CASE STUDY

Counterfeiting is still growing as markets globalize

	2013	2022	
Increase			
Value of counterfeit and pirated goods	€882.6 billion	€2,194.7 billion	248%
Lost revenue			

	2013	2022	
Increase			
Wider economic and social costs	€676.2 billion	€1,408.2 billion	208%
Displaced economic activity, investment, public fund losses & enforcement costs			

	2013	2022	
Increase			
Employment losses	2.6 million	5.4 million	
207%			

75% of companies experience at least one major supply chain disruption a year *(2013 PwC and MIT Forum for Supply Chain Risk Management Survey)*

10% of medicines worldwide are fake. 60% contain no active ingredients, 16% incorrect ingredients *(World Health Organization WHO)*

48% of companies experienced a loss from conducting business overseas in the past 3 years *(2014 Chubb Multinational Risk Survey)*

Perceptions are changing: Consumers awareness of counterfeits is also growing and being shared

Chinese consumers are already very aware
Western consumers are growing in awareness

| $3.2bn | Average estimated loss in market cap of a Fortune 500 company from reported supply chain breach (World Economic Forum) |
72%	Of consumers prioritise product purchases from brands they trust (Nielsen Research)
60%	Of companies reported a loss of 3% or higher loss of value from counterfeit breaches [1]
54%	Of companies have sales revenues negatively affected by supply chain breaches [1]
64%	Of companies suffer declines in customer service levels from supply chain disruption [1]
3-5%	Of revenue is estimated to be lost due to product warranty claims due to counterfeit product substitution [1]

Physical Authentication

A backbone of counterfeit protection / detection will always include physical authentication

❖ It detects the fakes
❖ It can also deter production and sales of new fakes

Can be conducted anytime during storage and service life at any post-manufacture point
➢ Outgoing inspection
➢ Stores or warehouse
➢ Shipping dock
➢ Receiving dock
➢ Incoming inspection
➢ Pre-component installation
➢ In-system during service life
➢ Post-service inspection or failure analysis
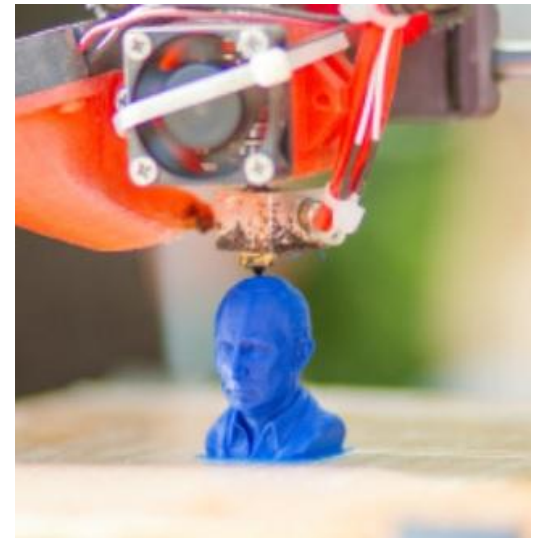
Levels of protection need to be reviewed as criminals also advance in the technology arms race

Physical Authentication:

Stronger anti-counterfeiting approaches combine a number of security features and technologies in **multi-layered solutions**. This is especially valid and required in industry segments with complex, fragmented and multi-channelled supply chains.

Reasons for multi-layered anti-counterfeiting solutions:

➢ Increased security level by higher number of hurdles for counterfeiting

➢ Appropriate security features for each level of the authentication chain
  o Covert and Overt solutions
  o High and Low security features
  o Digital and Electronic
  o Packaging
  o Authentication and Asset Management
  o Authentication and Marketing
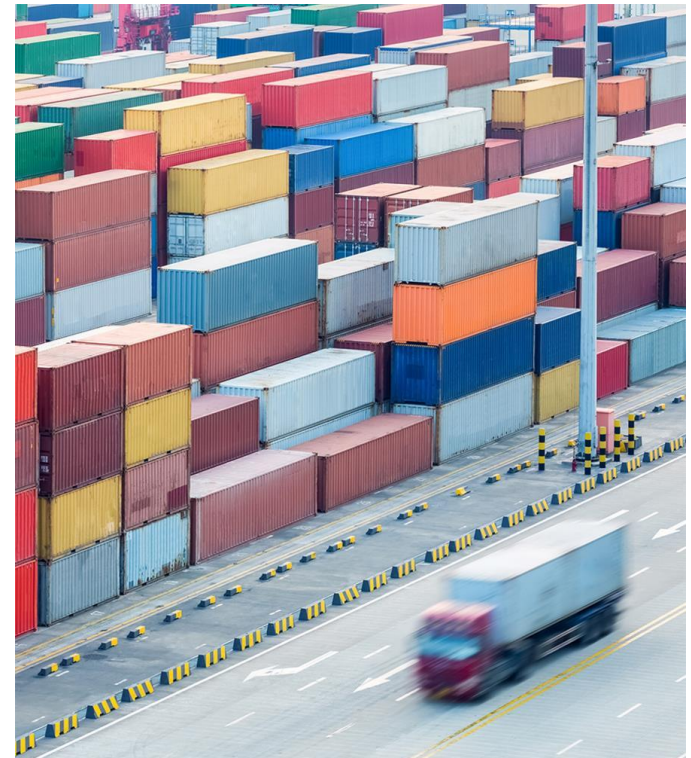
Cases Study

RFID/NFC tags widely used for many application such as ticketting, Assets Tracking, Medicines, Vaccines, Electric Power Meter, Wearable devices, medical apparatus and instruments,Transportation, Logitics, Retail, Entertainment, Defense, Security and etc.

Security bags

WiFi/BLE Paring

Box/Document Seal IDs

Gas Cylinder Tracking

Wine/Liquor Tracking

ETC Toll Plaza

NFC Experience – Brand Protection Tamper Proof

- Alcohol Brand protection – Cap Seal Sticker
- Document Security Seal
- Package Security Seal

Cosmetics origin authentication

Source Traceability

Brand Protection

Packaging Seal/Protection

NFC Experience Data-Cloud Service

- Alibaba Cloud-Server – Hard Disk Maintenance, Remove To Trigger Alert

NFC experience

Tamper Detection RFID Seals
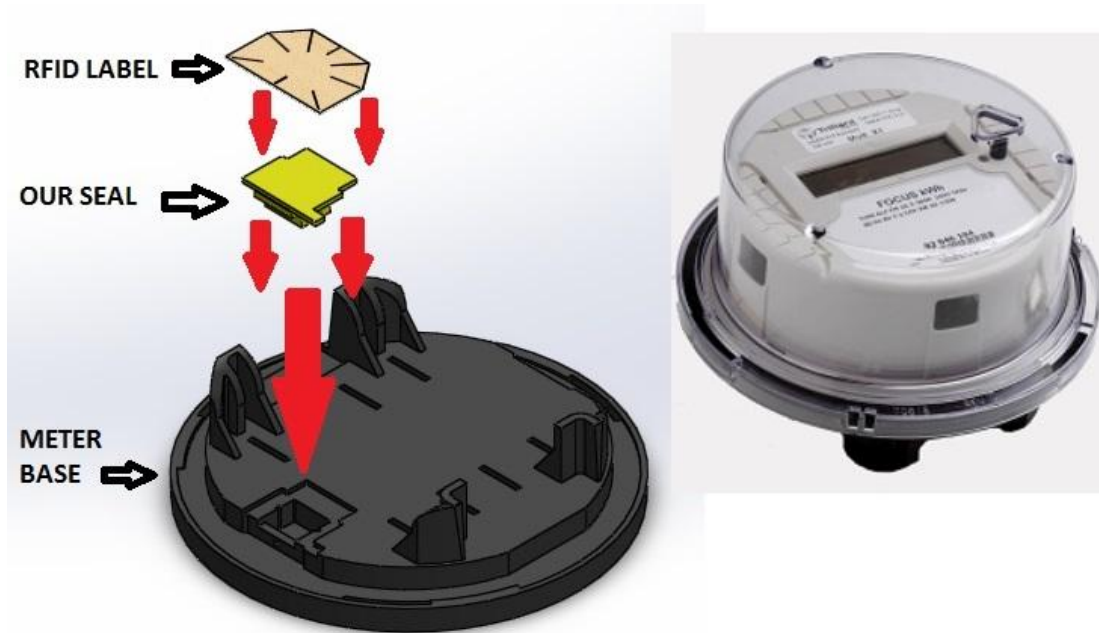
Electric Meter – TD tag

RFID Tamper Detection Tag, prevent people steal power supply

RFID Experience

- Anti-thief Packaging Bags

Cash Counting & Anti-fake Control

-Money Bag in People's Bank Of China, Break On Open, Anti-theif

-Went in/went out from treasury Counting

-Bag with a one time use of uhf seal lock

Logistics, retailing & advertise

Advertisement

Shipping Box

Gasoline

Break Nozzle on Check
during transport from station
to station – Anti-Theft

NFC Gas Cylinder – Security Identify
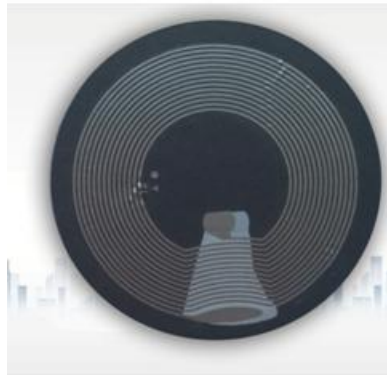
RFID Experience

TD tag Protect Gas Tank in railway

NFC advertisement promotion

- Trigger Event
- Trigger Website
- Trigger Messages

- User Connections

- BigData Analysis

Tobacco, alcohol, wine ,drugs, powder milk and food safety

One Time Use Tracking
Cold Chain Management

Logistics,warehouse & Couriers

Item positioning & location finding
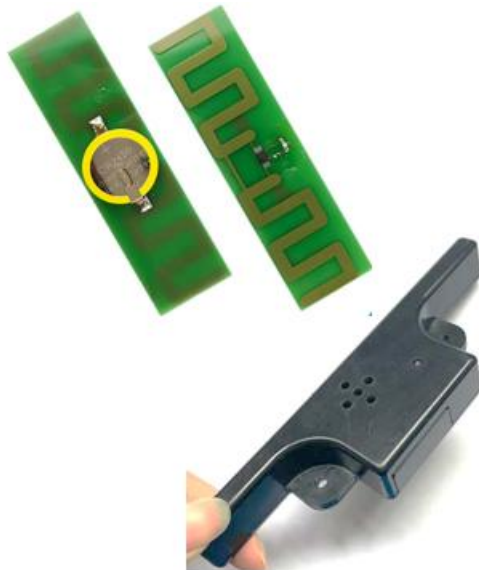
Network Tracking Management

- Identify each fiber cables for exclusive customer

- Easy Track & Maintenance

- Prevent mistake operation for their service

Vehicle Highway ETC Application

- Prevent money lose
- Increase money/incoming for government
- Traffic Control
- Police tracking

Gas Fueling System

- Vehicle ID
- Odometer
- Engine hours
- Additional vehicle data

Payment RFID Gun

Vehicle NFC tag
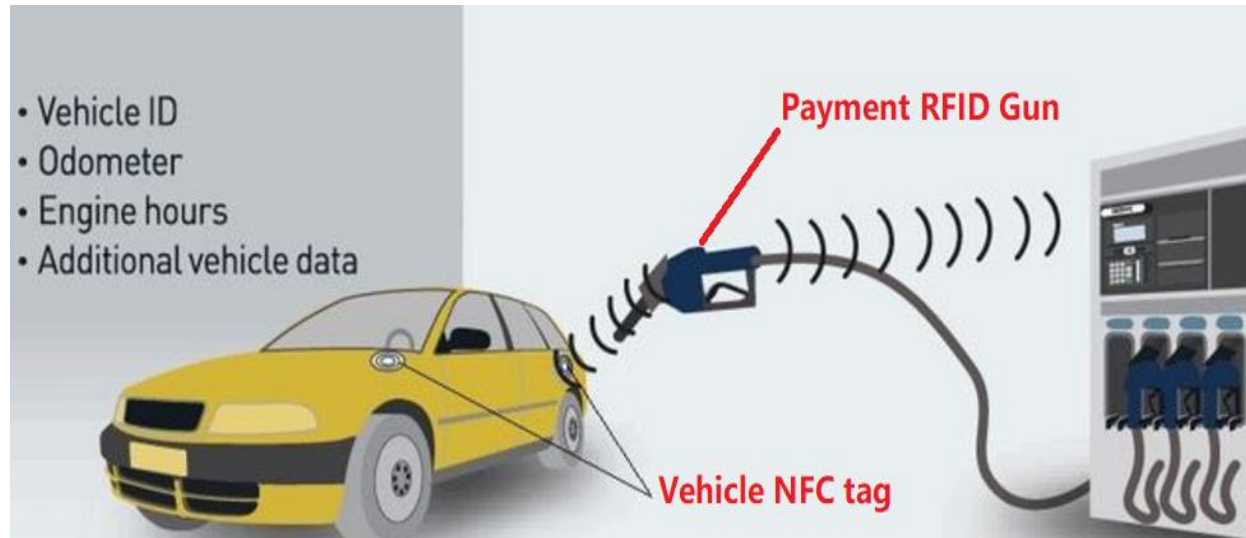
Assets & Auto Industrial management

Printable UHF Metal Tag
Less thickness

Bank Check & Ticket

Bank Check Voucher

Entertainment Pass Ticket

Prevent money lose

Anti-counterfeiting License

Prevent fake license certification

from NFC tamper technology

Widely used for vehicle quality license

for Hyundai, GEELY

Increase Sales of Spare Parts /Consumable

Binding Filter of Air condition

NFC Tonner/Cartridge Tag

Toner-Printer Binding Function

Make more sales of Toner/Ribbon/Ink Cartridge

Game Entertainment

Role Character/Player Login system

Un-manned Super Market

Human/liquid resistance tag is required

Design is most important -Auto check-in & billing system

Cigarette Tax Tracking

Increase tax income from its sale

LED Lighting Board

Super Big size of Lighting FPC Board ,prevent human heavy assembly works from small PCB board, portable & flexible

Drinkable Water Management

Inject UHF tag into water cylinder

Automatic warehouse, transport, refund point counting

Cylinder life circle & scrapping management

Phone RFID Tracking

Tag releasing management under cell-phone

Simple RFID track for retail system
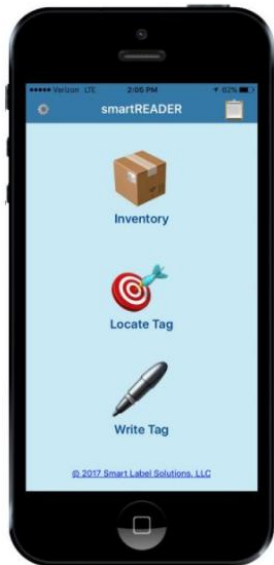
Housekeeping / Cleaning Track

RFID Tracking in Forklift

Security Document Cabinet

Non-Transfer RFID seal stickers

Smart Lift/ Elevator
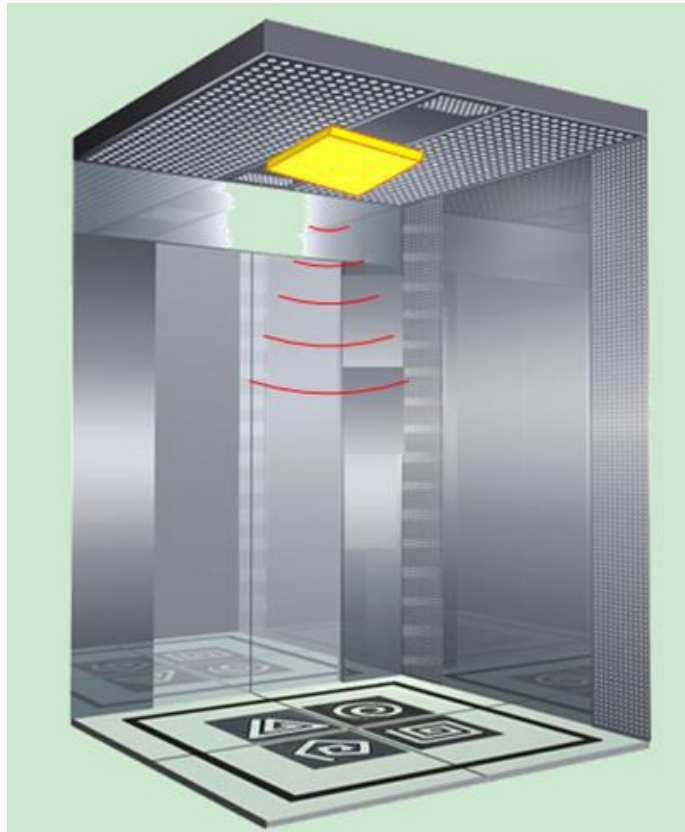
Smart guide line & security management with VIP welcome notice from reception area to the room of VIP guests

Jewelery Counting

Vehicle Tyre Life-cycle tracking

Tire replacement reminding

Waste collection for environment control

Quality inspection & scrapping management

reader

UHF Spring tire tag

Tread

Carcass

Board

Rim

RFID TAG

TPMS sensor

HAND READER
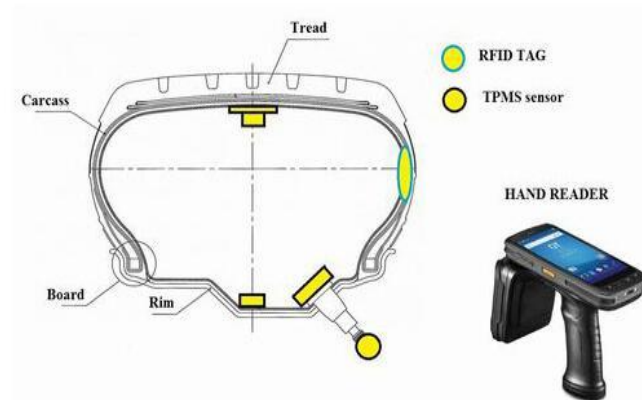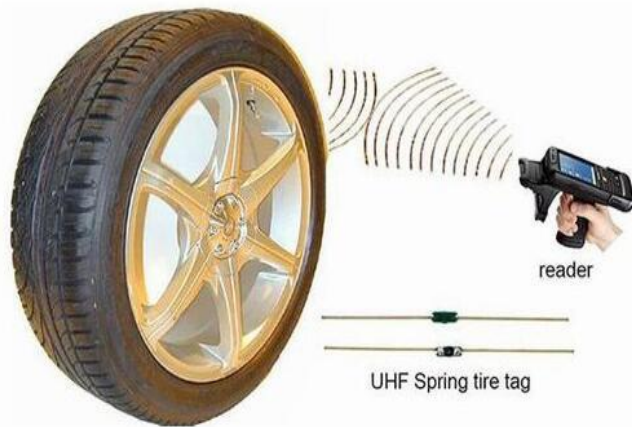
Pre-Structure/Precast – Location & Quality Check

◆RFID embedded in Construction-Bridge

◆RFID embedded in Railway for Public-service

Container Seal

Container Seal

Health Care & Hospital

- Storage Temp. Control
- Medicine Quality
- Blood bag RTLS Tracking

Interchanges During Shipment

Monitor food/medicine for each packaging & shipment during transport and storage basing on a RFID temperature sensor logger

Refrigerator/Freezer inside Container, Especially is Phamarcy, Vaccine tracking & monitoring

Power Supply Overload Control
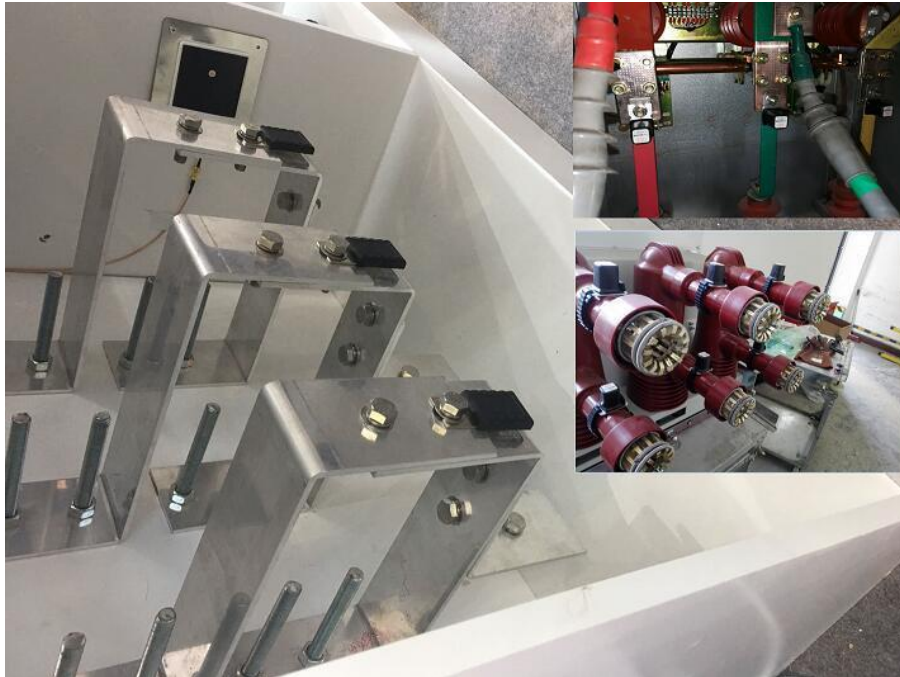
- **Overheat Monitor from each PAD connection**

- Fork Style Passive RFID Temperature Sensor

Power Supply Overload Control
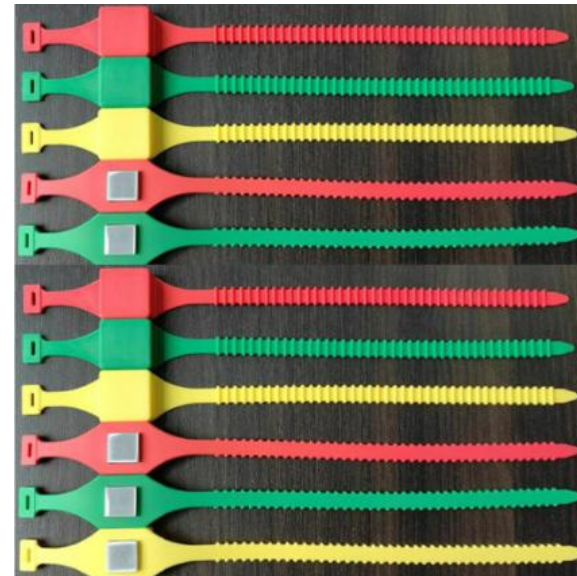
- Overheat Monitor from each PAD connection

- Wristband Style Passive RFID Temperature Sensor

Milk Production Line – Overheat pumping

◆In Tube Quality Control basing on RFID Temperature Sensor
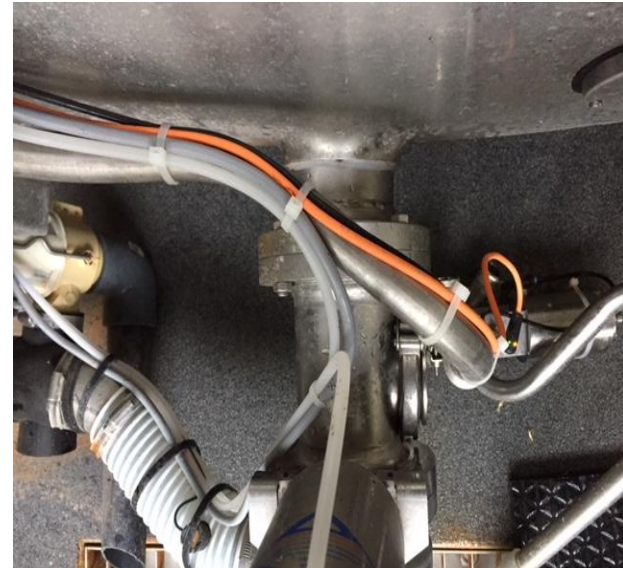
Door Close/Open Detective Sensor

- RFID sensor tag is made up of two separate parts: the sensor and the trigger.
- When hold the Sensor and Trigger together then pull them apart, the sensor detects changes in the magnetic field, and different door status will be shown.

RFID UHF Light Sensor Tag

- Detect the brightness of a car headlight is crucial for a car factory.

Cases Study

Anti-counterfeiting NFC/RFID system for brand and value protection in dangerous pesticide, chemical & medicines

Cases Study

Attendance device & management system for school, kindergarten, access control and so on

- Find id division

Cases Study

Spirit wine liquor wending cabinet with promotion, present & purchasing guide

- Find id division

Cases Study

- Coca Cola Drink Vending machine

- 2G/4G location service

- Multiple sensors such as temperature, body sensor, door operation sensor

- CCC & ROHS certification

- **Coolerlink under plastic cover**

Cases Study
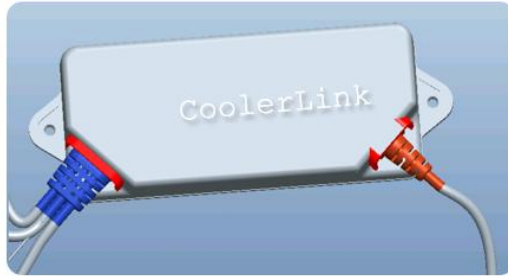
FEATURE FUNCTION

- Location movement Tracking
- Device Anti-Thief
- Sales Analysis
- Device maintenance & working status management
- Market promotion

GSM/2G/3G/4G

Location

Power On/Off Detection

Air TEMP

Door **Open**

Vibrating & Move

Compressor TEMP

iBeacon

Battery Level

People Flow

- Wottop Division
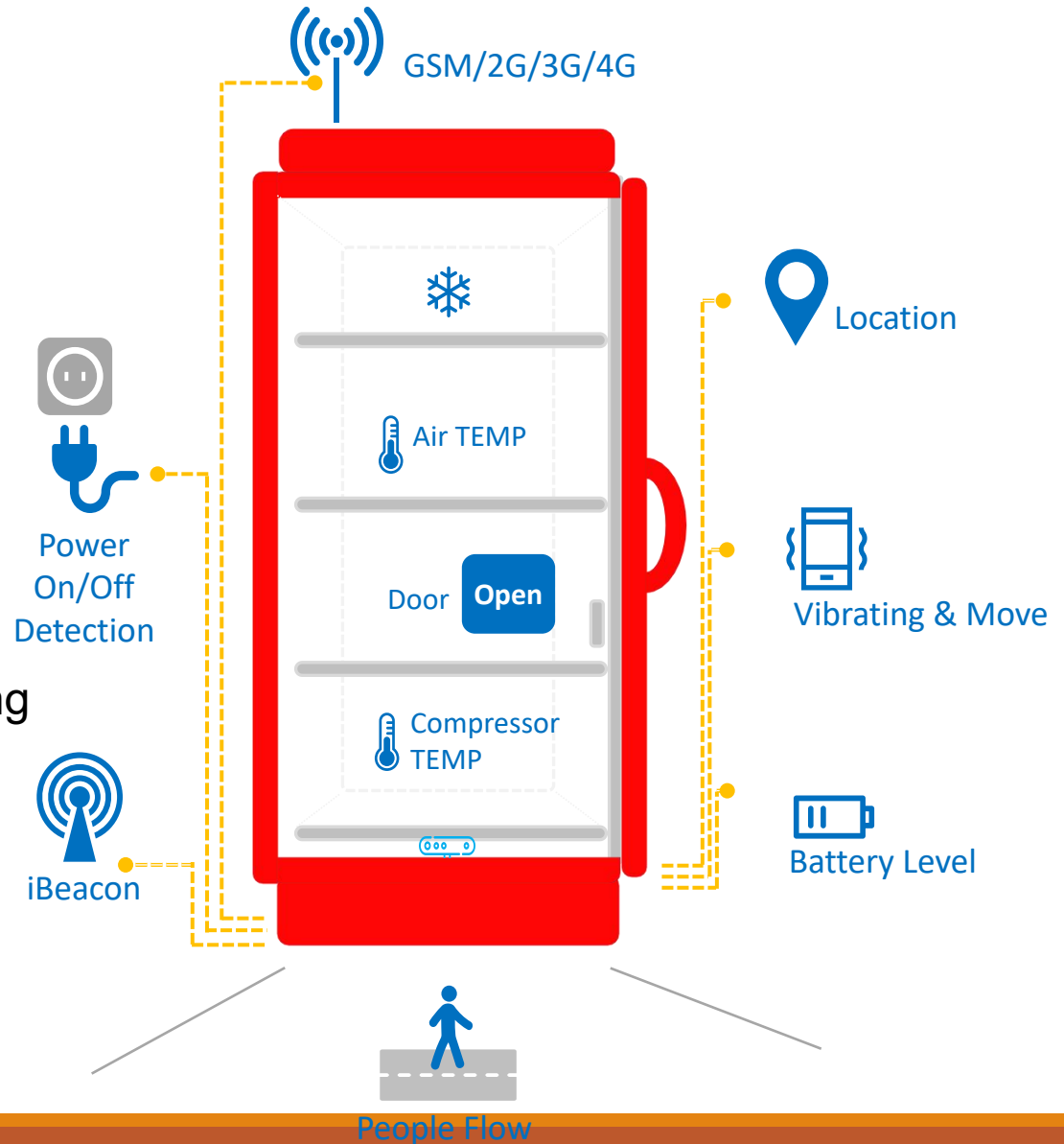
Cases Study

RTLS Device Tracking System
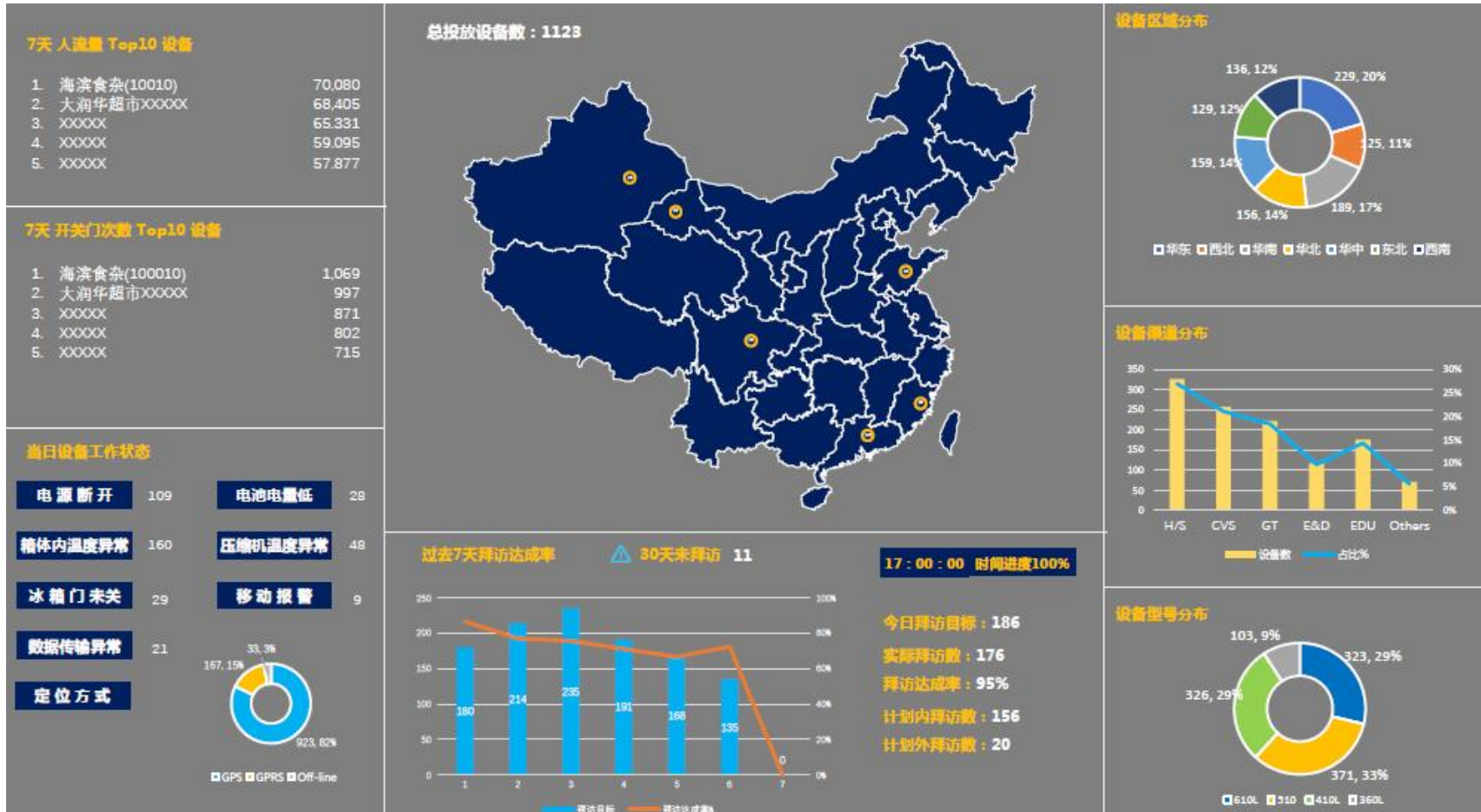
Cases Study

RFID/NFC Portable Data Collection

Cases Study

Reliable In house all kind of support family
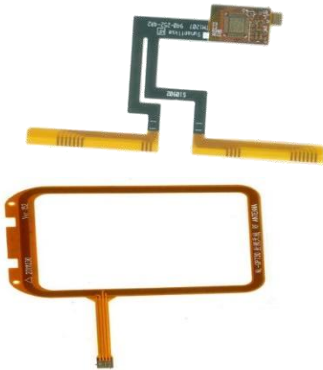
Cases Study

Anti-Disease Bracelet & Tracking System
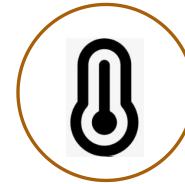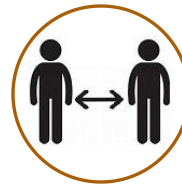
	Local Mac	Local User	Local Temperature	Closing Mac	Closing User	Closing Temperature	Closing Time
☐	3A:6D:5F:7C:69:17	John Lee		1a:2b:3c:4d:5e:6d	Bruce		2020-07-28 15:45:22

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- Information Division

Cases Study
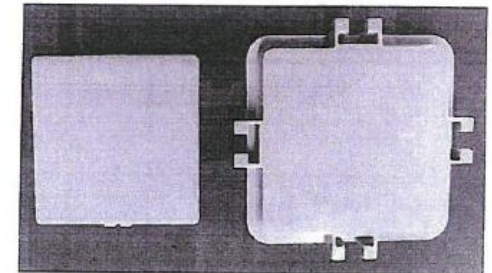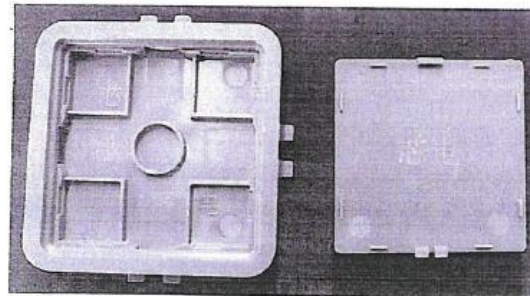
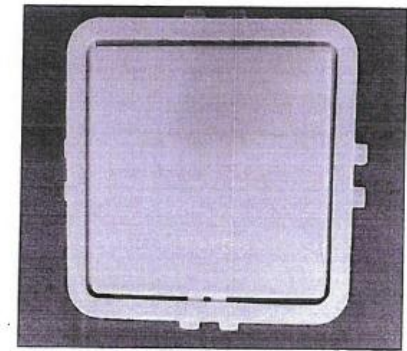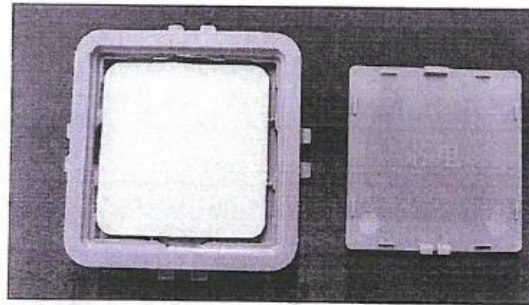## Hotel Check-in/check-out Device & System

Embedded Style

Desktop Style

Prefabs data collection and tracking

Collected and tracked the data of the prefabricated parts after leaving the factory,

and built the completed traceability system.

Consumable Water Purifier Management

When the effective filter element identification is genuine, the water purifier works normally and records the working time of the filter element.

When the filter element identification is false, the water purifier alarm, prompting the user to replace the genuine filter element, to ensure the user drinking water safety and the safety of the water purifier.

When the filter element is used for a certain time (or reaches its service life), the device will automatically remind the user to replace the valid filter element, otherwise it will stop working. After the user installs the new filter element, the device can work after reading the valid label and verifying.

BLE AOA Assets RTLS Management

Real-time location, historical track, electronic fence, asset inventory, quantity statistics, etc., the background can be one-click positioning or inventory.

Accuracy: 30cm

BLE AOA base station

2.4G active electronic tag BT-06L

Electric Vehicle "battery changing" management

1) Control each outgoing batteries with RFID label by unique ID to avoid inferior batteries.

2) The user can finished old battery self-replacement service

3) Contactless payment and settlement function

4) Transfer the risk of charging outside

# Tracing the source of high value product for anti-counterfeiting purpose

City Motor Bicycles RFID Management

- can automatically collect structured information
- Trigger the camera to automatically collect illegal pictures and videos.
- Double - base equipment based on video radio frequency can realize much accurate capture and identification of more than one kind of road violations.
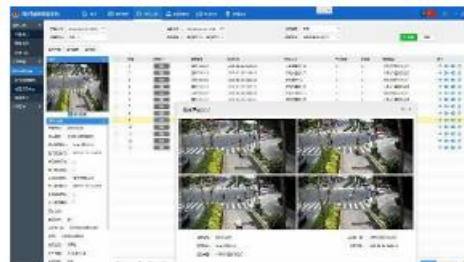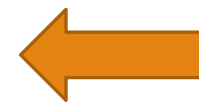
Pick to Light RFID LED Tag

Cable finding
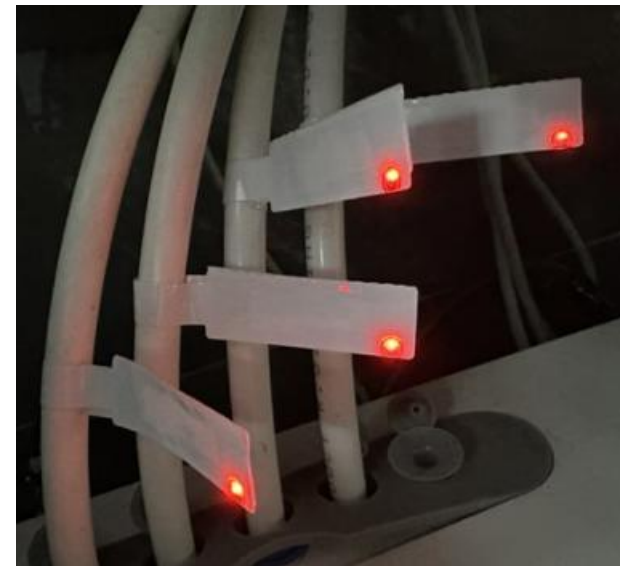
Pick to Light UHF On Metal Used PCB LED Tag

File management

Pick to Light RFID LED Tag

Toolings/Medicine Box management

Pick to Light UHF On Metal Used PCB LED Tag

Asset management

Pick to Light NFC LED Tag

Medical tube management / Asset management