21st Intermodal AFRICA 2019

Djibouti March 19th to 21st 2019

TOTAL SOFT BANK

TOTAL SOFT BANK LTD.

Stepping forward with Transportation Management System (TMS)

- **TSB introduction**
- **Company history**
- **Solutions TSB present**
- **CATOS system concept**
- **How the GPS , RFID , OCR enhance the operation forward**

Overview of TSB

Since 1988, **Total Soft Bank Ltd. (TSB),** has devoted to developing the ideal solutions for port and maritime industry, focusing on solutions for shipping, terminal, port community and simulator.

Office
- Head Office in Busan, Korea
- Global Networks throughout world
- *Regional Offices in Spain, Greece, Egypt, Hong Kong, Vietnam*
- *Joint Venture in Japan, Sales Agent in Taiwan and Colombia*

Human Resources
- HQ: Over 150 employees (Vietnam: 50, Greece: 10)
- 70% of employees in Development, R&D and Professional services

Qualification
- ISO 9001 certified and INNOBIZ certified
- KOSDAQ listed in 2002
  KOSDAQ: Korean Securities Dealers Automated Quotations
- Green technology certificate
- Software process quality assurance certificate Lv.2

Customer
- Over 90 marine terminals
- Over 53% world's container fleets

Overview of TSB

01 02 03 04 05 06 07 08

1988
- Establishment of TSB
- TSB Supercargo, CASP

1991
- Launching of TSB R&D Center
- Launching of Service Centers (USA, Japan, Malaysia)
- CATOS – Terminal Operation Solution

2001
- Launching of Joint Venture (USA, Japan)
- Listed at KOSDAQ
- Launching of Services Centers (Taiwan, Thailand, Spain & China)
- First Semi Automated Terminal in Korea

2011
- Logistics & Port Enterprise Solution
- Automation, Optimization, Simulation, KPIs
- Cloud Service Platform
- Corporate Service

Marine Terminal Solution Strategy

Integrated Total Solution in Maritime & Port Logistics

Marine Terminal
Maritime Terminal Operating System

Shipping
Ship Operation & Management System

Port Community
Port Community System

Simulator
Simulation System

Marine Terminal Solution Strategy

Solution

Port Authority
- Port Solution (PLUS)

Marine Terminal
- Terminal Operating System (CATOS, ESTOS)
- Inland Depot / Terminal (CARDOS in Cloud)
- General Cargo (MOST in Cloud)
- RoRo Terminal (ROTOS in Cloud)

Automation via Enterprise Solution
- Automated Deployment for Truck (CHESS)
- Automated Deployment for ARMG (ATCSS)
- Automated Deployment for RMG (RTGSS)
- Truck Booking System (TBS)
- Enterprise Integration (API Interface)
- Simulation & Forecasting (SimTOS)

Logistics
- Trucking (TMS in Cloud)
- Warehouse (WMS in Cloud)

Ocean Carrier
- Loading Computer (Supercargo)
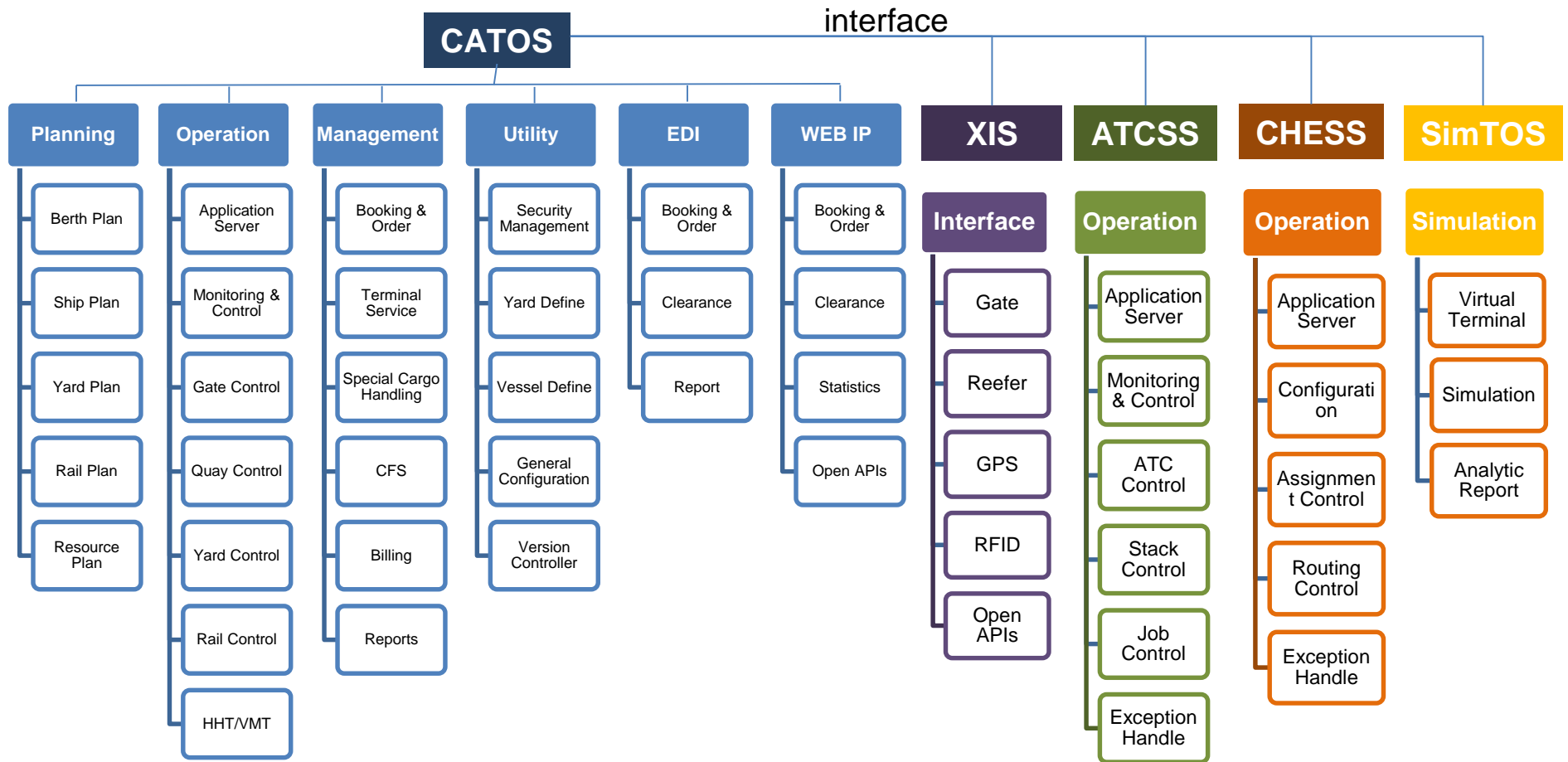- Stowage Planning (CASP)
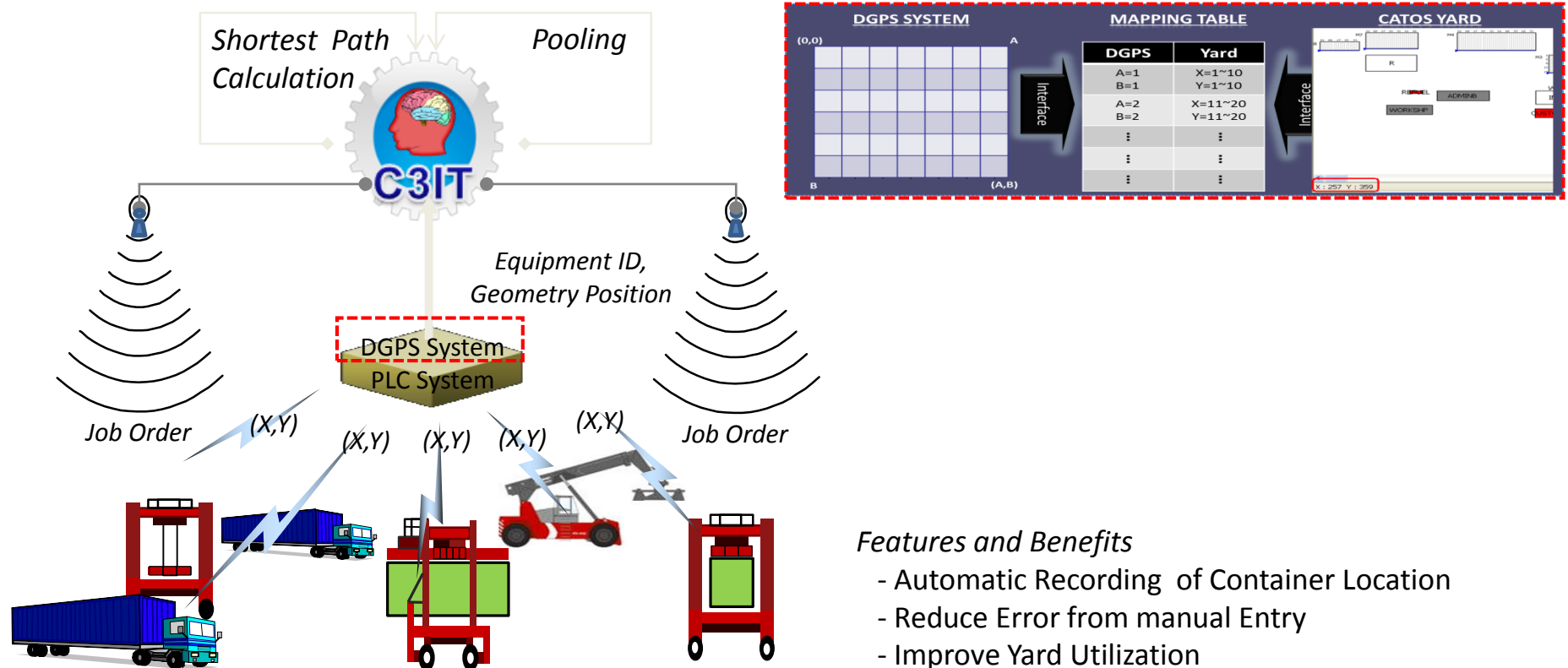- Ocean Management (Cloud CASP)

Simulation
- Crane Simulation

Marine Terminal Solution Strategy

CATOS Functions & Features

interface

CATOS

Planning
- Berth Plan
- Ship Plan
- Yard Plan
- Rail Plan
- Resource Plan

Operation
- Application Server
- Monitoring & Control
- Gate Control
- Quay Control
- Yard Control
- Rail Control
- HHT/VMT

Management
- Booking & Order
- Terminal Service
- Special Cargo Handling
- CFS
- Billing
- Reports

Utility
- Security Management
- Yard Define
- Vessel Define
- General Configuration
- Version Controller

EDI
- Booking & Order
- Clearance
- Report

WEB IP
- Booking & Order
- Clearance
- Statistics
- Open APIs

XIS
Interface
- Gate
- Reefer
- GPS
- RFID
- Open APIs

ATCSS
Operation
- Application Server
- Monitoring & Control
- ATC Control
- Stack Control
- Job Control
- Exception Handle

CHESS
Operation
- Application Server
- Configuration
- Assignment Control
- Routing Control
- Exception Handle

SimTOS
Simulation
- Virtual Terminal
- Simulation
- Analytic Report

1 Integration with DGPS

2 Integration with RFID (Yard)

3 Integration with RFID (Gate)

4 Integration with OCR (Gate)

5 Integration with OCR (Quay)

6 Integration with OCR (Yard)

To use DGPS information at the TOS, Data exchanging mechanism will be adopted. The integration of DGPS with the TOS using a real time data interface would ensure timely and secure information flow allowing containers to be tracked and confirmed as they move into, out of and within the facility

Shortest Path Calculation

Pooling

C3IT

Equipment ID, Geometry Position

DGPS System
PLC System

Job Order

(X,Y)   *(X,Y)*   *(X,Y)*   *(X,Y)*   *(X,Y)*

Job Order

Features and Benefits
- Automatic Recording of Container Location
- Reduce Error from manual Entry
- Improve Yard Utilization
- Speed up overall Yard Operations
- Prevent Unauthorized Move

DGPS SYSTEM / MAPPING TABLE / CATOS YARD

DGPS	Yard
A=1 B=1	X=1~10 Y=1~10
A=2 B=2	X=11~20 Y=11~20
⋮	⋮
⋮	⋮

Interface

X : 257 Y : 359

Case Study: Yard Truck Positing

Yard Truck Positing

- Last job position
- GPS integrated in Yard Truck VMT
- Yard Truck speed is taken into the calculation

GPS Module

- Integrate in the Yard Truck VMT
- With outdoor antenna

Data Transaction

- Transfer the yard truck position data to CHESS server every 5 seconds
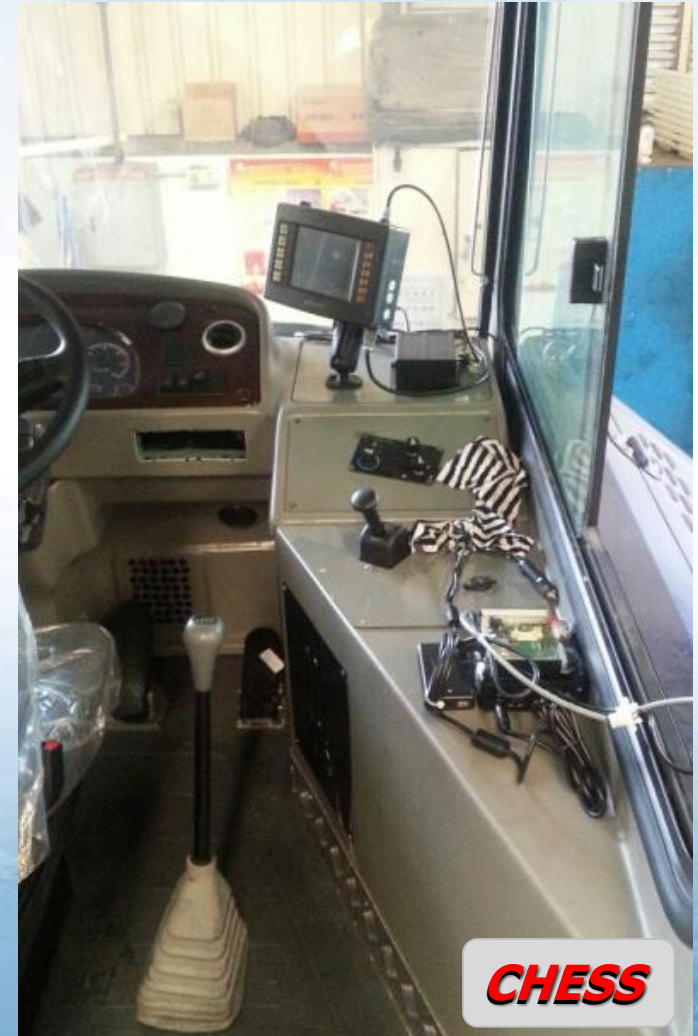
CHESS

Interface with PLC (DGPS) of Yard Equipment

1. The exact location and lock/unlock status of YQ's sp reader shall be traced.

2. Jobs are received from C3IT Server

3. RFID Tag
   - RFID Card is scanned by RFID Reader
   - Candidate of Jobs is decided

3. PLC Status of Crane
   - Crane movements are monitored by system
   - Job execution or none are identified by system

4. Job is completed by system and system trace the exact location of the container stacked.


Yard Crane Driver – Main Screen
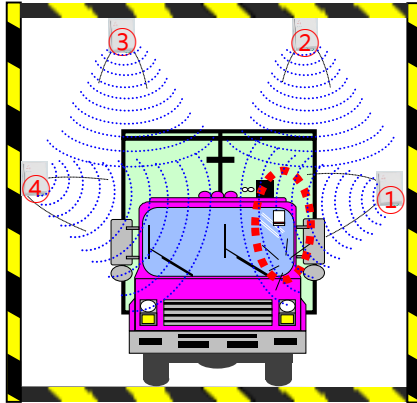
RFID-Portal

RFID-Portal: Install a frame equipped with RFID-readers at the entrance of a block. When a truck with its RFID tag through the frame, the truck arrival information is automatically transferred to TOS.
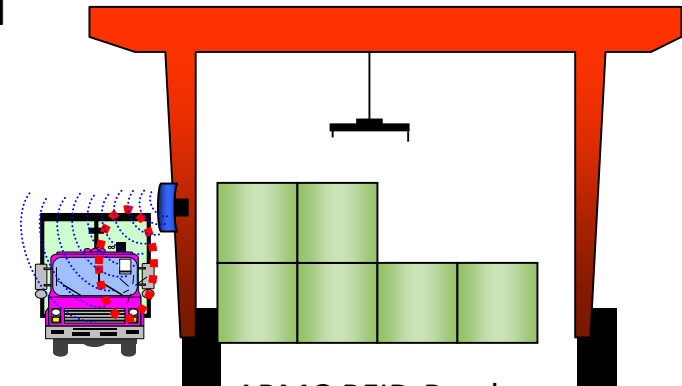

ARMG RFID-Reader

ARMG RFID-Reader: A RFID-Reader is installed on a leg of ARMG. When a trucker stops his truck at a Transfer Point and has his RFID Card read by RFID-reader, the truck arrival information is automatically transferred to TOS

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General Process
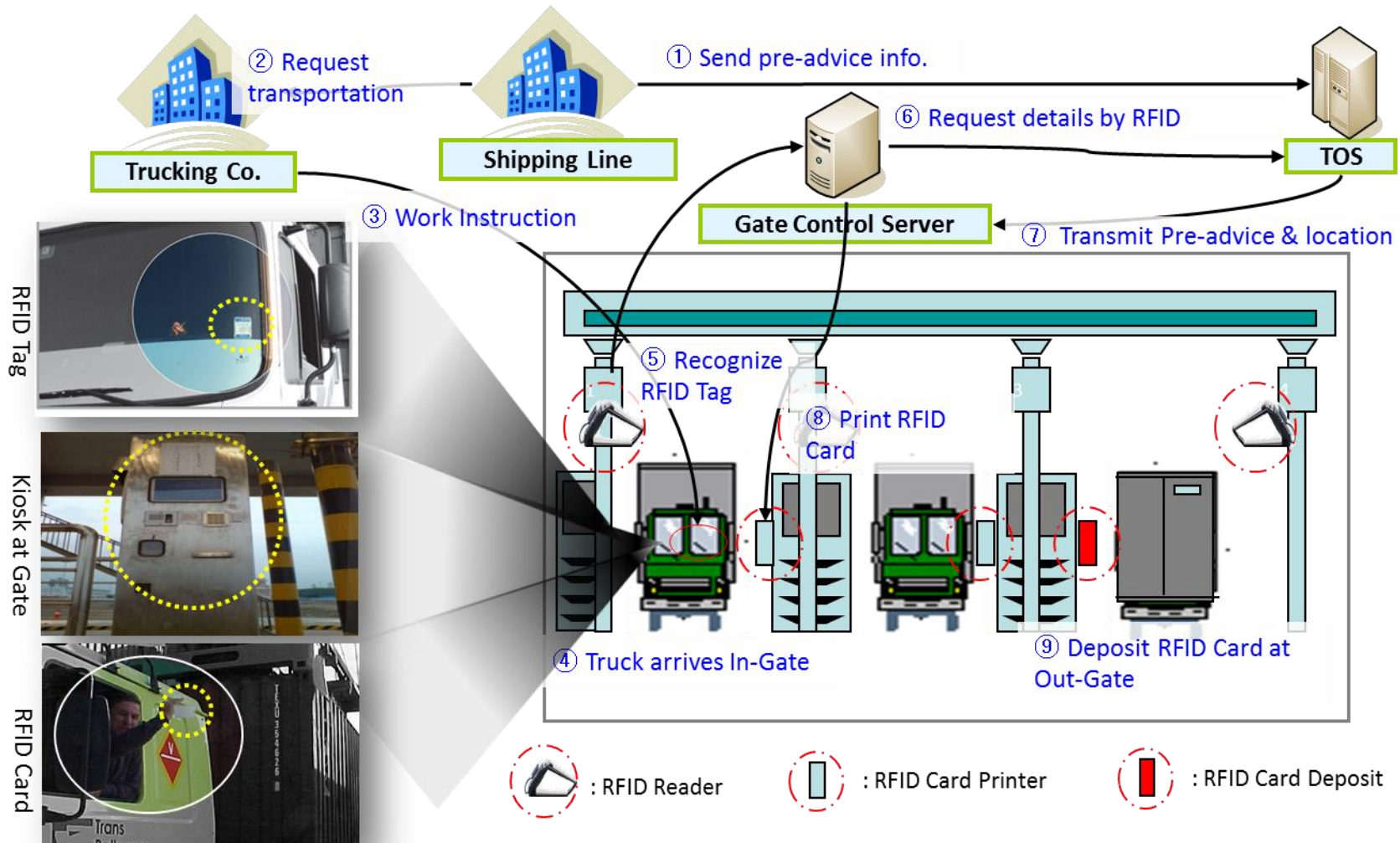
- *Application of RFID Tag and RFID Card*
  - ➤ RFID Tag for truck identification
    - – External Truck is recognized by RFID Tag.
    - – Pre-advice information is fetched from the system by using RFID Tag information which is read through the RFID reader.
    - – RFID reader of In-Gate compares RFID tag to pre-advice information.

  - ➤ RFID Card for Container/Job identification
    - – Writes container detail information to reusable RFID card at In-Gate.
    - – External trucker takes the RFID card and shows it to RFID reader of TOS
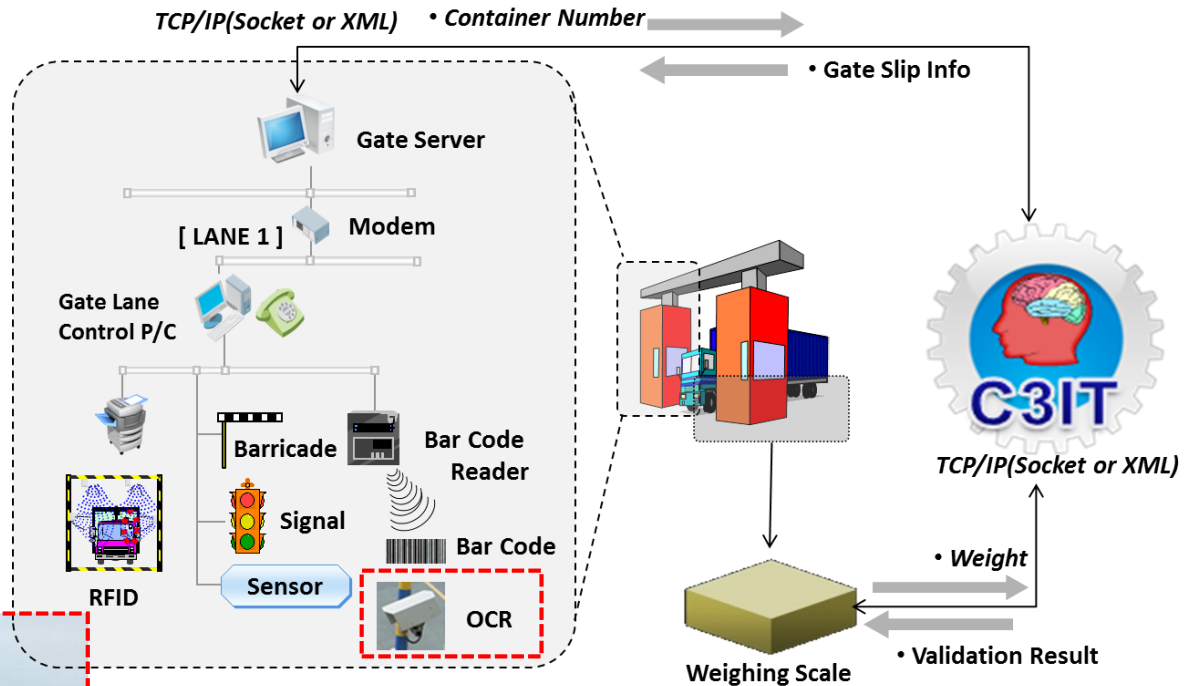   - – TOS works are initiated by RFID card
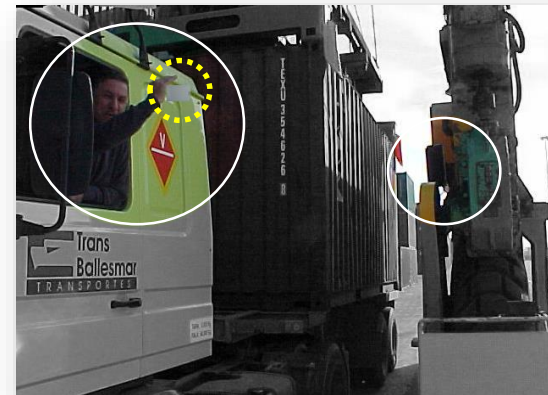
- Distribution of RFID Tag and RFID Card

  ➢ RFID Tag for truck identification
  - − All of external truck which is coming and going container terminal have to be issued RFID Tag
  - − RFID Tag is issued at Document Office in Container Terminal (or Port Authority)

  ➢ RFID Card for Container/Job identification
  - − When external Trucker arrives at In-Gate, he receives a RFID Card which is issued by RFID Printer in In-Gate
  - − When external Trucker arrives at Out-Gate after he worked at Yard, he deposits a RFID Card to Out-Gate RFID Machine

TOS Integration with OCR (Gate)

Gate Automation can come with Bar Code, RFID and OCR System. According to the degree of gate automation, TOS can provide from un-manned gate operation to partially automated gate with some data input by gate clerk. In order to fully automate the gate operation, COPINO, or Container Pick-Up Notification, is necessary
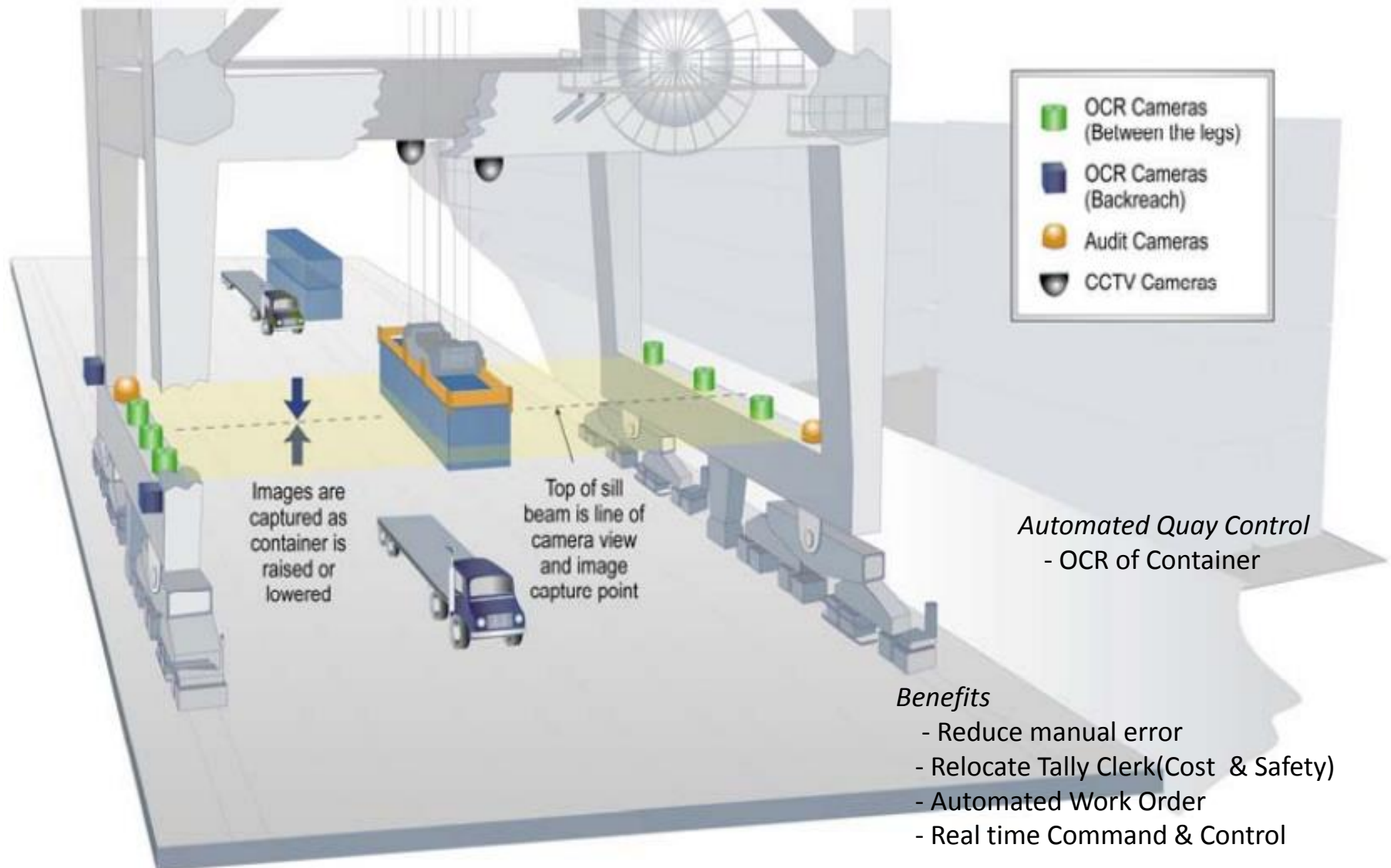
Automated Gate Control
- OCR Equipment's ID
- Remote Inspection

TCP/IP(Socket or XML)   • *Container Number*

• *Gate Slip Info*

Gate Server

[LANE 1]   Modem

Gate Lane Control P/C

Barricade

Bar Code Reader

Signal

Bar Code

RFID   Sensor   OCR

TCP/IP(Socket or XML)

• *Weight*

Weighing Scale   • *Validation Result*

Benefits
- Improve Throughput
- Lower Operation Costs
- Reduced Queue / Idling
- Remote Command /Control

OCR Cameras (Between the legs)

OCR Cameras (Backreach)

Audit Cameras

CCTV Cameras

Images are captured as container is raised or lowered

Top of sill beam is line of camera view and image capture point

Automated Quay Control
- OCR of Container

Benefits
- Reduce manual error
- Relocate Tally Clerk(Cost & Safety)
- Automated Work Order
- Real time Command & Control

TOS supports the Interface of yard automation to enable real time inventory and container tracking management

Automated Yard Control
    - OCR of Container

Impact
    - Reduce Handling Time
    - No Data Entry
    - Reduce Yard Queue
    - Increased Safety & Security

Overview of TSB

Latest Update

- Abu Dhabi COSCO Terminal (Abu Dhabi)
- Piraeus Container COSCO Terminal (Greece)
- Thessaloniki Port (Greece)
- NCTV Noatum Container Terminal (Spain)
- APL Terminal – KAO (Taiwan)
- Yang Ming Automated Terminal (Taiwan)
- Taiwan Ports Corporation - TIPC (Taiwan)
- Wan Hai Terminal (Taiwan, Japan)
- K-line upgrade (Japan 4 terminals)
- Gemadept Nam Dinh Vu (Vietnam)

- Corporate Deal with COSCO Port
- Corporate Deal with CMA/CGM (Under going)

- Maersk Group Stowage World wide Platform (CASP on Clouding system)
- APMT Terminal (South America)

- Over 80 marine terminals
- Over 53% world's container fleets

THANK YOU