



Marine Terminal Management Training Program




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Charleston SC - April 25, 2006





Current and Future Role of Technology

in marine terminals





Agenda

- ▶ **Overview of Terminals**
- ▶ **Role of Technology**
- ▶ **Technology for the Operation**
- ▶ **Types of Technology**
- ▶ **Benefits of Technology**





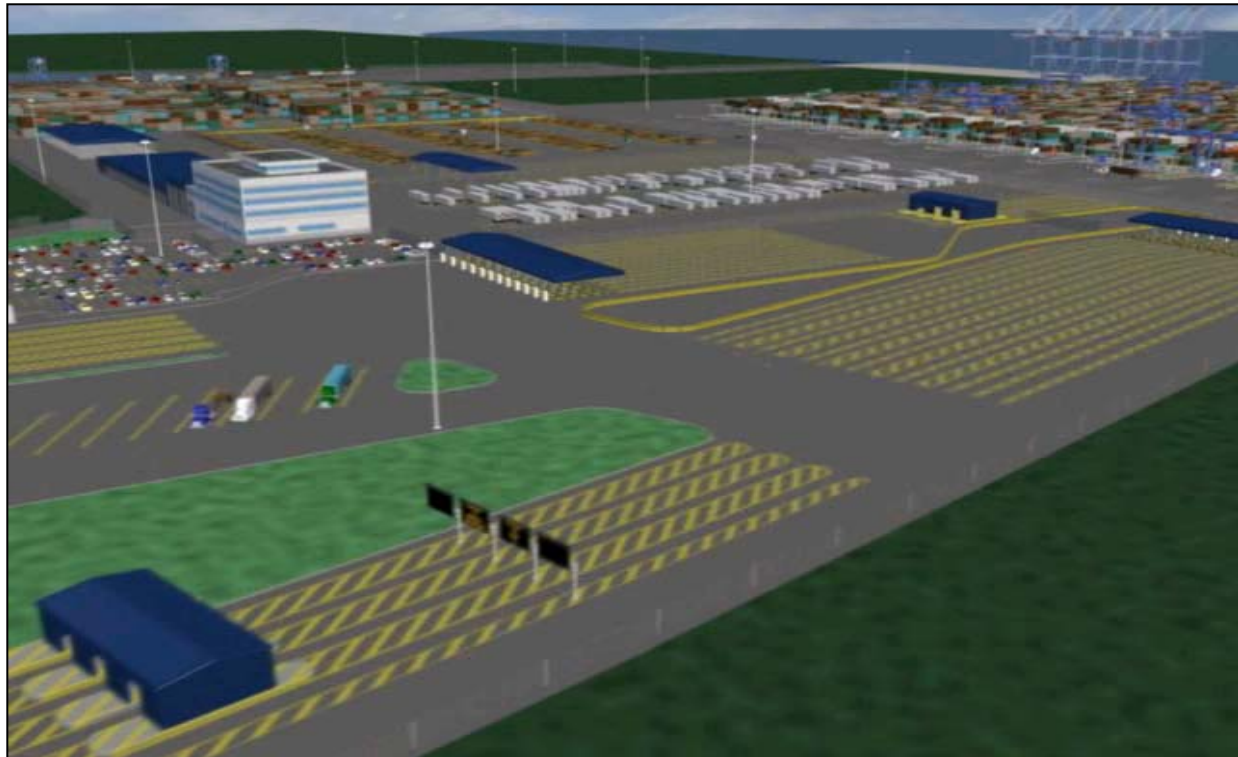
Today's Industry Environment

- ▶ World's trade with USA continues to grow
- ▶ USA ports have limited capacity to expand
- ▶ Existing terminal capacity will be exceeded by 2010 in most USA ports
- ▶ Double digit growth has been experienced in many ports
- ▶ Double digit growth is expected to continue



Updating Operations

- ▶ Opportunity to improve traditional method of container handling
 - Greenfield sites
 - Overhauling/Retrofitting existing terminal facilities



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Terminal Capacity

- Stacking Density – Increase terminal capacity
 - Current:
 - US East Coast
3,500
 - US West Coast
4,200
 - Europe & Asia
8,000+
 - Future – Dependent on technology and stacking practices



Role of Technology

■ Safety

- Remote operations will relocate traditionally high risk jobs to safer working environments
- Segregation of on-terminal traffic provides for increased terminal safety
- Average Lost Time Accident costs
 - \$19K National (all industry)
 - \$29K Longshore



Role of Technology

■ Security

- Surveillance
- Facility Access Management
- Radiation Portal Monitoring





Role of Technology

■ Operations

■ Production/Costs

- Marine Productivity
- Truck Turn Time – Reduction through advanced notification

■ Equipment / Maintenance

- Tracking
- Remote Diagnostics
- Remote equipment reset.





Role of Technology

■ Environmental

- Terminal efficiencies will reduce trucker idle time, thus reducing emissions
- Electric vs. diesel wharf and yard cranes
- On-dock rail will take trucks off the road each year





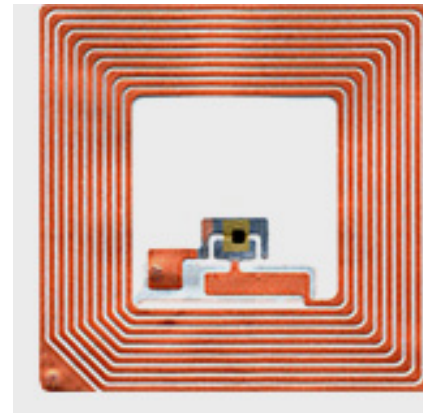
Finding Technology that Fits

1. Visit/View Best Practices - technology in use
2. Set Goals and Objectives
3. Create Operational Functional Specification
 - ▶ Drives the IT Specification
 - ▶ Drives Power Equipment Specifications
4. Simulate Operation
5. Procure Equipment
6. Develop and Train staff



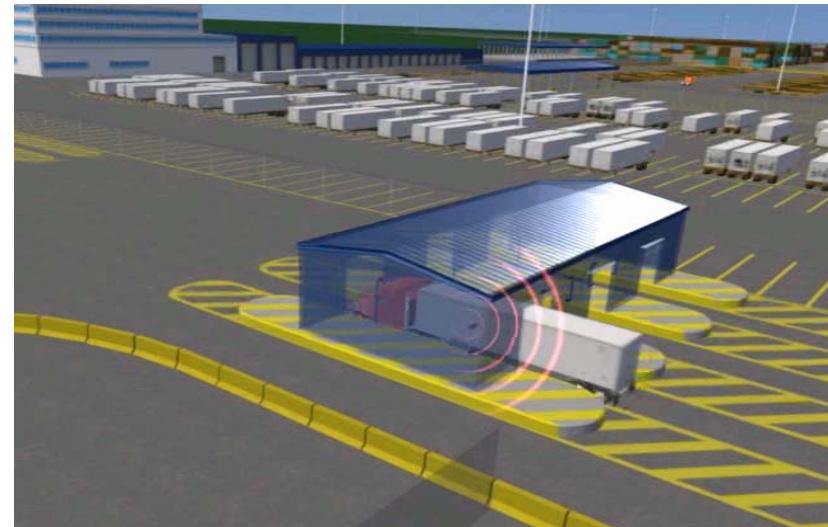
Radio Frequency Identification (RFID)

- ▶ RFID tags may be used in order to identify Over-the-Road trucks prior to arrival at the facility
 - Combination of Pre-arrival Information and Automated Yard Machinery can significantly reduce turn times
- ▶ RFID tags may also be used for matching appointments to truck visits.
- ▶ RFID tags may be used to identify container transactions at various points within the terminal yard
 - Pinpoint yard problem areas
 - Ensure truck visits comply with instructions
 - Less miscellaneous yard cleanup



Optical Character Recognition (OCR)

- ▶ OCR cameras in the Gate Portals
- ▶ OCR images may be matched with RFID numbers and validated against an appointment.
- ▶ OCR is capable of capturing the container and chassis identification numbers.



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Security System

- ▶ Security System should be responsible for access and surveillance coverage (CCTV)
- ▶ Security System is also responsible for points of entry (gates)
- ▶ Security System may interface with Vehicle System to determine appropriate drivers/operators
- ▶ Time checks in and out of term



Vehicle System

- ▶ Vehicle System incorporated in all Container Handling Equipment
 - Vehicle System incorporates the use of DGPS
 - Vehicle System interfaces with TOS for container position updates
 - Vehicle System interfaces with the TOS in order to receive orders for container movement



Stack Operations

▶ Rail Mounted Gantry

- Design – varies according to simulation results and operational needs
- Stack Density – simulate in order to determine design efficiency and proper size
- Remote Operation



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Benefits of Technology

- ▶ Increase throughput per acre
- ▶ Allows Management team to be more Informed through use of improved, real-time information flow
- ▶ Improve terminal operations performance by limiting variables (creating consistency)
- ▶ Technology is not successful without the right people!





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A Vision for the Future
In Hampton Roads and Around the World
Thank You



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