Blockchain dans le Transport maritime & logistique

Menaces ou opportunités sur le commerce extérieur national

18 Décembre 2019
Port of Antwerp –

- Key figures
- Trade with Morocco
A truly global port
Belgium’s biggest economic driver

- 235 Million tonnes of freight
- 12,068 hectares
- 11 million TEU/year
- 144,000 jobs
- 1,000 companies
- 4.8% GDP
- 20.7 billion € added value
A truly global port, with sustainable growth
6th record in a row: 235 million tonnes of cargo in 2018
A truly global port

Direct maritime services to +1,000 ports worldwide
Excellent connectivity

Intermodal offer and shift 2030: more rail and inland shipping (containers)

- 2018: 38%, 2030: 42%
- 2018: 7%, 2030: 15%
- 2018: 55%, 2030: 43%
Trade Port of Antwerp – Morocco

Yearly average over period 2014 - 2018

2,25 million tonnes of freight
±150,000 TEU/year
Blockchain: State of play – today
Blockchain technology is not new

- **1991**
  - "How to time-stamp a digital document"
  - S. Haber & W.S. Stornetta

- **2002**
  - "Hashcash"
  - Adam Back

- **2008**
  - "Bitcoin: a Peer-to-Peer Electronic Cash System"
  - Satoshi Nakamoto

- **today**

  added an economic model to the technology
Gartner hype cycle for Emerging Technologies
Blockchain today

- Blockchain is **sliding** into the through of disillusionment
- will begin to **climb out** of this by 2021
- “Blockchain is not yet enabling a **digital business revolution** across business ecosystems and may **not until at least 2028**, when Gartner expects blockchain to become fully scalable technically and operationally.”
  
  *(Avivah Litan, Research VP – Gartner)*

- … ending up with 3.100 billion $ on economical value
“We are witnessing many developments in blockchain technology that will change the current pattern. By 2023, blockchain platforms will be scalable, interoperable, and will support smart contract portability and cross chain functionality. They will also support trusted private transactions with the data confidentiality required. All together, these technology advances will take us much closer to mainstream blockchain and the decentralized web, also known as Web 3.0”

Avivah Litan, Research VP – Gartner
Blockchain in Logistics

- 85% of the blockchain projects are stuck in experimentation mode. (stays in or frozen after the Proof-of-Concept phase)
- Blockchain-technology is only 20% of the project, the other 80% lies in the strategic domain
- Blockchain in Logistics & Transportation almost at the Peak of Inflated Expectations
Today’s conclusions
“Additionality”

• ICT innovation in the supply chain is seen as the key for keeping competitive advantage

• Blockchain technology can help further integration, if standardization is achieved

• Full blockchain benefits are enabled only in combination with other technologies
  
  • Just a supporting technology! Not an ultimate business game changer (disruption)
  
  • Additionality through integration with other technologies: add-on services, Machine learning & AI, IoT, Data analytics, Certified hardware, …
Blockchain in Maritime & Logistics
Early adopters in the maritime supply chain
Why Blockchain – the 3 T’s
Rationale – why blockchain
The necessity to pilot on blockchain projects

• Hype – external pressure (…everybody does it! …and what if we don’t?)
• the trend towards collaborative innovation in the maritime supply chain
• main characteristics for piloting and/or studying:
  • the growing need for digital innovation gradually moves to the maritime supply chain
    • cost savings
    • increase the quality of products (or services)
    • further growth opportunities
  • fast technology push
  • a fast evolving and dynamic global context
• Solving inefficiencies in the maritime supply chain
Inefficiencies in the Maritime supply chain

<table>
<thead>
<tr>
<th>Data-related inefficiencies</th>
<th>Port and hinterland stakeholders</th>
<th>Authorities</th>
<th>Other third parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information/document flow</td>
<td>Shipment</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Information/ownership tracking</td>
<td>Freight forwarder</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Operation planning</td>
<td>Customs declarant</td>
<td>X</td>
<td>X</td>
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<tr>
<td>- Customs declaration</td>
<td>Shipping line</td>
<td>X</td>
<td>X</td>
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<tr>
<td>- Radar</td>
<td>Terminal operator</td>
<td>X</td>
<td>X</td>
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<tr>
<td>- Receiver of the goods</td>
<td>Port Authority</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Customs</td>
<td>Harbor, maritime, logistics</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Other (e.g., Welfare, Sanitary and veterinary)</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Financial liquidity</td>
<td>Agent</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Financial institutes</td>
<td>ICT providers</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

- Inefficiencies in the Maritime supply chain

- Information/document flow
- Operation planning
- Customs declaration
- Financial flow
- Late shipment payment
- Late service payment
- Cargo flow
- Shipment segmentation (under-capacity utilization)
- Loading units management
Moving a container from A to B

> 30 different parties involved

> 200 communication interactions

source: NYT March 4, 2017; Forbes March 5, 2017
Poor supply chain efficiency

> 99% of freight transport operations within EU still use paper documents

source: EC, DTLF reports 2018
Poor supply chain efficiency

Up to 50% of the cost of moving a container is related to paperwork.

Terminal reposition a container 4 to 5 times.

1 out of 4 trucks is driving empty on our highways.

Source: NYT March 4, 2017; Forbes March 5, 2017 & customer meetings.
Current information flow
Interconnected data silo’s

Optimized company operations resulting in sub-optimized end to end chains
Outdated point-to-point information technology
So we need another infrastructure to collaborate...
Some Blockchain projects
- within the port area
- port & hinterland / transport
Secure Container Release

50 tons of narcotics found in the Port of Antwerp in 2018

source: De Standaard, 2019
Secure Document Workflow

Phytosanitary Certificate

administrative cost of €8 billion related to processing of freight transport documents in the EU

source: EC proposal on electronic freight transportation information, 2018
Chainwise collaboration

today a terminal needs to reposition a container 4 to 5 times before releasing it

source: management estimates
TEST, INSPECT, CERTIFY, TRAIN & CONSULT

Safety First  
Efficiency  
Quality  
Sustainability

for a safe & efficient environment
Systemen in het netwerk

- Container boeking
- Boeking & planning
- Track & Trace
- Yard & terminal operaties
- Yard en terminal operaties
- ERP
- Depot & stockage
- Transport management
- Warehouse management
Use cases
When to use blockchain

• in a B2G-environment – when issuing legal documents: declarations, certificates, permits, …
  • Importance of timestamps when issuing, delivering freight documents on time, etc

• in a B2B-environment:
  • when there is no contractual relation between stakeholders
  • by combining the 3 different flows in the supply chain
Business cases
Practical cases proven to work in port area & hinterland transport

- Certificates (phytosanitary, Vinçotte case)
- Transparency in
  - multimodal transport (container pickup – secure container release, NMoT)
  - combined transport – barge & rail (H.Essers case)
- e-Documents & interoperability amongst freight documents
  - e-B/L
  - e-CMR
  - e-CIM
  - e-AWB

Blockchain enables assured multi-entity trusted collaboration and facilitates shared control over data between the different flows in the supply chain.
Challenges & obstacles for adoption

**Business**
- Change management – awareness-building executives
- Scaling – significant investment as not ready for mass adoption (not competitive)
- Set up early adopters ecosystem
- Data sharing – culture switch to open up company boundaries for mutual advantages

**Organization**
- Training & acquisition of personnel
- Integration with legacy – data integration, digitization, automation, process standardization
- Rollout – develop underlying infrastructure for sustainable & scalable impact

**Product**
- Switch to decentralized track & trace ledger instead of product data per department unit
- Integrate external product life cycle
- Confidentiality
- IP
- GDPR

**Technical**
- Security metrics
- (IoT) data integrity
- Data standardisation
- Domain knowledge to understand & use the data
- Data analytics – combining internal & shared knowledge
- Hardware conformance
Opportunities

**Ecosystem**
- **Increased efficiency, decreased cost** – shared infrastructure, elimination of redundancy
- **Process optimization** – optimized analytics due to larger heterogenous data pool
- **Process assurance** – traceability & faster fault/anomaly detection
- **Competitive advantage** due to ecosystem
- **On-demand** supply network – based on verified capability, expertise, locality
- **Add on**: Smarter warehousing, Data homogeneity, Clear ownership

**Suppliers & Customers**
- **Efficient cooperation** – real-time overview of value chain & contracts
- **Effective business processes** – automatic & immediate smart payments/contracts
- **Process optimization** thanks to immediate & privileged data access
- **Verifiable guarantees on certification & quality assurance**
- **Compliance** to rules & regulations
- **Audit** trail
Blockchain - Conclusions

- Not benefitting from the cryptocurrency attention
- Non-finance industry is only discovering its potentials, but has a different personality
- Business shock to blockchain adoption still too big compared to alternatives
- Not a standalone game changer
- Companies are waiting & looking for example cases, early adopters, multinationals
“No one can whistle a symphony.
It takes a whole orchestra to play it.”

H.E. Luccock
Merci beaucoup !