

XIC12

BLOCKCHAIN FOR SUPPLY CHAIN AND LOGISTICS FORUM

www.blockchainsupplychain.io

HOUSTON, TEXAS

MAY 21-22, 2018

Digitalization and Blockchain: Foundations for a Port of the Future (2)



Nico Wauters
Chief Executive Officer
T-Mining



Automate and Streamline Container Logistics Operations in the Port of Antwerp through Blockchain Technology

Houston, May 21, 2018
Nico Wauters, CEO T-Mining

AGENDA

- Intro
- Why Blockchain ?
- 3 Use-cases in the Port of Antwerp
- 3 Lessons Learned



Developing a Smart Contracts Community Platform for Logistics

End-users

Blockchain Services

Secure Container Release

Document transfer

...

allowing third parties to
quickly build blockchain services ...

Developers

Smart Contract
Platform for Logistics

Smart Contract libraries

API module

Governance module

... re-using ready-made components
tailored for logistics services and
community governance

Logistics
Communities

Permissioned Blockchain Infrastructure

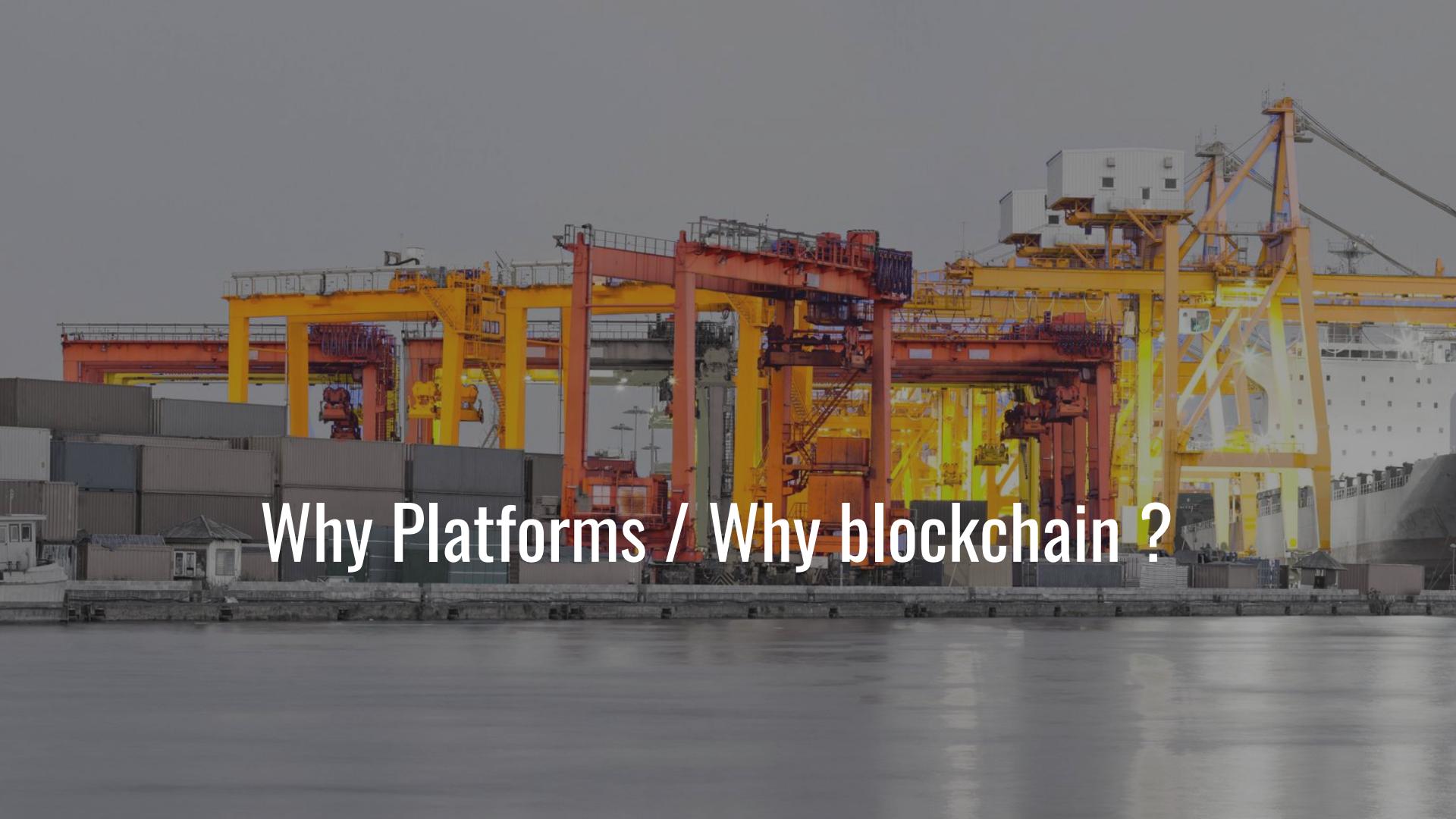
BC node toolkit

Etherium VM based
framework



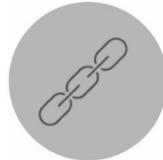
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BLOCKCHAIN
LOGISTICS

A wide-angle photograph of a busy port terminal. In the foreground, a dark body of water reflects the industrial structures. Behind it, several large yellow and orange gantry cranes are positioned over shipping containers. The containers are stacked in rows, with some being loaded or unloaded by the cranes. The sky is overcast and grey.

Why Platforms / Why blockchain ?

Current container logistics processes are lacking efficiency



Fragmented



No transparency



Paperbased/
Data duplication



Errors



Underutilisation



Not coordinated

30

people and organizations,
including more than 200
different interactions and
communications

50%

of the cost of moving
a container is related
to paperwork

43%

overall truck efficiency.
24% running empty /
57% average loading

4-5

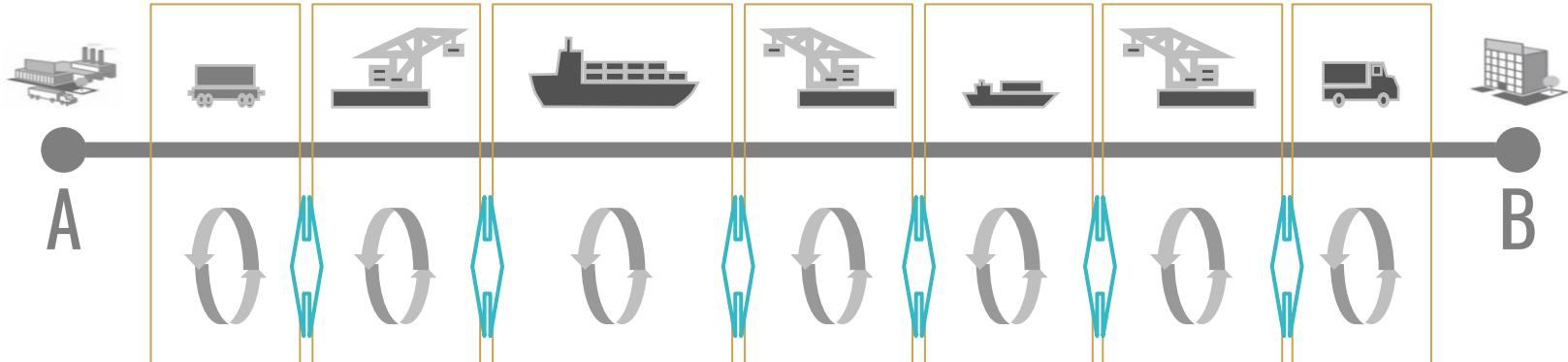
stack moves
before picked by
transporter



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The profit paradigm: optimized companies operations resulting in sub-optimized E2E supply chain



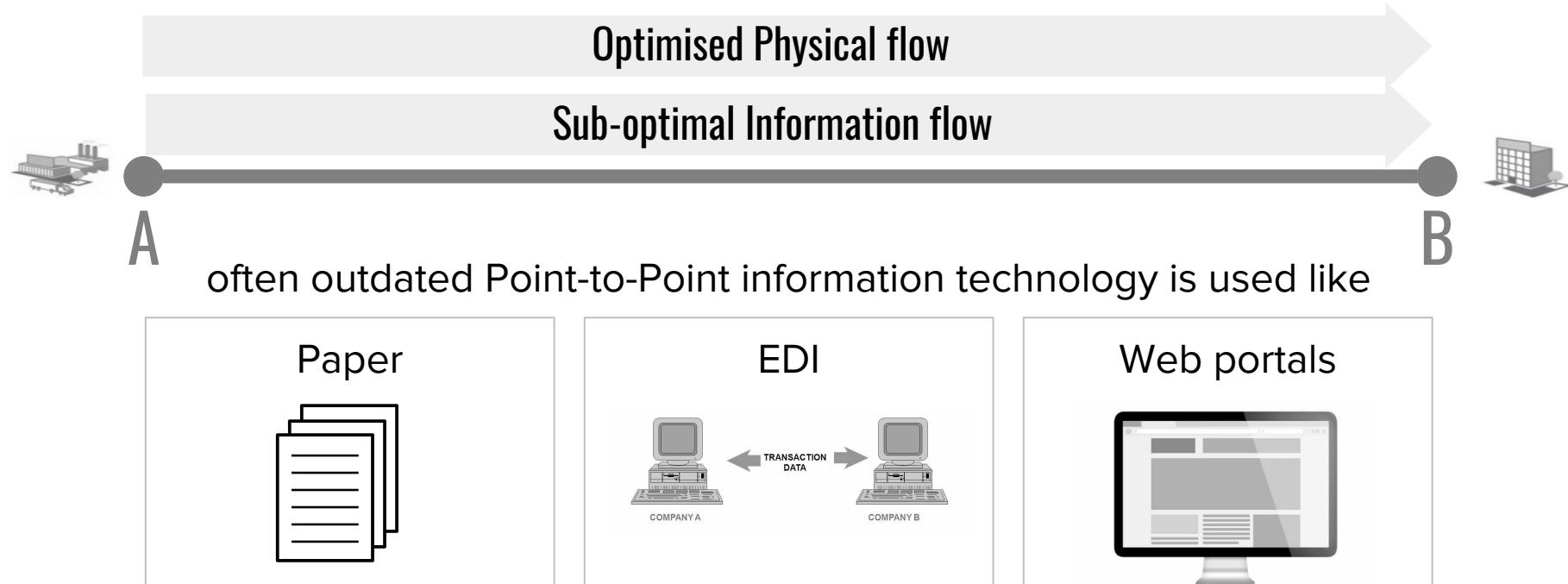
Horizontal Integration of the Supply Chain

Huge investments in internal ICT systems & process optimisations

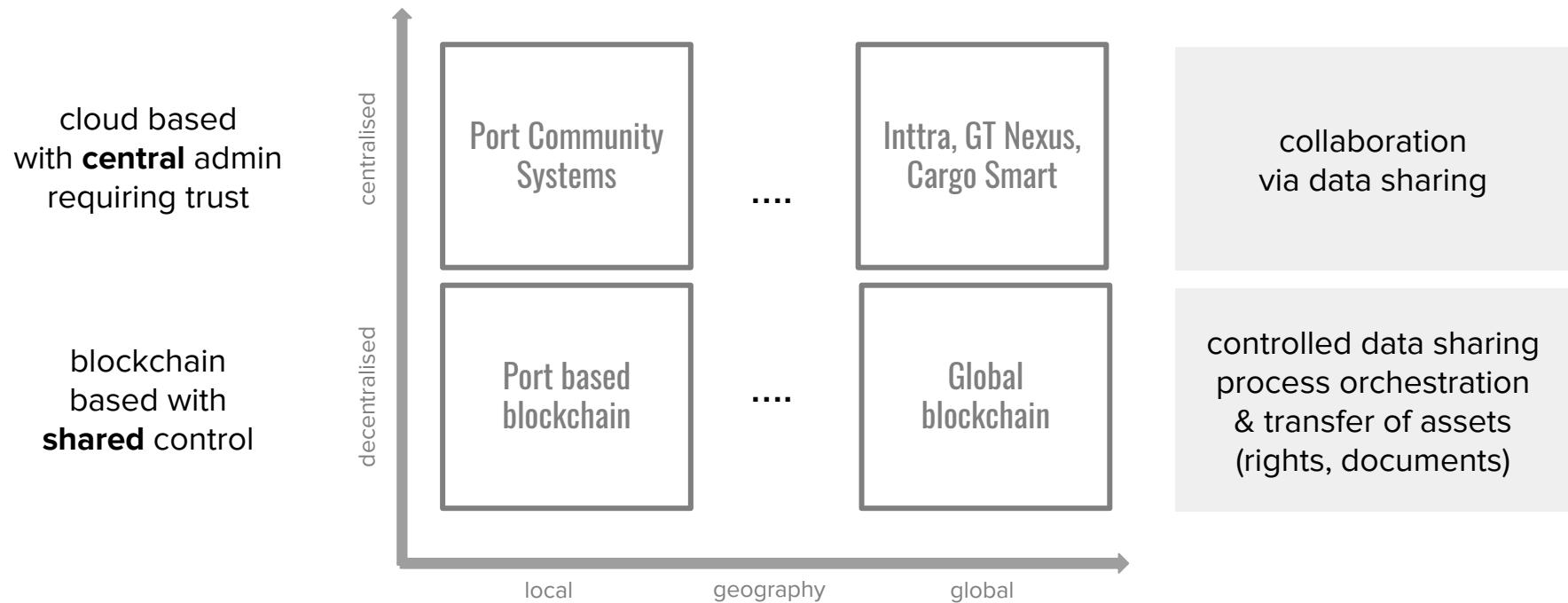
Point-to-point communication technology

Suboptimal collaboration locking further E2E optimisation and value

Why the E2E flow is sub-optimised?



Central cloud based platforms versus blockchain platforms

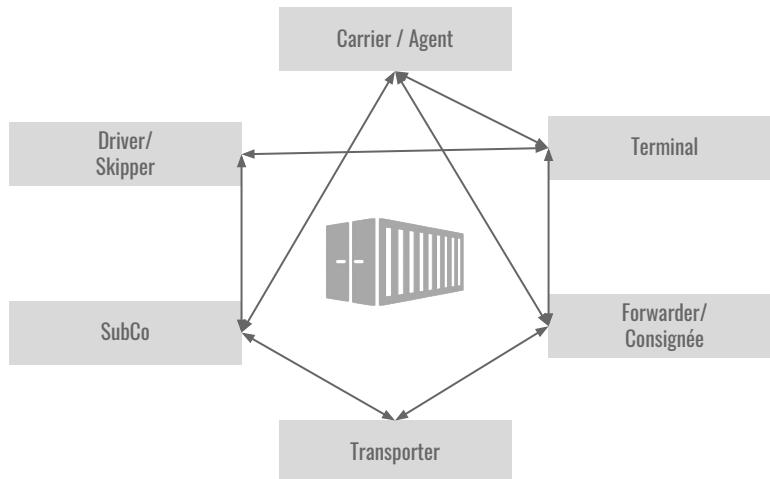


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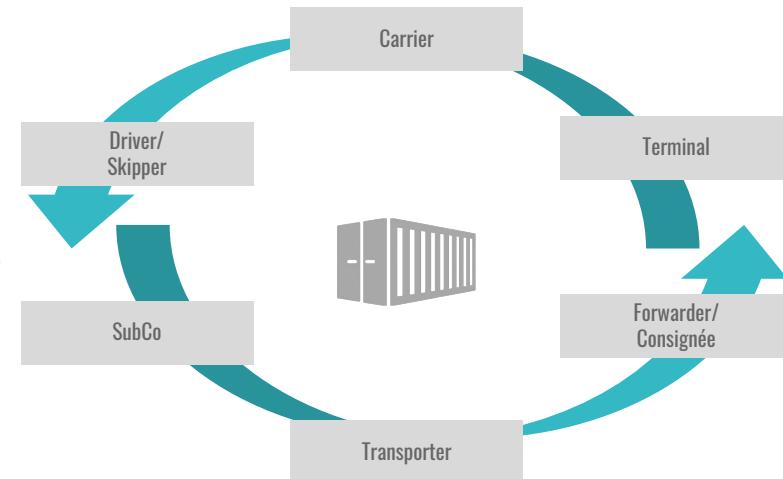
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Via smart contracts blockchain creates a trusted business process collaboration platform

Traditional Information flow



Blockchain-based Collaboration

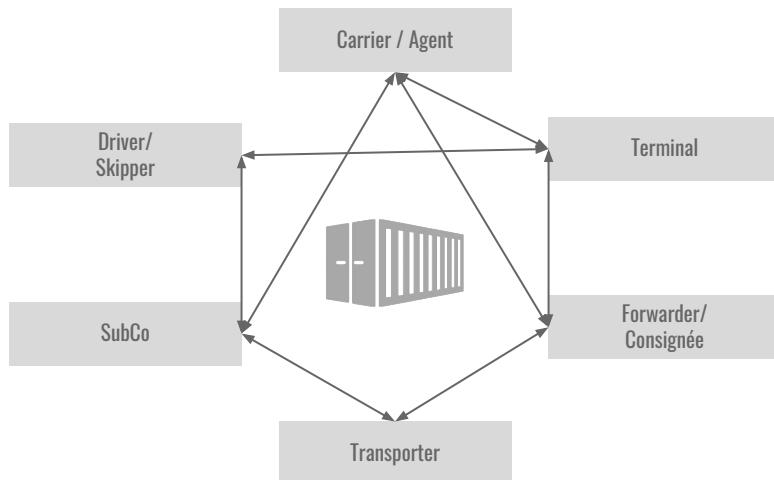


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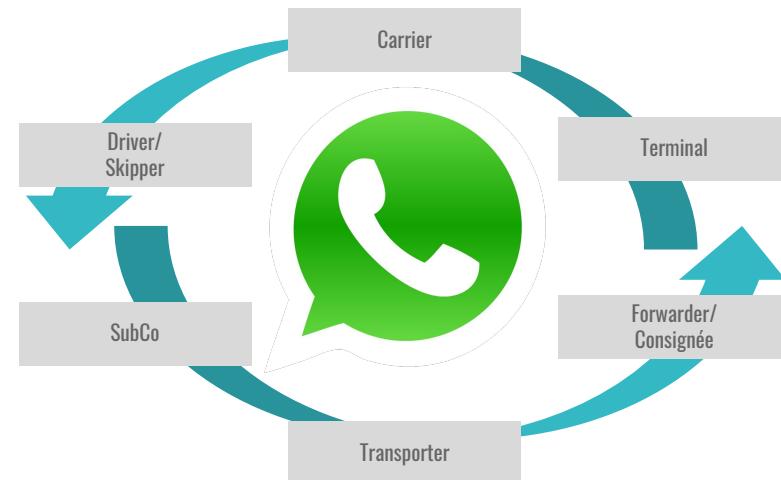
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LOGISTICS

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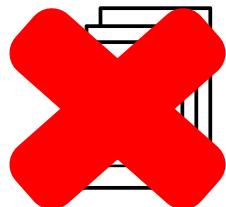


Blockchain-based Collaboration



Will blockchain succeed where centralised technologies failed?

Paper



EDI
interfaces



Web
portals



Blockchain-enabled
Peer to peer
Collaboration



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A wide-angle photograph of a busy port terminal. In the foreground, a large body of water reflects the industrial structures. On the left, several grey shipping containers are stacked. The middle ground is dominated by a complex array of industrial equipment, primarily large gantry cranes painted in bright yellow and orange. These cranes have long metal booms extending horizontally over the water. The background shows more of the port's infrastructure, including additional cranes and possibly some industrial buildings under a clear sky.

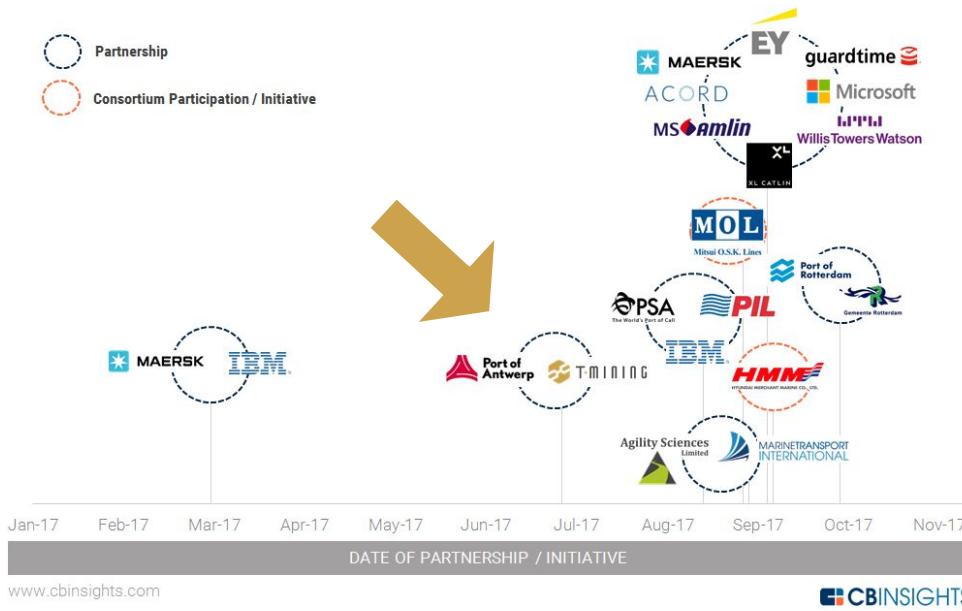
3 blockchain use cases in the Port of Antwerp

Antwerp pioneering in Logistics with Blockchain

Maritime Logistics + Blockchain Timeline

Select 2017 Blockchain Partnerships and Initiatives in the Maritime Logistics Space

- Partnership
- Consortium Participation / Initiative



Source: [CB Insight Research](#), November 2017

3 use-cases in Port of Antwerp

Secure Container Release

transfer assets



Securing critical transactions
solving the “double-spending” issue
ensuring superior security

Secure Documents Transfer

transfer certificates



reduce paperwork & automate
avoiding paperwork &
automating the document flow

Chainwise Collaboration

exchange data



improve operational efficiency
connecting data-silos & automating joint
business processes across the E2E flow

Use case 1: Secure Container Release

Today, a PIN code is used to release a container for pick-up ...



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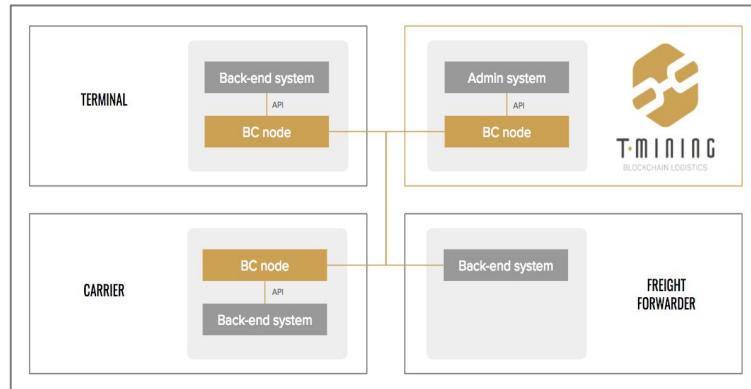
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Use case 1: Secure Container Release

Transferring the right to pick up a container along the chain



PoC in Port of Antwerp tokenizing the pickup right and allowing to securely transfer it



Blockchain accessible through API, web & mobile app

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Use case 2: Secure Document Transfer allows efficient processing of certificates reducing paperwork

Today's paper flow adds cost, time & complexity to trade flows

Introducing a digital workflow to transfer certificates



Importer



Approving Authority

Blockchain network

Create
certificate

Transfer / Share
certificate

Retrieve / Status
certificate

Approve / Reject
certificate

EXPORTING COUNTRY

Certifying Authority

Exporter

Port Authority or Customs

Benefits of Blockchain

- **only 1 party** at the time owning the digital certificate
- **secured handover** of certificates between parties
- **automated document workflow** allowing checks and notifications
- tamper free **audit trail** providing E2E transparency
- **paperless** transfer providing instant access to the data
- immutable **single source of truth** avoiding delays due to non-synchronised data



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BLOCKCHAIN LOGISTICS



Sign off

Search + New

type	reference	createdBy	createdAt	owner	status	Comments	Actions
e-phyto certificate	PHYTO-001	NPPO	2018-05-18T10:51:12Z	Company X	Created ▾	0	Actions ▾
e-phyto certificate	PHYTO-002	NPPO	2018-05-18T11:05:02Z	Company X	Rejected	2	Details Transfer Share
e-phyto certificate	PHYTO-003	NPPO	2018-05-18T11:40:18Z	Company Y	Accepted	1	Actions ▾

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A wide-angle photograph of a modern industrial port. In the foreground, a dark grey river or water body is visible. Behind it, a massive complex of industrial structures is built along a concrete pier. The most prominent features are several large gantry cranes, painted in bright yellow and orange, which are used for moving shipping containers. These cranes have long, articulated arms extending horizontally. The structures are multi-story, with various levels of walkways, ladders, and equipment. In the background, a large white ship is docked at the port, its hull and superstructure visible. The sky above is a uniform, pale grey.

3 Lessons learned

Lesson 1: Building this community network takes time

Application layer

Blockchain layer
exchanging data & automating multi-entity processes

Port
Authorities

Customs

Container
Carriers

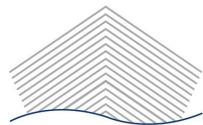
Terminal
Operators

Transport
Companies

Shippers
Warehouse



Lesson 2: Defining a Blockchain Governance is critical



NxtPort

NxtPort
the Community facilitator

**Setup governance
Define use case roadmap**



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Blockchain Technology provider

**Roll-out the network
Develops new blockchain services**

Lesson 3: Interoperability between multiple blockchains each serving its own users and having its own governance

Community-centric types of blockchains

- joint initiative from private & public sector within a single port
- port associations

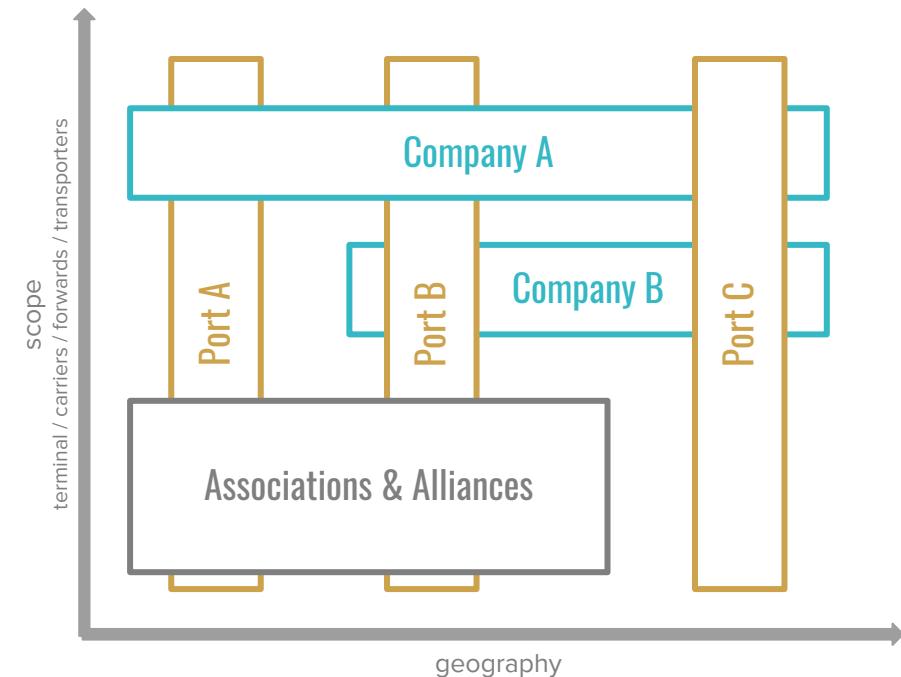
Ecosystem-centric types of blockchains

- centralised around one single **company**
- **alliances** or associations eg. freight forwarders

Need for Interoperability to facilitate interconnection between blockchains

requiring data standards to:

- transfer assets & rights
- orchestrate services between companies & communities



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Key takeaways

Permissioned networks are
fast, energy efficient and
production ready
but require
governance

Success is dependent on
the ability to create
communities

Multiple blockchain
networks will co-exists
and will be interconnected
via internet of blockchains

Thank you



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