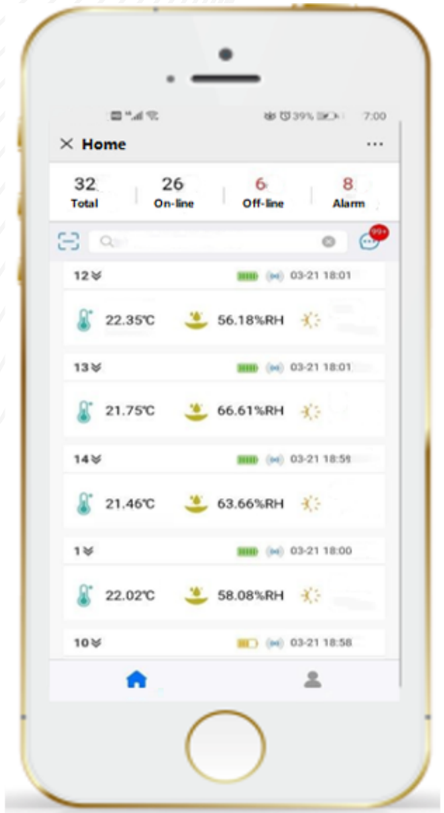
Magnet adsorption, more convenient installation

The solar panel

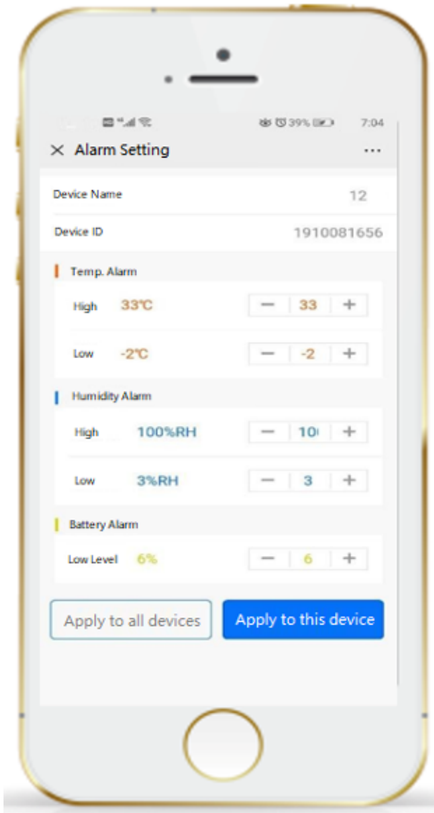
Device status indicator

Individual Module 2: Doctor AG

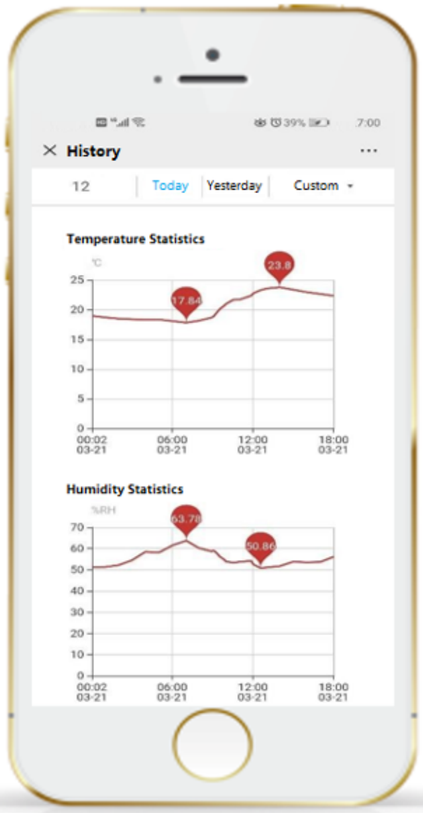
Temperature and humidity, light remote real-time viewing



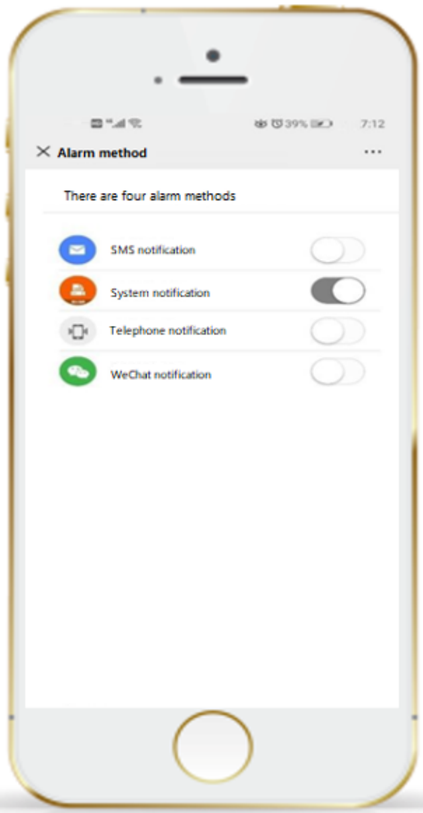
Alarm range set autonomously



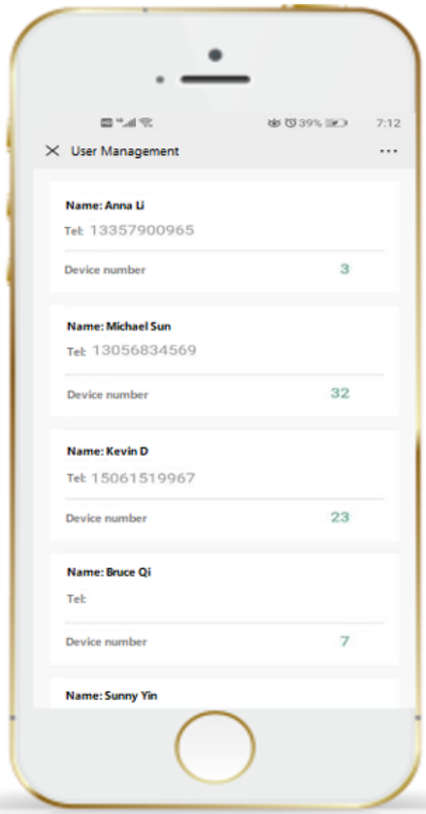
historical data view, Assist in decision-making



Support telephone, System, SMS multiple alarm methods



Support for multiple people at the same time to Manage devices,



AGRITEK

INTELLIGENCE IN AGRICULTURE

Thank You