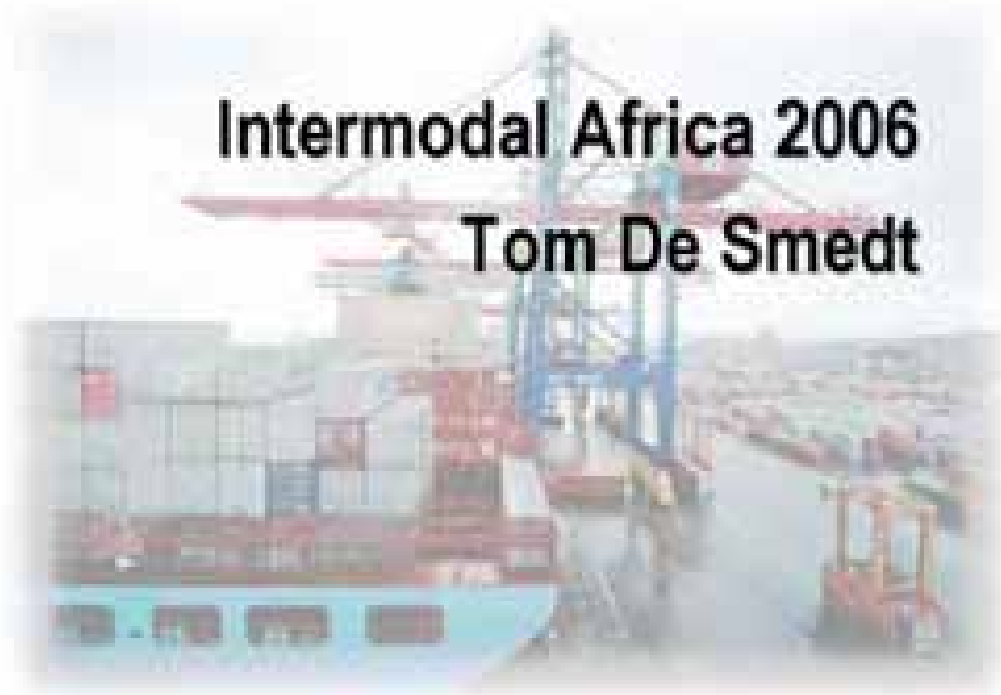


Take the Fast Lane

Technological Advancements in Container Terminal Management

Intermodal Africa 2006

Tom De Smedt



COSMOS

Presentation Overview

- Introduction
- Container Terminal Operating Systems
- Evolving and new technologies for container terminals
- Process optimization
- Conclusion



Container Terminals: a fixed asset business



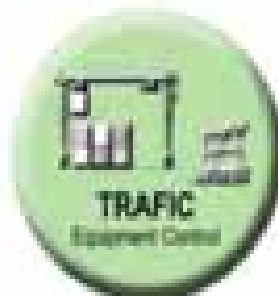
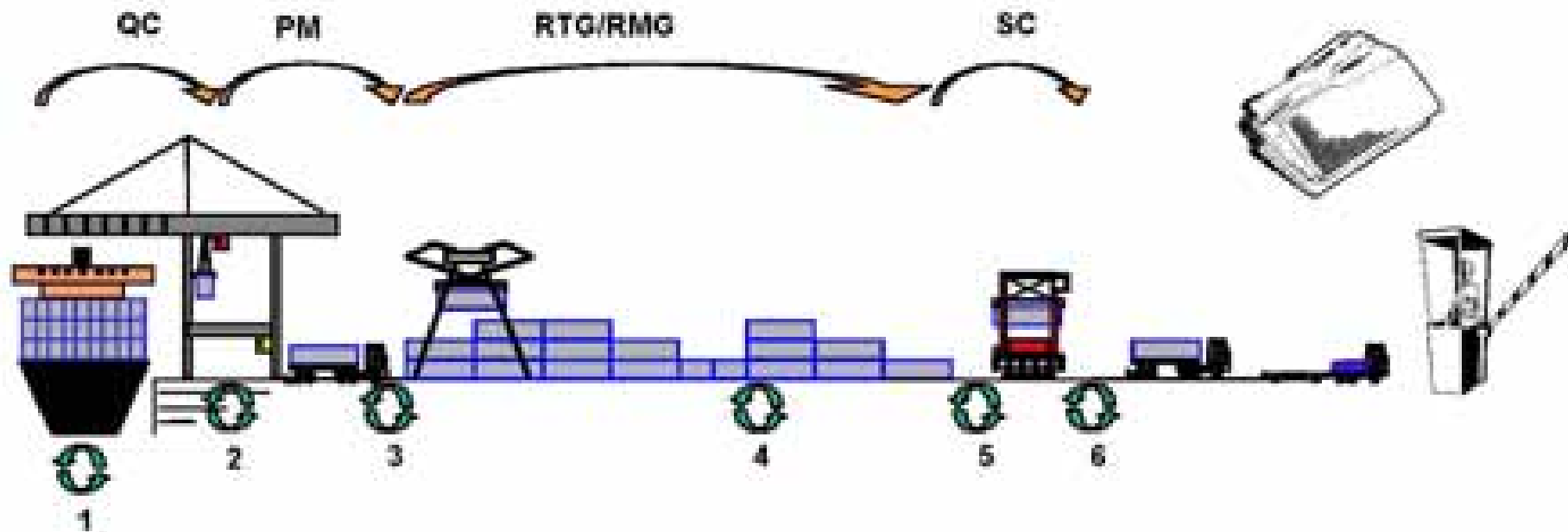
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- Quay Cranes
- Yard
- Container handling equipment
- People
- Buildings
- Infrastructure
- ...

Efficient management of resources improves revenue



Container Terminal Processes



Cosmos Proven Solutions



COSMOS

Evolving and new technologies for container terminals

Not advisable

Business
Objectives

Align technology
with business

Technology

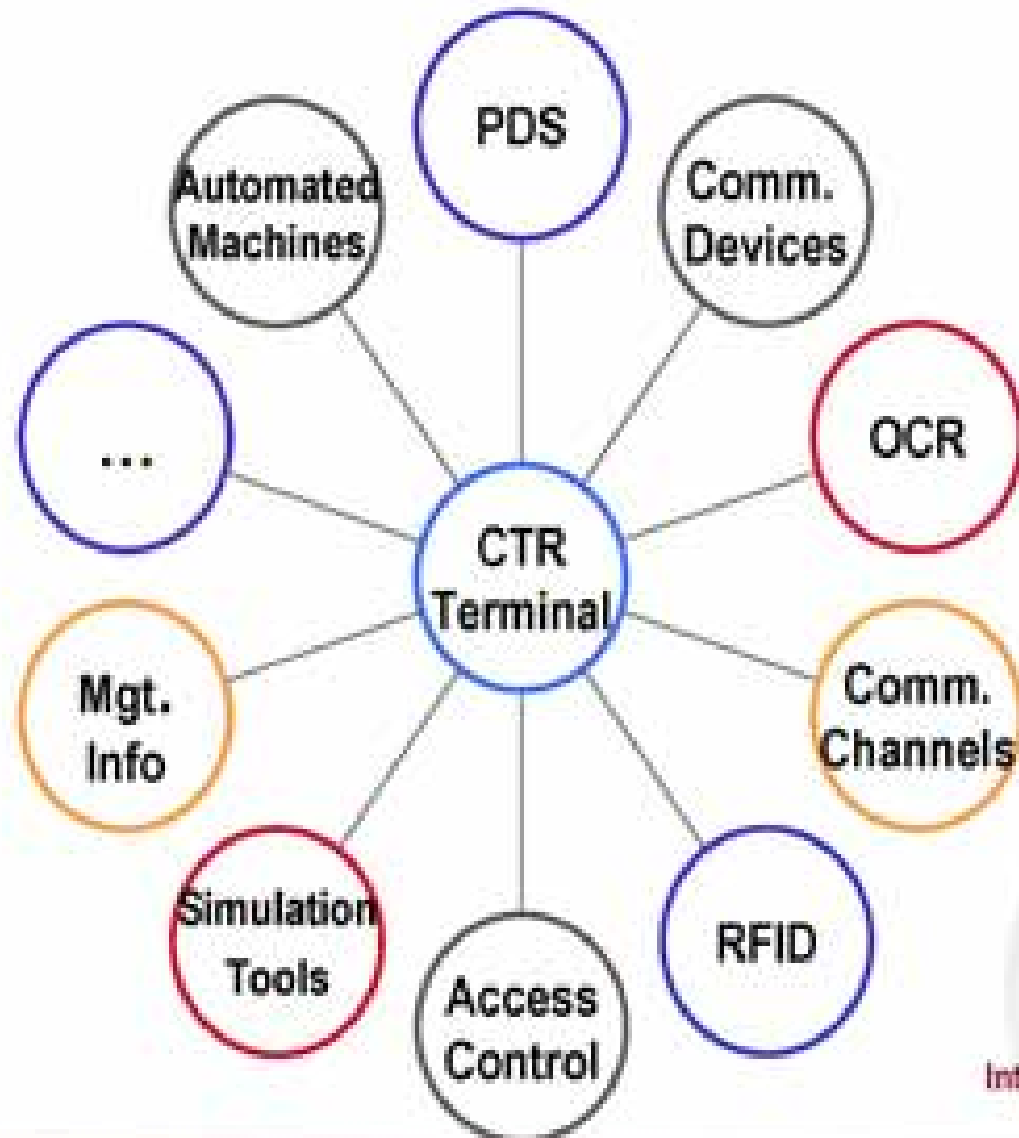
Preferred



Evolving Business Objectives

- 1 Security: access control, ISPS,...
- 2 Safety: port workers, external parties
- 3 Measuring Performance: Management Information Systems, dashboards, KPI's
- 4 Automation: reducing manpower

Evolving Technology

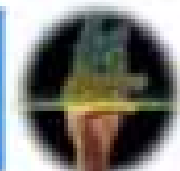
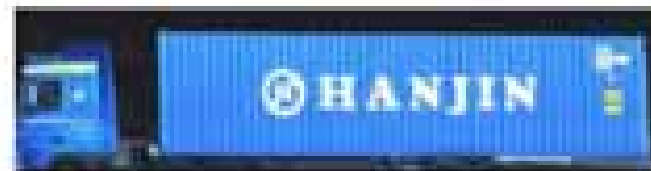


Gate processes: access control, images, RFID and OCR

- Security** Check & and verify driver's ID: chip card, biometry
Pictures of vehicles, drivers...
- Safety** No need for gate checkers
Total logistic chain, track and trace
- Automation** Trucks and containers registered automatically: OCR and RFID

Access control

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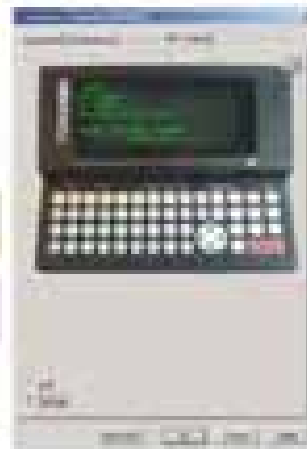


Communication devices

- **Security** Eliminate need for voice communication
- **Automation** Send system generated instructions to drivers
Receive real-time input from tally men, reefer mechanics...



- **Security**
- **Automation**



Position Detection Systems: Eliminate phenomenon of lost boxes

Safety

Eliminate need for yard inventories = no need for pedestrians checking boxes
Increased driver comfort: button less operations, guidance

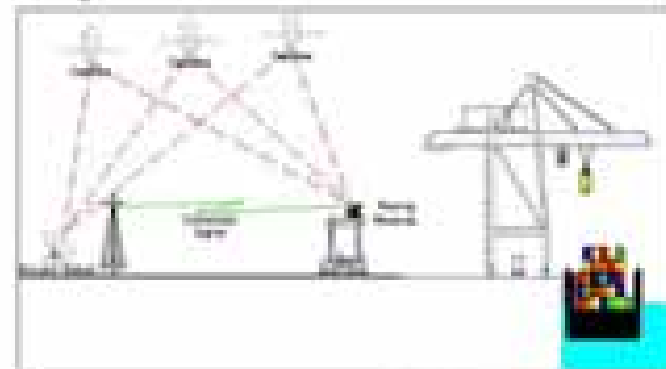
Automation

Better planning of equipment, because of real-time position detection
Make positions available more quickly
Verify actions performed by human drivers

Security

Cost

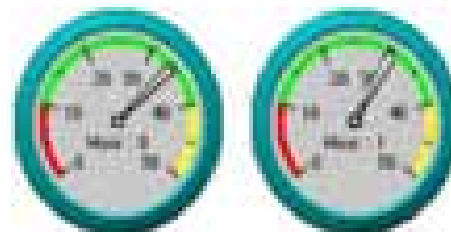
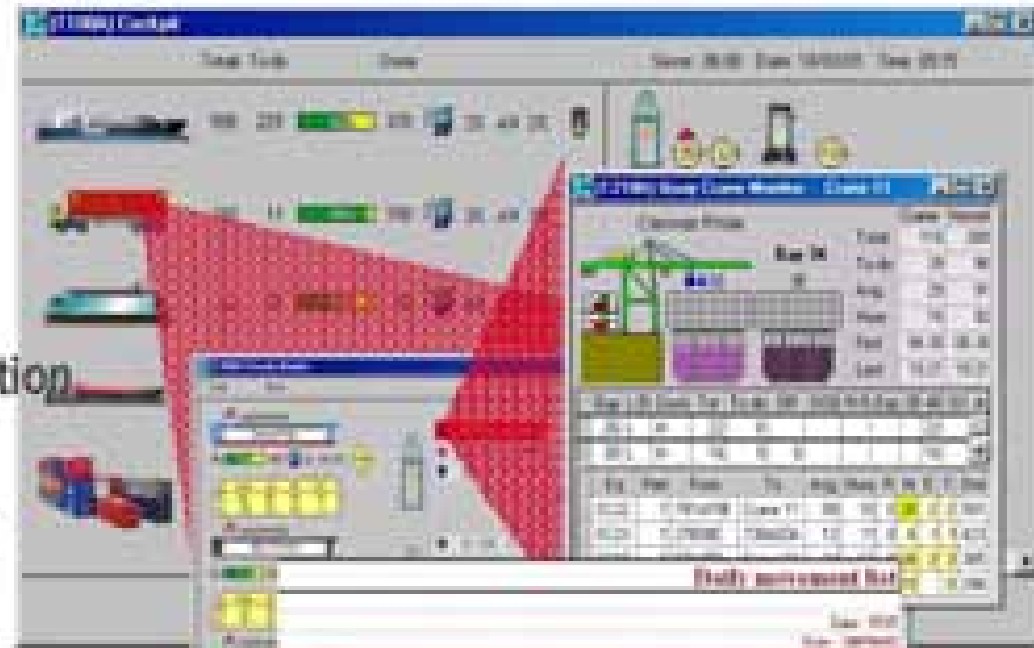
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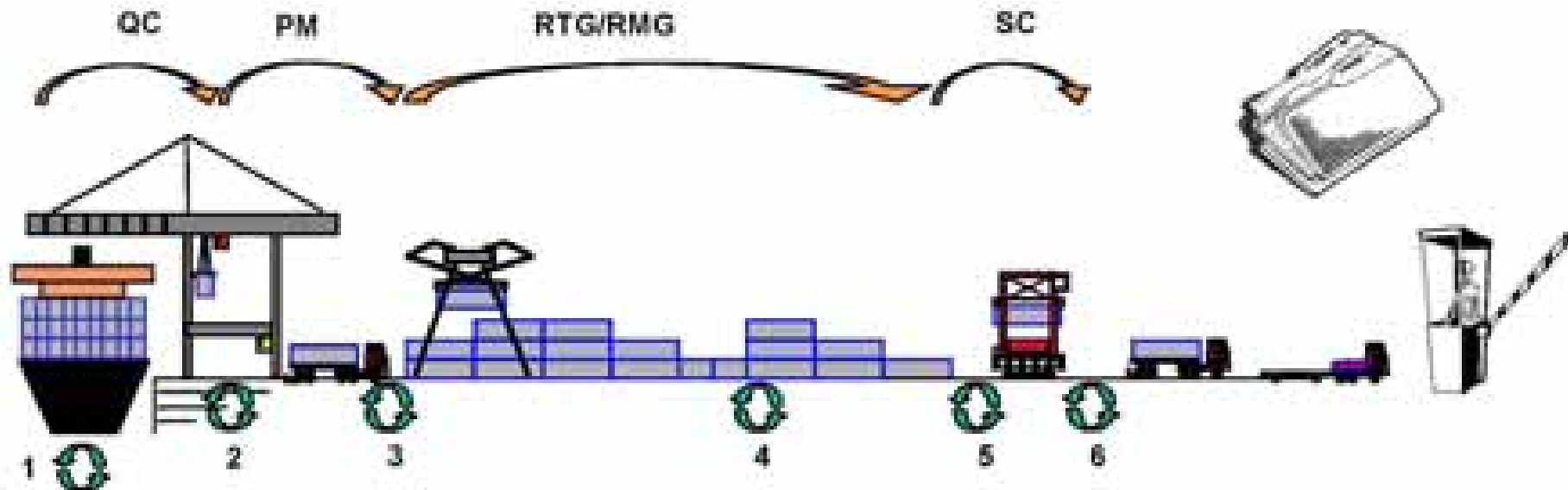
Management tools: monitor, report

MIS

- **During Operations:**
Control and intervene
 - Need for real-time information
 - Dashboard
 - Management by exception
- **After Operations**
 - Reports: printed, electronic format

A printed report document with a red header bar. The report contains multiple columns of data, likely representing a list of items or transactions. The text is small and difficult to read, but the layout is organized into a clear table structure.

Process overview and sub process optimization



PDS

Comm. Devices

OCR

Access Control

Mgt. Info

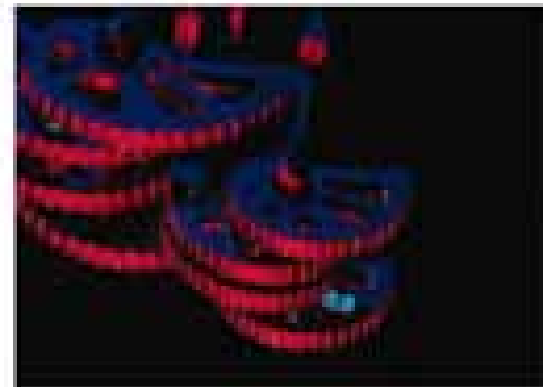
RFID

Sub process optimization vs. overall optimization



- Sub process optimization may lead to bottlenecks
- Sub processes need to be tuned to each other and need to be synchronized
- All sub processes need to be taken into account

TOS takes into account all sub processes and interactions



Evolution Terminal Operating Systems

- **Focus on:**
 - Terminal revenue
 - Coding business processes into efficient applications

- **Cosmos as system integrator?**
 - Yes, by integrating proven solutions, provided by certified technology partners, into the proven TOS, Cosmos provides added value to its customers



Take the Fast Lane

Some of Cosmos' Technology Partners



LXE



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Kalmar



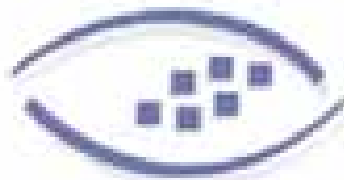
Septentrio
satellite navigation



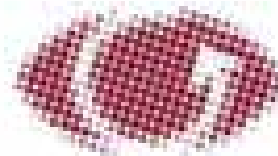
PRECISION
Solutions
EVS



SAVCOR



CAMCO TECHNOLOGIES



VISY

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Conclusion

- Sub processes can be optimized, using advanced technology, but do not necessarily lead to total and overall optimization
- The total picture, taking into account all interactions, is required
- Small terminals or big terminals, manned or unmanned face similar challenges

**Technology can assist terminals
in reaching their objectives**



Thank You

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