Business model for administering platforms
for sharing logistics information

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Processes & use of e-Freight standards
Process scenarios
Scope & benefits

1. Secure trade lanes (Smart-CM)
   - Visibility based on container tracking, terminal events & ship movements - security release
   - CSD activation
   - CSD deactivation

2. Door-to-door co-modal transport chains
   - Cargo consolidation, rescheduling/rerouting
   - Shipment order
   - Proof of delivery

3. Benefits for Planning
   - Later closing time, pre-stacking support, ...
   - Arrival notification and import manifest

4. Benefits for Execution
   - Green light
   - Container gate-out

Point of Origin -> Port of Loading -> Port of Discharge -> Point of Destination
Sea/hinterland interface

Logistics Process

1st passage point to port of discharge
DSS arrival
Port of discharge
Inland transport
Inland terminal

Manifest reporting
Manifest approval
Discharge
Import declaration & Customs release
Commercial release
Truck arrival
Container departure

Fwd/Consignor
Carrier/Agent
Inland transport
Terminal (PoD)
Customs

Bottleneck solved:
Later closing time informs hinterland operator (export)

Bottleneck solved:
Pre-stacking based on hinterland leg

Bottleneck solved:
Green light = Fiscal + Commercial release

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STL: Secure trade lanes
Smart-CM, Integrity

Logistics Process

- Port of loading (PoL)
- DSS
- Port of discharge (PoD)
- Inland transport
- Inland terminal

ICS Scan Exception Loading
Discharge Exception Customs release Commercial release Truck arrival Container departure

Information Process

- Carrier/Agent (PoL, PoD, hinterland)
- Terminal
- Customs

CSD (Neutral layer)

Bottleneck solved: Visibility based on container devices

ICS-ENS ETD/ATD ETA/ATA Vessel AIS

Bottleneck solved: Security release

Gate-In Gate-Out Gate-In hinterland

Bottleneck solved: Visibility based on terminal events & sea leg

ICS response
A) Do not load
C) Inspection

STL: Secure trade lanes
Smart-CM, Integrity

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Bottleneck solved:
Visibility based on container devices

Bottleneck solved:
Visibility based on terminal events & sea leg

Bottleneck solved:
Security release
Door-to-door co-modal transport chains
Freightwise, DiSCwise

**Logistics Process**

- Port of discharge
- Barge transport
- Inland terminal
- Inland terminal
- Road transport
- Point of delivery
- Rail transport
- Inland terminal
- Road transport
- Road transport
- Road transport

**Information Process**

- Fwd/Consignor
- Rail operator
- Barge operator
- Road operator
- Road operator
- Road operator

Bottleneck solved:
- Cargo consolidation potential
- Automatic rescheduling of hinterland legs
- Transparency of hinterland leg

Transport demand definition
Transport chain (re-)planning
Transport booking management
Transport order management
Transport operation management
Transport chain control
Status report
Status report
Status report

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Integrated scenario – Using the Common framework

Transport demand

- Port of origin
- Point of loading
- DSS
- Point of discharge
- Port of discharge
- Gate
- Inland transport
- Point of delivery

Transport supply

- Entry summary declaration
- Vessel departure & arrival
- Import manifest
- CRS
- TOS
- CRS
- Loaded goods report
- Discharged goods report
- CRS
- TOS
- CRS
- Gate-out
- Gate-in
- Gate-in

Cooperative systems

- Vessel position
- Estimated time of vessel arrival
- TOS
- TOS
- TOS
- CRS
- CRS
- CRS

Intelligent cargo

- Security message
- Security message
- Security message
- SDM
- SDM
- SDM

Supply chain security and compliance

- Customs response
- Security release
- Fiscal release
- CRS
- CRS
- CRS

Logistics services user
- Logistics services provider
- Transportation network manager
- Transport regulator

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Quantified benefits
## Benefits

### Average container values

<table>
<thead>
<tr>
<th>Source</th>
<th>Average Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew O’Sullivan – IUMI 2006</td>
<td>$80,000 - $210,000</td>
</tr>
<tr>
<td>Munich Re: Estimate</td>
<td>$80,000 - $100,000</td>
</tr>
<tr>
<td>XL Re Studies</td>
<td>$35,000 - $120,000</td>
</tr>
<tr>
<td>Hyundai Fortune (Multiple sources)</td>
<td>$204,000 - $300,000</td>
</tr>
<tr>
<td>MSC Carla (AIMU RI Committee Survey)</td>
<td>$74,000</td>
</tr>
<tr>
<td>APL China (AIMU RI Committee Survey)</td>
<td>$211,000</td>
</tr>
<tr>
<td>Guy Carpenter: Japan – LA</td>
<td>$90,000</td>
</tr>
<tr>
<td>Guy Carpenter: LA – Japan</td>
<td>$30,000</td>
</tr>
<tr>
<td>AIMU Reinsurance Committee</td>
<td>$95,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route</th>
<th>Average Value</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America – Asia</td>
<td>$17,795</td>
<td>$102,163</td>
</tr>
<tr>
<td>North America - Europe</td>
<td>$28,480</td>
<td>$76,081</td>
</tr>
<tr>
<td>Europe - Asia</td>
<td>$21,663</td>
<td>$89,863</td>
</tr>
<tr>
<td>Europe – North America</td>
<td>$26,424</td>
<td>$55,020</td>
</tr>
<tr>
<td>Asia – North America</td>
<td>$30,477</td>
<td>$41,517</td>
</tr>
<tr>
<td>USA – China</td>
<td>$10,840</td>
<td>$64,077</td>
</tr>
<tr>
<td>USA – Japan</td>
<td>$77,144</td>
<td>$301,929</td>
</tr>
<tr>
<td>USA - Australia</td>
<td>$22,065</td>
<td>$51,267</td>
</tr>
</tbody>
</table>

Best assumption we can make is that, for the Europe – Asia route:

- The average container value on the Europe – Asia route is EUR 20,000
- 70% of these container values will be smaller than EUR 85.000 (average +/- σ)
- 95% of these container values will be smaller than EUR 150.000 (average +/- 2σ)
## Benefits
### Short term benefits

<table>
<thead>
<tr>
<th>Savings area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hinterland operator – Truck</strong></td>
<td>Applicable to 15-20% of import containers</td>
</tr>
<tr>
<td><strong>Less waiting times at terminal</strong></td>
<td>x 20 minutes on average per container</td>
</tr>
<tr>
<td></td>
<td>x 50 Euro/hr waiting costs</td>
</tr>
<tr>
<td><strong>Calculation example:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Assumptions:</strong></td>
<td>Applicable to 15% of import containers</td>
</tr>
<tr>
<td><strong>Result:</strong></td>
<td>Waiting time savings = 15% x 20 min x 50 Euro/hr</td>
</tr>
<tr>
<td></td>
<td>= 2.5 Euro per container</td>
</tr>
<tr>
<td><strong>Hinterland operator – Barge</strong></td>
<td>Savings are expected to be higher, as a single delay for 1 specific container can</td>
</tr>
<tr>
<td><strong>Less waiting times at terminal</strong></td>
<td>impact multiple containers in the barge, even though the waiting costs per</td>
</tr>
<tr>
<td></td>
<td>container are less;</td>
</tr>
<tr>
<td><strong>Calculation example:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Assumptions:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Result:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sea container terminal</strong></td>
<td>10-20% less container moves, x 144 Euro/10%</td>
</tr>
<tr>
<td><strong>Less container moves</strong></td>
<td>This is beneficial due to joint arrangements and cost savings for cargo shippers and</td>
</tr>
<tr>
<td></td>
<td>port operators.</td>
</tr>
<tr>
<td>**This is particularly beneficial for small and</td>
<td></td>
</tr>
<tr>
<td>containers of less average value (10.000 Euro)</td>
<td>Best applicable to containers of less average value (10.000 Euro)</td>
</tr>
<tr>
<td><strong>Calculation example:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Assumption:</strong></td>
<td></td>
</tr>
<tr>
<td>- Applicable to 10% of import containers</td>
<td></td>
</tr>
<tr>
<td>- 15% less container moves</td>
<td></td>
</tr>
<tr>
<td><strong>Result:</strong></td>
<td>Terminal savings = 15% x 10% x 144 Euro = 2,16 Euro</td>
</tr>
<tr>
<td><strong>Container carrier</strong></td>
<td>More efficient terminal handling will also lead to shorter stays in the port,</td>
</tr>
<tr>
<td><strong>Shorter stay in port</strong></td>
<td>resulting in less port dues;</td>
</tr>
<tr>
<td><strong>Calculation example:</strong></td>
<td></td>
</tr>
<tr>
<td>**To be prudent, we assume such savings not to be</td>
<td></td>
</tr>
<tr>
<td>made on short term, as fewer container moves will</td>
<td>be made on short term, as fewer container moves will</td>
</tr>
<tr>
<td>probably first benefit the land-side not the</td>
<td>probably first benefit the land-side not the</td>
</tr>
<tr>
<td>sea-side.</td>
<td>sea-side.</td>
</tr>
</tbody>
</table>
**Benefits**

**Long term benefits**

<table>
<thead>
<tr>
<th>Savings area</th>
<th>Container value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety stock</td>
<td>x 7% p.a. (per annum)</td>
</tr>
<tr>
<td>The reduction of stocks held in order to cope with variability in lead time</td>
<td>x deviation multiple Z ((\pm 2/3/4) for a 95/97/99% service level)</td>
</tr>
<tr>
<td></td>
<td>x reduction in lead time variability ((\sigma))</td>
</tr>
<tr>
<td></td>
<td>+ 25% additional inventory carrying costs</td>
</tr>
<tr>
<td>Pipeline inventory</td>
<td></td>
</tr>
<tr>
<td>The reduction of stocks held during transport</td>
<td></td>
</tr>
<tr>
<td>Service charge</td>
<td></td>
</tr>
<tr>
<td>The costs charged by transport operators in the door-to-door chain esp. on-carryage services that have to be rebooked after deviations occur</td>
<td></td>
</tr>
<tr>
<td>Administrative labour</td>
<td></td>
</tr>
<tr>
<td>The costs of forwarding, including the collection of status information and the use of that information when managing deviations; also the costs of compliance can be included</td>
<td></td>
</tr>
<tr>
<td>Pillerage, thefts</td>
<td></td>
</tr>
<tr>
<td>The costs of goods lost or damaged</td>
<td></td>
</tr>
</tbody>
</table>

Long term benefits have focussed on improvement of the reliability of the logistics process. Examples:

- Ship missing, i.e. container misses loading on planned vessel
- Unscheduled transhipment (to other vessel, late arrival in same PoD, changed PoD)
- Delayed departure at PoL or arrival at PoD
- Release status of the container
- Timely gate-out at PoD

Savings potential is in the magnitude of +/- 300 Euros per imported container of value 100,000 Euro. Most of these (70-80%) are financial gains as a result of reduced pipeline & safety stocks, directly depending on the average container value. This affects working capital requirements.

This applies mostly to the shipper or beneficial cargo owner (BCO). If realized by the logistics integrator, he may be able to sell his services with a premium to shipper or BCO.

**It requires data that goes beyond the port. This is done either by deploying container tracking devices or by collecting alternative status data from transport providers and terminal operators in the chain. It may apply to a limited part of the imported containers.**

Calculation example:

- Container value = 100,000 EUR
- Result: Pilferage/theft savings = 10 EUR per container
Allowable costs
Conclusions Smart-CM:
Full VAS makes Smart-CM platform easier to exploit
Exploitation model to facilitate ‘combined services’

Assumption:
-100,000 EUR Per container
-EDC76, 6/yr
-VAS does not include costs for other components
Due to insecurity of long-term benefits:
Provide smart visibility information services that deploy alternative data sources
*With benefits for sea-hinterland interface & co-modal chain*

Long-term, shippers / cargo owners, container value above average, new data sources

Short-term, operators around ports, container value below average, existing data sources

Assumption:
- 100,000 EUR Per container
- EDC76, 6/yr
- VAS does not include costs for other components
Collaborative information services
Specialization to reduce development costs: Each of the product components mentioned has substantial costs for development. Specialization is a method to reduce such costs by creating economies of scale.

Ensuring critical amount of data access: Access to data providers is important in order to make value added services functional. If there is no data to populate the VAS, then the functionality of the VAS itself cannot be used.

Create footprint towards potential market: Apart from access to specialized data providers, access to large numbers of transport & logistics operators increases the amount of data that can be captured directly from the operators. It also simplifies sales if large numbers of shippers, beneficial cargo owners and transport & logistics operators are already connected.
Collaborative information services

Logistics information value chain

Added value:
- Access to data
- Access to users

Added value:
- Low cost entry
- Low cost substitution

Added value:
- Higher-value information
- Single access point
Collaborative information services

Example implementation

Freightwise / DiSCwise / Rising
Logit 4SEE©
Single Access Point to End-to-End Transport Options & Status

Data standardization
- (optional, sensitive data)

Data aggregation
- Freightwise / DiSCwise / Rising Logit 4SEE©
- Single Access Point to End-to-End Transport Options & Status
- Consolidated information
- Smart-CM Neutral Layer
- Smart-CM ICS-SEAP
- DiSCwise Import Service
- Integrity SICIS
- HPH data network
- Port community system
- ANR
- RTM
- Integrator data warehouse
- DHL
- Logistics network
- Descartes GLN
- Freightwise Logit 4SEE© Provider Application

Customs
- Shippers / BCOs / LSPs
- TEP, TES
- CRS, TES
- SDM

Neutral Layer
- Smart-CM
- ICS-SEAP
- DiSCwise Import Service

Terminal System
- Deep sea carrier system
- Carrier System
- Terminal System
- Hinterland carrier system
- ERP

Port Community System
- ANR
- RTM

Integrator Data Warehouse
- DHL

Logistics Network
- Descartes GLN

Smart-CM Neutral Layer
- Smart-CM
- ICS-SEAP
- DiSCwise Import Service

SDM
- Shippers / BCOs / LSPs
- TEP, TES
- CRS, TES
- SDM

Data standardization
- Freightwise / DiSCwise / Rising Logit 4SEE©
- Single Access Point to End-to-End Transport Options & Status

Individual user/provider systems
Collaborative information services
Possible charging mechanism A – Functional integration

Logistics information value chain

Individual user/provider system → Data aggregation → Consolidation information

Data standardization/interoperability service

Consolidation information → User Forwarder Shipper BCO Platform

Possible charging mechanism A – Functional integration
5,- … 300,- Euro Per container trip

COMCIS (26-1-2011)
Collaborative information services
Possible charging mechanism B – Integration based on footprint

Logistics information value chain

Data aggregation

Individual user/provider system

Data standardization/interoperability service

Consolidation service (VAS)

Integrated services platform

$5,- … 300,- Euro
Per container trip

User Forwarder Shipper BCO

Individual user/provider system

Data aggregation

Individual user/provider system

Individual user/provider system

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Logit Systems
Collaborative information services

Phases in approaching the market

Short term:
A **bundling of product components** that ensures access to data & value added services;
Providers of individual product components are few;
Bring an offer to the market where all relevant components are included;
Mid term:
An **interoperable market** in which value added services establish **coalitions** (and agreements) for longer periods with data sources and connectivity services; This enables **specialization** but at the same time ensures them of sufficient **marketing channels** to enable them to invest in further development of their specialized products; As time goes by the interfaces between the individual product components will be more and more **standardized**;
Long term:
An open spot market in which value added services can be used to discover intelligent load and cargo units, data sources and applications, configure which data sources to use for which client or shipment, settle on the terms of use of data sources, and complete the cycle by enabling aggregated billing to the end-user;
Collaborative information services

Points of attention

- **Data protection & sharing:** This should follow agreements between provider and user of data. One particular issue is reusing/reselling of data.

- **Accuracy & reliability of data:** This is a key aspect, as we are consolidation multiple data sources into information that should be able to support decision making processes.

- **Configurability:** The user should be able to select, dynamically, what data sources, services and features to deploy for specific containers, customers, trade lanes. In this way he can select data and features that match the expected benefit.

- **Quality of data:** In case multiple conflicting data sources are used, the user should be able to select which sources has preference. An audit trail should be provided as to what data was used to support which decision.
Thank you for your attention!

**One snapshot for logistics**
Consolidating data in the transport chain

**One single service**
to plan and follow up multi modal logistics chains

**Aggregation & correlation of data**
to cover blind spots & support decisions

**True visibility**
to proactively reduce impact of deviations