

2024 TOC ASIA

# **DONGWON GLOBAL TERMINAL: EVOLUTION AND FUTURE DIRECTIONS IN PORT OPERATIONS**

**Soyoon Bae**

**Dongwon Global Terminal Busan  
Business Planning Team**

# **1. Process of Opening a New Port**

## **2. Terminal Status**

## **3. Future Strategies**

BACKGROUND BACKGROUND BACKGROUND BACK

# Professional Background



## Experience

'24. 04. ~ Present	DGT Business Planning Team
'22. 07. ~ '24. 04.	DGT Terminal Opening T/F
'21. 04. ~ '22. 07.	CMA CGM Korea Office

## Education

Bachelor's Degree in Naval Architecture and Ocean Engineering  
from Pusan National University ('11 ~ '15)

## Responsibilities

Profit and Loss Strategy  
Public Relations  
Disclosure

# Soyoon Bae

# EVOLUTION AND FUTURE DIRECTIONS IN PORT OPERATIONS

Dongwon

Global

Terminal

Busan

## 1. Process of Opening a New Port

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Business Environment

### Changes in Government Port Development Strategy



- Port of Busan: 7th largest container port in the world and 2nd busiest Trans-shipment Hub
- Mainly developed by the BPA(Busan Port Authority)
- North Port: Port functions are currently being reduced (Redevelopment into waterfront spaces, cultural venues, etc.)
- New Port: Handling over 70% of Busan's cargo volume based on cutting-edge equipment and systems

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Business Environment

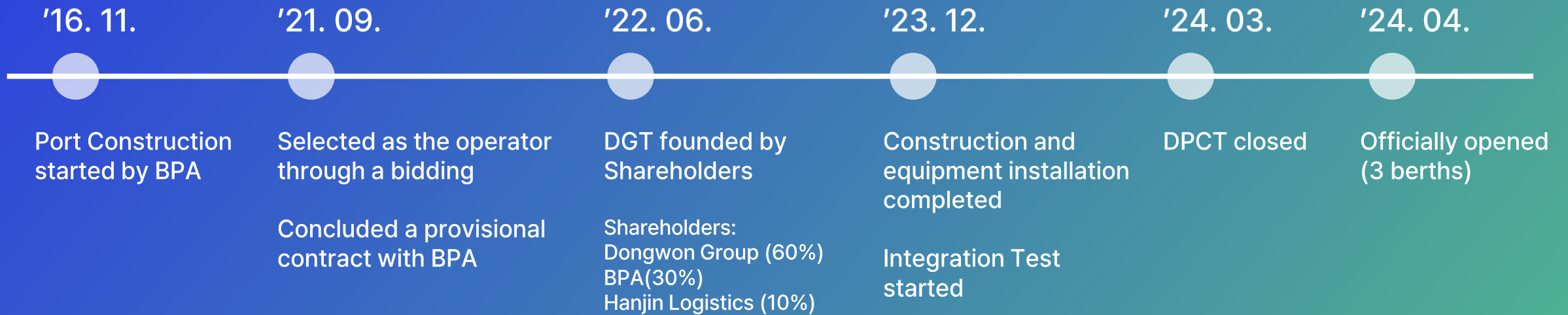
### Deciding Terminal Relocation to New Port



- As DPCT opened in 2002 as conventional terminal, it was one of the leading terminals in Busan North Port
- Due to the continuous capacity expansion of New Port, the limitations are as follows:
  - 1) Labor-intensive operating system
  - 2) Risk of safety incidents
  - 3) Reduction in handling volumes
  - 4) Increase in maintenance cost due to aging infrastructure
- In response to the changing environments, we decided to close DPCT and open a new terminal at New Port

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Key Milestones



# EVOLUTION AND FUTURE DIRECTIONS IN PORT OPERATIONS

Dongwon

Global

Terminal

Busan

## 2. Terminal Status



# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Facility Overview



6

2,135m

21m

1.4mn

100,000

4.5mn

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Automation Equipment



**Ship-to-Shore Crane**

- Double trolley type
- Seaside: Semi-automated (Remote)  
Landside: Fully-automated
- Manufactured by Hyundai Samho H.I.



**AGV**

- Automated guided vehicle
- Based on FMS and transponder
- 5 units per 1 STS (Including spare equip.)
- Manufactured by VDL and Hyundai Rotem



**ARMG Crane**

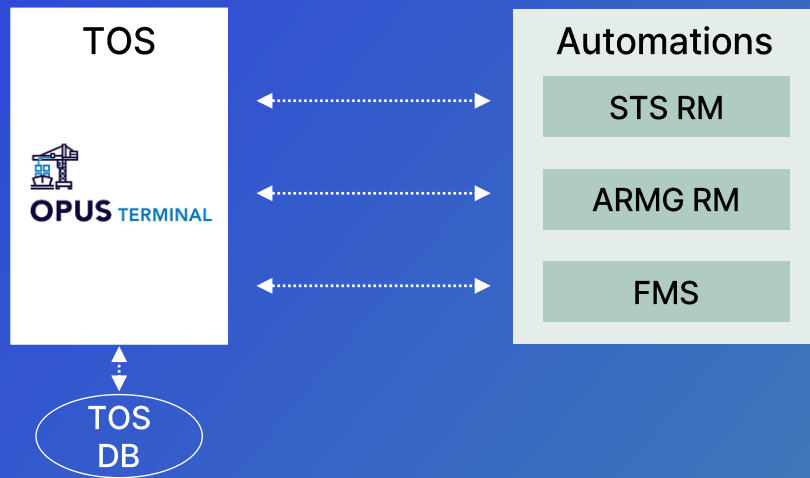
- Automated rail mounted gantry crane
- Fully-automated operation
- Rahmen type and cantilever type
- Manufactured by HJ H.I. and Doosan H.I.

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

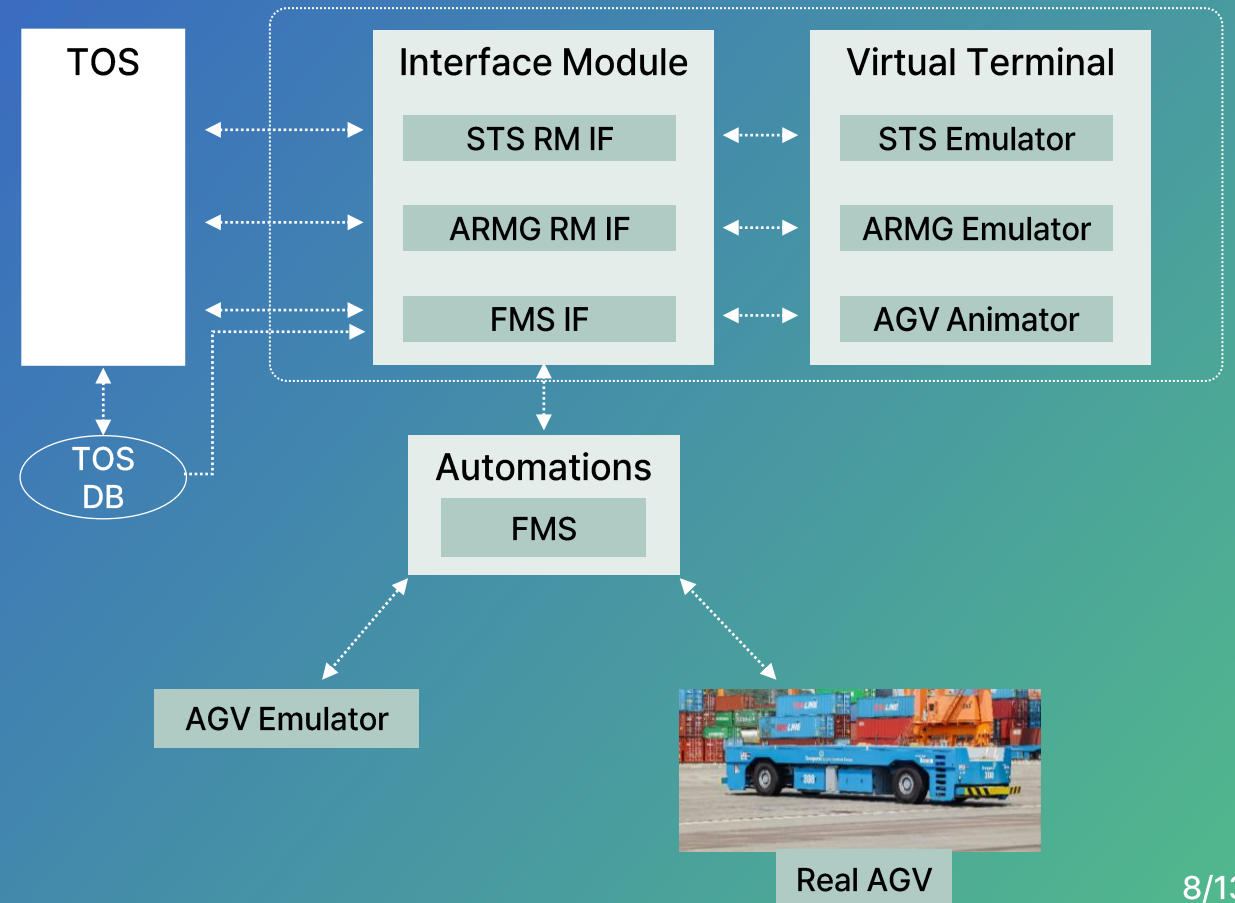
## Integration Test

- Digital twin allows us to simulate terminal operations in a virtual space
- Test enables operational verification and system stabilization

### Physical Environment



### Simulation Environment



# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Integration Test

- The hybrid testing involves running various scenarios and operations in the virtual environment while simultaneously operating real AGVs



Virtual terminal created by digital twin technology



Hybrid test using real AGVs

# EVOLUTION AND FUTURE DIRECTIONS IN PORT OPERATIONS

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## 3. Future Strategies

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Future Strategies

### Enhancing the Use of Eco-friendly Equipment: AMP(Alternative Maritime Power)



- Benefits
  - 1) Significantly lowers carbon emissions
  - 2) Minimizes noise pollution in port areas
  - 3) Reduces fuel consumption and cost for shipping companies



- Strategies
  - 1) Invest in infrastructure to support active use of AMP
  - 2) Collaborate with tech. providers and government agencies

AMP Location (17 AMPs in DGT)

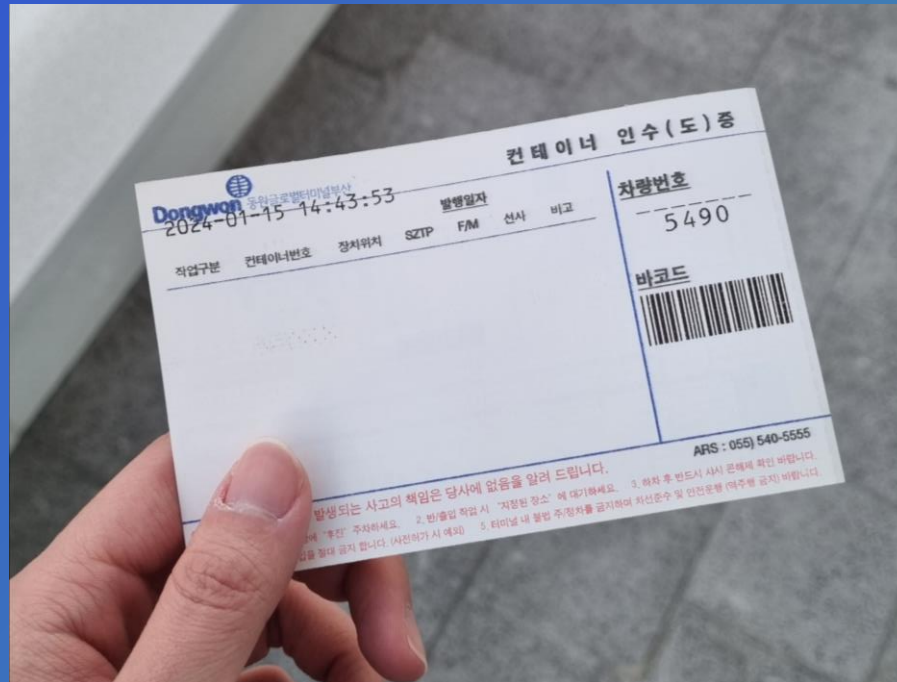
# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Future Strategies

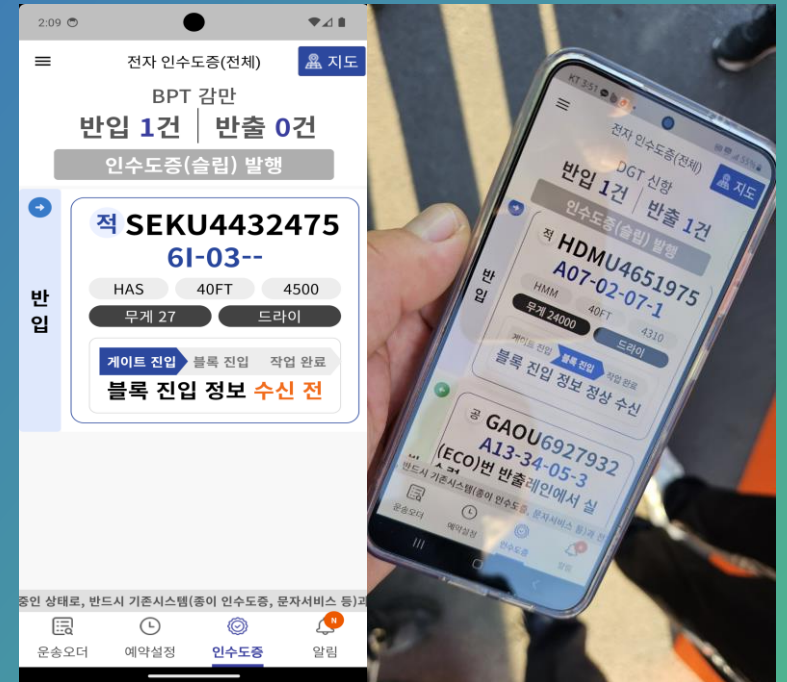
### Zero Paper Usage, Zero Waste Terminal: Implementing the E-Slip Method



Main Gate



Paper Slip (As-Is)



E-Slip (To-Be)

# DONGWON GLOBAL TERMINAL BUSAN DONGWON

## Future Strategies

### Block Terminal Project: Expansion to Jinhae New Port



- The development of Jinhae New Port started and the port plans to open in stages from 2031
- Participating as the operator of Jinhae New Port
- Objectives:
  - 1) Integrating DGT and Jinhae New Port to develop a single block terminal
  - 2) Continuously increasing degree of automation
  - 3) Increasing port productivity



**THANK YOU.**

**감사합니다.**

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