The Safety Management of at seas by RFID system application

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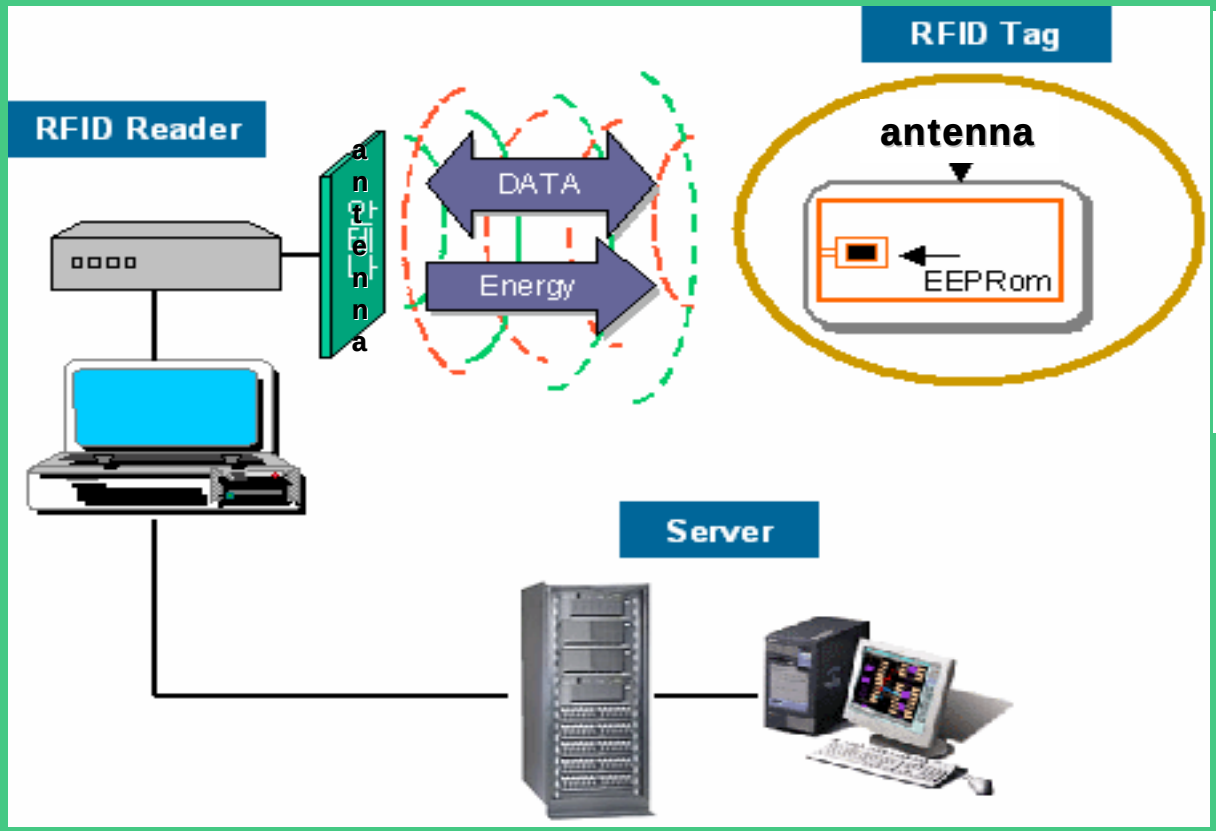
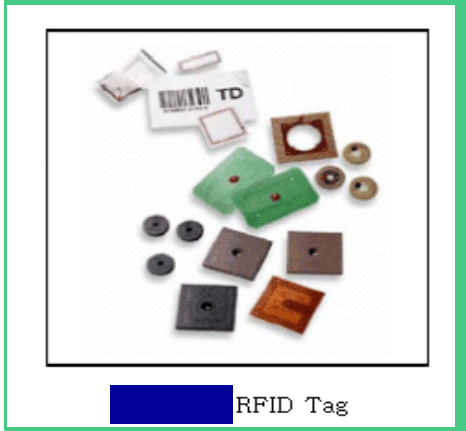
What is RFID?

- RFID(Radio Frequency Identification) is a method of identifying unique items using radio waves
- RFID systems include electronic devices called *tags* and *readers*
  - *Is RFID a barcode?*

RFID Concepts

- Identify objects from distance by using small IC with RF transponder
- Track and trace the objects
- Provide the enterprises with real-time view of their assets





RFID Types : Active or Passive(1)

Functionality

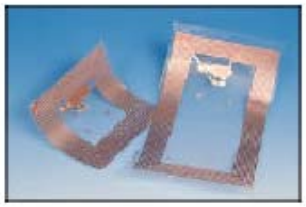
Cost

Active Tag

- Long Range
- Location Finding
- Larger R/W Memory
- Non-Line-of-Sight
- Simultaneous ID

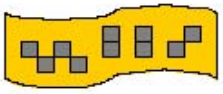
But ...
- Most Expensive
- Limited Life
- Less Rugged

- R/W Memory
- Non-Line-of-Sight
- Simultaneous ID
- Very Rugged



Passive Tag

Smart Materials
(Magnetic, Chemical, Nuclear ...)

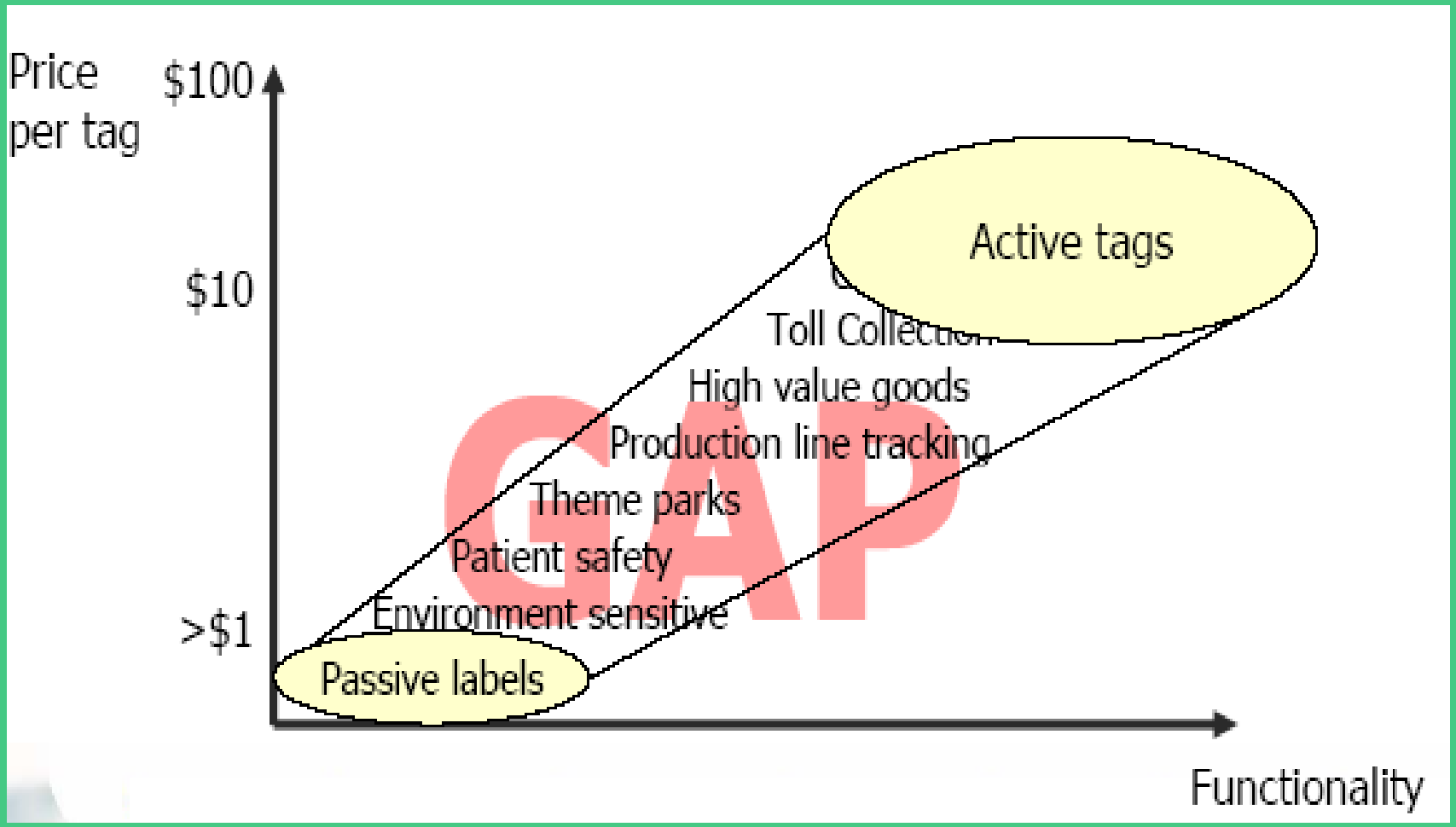


- Non-Line-of-Sight
- Potentially SID

2D Bar Code
- Larger Data Capacity
- Greater Data Integrity

Linear Bar Code
- Lowest Cost

RFID Types : Active or Passive(2)



RFID Frequency & Applications

Embedded μ-chip

Passport, ID card

Global

125KHz,134KHz
(ISO 18000-2)

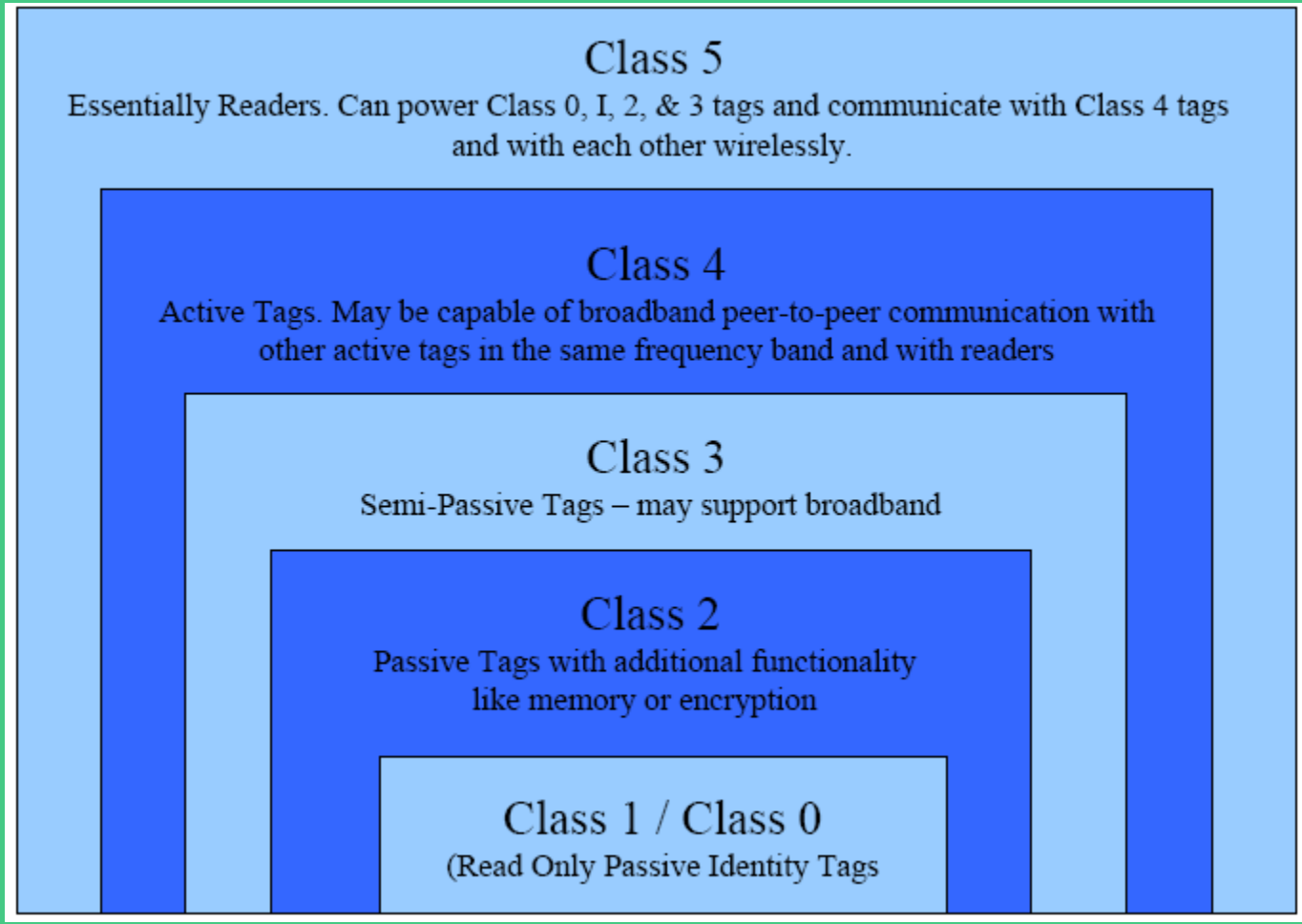
13.56Mhz
(ISO 18000-3)

433.92MHz
(ISO 18000-7)

860MHz 960MHz
(ISO 18000-6)

2.45GMhz
(ISO 18000-4)

Global Stardizations & Spec.



Comparison of RFID to Barcodes

- Similarities
  - Automate process and improve operations management
  - Reduce labor and eliminate human errors
- Differences
  - RFID tags can be embedded and hidden (:invisible)
  - RFID tags can be re-programmed on-the-fly
  - RFID can be used in harsh environments, such as outdoors, around chemicals, moisture, and high temperatures

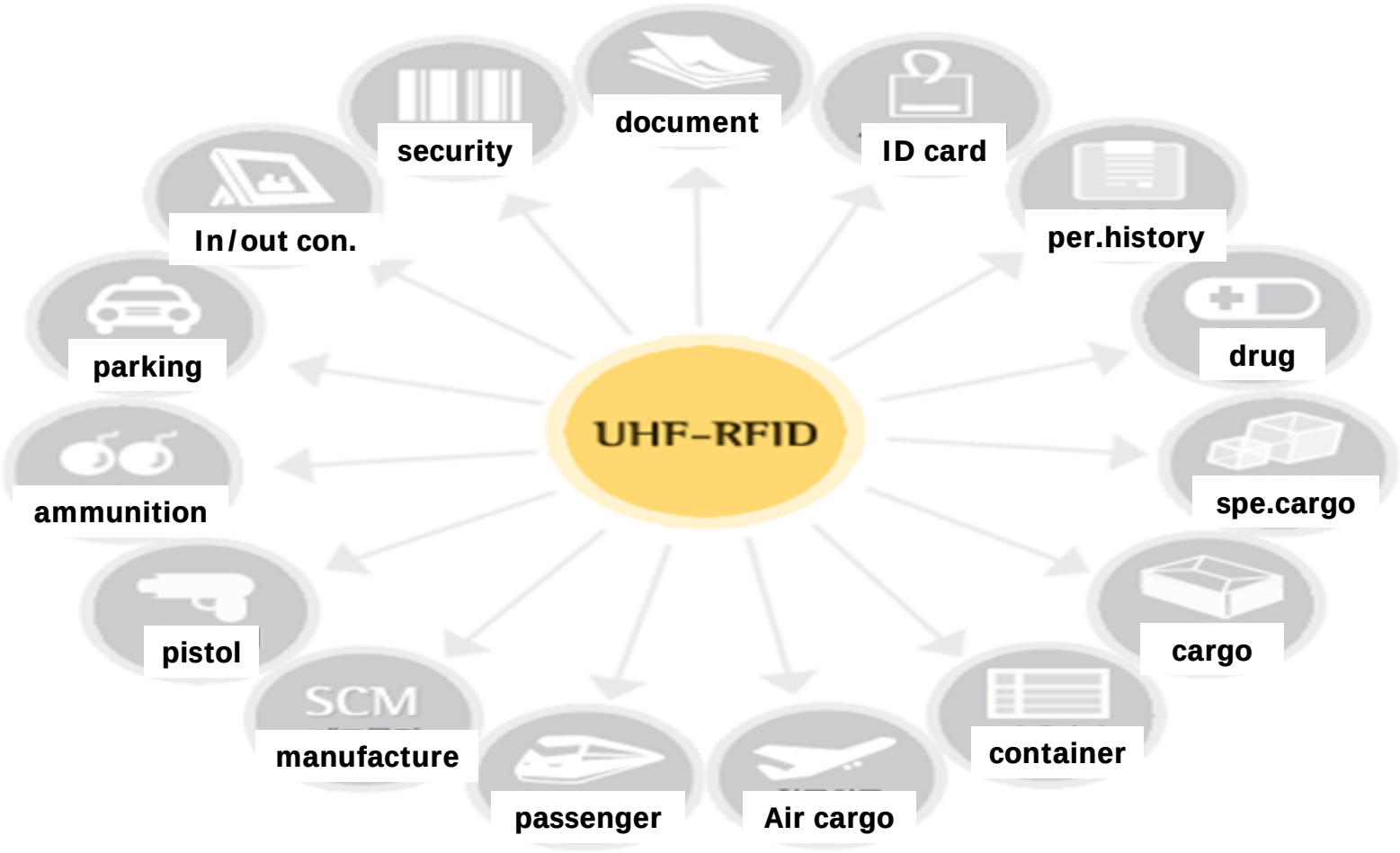
Current Uses(1)

- RFID has been used in libraries for several years
  - As a security solution
  - For inventory management
  - For self-checkout
  - For automated return systems
- The Eugene Public Library in Oregon has sorters and conveyer belt systems that deposit returned books into specified bins that are linked through an RFID number to specific sections of the library

Current Uses (2)

- Air Canada uses RFID to track luggage
- Livestock tracking (ear tags) in Australia and Europe
- Wall Mart and the Dept. of Defense are requiring their suppliers to have RFID tags on all pallets and cases they deliver by 2005

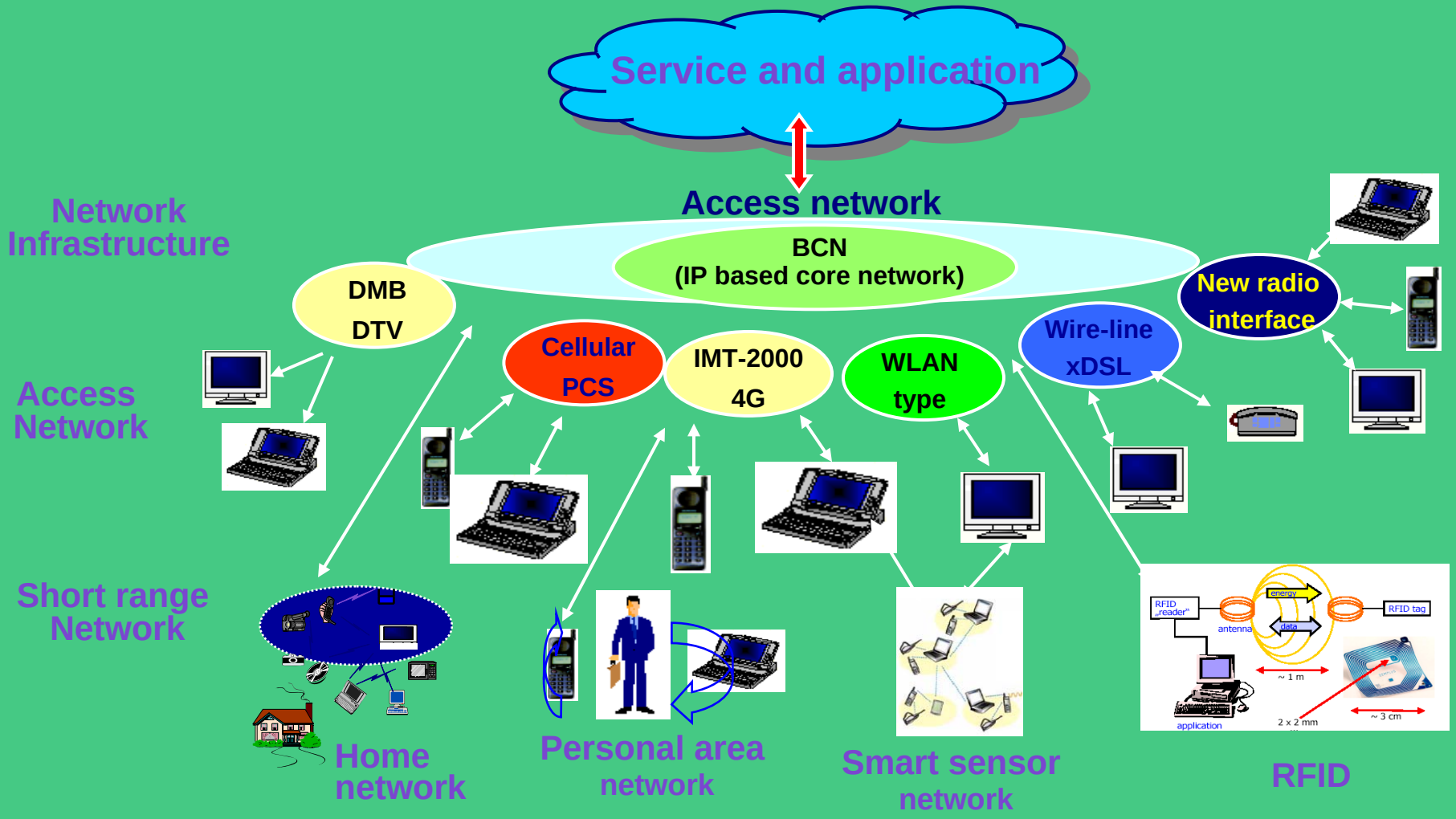
Current Uses(3)



RFID Advantages and Disadvantages

- Advantages
  - Offers highly reliable data collection in harsh environments
  - Eliminates manual data entry
  - Inspires new automation solutions
- Disadvantages
  - Privacy concerns

Key Technologies of Ubiquitous Network



Background of RFID system Application for Marine

Voice : SSB, MF, HF, INMARSAT

Objects : Detects by RADAR

AIS : Ship's Infor. Exchange

Satellite : Data, Voice, Image

⇨ Only for Large ship ,

no regulation for small ship

The Needs for Small Ship Management

1Year : 220 Dead, Missing by Sea Accidents

Number of Illegal Fishing 15,392

Application IT(RFID) system

-> Up to rate of Rescue

To Build for Safety /Clean /Hopeful Sea

Present Situation of Fishing Boat IN/OUT Port

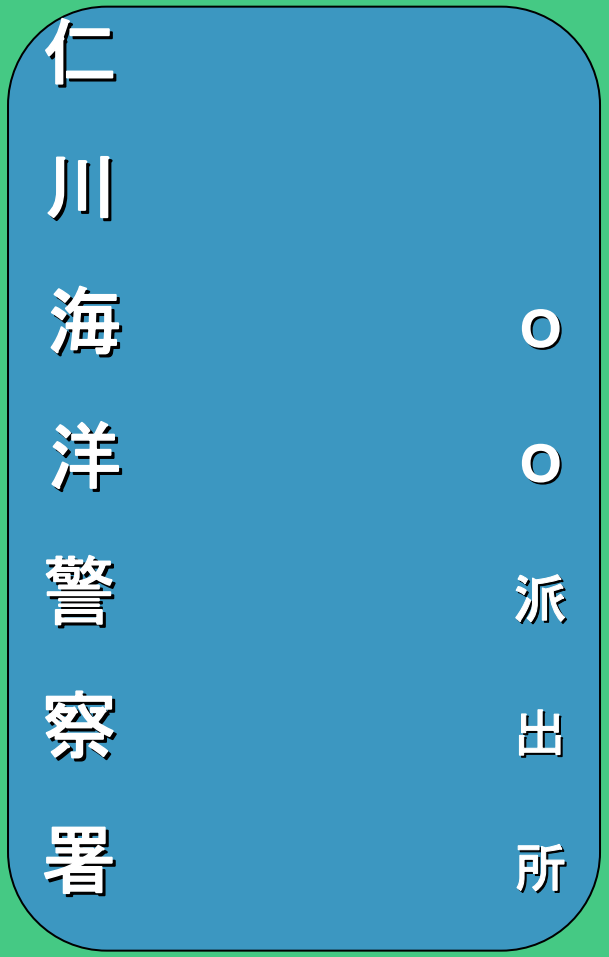
In & Out Port Report by Visiting Control System(from ’72)

Signal Board Exchange

Using at sea Inspection

Return to In port Report

Signal Board Sample



Marine RFID Development

’05. 3~4 Development M/RFID
Mokpo Maritime Univ.

’05. 5~10 Exhibition

’05. 11 Application APEC

’06. 5 Add Function

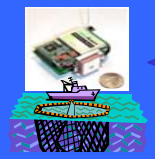
The Concepts of Marine RFID

Fishing boat/Life jacket

Patrol vessel

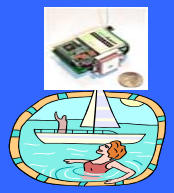
RFID Tag

ID-1
Fishing boat

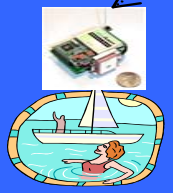


ID-2
Fishing boat

ID-n
Fishing boat



ID-1 Life
jacket

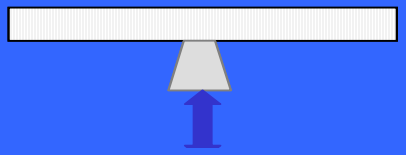


ID-2 Life
jacket

RFID reader

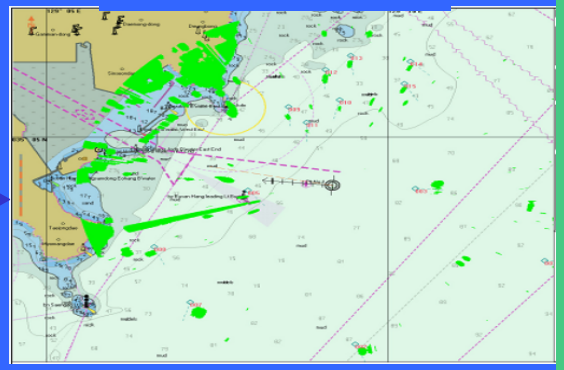
ID/Position S/W

Radar scanner



Radar scanner converter

Electronic Chart

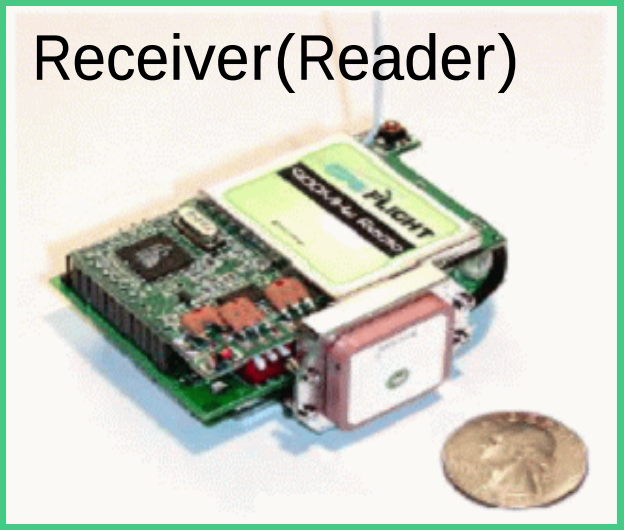


Marine RFID Development & Test

Tag for Transmission

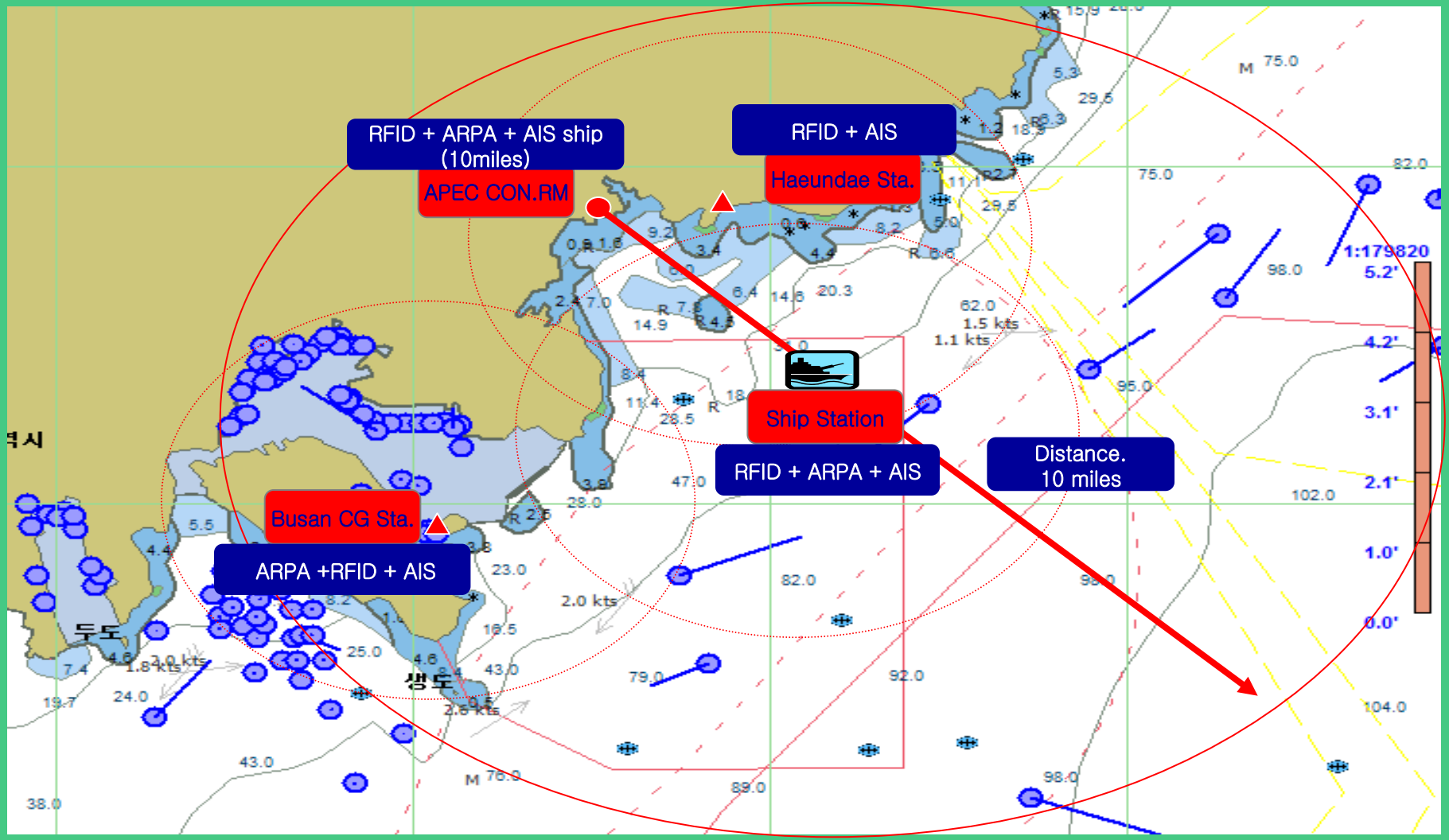
Test Record

Receiver(Reader)

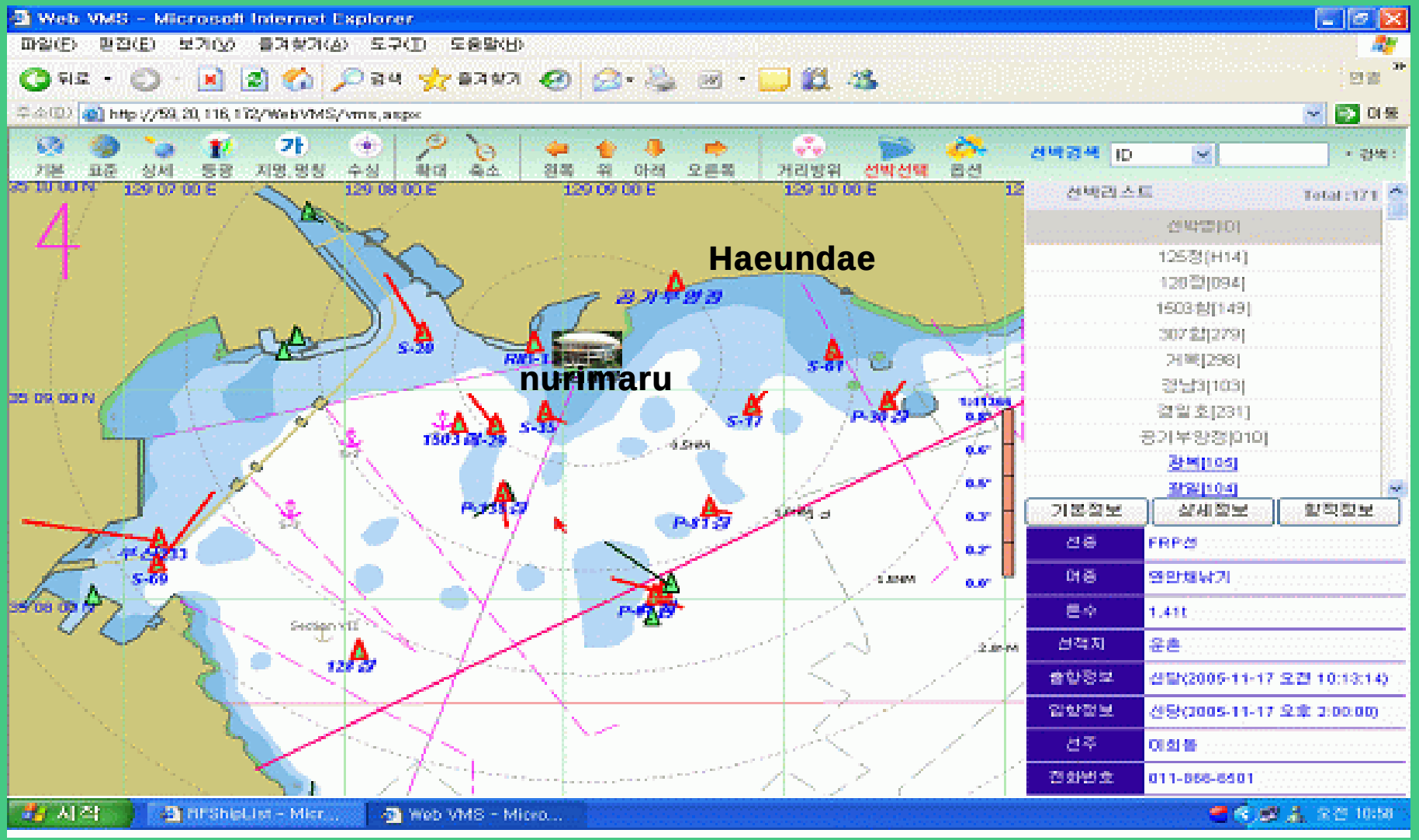


Test Record

Application for APEC(1)



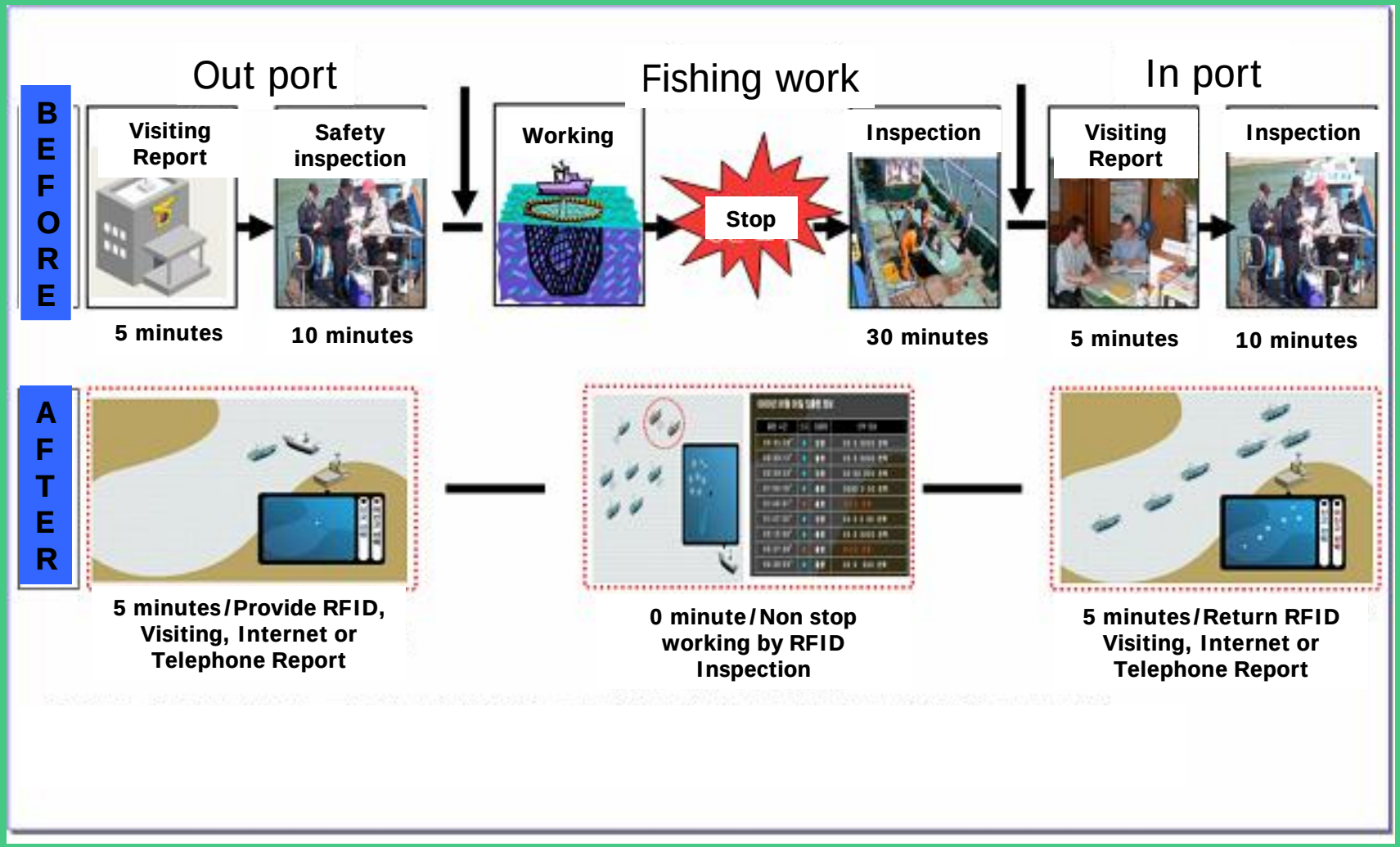
Application for APEC(2)



Application for Others

- Improve In & Out Port System
- Identification of me & others
- Preventing for Disaster, SAR
- Terror, Security, Guard at Sea

In/Out Port System
(Ship Free-Pass System)



Actual Practice Station of ship free pass system

INCHEON Maritime Police Station

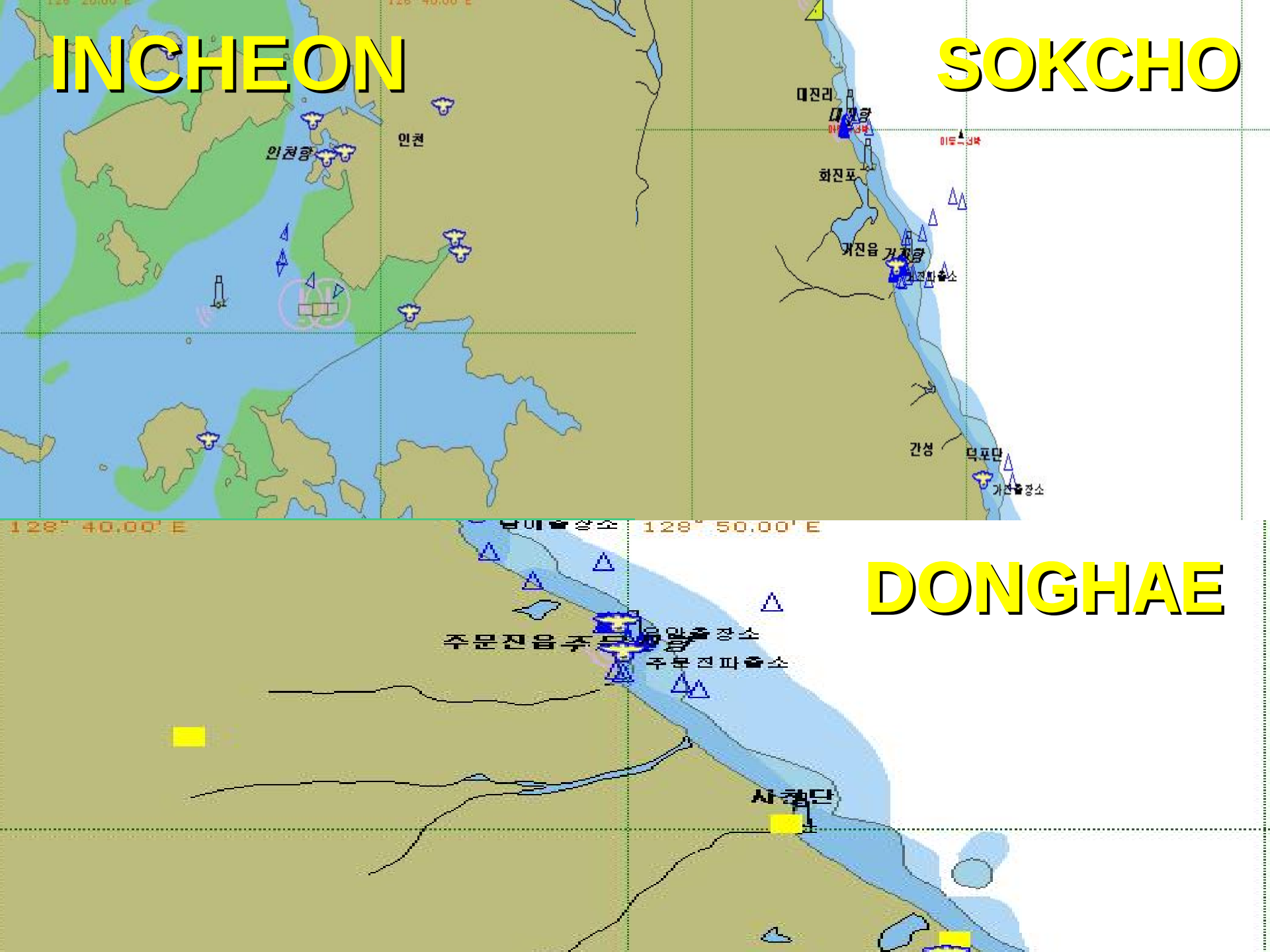
- 2500 ea

SOKCHO **Maritime Police Station**

- 2500 ea

DONGHAE Maritime Police Station

- 600 ea


INCHEON
SOKCHO
DONGHAE
인천
인천항
대진리
화진포
간성
덕포단
128° 40.00' E
128° 50.00' E
주문진읍
주문진파출소
사천단

Plan in the Future

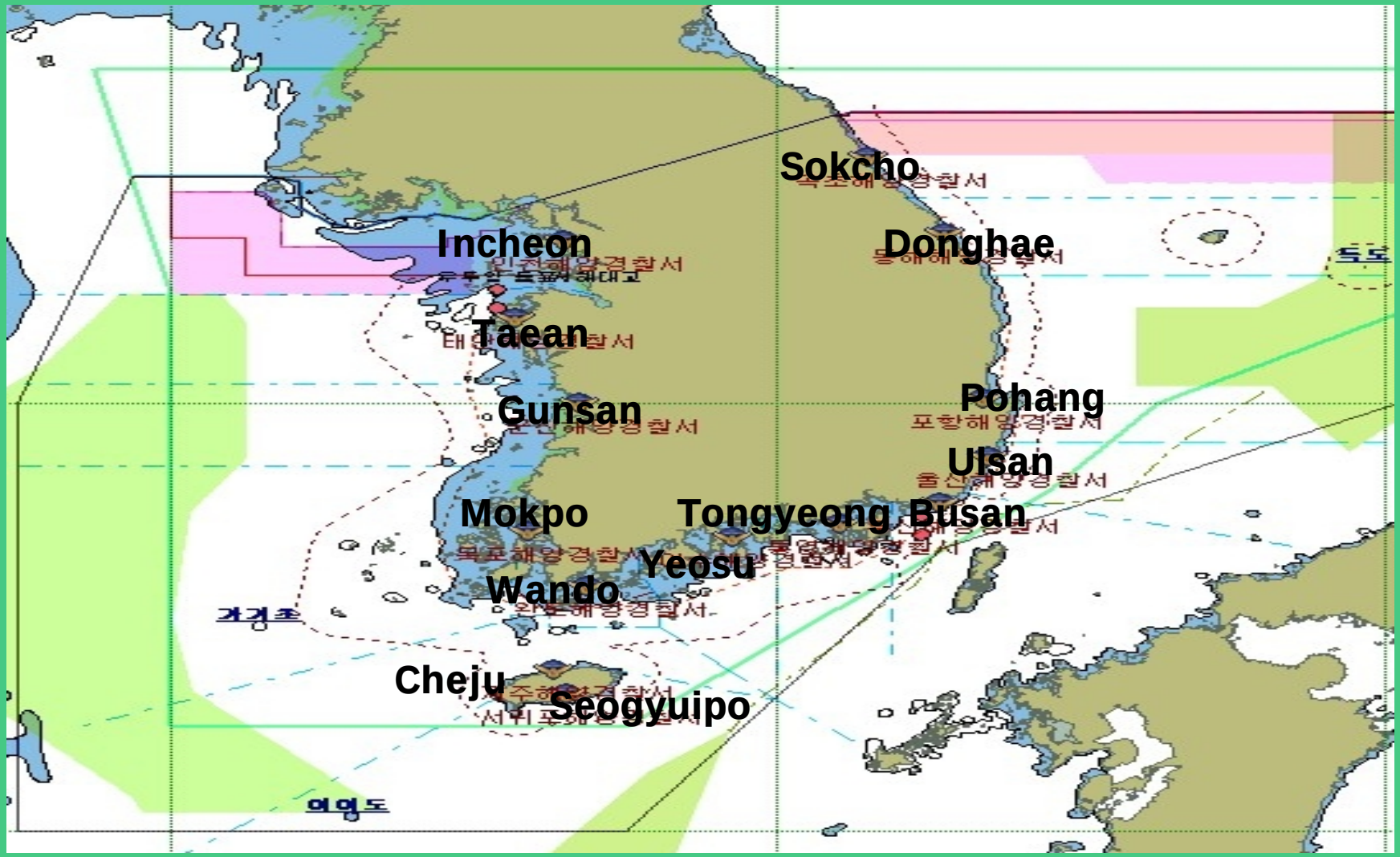
PDA(Personal Data Assistant)

DMB(Digital Multimedia Broadcasting)

All coastal area Application

by 2013

Plan in the Future



Thank You!

Questions?