



Marine Terminal Management Training Program

**The Positive and Pervasive Role of IT –
Enhancing Management and Operational Efficiencies
Technology Options**



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Introduction

- Technology is an essential part of managing and running a container port / terminal.
- A wide variety of options are available to terminal management and IT management:
 - Technologies
 - Products
 - Vendors
- What's best for your terminal?
- How do you decide?

The Role of Information Technology Role in today's modern container terminal?

➤ Manage the Business

- Administrative Systems (email, word processing, spreadsheets, presentation tools, PowerPoint, etc.)
- Financial Systems & Human Resource Systems
- Sales / Marketing Systems (PIERS, Lloyds List, Compair Data)
- Security / Access Control / TWIC

➤ Run the Operations

- Inside the Terminal
- Outside the Terminal

Run the Operation – Inside the Terminal

➤ Terminal Functions

- Gate Systems
- Terminal Operating Systems (TOS) - Yard & Vessel

➤ Terminal Technology (examples)

- OCR
- RFID
- DGPS

➤ Vendors (examples)

- CAMCO Technologies – Gate Systems
- Hi-Tech Solutions – OCR / Image Processing



CAMCO TECHNOLOGIES



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Terminal Automation - Areas of Concentration

➤ Gate / Pre Gate

- Pre advice / appointment systems
- Web portals / appointment systems
- Gate pedestal
- OCR
- Driver ID Card Readers
- Fully integrated systems – GEM

➤ Yard

- Automated terminal equipment
- Equipment monitoring (reefer temperature, CHE fuel levels, tire pressure, etc.)
- Container Optimization (Allocation filters, Simulation tools, etc.)

➤ Vessel

- Limited, primarily crane stability and positioning tools
- Currently mainly EDI (stowage plans, load lists, discharge lists)

Gate Systems

- Many Gate System Vendors offering a variety of applications
- All use basically the same technologies
- The Vendors
 - TOS Vendors (NAVIS, TideWorks, RBS, JADE, etc.)
 - Specialist Vendors
 - ◆ Embarcadero Systems Corporation
 - ◆ TideWorks GateVision
 - Technology Vendors
 - ◆ OCR
 - ◆ Pedestals
 - ◆ Cameras
- Gate Entry Management (GEM)



Gate Entry Management (GEM)



What does GEM do?

- Provides trucking companies with web interface tool to:
 - make time-slot bookings.
 - ensure data for exports and imports is "clean" before truck arrives at the terminal.
- Provides integration platform linking:
 - AM Radio
 - Portal OCR technology (SAIC)
 - Pedestal technology (LA King)
 - Terminal operating system (NAVIS or CERES)
 - Transponder technology (TransCore)



The Companies - Terminal Operating Systems (TOS)

- Carriers / Terminal Operating companies began developing for own use in the late 1970s
- First commercial product introduced 1988
- First versions nothing more than tools to record yard and vessel activities, provide reports and communicate activity.
- Later versions introduced planning and productivity modules
- Current versions offer efficiency tools for container stacking and yard planning / routing.
- Latest versions offer complex integration tools for gate
- Automation of cargo handling equipment
- Operations simulation

Standard TOS Architecture

Graphical Container Planning, Monitoring and Control System

- Operations Management and Control, Graphical Planning, Management, Automation, CHE Interface
- Main Vendors
 - NAVIS – SPARCS
 - TideWorks – Spinnaker
 - RBS - TOPX

Foundation System

- Container Data Processing, Break-bulk Data Processing, Vessel Process, Truck Processing, Billing, EDI, Reference Data
- Leading Vendors
 - NAVIS – EXPRESS
 - TideWorks – MainSail
 - RBS - TOPO



TOS Systems – Vendors

Vendor	Product	Comment
Advent Inc.	Terminal Management Systems (TMS)	Offer source code
COSMOS N.V.	Various Modules	Limited US Experience
CyberLogitec Co. Ltd.	OPUS	Subsidiary of Hanjin
Trans-I Technologies	TransTerminal	Not Actively Marketing
JADE	JadeMaster	New Zealand
NAVIS	Express & Sparcs	Market Leader
Portek	Container Terminal Management System	Missing some US Requirements
Realtime Business Solutions Pty.	TOPO & TOPX	Innovation Leader
TideWorks Technology	Mainsail & Spinnaker	Part of Carrix / SSA Terminals Company
Total Soft Bank Ltd.	CATOS	Experienced Vendor

TOS Complimentary Technologies

➤ Satellite Telemetry

- Container Position Detection
- Vehicle Location Tracking
- Fuel Monitoring and Refuel Management

➤ RFID - Radio Frequency Identification

- Technology based on radio waves.
- A reader communicates with a tag, which holds digital information in a microchip.
- The tag picks up signals from and sends signals to a reader.

➤ OCR - Optical Character Recognition (OCR)

- The process where a scanner reads printed characters
- The software interprets the number and passes to a computer application
- Some Common Applications



The Technologies OCR (cont)

- ▶ Many vendors: Hi-Tech, CAMCO, etc.
- ▶ Technology becoming common place around the world



Crane OCR



Gate OCR



Rail
OCR

TOS Complimentary Technologies

➤ Wireless LANs

- Handhelds
- Belt Printers
- Vehicle Mount



➤ GPS - Global Positioning System & DGPS - Differential Global Positioning System

- Applications Include: Container yard location, Yard equipment location (straddles, RTGs, RMGs, hostlers, etc.), Truck / Cab location
- Vendors include: Savcor – Container Positioning Technology, SAIC



Automated Terminals

- HHLA – Container Terminal Altenwerder, Germany, CTA
 - Hamburg Port Consulting IT Group
 - Production since 2003
 - Terminal Automation
 - Crane “drivers” in Kitchen
 - Terminal Operating System - TERMINALSTAR
 - Cargo Handling Automation / Advancements
 - Laser / Cameras
- APMT – Norfolk, VA

Run The Operation – Outside the terminal

➤ Off Dock Yards

- Primarily used for empty containers or chassis.
- Frees up storage space in terminals for loaded moves.
- Critical Success Factors -Real-time integration with ocean carriers and marine terminals operating systems.

➤ Chassis Pools

- Multiple Vendors: DCLI, TRAC Leasing, OCEMA CCM
- Pool results have been very successful.
- Increased equipment utilization.
- Decreased chassis fleet size.
- Freed storage space for other equipment
- Critical Success Factors: Strong IT systems to track activity

Run The Operation – Outside the terminal

➤ Virtual Container Yards (VCYs)

- AKA Street Turns or Street Interchanges
- Most current programs for international cargo are port sponsored (Oakland, LA/LBC, Virginia, NY/NJ).

➤ Traffic Mitigation Fees / Extended Gate Hours

- PierPASS is a Traffic Mitigation Fee.
- Generated a forum for other port-wide initiatives such as RFID Truck Tag Security Program and TWIC Testing

➤ Truck Appointment Systems

- Seen as way to comply with environmental legislation to reduce truck engine idle time.
- Programs at Ports of Vancouver, Oakland, Los Angeles, Long Beach and Napoleon Yard at New Orleans. Coming in NY/NJ
- Motor carriers prefer a single port-wide system over multiple systems.

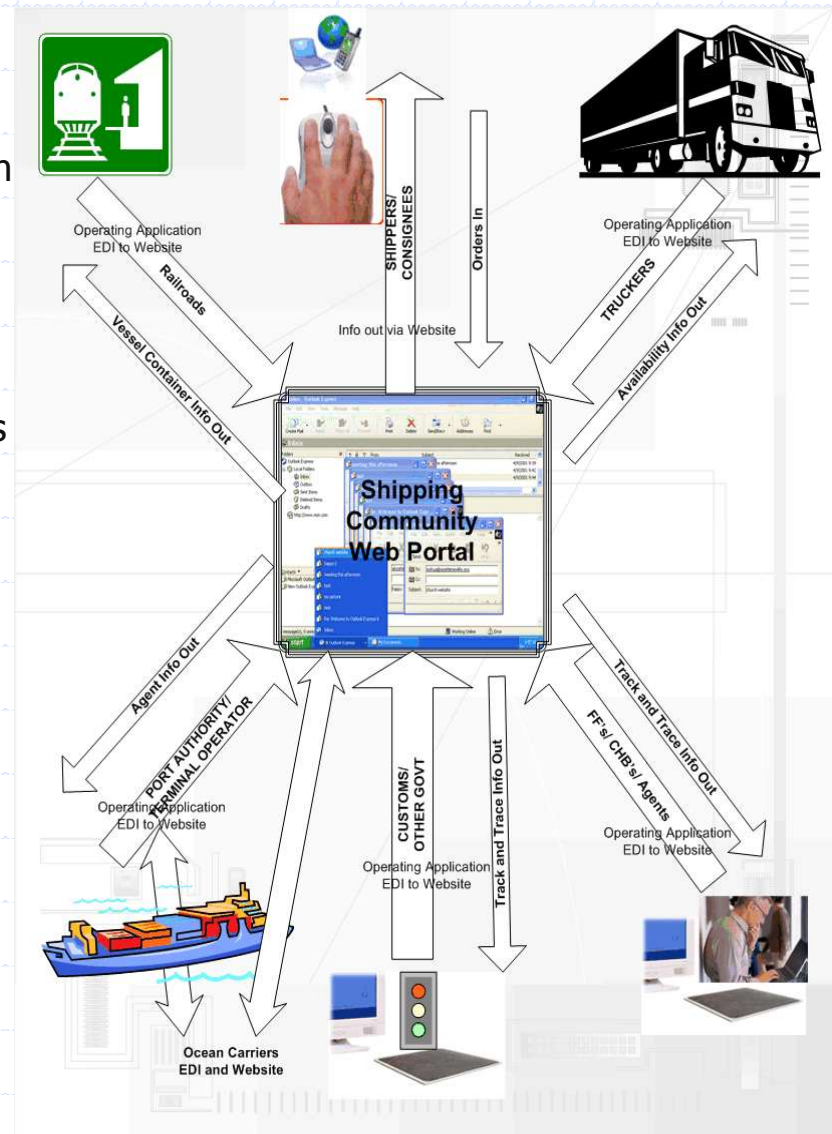


The INTERNET

- A world wide electronic network of computers with the ability to communicate with one another.
- Common Internet applications include:
 - Truckers viewing queues at terminal (web cameras)
 - Trucker appointments
 - Trucker delivery information
 - Cargo availability
 - Shipper inquiries

Port Community Systems

- A web portal designed to facilitate information flow between parties.
- Requires a powerful EDI engine to facilitate data exchanged between parties.
- Web based inquiry and update tools for truckers, freight forwarders, brokers, shippers and consignees.
- Managed by the port authority or third party.
- Critical Success Factors:
 - Up front Port Community commitment a MUST.
 - Requires participation by all major stakeholders.
 - Single web site for port wide initiatives (PierPass, Trucker Registration, etc.).
 - Not for profit but self funding.



What's best for your terminal?

➤ The Good News and The Bad News – You have OPTIONS

- Vendors
- Products
- Services
- Technologies

➤ Ask Yourself

- What Technology is appropriate for my terminal?
- What Vendor is appropriate for my terminal?
- Do we have an internal IT Staff? And what are their capabilities?

How do you decide?

- Look at Technology like any other business issue.
- Involve all the stakeholder groups in the process.

➤ Gather Requirements

➤ Prioritize Requirements

➤ Evaluate Objectively

#	Area	Requirements / Feature	Weight: 1=Optional 2=Nice to Have 3=Absolutely Required	Vendor 1	Vendor 2	Vendor 3
1	WEB PORTAL	Provide configurable access by User Group, Security Role, and view or update status.				
2	WEB PORTAL	Allow trucking company (dispatchers) to make trucker appointments to pickup or drop-off a container.				
3	WEB PORTAL	Create ad-hoc appointments for unscheduled trucker arrival				
4	WEB PORTAL	Allow Line users to assign a trucker to a freight or exam container.				
5	WEB PORTAL	Provide an interface to remove container holds.				
6	WEB PORTAL	System shows holds for each of the following categories: Customs, USDA, Freight, Demurrage, Carrier				
7	WEB PORTAL	Allow users to get terminal specific information such as contact information, directions, local rules.				
8	WEB PORTAL	Ability for User to select parameters for automatic email, fax, or SMS of container notification changes.				
9	WEB PORTAL	Provide daily message to the users				
10	WEB PORTAL	Provide configurable system notifications				
11	WEB PORTAL	Allow users to identify and pay demurrage or guarantee demurrage fees				
12	WEB PORTAL	Allow users to identify and pay or guarantee tariff fees for terminal services.				



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Thank You



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