

# 集装箱物流全程 实时在线监控系统

Online Real-time Monitoring System For the  
Whole Process of Container Logistics Chain

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# 1. 意义和必要性 Significance and necessity

集装箱运输以其高效、便捷、安全的特点成为交通运输现代化的重要形式。据统计，近十年来中国沿海港口集装箱吞吐量增长率一直保持在30%左右，2008年集装箱运输总量超过1.2亿TEU。2008年上海港集装箱吞吐量达到2800万TEU，位居世界第二。在高速发展的过程中，广大客户对集装箱物流提出了新的需求。

Container transportation plays an important role for its efficiency, convenience and safety. According to the statistics, container throughput of China has remained a growth rate of 30% for past 10 years, and has exceeded more than 120 million TEUs in 2008. The container throughput of Shanghai Port has reached 28 million TEUs last year, ranking second in the world. In the process of its rapid development, more and more customers have raised higher demand for container logistics.

## ➤ 信息化需求 Informationization Demand

由于目前集装箱物流过程中集装箱自身不载有信息，信息的传递还依赖于传统方式。集装箱的流向、流转和识别基本上还是处于人工、半人工状态。信息资源难以共享，导致集装箱物流成本居高不下，已成为制约其发展的瓶颈。利用现代信息技术提高集装箱物流过程的透明度，将实现集装箱货运供应链上各节点的物流、资金流和信息流的有机统一，从而促使物流成本减少、物流流程重组，给供应链上的企业带来效益。

Since no information could be obtained from the container itself, the information delivery during the container transportation still relies on conventional methods. Identification and monitoring of containers are still under manual or semi-manual conditions. It is difficult to share information. The high costs of container logistics has become a bottleneck restricting its development. The process transparency of container logistics, by using of modern information technology, will organically integrate material flow, capital flow and information flow of each node in the supply chain, finally reducing logistics costs, reengineering the logistics process and bringing great benefits to those enterprises in the chain.

## ➤ 安全需求 Security Demand

近年来不断发生的恐怖袭击事件以及偷渡、走私、失窃问题，引起了全球各界的广泛关注。特别是，全球集装箱物流安全保障形势相当严峻。

In recent years, the terrorist attacks and smuggling problems have caused extensive concern by all the fields in the world. Especially, the issue of security of global container logistics is quite serious.

下面请注意后面几个事件。

Please note the following events.



事件一：据《西雅图时报》2007年4月5日报道，美国华盛顿海关当天凌晨在西雅图一个集装箱码头抓获了22名偷渡客，这批偷渡客躲藏在一个40英尺集装箱内。

Event 1: The *Seattle Times* reported (published April 5, 2007) that 22 stowaways were spotted by U.S. Washington Customs hiding in a container. It's a 40-foot container on the vessel 'Rotterdam'.



事件二：据《欧洲日报》2008年4月12日报道，泰国当地9日发生了54名缅甸偷渡客被闷死在集装箱内的惨剧。

Event 2: The *Europe Journal* (published April 12, 2008) reported that Fifty-four migrant workers from Myanmar suffocated in the back of a seafood truck in southern Thailand while being smuggled to the popular resort island of Phuket.



The third edition of  
*Europe Journal*



事件三：据上海《劳动报》2008年7月2日报道，仅一名卡车司机盗窃集装箱货物价值超过百万元。

Event 3: According to *Labor Daily* China on July 2, 2008, goods valued more than 1 million RMB were stolen by only one container truck driver.

相关资料显示，全球一年在集装箱货物失窃方面的损失达300~500亿美元。

Related information shows global cargo loss 30 ~ 50 billion Dollar every year because of thief.



## 集装箱司机专盗集装箱

### 偷窃布匹棉纱价值超过百万元

本报讯 物流公司驾驶员勾结同乡和收赃者，用切割机打开集装箱门大肆盗窃，从布匹、出口棉纱到价值百万余元的银块都不放过。日前，两人被市检二分院以涉嫌盗窃罪提起公诉。

翟某来自山东，是上海某物流公司的临时驾驶员，陈某则是他的老乡。去年11月27日，该公司安排翟某驾驶集装箱车去昆山某光学应用材料公司拉货。翟某便叫上陈某一同前往。在昆山装货时，两人得知这批货是银块，即起贪念。在沪途中，陈某联系了一个绰号“老余”的收赃人，约好在青浦附近接头。

当晚，“老余”带着几名同伙出现。他们用手提式砂轮切割机割断了集装箱门搭扣的销子，随

后打开箱门撬开其中的一只大木箱，从里面搬出24盒重达400余公斤的银块。最终，翟、陈两人将这批价值150万余元的银块以30万元卖给了“老余”。

两天后，该光学应用材料公司在查验货柜时发现靠近集装箱门的一只大木箱包装有些松动，一清点才得知货品失窃。数天后，翟某、陈某相继落网。经查，陈某还伙同他人以相同手法分别从集装箱内偷盗了出口到日本和香港的棉线和布匹，价值20余万元。

据了解，这伙犯罪嫌疑人作案手法十分隐蔽，被偷的集装箱看上去“毫发无损”，一些被害单位即使发现货品少了，也往往搞不明白问题出在哪里，只好自己“吃进”。 □ 曹小敏 杨馨



与此同时，食品安全问题引起了人们广泛的关注。近期，各大媒体先后曝光了一系列问题食品事件。

Meanwhile, food safety issues attracted wide attention. Recently, reports on food safety have been carried by much of the mainstream media.

事件四：2008年1月底，在日本发生的因食用中国饺子而产生农药中毒事件也引起了国际社会对于食品安全的广泛关注，中日双方共同就此事展开了调查。

Event 4: At the end of January, 2008, great concern has been widely aroused among the world on the food safety as hundreds of Japanese reported feeling ill from eating insecticide-tainted dumplings from China. Japanese and Chinese officials have launched a full investigation into this food poisoning case.

日本《东洋经济》周刊报道称，日本食品行业人士分析认为：饺子中毒事件的根源极有可能出现在漫长的运输和保管过程中，也就是物流过程中。



Reported by Japanese *Economic Weekly*, experts in food industry believed that, the contamination most likely took place during the long transportation and storage, that is during logistics, since no pesticide residue was found in the factory. Consequently, to assure the food safety, it is essential for us not only to adopt scientific management in the process of production, but also to monitor the logistics process effectively.

## 应用集装箱电子标签系统的必要性 Why the E-tag is needed?

➤ 由此可见，现代集装箱物流迫切需要一种智能化电子标签系统，实时记录集装箱运输中的箱、货、流信息，以及相关的安全信息，结合全球网络环境实现集装箱物流的全程实时在线监控，以提高集装箱物流全程的安全性和透明度，提升集装箱物流的整体水平。

So, it is urgent for the modern container logistics to adopt intelligent E-tag system which can record the information of container, cargo, flow, as well as the security information, and realize the online real-time monitoring of the whole process of container logistics chain by Global Network, in order to guarantee the safety and transparent during the container transportation and improve the logistics efficiency and increase the level of container service.

## 应用集装箱电子标签系统的效果

### What does the E-tag system bring to us?

- 使集装箱物流各环节的安全更可控，并具有追溯性，从而防止货物失窃，提高货物的运输质量

Make whole process of container logistics more controllable so as to prevent the loss of goods and improve the level of transportation of the cargo

- 有效增强政府对物流全过程的监管，提高国家安全水平
- Effectively enhance the level of Government supervision of cargos and raise the level of national security and protection

- 使集装箱物流全程更透明，可帮助货主及时掌控运输动向，降低物流成本，提高经济效益

Make whole process of container logistics more transparent. Help shippers know about the transport status of their cargos in time, so as to reduce the logistics cost and bring obvious commercial benefits for enterprises



## 2. 系统介绍 Introduction of the E-tag system

### ✧ 集装箱电子标签系统的功能

Function of the E-tag system

#### ➤ 集装箱物流信息实时传递

Real-time transmission of container logistics

1. 箱信息      Container information
2. 货物信息      Cargo information
3. 物流信息      Logistics information

#### ➤ 集装箱安全信息      Security information of container logistics

1. 开关箱时间  
Time of when opening or closing the container
2. 开关箱时，箱所处的位置（与GPS相连）  
Location of container when opened/closed (connect with GPS)
3. 集装箱的物流动态和授权状态  
Dynamic information and authorized stated of container

# 集装箱电子标签系统的服务对象

## Service objects of the E-tag system

货主  
**Shipper & Consignee**



港口  
**Port**



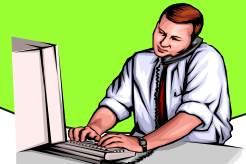
船公司  
**Ship owners**



物流公司  
**Logistics company**



货代、船代  
**Forwarder**



海关  
**Customs**

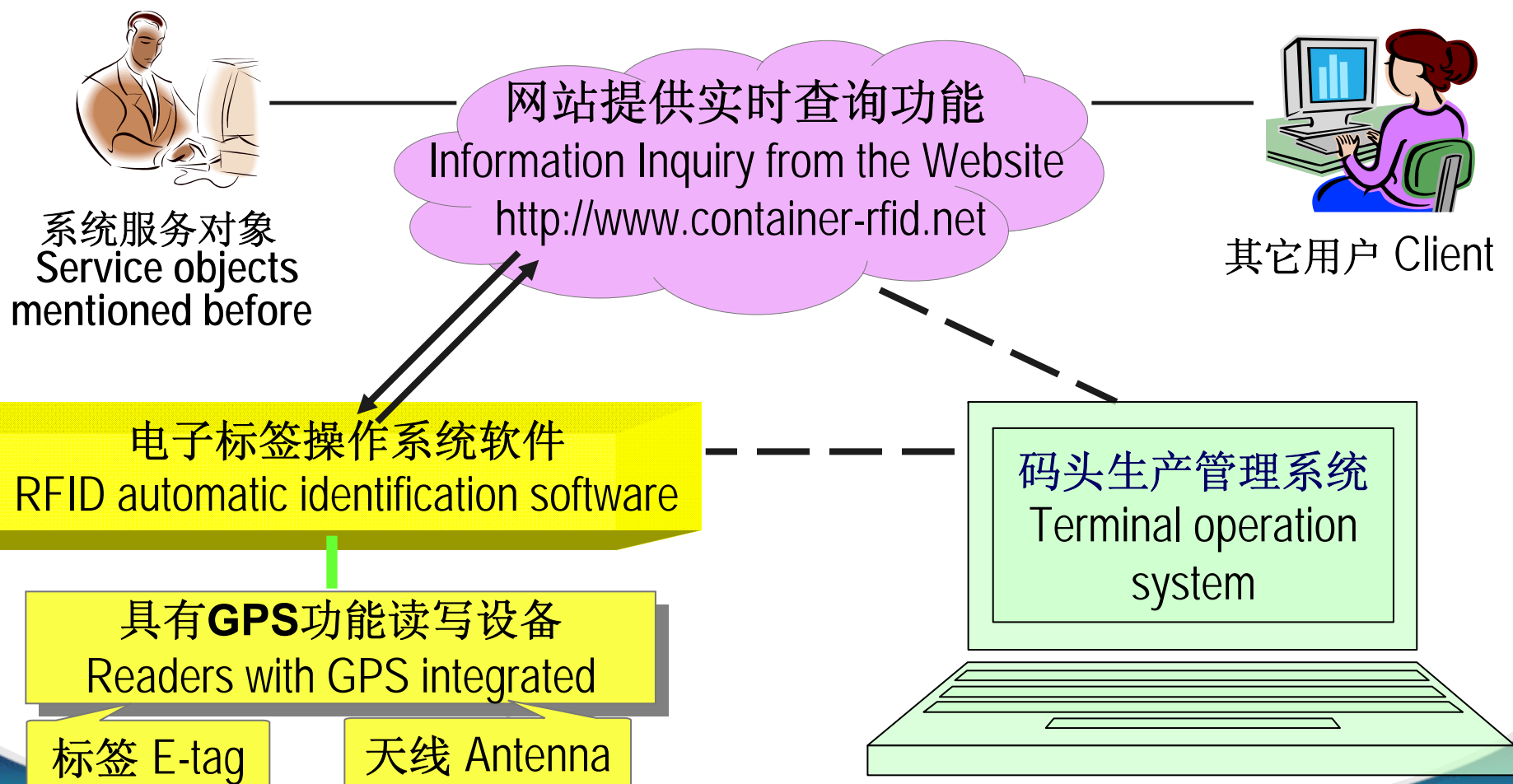


边检、商检  
**Inspection**



# 集装箱电子标签系统的框架

## E-tag system Frame



# 集装箱电子标签系统的工艺流程

## Procedures of the E-tag system

发货人  
装箱  
Shipper

港区  
Port

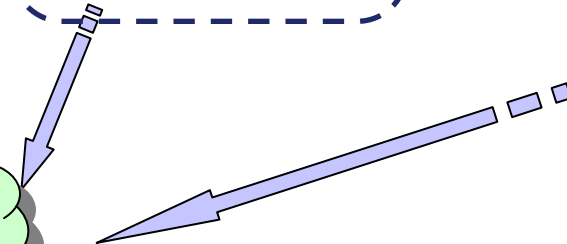
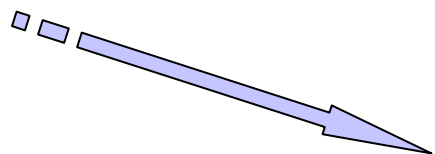
远洋运输  
Ocean

港区  
Port

收货人  
拆箱  
Consignee



挂上  
电子标签  
Put on  
e-tags



摘下  
电子标签  
Take off  
e-tags



## 控制点的操作方法

### The operation at each controlled point

#### 发货人装箱 Shipper at Stuffing point

在集装箱货主的装箱点，通过移动式读写设备，授权写入箱、货、流信息，关箱门挂上电子标签。此时，网站上已能显示该集装箱的关箱时间、地点，箱物流信息。

At stuffing area, with authority , information of container and cargo are input into the E-tag by moveable device. Then close the container and mount the E-tag. Meanwhile, the website can show the time and location of the container as well as other information related.



## 进/出道口 Gate in/out

集装箱通过码头进/出道口时，固定式读写设备读取电子标签，并将信息上传至服务器。若发生电子标签未经授权打开，则系统发出报警信息，在网站上显示红色警示。

At the gate, fixed reader gets information from E-tag and then uploads them to the server. The system will alarm and the security tag on the website will turn red once the E-tag is found opened illegally before.



## 海关查验箱 Inspection area

海关需要查验集装箱时，通过PDA授权对电子标签进行合法开启，检查完毕后再挂上电子标签，并在标签中做出记录。

If containers had to be inspected by customers, E-tag can be legally opened by authorized PDA. Lock E-tag after inspection .The related information of the container are automatically recorded into the E-tag.



## 装/卸船 Loading/ discharging at Quay Crane

集装箱在港口装船和卸船时，桥吊起吊集装箱后，无线式读写设备读取标签信息，并将该箱的安全状况等信息上传服务器。

At QC, during the process of lifting the container, wireless reader can get the information from E-tag and upload the security condition of container to the server.





## 收货人拆箱 Consignee at Unstuffing point

集装箱到达目的地后，使用移动式读写设备读取标签信息，并将集装箱物流全程信息上传至服务器存档备查，然后摘下电子标签，标签进入下一个循环。

At unstuffing area, moveable device is used to get information of the whole process and upload them to the server to save. Unlock the E-tag for another cycle use.



# 集装箱电子标签 The E-tag

- 有源电子标签，可读写，32k字节存储容量；  
Active tag, read/written, 32k byte memory capacity;
- 具备电子标签和电子门封双重功能；  
Made up of seal and tag;
- 可循环使用，使用寿命可达10年；  
Recycled, with a life span of 10 years;
- 能够满足工业环境要求；  
Meet the requirements of industrial environment;



2.4GHz

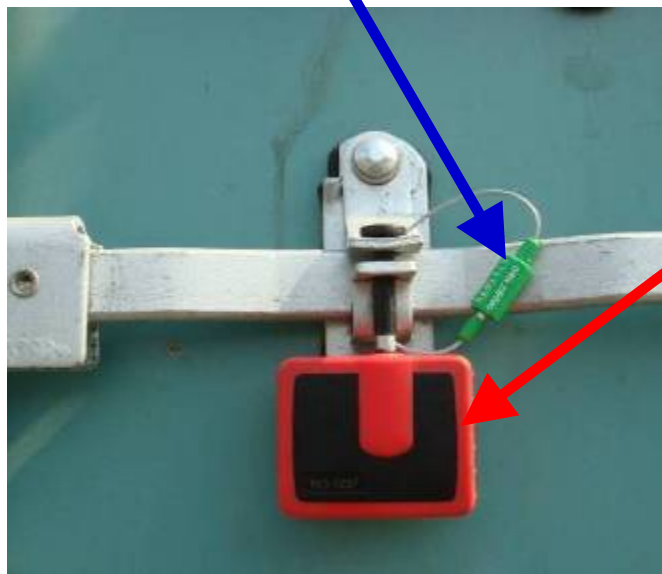


868MHz



## 安装方式 Location

原有机机械封条 Original seal



电子标签 E-tag



在试验阶段，电子标签可与原有的机械封条同时使用，不影响原有门封

The E-tag can be utilized with the original seal simultaneously without any interference.

## 读写设备 The readers

### ➤ 便携式PC读头、手持式读写器

Moveable readers

便携式PC读头、手持式PDA读写器均为移动式读写设备，用于装/拆箱点和查验箱区，进行集装箱电子标签信息录入、识读、核对或交换，整合了GPS和Internet通讯功能。

Laptop and handheld PDA, integrated with GPS and Internet communication, are used in stuffing/ stripping area and inspection area to capture, read, check or exchange the information in the E-tag.





➤ 固定式读写设备 Fixed reader



上海的安裝位置  
In Shanghai

美国的安裝位置  
In Savannah



## ➤ 无线式读写设备 Wireless reader

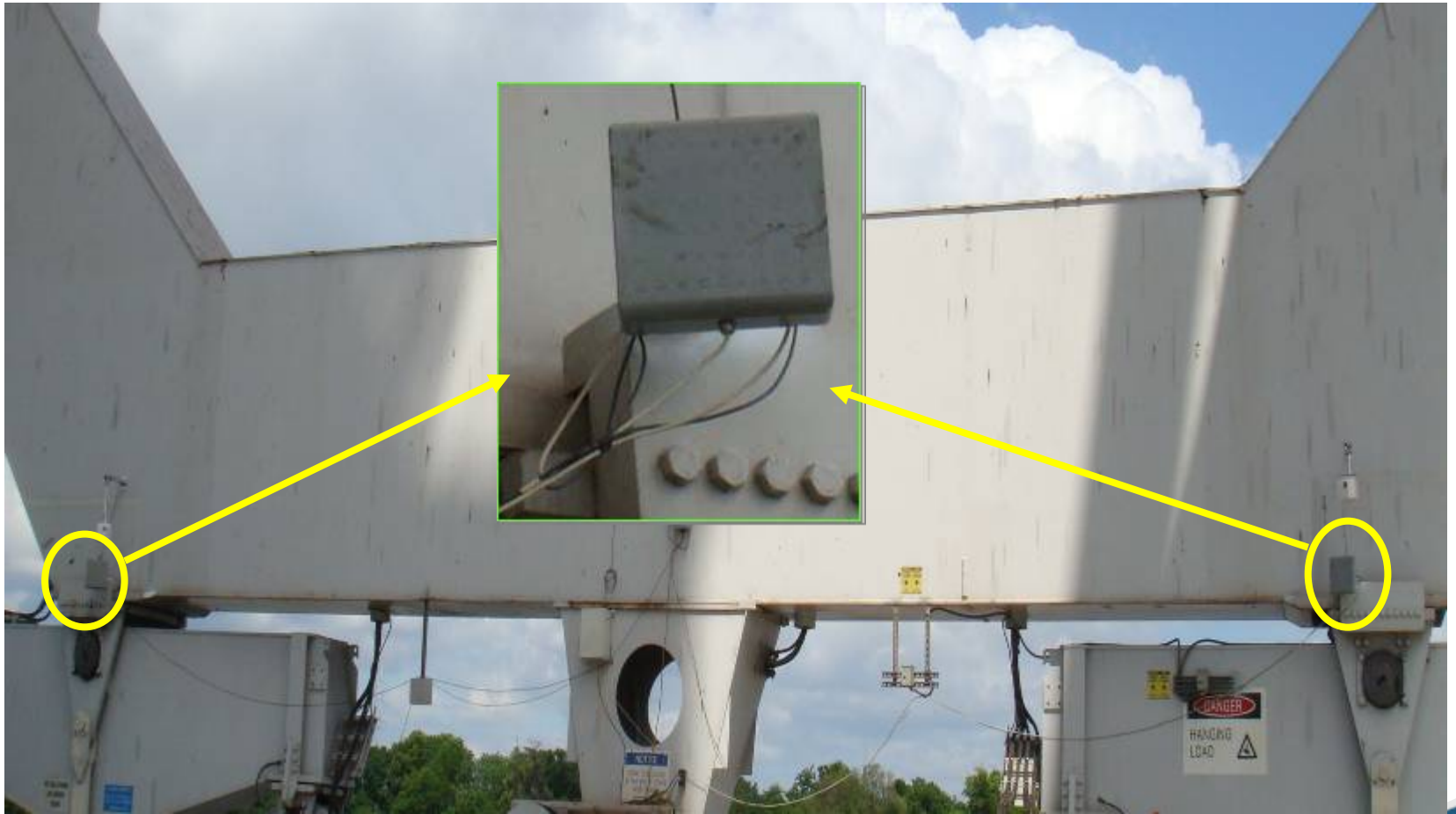
安装在如桥吊等移动设备上，通过集装箱电子标签无线桥接器与服务器通讯。

Installed at moveable device like quay crane. Communicate with server by wireless bridge.



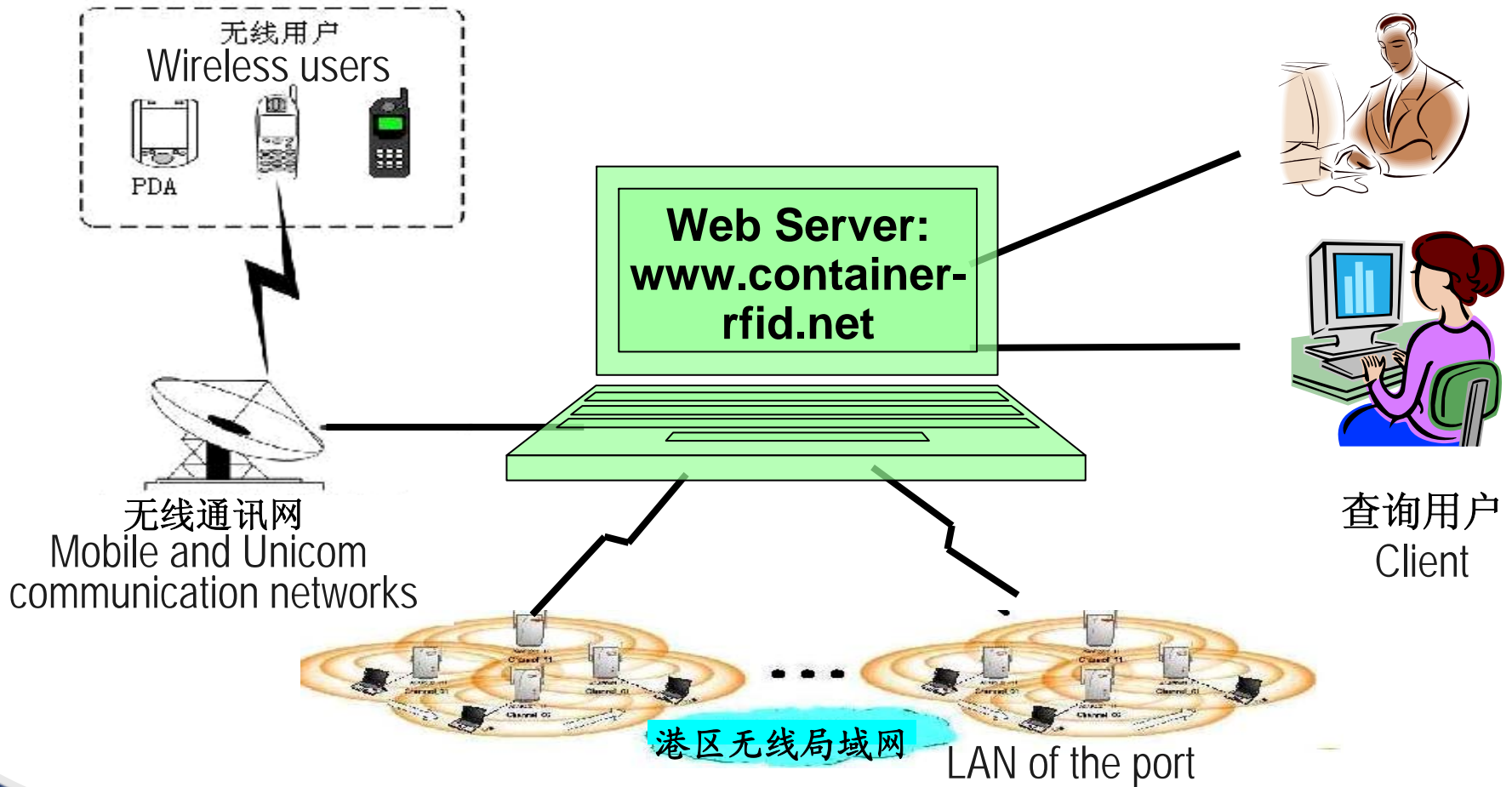
## 无线式读写设备在美国桥吊边的安装位置

Wireless readers fixed on the QC at Savannah



# “三网合一” 的网络数据传输系统

## “Three kinds of network in one” Data transmission system





- 在不具备有线网络条件的场合，例如发货人装箱点、收货人拆箱点等，采用社会公网，即无线通讯方式（CDMA/ GPRS无线上网卡）进行数据传输。通过蓝牙技术和GPS模块得到当地GPS坐标，联同手工输入的箱货流信息一并上传至网站；

In the area without internet, such as stuffing/stripping place, the current GPS coordinate is obtained by Bluetooth technology and GPS module. Then CDMA/ GPRS wireless card fixed in the PC or handset is used to exchange such data as GPS information, together with cargo and container information with the server.



➤ 在港区道口、岸桥、查验箱区等，可利用港区的无线局域网，实现数据传输，并上传至网站；

At the access points covered with terminal's WLAN such as the gate, quay crane, and inspection area, wireless LAN adapter is adopted to record and upload information WLAN transmission protocol.



- 在有线网络覆盖的地方，可通过互联网进行数据的传输、交互和信息的查询。

For the Clients or internet users, the information transmission, exchange and query are realized with a connection to the internet by cable transmission medium.



## 集装箱电子标签网站 The Website of the E-tag System

- 开发集装箱电子标签系统网站 ([Http://www.container-rfid.net](http://www.container-rfid.net))，它是基于电子标签的集装箱信息查询公共平台，具有中文、英文和日文界面，能够实时反映安全信息、集装箱信息、货物信息和物流信息，具备进行基于电子标签的集装箱运输信息的实时交换和网上查询服务等功能。

A website for the E-tag system has been established (Chinese/ English/ Japanese version), serving the functions of real-time information exchange and online inquiry during container transportation.

([Http://www.container-rfid.net](http://www.container-rfid.net))



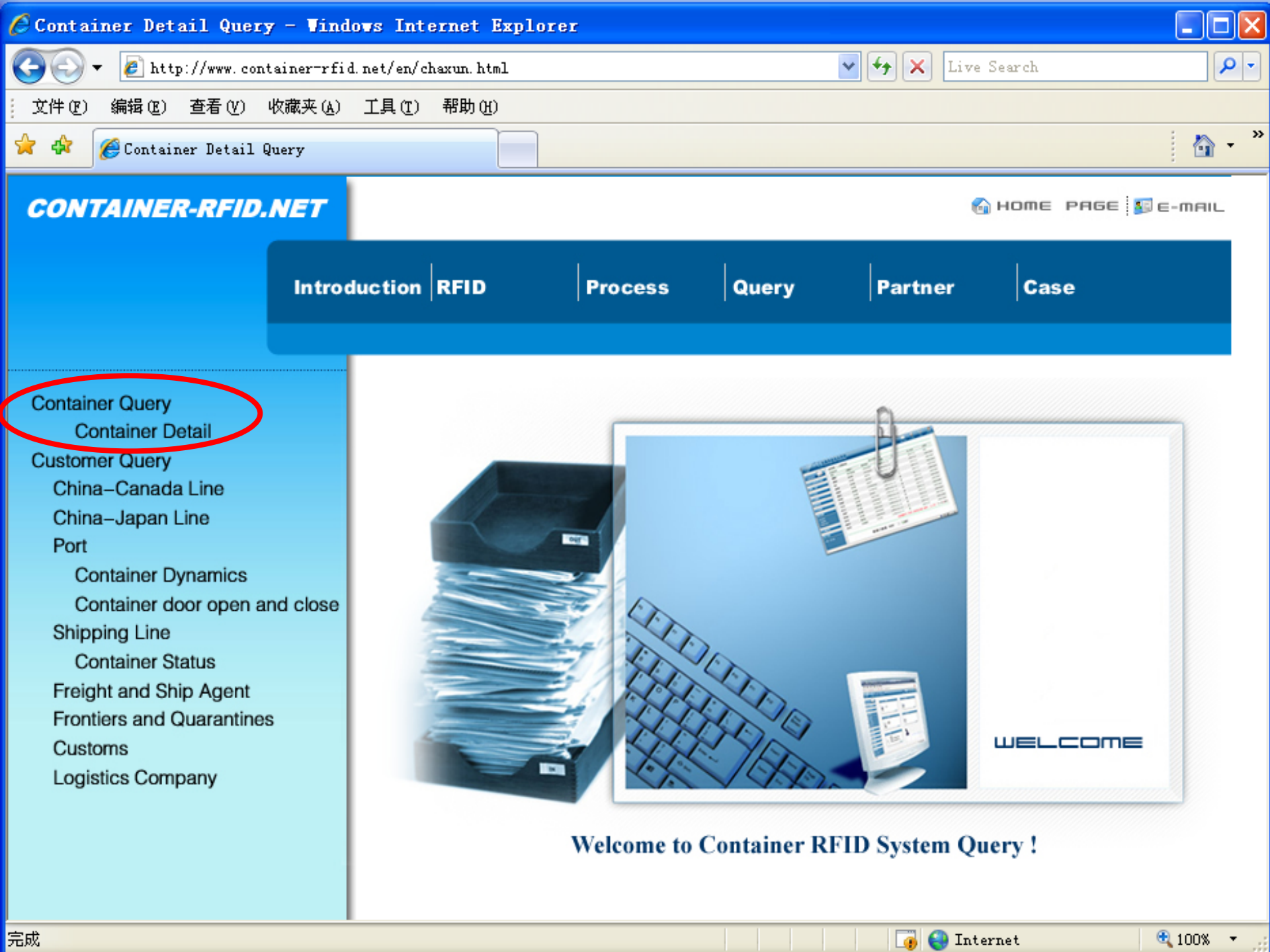


www.container-rfid.net



中国集装箱电子标签系统  
China Container RFID System

[进入](#) [Enter](#) [日本語](#)



Container Query  
Container Detail

Customer Query

China-Canada Line

China-Japan Line

Port

Container Dynamics

Container door open and close

Shipping Line

Container Status

Freight and Ship Agent

Frontiers and Quarantines

Customs

Logistics Company



WELCOME

Welcome to Container RFID System Query !



**CONTAINER-RFID.NET**

[HOME PAGE](#) [E-MAIL](#)

[Introduction](#)

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[Container Detail](#)

Customer Query

China-Canada Line

China-Japan Line

Port

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Customs

Logistics Company

**Login**

User:

Password:

Submit

授权方可进入查询

Authorized people can  
query the information

## CONTAINER-RFID.NET

HOME PAGE E-MAIL

Introduction

RFID

Process

Query

Partner

Case

 Container No: 

Vessel:

Voyage:

Search

Container Query

Container Detail

Customer Query

China-Canada Line

China-Japan Line

Port

Container Dynamics

Container door open and close

Shipping Line

Container Status

Freight and Ship Agent

Frontiers and Quarantines

Customs

Logistics Company

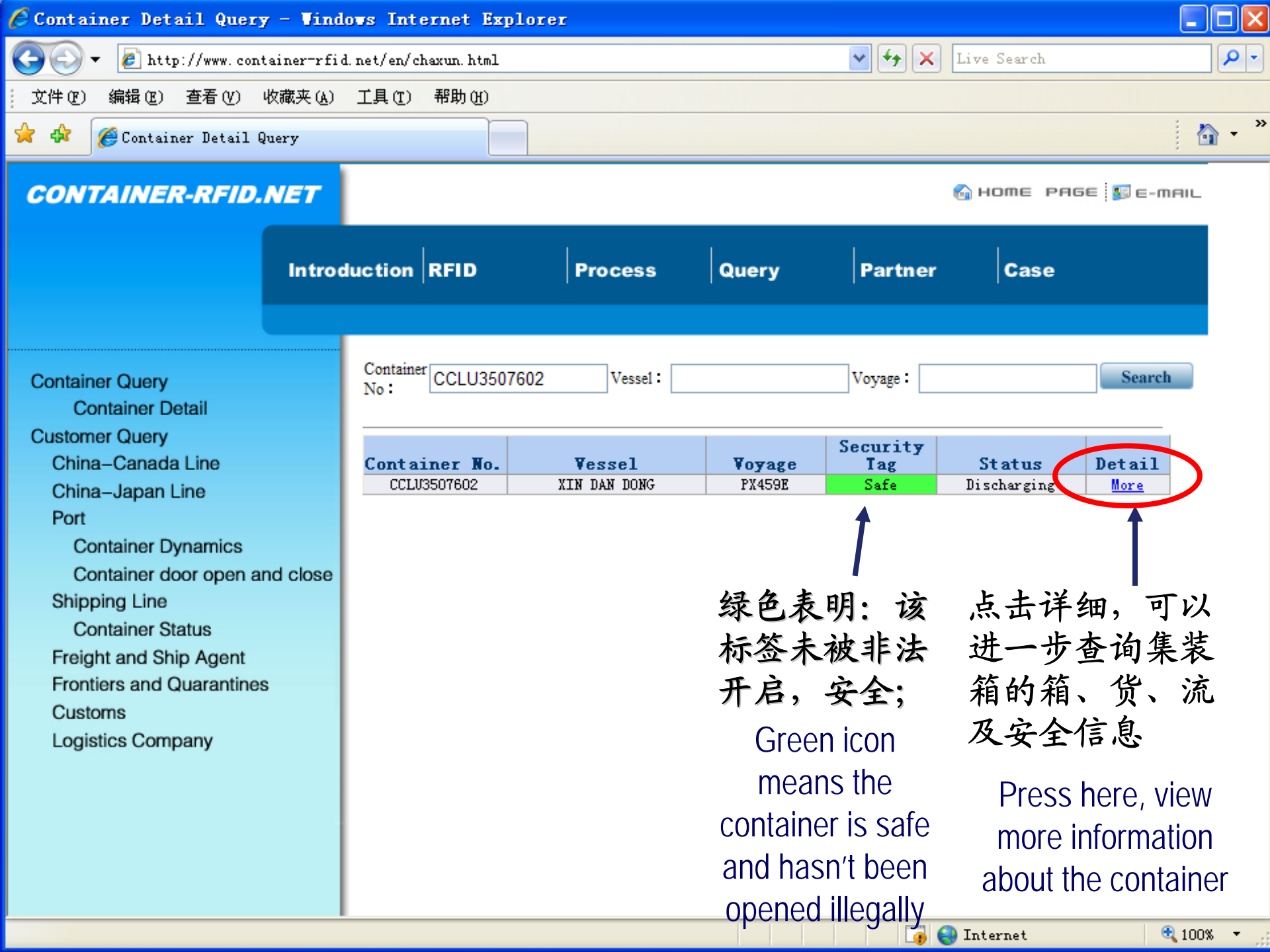
Container No.	Vessel	Voyage	Security Tag	Status	Detail
CCLU3507602	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU3513631	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
PSCU4060054	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
INKU6108859	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
TRLU8625199	XIN DAN DONG	PX459E	Safe	Inbound	<a href="#">More</a>
TTNU3474887	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU1340050	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CAXU3124502	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CMAU1371947	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU1271895	XIN DAN DONG	PX459E	Safe	Inbound	<a href="#">More</a>
ECMU1529280	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
TRIU3842089	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
TRLU9291856	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU4823138	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU3905930	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU4084167	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
UESU4724620	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU9927900	XIN DAN DONG	PX459E	Safe	Inbound	<a href="#">More</a>
ECMU4466170	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
INBU5428557	XIN DAN DONG	PX459E	Safe	Inbound	<a href="#">More</a>

1 2 3 4 5 6 7 8 9 10 ...

在此输入需要查询的箱号，即可查询单箱情况

Input container ID, view the basic information





## Container Detail Query Results

### Door Open/Close Informaiton

Time	Location	Operation	Security Tag
12:00 June. 13, 2008	港华路	Close	Safe

### Container Information

Vessel		Voyage		Container No.		ISO Type		Container Weight	Owner
XIN DAN DONG		PX459E		CCLU3507602		2201			
Full/Empty	Damage/Dirty	Cargo Weight		DG Class	ISO No.		Temperature	POL	POD
Full		26640						SHANGHAI	SAVANNAH
Inbound Time		Loading Time		Discharging Time		Outbound Time			
12:00 June. 13, 2008		00:41 June. 17, 2008		07:12 July. 17, 2008					

### Cargo Information

B/L	Cargo Name		Cargo Weight	DG Class	Quantity	Volume
SHSAV3AB504	P		24440		1040	10

### Logistics Information

Operation	Time		Location	Machine
Vanning	12:00 June. 13, 2008		港华路	
Inbound	12:00 June. 13, 2008		振东进场道口	
Loading	00:41 June. 17, 2008		振东桥吊 (6)	
Discharging	07:12 July. 17, 2008		Savannah 岸吊	

## CONTAINER-RFID.NET

HOME PAGE E-MAIL

Introduction RFID

Process

Query

Partner

Case

Container Query

Container Detail

Customer Query

China-Canada Line

China-Japan Line

Port

Container Dynamics

Container door open and close

Shipping Line

Container Status

Freight and Ship Agent

Frontiers and Quarantines

Customs

Logistics Company

Container No: CCLU4240249

Vessel:

Voyage:

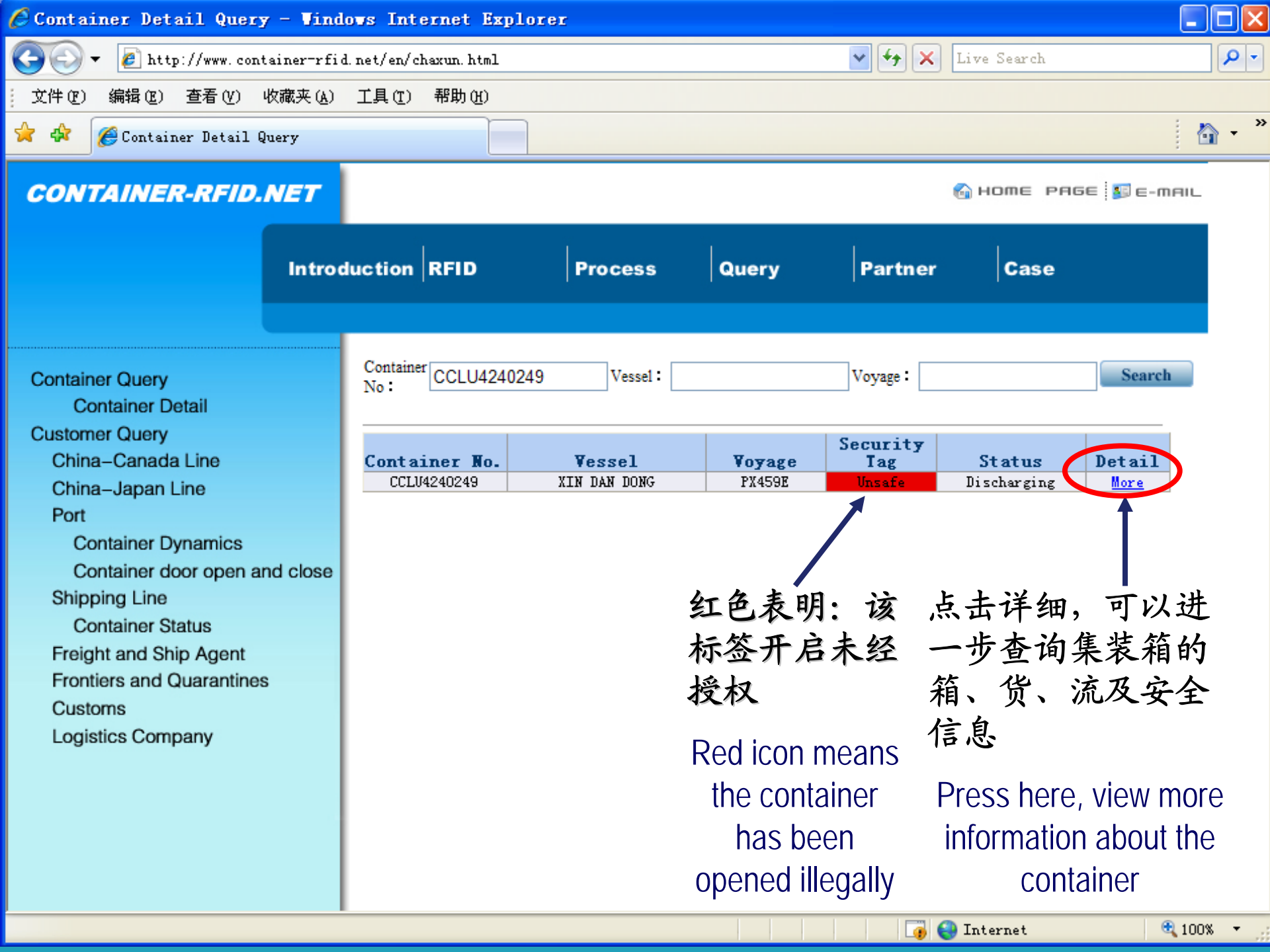
Search

Container No.	Vessel	Voyage	Security Tag	Status	Detail
URBU4291875	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
PXXU4269721	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU4530120	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CLHU4705161	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU9377179	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU9263900	XIN DAN DONG	PX459E	Unsafe	Discharging	<a href="#">More</a>
TOLU3305113	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU4240249	XIN DAN DONG	PX459E	Unsafe	Discharging	<a href="#">More</a>
MMCU2108664	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU4709054	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
GATU0864075	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
ECMU2031100	XIN DAN DONG	PX459E	Safe	Discharging	<a href="#">More</a>
CCLU9901275	XIN DAN DONG	PX459E	Safe	Inbound	<a href="#">More</a>
CCLU3306104	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
TGHU3233209	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
CCLU3410696	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
CCLU3453785	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
CCLU4786570	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
CCLU2163605	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>
CCLU2790457	NORDAUTUMN	PX461E	Safe	Discharging	<a href="#">More</a>

1 2 3 4 5 6 7 8 9 10 ...

在此输入需要查询的  
箱号，即可查询单箱  
情况

Input container ID, view  
the basic information







## Container Detail Query Results

## Door Open/Close Informaiton

Time	Location	Operation	Security Tag
05:41 June. 14, 2008	港华路	Close	Safe
05:43 June. 14, 2008	未知地点	Close	Unsafe
05:44 June. 14, 2008	未知地点	Open	Unsafe

## Container Information

Vessel		Voyage		Container No.		ISO Type		Container Weight	Owner
XIN DAN DONG		PX459E		CCLU4240249		4201			
Full/Empty	Damage/Dirty	Cargo Weight	DG Class	ISO No.		Temperature		POL	POD
Full		11281						SHANGHAI	SAVANNAH
Inbound Time		Loading Time		Discharging Time		Outbound Time			
05:42 June. 14, 2008		22:40 June. 16, 2008		07:12 July. 17, 2008					

## Cargo Information

B/L	Cargo Name	Cargo Weight	DG Class	Quantity	Volume
SHSAV3AB529	NO	7681.30		874	56.75

## Logistics Information

Operation	Time	Location	Machine
Vanning	05:41 June. 14, 2008	港华路	
Inbound	05:42 June. 14, 2008	振东进场道口	
Loading	22:40 June. 16, 2008	振东桥吊 (6)	
Discharging	07:12 July. 17, 2008	Savannah 岸吊	

## 电子标签系统的特征

### Features of the E-tag system

➤集成了电子标签和电子封条功能于一体集装箱全程实时在线系统，建立了集装箱电子标签系统网站，实现了集装箱全流程的可视化跟踪管理；

The E-tag system integrate the function of tag and e-seal. The whole process of container transportation based can be visualized tracked on the website;

➤系统能够同时识别和兼容2.4GHz和868MHz等不同频段电子标签。

The E-tag system can identify and operate e-tags at different frequency, such as 2.4GHz and 868MHz.

➤集成了GPS地理位置采集并与系统实时交互的移动式读写器，满足在装、拆箱点等场合完成数据采集和实时上传，为集装箱的实时跟踪提供依据。

The moveable readers, which integrate the function of GPS and data exchange, can get and upload the data in real-time at the stuffing and unstuffing points and is the basis for online monitoring for container logistics.

➤利用无线局域网、GPRS/CDMA公网和互联网构筑信息传输网络，实现集装箱物流全过程数据的实时交换；

The real-time data exchange for the whole process of container logistics chain can be realized by hybrid network, which is composed of GPRS/ CDMA, WLAN and internet.

➤在进场道口，通过标签读写设备，能够把EDI信息录入到标签中，自动记录和校验集装箱物流相关的所有信息。

At the gate-in, EDI data can be automatically input into the e-tag, and all information related to container logistics can be recorded and verified.

### 3.项目进展介绍 Origin and process of the E-tag system

#### ➤ 中国国内集装箱电子标签航线的情况

##### The domestic container tag Pilot Sailing

上海港从2001年起，在科技部、交通部、海关总署的支持下，开展了集装箱电子标签系统的研究。从中国内贸集装箱运输起步，研究了集装箱电子标签相关技术和系统，开展了集装箱电子标签航线工业性试验。

SIPG has headed the container tag solution since 2001, supported by the Ministry of Transport of China, the Ministry of Science and Technology of China and General Administration of Customs. Started with domestic trade pilot, we commenced the industrial pilot using tags and testing the process of 'port to port'.



2005年12月3日，中国第一条装有电子标签的集装箱班轮“浙海325”正式起航，完成集装箱电子标签系统在上海至烟台“两港一航”运输线上真实环境下的应用。至2006年1月19日，示范线累计完成箱量5294TEU，上海港取得了第一手的现场工业性数据。



The first vessel with tagged containers - 'Zhejiang 325' shipping bound for Shanghai from Yantai on Dec. 3, 2005. It is the first time to apply container tag system in a real pilot called '2 ports and 1 line'. Until Jan. 19, 2006, container throughput of this demonstration has realized 5294 TEUs. We got the industrial data of container tag system by first-hand.

## ➤ 集装箱电子标签中美航线的情况

### The China-US E-tag Pilot Sailing

为了进一步提升项目的技术水平，使之走向国际化和标准化，上海港在国家科技支撑计划的支持下，联合美国 Savannah 港、中海集团、海渤信息、上海秀派电子、北京盖博瑞尔电子等公司，共同研制基于智能电子标签的集装箱物流全程实时在线监控系统，开通中美航线。项目也得到了美国海运署、美国国土安全局等官方部门的高度关注。

In order to promote the project to be internationalized and standardized, supported by the National Support Project, SIPG and GPA have started the 'Online Real-time Monitoring System for the whole process of Container Logistics Chain' between China and US based on E-tags, cooperated with China Shipping Company and some local famous RFID manufacturers. This project has gained support by Chinese Government and arouses concern of US Maritime Ministry and Homeland Security.

在2007年11月29日召开的“第二次中美海运磋商”会议上，我们的项目向中美双方官员作了现场演示和介绍，得到了好评。尤其是整个系统在促进集装箱安全运输和反恐问题上将能发挥的作用得到了高度评价。

On November 29, 2007, at the '2<sup>ND</sup> China-U.S. Maritime Consultative Meeting', our project received positive feedback by the officials of the two sides, and also received the high praise on its role for container security and preventing terrorism.



## ➤ 集装箱电子标签中美航线的正式开航

### Inaugural Ceremony of the China-US E-tag Pilot Sailing



2008年3月10日，中美双方在上海港集装箱码头举行了隆重的开航仪式，共同见证国际上第一条安装智能电子标签的“上海-Savannah”中美集装箱运输示范航线正式开通。



The inaugural ceremony for China-US E-tag pilot sailing was held in Shanghai, Mar. 10<sup>th</sup> 2008, which marks the real implementation of the first international container line 'Shanghai - Savannah' using E-tags.



仪式上，交通部副部长徐祖远、上海市副市长沈骏、美国佐治亚州港务局汤姆•阿姆斯特朗副局长出席并发言。

Mr. Xu Zuyuan, Vice minister from Ministry of Transport of China, Mr. Shen Jun, deputy Mayer of Shanghai, and Mr. Tom Armstrong, GPA director of Strategic Development attended the ceremony and gave speeches.



当天下午，中国交通部在上海主持了“集装箱电子标签”技术交流会，共同推动集装箱运输信息化的进程。

In the afternoon, the Ministry of Transport of China held the technical seminar of the E-tag in Shanghai to speed up the process of informationization of container transportation.





## ➤ 集装箱电子标签中美航线在美国的推介仪式

### Ceremony of the China-US E-tag Pilot Sailing

2008年6月2日，中美双方在美国 Savannah 举行了隆重的推介仪式。

On June 2, 2008, GPA and SIPG held a grand introduction ceremony in Savannah



Photos by Carl Elmore/Savannah Morning News

The Crescent Towing tug Savannah sprays water over the Savannah River on Tuesday morning as Bao Qifan, executive vice president of the Shanghai International Port Group, speaks.

## The Savannah-Shanghai connection

### Ports launch E-tag cargo-tracking project

BY MARY CARR MAYLE

912-652-0324 • mary.mayle@savannahnow.com

The fastest-growing port in the country has teamed up with the fastest-growing port in the world to develop an innovative container tag that will allow them to track and monitor cargo as it is shipped overseas.

Georgia Ports Authority and the Shanghai International Port Group on Tuesday commemorated the launch of a one-of-a-kind E-tag cargo-tracking project that uses Radio Frequency Identification — or RFID — to follow cargo movements from their point of origin to their destination.

Not only will the electronic tags allow customers to monitor their containers' progress and make real-time decisions on cargo delivery, but the system also has the capability to alert the Department of Homeland Security if a cargo seal is tampered with or removed, port officials said.

"The threat against terrorism, stowaways and food



These E-tags will allow shippers to track cargo around the world.

SEE CONNECTION, BACK PAGE

## 中美航线运作情况 Implementation of the E-tag Pilot Sailing

自3月10日开航以来，从上海港至Savannah港所有的集装箱都安装了电子标签，从Savannah港至上海港的部分集装箱安装电子标签。到目前，两港间来往集装箱班轮46个航次，完成了6707 TEU。



Since March 10, all the containers from Shanghai to Savannah were mounted with E-tags, and so were several containers from Savannah to Shanghai. Until now, 6707 TEU were completed by 46 voyages.

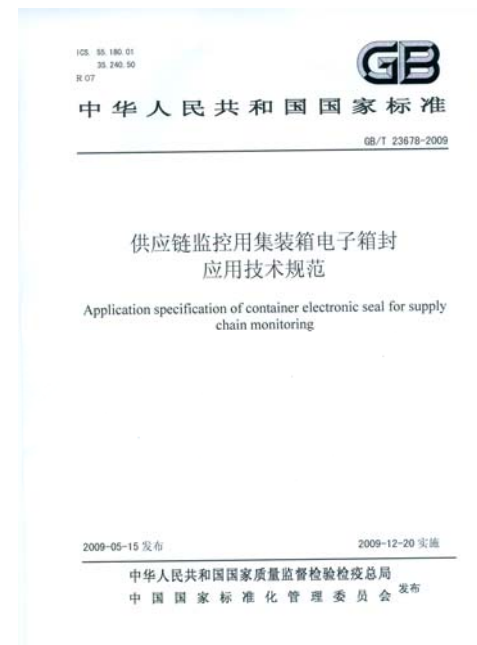


# 标准化工作的情况

## Standardization

本项目提出的中国国家标准现已发布，标准号为GB/T23678-2009。

The Chinese National Standard “The container e-seal applied for monitoring in supply chains” has been announced. The number is GB/T23678-2009.



中国的国际标准工作提案“货物集装箱 – RFID – 货运标签”经过为期三个月的投票，于2009年5月8日得到通过，正式进入编写阶段。编号为ISO/NP 18186。

After 3-month ballot, the Chinese New Work Item proposal on “Freight containers - RFID - Cargo shipment tag” was approved on May 8<sup>th</sup> 2009, and we enter into the period of working draft, which number is ISO/NP 18186.

Answers to Q.1: "We agree that a globally relevant International Standard on this subject is feasible and therefore agree to the addition of the proposed new work item to the program of work of the committee"		
14 x	Yes	Belgium (NBN) China (SAC) Czech Republic (UNMZ) Denmark (DS) France (AFNOR) Germany (DIN) India (BIS) Japan (JISC) Korea, Republic of (KATS) Malaysia (DSM) Russian Federation (GOST R) South Africa (SABS) United Kingdom (BSI) USA (ANSI)
4 x	Abstention / No interest	Israel (SII) Netherlands (NEN) Singapore (SPRING SG) Spain (AENOR)
0 x	No	

## 4.商业化模式探索 Searching for a good commercial mode

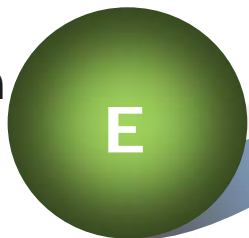
我们还积极探索商业化模式，推动全球集装箱物流实现全程实时在线监控，从而提高集装箱运输的信息化水平和安全性。

We are searching for a good commercial mode for the online real-time monitoring system for the whole process of Global container logistics, in order to guarantee the safety during the container transportation and enhance informationization level of container service.

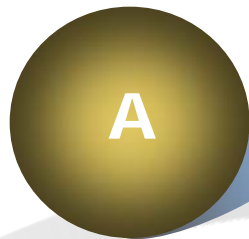
中美航线开通后，许多RFID制造商、全球追踪网络运营商、货主纷纷表示将与我们开展合作。

A large number of RFID manufacturers, global tracking network operators, shippers have also expressed their willing to cooperate with us.

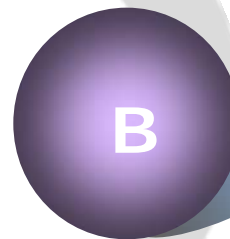
中美航线延续  
The  
continuation  
of the  
“Shanghai-  
Savannah”  
Pilot



俄罗斯集装箱监控应用  
Russian intelligent  
container monitoring



“中国山东-美国纽约”食品专线  
‘Shandong-New York’ pilot for  
food defense



“中国-日本”航线  
“China - Japan” trial



“中国-马来西亚”航线  
“China - Malaysia” trial

1. 在国际航线上的  
应用情况  
International  
applications



# ◆ “中国山东-美国纽约”食品专线

## ‘Shandong-New York’ pilot for food defense

加拿大的VLM公司在他们运输食品的集装箱上安装电子标签，来实施跟踪。2008年11月正式开始的“中国山东-美国纽约”的食品安全专线的应用，现已完成超过200标准箱的监控。

Canada VLM Food Trading International Inc. used the e-tag system to trace their food containers from Shandong province in China to their storages in New York. The pilot for food defense has been launched since Nov. 2008, which has achieved more than 200TEUs till now.



# ◆中日航线 “China - Japan” trial

“中国-日本”集装箱物流全程实时在线监控航线已经获得中国交通运输部水运局和日本交通省港口局的支持，目前已分别在烟台和深圳进行了2次实船试验。

Under the supports both from Ministry of Transport of China and Ministry of Land Infrastructure and Transport of Japan, “China - Japan” pilot using the e-tags has been tested for twice in Yantai and Shenzhen.



5月在烟台挂签，日冷公司  
Fixed the e-tag, Yantai, May



8月，在深圳挂签  
佳能公司  
Fixed the e-tag,  
Canon company  
Shenzhen, Aug.

日本通运株式会社也计划在中日集装箱滚装快线上使用电子标签系统，为其客户提供集装箱物流信息实时查询，现已进入了测试阶段。

NIPPON EXPRESS CO., LTD. is also planning to use e-tag system to provide real-time information inquiry to their customers in the container ro-ro ship line between China and Japan. The project has now entered a test phase.





## ◆ 中马航线 “China - Malaysia” trial

2009年4月，“中国-马来西亚”港口集装箱物流全程实时在线监控航线已经签约，从Johor港到外高桥5期码头航线的设备已经到位。

SIPG has discussed with Johor Port about the application of container e-tag between China and Malaysia. We have signed a co-operation memorandum in Apr. 2009. The line from Johor port to Waigaoqiao Terminal Phase V is expected to start officially later this year and now the devices in both terminals have been in place.

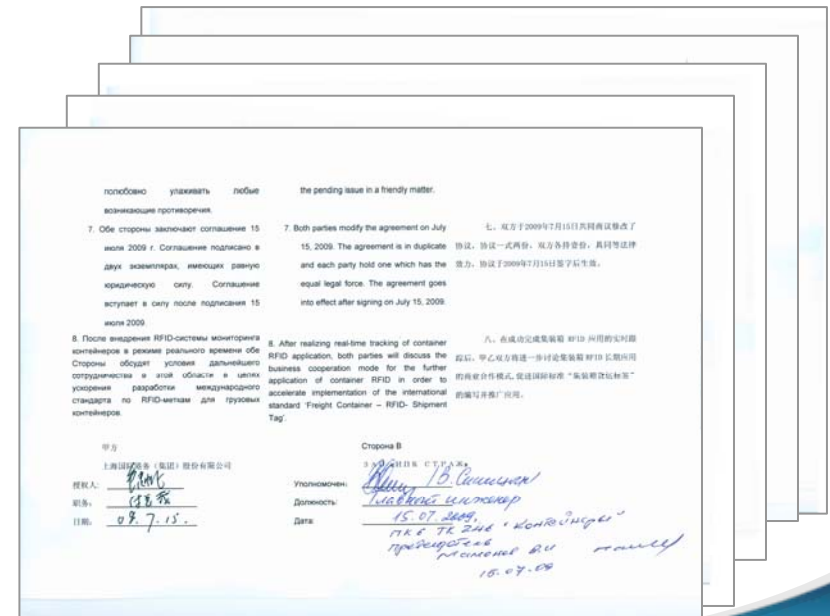




# ◆俄罗斯集装箱智能监控应用 Russian intelligent container monitoring

2009年7月15日上港集团与俄罗斯STRAZH公司签订合作协议，为其提供电子标签产品和服务共6套。现已进入实施阶段。

STRAZH in Russia signed the cooperation agreement with SIPG to purchase 6 sets products and equipments of container e-tags for intelligent monitoring. July 15, 2009. The project has now entered the implementation phase.



## ◆中美航线的延续

### The continuation of the “Shanghai-Savannah” Pilot

近日，美国GPA和上海港共同讨论，重点开展围绕以大货主为中心的集装箱点到点的实时在线监控系统。目前，双方正在寻找该航线上的大货主。

Recently, GPA and SIPG had a discussion together aiming to continue the trial with e-tag system which emphasizing on shippers and ‘point-point’ mode. Now, both parties involved are looking for shippers.



混凝土车运输的监控

The application of concrete  
mixers monitoring

F

A

集装箱陆路运  
输监控的应用

Applications in  
monitoring of  
the overland  
transportation

粮食收购的  
应用

The  
application  
of grain  
purchases

E

2. 在其他物流领域的  
应用情况  
Other applications  
in logistics realm

B

入境货物检疫  
监管的应用

Application in  
quarantine  
inspections of  
entry-exit  
cargos

D

上海市建筑渣土管理平台的应用  
The application in Shanghai  
management platform of  
construction wastes

C

成品油罐车运输  
的监管

Monitoring for the  
product oil tank  
transportation

## ◆ 集装箱陆路运输监控的应用

### Applications in monitoring of the overland transportation

由上海逸诚公司负责集装箱陆上运输业务，经常发现箱内货物短缺，货主要求索赔，从而带来经济损失。他们希望通过使用本系统来进行责任的区分，并有一个第三方公正机构来进行项目实施，并能出具相关的证明。

Shanghai Yicheng International Cargo Transport co., Ltd. is responsible for the land transportation of containers. Cargos in containers are often found short when shippers received them. Many compensation caused a lot of economic losses. So the company wants to clarify the responsibility by using the e-tag system. They also want a fairly third party to be involved in the process and provide relevant certifications.



## Apply for the first time:第一次实施情况

- Aug. 11, at noon, Shanghai Ocean Shipping Tally Company was responsible for fixing e-tags on 10 containers owned by Shanghai Yicheng Company at Shanghai Waigaoqiao Terminal Phase 2.

8月11日中午，由上海外轮理货公司负责在外二期码头查验区对逸诚公司承运的10个集装箱进行了挂签操作。

- Aug. 13, in the evening, e-tags were traced when the containers left Zhengdong terminal area.

8月13日晚上，当集装箱出振东港区时对标签进行了监控。

- Aug. 14, in the morning, Shanghai Ocean Shipping Tally Company sent technicians to Fuyang to monitor and dismount the e-tags.

8月14日早上，由上海外理派人到富阳拆箱点进行拆签、监卸。



通过监控记录，发现10个箱子中其中9个箱子在国内运输过程中箱门没有被打开。但其中有一个箱子（EMCU1357073）在运输过程中（8月14日凌晨1:30）被打开过。目前运输公司已查到该箱的货物在拆箱点短少1.4吨货物。本系统提高了运输的透明度，为其追查提供了相关依据。

## Container Detail Query Results

### Door Open/Close Informaiton

Time	Location	Operation	Security Tag
11:03 Aug. 11, 2009	振东查验箱区 中心堆场	Close	Safe
01:38 Aug. 14, 2009	未知地点	Open	Unsafe
08:31 Aug. 14, 2009	未知地点	Close	Unsafe
09:52 Aug. 19, 2009	未知地点	Open	Unsafe

### Container Information

Vessel XIN MEI ZHOU		Voyage 0014W		Container No. EMCU1357073		ISO Type		Container Weight 0		Owner	
Full/Empty	Damage/Dirty	Cargo Weight 0	DG Class	ISO No.		Temperature		POL CNSHA		POD FUYANG	
Inbound Time		Loading Time		Discharging Time				Outbound Time			

### Cargo Information

### Logistics Information

Operation	Time	Location	Machine
Vanning	11:02 Aug. 11, 2009	振东查验箱区 中心堆场	

9 out of 10 containers were not opened during transportation according to the monitoring record. But there was one container (EMCU1357073) to be opened at 1:30 AM, Aug. 14. Currently, Shanghai Yicheng company has checked that cargos were short about 1.4 ton at deconsolidation point. The system improves the transparency of transportation, which provides important relevant evidence.

采用本系统后，提高了集装箱陆上运输的透明度，该公司随后又对其20个集装箱安装了电子标签。结果，发现货物不再短缺。目前，已在全面推广中。

The transparency of the overland transportation for freight container has been enhanced by using the e-tag system. Later, 20 containers owned by Shanghai Yicheng Company were mounted with e-tags. At this time, cargos are no longer short. Now, the system has been promoted in an all-round way.



# ◆入境货物检疫监管的应用

## Application in quarantine inspections of entry-exit cargos

中国苏州出入境检验检疫局、苏州高新区出口加工区、保税物流中心采用本系统，对已检或待检货集装箱的陆上运输进行“货物保全”，即保证货物的完整性。

Suzhou Entry-Exit Inspection and Quarantine Bureau, Suzhou Export Processing High-tech Park and bonded logistics center introduce the system to ensure the integrity of cargos.





# ◆成品油罐车运输的监管

## Monitoring for the product oil tank transportation

目前国内油罐车运输安全管理主要采用传统金属铅封的方式，结构简单，易于复制，防伪性能一般。中石化北京石油分公司采用电子标签系统对油品运输进行管理，提高运输透明度。

Currently, the safe transportation management of domestic oil tanker is primarily a traditional way of lead seals. The structure of method is simple, easy to copy and lack of security. Beijing Oil branch of SINOPEC has introduced the e-tags with RFID technology to carry out security management of oil transportation in order to raise transparency of transportation.

# ◆上海市建筑渣土管理平台的应用

## The Application in Shanghai management platform of construction wastes of building site

上海市每年有将近4000万吨建筑渣土需要处理，时常发生运输单位不按照指定地点随意倾倒现象，对城市环境造成严重破坏。上海市绿化和市容管理局采用电子标签系统来强化管理，提高建筑渣土运输的透明度。

Every year there are nearly 40 million tons of construction wastes to be disposed in Shanghai. Transportation companies often dump randomly instead of at the designated places, which severely damage the environment. City appearance and environmental sanitation administrative bureau has intensify management by using e-tag system to raise transparency of construction wastes transportation.

# ◆粮食收购的应用

## The application of grain purchases

中国吉林粮食集团在粮食收购过程中的运粮车辆上安装电子标签，防止司机作弊，已应用了15个月，效果良好。

Jilin Grain Group Co. Ltd. (JGG) has mounted e-tags on their food trucks in the process of grain purchasing for 15 months, and has achieved good effect.



## ◆ 混凝土车运输的监控

# The application of concrete mixers monitoring

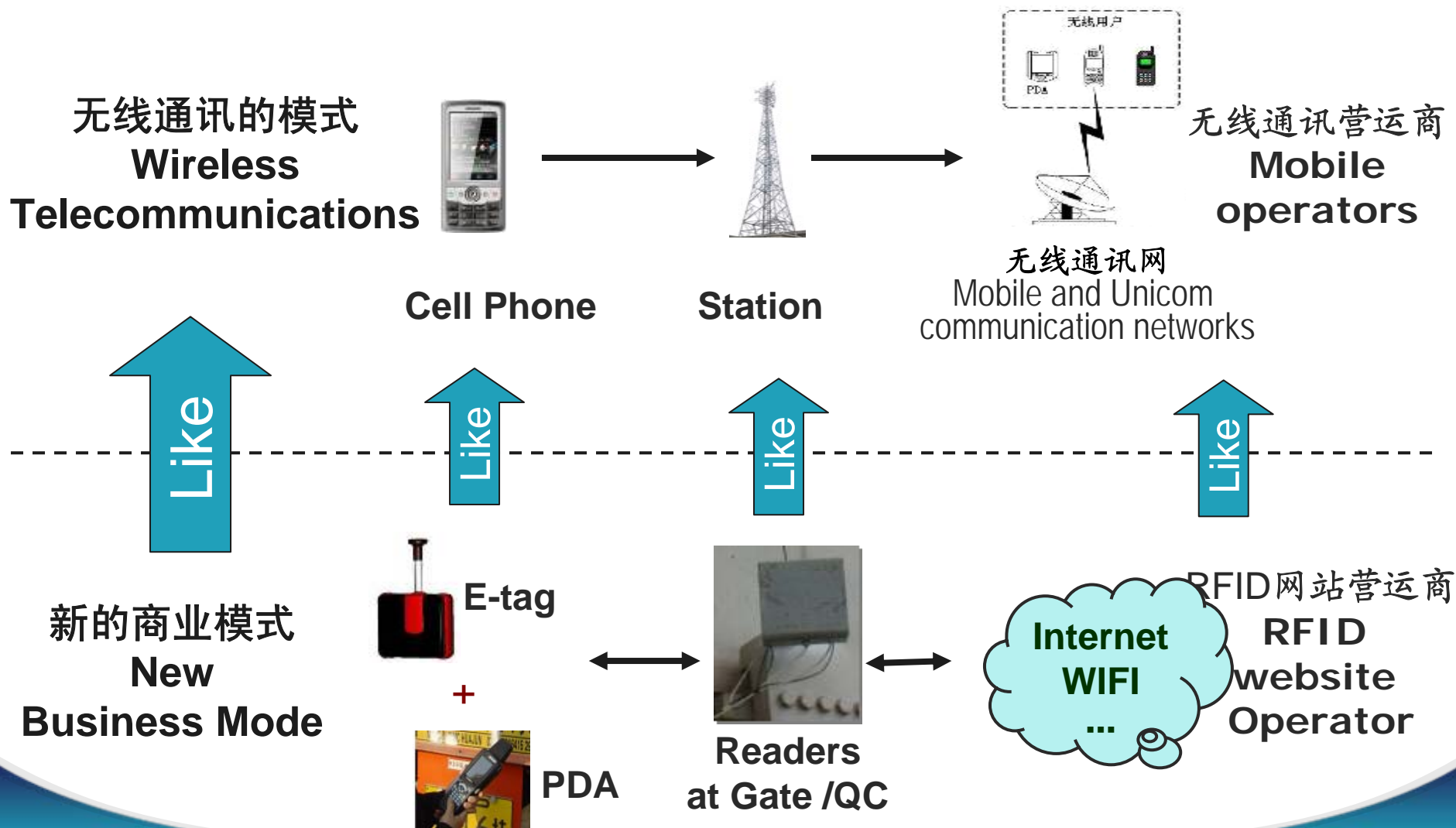
中国上海混凝土搅拌有限公司在混凝土搅拌车运输的监控中，也采用了电子标签系统，通过提高运输的透明度，解决了混凝土运输行业存在的短缺问题。

Shanghai Concrete Co. has mounted e-tags on **concrete mixers** to prevent the short of concrete, which increases transparency during the process of transportation.





## ◆ 商业模式 business mode



## ◆ 各方的经济关系 The economic relations

- 由政府指导监管的集装箱监控系统营运商投资网站和设在码头、仓库、物流中心的读写器，负责系统的营运，向客户提供相关信息，收取适当的费用； RFID website operator, led by the government, is responsible for mounting readers at the terminals, warehouses, logistics centers and maintaining the system operation. The operator charges a reasonable fee for providing the information to the clients.
- 货主、保险公司、商检公司等直接用户购买电子标签和手持式读写设备，自行操作，回收标签，在网站上通过授权获取信息，并支付适当的费用； The shipper, assurance companies, commodity inspection agents will buy the e-tags and PDA to trace the cargos. They will recycle the e-tags themselves for the next circulation and pay for the information from the website after being authorized.
- 政府主管部门、海关、检验检疫、边检可以从网站上提出相关要求，履行职责。 Responsible departments of the government, the Customs, inspection and quarantine bureau, frontier inspection can make requirements through the RFID website and discharge of duty.

- 中国国家发改委已正式批准将本项目列为国家第一批信息化建设试点。中国交通信息中心作为交通部直属国家交通领域信息资源规划单位，负责物流监控服务平台的建设、经营与管理。

The project has been officially classified as the first batch of information construction demonstration by the National Development and Reform Commission. As an information resource unit directly under ministry of transport, China Communication Information Center is responsible for operation and management of logistic monitoring platform.

- 上海外轮理货有限公司、上海交海信息科技有限公司、上海秀派电子科技有限公司不断升级系统软件和网络平台，开展商业模式的运作，现已与十几家货主、船代、货代等用户开展了业务。

Shanghai Ocean Shipping Tally Company, Shanghai Jiaohai Information Science and Technology Co. Ltd. and Shanghai Super Electronic Technology Co. Ltd upgrade system software and network platform constantly, take charge of the on-the-spot operation of the whole commercial mode. They have established good cooperation with dozens of customers such as shipment, shipping agent, etc.

项目得到了中国交通运输部、中国科技部、中国标准化委员会、中国国家发展与改革委员、中国工业和信息化部的大力支持。我们希望能加强与各国同行的合作和交流，共同推动集装箱物流全程实时在线监控系统的应用和发展。

During the project, we have gained the strong support of Ministry of Transport of China, Ministry of Science and Technology of China Standard Association of China, China National Development and Reform Commission, Ministry of Industry and Information Technology. We are looking forward to having future cooperation with Canada and various countries to promote the application and development of the online real-time monitoring system for the whole process of container logistics chain.



Thank You!

