Workshop - Strengthening Security on Inland Freight Routes

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National Office of Customs in Rotterdam
Basic principles of EU project Core

• B2B project

• Business drivers:
  - cost savings
  - transparency
  - visibility
  - trade compliance
  - etc.

• Important pillars:
  - data integrity (data of high quality from the source)
  - goods integrity (supply chain security)
Improving data quality

Data from the source
- Data from the originating process:
  - where the data were generated
  - from the provider that has control of and knows what has happened

Data quality (e.g. data integrity)
- completeness
- correctness
- timeliness
ICS 1.0

- Missing data
- Incomplete data
- Unclear data

The goal

- No missing data
- Clear data
- Source known
Customs dashboard

**Improve efficiency by:**

- Presenting additional supply chain data from various other sources together with existing data (e.g. declarations)

- Risk analysis and detection based on accurate data of high quality:
  - identify shipments that are high-risk as early as possible
  - identify shipments that are low-risk
  - contribute to reduce inspections => facilitation
CRIS – Customs Real Time Information System

Additional information Notification
CRIS Matching Service

Watson Explorer Analytics tooling
CRIS Dashboard

Engine
Customs Data Pool

KIS
KVK
Hist. Decl.
Shipments

Maersk GTD
Flora-Holland
Seacon
Con-Traffic

News API

SIP Events
Document
Container Status Messages

Internal Data
External Data
Actor Data
Event Data
Reference Data

Ref.
Enter
Import
Selections

Risk rules
Profile descr.
Risk Mgmt
Goods integrity

**Integrity of the goods flow:**

Ensuring the integrity of the goods flow by using:
- CSD’s (container security devices)
- or equivalent measurements
Goods integrity
Goods integrity

Customer Dashboard and Big Data Analytics

Future
- Seamlessly connect different protocols

AKUA Gateway
- Multi-layered sensor and device authentication
- Sensor-to-device and device-to-edge encryption
- Verification of sensor presence and operational health
- Analysis of sensor data to identify anomalous patterns
  - Indicative of threats to quality, integrity, or security
  - Indicative of malicious intent

IoT Devices and Sensors
Trusted Trade Lane Solution

- Data Integrity (data pipeline)
- Goods Integrity (smart seal)
- Design for Security
Facilitate smart en secure trade lanes

Facilitating smart en secure trade lanes:

Possible for smart and secure trade lanes where:

- commercial reasons are leading for using data from the source
- ensuring the integrity of the goods with:
  - CSD’s or
  - Equivalent measurements
DIGITIZING THE GLOBAL SUPPLY CHAIN

TradeLens is an open and neutral industry platform underpinned by Blockchain technology, supported by major industry players.
Key Challenges

<table>
<thead>
<tr>
<th>Banks</th>
<th>Importers and Exporters</th>
<th>Carriers</th>
<th>Forwarders</th>
<th>Ports</th>
<th>Authorities</th>
</tr>
</thead>
</table>
Real life access to container events

<table>
<thead>
<tr>
<th>Container Number</th>
<th>Description</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNBU0027068</td>
<td>Fresh cut flowers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40ft High Cube Reefer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VGM: 16210 kg</td>
<td></td>
</tr>
<tr>
<td>XXXX123456789</td>
<td>ETD: 17 Sep 16 15:39</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>ATA</th>
<th>ATD</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td></td>
<td></td>
<td>01 Sep 2016</td>
<td>06:00</td>
</tr>
<tr>
<td>Warehouse</td>
<td></td>
<td></td>
<td>01 Sep 2016</td>
<td>12:00</td>
</tr>
<tr>
<td>Mombasa</td>
<td></td>
<td></td>
<td>02 Sep 2016</td>
<td>16:00</td>
</tr>
<tr>
<td>Salalah</td>
<td></td>
<td></td>
<td>06 Sep 2016</td>
<td>12:00</td>
</tr>
<tr>
<td>Algocinas</td>
<td></td>
<td></td>
<td>07 Sep 2016</td>
<td>04:21</td>
</tr>
<tr>
<td>Antwerp</td>
<td></td>
<td></td>
<td>14 Sep 2016</td>
<td>19:30</td>
</tr>
<tr>
<td>Warehouse</td>
<td></td>
<td></td>
<td>16 Sep 2016</td>
<td>23:25</td>
</tr>
<tr>
<td>Holland</td>
<td></td>
<td></td>
<td>17 Sep 2016</td>
<td>02:14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container selected for inspection</td>
<td>17 Sep 16 11:34</td>
<td></td>
<td>Antwerp (BEANT)</td>
</tr>
<tr>
<td>Container discharged</td>
<td>17 Sep 16 04:11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATA at port</td>
<td>16 Sep 16 23:25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By Country authority

By Terminal
## Types of events

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Action</th>
<th>Status</th>
<th>Additional Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Container Tracking</td>
<td>Container stuffed</td>
<td>ATD container from port</td>
<td>Estimated Gate out</td>
</tr>
<tr>
<td>Update Harmonized system code</td>
<td>Verified Gross Mass</td>
<td>ETA container at port</td>
<td>ETA full container at warehouse</td>
</tr>
<tr>
<td>Container Type</td>
<td>Container sealed</td>
<td>Route changed</td>
<td>Gate out empty</td>
</tr>
<tr>
<td>Duns number</td>
<td>Shipping instructions</td>
<td>Temperature read</td>
<td>Gate out full for import</td>
</tr>
<tr>
<td>Booking Confirmed</td>
<td>Full container ready for pick up from warehouse</td>
<td>Temperature set point changed</td>
<td>ATA full container at warehouse</td>
</tr>
<tr>
<td>Empty container ready for pick up</td>
<td>Full container picked up from warehouse</td>
<td>Container discharge estimated</td>
<td>Seal removed</td>
</tr>
<tr>
<td>Empty Container Picked Up</td>
<td>Shipment split</td>
<td>ATA container at port</td>
<td>Container de-stuffed</td>
</tr>
<tr>
<td>Link container no to tracking ID</td>
<td>Estimated gate in</td>
<td>Empty container discharged</td>
<td>Empty container ready for pick up at import warehouse</td>
</tr>
<tr>
<td>De-link container with tracking ID</td>
<td>ETD container from port</td>
<td>Full container discharged</td>
<td>Empty container picked up from import warehouse</td>
</tr>
<tr>
<td>ETA empty container at warehouse</td>
<td>Geofence out</td>
<td>Container pre Cleared</td>
<td>Empty container arrives at empty depot</td>
</tr>
<tr>
<td>Geofence In</td>
<td>Gate in empty</td>
<td>Container selected for inspection</td>
<td>Container tracking ended</td>
</tr>
<tr>
<td>ATA empty container at warehouse</td>
<td>Gate in full for export</td>
<td>Container commercial release</td>
<td>Dangerous goods declaration available</td>
</tr>
<tr>
<td>Estimated time for full container pick up</td>
<td>Empty container loaded</td>
<td>Customs release</td>
<td>Bill of lading available</td>
</tr>
<tr>
<td>Container Device Started</td>
<td>Full container loaded</td>
<td>Next mode of transport</td>
<td>Commercial invoice available</td>
</tr>
</tbody>
</table>
An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.
GTD Workflow Solution Overview

1. Upload Scanned Documents or submit data via API/EDI
2. Authorize Documents via UI or API/EDI
3. View authorized Documents via UI or API/EDI
4. Release goods to Importer

Workflow UI  Workflow API
Workflow Blockchain
GTD Workflow Technical details

- A Distributed Ledger ensures that data written to GTD is distributed to all member nodes.
- Consensus ensures that a network of known, trusted computers determines what information is written to GTD and prevents anyone from changing what has been written.
- Identity is based on certificates issued by a trusted authority, and only known machines may participate in consensus or maintenance of the ledger.
- Hash Functions are cryptographic “fingerprints” that allow a Blockchain to easily determine whether a file has been modified.
Blockchain for the enterprise is solving previously unsolvable problems

The attributes of blockchain technology are ideally suited for large networks of disparate partners. Blockchain establishes a shared, immutable record of all the transactions that take place within a network and enables permissioned parties access to secured data in real time.

Members of TradeLens gain a comprehensive view of their data and can collaborate as cargo moves around the world, helping create a transparent, secured, immutable record of transactions.