



Science Applications International Corporation

PORTS OF THE 21st CENTURY

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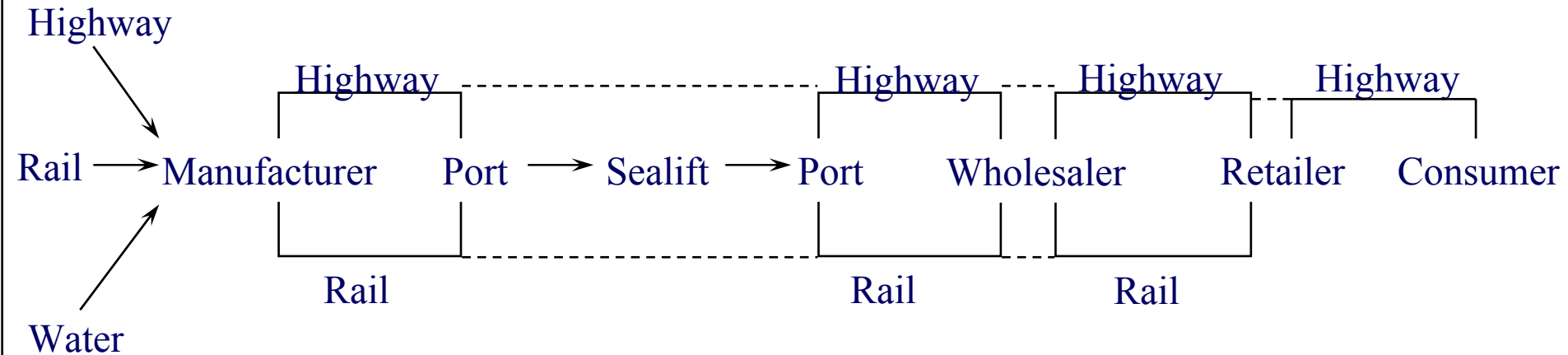
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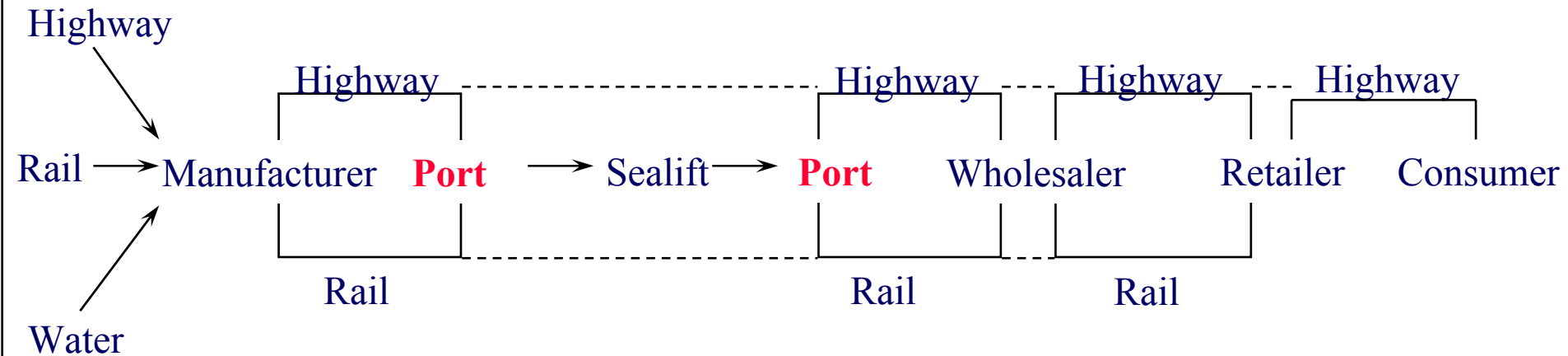
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Supply Chain Management



Point: The Distribution Process

Supply Chain Management



Point: Seaport is connecting link for 3 modes of transportation

Challenge = How to increase efficiency and productivity

Ports of the 21st Century

Issues

- Environmental
- Port Congestion
- Ship Draft vs Water Depth
- Land Side Access
- Gate Processing
- Manual Operations
(Administration, MHE, Inventory)
- Cargo Dwell Time
- Aging Infrastructure

Ports of the 21st Century

Issues

- Environmental
- Port Congestion
- Ship Draft vs Water Depth
- Land Side Access
- Gate Processing
- Manual Operations
(Administration, MHE, Inventory)

Solutions

- Recognition, Planning, Teaming, Partnering
- Inland ports; “Virtual Ports”
- Dredging; off shore floating ports; smaller vessels
- Highway connectors; on terminal rail; dedicated corridors
- Technology (RFID, OCR, Video) Automation
- Automation; “Smart” MHE, Robotics, video, intelligent spreader bars, EC

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Issues (cont'd)

- Cargo Dwell Time
- Aging Infrastructure

Solutions (cont'd)

- Direct movement from rail to ship/ship to rail
- Expert Systems
 - Yard planners - resource allocation
 - Stack management
 - Train load assistant
- Knowledge based automated systems
- Private investment; innovative financing (loan guarantee / insurance)
- Job creation

Ports of the 21st Century

Control Center

**Information
Dominance**

Decision Support Tools

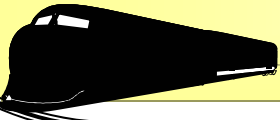
- Terminal Throughput & Costs Models
- Advanced Ship Loading & Unloading Models
- Integrated Skycam in Port Operations
- Simulations - Cranes, Cargo OPN's, Staging Yards



- RFID
- OCR
- VIDEO
- EC

- Smart MHE
- Video
- GPS
- Robotics
- Expert Systems
 - Yard Planners
 - Stack Management
 - Train Load Assistant

- Video on Crane
- Automated All Weather Cargo Transfer System
- Intelligent Spreader Bars
- Cell Elevators
- Cranes for Multiple Container Lifts
- Crane Anti-Sway System
- Direct Rail to Ship



Point: Profitable Ports in the 21st century will be agile, technologically enhanced, information dominant, easily accessible from land & water

