ECITL’11

Intermodal Operator SeaRail
SeaRail Oy – Berndt Ahlfors
Agenda

1. SeaRail Oy
2. Case objectives and Requirements
3. How the Intelligent Cargo is applied
4. Pilot application
5. Expected and “To-Be” benefits
6. Conclusions
SeaRail Oy

Intermodal transports: Railway (or truck) – Train ferry – Railway (or truck). Owned by the state Railways in Finland and Sweden.

- A modern wagon fleet: covered, open and tank-wagons.
- The use of bogie changeable wagons (i.e. special wagons) allows for swift connection without reloading.
- Indoor reloading (between European and Finnish/Russian wagons or from wagon to lorry).
- Environmentally friendly transports.
- Facts about SeaRail: employees 36, turnover 21 million euro, transported volume half a million tons.
- Almost 25% distributed by truck. Increasing.
Case objectives

- The core business for SeaRail is the effective utilisation of the wagon fleet, both long-term and case-by-case leased wagons.
- Today, the main logistics issue is the lack of information about wagon movements.
- For this reasons, the IC application in this pilot aims to collect exact real-time information about the wagons movements in order to perform selected IC functionalities.
How the Intelligent Cargo is applied

- Wagon identification
- Automated wagon selection for the transport order
- Individual Transport parameters
- G-force recording
- G-force notifications
- Wagon positioning
- ETA (Estimated Time of arrival)
- Wagon status updates (reserved/unreserved, loaded/unloaded)
- Calculation of KPI (Key Performance Indicators)
Pilot application

- Smart sensors

Axle counters

GPS & G-Shock
Pilot application

- User interface with pop-up alerts
Pilot application

- Wagon follow-up
Pilot application

- Sample of measurements of KPI calculations

<table>
<thead>
<tr>
<th>OrderNo</th>
<th>Depart</th>
<th>Arrival</th>
<th>LoadDate</th>
<th>DeptDate</th>
<th>NavMaster</th>
<th>ST</th>
<th>Dest</th>
<th>ETA</th>
<th>NavMaster</th>
<th>TT</th>
<th>Diff.</th>
<th>Remark</th>
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</table>

From 24-03-2011 (total days) 80 days empty 59% utilisation rate

59% utilisation
## Benefits of the IC implementation (values/KPIs)

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>As-Is Value</th>
<th>To-Be Value</th>
<th>Expected improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average notification time in case of status change</td>
<td>Max 600 minutes</td>
<td>Max 30 minutes</td>
<td>Max: 95%</td>
</tr>
<tr>
<td></td>
<td>Min 60 minutes</td>
<td>Min 5 minutes</td>
<td>Min: 91%</td>
</tr>
<tr>
<td>Average time spent for wagon selection</td>
<td>Min: 15 minutes</td>
<td>Min: 1 minutes</td>
<td>Min: 93%</td>
</tr>
<tr>
<td></td>
<td>Max: 20 minutes</td>
<td>Max: 5 minutes</td>
<td>Max: 75%</td>
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<tr>
<td>Transport duration</td>
<td>One week</td>
<td>5-6 days</td>
<td>20%</td>
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<tr>
<td>ETA reliability</td>
<td>Not available</td>
<td>Available and above 90%</td>
<td>Better insight</td>
</tr>
<tr>
<td>Wagon usage rate</td>
<td>Based on Financial calculation (90-100%)</td>
<td>Based on actual load (57-59%)</td>
<td>Better insight</td>
</tr>
</tbody>
</table>
Conclusions

● The motivation for this project was new innovation after years in a world of ignorance and a lot of job.

● All parties involved in the transportation have now opportunity to get information about the transport in exact real-time.

● At this moment there is no possibilities to identify an individual paper reel or other cargo items.

● Future research
  ● The challenge with this project is how to get every wagon in Europe installed with intelligent units?
  ● At least every new wagon should be outfitted with these intelligent unit as a part of the wagon-body.
  ● A common standard for the communication and hardware should also be agreed on.
Thank you for listening!
Requirements

- **The lack of information about wagon movements**
  - Currently:
    - Wagon movements can be followed only by third parties systems
    - No sensors in the wagons or system for alerts and notifications
  - Critical issues:
    - The available information is old and unreliable
    - The information is based on queries to various monitoring systems in various organizations
    - The information is unnecessary in normal circumstances, when no deviations occur

- **More effective usage of wagon fleet**
  - Currently:
    - Transport managers do not have operational wagon fleet management system
    - Manual system with risk of human errors
  - Critical issues:
    - Suitable wagon selection to transport need is a key issue for effective usage of the fleet
    - Efficient operative management of the transportation requires reliable up-to-date status information
Benefits of the IC implementation

- Electronic and automatic information flow including real-time information to all necessary parties
- Information in unexpected situations
- The real-time location and status of the wagon
- Departure/arrival time / ETA for routepoints
- Wagon status updates
- Transport orders fulfillment (type, quantity, selected wagons, etc)
- Intelligent Cargo and prompt information

Cost reduction, less double work and time-taking queries, shorter lead times

Awareness of the cargo status at any time all along the chain

Better planning based on information about deviations, ETA updates, etc

Better service level and more profitable operations

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