

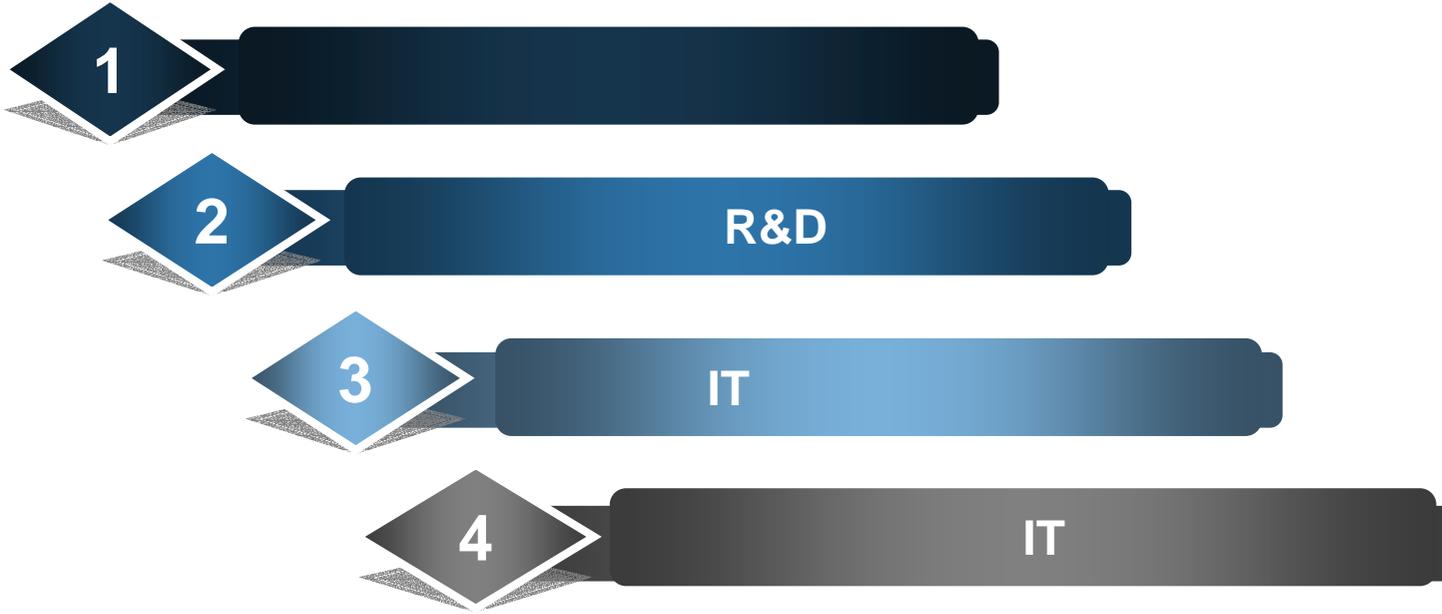


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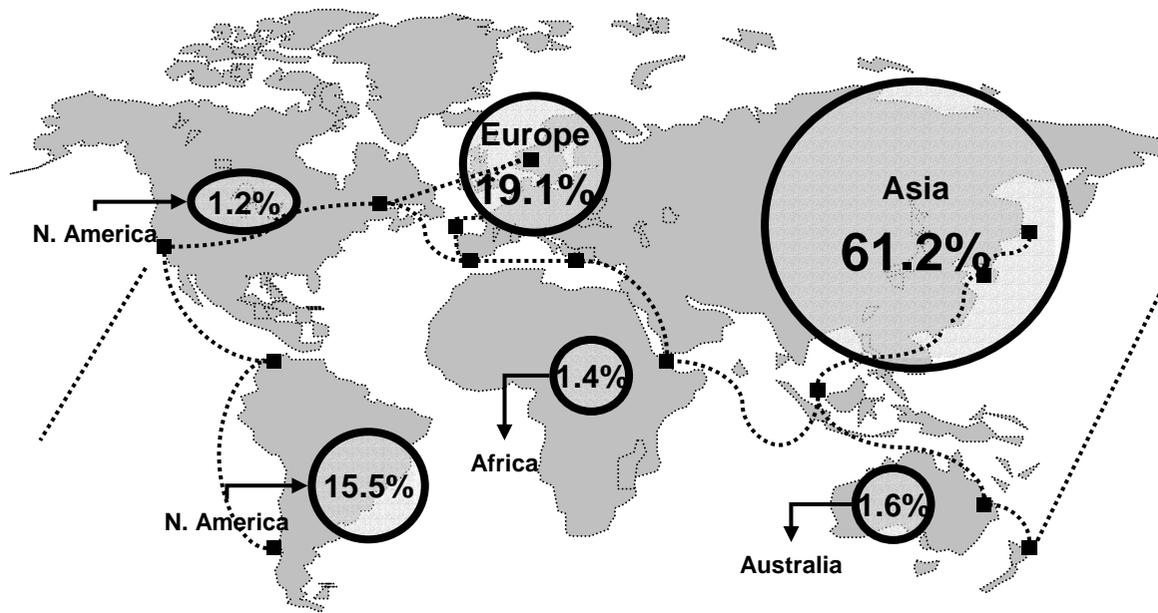
: 2006. 9. 13.



Freight Handling of Major Sea Ports

Busan is one of the main sea routes

Sea Lane and Handling Capacity



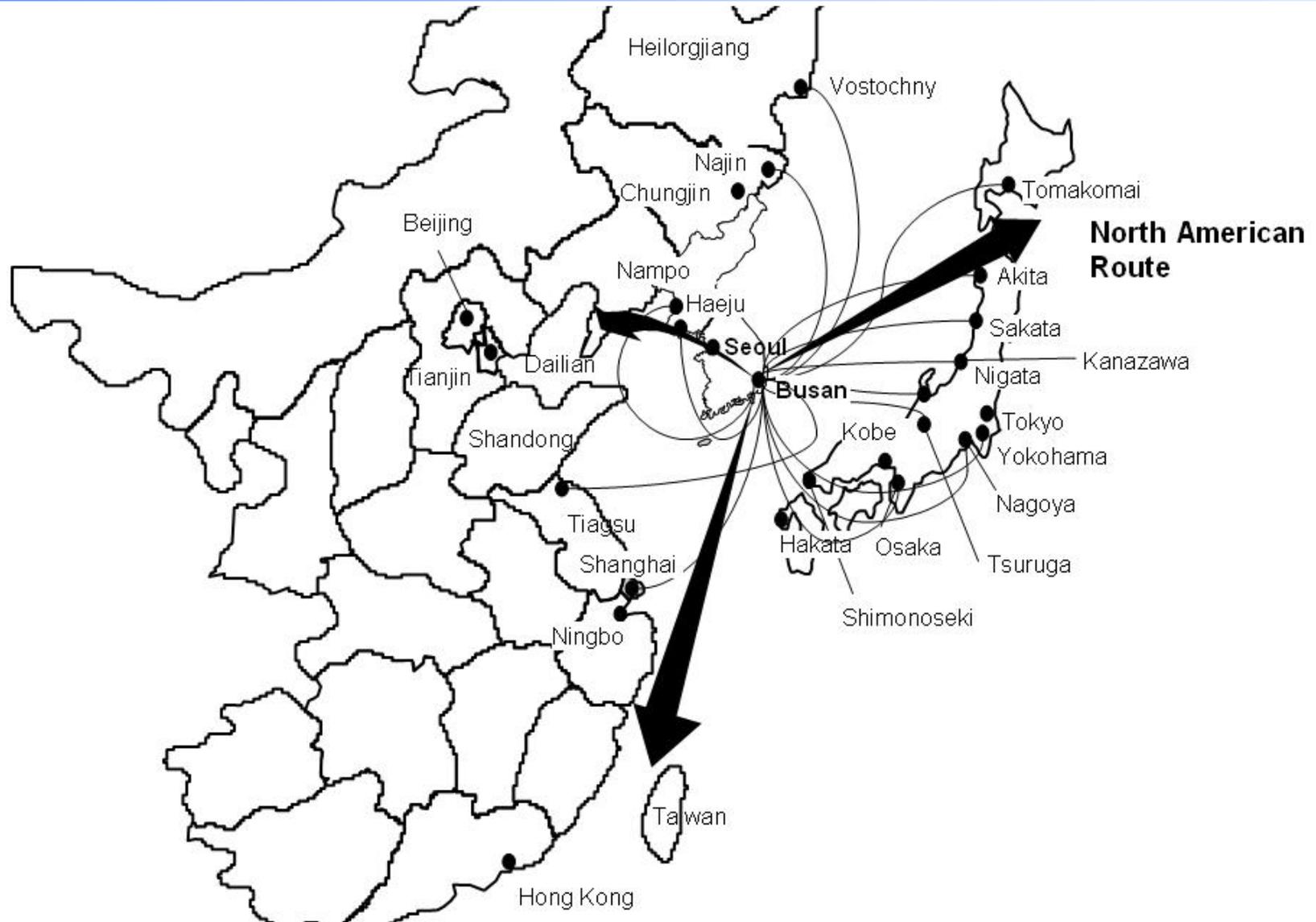
○ Handling Capacity of Major Ports
..... Sea Lane

IMPLICATIONS

- The location of Busan: Europe-Singapore-Hongkong-Kaosung-Busan-Kobe-North America
- The percentage of northeast Asia for handling freight:: 61.2%

* Source: Drewy, Record of Handling of Containers for the top 100 ports, 2003

Main Sea Route for Northeast Asian Logistics



Trends in the Ports, Maritime, and Logistics

- Seaports have turned into commerce and industrial centers from the simple physical sea/land interface
 - Turned into logistics and distribution platforms
 - Become inter-modal nodes in international supply chains networks, the efficiency of which now drives trade competitiveness
- IT-based Port & Logistics
 - To build up Ubiquitous Port based on RFID, Wireless LAN, sensor tags, location-based services

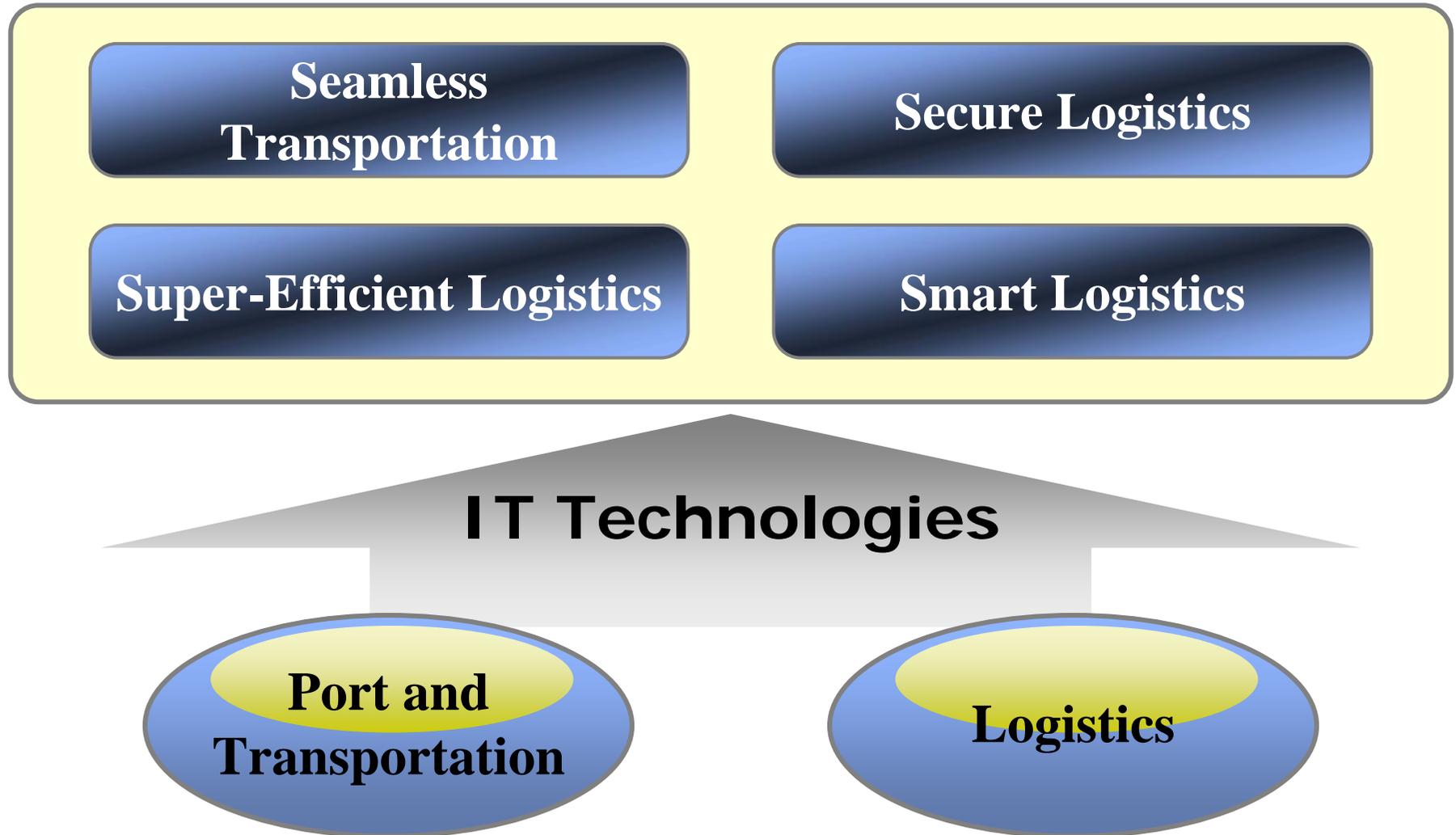
Next Port & Logistics

- 'Sense-and-respond' supply chains
 - RFID, sensor, locations
- Port & terminal
 - Design and evaluation of optimized Port terminals
 - Real-time location-based terminal operating system
- Logistics analyses
 - To optimize logistics chains
 - Design of networks of logistics
 - Business process for global supply chains
- Maintenance and equipment audit
 - To establish the life expectancy of aging container handling equipment
 - Ship to shore cranes
 - Rubber tired cranes

Next Port & Logistics

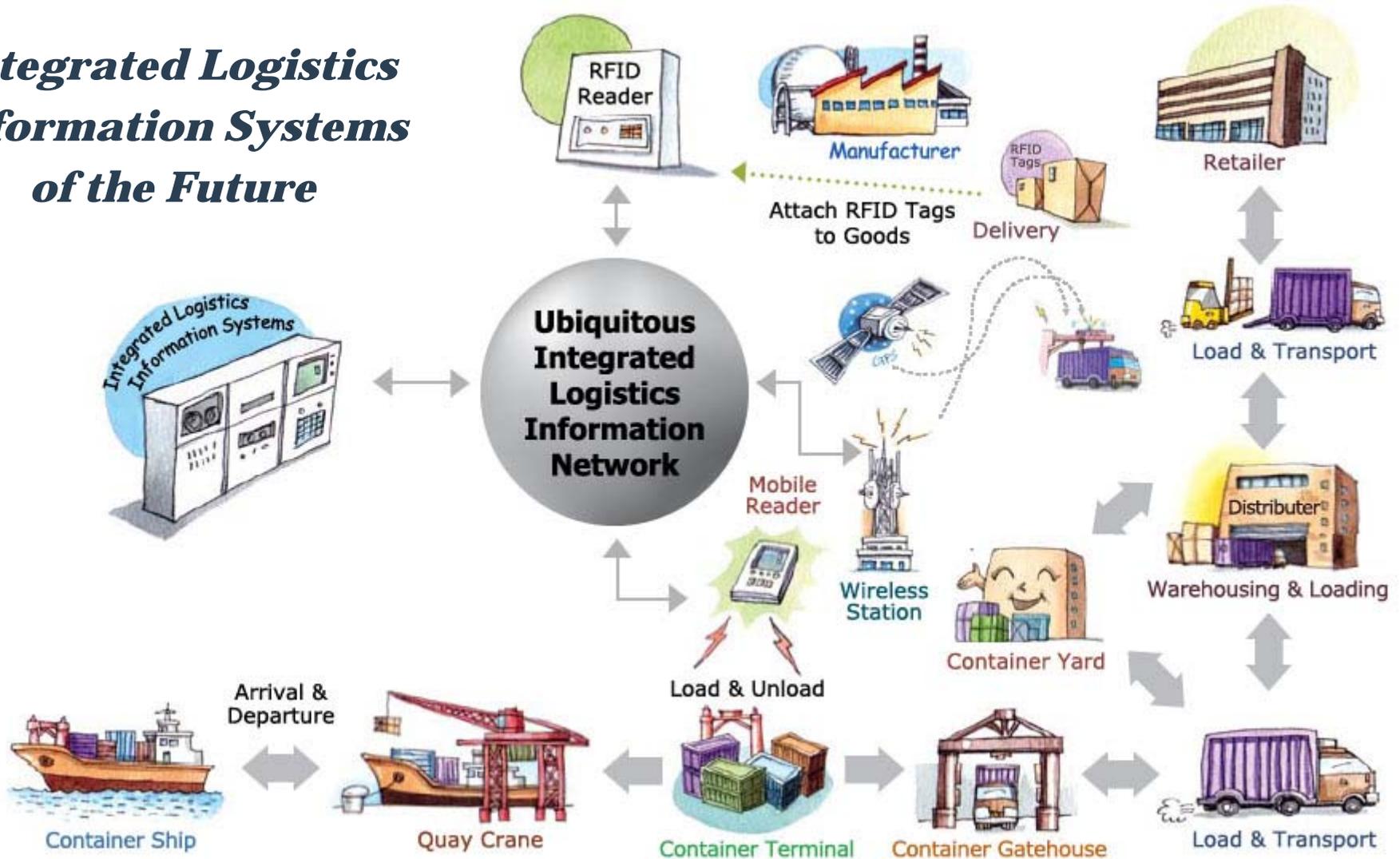
- **RFID/RTLS/Sensors middleware platforms**
 - 900MHz tags, 433MHz tags, sensor tags, RTLS tags
- **Maritime security**
 - To implement security plans for vessels and port facilities
- **Position control of equipment**
 - RFID, GPS, LBS
 - RTLS (Real Time Locating System)
- **Automated container transport system**
 - Automated Lift Vehicle (ALV)

Vision for Port and Logistics



Future Business Domain

Integrated Logistics Information Systems of the Future

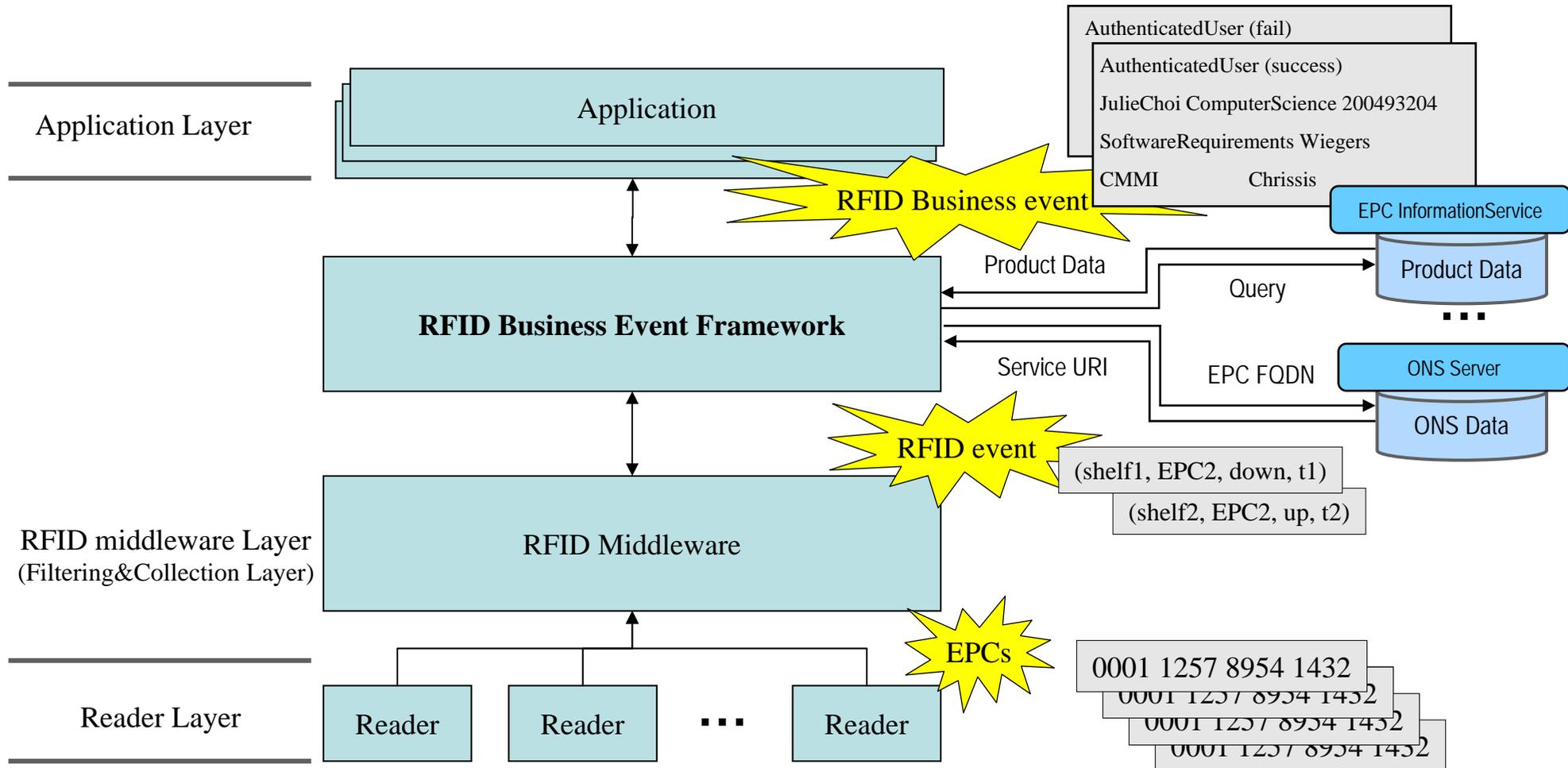


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	1998 ~ 2006(9)	, *	8	,	
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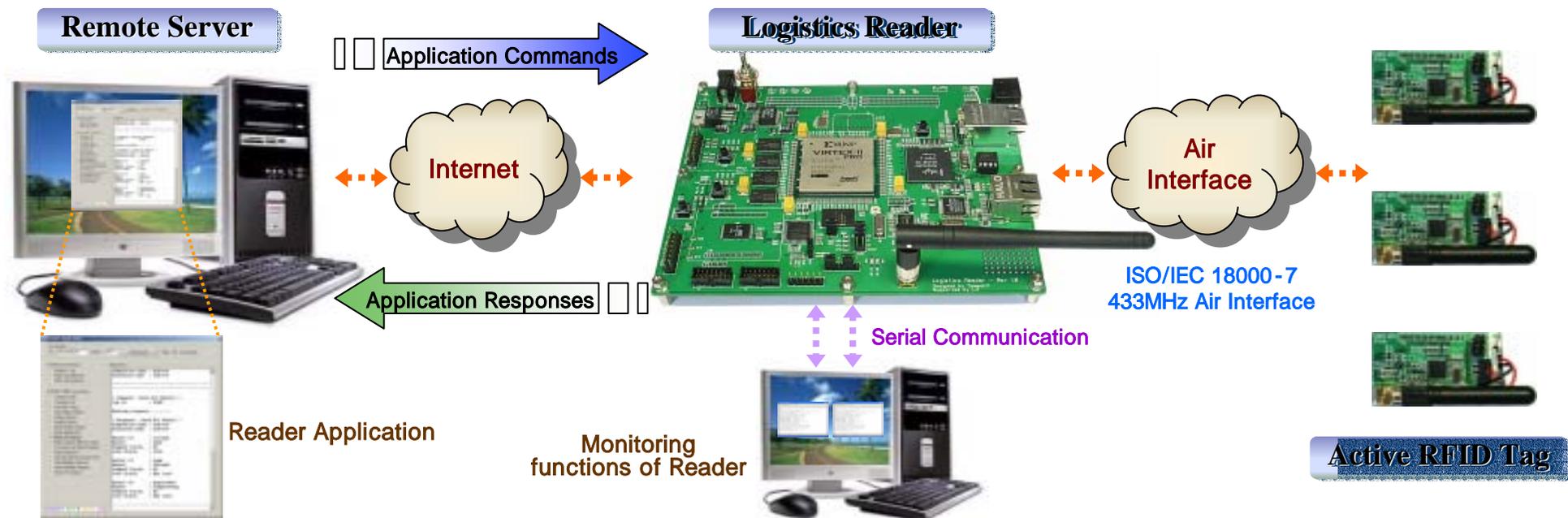
➤ Layered Middleware Architecture



433MHz RFID Reader & Tag

➤ System Diagram

- ◆ Communication between Logistic Reader and Remote Server
 - Logistics Reader receives commands from Remote Server through the Internet, processes those commands, and returns their results
 - Supporting 16 Application Commands/Responses defined by ISO/IEC 15961
- ◆ Communication between Logistic Reader and Tags
 - RF Communication compliant with ISO/IEC 18000-7 air interface
 - Collision Arbitration mechanism prevents collisions occurred among multiple tag responses



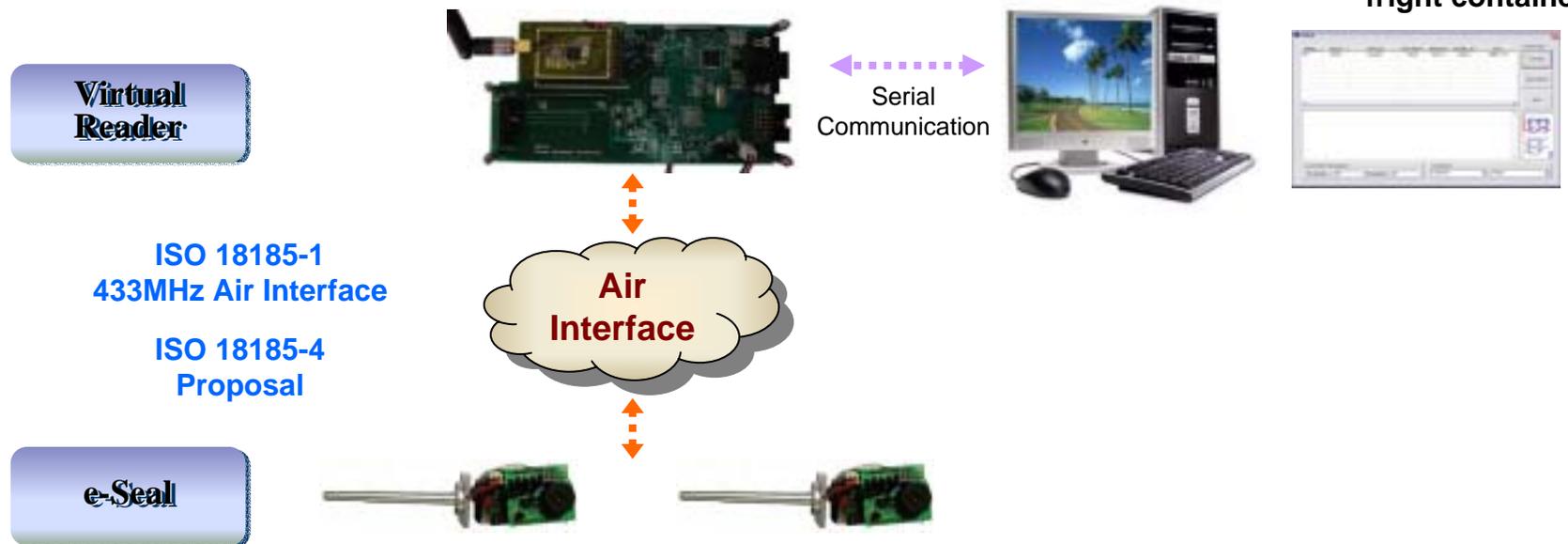
e-Seal System Diagram

What is e-Seal?

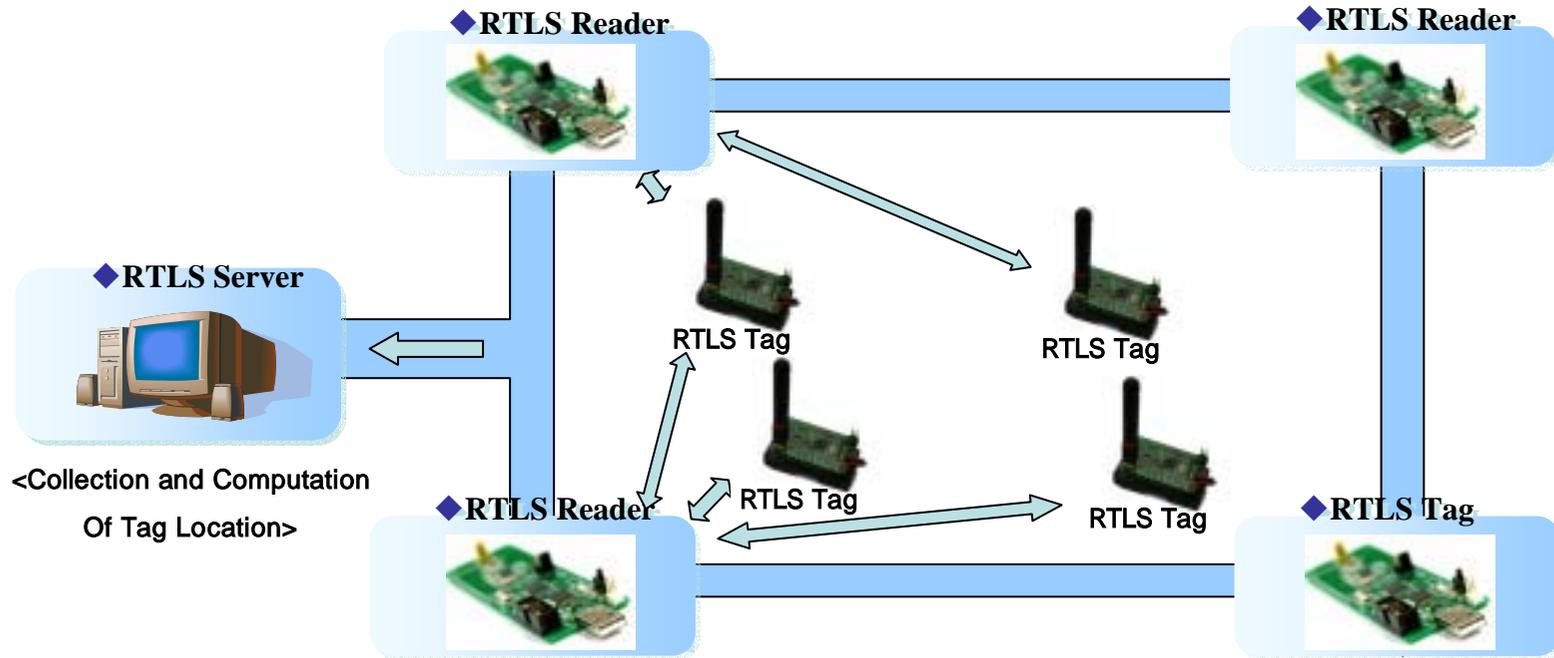
- e-Seal is container seal based on RFID Technology
- U.S. Departments of Homeland Security (DHS) try to make a regulation that all freight container which is incoming U.S. should use the e-Seal for high security



e-Seal on freight container



RTLS System Diagram



RTLS System followed by ISO/IEC 24730-3 Standard Protocol

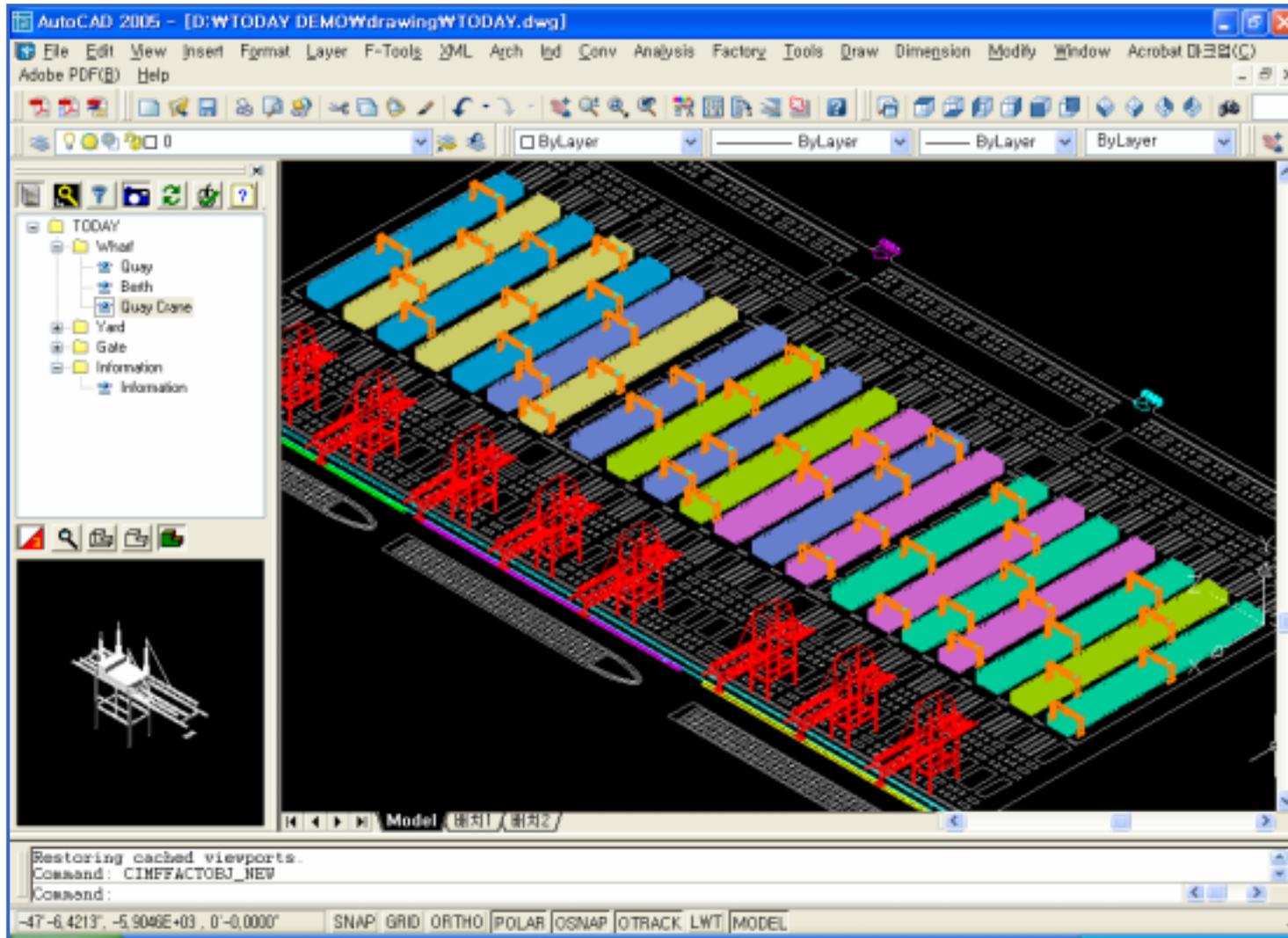
◆ RTLS Reader

Atmega128L + XE1203F
+ USB Interface

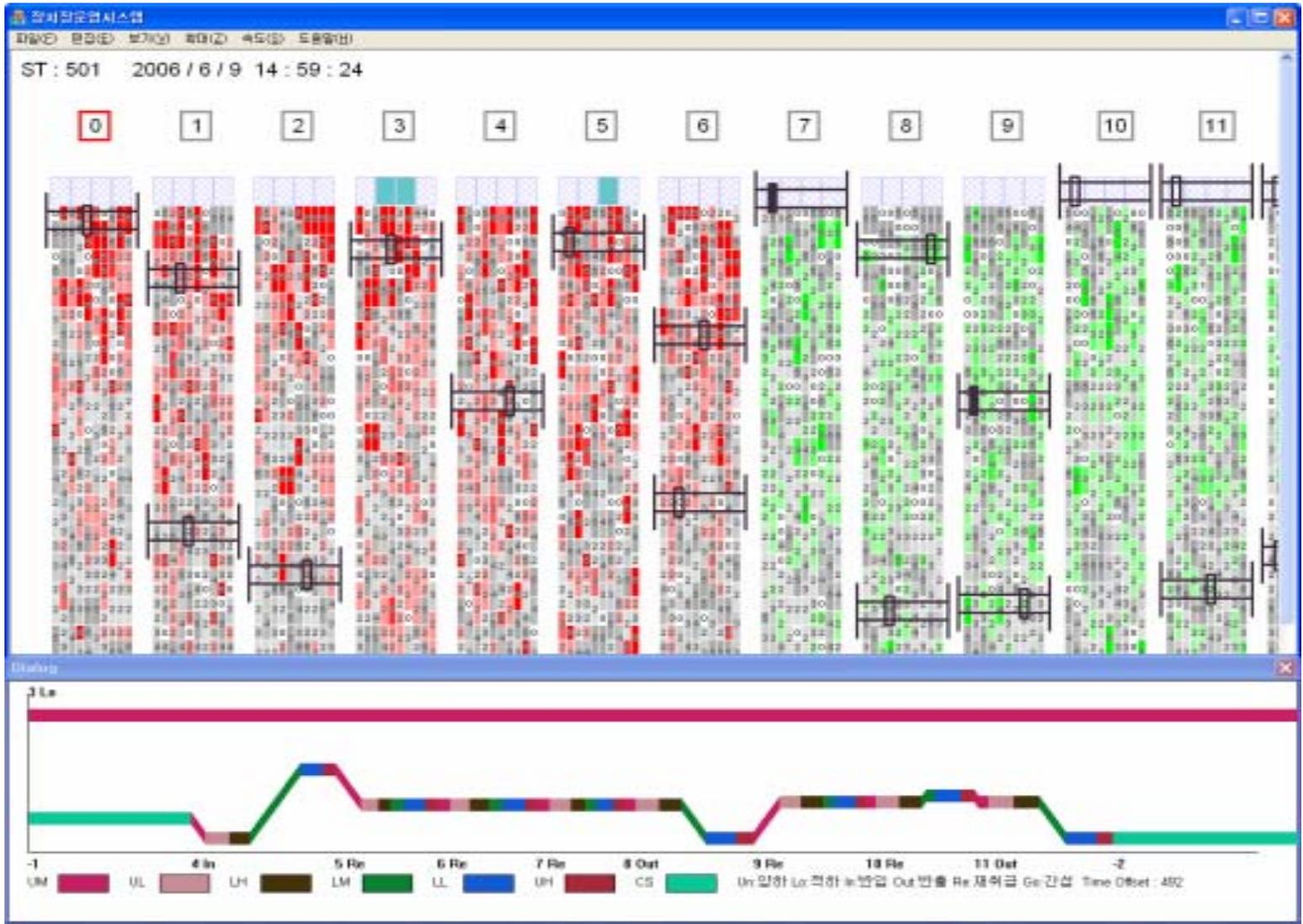


◆ RTLS Tag

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A decision Support System for Designing Container Terminal (Demo Screenshot)



Automated
Container Terminal
Logistics Control
System (Demo
Screenshot)

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	357	8,215	2,233,413	
	55	911	38,521	
	7	54	5,562	
	241	2,870	573,730	
	3,808	33,011	5,809,517	
	3,414	23,133	1,221,516	



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➤ 1 : 10 (50%, 30%, 20%)

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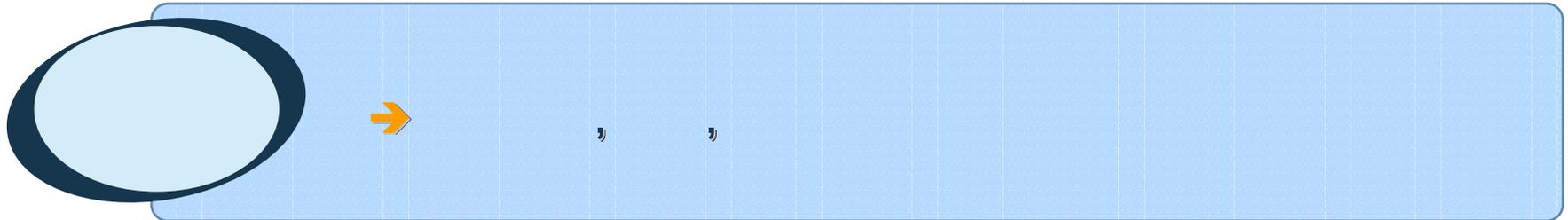
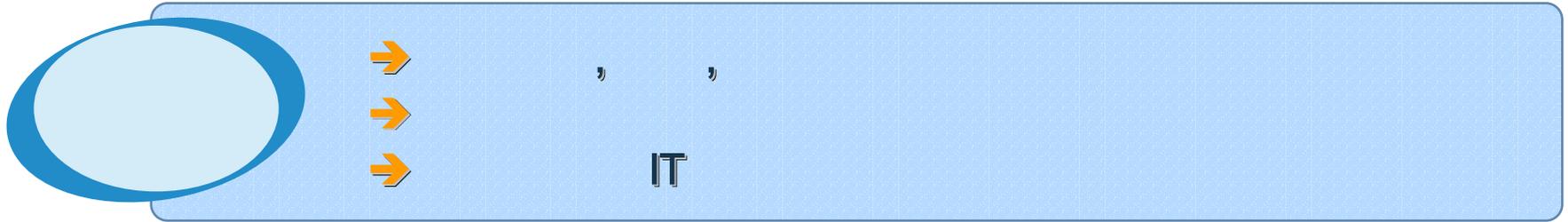
➤ 20

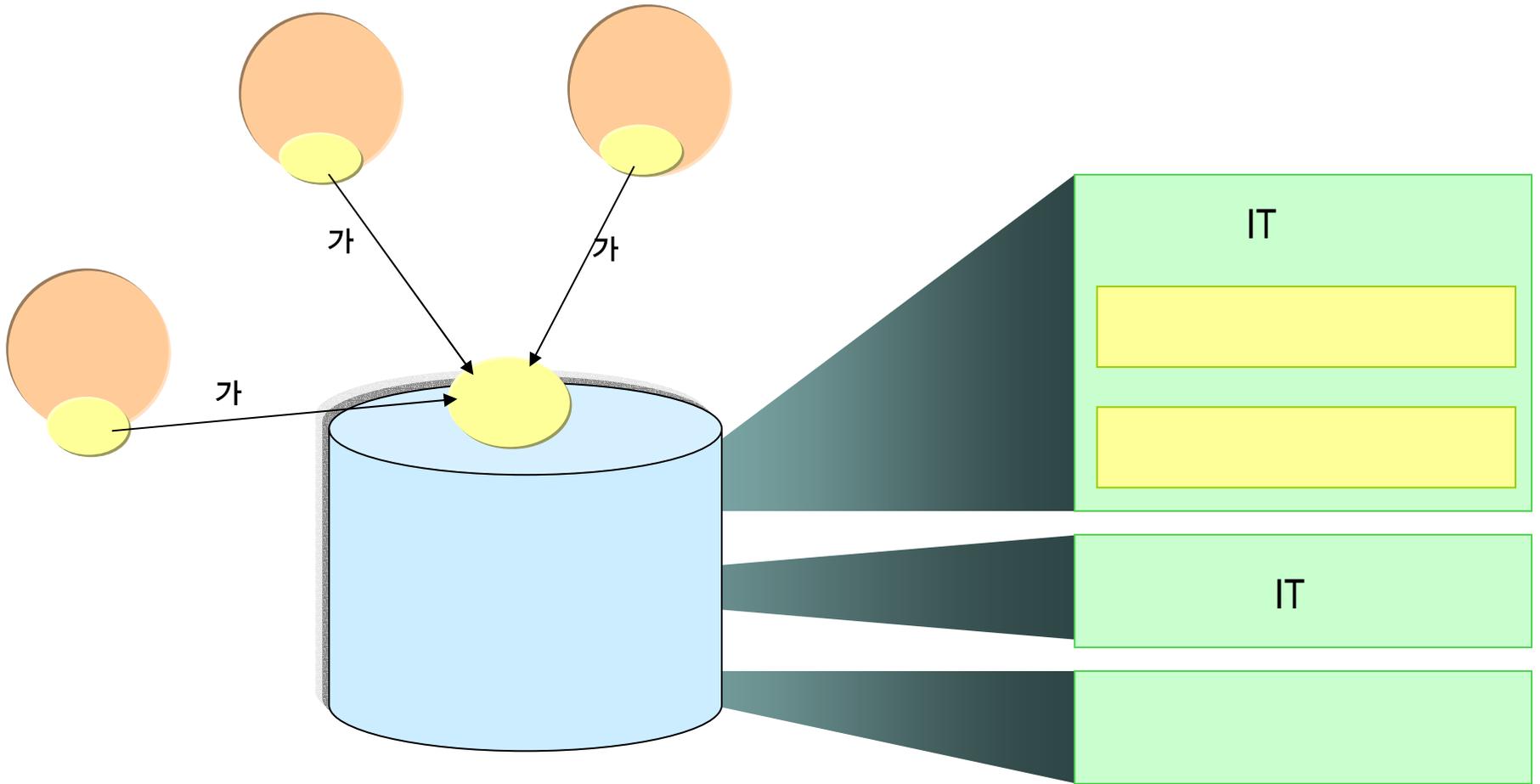
➤ 200 (10 , 6 , 4)

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 - RFID, RTLS
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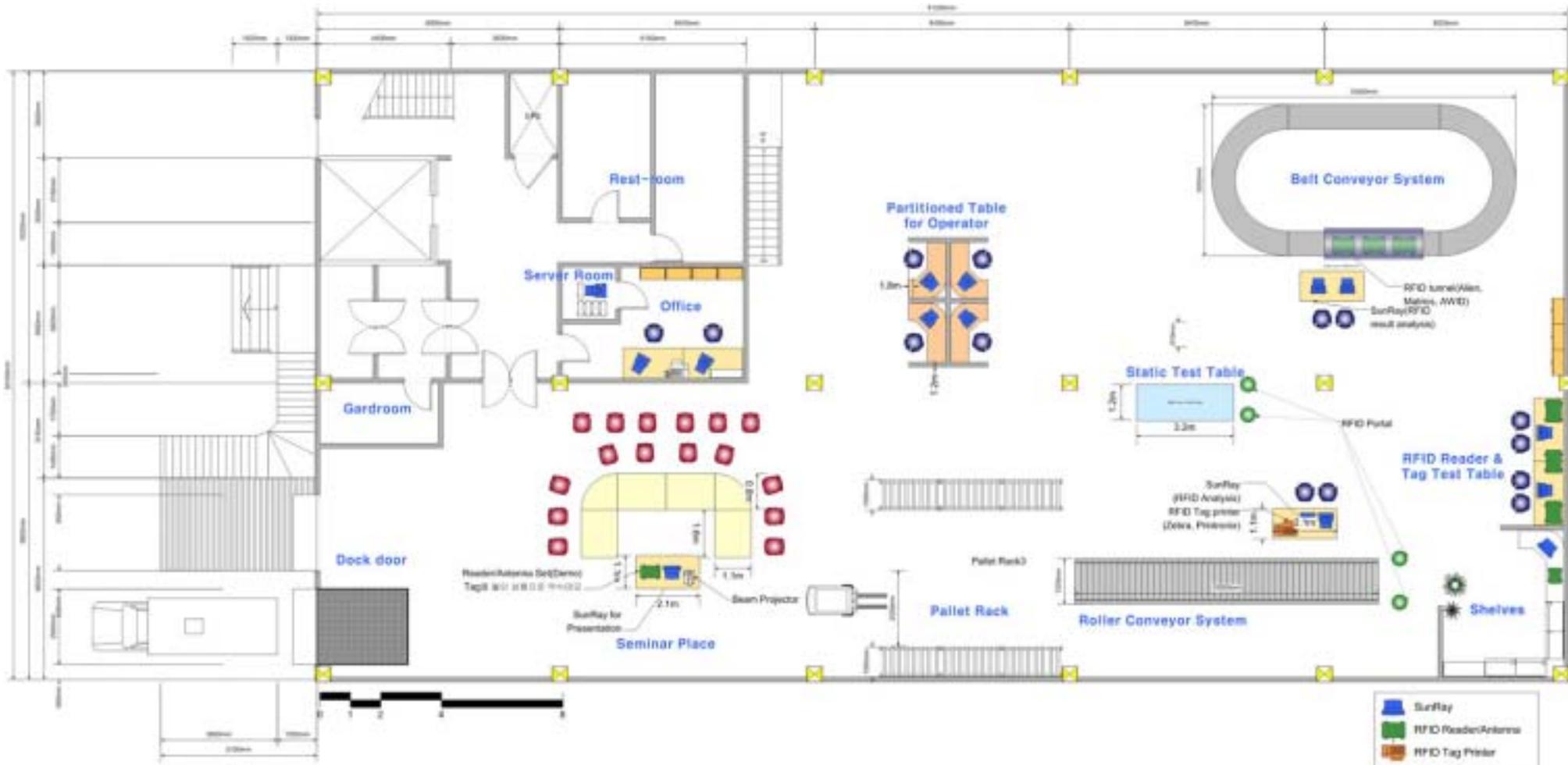






RFID

➤ RFID Test Center Layout



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- R&D, , DB
 - DB
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- - IT :
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 - U-Port



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➤ IT

➤ IT



➤ issues ,

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- “ (reliable accessibility)”
 - Exactly on time
 - Secure transportation
- - Mobility management
 - Traffic management
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