INALOG
INSTITUTO NACIONAL DE LOGÍSTICA

Uruguay Logístico

"El cambio tecnológico nunca será tan lento como hoy"

The Future of Cross Border Digital Trade and the Role of Seaports

UNITED NATIONS
UNCTAD

Jan.Hoffmann@UNCTAD.org

Digitalization and trade

- The mindset
- Challenges ahead
- Science Fiction?
- Back to basics

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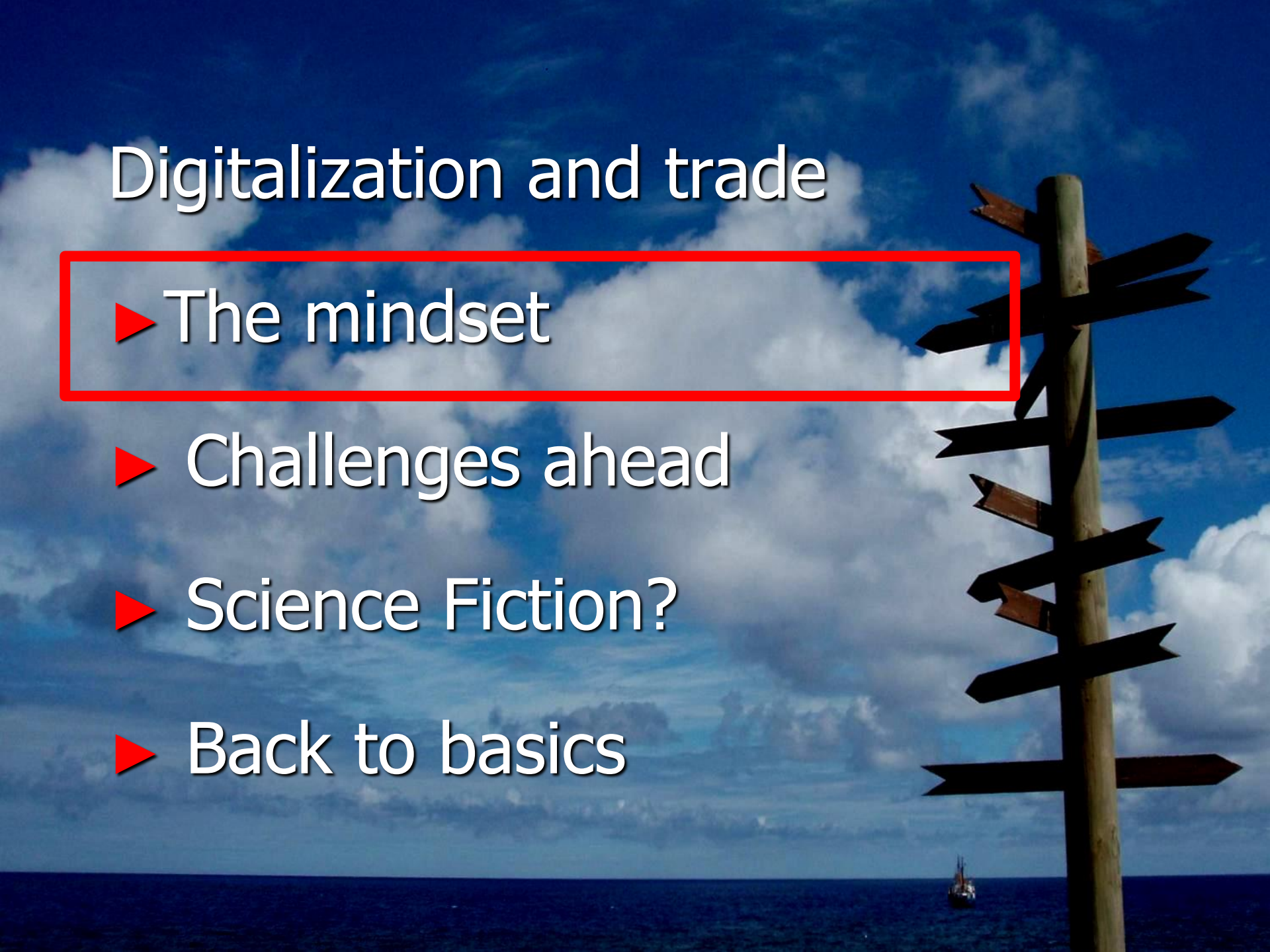


Three stages of digitalization

- **1. Optimization**
  Maximizing efficiency and reliability in existing processes
- **2. Extension**
  Moving beyond efficiency to capture new sources of value
- **3. Transformation**
  Reinventing logistics, trade and business models, based on data-driven revenue streams

Source and further reading:
https://t.co/vbHAdYaSWf

1. Optimization

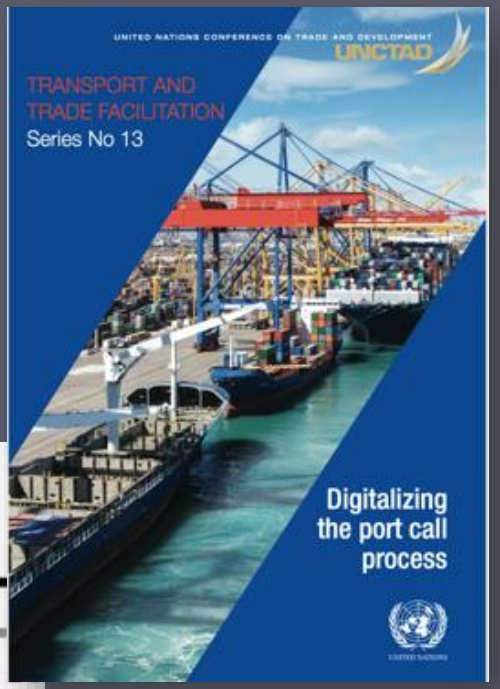
Example: Port call optimization

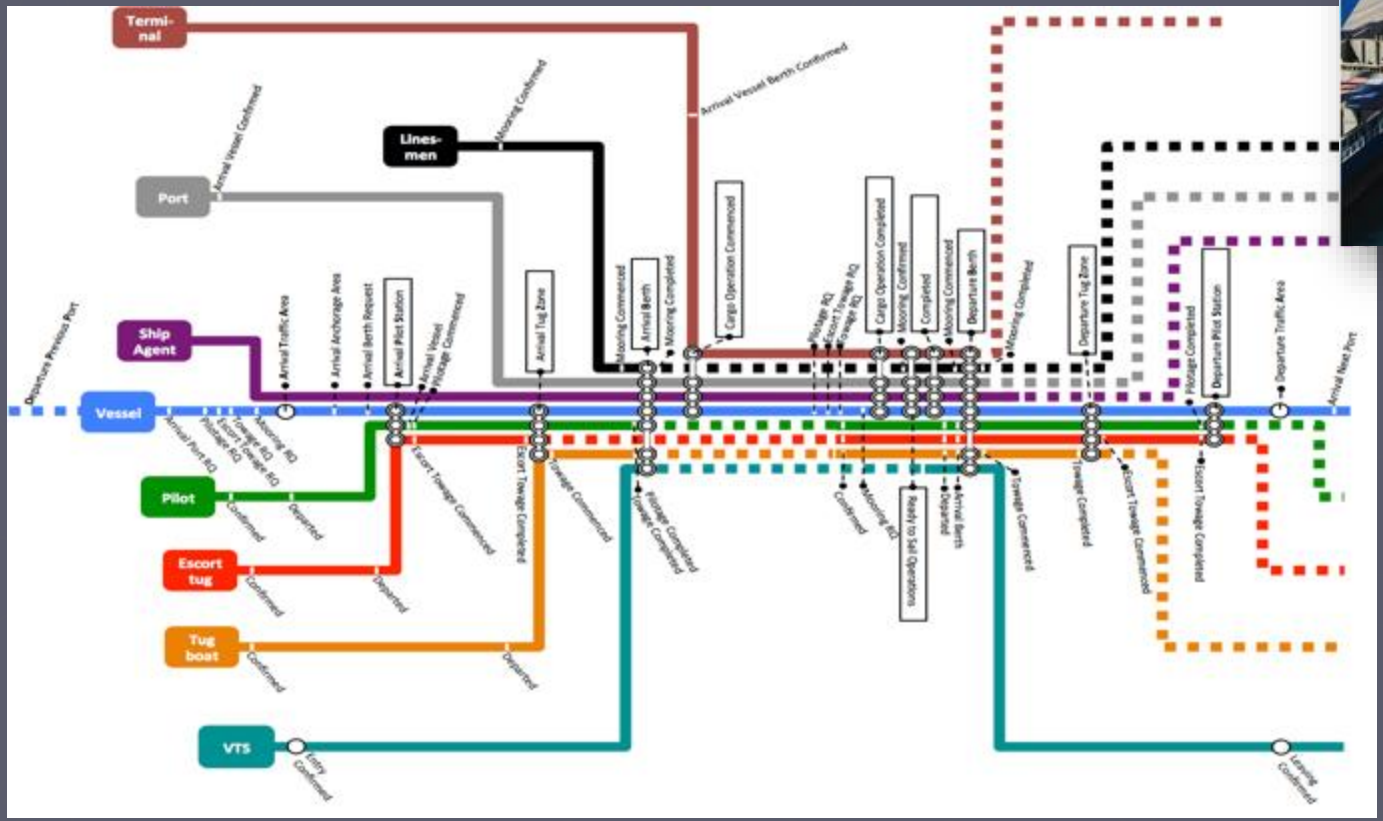
"Port Call Optimization is about optimizing speed, draught and port stay, leading to lower costs, cleaner environment, more reliability and safety for Shipping, Terminals and Ports".

https://portcalloptimization.org/

1. Optimization

The complexity of port call operations





Source: Lind M., Haraldson S., Karlsson M., Watson R.T. (2016) Overcoming the inability to predict - a PortCDM future, 10th IHMA Congress – Global Port & Marine Operations, 30th May – 2nd May 2016, Vancouver, Canada

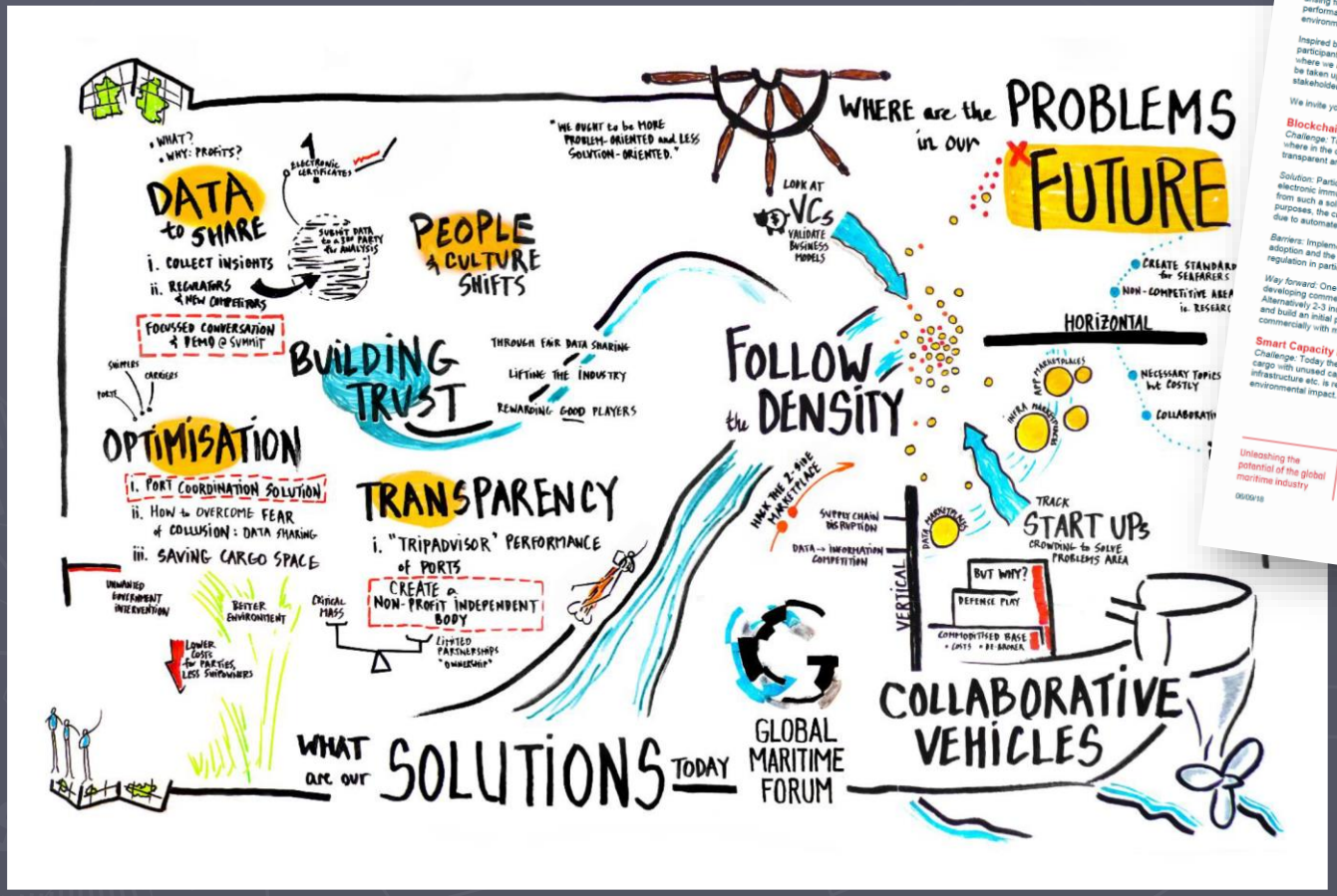
1. Optimization

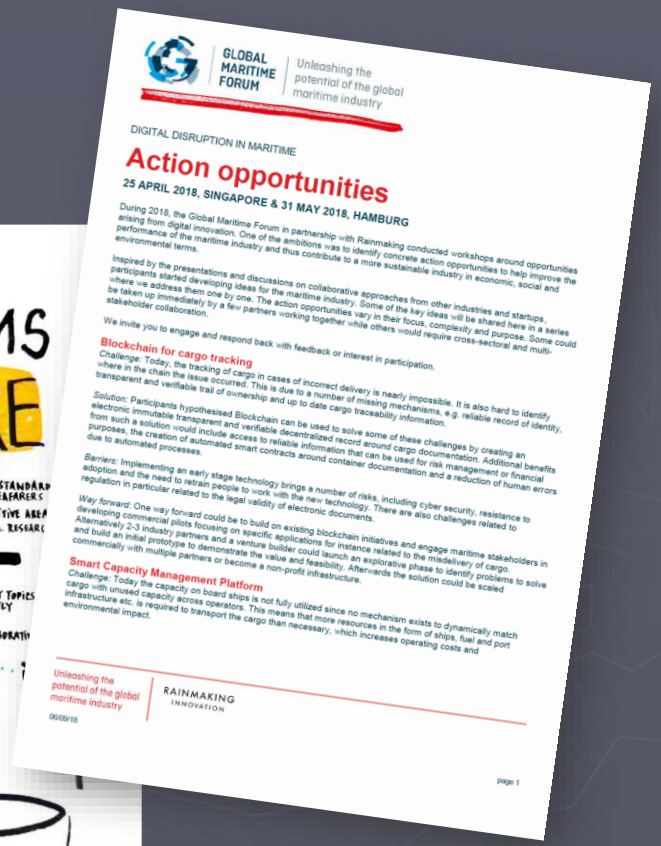
"An important driver for the optimization of port calls is that relevant **data is shared in advance**. This enables better planning of berth occupation, availability of equipment, labour resources, as well as stowage planning and the subsequent distribution and delivery arrangements (…)".

Source:
Digital Data Sharing: The Ignored Opportunity for Making Global Maritime Transport Chains More Efficient. Blog written by Mikael Lind et al. Article No. 22 for ***UNCTAD Transport and Trade Facilitation Newsletter*** *N°79* - Third Quarter 2018

2. Extension

"Action opportunities"




GLOBAL MARITIME FORUM
Unleashing the potential of the global maritime industry

DIGITAL DISRUPTION IN MARITIME

Action opportunities

25 APRIL 2018, SINGAPORE & 31 MAY 2018, HAMBURG

During 2018, the Global Maritime Forum in partnership with Rainmaking conducted workshops around opportunities arising from digital innovation. One of the ambitions was to identify concrete action opportunities to help improve the performance of the maritime industry and thus contribute to a more sustainable industry in economic, social and environmental terms.

Inspired by the presentations and discussions on collaborative approaches from other industries and startups, participants started developing ideas for the maritime industry. Some of the key ideas will be shared here in a series where we address them one by one. The action opportunities vary in their focus, complexity and purpose. Some could be taken up immediately by a few partners working together while others would require cross-sectoral and multi-stakeholder collaboration.

We invite you to engage and respond back with feedback or interest in participation.

Blockchain for cargo tracking

Challenge: Today, the tracking of cargo in cases of incorrect delivery is nearly impossible. It is also hard to identify where in the chain the issue occurred. This is due to a number of missing mechanisms, e.g. reliable record of identity, transparent and verifiable trail of ownership and up to date cargo traceability information.

Solution: Participants hypothesised Blockchain can be used to solve some of these challenges by creating an electronic immutable transparent and verifiable decentralized record around cargo documentation. Additional benefits from such a solution would include access to reliable information that can be used for risk management or financial purposes, the creation of automated smart contracts around container documentation and a reduction of human errors due to automated processes.

Barriers: Implementing an early stage technology brings a number of risks, including cyber security, resistance to adoption and the need to retrain people to work with the new technology. There are also challenges related to regulation in particular related to the legal validity of electronic documents.

Way forward: One way forward could be to build on existing blockchain initiatives and engage maritime stakeholders in developing commercial pilots focusing on specific applications for instance related to the misdelivery of cargo. Alternatively 2-3 industry partners and a venture builder could launch an explorative phase to identify problems to solve and build an initial prototype to demonstrate the value and feasibility. Afterwards the solution could be scaled commercially with multiple partners or become a non-profit infrastructure.

Smart Capacity Management Platform

Challenge: Today the capacity on board ships is not fully utilized since no mechanism exists to dynamically match cargo with unused capacity across operators. This means that more resources in the form of ships, fuel and port infrastructure etc. is required to transport the cargo than necessary, which increases operating costs and environmental impact.

Unleashing the potential of the global maritime industry | RAINMAKING INNOVATION

06/09/18

page 1

Further reading: http://globalmaritimeforum.org

GLOBAL MARITIME FORUM

2. Extension

"Action opportunities"

- Blockchain for cargo tracking
- Smart capacity management platforms
- Circular logistics solutions
- Driver and crew recruitment and allocation marketplace
- "Trip advisor" for transport industry
- …

GLOBAL MARITIME FORUM | Unleashing the potential of the global maritime industry

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Unleashing the potential of the global maritime industry | RAINMAKING INNOVATION

06/09/18

page 1

Further reading: http://globalmaritimeforum.org

GLOBAL MARITIME FORUM

3. Transformation

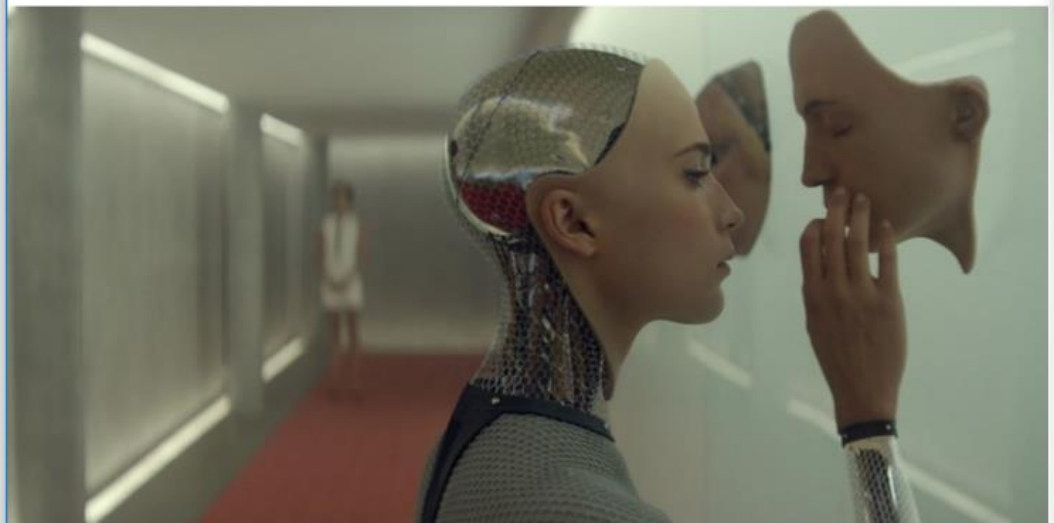
big think
Smarter Faster

DISCOVER VIDEO BIG THINK FOR BUSINESS

Human-like A.I. will emerge in 5 to 10 years, say experts

A survey conducted at the Joint Multi-Conference on Human-Level Artificial Intelligence shows that 37% of respondents believe human-like artificial intelligence will be achieved within five to 10 years.

STEPHEN JOHNSON 26 September, 2018



www.cepal.org/en/publications/45455-industry-40-and-emergence-logistics-40

Original: Español

www.cepal.org/transporte

número 7 / 2019 / ISSN: 1564-4227

FAL

BOLETÍN 375

FACILITACIÓN, COMERCIO Y LOGÍSTICA EN AMÉRICA LATINA Y EL CARIBE

CEPAL

La revolución industrial 4.0 y el advenimiento de una logística 4.0

Antecedentes

La llamada cuarta revolución industrial (4RI) trae aparejada una serie de cambios disruptivos tanto en los modelos de negocios como en las cadenas productivas que los sustentan. La logística, como parte fundamental de estos procesos, no queda ajena a estos cambios trascendentales. Esta cuarta revolución industrial se caracteriza por la velocidad, la amplitud y profundidad en que ocurre. Los cambios son tan vertiginosos que cambiarán la manera como vivimos, trabajamos y nos relacionamos, impactando a los países, las empresas, las industrias, y la sociedad en su conjunto (Schwab, 2016). El sistema logístico del futuro, en consecuencia, apunta a la interconectividad de la información, la optimización del tiempo y los recursos, con una fuerte inversión y desarrollo en innovación para mantener su competitividad.

www.cepal.org/en/publications/45455-industry-40-and-emergence-logistics-40

Optimización de la carga

Big Data

Sector logístico

Blockchain

Tecnologías industriales

Automatización

Cloud computing

IoT

Inteligencia artificial

Robótica

IIoT

3D

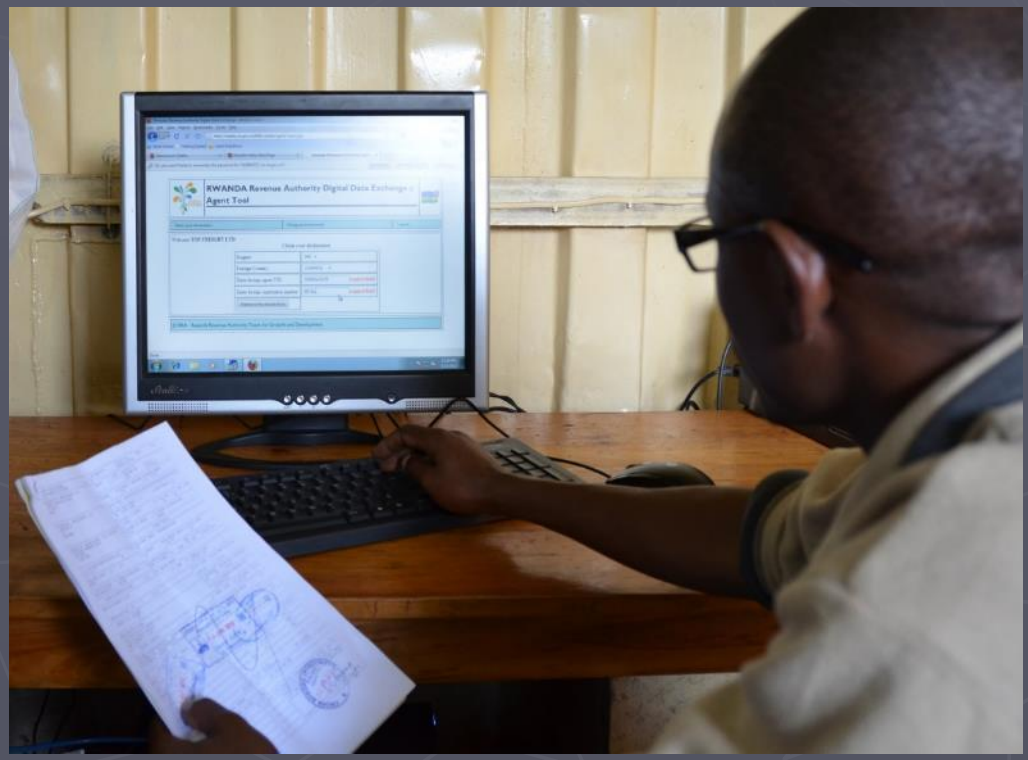
The mindset

- How to set today's rules for the future?

- The negotiation, ratification and implementation of conventions take time
- Need to commit to whatever is the best [future] technological solution

Out of date already?

- In the future the concept of "copies" versus "originals" as per Article 10.2 TFA will become obsolete as processes focus on data rather than on documents.



Out of date already?

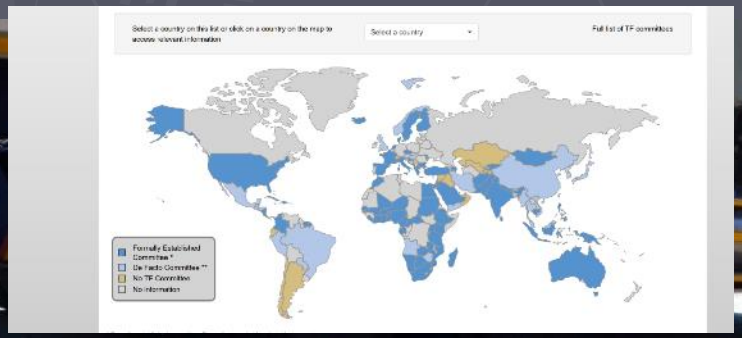
- The same may apply to "information technology to support the single window" as per Article 10.4, as focus shifts to data and information on a **distributed** ledger.

A dynamic dimension in the TFA

- In the long term, Article 10.1 will gain in importance, it does not prescribe any specific technological solution.

A dynamic dimension in the TFA

- In the long term, Article 10.1 will gain in importance, it does not prescribe any specific technological solution.
- Progressively, various provisions will become antiquated or obsolete and we will just want to *minimize* "the incidence and complexity of import, export, and transit formalities"; continuously "*review*" requirements; keep "*reducing* the time and cost of compliance for traders and operators"; and always choose "the *least* trade restrictive measure" (10.1 TFA)



A dynamic dimension in the TFA

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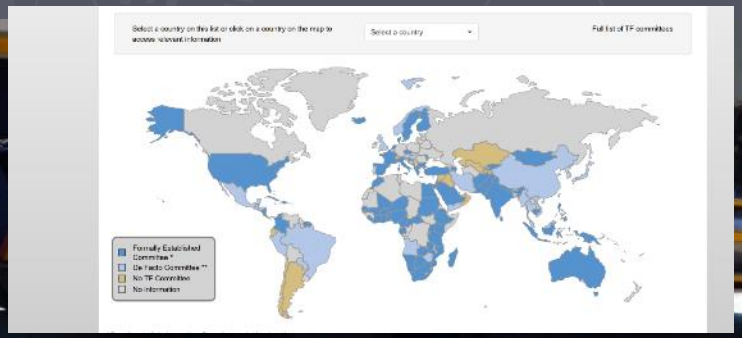
Institutional setting to continuously review: NTFCs

Trade Information Portal: to document and visualize procedures and potential for simplification



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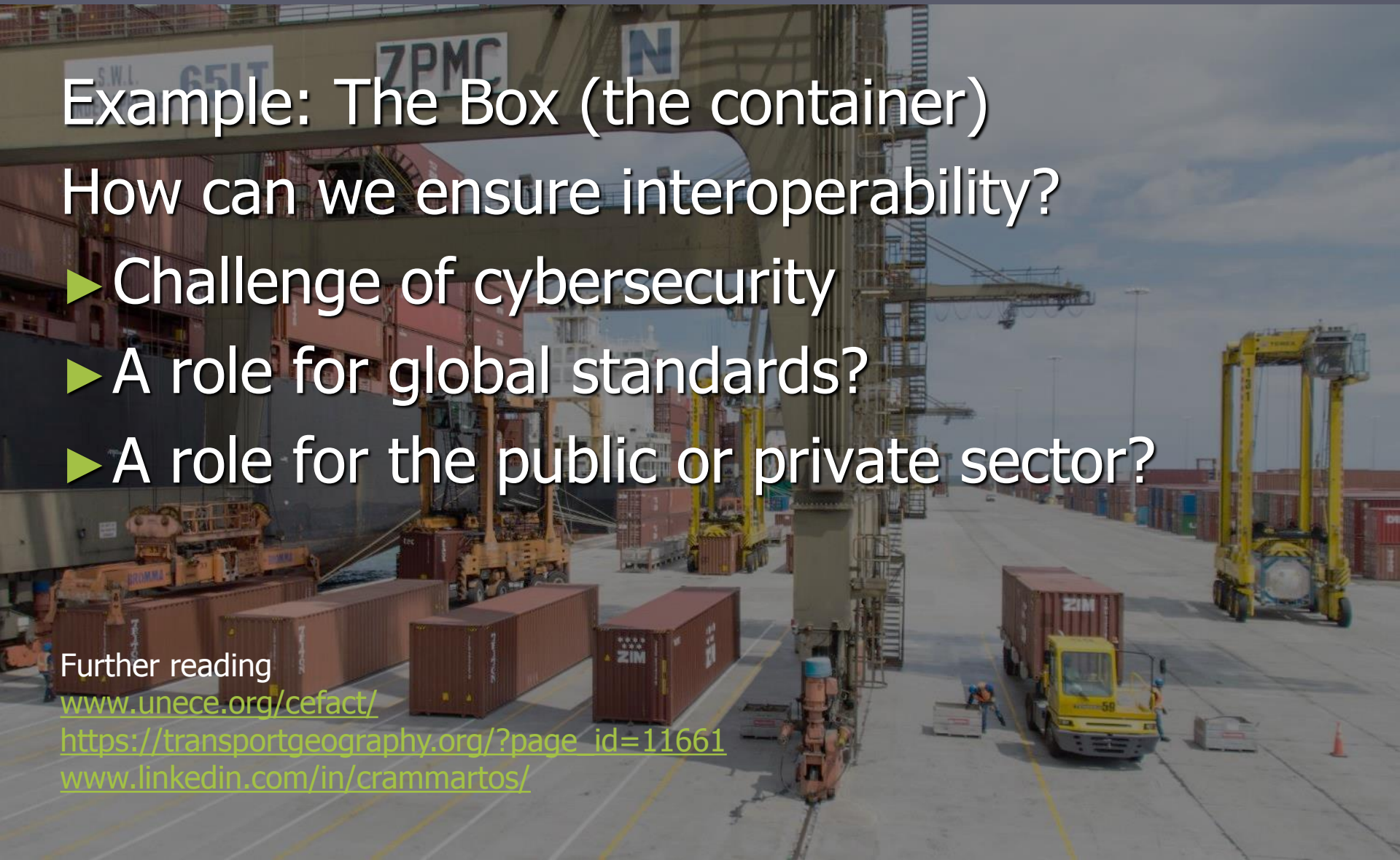
Challenge #1: Interoperability



Example: The Box (the container)

How can we ensure interoperability?

- Challenge of cybersecurity
- A role for global standards?
- A role for the public or private sector?

Further reading

www.unece.org/cefact/

https://transportgeography.org/?page_id=11661

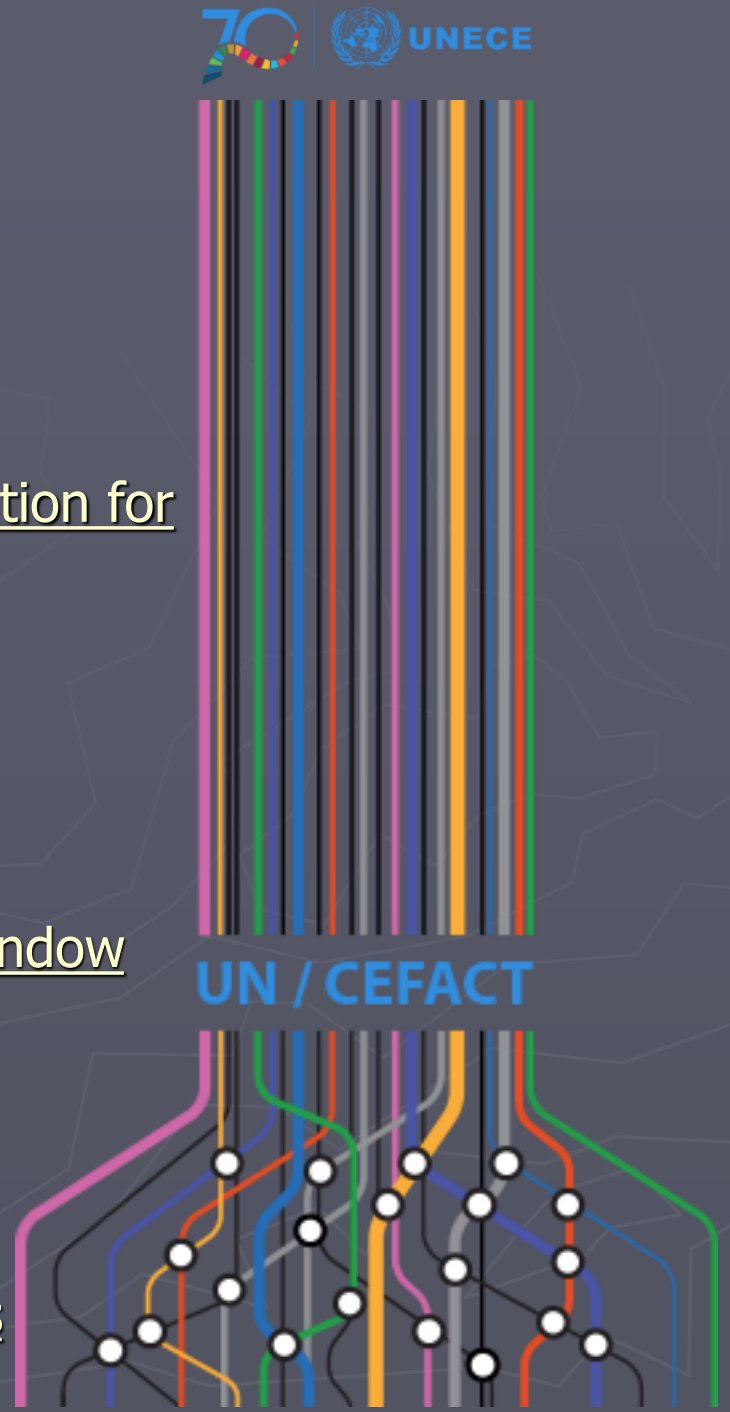
www.linkedin.com/in/crammartos/

UN/CEFACT Single Window

- Rec33 – Single Window Recommendation (new release for 2020)
- Rec34 – Data Simplification and Standardization for International Trade
- Rec35 – Establishing a legal framework for international trade Single Window
- Rec36 – Single Window Interoperability
- Rec37 – Single Submission Portal
- Technical Note on terminology for Single Window and other electronic platforms

Work in progress:

- Recommendation Project on Core Principles of Single Window Operations



Challenge #2
Competition & Cooperation

We want to encourage technological progress without creating monopolies

Further reading: UNCTAD Policy Brief
https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2246

Consolidation in shipping

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

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The contents of this report must not be quoted or summarized in the print, broadcast, electronic or social media before
3 October 2018, 0700 GMT
(3 a.m. New York; 9 a.m. Geneva; 12.30 p.m. Delhi; 3 p.m. Hong Kong)

No. 69
SEPTEMBER 2018

POLICY BRIEF

MARKET CONSOLIDATION IN CONTAINER SHIPPING: WHAT NEXT?

Over the past two years, a wave of market consolidation has transformed the global container shipping industry, leading to mergers and acquisitions between container lines, a reshuffling of shipping alliances and the expansion of shipping companies into port operations. There is potential for more consolidation, which raises the question as to the implications for market concentration levels, and whether the industry is becoming an oligopoly on certain routes.

Consolidation activity in 2016–2018 reflects the industry's efforts to cope with the difficult market conditions faced since the 2008 global financial crisis. For many years, container shipping has struggled with low freight rates, dwindling earnings and poor financial returns.

There are clearly two sides to the container market consolidation story. By consolidating and joining alliances, container lines can expect to reduce costs, better manage ship capacity and enhance efficiency. These, in turn, benefit shippers, if on a given route the savings achieved by container lines translate into lower rates and improved service offerings. On the other hand, shippers, trade and ports can be negatively affected, if on a given route, consolidation results in reduced competition, constrained supply, market power abuse, and higher rates and prices. These trends call for systematic and regular monitoring and assessment of consolidation trends in container shipping.

Growing container shipping market consolidation

Since 2016, the global container shipping industry, which handles about 60 per cent of seaborne merchandise trade in terms of value, witnessed a series of developments leading to major market consolidation.[1] Container lines concluded various mergers and acquisitions and formed larger strategic shipping alliances – groupings where member container lines cooperate on strategic issues. This consolidation activity resulted in greater market concentration, with a handful of container lines dominating the market. As of January 2018, the top 15 container lines accounted for just over 70 per cent of all container ship capacity. Six months later, in June, the top 10 controlled almost 70 per cent of capacity, reflecting the completed operational integration of the new mergers.

Between 2004 and 2018, the number of companies providing services per country

[1] This policy brief draws mainly upon the information, data and analysis reported in the UNCTAD publication, *Review of Maritime Transport 2018*. Relevant references and sources are available at http://unctad.org/RMT (accessed 13 September 2018).

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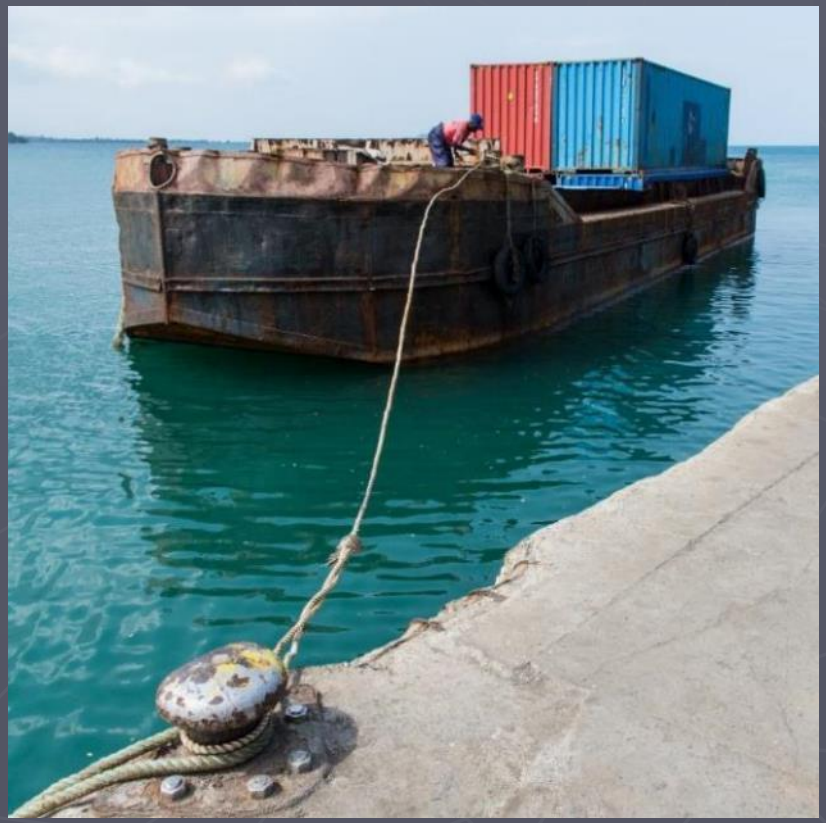
Further reading: UNCTAD Policy Brief
https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2246

Challenge #3: Development

Challenges and opportunities for Developing countries

- Open up or protect?
- The right mix of global and national rules?
- Role of Trade Facilitation?



Further reading: UNCTAD Policy Brief
https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2479

Digitalization in shipping

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No. 75
JUNE 2019

POLICY BRIEF

DIGITALIZATION IN MARITIME TRANSPORT: ENSURING OPPORTUNITIES FOR DEVELOPMENT

Digitalization and new developments in artificial intelligence, blockchain, the Internet of things and automation, are of increasing relevance to maritime transport. They help optimize existing processes, create new business opportunities and transform supply chains and the geography of trade. Notwithstanding the potential opportunities and benefits offered by these technologies, they also entail risks and potential costs to maritime actors in developing countries. It is thus necessary to establish a level playing field.

This policy brief discusses the role of interoperability and global standards, the importance of promoting technological innovation, while avoiding monopolistic outcomes, and the need to ensure that digitalization works towards the achievement of the Sustainable Development Goals.

Key points

- There is a need for policy design at the national and international levels to ensure that developing countries can benefit from the digitalization of maritime transport.
- It is important to provide support for innovation at home, as policies that facilitate access to cutting-edge technologies can affect the trade competitiveness of importers and exporters.
- Developing countries need to build institutional capacity in competition and data protection.
- Policymakers can facilitate cooperation by promoting national collaborative platforms.

Port and shipping services can significantly benefit from digitalization. UNCTAD research indicates that maritime transport, with a fleet of 95,402 ships, carries about 80 per cent of global trade volumes.[1] Practically all the data behind any maritime trade transaction and transport operation are being digitized. The Internet of things, coupled with an increasing availability of data, will allow for an exponential growth of automated processes. The combination of enhanced digital and physical connectivity will help carriers, seaports and intermodal transport providers integrate their processes with the shippers' own globalized supply chains, providing a better visibility of shipments at any given time. This is facilitated by artificial intelligence, which can help analyse the growing volume of data from automatic identification systems; global positioning systems; and tracking devices for cargo and containers. These data can be reported and securely stored on the blockchain, making them tamper-proof and trackable. To benefit from these trends, developing countries need to ensure not only access to these services, but also participation in the business as service providers, while ensuring a positive net impact on employment.

1 UNCTAD, forthcoming, *Review of Maritime Transport 2019*.

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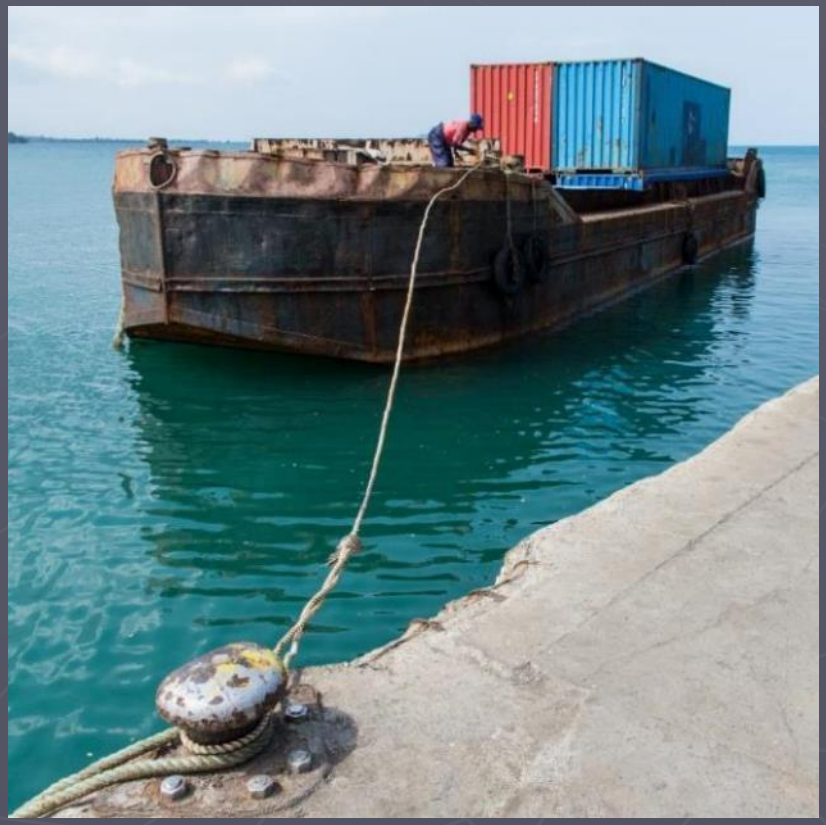

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Science Fiction?

- Artificial Intelligence AI systems will learn and adapt faster to new challenges and technologies than humans, as newly acquired knowledge is passed on immediately to fellow AI-endowed units – no need for webinars …

Science Fiction?

- It will become increasingly important that AI systems be taught a set of values upon which to base their learning and decisions.

- E.g.: self-driving cars need to be taught to base decisions on pre-defined criteria

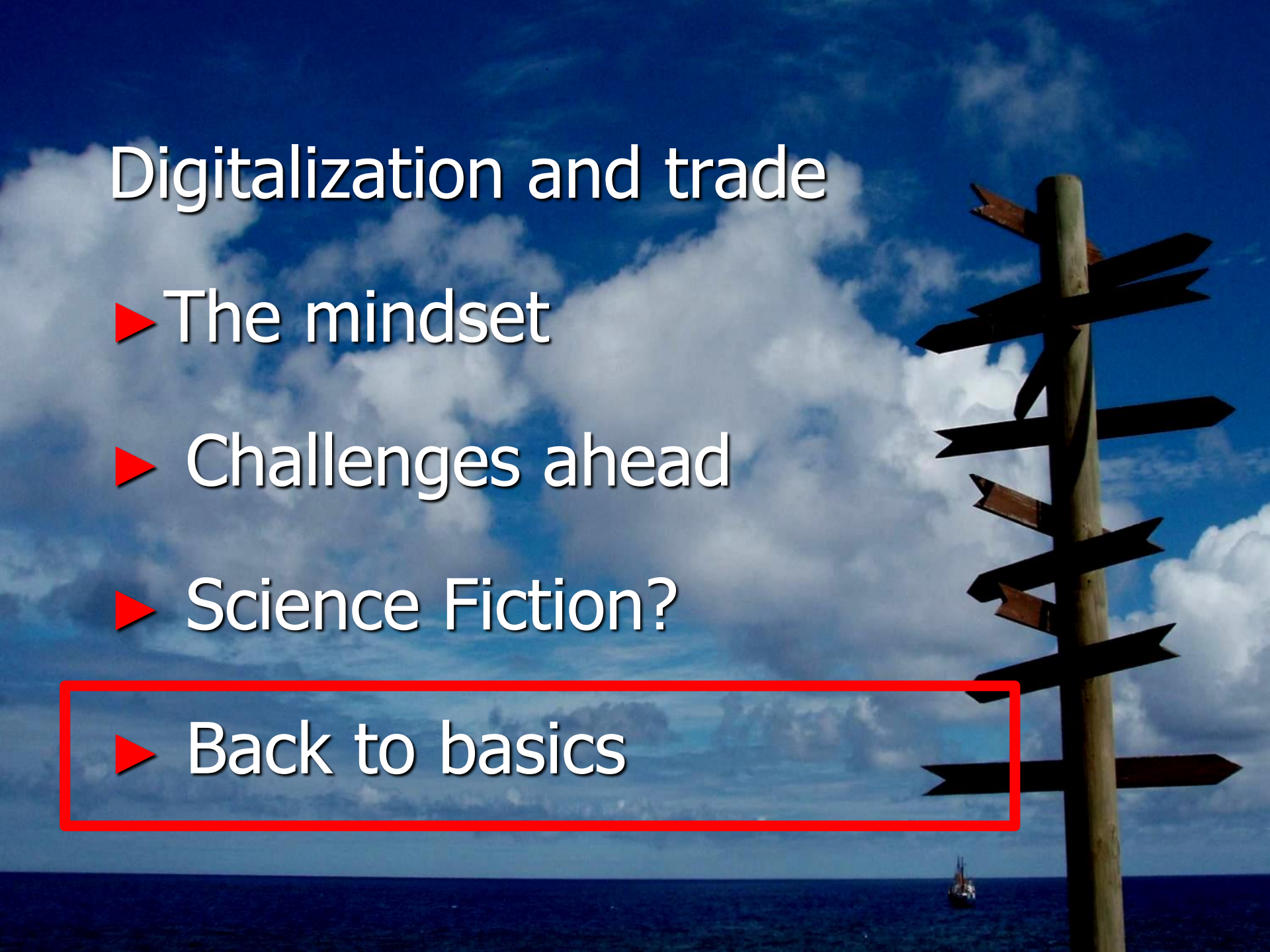
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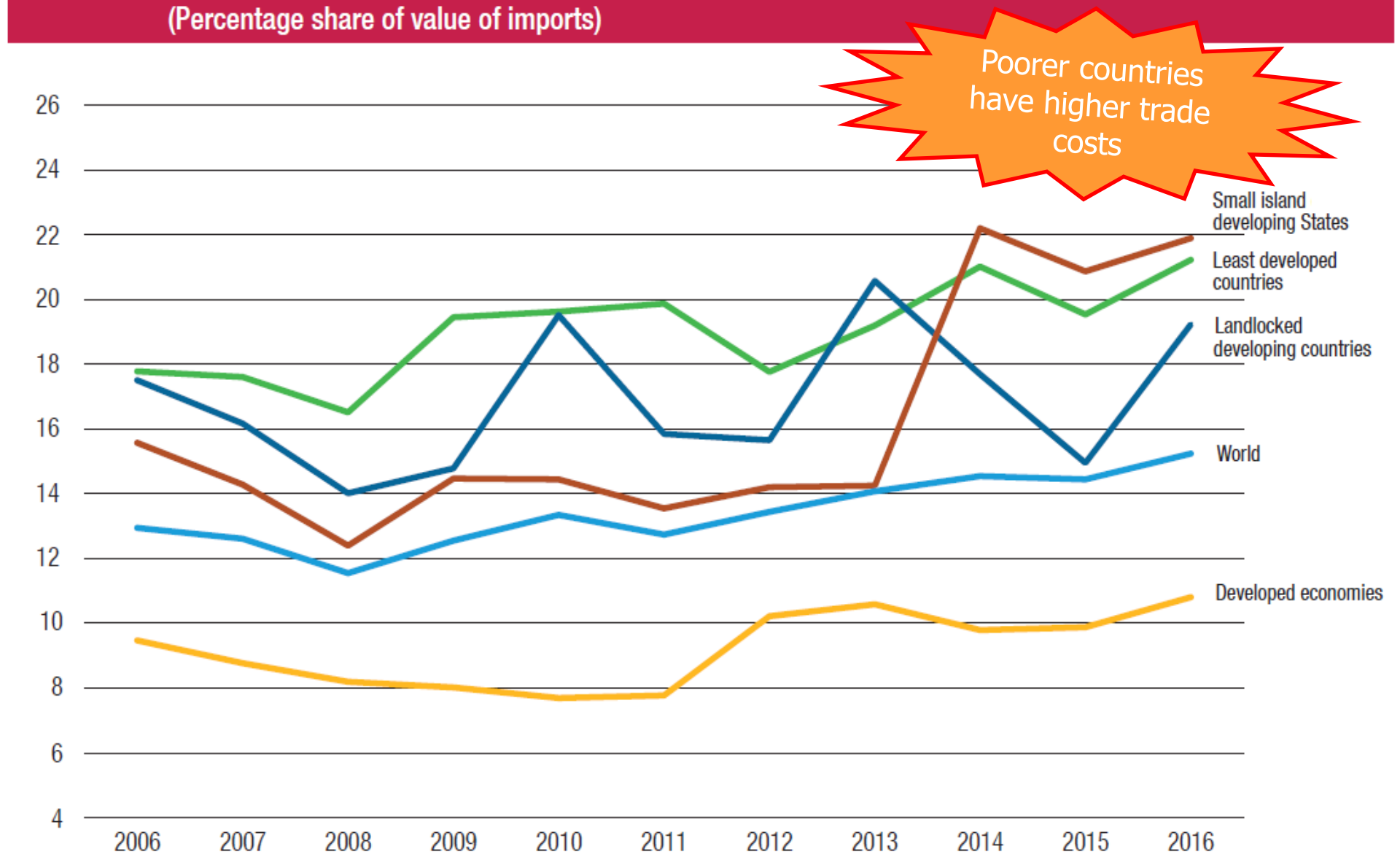
Figure 3.5. Transport and insurance costs of international trade, 2006–2016
(Percentage share of value of imports)



Source: UNCTAD secretariat calculations.

Note: All modes of transport; the least developed countries grouping includes 48 countries for all periods up to 2016.

Back to basics

- Many challenges remain. The use of the Internet is still not universal, especially in many LDCs and remote areas.
- In LDCs only 1 in 6 people use the Internet

Working on it

- UNCTAD works on solutions that help facilitate trade and its transportation, transparency, E-Commerce, customs automation, port reforms, national trade facilitation committees, and transport corridors.
- We provide analysis, technical assistance and capacity development for those who may otherwise be left out.

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"Technological change will never be as slow as today"

The Future of Cross Border Digital Trade and the Role of Seaports

Jan.Hoffmann@UNCTAD.org

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