Implementation of IOTs in

Agriculture Industry in China

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The ambition of the IOT implementation in China agriculture industry

- The existing domestic greenhouse planting modes are as follows:

- Crop growth environment relies mainly on farmers' personal experience or sensory experience rather than precise and reliable quantitative data, thus successful experience of planting is not easy to be summarized and replicated

- Ambition and solution:

- Rural economy have been the most attractive issues in the world.

- IOT Regarded as one of the most promising technology for propelling agriculture, farming, fishing and poultry industry, to reduce cost and enhance rural labour efficiency significantly.

IOT Farming Market Overview

➢ The development of China's agriculture has been from manual agriculture to mechanical agriculture, and then to smart agriculture.

➢ The application of the IOT make great contribution to the development of China modern agriculture and intelligent agriculture

➢ Intelligent, network and data processing become the main features of a new round of China agricultural infrastructure
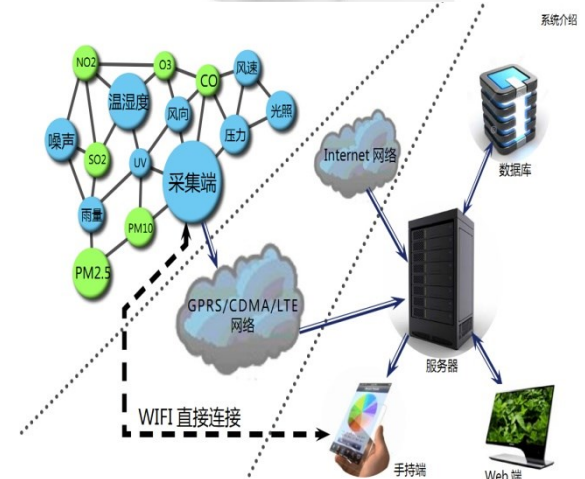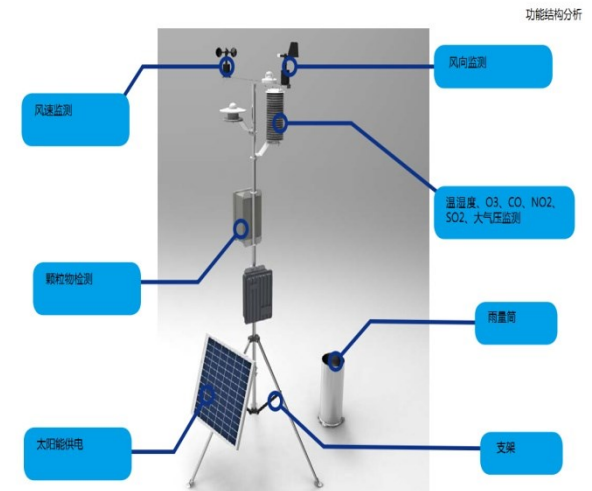
Farming wireless weather station applied--low cost and maitanance

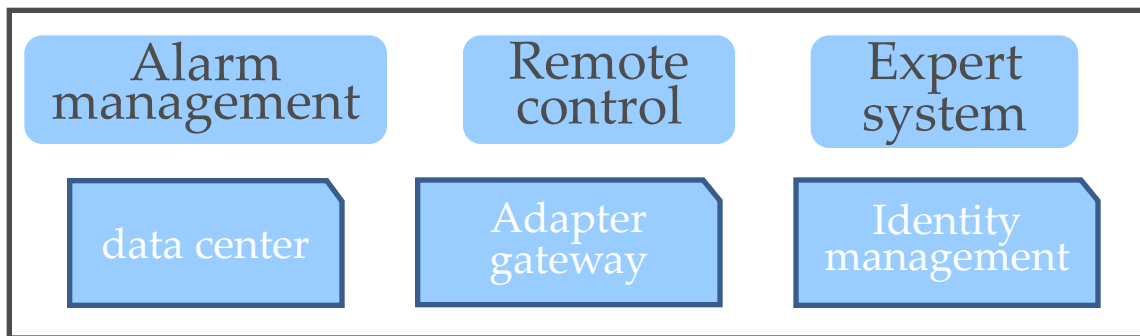# The structure and principle of the IoT agriculture
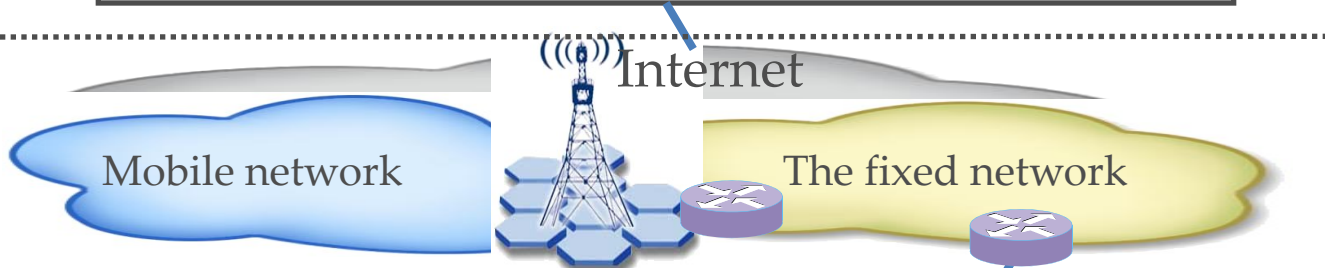
irrigation　　　　storage　　raceability& anti-fake

✓ Personalized portal

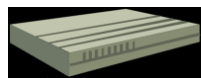| Alarm management	Remote control	Expert system
data center	Adapter gateway	Identity management

✓ Common service platform

✓ Communication service + information operations

Internet

Mobile network　　The fixed network

✓ The convergence of fixed and mobile Internet capabilities

gateway　　　　　　　　　　gateway

controller　　　　　collector

✓ Standardization of the underlying sensor and controller interface, support hierarchical domain networking

Facilities　　　　Sensors

1、IOT wireless sensing layer

In the sensing WSN layer, all environment parameters will be acquisited in real time including living condition such as temperature, humility, light condition, ammonia gas density and sensor measure equipment working status and location. All those parameters and data are detected and collected by sensor network system. The sensor network used to collect data and physical parameter, radio frequency devices, sensors, mobile terminals, WSN equipment.

IOT application in china farming

Intelligent agriculture survelliance

master control computer room

radio network gateway

3G wireless router

PC

phone

wireless relay

sunshade net(wireless smart socket)

humidifier (wireless smart socket)

air-in

air-out

heater(wireless smart socket)

air blower(wireless smart socket)

wireless electromagnetic valve

- ● Wireless air temperature and humidity sensor
- ● Wireless Light Sensor
- ● Wireless soil temperature and humidity sensor
- ● Wireless Solar carbon dioxide sensor

Realtime survelliance

Information analysis

Fault alarming analysis

Remote devices control

Decision&policy support

sensor layer

transmission layer

processing layer

application layer

Benefit analysis

The expenses of Infrastructures of the IOT green-house with an area of 2,0000 square meters：15076.6 dollars . The annual cost of system operation and maintenance: 1809.2 dollars.

Advantages	**Saving expenses**
Through measuring related parameters by the IOT scheme，water resource can be saved significantly by accurate irrigation.	Compared to conventional irrigation, the IOT scheme can save water resource up to 67%.
Saving human resource expenses, i.e, reducing one management staff and one worker.	Saving human resource expenses of 758.8 dollars annually.Human cost can be recycled within 3 years.
Measuring mixed rate of integrated soil chemical fertilizer and water. Compared to conventional method, the farm IOT scheme can reduce waste of chemical fertilizer as well as soil pollution dramatically.	Saving chemical fertilizer expenses 452.3 dollars and increase fertilizer utilization rate up to 40% annually.
Improve green house live rate and reduce growth period as well as improve product volume significantly.	Farm live rate can be improved from 20% to 80%. growth period reduced up to 30% , production volume improved one or more times, respectively.
Improve the efficiency and reduce labor intensity, managers don't need to keep for a long time on the farm, at home or abroad on holiday can be managed.	It can recover the construction investment costs, realize earnings in a year.

IOT: various farming scenarios benefits

01 farmers

realtime acquisited data of farming & disaster alarming

02 farming consultants

Analysis on acqisited data & make valuable decision

Realtime, Accurate, large scale, dynamic, automatic control, survillance

03 farming finance

Farming inverstment & insurance survelliance according to data and anlaysis

04 local goverment

Rural marketing policy decision support

Farming analysis & major functionality

➤ 1.Real-time data:

Agricultural field, i.e temperature, humidity, light, soil moisture data network is passed to the data processing system for intelligence analysis and processing;

➤ 2.Real-time surveillance

Users can watch anytime and anywhere through mobile terminal, i.e. PAD, handset or laptop to agriculture field actual images, remote monitoring of crop growth process

Real-time data and video to make managers more at ease.

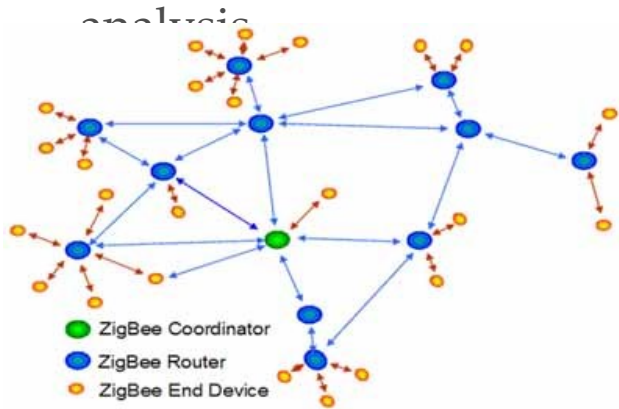
Data collection

The video monitor

Farming analysis & major functionality

➢ 3.Data storage

   Based on historical data can be stored, form a knowledge base, at any time
   in processing and query;

➢ 4.Data analysis

   System through the intuitive form to when the data chart and spatial
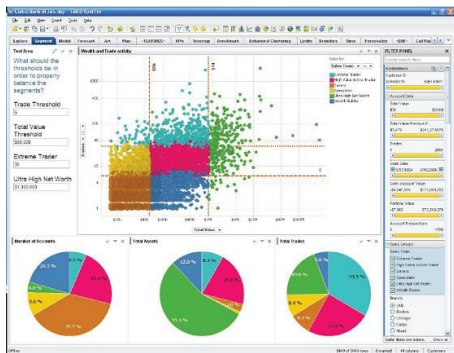   distribution, which can provide daily, monthly and other review as well as
   analysis

Farming analysis & major functionality

➢ 5. Remote control

Users can at any time, anywhere, by any Internet terminal can be implemented to the agricultural field devices of all kinds of remote control switch;

➢ 6. Intelligent decision

Platform system has self learning ability, according to expert system, user database, user settings, intelligent control on farm equipment.

THANK YOU!