



# Smart Industry & Warehouse Management Solution



# ONE-STOP IoT SOLUTION INNOVATOR



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# Industrial Warehouse Management Dilemma

Cumbersome steps  
High labor time cost



Long time to find items  
Difficult to take  
inventory of stock



High environmental requirements  
Production environment  
monitoring required



Frequent replacement  
High economic costs

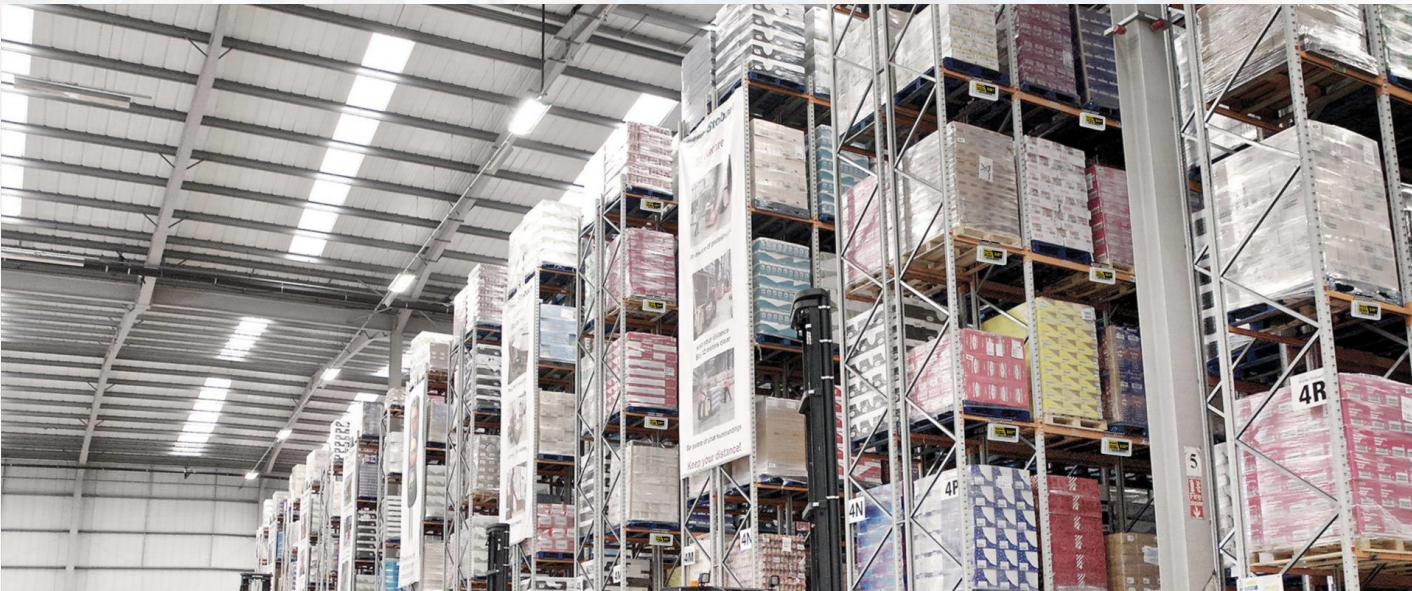


Lack of timely  
information flow on  
cargo transit





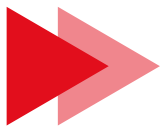
# Minew Digital Industrial Warehouse Solution



MinewTag' s Smart Warehouse Solution automates all materials & supplies, and operations in the warehouse, depending on our smart Tags and Cloud Platform.

The solution embodies our resolve to improve labor efficiency, increase warehouse storage density.

Our platform helps warehouses realize information management and visualization management.



# Digital Industrial Warehousing Solution



## Digital Industrial Warehousing

### Minew Digital Industrial Warehouse Solutions

#### Minew Cloud Platform

Cloud Data Center

Device Management

Operation Platform

Security Maintenance

API Intergrating

BLE5.0

WiFi

MQTT

*http/https*

*2.4G Private Agreement*



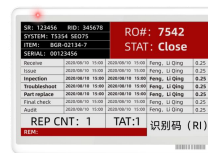
IoT gateway

Minewtag

Application	Data Presentation Customer Interaction
platform	Data Storage Retrieval, Usage Business Planning Security, Maintenance
web	Access and transmission networks
device	Information Collection Information Processing



ESL with button



Multiple sizes Industrial storage labels



Bluetooth location beacon



Asset Tag

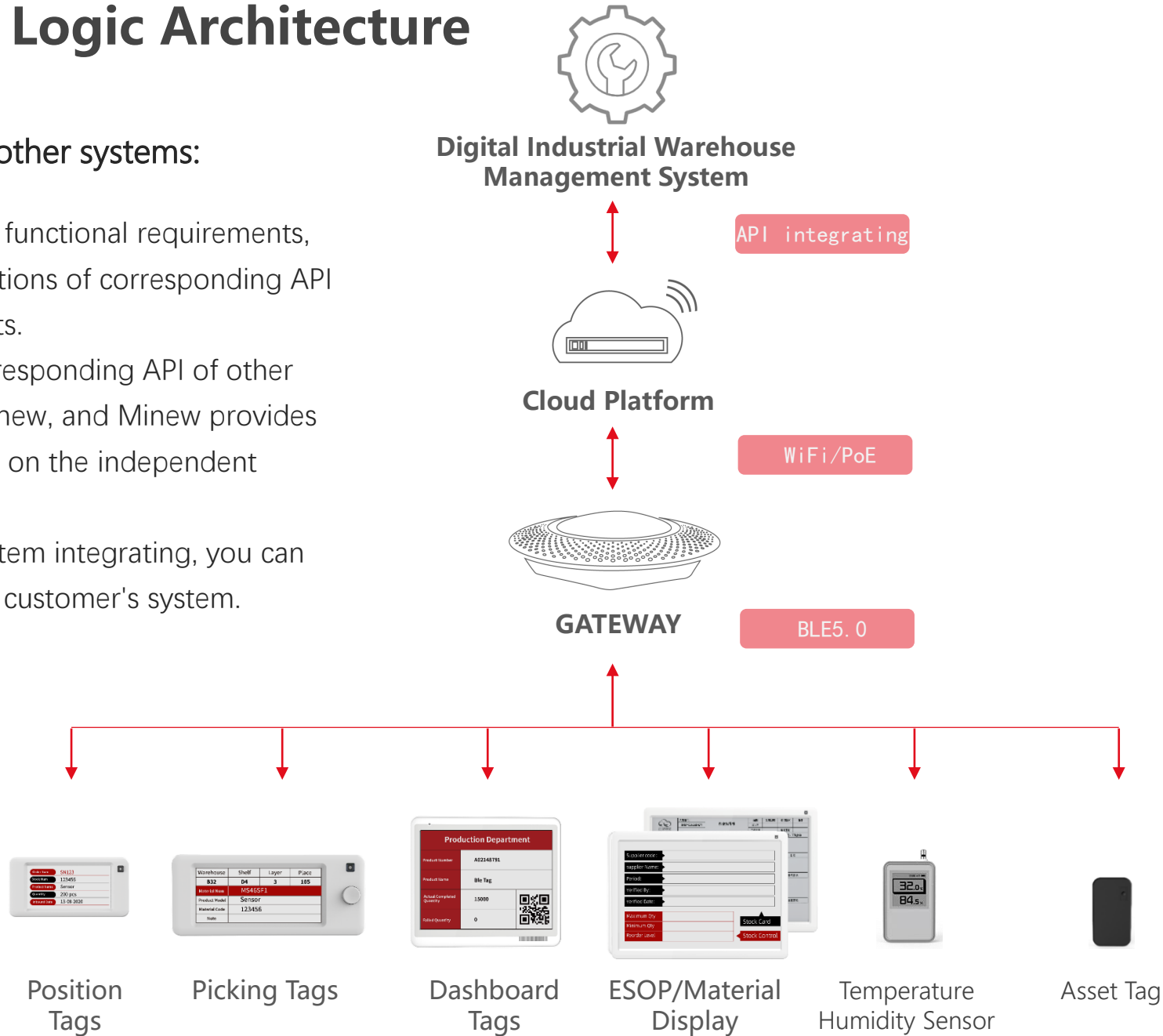


Temperature Humidity Sensor

# Solution Logic Architecture

## Steps for integrating with other systems:

- ▶ Understand the customer's functional requirements, and provide customized solutions of corresponding API according to the requirements.
- ▶ Customer provides the corresponding API of other systems(e.g. MES, ERP) to Minew, and Minew provides the corresponding API based on the independent Minew Cloud Platform.
- ▶ After the completion of system integrating, you can control all kinds of device on customer's system.

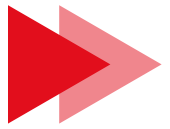


Application

Platform

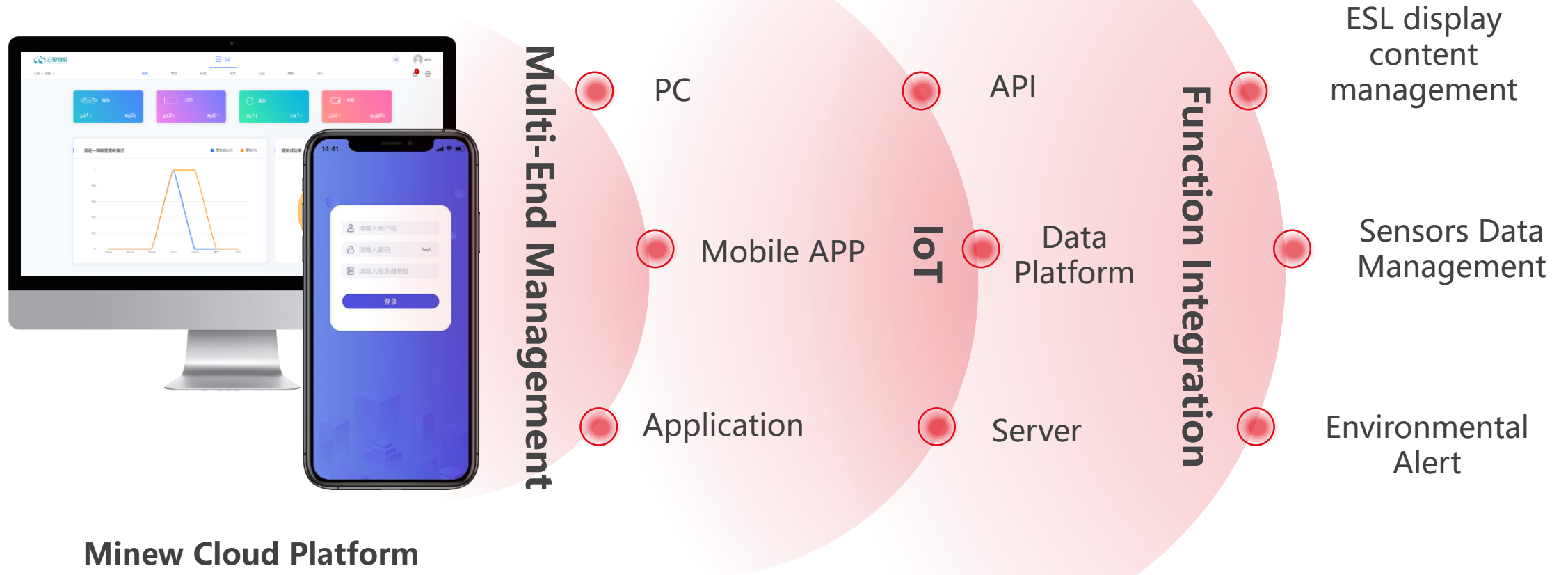
Data processing

Perception layer



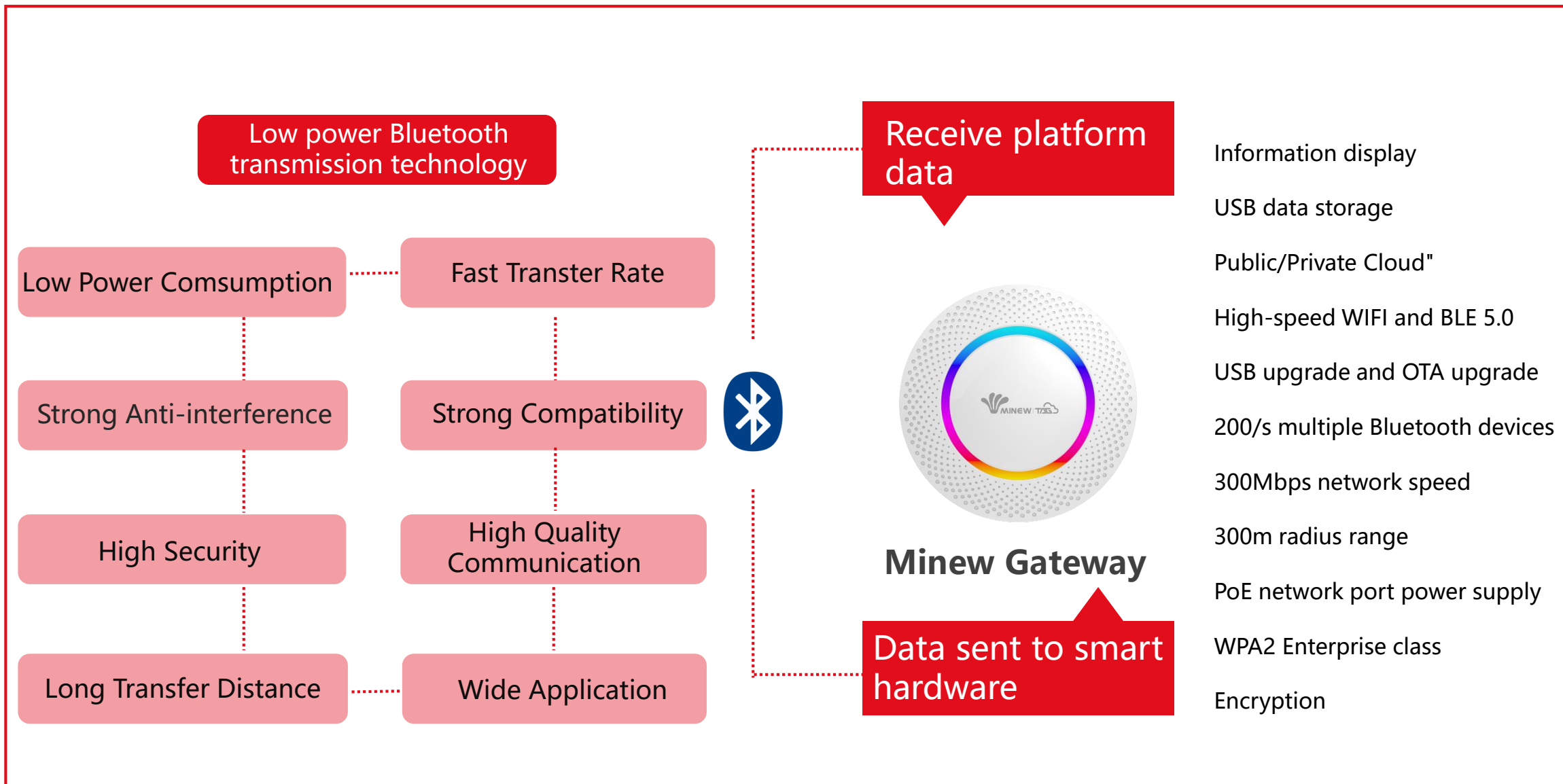
# Minew Cloud Platform

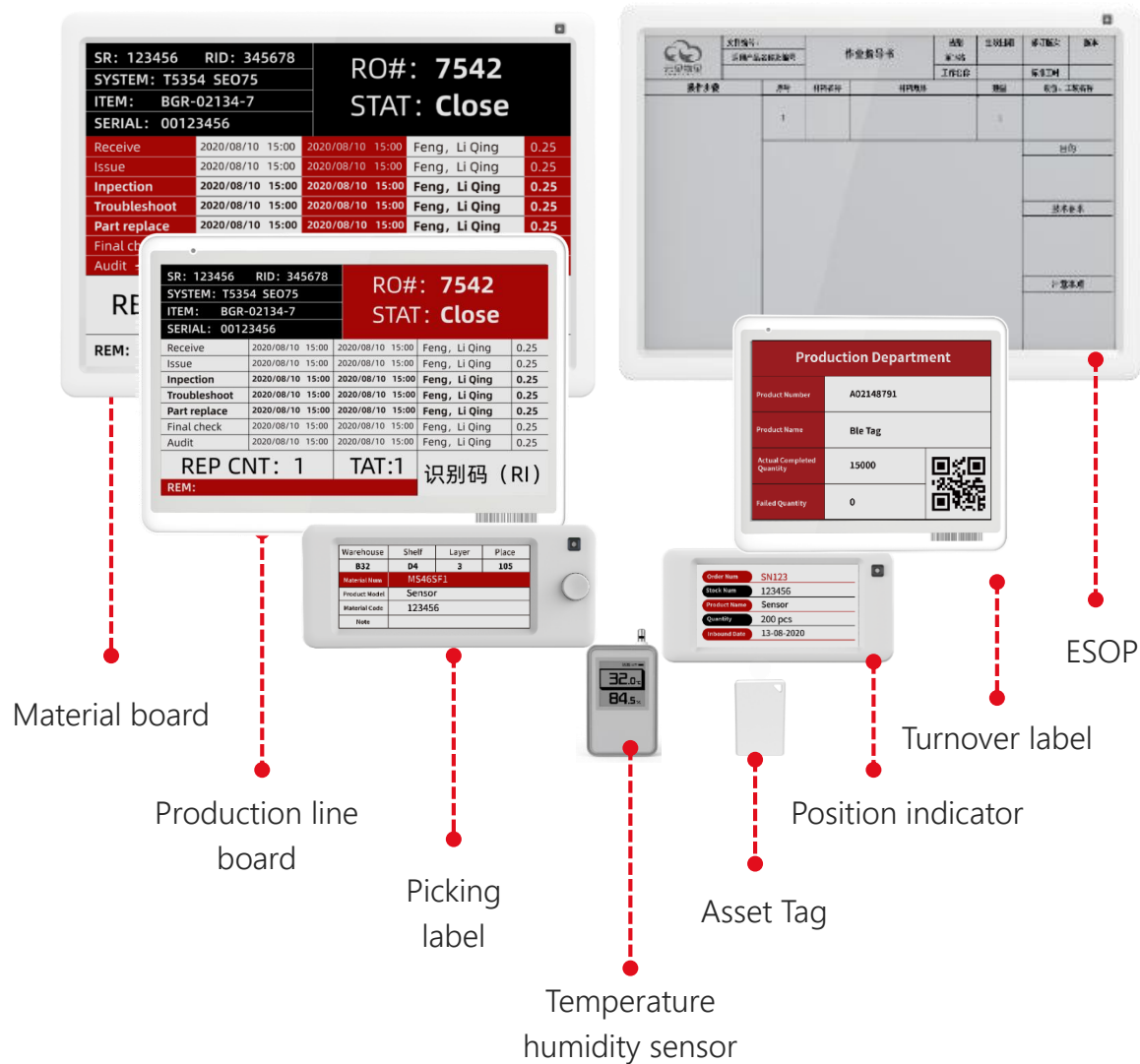
Minew Cloud Platform is an enabling applied IoT security management platform, based on security monitoring and management of low-power wireless IoT devices. The platform integrates wireless IoT data collection, highly reliable and secure transmission, basic IoT, Internet / mobile Internet, AI, big data analysis, cloud computing and other technologies. Minew Cloud Platform can access a variety of application scenarios, provide customized APIs to connect various application systems, and achieve smart upgrading.





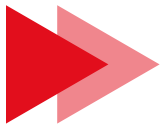
# Minew Gateway



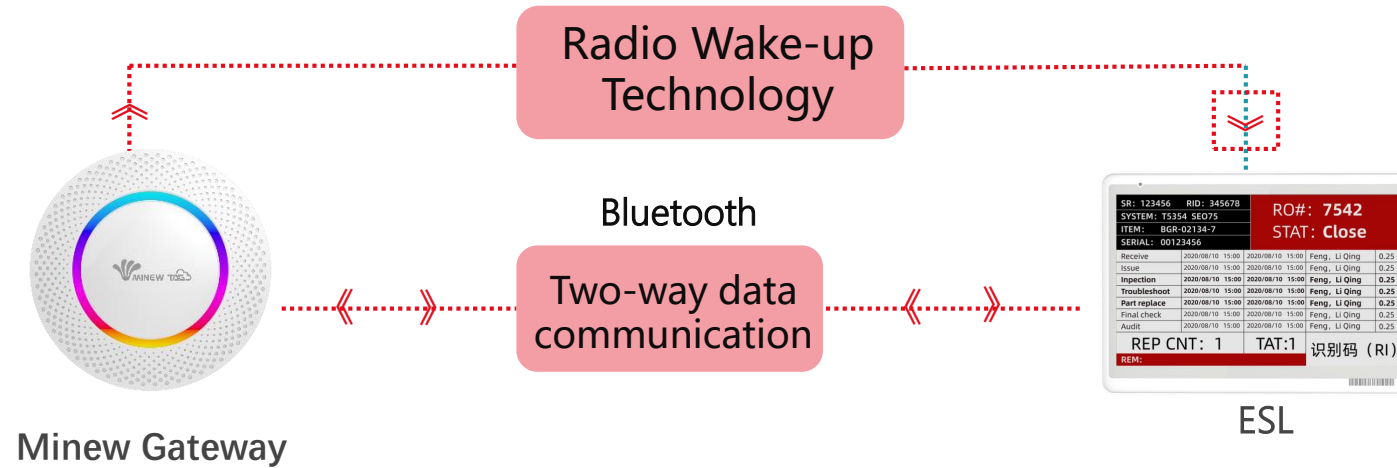


# Linkage Industrial Warehouse Management System

► Connect other systems ( e.g. MES, ERP) to realize digital industry in terms of warehousing, outbound, inventory, warehouse transfer, goods positioning, production environment management and asset management.



# Minew Base Station & ESL High Interference Immunity



## Communication Technologies.

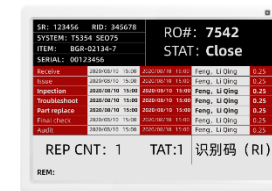
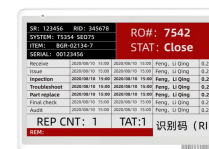
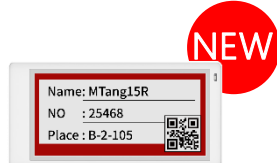
- ▶ **Direct Sequence Spread Spectrum** with super anti-interference capability, extremely high working reliability and confidentiality
- ▶ **AES-128 encryption** with highly secure and ensures data transmission safety.
- ▶ **automatic frequency hopping connection** in 2.4G channels separated from WiFi, fixed on three channels 2402, 2426 and 2480 for efficient broadcasting to avoid signal interference.

## Smart Display Operation.

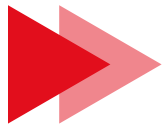
- ▶ Sleep during non-working hours to reduce power consumption and signal interference
- ▶ Wakes up the ESL through the radio signal before the ESL starts broadcasting.
- ▶ In the same space and time, to prevent the radio signal interference caused by multiple gateways, the following highly reliable processing mode is adopted.
  - > one gateway is strategically ordered to perform the wake-up task, while other gateway perform the updating screen task;
  - > radio wake-up assigns channel processing mode to circumvent signal co-channel interference;
- ▶ Radio wake-up is executed only for ESL that need to be connected to update screen.



# ESL SPECIFICATION



Product Model	DZ026	STag29A	DS035	STag42	STag58	MTag75	STag116
Size	84.6*41*7.8 mm	103*43*13 mm	99.5*49.5*9.8m m	105*94*14mm	140*120* 14 mm	183*129*16 mm	272*196*14 mm
Display area	30.7*60.1 mm	67*29 mm	79.4*37.9mm	85*64mm	119 * 88 mm	163 * 98 mm	245* 163 mm
Screen size	2.66 inch	2.9 inch	3.5 inch	4.2 inch	5.8 inch	7.5 inch	11.6 inch
Resolution	296*152 px	296 * 128 px	384*184 px	400*300 px	648 * 480 px	800 * 480 px	960 * 640 px
Pixel	125dpi	112dpi	122dpi	120dpi	138dpi	124dpi	100dpi
Weight	30g	42g	45g	92g	146g	293g	416g
Display color	Black White Red	Black White Red / Black White Yellow / Black and White	Black White Red	Black White Red / Black White Yellow / Black and White	Black White Red / Black White Yellow / Black and White	Black White Red / Black White Yellow / Black and White	Black White Red / Black White Yellow / Black and White
Battery type	Customized battery	CR2450 * 2	CP502440	CR2450 * 4	CR2450 * 4	CR2477 * 6	Customized charging version
Battery lifetime	8 Years (5 updates/day)	5 Years (5 updates/day)	10 Years	5 Years (5 updates/day)			



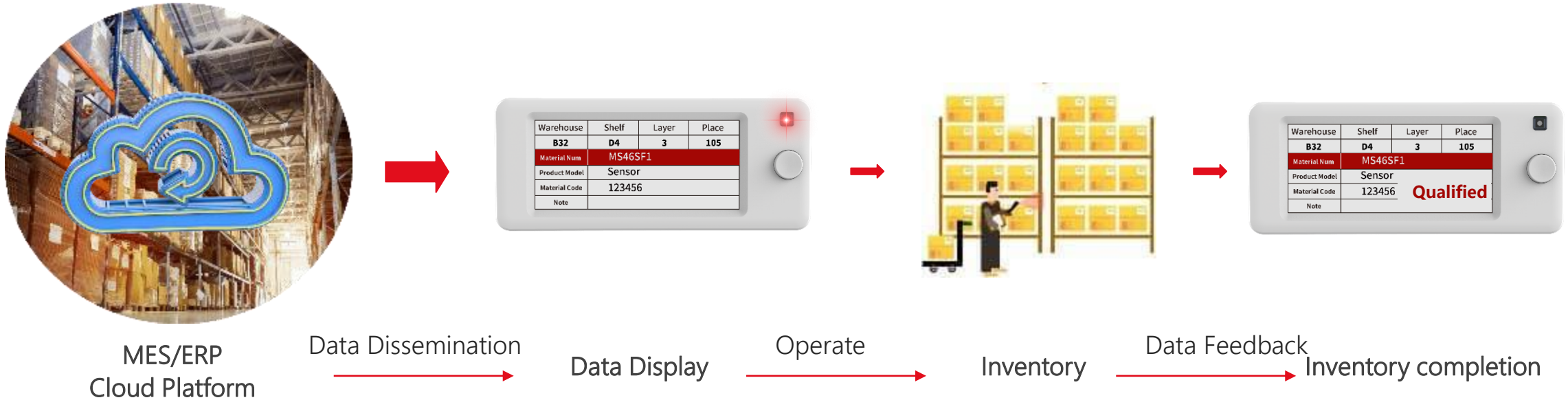
# SENSOR SPECIFICATION



Product Model	S3 Temperature Humidity Sensor	S1 Temperature Humidity Sensor	S2 Light Sensor	E6 Asset Tag	E8S Asset Tag
Size	81*45*22 mm	70.6*38*17.8 mm	52.6*23.7* 5.3 mm	42.5*23.5*5.3 mm	36.5*23.7*5 mm
Broadcast distance	100m (open space)	100m (open space)	50m (open space)	50m (open space)	60m (open space)
Lifetime	2 years	3 years	3-5 years	3-5 years	200 days
Shell & Protection	PC IP66	ABS IP65 (main body) IP66 (long probe)	ABS IP65	ABS IP65	ABS
Product features	<ul style="list-style-type: none"> <li>* Support OTA</li> <li>* Replaceable battery</li> <li>* With a variety of probe and screen combinations</li> <li>* Up to 2048 local data</li> <li>* Real time monitoring &amp; threshold alarm</li> <li>* High precision EPD screen</li> </ul>	<ul style="list-style-type: none"> <li>* With a variety of probe combinations</li> <li>* Monitoring range: -40 °C ~60 °C</li> <li>* Replaceable battery</li> <li>* High precision digital screen</li> <li>* Real time monitoring &amp; threshold alarm</li> </ul>	<ul style="list-style-type: none"> <li>* Built in light sensor, light alarm</li> <li>* Anti disassembly alarm function</li> <li>* Small and light, easy to deploy</li> <li>* Ultrasonic assembly process</li> <li>* Suitable for fixed or mobile assets</li> </ul>	<ul style="list-style-type: none"> <li>* Built in light sensor</li> <li>* Anti disassembly alarm function</li> <li>* Small and light, easy to deploy</li> <li>* Suitable for fixed or mobile assets</li> </ul>	<ul style="list-style-type: none"> <li>* Replaceable battery</li> <li>* Small and light, easy to deploy</li> <li>* Suitable for fixed or mobile assets</li> </ul>

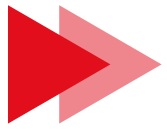
# Smart Stock In

LED light flashes to mark the storage area, ESL shows the storage information, staff successfully puts in storage, checks on backend platform.



## Operation steps:

- ▶ The staff determines the area where the goods are warehoused that meet the warehousing conditions according to the conditions in the system.
- ▶ In the screened shelves, the system pushes the information of goods to be warehoused to the ESLs, such as the quantity, date and etc., and the information is displayed on the ESLs synchronously.
- ▶ The stock-in goods of ESL which receives the information, and its LED light flashes intelligently to remind staff.
- ▶ Staff checks the flashing LED light position to determine the goods location and determine stock-in quantity according to the information displayed on the ESL.
- ▶ When the goods have been warehoused, the staff uses the special PDA to scan the QR code on the label (or use button) to complete the confirmation of warehousing and turn off the lights.



# Smart Stock Out

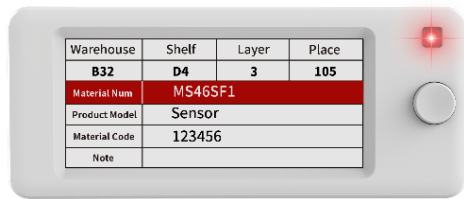
The LED light flashes to remind the stock out area, the ESL displays the information of the stock out goods, once stock out successfully, and the system data will update.



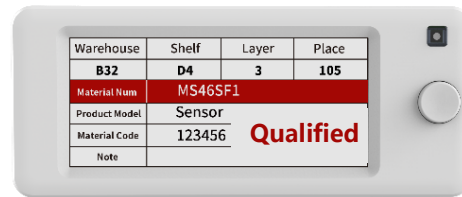
MES/ERP  
Minew Cloud Platform

Data  
Dissemination

Data  
Feedback



Out of Stock  
Operation

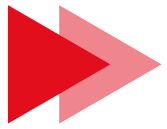


Information display

Stock-out success

## Operation steps.

- ▶ The staff defines the stock out area of goods, and screens the shelves in the background of the system;
- ▶ In the screened shelves, the system pushes the stock out information of goods to the ESL, such as outbound quantity, remaining quantity, etc., and the information is synchronously displayed on the ESL of the shelf;
- ▶ The LED light of the ESL to be delivered from the warehouse after receiving the information flashes intelligently to remind;
- ▶ The staff check the flashing position of the LED light to determine the delivery position of the goods, and determine the delivery quantity according to the information displayed on the ESL;
- ▶ After the goods are delivered out of the warehouse, the staff uses the special PDA to scan the QR code displayed on the label (or use button) to complete the warehousing confirmation and turn off the light.



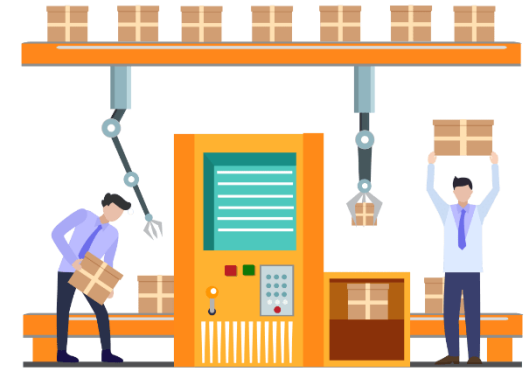
# Smart Stock Transfer

The LED light flashes to remind the location of the goods to be moved. When the goods arrive at the designated turnover point, the ESL receives the signal and automatically updates the information.



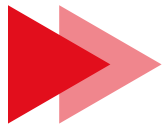
Real time display of turnover information

Quick update of turnover information



## Operation steps.

- ▶ The staff defines the shelf-shift area of goods, and screens the shelves according to the conditions in the system;
- ▶ In the screened shelves, the system pushes the information of the goods transferred to the ESL, such as the quantity of transferred goods, the remaining quantity, etc., and the information is synchronously displayed on the ESL of the shelf;
- ▶ The LED light of the ESL to be moved to the warehouse receiving the information flashes intelligently to remind;
- ▶ The staff checks the flashing position of the LED light to define the location of the goods to be moved, and starts the move operation according to the information displayed on the ESL;
- ▶ After the goods are counted, the staff uses a special PDA to scan the QR code of the ESL (or use the button) to complete the process;
- ▶ When the goods move from an area to the designated turnover point, the ESL receives the signal from the gateway of the turnover point and automatically completes the display content update after the stock transfer.



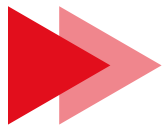
# Smart Stock Take

The LED light flashes to remind the stock-take area, the ESL displays the current location data, the staff counts successfully, and checks and confirms the data on the background system.



## Operation steps.

- ▶ The staff defines the goods stock-take area, and selects the shelves in the background of the system according to the conditions;
- ▶ In the screened shelves, the system pushes the information of goods inventory to the ESL, such as the system inventory quantity, and the information is synchronously displayed on the ESL of the shelf;
- ▶ The LED light of the ESL to be counted that receives the information flashes intelligently to remind;
- ▶ The staff checks the flashing position of the LED light to determine the counting position, and starts counting according to the information displayed on the ESL;
- ▶ After the goods are counted, the staff uses a special PDA to scan the QR code of the label (or use the button) to complete the counting confirmation and turn off the light.



# Regional Positioning & Goods Position Indicating



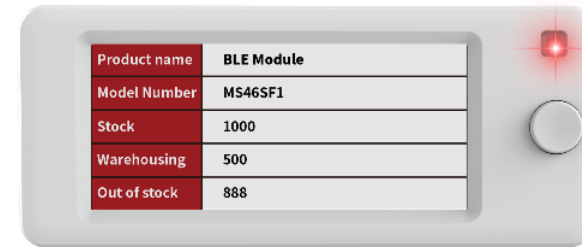
System linkage

Tricolor display

High brightness

Remote control

low consumption



Seven color LED

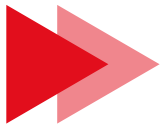
ESL

Warehouse Warning Light

## Operation steps

- ▶ Before the goods are stock-in, stock-out, moved and counted, the shelves that meet the conditions are first selected in the system;
- ▶ The system pushes information to the screened shelves, and the LED light of ESL receiving the information flashes to remind, while the warehouse warning light flashes continuously;
- ▶ Determine the location of goods according to the flashing warehouse warning lights; Determine the specific location of the goods according to the flashing ESL;
- ▶ After the operation of the goods, the staff used a special PDA to scan the label QR code (or use the button) to complete the ESL light off;
- ▶ After all ESLs LED light are turned off, the system receives feedback and automatically turn off the warehouse warning light

Note: the identification operation of storage warning lights can be customized and developed on demand



# Production Line Process Management

## Production line ESL

SR: 123456	RID: 345678	<b>RO#: 7542</b>		
SYSTEM: T5354	SEO75	<b>STAT: Close</b>		
ITEM: BGR-02134-7				
SERIAL: 00123456				
Receive	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Issue	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Inspection	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Troubleshoot	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Part replace	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Final check	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Audit	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
REP CNT: 1	TAT:1	识别码 (RI)		
REM:				

MTag75

- EDP display
- Real time update

## Work instruction ESL

SR: 123456	RID: 345678	<b>RO#: 7542</b>		
SYSTEM: T5354	SEO75	<b>STAT: Close</b>		
ITEM: BGR-02134-7				
SERIAL: 00123456				
Receive	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Issue	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
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Final check	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
Audit	2020/08/10 15:00	2020/08/10 15:00	Feng, Li Qing	0.25
REP CNT: 1	TAT:1	识别码 (RI)		
REM:				

STag116

- EDP display
- Real time update

## Operation steps.

### Production Line ESL

- ▶ Place ESLs at the front of the production line, and update production data regularly according to production steps;
- ▶ According to the production data, the staff used a special PDA to scan the label barcode and complete the real-time data update display of the production line.

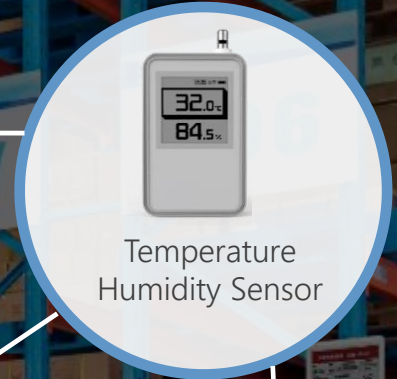
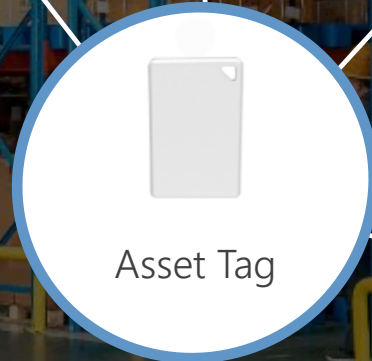
### Work Instruction ESL

- ▶ The work instruction ESL shows the operation steps and precautions of the production line process;
- ▶ If the content of the instruction needs to be adjusted, the staff can log in to the system on the mobile/ PDA/ pc to edit the content of the operation instruction.

# ▶ Asset Management & Environmental Management

## Asset Management: Monitor in real-time

- ▶ MES/ERP and other systems connect with backend data of asset management system through API;
- ▶ The system determines the current status of asset management ESLs and bound assets;
- ▶ The status identification results will be pushed to the system for users to determine the current asset status



## Environmental Management: monitoring environmental temperature and humidity data

- ▶ MES/ERP and other systems connect to the data interface of temperature and humidity sensor system through API;
- ▶ After the temperature and humidity changes, the data is actively pushed to the system for display.

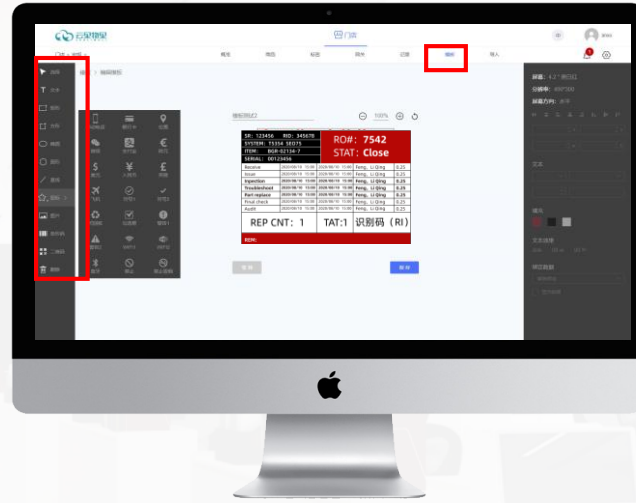


# Unified Management & Multi-terminal Control



## PC control, batch update

Support excel file import, and realize batch refresh of multiple devices.



## Customize template, one click update

Massive templates are stored, optionally configured. Customize the display content and refresh the content with one click.

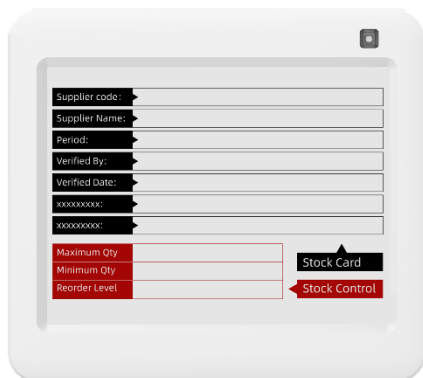


## Mobile terminal control

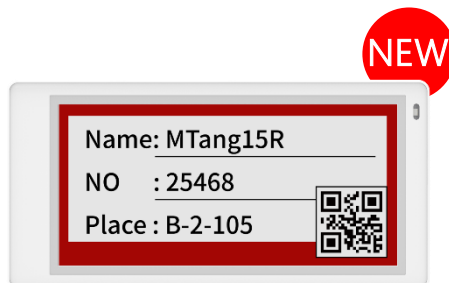
The mobile app logs in, updates online, and refreshes information synchronously.



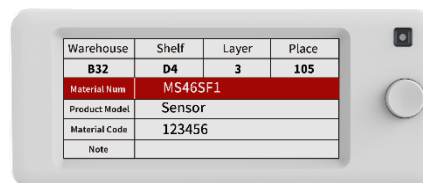
# Massive Template & DIY Template



STag42



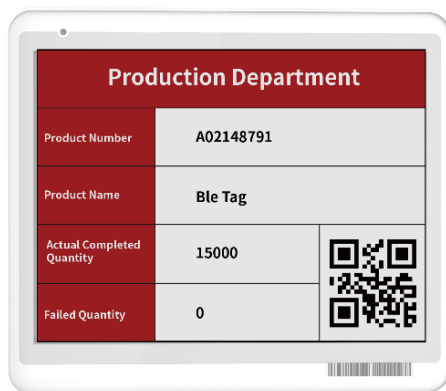
DS035



STag29A



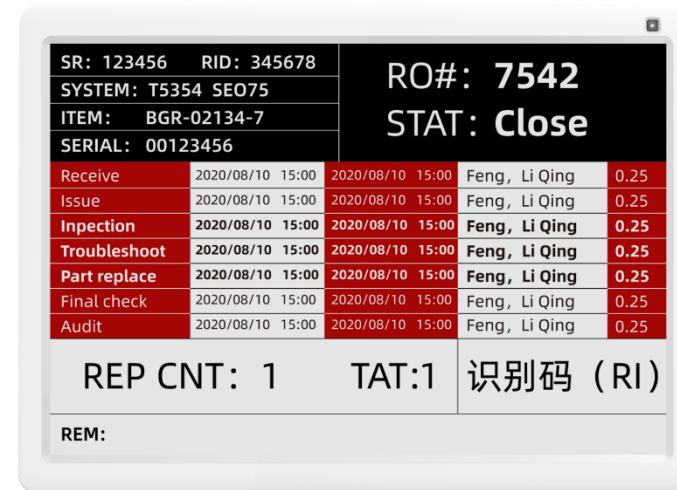
DZ026



MTag58



MTag75



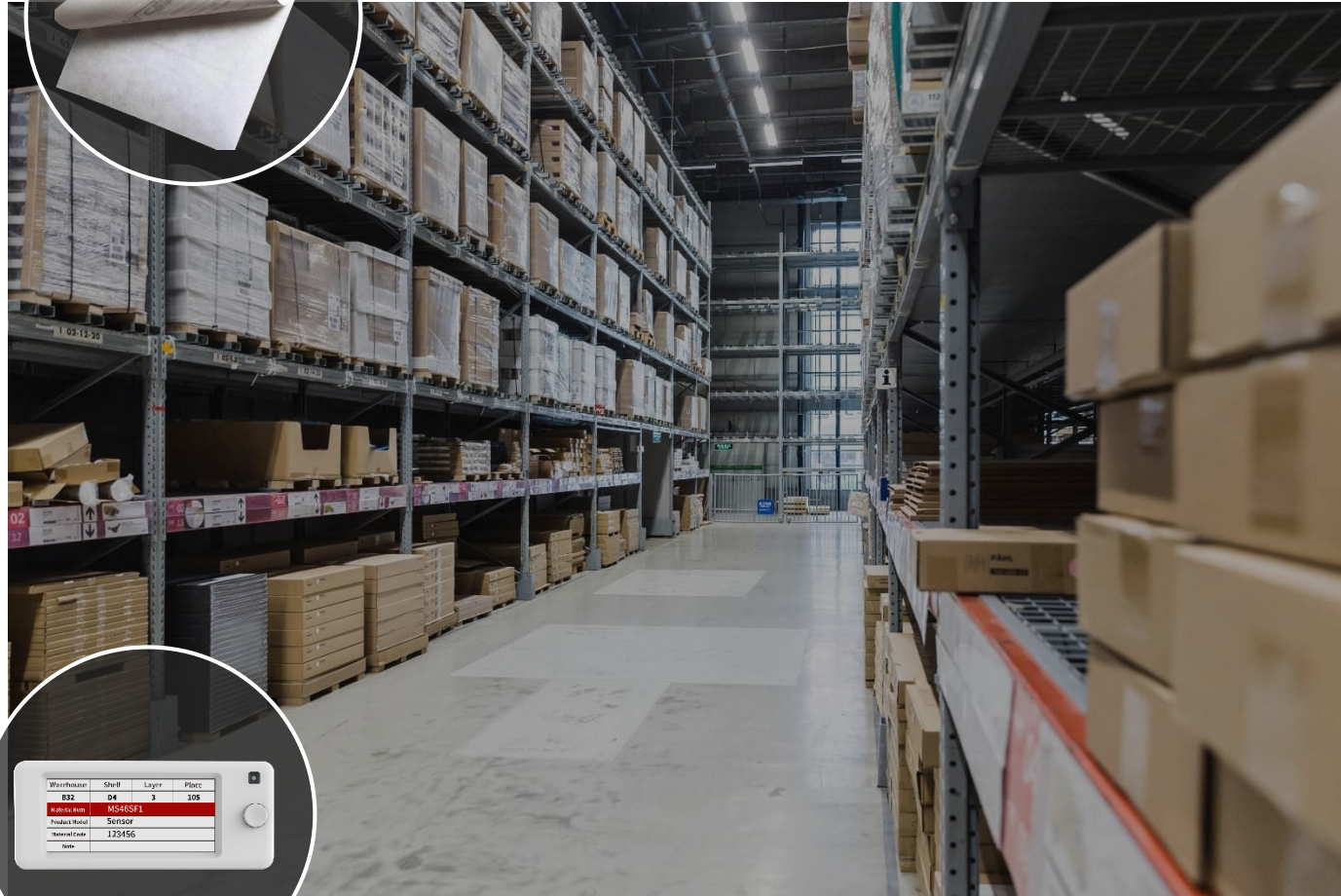
STag116



# Solution Advantage



Paper labels - frequent replacement - continuous consumption of paper



Electronic labels - reuse - energy conservation and environmental protection

Cost savings

Reduce mistakes

Storage management

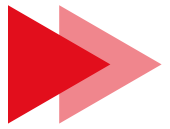
Warning management

Optimal process

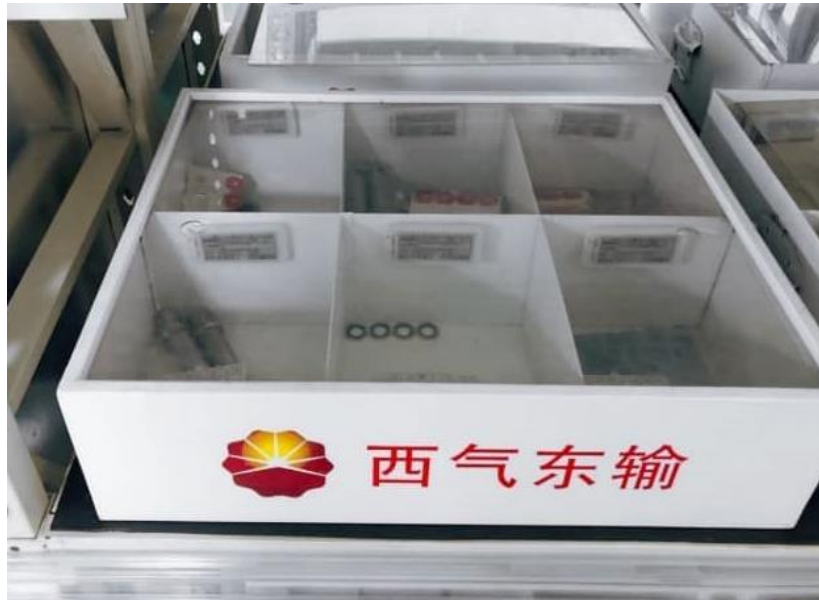
Improve efficiency and benefit

Project management

Warehousing Digitalization



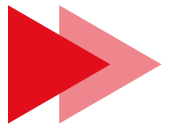
# Project Case





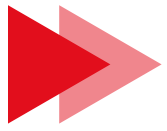
# Project Case





# Project Case





# Project Case





Shenzhen Minew Technologies Co., Ltd.

[www.minewtag.com](http://www.minewtag.com)

No. 8, Qinglong Road, Longhua District, Shenzhen, China