Hinterland Interfaces, Intermodal & Inland Terminal Operations
International Best Practices

Dr. Felix Kasiske, HPC Hamburg Port Consulting GmbH
Agenda

Challenges for Intermodal Hinterland Operations

Impacts on Intermodal Network and Terminal Structures

Best Practice Case – CSX Hub Terminal North West Ohio
Changes in the Maritime Industry
Market Growth and Vessel Size Development

Global Container Transport Growth

Evolution of Containerships 1985-2011

Source: Alphaliner

Vessel Size Growth, Fleet Segmentation (% of total TEU capacity)

Order Book Segmentation (% of TEU order capacity)

Source: Drewry
Challenges: Port Terminal Dimension
Consequential Interface Issues

→ Vessel Size Growth Creates new Challenges for Intermodal Railway Facilities in Ports and on Intermodal Networks!

→ Day-to-day volatility increased by 80%
→ Total peak increased by 11%
Agenda

Challenges for Intermodal Hinterland Operations

Impacts on Intermodal Network and Terminal Structures

Best Practice Case – CSX Hub Terminal North West Ohio
Changes to Network Architecture
Take Advantage of Economies of Scale

→ Creates Demand for smart Use of Economies of Scale!
Changes to Terminal Intermodal Operations

Existing Terminal Networks

→ Existing Terminals are not Designed to Serve as Hubs!
Agenda

Challenges for Intermodal Hinterland Operations

Impacts on Intermodal Network and Terminal Structures

Best Practice Case – CSX Hub Terminal North West Ohio
East-West Transit is Broken and Time Consuming

Different intermodal Operations in Eastern and Western States Create Ops Challenges
Initial Situation
National Gateway Project

- Project overview:
  - $842 million in investments
  - 61 double stack clearance projects
  - Construction of 6 intermodal terminals

- Strategic value
  - Increases intermodal capability in key population centers
  - Provides double stack capacity from East Coast Ports to Midwest

Source: National Gateway
CSX Intermodal Terminal NW Ohio

Objectives and Operations Means

Objectives
- connect east/west
- toupee/fillet operations
- make use of economies of scale in distribution of domestic and maritime volumes
- serve local economy of northern Ohio

→ Combined Switching/ Intermodal Lift “Transrailment” Terminal!
CSX Intermodal Terminal NW Ohio

Facts & Figures

- Combined block swapping/container handling facility
  - 8 process tracks 24,000ft/7,300m
  - 9 block swap tracks 100,000ft/30,000m
  - 2 straddle lanes for horizontal relocation
  - 1 truck lane for local delivery
  - 5-wide container stack (four high)
  - Parking for approx. 280 local units

- Capacity: throughput appr. 2 million containers

- Hub within CSX network and cornerstone of Nat’l. Gateway Concept

- Feb 2011: 17 trains/day
- June 2011: gate delivery/receipt
- July 2011: full swing with 32 trains/day

→ First real Hub Terminal worldwide Designed to Serve as such!
Precondition: Ability for

- automated train planning
- resulting automated job creation and sequencing → various optimization levels
- GPS-based equipment control
- semi-automated crane operations
CSX Intermodal Terminal NW Ohio
Planning Approach

1. Train Schedule and Consist Analyses
2. Track Utilization Planning
3. Crane Performance Demand Analysis
4. Storage Demand Analysis
5. Crane System Selection
6. Selection of Horizontal Transport Alternative
7. Simulation including Scheduling and Equipment Deployment Optimization
8. Feasibility Tests
9. System Validation and Selection
10. Detailed Process Planning and Requirements Engineering
CSX Intermodal Terminal NW Ohio

Enabling Technologies

- Automated railcar recognition in approach to terminal, in ladder and in entrance to process tracks
- Automated container recognition
- Railcar tracking in entire facility
- Automated train-set position calibration

- Automated collision/overrun with load control between cranes, SCs, grunts, M&R crews and moving trains
- Auto-gates and system based truck-to-crane order calls

→ Tailored Planning Process including Simulation and Process Optimization Ensured Feasibility of Hub Functionality and finally Operations Success!
HPC Hamburg Port Consulting GmbH

Contact Details

HPC Hamburg Port Consulting GmbH
Dr. Felix Kasiske
Container-Terminal Altenwerder
Am Ballinkai 1
D-21129 Hamburg
Germany

Phone: +49 40 74008 132
Fax: +49 40 74008 133
f.kasiske@hpc-hamburg.de

With courtesy of CSX Intermodal Terminals Inc.