Innovative Approaches to Port Challenges
Dwell Time and Transit Time Management
at the Port of Halifax

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Agenda:

• The Challenge
• The Approach
• The Result
• Lessons Learned
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The Port of Halifax

- Full service port with multiple terminals to service container, bulk, breakbulk and project cargo; 550,000 TEU in 2006
- First/last east coast North American port to/from Europe, the Med & Suez
- Deepest berths on the east coast of North America; easily accommodates post-Panamax ships
- Double-stack rail access on one system (CN) to Montreal, Toronto, Chicago and beyond
- The Port of Halifax is uncongested with available terminal and rail capacity
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The Challenge:

- To improve the quality and consistency of service to port customers by measuring and monitoring two key performance metrics:
  - Container Dwell Time
  - Total Transit Time

- To collect these metrics for thousands of containers without introducing an unmanageable burden on Port staff
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- Container Dwell Time

The time a container sits at a marine terminal (terminal dwell time) or rail terminal (rail dwell time) before starting it inland journey

- Dwell times rising due to rail car supply issues
- Dwell times are non-productive
- Inefficient use of rail and terminal resources
- Delays delivery of cargo to the customer
- Direct impact on quality of service
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➢ Total Transit Time

The total elapsed time from vessel discharge to arrival at the ultimate inland destination

• Direct measure of consistency of service
• Allows for improved logistics planning
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The Approach - Container Tracking System (CTS):

- Receive container movement event information from source, as close to real time as possible:
  - Container Discharge Event from Terminal Operator
  - Ramp Event, Rail Terminal arrival/departure events, and deramp event from rail service provider
- Store event data in a local data base
- Provide tools to analyze and report on dwell times and transit times
- Develop using state-of-the-art .NET technology
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Dwell Time Snapshot
Halifax Port Authority  Average Terminal Dwell Time Report
Report Parameters:  Start Date: 01/01/2007 -- End Date: 01/31/2007 -- Terminal: All
Destination:    All -- Ship Line: All -- Vessel: All -- Arrival Date: All

Average Terminal Dwell Time: 36
Hours  Count  % Total
0-24:    3,212 (55.26%)
24-48:   1,184 (20.37%)
48-72:   703 (12.09%)
72-96:   335 (5.76%)
96-120:  150 (2.58%)
120-144: 73 (1.26%)
144-168: 16 (0.28%)
168-192: 18 (0.31%)
192-216: 36 (0.62%)
216-240: 21 (0.36%)
> 240:   65 (1.12%)
Total:   5,813
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Dwell Time Trends

Average Terminal Dwell Time by Terminal - 4 Weeks
(Sunday, May 13, 2007 - Saturday, June 9, 2007)
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On-Line Inquiry - Container Search
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On-Line Inquiry – Container Details

<table>
<thead>
<tr>
<th>Container Number</th>
<th>Vessel</th>
<th>Voyage</th>
<th>Discharge Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHU2510</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ship Line</th>
<th>Status</th>
<th>Size</th>
<th>Location</th>
<th>Rail Car Number</th>
<th>Train Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIMU</td>
<td>DERAMPED</td>
<td>20</td>
<td>TERMINAL</td>
<td>58007</td>
<td>Q1149107</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discharged</th>
<th>Ramped</th>
<th>Departed</th>
<th>Arrived</th>
<th>Deramped</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/06/2007 15:57</td>
<td>05/07/2007 10:02</td>
<td>05/07/2007 22:00</td>
<td>05/03/2007 08:31</td>
<td>05/03/2007 11:22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HalTerm</th>
<th>Terminal Dwell</th>
<th>Rail Dwell</th>
<th>Total Dwell Time</th>
<th>Rail Leg</th>
<th>Transit Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>11</td>
<td>29</td>
<td>49</td>
<td>67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From</th>
<th>Departure Date</th>
<th>To</th>
<th>Arrival Date</th>
<th>Car #</th>
<th>Train #</th>
</tr>
</thead>
<tbody>
<tr>
<td>HALIFAX</td>
<td>05/07/2007 22:00</td>
<td>MONMONTINT</td>
<td>05/09/2007 08:31</td>
<td>58007</td>
<td>Q1149107...</td>
</tr>
</tbody>
</table>
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Web Based Inquiry – Container Search
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Web Based Inquiry - Container Details

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<table>
<thead>
<tr>
<th>Container</th>
<th>Size</th>
<th>Discharge Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACLU201544</td>
<td>20</td>
<td>Atlantic Conveyor, Voyage 7243, Owner ACLU</td>
</tr>
</tbody>
</table>

Please be sure to use the [Modify Search] or [New Search] buttons to modify your current search or to perform a new search. Do not use your browsers Back button.

Container status and movement information is based on information provided to the Halifax Port Authority and updated on a daily basis at 9:30 AM Atlantic time with the previous day’s movements.
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Web Based Inquiry – Container Details
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The Result:

- CTS is a Key tool in managing Dwell Times
  - Dwell times reduced by 37% between June 2005 and May 2007

- Collection, reporting and analysis of dwell times and transit times are fully automated – no staff involvement
  - More effective use of HPA staff time
  - More timely dwell time and transit time monitoring

- Provides visibility of cargo movement through the Port of Halifax to destination
  - Positive customer feedback and suggested enhancements
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Lessons Learned:

- The value of consistent and objective performance measurement
  - Provides baseline data for comparison and marketing
  - Highlights areas where improvements are needed
  - Allows results of improvement efforts to be evaluated
  - Focuses attention on subject area
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Lessons Learned:

- The importance of visibility
  - Customers want to know about their cargo
  - Numerous suggestions for enhancements to improve immediate operational value of data
    - List management, watch lists, and event notification
    - Notification based on thresholds
    - Cargo status information (hold/release events)
    - Truck gate events
    - Export containers
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Lessons Learned:

- The role of Innovation
  - Making best use of data that you have
    - Getting information to those who can act on it
  - Planning and prediction
  - Using current technology
    - Allows quick response to changing needs
    - Facilitates information sharing and collaborative systems
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Lessons Learned:

- Collaboration is key to success
  - CTS was successful due to cooperation among stakeholders
    - Direct participation of rail service provider and two terminal operators
    - Indirect involvement of all ship lines
    - Overcame concerns associated with measurement and monitoring
  - Need to move beyond cooperation to collaboration
    - Look beyond boundaries to understand the entire supply chain, and coordinate technology investments to optimize
    - Technology as infrastructure – seamless integration
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Thank you!