A Representative Brand for enhancement of national logistics competitiveness

A ubiquitous high-tech port through Yes! U-Port, the new future of port in Republic of Korea, is here now.
Yes! U-Port having integrated shipping and port logistics information system in Korea!
Yes! U-Port has realized smooth shipping and port logistics work process anywhere, anytime around the clock. By implementing ubiquitous based port-logistics infrastructure, and has dramatically reduced the time spent in processing import/export logistics tasks and logistics cost to enhancement of national logistics competitiveness.

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The New Leader of Port Logistics, Yes! U-Port Realizes Futuristic U-Port, the World Best Class.
We realize a global shipping and port logistics hub.

Efficient and Creative
“User Customized Shipping and Port logistics Service”

Construction of Shipping and Port Logistics Integrated Information Network Based on Open Platform

Constructing Shipping and port logistics Integrated Service of Opening, Sharing, Communicating, Cooperating Based on Government 3.0 Paradigm
• Constructing Integrated Port-MIS 3.0 that Operates 31 Trading Ports
• Enhancement of shipping and port logistics information center for continuous port logistics information service
• Creation of New Added Value by Using Fusion & Combination of Public·Private Information and Big Data

Construction of Opened Platform for Shipping and port logistics Information Integrated Service
• Constructing Service Platform Based on Electronic Government Standard Framework
• Constructing Association Standard Interface Platform that has considered Opening, Sharing and Communicating
  - OpenAPI, LOD Service for Convenient Information Usage of Shipping and port logistics Information Center

We prepare for the Basis of Knowledge Sharing with Cloud Based and Opened SW Utilization
Information Management Service

Disaster/Calamity Recovery

Logistics Competency Reinforcement with Port-Distribution Service Improvement and Efficiency

Improvement of port logistics productivity with logistics cost reduction

Paperless non-visiting civil service and information joint utilization to reduce costs

Real-time Shipping Safety Management and Immediate Response of Safety Accidents

- **Port-MIS**
  Trade port entry/exit, usage of facility inside the port, managing matters, Cargo carry-in/out, tax collection, hazardous matter carry-in/out, etc. A system that processes all port operation tasks

- **PSS**
  A system to increase port security and logistics efficiency through port gate automatic certification through issuing RFID pass for the personnel and vehicles that enters national ports

- **Port-MIS**
  A system to increase port security and logistics efficiency through port gate automatic certification through issuing RFID pass for the personnel and vehicles that enters national ports

- **PSS**
  A system to increase port security and logistics efficiency through port gate automatic certification through issuing RFID pass for the personnel and vehicles that enters national ports

- **SP-IDC**
  A system that provides international logistics information, policy support, liner analysis, port civil petition information, requirements of the users such as terminal operation information, statistical information and fundamental shipping port logistics analysis information

- **VMS**
  Hazardous Management System such as VTS through Real-time Check-up of Vessel Traffic Information, Shipping Traffic, Security/Counter-Terror, Port Management, Shipping Public Order, Coastal Resource Management, etc

- **GCTS**
  A system that supports the application to vehicle assignment and block management by providing cargo/container/vehicle tracking information in real time while making use of vehicle tracking information automatically collected through RFID-based gate operation system

- **DR**
  DR System to Safely Manage the Main Systems Related to Shipping and port 24 hours a day 7 days a week
:: Realizing a paperless port administration around the clock by connecting 31 trade ports throughout the nation into a single port

It is an information system that has on-line processed all administrative tasks related to ship transfer and cargo carry-in/out that occurs at ports, and it connects national ports to one single network to realize non-visit civil petition administration anytime anywhere around the clock such as dealing with civil petitions using EDI, internet and mobile.

Port-MIS (Port-Management Information System)

www.portmis.go.kr
Collect, analyze and service vast shipping, port and distribution information effectively to maximize task efficiency

Providing various Information for Import/Export Logistics Task Support

- **Port-Logistics Information sharing System**
  - B2B supporting system for joint utilization of information related to bayesian and transshipments of the port logistics subjects

- **Port-Logistics Integration Utilization Service**
  - B2B supporting system to integrate and co-utilize such as ships’ port entry/exit authorization/permission dealing results and status of dealing cargos and dangerous matters, etc.

- **Tally Information Joint Utilization System**
  - B2B supporting system for joint utilization of examination information for container cargo and bulk cargo between logistics players or logistics entities

- **Import/Export Logisitics Map Service**
  - A service providing the flow of import/export cargos based on maps to provide a variety of analysis services

Introduction Effects of SP-IDC

- Contributing to Logistics cost saving and productivity improvement by utilizing it as the basic infrastructure to reinforce port and logistics informationalization
- Increasing administrative efficiency with integrative management and service system construction of shipping and port logistics related information
  - Improving task efficiency through association and gathering the information
  - Preparing a base that can be associated with foreign ports’ shipping and port logistics information system
  - Improving task efficiency through association and gathering the information
  - Preparing a base that can be associated with foreign ports’ shipping and port logistics information system
  - Preparing a base that can be associated with foreign ports’ shipping and port logistics information system
- With searching integrated information through batch information processing system, Logistics cost is reduced
  - Improving Distribution competency with cost cutting for information access and utilization
  - Budget reduction such as uniformed budget management and prevention of redundant investment through system integrated management
  - Information access and processing cost cutting of related subjects
- Solution of digital divide among shipping and port logistics industries and enhancement of customer service
  - Able to construct and use high tech info environment with cheap costs
  - Expansion of informationalization base through providing info environment supporting service and each application software development and Logistics are possible
VMS (Vessel Monitoring System)

www.gicoms.go.kr

:: Monitoring/Tracking the location of Vessels Navigating throughout the World and Minimizing Prevention and Damage of Shipping Accidents

VMS is a total information system as to safety, security and environment protection of shipping & fisheries field to Monitoring/ Tracking the Position of national flagged vessels navigating at the oceans in the world and integrate all information of shipping/safety field by utilizing the information among the related organizations in common functioning as a risk management system to minimize damage when there is an accident or to prevent shipping accidents.

:: GICOMS System Concept Chart

Introduction Effects of GICOMS

- Total control and support of Shipping traffic through efficient vessel integrated control as to the water area throughout the world
- Enhancing civil service with information provision through internet and info joint utilization through Interface network among related institutes and total control of shipping safety related info
- Minimizing damages with efficient correspondence for shipping fisheries disaster accidents
- Improving safe protection of Korean crews/vessels/cargoes at the pirate crime ridden water area
- Raising (or upgrading) international reputation through suggesting shipping safety standard model of the international society
- Improving shipping traffic control services through auto identification, enhancing advanced shipping position by compliance with international regulations, constructing base for integrated shipping traffic service system, increasing job efficiency of the management

:: GICOMS System Concept Chart

- Port
- Coast
- Exclusive Economic Water Area
- International Waters

- Radar
- Guard Ship
- Fishing Vessels
- Merchant Vessels
- Leisure Ships
- VMS
- Satellite
- AIS

- Ministry of Oceans and Fisheries
- Korea Coast Guard
- Navy, NSC

Person in Charge of the Task

Public

Applicant

Government

Ministry of Oceans and Fisheries

Related Organization

School/Research Center

 Applicant

Vessel Monitoring

Supporting tasks such as VTS, shipping traffic, security and counter-terror measures, port management, shipping public order, Coast & Resource management with the real-time vessel traffic information

Providing Safety Information

Providing shipping safety information related to weather/navigational route, using VMS Cell-phones and providing vessels with main news through system associations with Hoonhub news

Information Sharing System

Quickly providing information related to shipping safety collected real-time for solving and dealing with the accident and jointly utilizing shipping safety info through system associations with main inst.

Main Service

Shipping Informationalization

Shipping Traffic Management System

Vessel Auto Identification Management

Broad VTS Control

LRIT System

VMS System Management

Shipping Information Integrated Management

Ocean Crisis Correspondence

Video Conference System

Disaster Assessment System

Cross Correspondence Management

Disaster History DB

Shipping Informationalization

Shipping Safety Information

Vessel Position information

Shipping Accident information

Illegal Fishing information

Port Entry/Exit information

Cargo Tracking information

Hazardous Cargo Position information

Shipping Traffic Management System

Vessel Auto Identification Management

Broad VTS Control

LRIT System

VMS System Management

Shipping Information Integrated Management

Ocean Crisis Correspondence

Video Conference System

Disaster Assessment System

Cross Correspondence Management

Disaster History DB

Information Sharing System

Disaster Crisis Correspondence

Video Conference System

Disaster Assessment System

Crisis Correspondence Management

Disaster History DB

Government

Ministry of Oceans and Fisheries

Related Organization

School/Research Center
:: Realizing Real-time Port-Logistics Tracking Management in and out of the Country with RFID Technology

A system that provides container and vehicle tracking information by constructing RFID and GPS based logistics information network, which can manage supply network at real time, and supports vehicle assignment and container block management more easily.

:: Main Functions of GCTS

- Collecting information of gate-in/out and stacking/stevedoring result of vehicle/container in logistics point in real time, and providing location tracking of container/cargo and various info with container/BL No. by implementing RFID-based logistics information network
- RFID-based Gate Automation Management
  - Gate automation system of container and vessel using RFID technology at the logistics bases such as container terminal, container yard and rail station, etc.
- Providing Real Time logistics Tracking information Service
  - Providing cargo/container/vehicle tracking information real time using container/vehicle tracking information that are automatically collected through RFID-based management system constructed at the distribution base

:: Introduction Effects of GCTS

- Accomplishing port logistics process efficiency
  - RFID-based gate automation enabling reduction of gate passing time
  - Enhancing efficiency of terminal operation through automatic confirmation of stacking and loading
- logistics competitiveness Reinforcement
  - Fostering bases for national U-Port construction
  - Improvement of international competency of shipping/port through leading application of RFID infrastructure
- International Cargo Security Regulation Correspondence
  - Reinforcing cargo security function and increasing customs clearance efficiency through container e-Seal attachment
- RFID International Standardization Leading
  - Preparing RFID technology standardization basis of national import/export cargo
  - Establishing and settling RFID based port logistics process standard
:: Realizing Optimal Port Logistics Security with Port Access management through RFID technology

RFID-based port arrival/departure managing system is the one to improve security and efficiency of port arrival/departure, which can automate port arrival/departure through port pass application and RFID tag pass issuance through internet to realize optimal port logistics security.

:: PSS Realization Air View

Introduction Effect of PSS

- Reinforcing port entrance security system
  - With real-time management for port pass issuance application and approval status quo, reinforce port entrance management
  - Reconciliation of port entrance pass issuance and entrance information cooperative usage through port entrance info association
  - Easy to refer and control information related to the passenger through information control related to the pass issuance

- Enhancing task efficiency and improvement of civil petition service
  - With automation of port pass issuance management and entrance management service automation, enhancing task convenience of petitioner and person in charge of the task
  - Shortening entrance time by remote entrance control for port entering personnel and vehicles
  - With standardized RFID-based port arrival/departure security system usage, reduce new construction costs and availability of the already constructed system
:: Realizing task processing around the clock at disasters and calamities

Port-Logistics Information Tasks are realized around the clock by constructing disaster recovery system of Ministry of Oceans and Fisheries, port authority and port-logistics enterprise to provide shipping port logistics information service that becomes the basis of national logistics at disasters and calamities.

:: Disaster Recovery Process

- **Real-time Data Copying**
  - Port-Logistics information system data can be copied real-time through exclusive network for each institute which has moved in.

- **Re-classify the tasks of the institutes that have moved in and analyze, assess their influence on the tasks**

- **Internalization & Unification of Task Continuity Plans at National Center Emergency**

- **Perform procedures supporting conversion of service to disaster recovery center within the shortest time from the pertinent period after declaring disasters and then returning to the main center after dealing with the disasters.**

- **Service Conversion Management**

:: Introduction Effects of DR

- **Realizing task processing around the clock with preparation of safe information utilization basis**
  - Securing task continuity of port-logistics info service with disaster-calamity recovery system realization
  - Improve reliability to customers with disaster recovery system construction that responds to disasters
  - Maintaining data consistency with systematic management and interface of information system

- **Management System Support**
  - Securing interoperaibility basis among related systems with integrated info system data copying and Management
  - Eliminating redundant investment factors that can occur with individual system disaster recovery center construction
  - Preventing impedance of the unauthorized with the introduction of integrated security system inside the disaster recovery center
Your Future E-Business Safe Voyage

Detailed Description of System

- Port-Management Information System (Port-MIS) 22
- Shipping and Port Integrated Data Center (SP-IDC) 28
- Vessel Monitoring System (VMS) 32
- Global Cargo Tracking System (GCTS) 36
- Port Security System (PSS) 42
- Disaster Recovery (DR) 46
Your Future E-Business Safe Voyage

**Port-Management Information System (Port-MIS)**  [www.portmis.go.kr](http://www.portmis.go.kr)

- Realizing paperless port administration, connecting 31 national trade ports into one

  Port-MIS is an information system that has computerized all administration tasks related to cargo in/out and movement of vessel that occurs in ports, and realizes paperless port administration with application processing using network connection and EDI · internet · mobile of 31 trade ports around the country.

- Service Composition

  **Vessel Operation Management**
  - Vessel Port Arrival/Departure
  - Port Administration Management
  - Management of operation performances
  - Management of Vessel In/Out

  **Cargo Management**
  - Cargo declaration
  - Container declaration
  - Cargo like declaration
  - DG cargo management

  **Port Admin/Port Authority**
  - Vessel Arrival Acceptance
  - Vessel Departure Acceptance
  - Permitting the use of port facility

  **Cargo Operation**
  - Receiving cargo/container
  - Carry-in/out reports
  - Confirming hazardous matters carry in

  **Billing**
  - Issue Invoice
  - Preventing Investment Costs
  - Volume Incentive

  **Facility Management**
  - Assignment of actual tug-boat
  - Assigning pilot
  - Radio Quarantine, Tally

  **Supporting Decision-Making**
  - Vessel Port Arrival/Departure Analysis
  - Cargo/Container in/out Statistics
  - Information Utilization

  **Shipping Company/Agency**
  - Vessel Operation
  - Port Port Arrival/Departure Report
  - Applying the usage of port facilities

  **Billing**
  - Collection
  - Investment Cost Reserve
  - Volume Incentive

  **Facility Management**
  - Tugboat operation
  - Pilotsage
  - Radio Quarantine
  - Tally

  **CIQ Institute**
  - Bill Collection
  - Investment Cost Reserve
  - Overdue payment management

- Port-MIS Construction Background and Progress

  - According to rapid increase of import/export cargoes and vessels, Ministry of Oceans & Fisheries established basic plan of total information management system beyond primitive computerization of work process in 1987, promoting Port-MIS development into the port for simplified public service, Logistics cost saving and each information data sharing

  - Ministry of Oceans and Fisheries decided to construct Port-MIS in 1991
    - Jan. 1992: Busan Port-MIS Management Open (On-Line)
    - Dec. 1993: Expansion to Youngnam Area Ports (Ulsan/Musan/Pohang)

  - Promoting Port-MIS EDI from 1996
    - Jan. 1997: Expansion of Port-MIS Operation to Incheon/Yeosu/Dangjin ports
    - Apr. 1997: Promoting Information Sharing system such as Format Standardization
    - Apr. 1997: Constructing EDI System for DG cargo operation
    - Dec. 1997: Applying to All Domestic Ports such as Mokpo and Jeju
    - Sep. 1999: Implementing Integrated Port D/B System

  - Dec. 2004: Constructing Mobile Port-MIS Using PDA

  - Nov. 2005: One-Stop Service through Single Window by unified and integrated application form Upgrade Port-MIS to web-based system
    - 2006: Free Service of Ministry of Oceans and Fisheries Unique Forms (10 Types) through internet based Shipping and port logistics information center

  - 2009: Realizing Port-MIS with Web
    - 2009: Constructing Port-MIS 2.0 (Application submission through web)
    - 2011: Upgrade of Port-MIS 2.0 (Verification of submission, inquiry with smart-phone)

  - 2012: Realizing Application Submission easy service by smart mobile technology
    - 2012: Smart Port application easy service
Port-MIS Configuration Diagram

Connecting 31 trade ports into a single nationwide network.

Port-MIS Service Contents

- Only single application submission to MOF, Port Authority, CIQ (Customs, Immigration, Quarantine) through web port-MIS free of charge.

Service Composition

- **WebPort-MIS 2.0**
- **Service Composition**
- **Port-MIS System**
- **Applicant**
- **Web Port-MIS**
- **Cargoes**
- **Cargo Fee Management**
- **Cargo Operation**
- **Approval of several applications belonging to one applicant**
- **In Charge of Civil Affairs**
- **Approval function of several applications belonging to one applicant is available in Port-MIS by unifying information of submission system into Port-MIS**
- **It is possible to inform charges and control wrong payment.**

**Voluntary Agency**

- Government Organization
- EDI User
- Port-MIS User
- EDI User
- Port-MIS User
Your Future E-Business Safe Voyage

Port-Management Information System (Port-MIS)

Introduction Effects of Port-MIS

- Reduced work process time and saved cost
- Paperless job process and reduction of applicant’s visit to government office
- Reducing number of application form through simple import/export procedures (75 types → 16 species, 78.8% reduction)
- Reducing vessel waiting time and container processing time with automation of application process
- Possible to submit application without any EDI transmission cost by unifying Port-MIS operation that was managed by 3 different regions separately
- Task processing speed up with rapid check of application process with widget function
- Improving customer service for the public
- Improving reliability of port user through rapid Port-MIS provision
- Improving satisfaction of civil service by unifying customer service center through web
- Possible to response to emergency case after business hour with approval in the web
- Increasing administration efficiency
- Pursuing smooth Management of Vessel Arrival/Departure and cargo processing through information network that integrating all national ports
- Guaranteeing efficient usage of limited port facilities by accurately checking the current status of port facility use
- Reducing total logistics cost (Reducing human resources/maintenance cost cutting/minimizing redundant tasks)
- Eliminating unnecessary job process time resulted from separate operation of Port-MIS by different region thanks to standard work process with unified system implementation
Collecting, integrating vast shipping logistics information to provide them real time

It is a system constructed to integrate/manage shipping port logistics information. For the public sector, it can save budget, increase administration service efficiency and improve information providing services for the people, and for the private sector, it can solve digital divide, save processing cost of information, and enhance new technology utilization. It also integrates/provides various kinds of application related to shipping, Port, import/export process and several kinds of information related to shipping and Port operation anywhere, anytime with internet or smart phone free of charge.
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SP-IDC Main Features & Services

- Providing Shipping and port logistics Total Information through Collecting & Processing a Variety of Port Information
- Port Authority
  - Vessel Arrival/Departure Notice
  - Crew/Passenger List
  - Vessel Qualification Screening Results
  - Foreign Crew Entrance Report
  - Health Status Report
  - Radio Quarantine Screening Results
  - Hygiene Inspection App.

- Pilot
  - Vessel Arrival/Departure Information
  - Assignment info of tugboat request

- Tug boat
  - Vessel Arrival/Departure Information
  - Cargo carry-in/out
  - Hazardous Matter carry-in
  - Code/User Information

- Terminal
  - Previous gate carry-in/out Information
  - Gate log Information
  - Loading/Unloading Information

- SP-IDC
  - Vessel Arrival/Departure/Port Facility Use/Control Information
  - Cargo/Carry-in/out/Hazardous Matter/Cargo Information
  - Code/User Information
  - Statistics
  - Code/User Information

- Port-MIS
  - Vessel Arrival/Departure/Port Facility Use/Control Information
  - Cargo/Carry-in/out/Hazardous Matter/Cargo Information
  - Code/User Information
  - Statistics
  - Code/User Information

- Value Added Service Information
  - Port-MIS
    - Vessel Movements, Cargo Tracking, etc.
    - Port Facility Status
    - Vessel Arrival/Departure Information
    - Port Schedule Information

- Introduction Effects of SP-IDC
  - Increase of Convenience of Maritime Port Logistics players
    - Increase of convenience in Logistics information usage of logistics player(private sector, government) through unification of information providing window related to Shipping and port logistics
    - Providing several kinds of maritime logistics info for free anywhere, anytime using internet or smart-phone
  - Improvement of Service to the public
    - Providing a variety of latest information related to Shipping and port logistics
    - Expecting Logistics information gap to be solved through Logistics info access and utilization improvement of the Logistics subjects
    - Providing the latest information related to Shipping and port logistics and preparing a venue of PR to the people of related policies
  - IT provision of highly reliable Logistics information
    - Correspond to variation of Shipping and port logistics information demands through IT provision of Shipping and port logistics information
    - Supporting rapid decision-making with systematic/continuous information provision through processing and providing long-term accumulated information
    - Providing customized statistics users need
  - Work process efficiency increase with the expansion of information utilization opportunities
    - Increase of information providing service efficiency with unification of information providing system related to Shipping and port logistics
    - Improving convenience in Logistics information usage of the Logistics subjects through information providing window unification
    - Contributing to Work process efficiency improvement of the users through a variety of service provision
Vessel Monitoring System (VMS)

VMS is a total information system about safety, security and environmental protection of shipping & fisheries field, a national risk management system to reinforce shipping accident preventions and minimize damages when accident occurs by interfacing/integrating all information of marine safety fields and track/manage the location of national flag vessel navigating in the oceans throughout the world.

GICOMS Construction Background and Promotion Status

- Dec. 2001 Establishment of Shipping Safety Informationalization Promoting Plans
  - Introducing VMS and Shipping-Safety Field Informationalization

- Apr. 2002~Nov. 2002 VMS Construction Feasibility Study and Basic Design
  - Suggesting integration VMS with Shipping Safety Information System

- Jan. 2005 Reorganizing the existing central control center into shipping safety total info center and pilot operation VMS
  - Preparing legal basis as to vessel Position reporting

- 2007 Constructing Vessel Automatic Identification System on Coastal Area throughout the Nation
  - Constructing AIS Communication Network of 22 land bases and VTS-Associated 11 sites, etc.
  - Integrating AIS Communication Networks throughout the Nation (Average coverage of communication: 100km)

- 2007 Completion of GICOMS development and Open GICOMS service
  - Interfaced/Integration of information systems related to shipping disaster safety (33 sites)
  - System Interface among related institutes such as NIS, Korea Coast Guard and Navy, etc.
  - Constructing GICOMS portal site and providing web VMS
**Your Future E-Business Safe Voyage**

**Vessel Monitoring System (VMS)**

- A system in which a position signal shot from the terminal such as mobile device, AIS installed in the vessel is displayed on the electronic navigation chart screen, a bi-directional data communication network between vessel-land.
- VMS terminal which can transmit/receive vessel location is installed in the vessel, and a monitoring device is constructed on the land.

**Association/Integration of Shipping Disaster Safety Related Information System**

- Based on VMS, integrated database of shipping safety through interface/integration of 33 scattered systems related to shipping disaster safety was implemented.
- With location info of vessel, overall inquiry of information related to vessel such as vessel registration, inspection, radio station, license and crew detail, etc. is available.

**Joint Utilization of Shipping Safety Info among Related Institutes and Services for the People**

- Providing marine safety integrated DB and VMS free of charge through the homepage.
- Constructing information network among related institutes related to marine safety disasters and joint utilization.
- Preparing shipping-fishery disaster/safety accident situation propagation and decision-making supporting system.

**GICOMS System Composition**

- Integrated DB
  - Vessel
  - Vessel specification
  - Cleaner
  - Relief Equipment
  - Port Management
  - Arrival/Departure Information
  - Cargo Information
  - Port Facility
- Crews
  - List, License
  - Education & Training
- Shipping Traffic
  - Security Information
  - Weather
  - Typhoon
  - Vessel
  - Inspection
- Providing Disaster Safety Information
  - Vessel, Ship-owner, Public

**GICOMS Main Functions**

**Shipping Traffic Information**
- Vessel Traffic Information
  - AIS
  - VMS
  - Coastal Uts, AIS
  - Coastal Uts VMS Information
  - Vessel Security Information
  - National flag vessel in Prison Hell area
  - Central Beacon Information Center

**Navigation Safety Information**
- Vessel Traffic Information
  - AIS
  - VMS
  - Coastal Uts, AIS
  - Coastal Uts VMS Information
  - Vessel Security Information
  - National flag vessel in Prison Hell area
  - Central Beacon Information Center

**Ship Management Information**
- Vessel Monitoring System
  - AIS
  - VMS
  - Coastal Uts, AIS
  - Coastal Uts VMS Information
  - Vessel Security Information
  - National flag vessel in Prison Hell area
  - Central Beacon Information Center

**Emergency Response Information**
- Vessel Monitoring System
  - AIS
  - VMS
  - Coastal Uts, AIS
  - Coastal Uts VMS Information
  - Vessel Security Information
  - National flag vessel in Prison Hell area
  - Central Beacon Information Center

**Introduction Effects of GICOMS**

- Increasing work process conveniences
  - Efficiently utilizes vessel traffic information real time for related work process operations
  - Safety management concentrated on the vessels vulnerable accidents
  - Utilize it in marine accident investigations and safety policy making through collected vessel traffic information
  - Pursuing safety/convenience of civil petitioners and employees with vessel position information service provision for shipping company
  - Quickly check and distribute each data needed for solving and dealing with the accidents
  - Safe fishing guidance for fishing vessels and systematic management and support for illegal fishing

- Prevention of accidents and damages
  - Minimizing damages with securing vessel traffic safety and quick countermeasures within the pirate/terror hell area
  - Preventing and monitoring pirate damages through vessel security monitoring system associations
  - Preliminary prevention of similar damages with alerting national flag carriers near the damaged area
  - Quick support of search and relief with improvement of vessel distress system and position tracking at distress
Global Cargo Tracking System (GCTS) is a system that automatically collects container/vehicle carry-in/out information for logistics center throughout the world in and out of the country and each main highway tollgate based on RFID information network, and GPS provides Logistics subjects with position tracking info in various ways using container/BL numbers, gathering logistic information associations with related systems (SP-IDC, Port-MIS, etc) and detailed information through web browser so that it could be checked anywhere in the world.

### Service Composition

- **Securing Visibility for Container/Vehicle/Vessel Positions**
  - ICD
    - Tag Attachment
    - Carry-in Information
    - Carry-out Information
  - G/CY
    - Carry-in Information
    - Carry-out Information
  - Tollgate
    - Entry Information
    - Exit Information
  - Gate
    - Carry-in Information
    - Carry-out Information
  - Yard
    - Stacking Information
  - Quayside
    - Load Information
    - Unload Information

- **Transportation Plan Establishment & Order Generation**
- **Main gate Passing/RFD Automatic Recognition**
- **Automated Transmission of Vehicle Movement Position terminal inside the Terminal**
- **Logistics Statistics Service**
  - Throughput Statistics Service
  - Shipping Support Service

### GCTS Construction Background & Promotion Status

- **RFID/USN Infrastructure**
  - Realizing Northeast Asia State-of-the-Art Ubiquitous Hub-port
  - Intelligent Integrated Logistics Structure
  - U-Port homepage

#### GCTS Construction Background & Promotion Status

- **2006~2007 Intro (1st Phase)**
- **2008~2009 Expansion (2~3rd Phase)**
- **2010~2012 Exp/Upgrade (4~5th Phase)**

- **Demanding Logistics Efficiency**
  - Adopting New Technology
  - Reinforcing National competitiveness

- **RFID Infrastructure**
  - Busan, Incheon, Gwangyang Port Terminal and Inland Logistics terminal (ICS, etc)
  - RFID Value-Added Info Service System Construction
    - Gate Automation System
    - Associated Transporter
  - Related System Information Association
    - SP-IDC, Port-MIS, GICOMS, etc.

- **RFID Value-Added Info Service System Construction**
  - Gate Automation System
  - Associated Transporter

- **RFID Infrastructure Expansion 1st Phase**
  - Domestic Main Logistics Base (ICS, IFT, CY, etc) and Highway Tollgate
  - Foreign logistics Base (US, China)

- **RFID Value-Added Info Service System Construction**
  - Gate Automation System
  - Associated Transporter
  - Related System Information Association
  - SP-IDC, Port-MIS, GICOMS, etc.

- **RFID Education & PR**
  - Establishing Industry-Academy Co-management and Technology Intercourse System

- **RFID Infrastructure Expansions of Domestic Total Port Terminal and Shipper Factory and Domestic Main Logistics Bases**

- **RFID Infrastructure Expansion 4-5th Phase**
  - Container Chassis Recognition Inland Base and Tollgate Addition
  - Foreign Distribution Base (Japan, Russia, and Poland, etc)

- **Governmental Org. Distribution Information Joint Utilization**
  - Korea Customs Office, Ministry of Trade, Industry & Energy Info Joint Utilization

- **RFID Education & PR**
  - Establishing Industry-Academy Co-management and Technology Intercourse System

- **RFID Infrastructure Expansion in and out of the Country**

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International RFID Infrastructure Construction

- Global Cargo Tracking System (GCTS)

Upgrade of GCTS through global logistics and trade-NET project.

- Possible to track container vehicle passing through Port terminal, ICD, CY, LIFT with RFID
- Providing distribution subject (Shipping Company, Transporter, etc.) tracking information
- Providing various information with association of related institute information
- Global Navigation Satellite Real-time that has made use of Cargo Tracking Function

Tag Remote Setting Flow Chart

- Position Collecting Server (DR)
- Container Information
- Transportation Status Information
- GCTS

- Position Tracking Service
  - Whether Container opened or not
  - Transportation Monitoring System
  - RFID Information Service
  - Tag Remote Setup/Shipping

Main Functions of GCTS

- Possible to track container vehicle passing through Port terminal, ICD, CY, LIFT with RFID
- Providing distribution subject (Shipping Company, Transporter, etc.) tracking information
- Providing various information with association of related institute information
- Global Navigation Satellite Real-time that has made use of Cargo Tracking Function

Related Institute

- Container/Vehicle Tracking Providing Information
- Real-time Distribution Statistics Providing Information
- Hazardous Matters in the city Providing Carry-in/out Information

Shipping Company

- Container Position Tracking
- Asset Management
- Container Management Efficiency

Transporter

- Tracing Cargo Position
- Asset Management
- Vehicle allocation Planning Efficiency

Port Terminal

- Port Management Automation
- Container Security Service
- Container Confirmation
- Yard Planning Efficiency
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Port Terminal Gate Automation with RFID Introduction

Introduction Effects of GCTS

- Leading RFID International Standardization
  - Preparing the basis of RFID Technology Standardization for National Import/Export Logistics
- Logistics Visibility Recovery & Process Efficiency
  - RFID-based Non-Stop GATE Automation
  - Providing real-time logistics information of domestic/foreign logistics facility
  - Providing and associating real-time information for main logistics subjects
- International cargo security regulation correspondence
  - Supporting container E-Seal attachment and management function
  - Attaching USN sensor on hazardous cargo and monitoring the status
  - Supporting WCO’s A.E.O. certification
- Developing balanced national logistics industry
  - through logistics base facility association and complex transportation system
- Preventing redundant investment of logistics subjects
  - through common infrastructure and information system expansion among many logistics subjects
- Solving logistics flow discontinuity and securing real-time visibility
- Inducing global logistics enterprise domestic attraction
- Realizing national institute logistics information system and utilization/management
- Securing visibility of domestic/foreign logistics flow and creating added value
- Promoting RFID-based national logistics informationization
- Reflecting national policies with reliable data generation

• Slipper: Quick/accurate logistics planning with logistics tracking information real-time monitoring such as cargo arrival, carry-in/out, or departure, etc.
• Transporter: Vehicle management and deployment task efficiency through channel tracking for each vehicle base
• Delivery Company: Solving congestion through vehicle waiting sequence number automation and cutting time getting on/off the vehicle and vehicle arrangement task efficiency
• Logistics Base Station Operator: Understanding real-time status of gate passing vehicles and cargoes, and terminal management efficiency through accurate carry-in/out information intercourse with moved-in companies
• Shipping Company: Management task efficiency of vessels, port arrival/departure and target logistics

National Logistics Industry Infrastructure Aspect

Task Efficiency Aspect for Each Logistics Subject

GCTS

General Cargo Terminal
Logistics Complex
Joint Collection/Delivery Center
Agriculture/Fisheries logistics management
Vehicle Recognition RFID Reader (Antennae)
Vehicle Electronic Tag
Vehicle Recognition Alarm Mars Light
Container stacking location Alarm Electronic Display

Freight Terminal

Container terminal

Vehicle Recognition RFID Reader (Antennae)
Vehicle Electronic Tag
Vehicle Recognition Alarm Mars Light
Container stacking location Alarm Electronic Display

General Cargo Terminal/ICD/Airport Cargo Terminal Entry Highway Tollgate

Port Terminal

Airport Cargo Terminal

Container Terminal

Vehicle Recognition RFID Reader (Antennae)
Vehicle Electronic Tag
Vehicle Recognition Alarm Mars Light
Container stacking location Alarm Electronic Display

Internet
Optimal Port Logistics Security System considering characteristics of Korean Ports

RFID-based PSS is a system to improve security and efficiency of port access, and a user can submit application of port pass and through web System can automatically verify and control port access of the people/vehicle with RFID tagged port pass issued by government.

Service Concept Chart

PSS Construction Background & Promotion Status

Port Management Convenience & Efficiency Maximization through Port Arrival/Departure Management Improvement

Establishment of automatic verification of access basis

Necessary to manage improvement of productivity of port administration process and convenience of customer

Require improvement of manual process of port operation and rapid port access inspection structure

Stable port operation and minimized burden

Request nationwide interface with all ports and information sharing

National Port Security System Status Reinforcement

Reinforcement of policy related to international port security

Strengthening security for port user internationally after 9.11 terror

Enforcement and implementation of international security regulation for vessel and port facility

Require reinforcement of international port access control through SAFE

Improvement of structure of Port access Approval management

Require improvement of manual process of port operation and rapid port access inspection structure

National Port Security System Status Reinforcement

Dual clustering and independent system configuration for stable port operation

Environment of manual process of port access control in domestic ports

Domestic port is controlled by human factor (security guard) and paper port pass

User inconvenience and port security problems coexist

Require efficiency of user convenient work process of port operation through improvement of port access control structure

Establishment of automatic verification of access basis

Require improvement of manual process of port operation and rapid port access inspection structure

Environment of manual process of port access control in domestic ports

Implementation of structure of Port access Approval management

Require improvement of manual process of port operation and rapid port access inspection structure

Jeju Port, Daesan Port, Masan Port

Gwangyang-Yeosu Port, Gunsan Port, Mokpo Port, Pohang Port, Donghae-Mukho Port

2008

2009

2010

2011

2012

National Port Security Plan TF setup and operation for conversion Plan to RFID-based port pass (Feb)

Decision of gradual expansion to nationwide port of RFID-based port pass

Jeju Port, Incheon Port, Ulsan Port, Gwangyang Port

Decentralized system to RFID-based port pass

Decision of gradual expansion to nationwide port of RFID-based port pass

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Main Features of PSS

- Encryption of registered data in RFID tag and access to RFID tag

- Security reinforcement with introduction of solution for prevention of private data leakage and data encryption

- Reflection of port security level on port access verification system

PSS National Operation Status

<table>
<thead>
<tr>
<th>RFID Access control System Installed Areas</th>
<th>Ministry of Oceans and Fisheries</th>
<th>PA Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youngsan Area</td>
<td>3 places of Masan Port</td>
<td>BPA 37 places</td>
</tr>
<tr>
<td>Gamma Port</td>
<td>+4 places of Pohang Port</td>
<td>+Private Operator 2 places</td>
</tr>
<tr>
<td>Donghae Port</td>
<td>UPA 8 places</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Private Operator 2 places</td>
<td></td>
</tr>
</tbody>
</table>

Reason of Personal Information Leakage

- Present employee
- Retiree
- Hacker
- Virus
- Customer DB Loss
- Other

Reason of Personal Information Leakage (Insider)

- Present employee
- Retiree
- Hacker
- Virus
- Customer DB Loss
- Other

Introduction Effects of PSS

- Port security reinforcement
- Port pass security reinforcement
- Personnel/Vehicle history management
- Identification reinforcement
- Increase of job efficiency of the officer

- Economic effect
- Reducing vehicle waiting time (20 → 5 seconds)
- Reducing personnel arrival/departure verification time (11 → 4 seconds)
- Reducing fuel (0.2 bil. won per year)
- Carbon emission reduction (75,000 kg per year)
- Personnel, increase work efficiency
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Disaster Recovery (DR)

- Preventing disruption of shipping and port logistics information process due to terror or disaster and realizing continuous operation

It is operation center of disaster recovery system for shipping and port logistics information established to prevent service disruption, secure data stability and ensure continuous job process of port logistics, preparing for catastrophe or cyber terror to break out over port-logistics information system that deals with 99% of national import/export logistics.

Institute

Providing marine-port-distribution info service through DR around the clock

Ministry of Oceans and Fisheries
- Busan Port-MIS
- POSI
- GCTS

Port Authority
- BPA (Port-MIS, Homepage)
- UPA (Port-MIS, Electronic tax invoice)
- YGPA (Port-MIS, Groupware)

Port Distributors
- EDI VAN service provider (KL-Net)
- Container terminal operator (PNC)

DR Progress Status

Necessary to Construct Stable Disaster Recovery System

More Deepening of dependency to Information system
- As work process through information is increased, port logistics will be stopped in case system is not available

Complicated Interface of Port Distribution Information Sys.
- Disaster recovery system is necessary to consider information interface among organizations as inter-connection of work process among related organizations, port authority and private logistics enterprise is more complicated

Insufficient Corresponding System for Disaster/Calamity
- In case of Disaster and Calamities, huge national damages can be brought including direct damage due to malfunctioning of port logistics process as well as indirect damage such as traffic chaos due to the malfunction

As work process through information is increased, port logistics will be stopped in case system is not available

Ministry of Oceans and Fisheries Disaster Recovery System and Construction: Port-MIS, GCTS, POSS

- Full Management of Center Starting from Port Authority and Logistics Enterprise Moving in
  - Sep. 2009: Construction of backup system of Port Authority and Logistics Enterprise Disaster Recovery System
  - Port-Logistics Information On-Line Service Introduction: SP- IDC, Port-MIS 2.0 application service, etc.

- Realization of Center Management Specialization and Full-Scale Port Authority and Logistics Enterprise Disaster Recovery System Move-in
  - Dec. 2011: Busan New Port Co., Ltd Disaster Recovery System Moving in
  - Jul. 2013: IPA/YGPA/UPA Disaster Recovery System Construction
Introduction Effects of DR

- Providing non-stop service of logistics information
  - With non-stop operation of port logistics information, Main center’s disaster recovery system 24 hours 365 days, stable service can be provided to the port operator with substitutive operation of disaster recovery system even though Port-Logistics information System is destroyed with each disaster

- Stability and Efficiency Improvement of operation process of disaster recovery system
  - Providing Disaster Recovery non stop service of disaster recovery system 24 hours 365 days
  - with sustainable quantification of management items, improving efficiency of outsourcing operation and maintenance work process through SLA establishment

- Reinforcement of Center’s reputation
  - Improvement of reliability through providing high quality service of Disaster Recovery System around the clock
  - Enhancing center’s technological potential and reinforcing its reputation for the public by making professional maintenance and repair enterprise support professional technologies for system Management stability and enhancement