How digitisation will change the face of the container shipping and port industries

Tim Smith, CEO Asia – APM Terminals The 6th Busan International Port Conference 1st November 2018



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World trade and its need for efficient shipping and port infrastructure continue to grow



More than **\$16 trillion** in goods are shipped across international borders each year



80% of the goodsare carried by theocean shipping industry.Ports are a critical link inthe global supply chain



More than **\$1 trillion** annual revenue for the wider shipping, ports and inland logistics services supporting global trade



However, efficient movement of goods is hampered by manual processes and wasteful operations

- Manual, time-consuming, paper-based processes developed 2 centuries ago (e.g. Bill of Lading, Letters of Credit, etc.)
- Complex, cumbersome, and costly peer-topeer messaging

A single shipment of avocados from Mombasa, Kenya to Rotterdam, Netherlands involves 30 actors, 100+ people, and 200 information exchanges



- Inconsistent information across organization boundaries
- Slow and costly processes involving multiple intermediaries

In the United States, 28% of the trucks drive on the road without cargo, creating a huge waste in the USD 700 billion p.a. haulage industry



Source: Economist Magazine 2016 Study.



Studies show that reducing barriers in the international supply chain offer huge potential to boost trade, economy and jobs creation

By removing barriers and improving how supply chains work, global trade could increase by nearly 15%, boosting economies and creating jobs¹

New technologies are emerging for digitisation and automation, which offer significant opportunities to bring the way we conduct world trade onto a far more efficient footing



- Opportunity to simplify and digitise the "paper flow" of moving goods around the world
- □ Opportunity to significantly improve efficiency in physical operations
- Opportunity to provide real-time transparency to improve management of global supply chains



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Case study 1

Potential of Blockchain Technology to build an electronic platform to connect the entire supply chain ecosystem



Blockchain technology can tackle process inefficiencies in international trade



- Simplify the "paper flow" of moving goods around the world
- Improve efficiency in physical operations



Reducing these barriers is an easy solution

- to boost economic growth and trade
- ✓ and create more employment



Maersk and IBM aim to connect the entire supply chain ecosystem through a platform marketplace



The participants in the ecosystem will include the network members, clients, and offering providers



- Ocean carriers
- Ports and terminals
- Government authorities
- Inland transportation
- 3rd party data providers



Primary consumers and beneficiaries of the platform

- Shippers (BCOs, retailers, manufacturers, etc.)
- Freight forwarders, customs brokers, 3PL
- Financial institutions



The collaboration model

An opportunity for all participants in supply chains to build an ecosystem to drive more efficient trade

- *A collaboration team* has been established to lead the initiative and drive industry adoption
 - Maersk has established an operational subsidiary to manage staff assigned to the collaboration; this subsidiary also ensures TradeLens independence from other Maersk business units
 - IBM has assigned dedicated staff from across its Blockchain, Cloud, consulting, and sales units
- IBM hosts, operates and supports the platform
- An Industry Advisory Board will be formed by ecosystem participants to help shape the platform and establish open standards
- Network Members, including ocean carriers, ports, inland transportation, and country authorities, are invited to participate on terms that give them access to the core platform, in exchange for the data they originate
- IBM, Maersk and 3rd parties can all build, deploy and independently market their own services through the TradeLens Application Marketplace
- Maersk business units including Maersk Line, Hamburg-Sud, APM Terminals, and Damco participate on the same terms as other participants with no special treatment or access to competitor data



TradeLens Overview

About the TradeLens Solution

Current Network Status – as of October 1, 2018

Terminals			
Terminal Location	Operator	Statu	
Algeciras, Spain	APM Terminals	۲	
Apapa, Nigeria	APM Terminals	۲	
Auckland, New Zealand	PortConnect	\bigcirc	
Avonmouth, UK	MCP	۲	
Bilbao, Spain	Port of Bilbao	\bigcirc	
Brisbane, Australia	Patrick Terminals	۲	
Buenos Aires, Argentina	APM Terminals	۲	
Callao, Peru	APM Terminals	۲	
Cotonou, Benin	APM Terminals	۲	
Felixstowe, UK	MCP	۲	
Fremantle, Australia	Patrick Terminals	۲	
Gothenburg, Sweden	APM Terminals	۲	
Halterm, Canada	Port of Halifax	۲	
Hong Kong	Modern Terminals	۲	
Houston, TX USA	Port of Houston	۲	
Itajai, Brazil	APM Terminals	۲	
Izmir, Turkey	APM Terminals	۲	
Lazaro, Mexico	APM Terminals	۲	
Liverpool, UK	MCP	۲	
Los Angeles, CA	APM Terminals	\odot	

Ports and

Terminal Location	Operator	Status
Maasvlakte II, Netherlands	APM Terminals	\bigcirc
Manila, Philippines	ICTSI	\bigcirc
Melbourne, Australia	Patrick Terminals	\odot
Montreal, Canada	Port of Montreal	\bigcirc
Mobile, AL USA	APM Terminals	\odot
Newcastle, UK	MCP	\odot
Onne, Nigeria	APM Terminals	\odot
Philadelphia, PA USA	Packer Terminals	$oldsymbol{O}$
Pecem, Brazil	APM Terminals	\odot
Rotterdam, Netherlands	APM Terminals	\bigcirc
Sydney, Australia	Patrick Terminals	\odot
Singapore, Singapore	PSA	\odot
Tangier, Morocco	APM Terminals	\odot
Teesport, UK	MCP	\odot
Valencia, Spain	Port of Valencia	\bigcirc

Ocean Carriers		
Ocean Carrier	Status	
Maersk Line	۲	
Hamburg-Sud	\bigcirc	
Pacific International Lines	\bigcirc	
Boluda Lines	\bigcirc	

Government Authorities Authority Australia Home Affairs Bahrain Customs

Canada Customs Ghana / GCNET

Peru Customs

Turkey Customs

Saudi Arabia Customs

Singapore Customs

Status

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Live: The Network Member is connected to the Platform and providing data

 In Process: The Network
 Member engaged and/or integration is in process

Some members engaged under Early Adopter Program and/or trial agreements



Transportation Provider	Status
Ancotrans	\bigcirc
CN Rail	\bigcirc
IMCC	\bigcirc



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Global Open Trade Digitisation Platform : A Way Forward

All the main prerequisites to digitise global trade are coming into place :

- We have visibility into the efficiency and benefits to supply chains from Global Trade Digitisation
- $_{\odot}\,$ the technology exists and is scaleable
- $_{\odot}\,$ the concept of how to apply it to our industry is emerging

The task ahead of us is to :

- engage with stakeholders across the industry, as we are doing today;
- $\circ~$ build awareness of the potential of this technology; and
- $\circ~$ work to generate broad support and participation.



Case study 2

Potential of digitisation/automation to transform container port operations



Container ports are in various stages of digital transformation. However, the efforts are often isolated and at different levels.

Port authority digitisation

The port of Rotterdam launched its **Portbase system in 2009**, digitizing over 40 services, including pre-reporting a vessel, sharing status of a shipment, export documentation, and loading/unloading papers.

Port terminal digitisation/automation

APMT launched the world's first fully automated container terminal at **Rotterdam MV2** in 2015, realising stable and safe operations as well as significant labor cost saving.

Port – City logistics digitisation

According to a 2017 study by SIPG and Accenture, there is **USD 1.5 billion p.a**. cost saving potential from digital optimisation in container trucking, barge operation and further sharing of up-stream and down-stream data **in Shanghai port alone**.

Port - wide supply chain digital integration

This is the **next stage of port-ecosystem digitisation**, which requires the support of all the stakeholders in the value chain.





Maersk is currently focusing its port terminal digitisation efforts on 3 levels APMT terminal-specific APMT & Maersk T&L Scope Asset and terminal monitoring Visualisation and dashboarding Analytics engine Level Micro-level ID, type, status, Ranking against operations location asset average breakdown Historical and Visualisation of Asset scheduled Highlighting of KPI operations maintenance data, breakdown and issues ranking usage • OEE Asset portfolio data Benchmarking Decision support against terminal Live alerts Advanced analytics assets % assets active/ Maintenance Terminal • KPI comparison down/under maint. scheduling Filtering based on • Berth status and Predictive features OEM, type, (capacity, maint.) allocated assets performance etc. Terminal locations. Benchmarking against Decision support Ť size, capacity global KPIs across Advanced analytics utilization, location. etc. identifying Global performance opportunities for Filtering based on Capacity status global optimisation region, OEM (available, stored, Handling capacity, • OEM benchmarking customs, etc.) growth, utilization



Case study 3

Remote Container Management



Maersk Remote Container Management offers greater cargo care visibility







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However we need to overcome a number of challenges in order to fully unlock the huge opportunity presented by emerging technologies...

□ Regulatory barriers

- Take the Maersk-IBM Blockchain initiative for example, without approvals from relevant regulatory authorities and government stakeholders (e.g. Customs), the technology cannot unlock its huge potential value to global users & stakeholders.
- Data protection increasingly draws the attention of national authorities and is subject to complex and unco-ordinated rules.

□ Human capital

- The shipping and logistics industries need to develop management cultures capable to embrace the opportunities to transform the way we work.
- In future we will be competing more with the likes of Amazon and Alibaba and need to attract the talent to develop, apply and operate in the digital age



And in an increasingly inter-connected world, we also must not forget the challenges of cyber security !

WORLD MARITIME NEWS	
HOME NEWS BY TOPIC REGIONAL NEWS IN DEPTH EVENTS SUBSCRIBE	第四章新激射经 新激射经 新激制法→ 素能→ 正文 新一轮网络攻击欧洲肆虐 俄石油马士基中招
Maersk Contains Cyber Attack Works on	美股行情中心: 独家提供全美股行业板块、盘前盘后、ETF、权证实时行情
Recovery Plan	Der Bergen - Das er innensektent in Case anne Alveranten Afrika der eine Albeiten einer Albeiten einer Alveranten Afrika der einer Albeiten einer Bergener albeiten einer Albeiten einer Bergener Albeiten aus der Albeiten einer Bergener albeiten einer Albeiten einer Bergener Albeiten aus der Albeiten einer Bergener albeiten einer Bergener aus der Bergener anderen einer Bergener aus der Albeiten einer Bergener aus der Albeiten einer Bergener aus der Albeiten einer Bergener aus der Bergener aus der Albeiten einer Bergener aus der Albeiten einer Bergener aus der Bergener aus der Bergener aus der Albeiten einer Bergener aus der Albeiten einer Bergener aus der Ber



Danish transport and logistics major A.P. Moller – Maersk has informed that it managed to contain a cyber attack which shut down IT systems across multiple sites and select business units.

The conglomerate, which was hit as part of a global <u>cyber attack</u> named Petya on June 27, 2017, said that it is working on a technical recovery plan with key IT partners and global cyber security agencies.





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The digital transformation is not easy, but the benefits far outweigh the risks and challenges!

Key stakeholders	Benefits
Cargo owners	Improved predictability, lower costs and fees, and less safety stock inventory
Shipping lines	Reduced network integration cost, improved asset utilization and opportunity to tap into end-to-end revenue opportunities
Port operators	Improved terminal planning with both landside partners and ocean carriers to reduce cost and generate revenue from the port ecosystem
Freight forwarders	Real time access to end-to-end supply chain data to improve operations efficiency and customer service
Customs/authorities	Opportunity to use block-chain and big data and to enhance data integrity, develop analytical capabilities, and minimize manual paperwork.



Thank you !

