The New Age – Disruption in maritime industries?
Digitalization: Innovative Technologies lead to disruption

3D-Printing
Internet of Things
Cloud Computing
Robotics
Big Data
Augmented & Virtual Reality
Artificial Intelligence
Disruption has already happened! How about maritime industries?

**AIRBNB**
World’s largest accommodation provider – no real estate

**UBER**
World’s largest taxi-company – No vehicles

**FACEBOOK**
World’s most popular media – Does not produce own content

**ALIBABA**
World’s most valuable retailer – No inventory
CMA CGM und Alibaba vereinbaren digitale Kooperation

Will Amazon Revolutionize Shipping?

By Adam Miller

For consumers, Amazon’s made shipping easy. Just choose the desired delivery date for your goodies and click. For the manufacturers who have to get those products to you, however, shipping remains a troublesome, inefficient, stubbornly analog business. Your “one-click” often translates into multiple phone calls, emails, faxes and reams of paperwork—all coordinated by a knowledgeable and well-connected professional.

http://www.bloomberg.com/view/articles/2017-02-14/amazon-might-revolutionize-world-of-shipping
Veränderungen in Gesellschaft und Wirtschaft durch die Digitalisierung

In der Wirtschaft schafft Digitalisierung neue Geschäftsmodelle, die ganze Branchen revolutionieren. Kapazitäten, die brachliegen, werden genutzt, Prozesse werden vereinfacht und die richtigen Ressourcen, Daten, Maschinen und nicht zuletzt Menschen werden miteinander vernetzt.

Die Vernetzung erweitert, ersetzt und umgeht klassische Unternehmenshierarchien.

Source: https://freighthub.com/en/services/

Freight Hub is one example for an asset-free forwarding company

Product Idea: Digital, asset-free forwarding company; Efficient use of innovative technologies to offer seamless processes and outstanding services

Benefits for users:
- Full-service freight forwarder with an digital interface
- One-stop shop for freight transports
- User-profile: All shipments in one place
- Real-time quotes and online booking function
- Digital freight tracking

Companies affected by disruption: 3rd Party Logistics Providers

Source: https://freighthub.com/en/services/
Digitalization of the maritime transport chain – vision of a digital future

How can seaports meet the requirements of disruptive customers?

Connected ports
Digitally-enabled port synchronization, import planning, resource and work flow optimization

Connected ships
Real-time monitoring, operations and availability optimization integrated with key stakeholders

Connected container trucks
Connected vehicle, driver, operations & regulations management

Connected workers
Mobile, safety, tracking analytics and technology to increase worker efficiency

E-Commerce Platforms
Real-time bookings, visibility, price transparency, customs and supplier integration with predictive analytics

Digital supply chains
End-to-end monitoring, analytics, automation and integration across channels and supply chain stakeholders
Digitalization of Seaports – Fields of Action
Succes in digital transformation – Strategic action fields for digital seaports

Enhance infrastructure digitally

Build data infrastructure

Establish digital culture

The future of work
Successful in digital transformation – Strategic action fields for digital seaports

- Enhance infrastructure digitally
- Build data infrastructure
- Establish digital culture
- The future of work
**Enhance infrastructure digitally – today’s options**

- Improve port efficiency by enhancing legacy infrastructure through smart technologies
- Improve traffic management to reduce traffic-related delays and subsequent loss of income by road users
- Improve safety by rolling out the newest generation of smart lighting
- Improve and understand environmental data like weather condition in correlation with the air pollution in the port area
- Understand the infrastructure use and its condition especially in critical parts of roads and movable bridges
Enhance infrastructure digitally – tomorrows vision

Automated drones as an example for smart maintenance

Tasks:
- To contribute to an up-to-date data profile of the port
- To inspect the status and the requirements for repair or dredging of underwater port infrastructure
- To measure the depth profile of the fairways
- To inspect the integrity of port facilities quickly and inexpensively
Enhance infrastructure digitally

Build data infrastructure

Establish digital culture

The future of work
Port is responsible for the efficient traffic and trade management

Management and operation heavily rely on real-time data

Port authorities and port stakeholder need to access data in real-time

Therefore, ports should provide a fast, reliable and futureproof data-infrastructure
5G offers dedicated network (slices) for e.g. large enterprises, vertical industries
Delivers optimised networks for dedicated communication services with high quality of service
High-reliability is the requirement for connecting traffic lights, water gates and other critical infrastructure
Harbour testbed delivers experience with running live scenario and infrastructure
Security as a key requirement for industrial solutions

Challenges by 2025

• 18 Million containers per year
• Several 10K trucks on harbour area streets every day
• Self driving/flying vehicles (public, private, enterprise)

Sharing data between shippers & their companies, trucks, port operators (guiding vehicles, watergate/crane control)
Emission measurement
Connecting tourists coming in “batches”
Cargo maintenance: Real-time info on container location, temperature, or humidity
100,000+ sensors can be used

Build data infrastructure: 5G as an option for tomorrow
Enhance infrastructure digitally

Build data infrastructure

Establish digital culture

The future of work
Digitalization is driven by innovation and changes in economy as well as society.

People must adapt to these changes – even if well proven practices are disrupted.

Ports should check every process, business model and management approach to verify, that those still meet requirements of digitalization.

Employees should be trained for and integrated in digital projects.
Establish Digital Culture Example: tomorrow's every day life

Instant prototyping for an inhouse research & development in ports

Output:
1. Efficient digital Processes
2. New business models

Open Innovation
Organisation needs

Ideation
Prototyping
Evaluation
Skaliation / Transformation
(HPA > Port of Hamburg > City of Hamburg)

Example:
Establish Digital Culture
Example: tomorrows every day life

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Example:
Establish Digital Culture
Succes in digital transformation – Strategic action fields for digital seaports

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The future of work
Implementation of innovative digital solutions leads to a variety of new services that Port Authorities can offer to their customers.

Digitalization and digital disruption will change the job profiles in ports.

New job profiles are required for activities in the sectors:

- Maritime traffic
- Port and hinterland traffic
- Energy and infrastructure
New job profile ‘shore-control-center operator’: Tomorrow’s standard?

Land based captain of an autonomous vessel

Task:
- To monitor the autonomous vessel’s operation, e.g. by regularly checking the vessel’s position data and operational performance figures
- To change the vessel’s settings or even to take full control over the vessel in case of an emergency alert
Enhance infrastructure digitally

Build data infrastructure

Establish digital culture

The future of work

Digital Seaport
Thank you!

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Read more in our book: Digitalization of Seaports – Visions of the future

Published by Prof. Jahn (Fraunhofer CML) and Dr. Saxe (Hamburg Port Authority)