The Clothing Store RFID Management Solution for TRIES

The global decentralized
commercial VIoT ecochain

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TRIES

TRIES was established in 1983. It is a comprehensive clothing company integrating R&D, design, production, and sales. It produces full lines of shirts, suits, jackets, T-shirts, sweaters, trousers, casual pants etc.

Project background

Present situation

全球去中心化的价值物联网商业生态链

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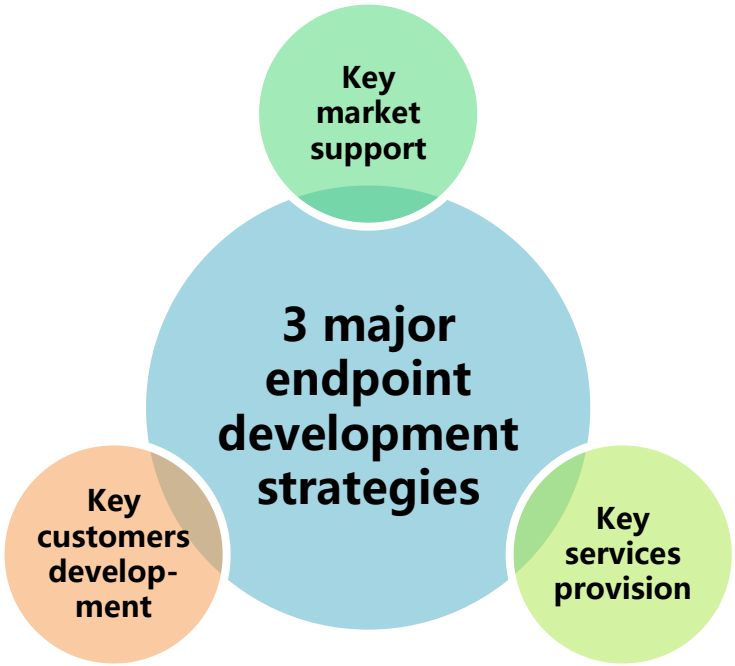
At present, TRIES has a network of more than 2000 retail stores which fully cover China. In 2017, TRIES is committed to continuous upgrade of channels, improvement of retail system, overall promotion of quality and services, to provision of more comprehensive and considerate services to consumers, and to realization of the pursuit of new life form.



Problem areas of store management process

Barcode system

- Barcode position manual search
- Complex operation process
- Barcode damages easily
- Affects sales efficiency

Store management

- Search difficulties
- Low accuracy of present magnetic stripe anti-theft systems, magnetic stripes impair easily
- Information storage reliability not high enough, data read-write accuracy low, circulation and management links data cannot be linked etc.

Inventory management

- Manual inventory, heavy workload, low efficiency
- Handwritten/memorized storage inventory data waste time and raise concerns
- Employees' repetitive work leads to negative emotions and lower work enthusiasm easily

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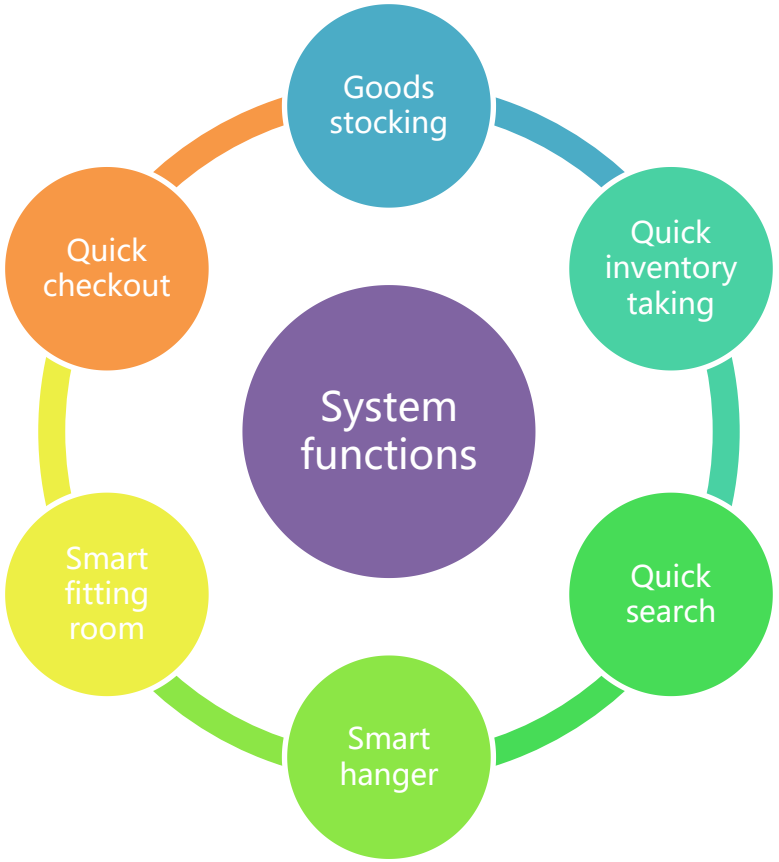
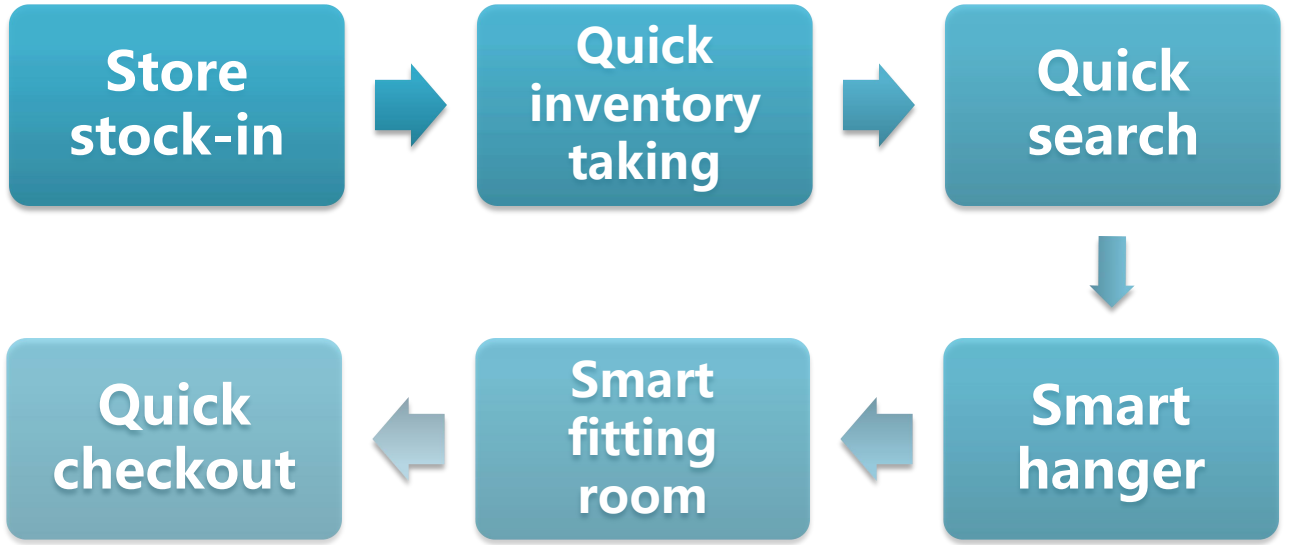
RFID-based smart store solution scheme

Smart retail management system uses a next-gen RFID technology. It provides branded businesses with new retail solutions as intelligent stores, future stores, intelligent payment and experience terminals, creates the intelligent shopping environment. Customers can experience the intelligent service and shopping brought by technology. Through customers behavior analysis, products layout and activities are adjusted in real time to improve store sales and goods turnover.


Goods stocking
Quick inventory taking
Quick search
Smart hanger
Smart fitting room
Quick checkout
System functions


Store stock-in
Quick inventory taking
Quick search
Smart hanger
Smart fitting room
Quick checkout

Clothing tags are carriers of clothing information including material, specifications, washing instructions etc. points of attention. There are label tags, fabric tags, imprinted tags etc. The ones used by stores are anti-theft tags, e.g. magnetic tags.

Label tag

A. Thin type
Encloses an RFID tag, for packed end products, batch customization available

B. Thick type
RFID Inlay enclosed in hard label fiber, custom appearance possible

Stick-on tag

Tags with sticky RFID Inlay directly applied to the back of a present label

Woven/ imprinted tag

RFID Inlay woven/imprinted into the fabric

Hard tag

EAS-compatible tag
2 core functions: RFID + EAS anti-theft

Stock-in

Before goods enter a store, a handheld RFID scanner reads label data on batch clothing tag, compares the quantity and model of the goods with the warehouse receipt, and corrects manual errors.

Quick inventory taking

The handheld scanner collects clothing tag information and sends it to the backend server to compare the data, the differences appear on the scanner screen in real time. After a manual check, inventory information is updated to the back-end server through the handheld scanner.

Smart hanger

Smart hanger is not only a marketing tool displaying information on countless products, it also collects customer's behavior data.

When a customer takes clothing off the hanger, the smart hanger automatically identifies the tag on the taken item, and the information on style, color, price etc. shows up on the display. At the same time, customer's behavior data is uploaded to the server. Through software analysis and statistics, we can get the clothing pick up rate and know which smart hangers attract customers' attention most.

Smart mirror

Basing on the virtual video technology, with a smart mirror you can have new clothing experiences without even trying clothes on. It greatly improves consumer experience.

If a customer is interested in an item, but doesn't want to try it on, here comes the smart mirror. The customer needs only a few simple steps to get the appearance of clothing on the body. It is convenient, fast, and also has a great sense of technology. Using the system, data of these customers' experience behavior can also be uploaded to the server to form strategic data.

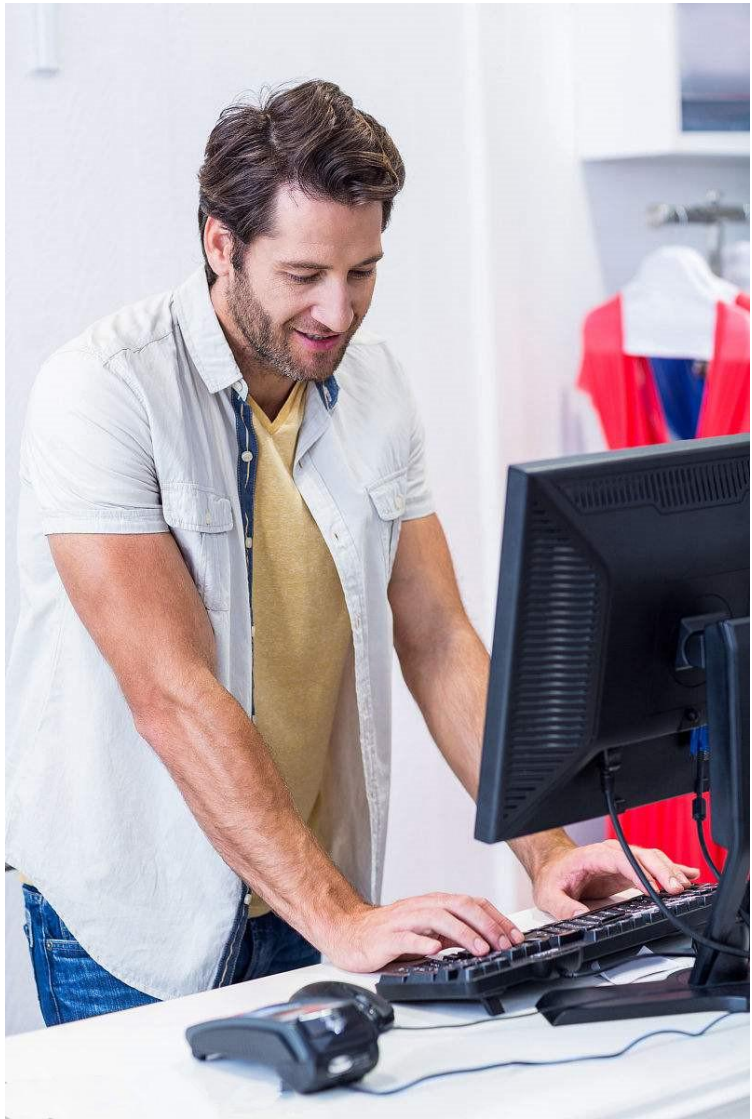
Smart fitting room

Smart fitting room combines RFID technology with personalized smart payment terminal to provide customers with high-tech experience services

When customers bring clothing with an RFID tag to the fitting room, RFID reader-writer automatically identifies the clothing. At the same time, the data is delivered to the backend server which responds with clothing information. Customers can see the information on other colors, sizes, stock etc. Using a touch screen, they can also pick associated items recommended by the system, order services and ask the assistant to send the selected items to the fitting room. These behavior data can be automatically collected using RFID to analyze clothing try-on rate.

Quick checkout

Using RFID to identify target information automatically, you only need multiple tags to be within the scope of a receiver to be read all at once. It can realize simultaneous identification of multiple goods, improve checkout speed and customer satisfaction.



Security and anti-theft function

Security and anti-theft system of a smart store integrates an RFID multisystem. It can provide clothing stores with theft protection and also serves as a checkpoint for new goods arrival and orders. It improves work efficiency and avoids repeated investments.

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➢ Reliability

Key features of an RFID electronic tag itself are big storage, high reliability, ecofriendliness etc. Electronic tags are developed according to the specific environment starting from properties and technology. They are reliable, magnet proof, water proof, static free, unwearable and have other advantages.

➢ Maintainability

System software supports upgrade maintenance. To keep up with the constant change and increase of customers' needs, the software reserves extendable functional modules to facilitate maintenance in real time.

➢ Real-time mode

Warehouse in/out goods are registered, goods circulation accelerates, easy to manage in real time.

➢ Accuracy

Based on inborn advantages of RFID, tag data is all good in advance. Moreover, reader-writer gets tag and related information in a non-contact way. This avoids human input errors, greatly reduces data error rate, and can help reach 100%.

Analysis of pro's

Intelligent store system function analysis

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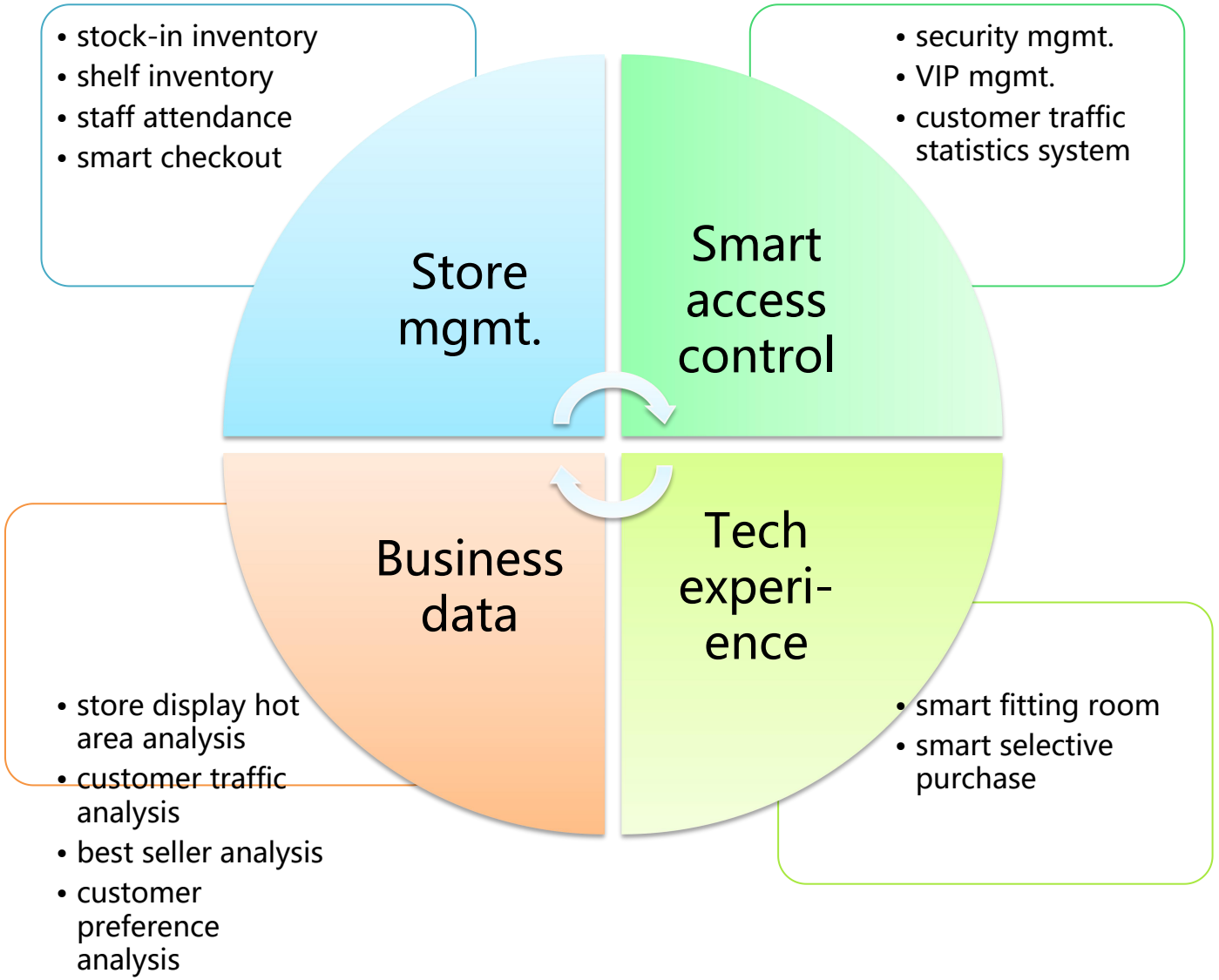

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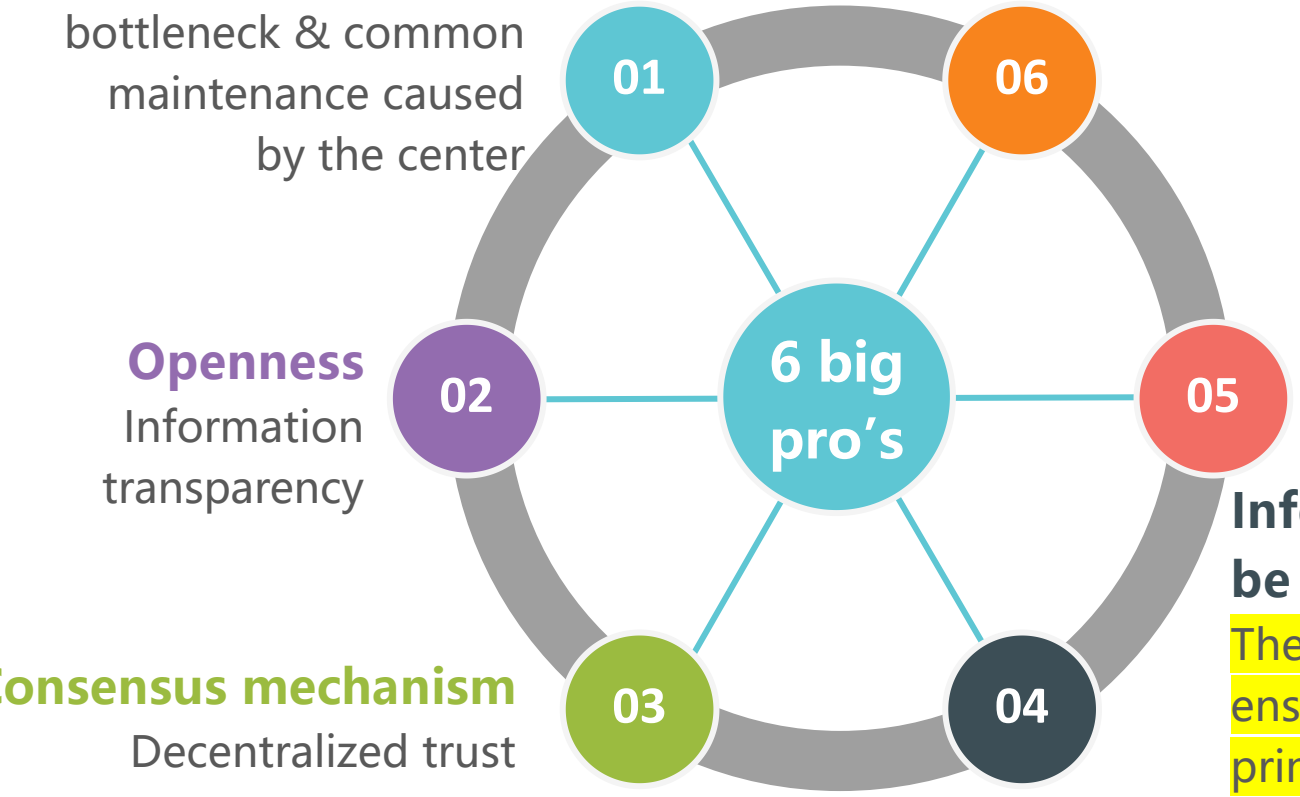
Blockchain 2.0 concept

Blockchain has a distributed data storage, p2p connection, consensus mechanism, encryption algorithm etc. new computer technology application models. Its 2.0 gen apart from the original consensus mechanism has programmability as the second key feature. Now according to various business demands, it can create more precise smart contracts.

Blockchain 2.0 pro's



Blockchain application

Clothing subchain system

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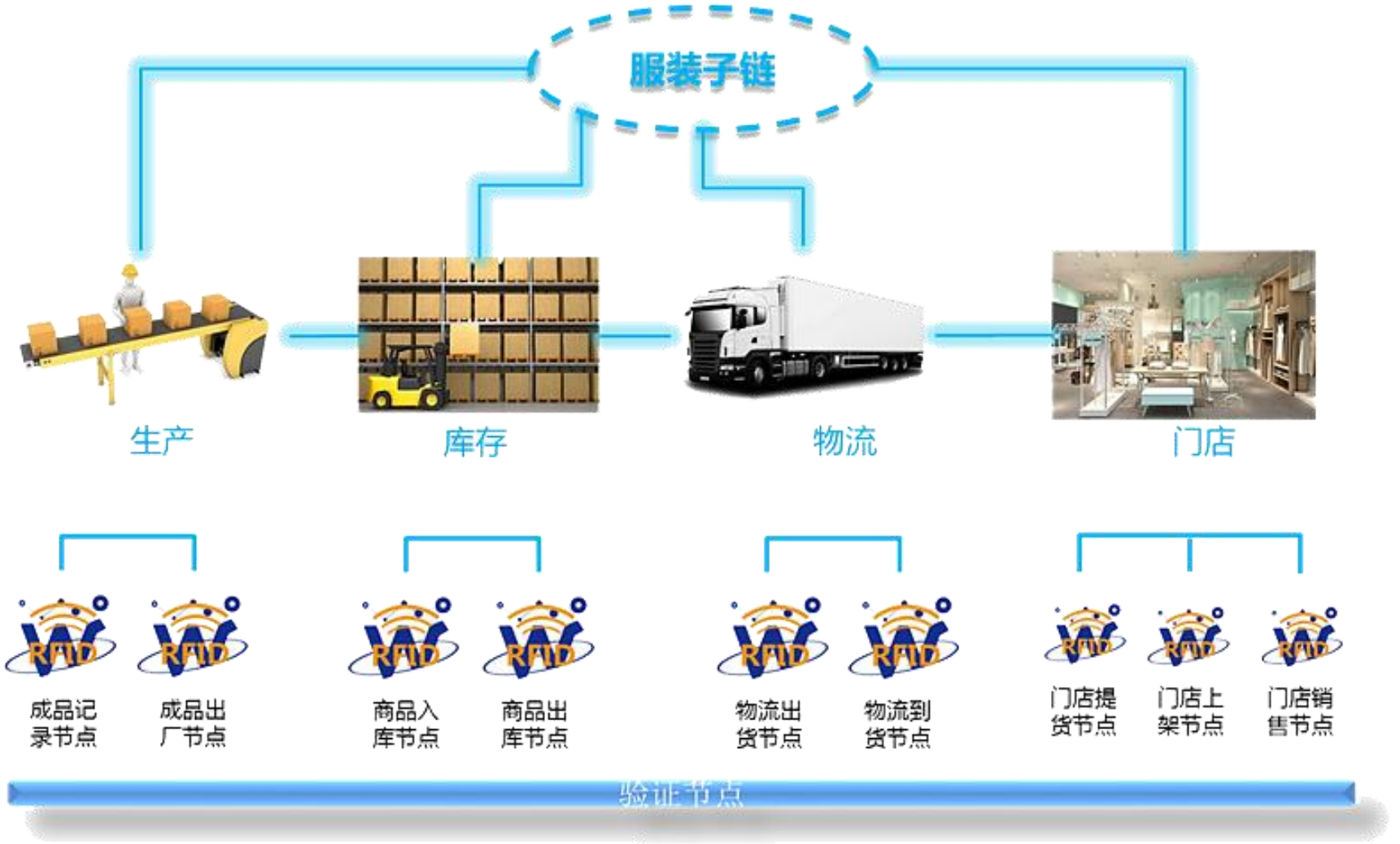
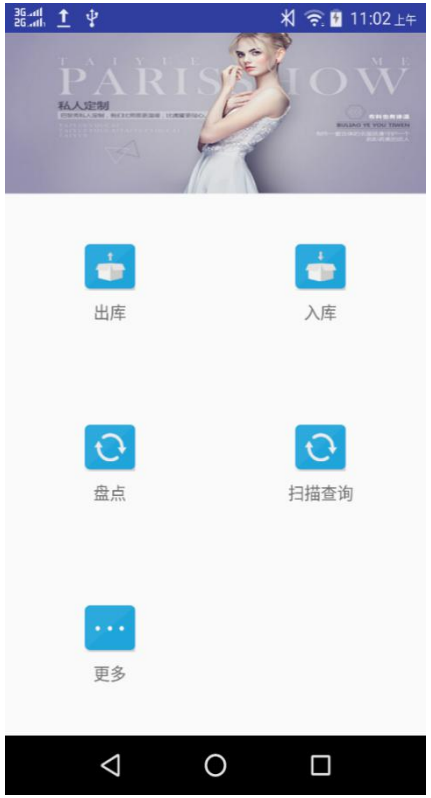


Rationale

Take goods production link for example. When garment production is finished, its related attribute information is written to an RFID tag. The product information is stored in manufacturer's data center after scanning with an RFID scanner linked with the control supervisor PC terminal. Then, through transfer to a smart contract, manufacturer releases the product information in the form of transactions. Here product related data is loaded to the chain. Warehouse in and out, logistics, store sales, product return/exchange etc. product data are loaded to the chain for storage. It facilitates manufacturer cooperation to reduce the base cost and further to achieve product tracing, anti-counterfeiting etc.

System effect

With blockchain, consumers can trace the source of clothing by scanning a QR code on the label to identify the authenticity of the goods.



1. **Building the whole process information chain:** Using blockchain and shared consensus, a public ledger is established. It is the only, traceable, tamper-resistant information source approved by the participants. It avoids complex information interactions between various systems and performance bottlenecks caused by conventional centralized servers. It also saves cost of equipment (for network nodes), and the data is maintained jointly.

2. **Process simplification, benefit increase:** Through integration of RFID technology and open data ownership, funds and information flow of clothing production, logistics, warehousing, sales and other levels is no longer mutually opaque. A lot of time and base cost money can be saved, and as a result, benefit increases.

3. **Data security:** The consensus mechanism is used to establish trust to unfamiliar nodes of a p2p network. Besides that, the cryptographic method is used to guarantee the security of the data and other security attributes.

4. **Data traceability:** Many problems caused by conventional data opaqueness are solved; all links of clothing lifecycle can be traced back. If any problem appears, it can be verified accurately and quickly, which strengthens the enterprise brand image.

Thank you

The global decentralized commercial VIoT ecochain

Building a commercial ecochain with the perfect combination of the real world and the blockchain

Leading humanity to a reliable and digitalized life

We create the new era of Value Internet of Things

http://www.waltonchain.org