



# SMART PORT AS A SERVICE



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The main two main issues marine logistic chains face today are a lack of connectivity between the different processes and lack of transparent information sharing throughout the supply chain. This leads to a situation where a lot of time is wasted with redundant communication and non-optimized port calls. Today's very competitive business environment and increasing global economic pressure are pushing ports and maritime logistic companies to engage in business model transformation and to seek efficiency through the digitalization of processes and data flows, since the traditional measures improving competitiveness are less and less impactful.

## PORTS TO DRIVE THE CHANGE

The European Sea Ports Organisation (ESPO) Memorandum [1] concludes that digitalization is one of the biggest game-changers for the transport and logistics industry and that port authorities could have a pivotal role in the digitalization of the business, as they are often the matchmaker

between all parties involved in port operations, sea-shore and port hinterland connectivity. Although the port authorities are strategically well-positioned to lead the digitalization of the entire ecosystem, there are a lot of challenges to master the new role as the facilitator of the ecosystem. Building a common platform to be used by all port call actors requires new collaborative efforts, new technical skills, business model transformation and significant financial resources. Unless you have all four in place the development of digital collaborative platforms are very slow, or in the worst case not progressing at all. If port authorities would be capable of overcoming these challenges, they could develop into real digital hubs and neutral data managers at the service of the transport and logistics chain, delivering substantial value to all connected port actors, leading to optimized port calls and business efficiency.

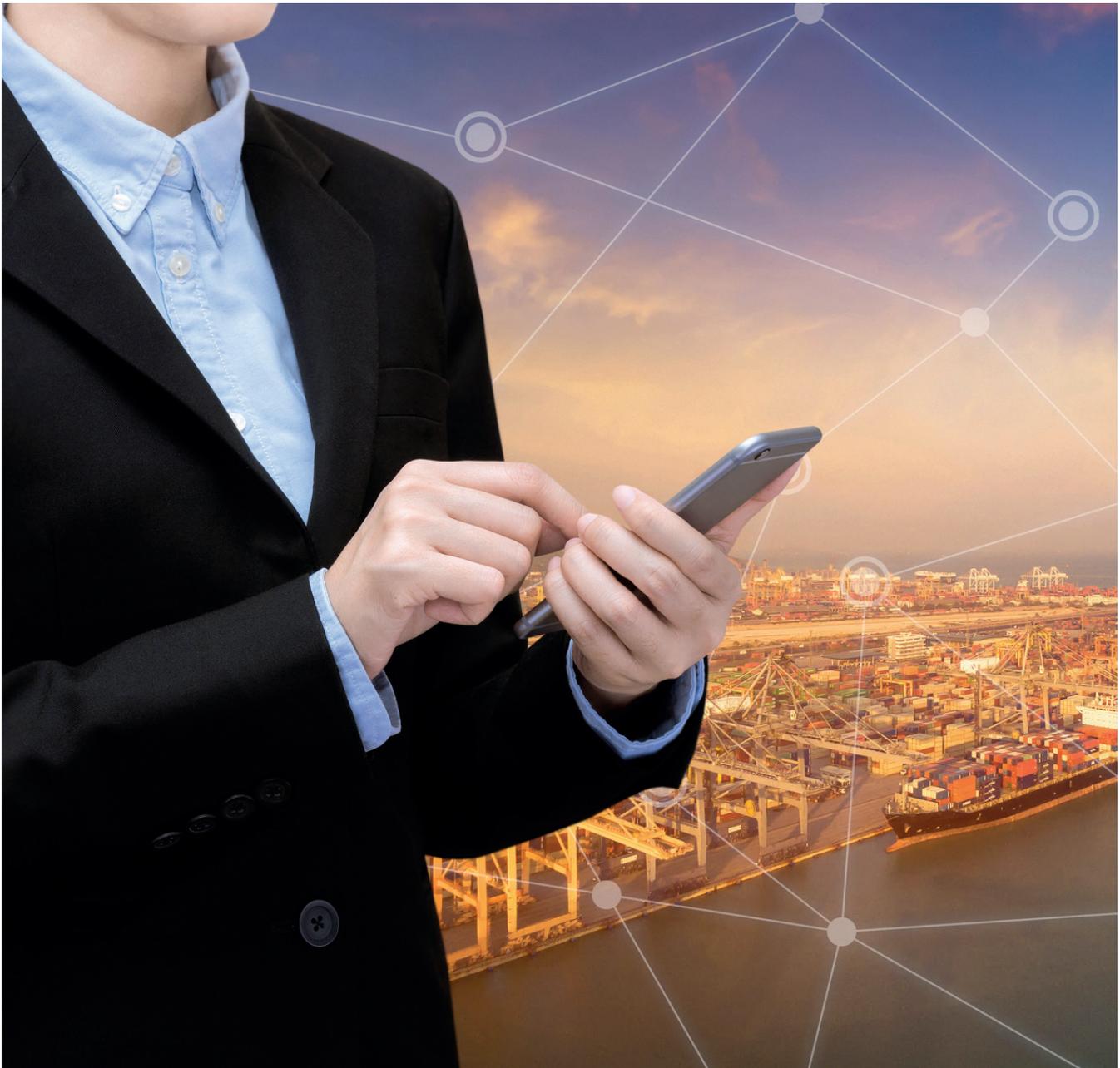
## PORT CALL INEFFICIENCY

Research confirms that today's port calls are increasingly inefficient. This means

there is an opportunity for cross-industry collaboration and data sharing with a smart port platform that has the potential to improve fleet and capacity utilization and generate tangible savings for the actors. The analysis of shipping movements identified that cargo vessels of various types spent between 60% and 70% of their turnaround time at the berth. Only 40% to 65% of the time at berth was used for operations [2].

## RUSH-TO-WAIT PROBLEM

Poor information sharing amongst port call actors, freight contracts and the "first-come, first-served" queueing principle enforced causes a "rush to wait"-problem. Approximately 60% of all dry bulk and general cargo vessel arrivals in the Baltic Sea exhibit this kind of a problem. On average the cargo vessels spent 40 hours in anchorage waiting for port entry. Solving this problem and using optimized speed profiles alone could lead to 12,5% CO2 emission savings [3].



### NON-INTEGRATED SUPPLY CHAIN

The dry bulk and general cargo ships plying the Baltic Sea travel on average 34% percent of their sailing time in ballast, that is, without cargo on board. More than half of the vessels sail empty at least 40% of their sailing time. The reason for this is that the coordination of ships and cargo flows is still performed manually by multiple brokers. The maritime industry and the cargo owners also do not coordinate their supply chains in a way that would ensure that a ship arrives and leaves with cargo [3].

### CO2 EMISSIONS

Reducing emissions on a global scale presents significant challenges to all industry sectors, including sea freight. The sooner the process of reducing emissions is commenced, the more time there will

be to switch to low-emission operations in a sustainable manner. If the process for reducing emissions is not commenced within the next few years, the world faces significant warming and drastic measures. In May 2018, IMO adopted a GHG reduction strategy for the shipping industry with the intention to reduce carbon dioxide emissions by at least 40% by 2030 and 70% by 2050 and halve the total annual GHG emissions by 2050. Analyses show real-time coordination of production and logistics planning would increase the utilization of bulk ships from 34% to 43%. This in turn would reduce emissions 25-30% [3].

### DIGITALIZATION CHALLENGES

Despite the validated substantial benefits that port optimization through better communication and digitalization could

bring, the maturity levels of port ICT systems are not sufficient for acting as the digital information proxy between all actors in the ecosystem and capitalizing the benefits. One would think that port authorities would have invested a long time ago in building their ICT systems to support smart port capabilities and collaborative decision making, so obviously something is holding back the progress. The list of reasons why the development of smart port capabilities has not advanced is long, but here are a few reasons that slow down the progress.

### CAPEX INVESTMENT BUDGET

Although digital technologies and open innovation will radically break existing industrial barriers and open up new business opportunities, many (especially

smaller) ports cannot afford the investments needed to make the innovation leap. In general, ports have been focusing their investments on developing physical infrastructure instead of discovering new business opportunities by investing in digital infrastructure. According to Port investment Survey done by ESPO in 2018, only 4% of the port investments are attributed to ICT and digital infrastructure [1].

**PROPRIETARY IT SYSTEMS USED**

Siloed logistics chains existing globally today are not transparent, processes are manual and they are missing the enablers for automation increases because everyone is trying to optimize their operations. No solution exists to manage all the needed digital handshakes between port call actors through a platform that has all the needed data accessible enabling digital operation services.

**DISTRIBUTED DECISION MAKING**

The complexity of the port ecosystem is so overwhelming and it has so many actors, standards, consortiums, politics, manual processes and proprietary IT systems developed with local vendors that it takes a lot of focus and determination to drive through any decisions within the ecosystem. This slows down smart port development significantly.

**LACK OF STANDARDS**

Investing in building digital handshakes between all actors with interfaces that are not standardized yet, leads to inefficient use of budget. The cost of maintaining the developed smart port capabilities increases when such capabilities need to be constantly maintained to comply with new or updated protocols between the actors.

**SMART PORTS AS A SERVICE**

The industry needs a different approach to speed up smart port digitalization. What if there were a better way where port actors would not each need to make large CapEx investments in fast-changing technology? Where they would not need to wait for years to get working solutions, and could start offering smart port solutions as a service for their ecosystem? Important goals for future ports would include improving situational understanding and operation planning, optimizing the cost of port calls and transport chains in general, reducing waiting times, optimizing processing times, increasing productivity, enabling new databased business models, and enabling new digital services. If all of the above would be offered to port actors as a Service it could speed up the adoption of smart port capabilities remarkably. This

is an area where new innovative software companies, like Awake.AI can help the industry. Awake.AI is a collaborative and open data platform company that facilitates ecosystem creation for smart ports, enabling collaborative decision making. The underlying objective of the Awake platform is increasing operational efficiencies and creating new digital services for all actors in the port ecosystem, from port service providers to infrastructure utilization to shipping customers and cargo owners. With this in mind, Awake.AI is developing predictive

analytics and models for key processes in harbour operation as well. To facilitate the involvement of new digital service providers for smart ports, the Awake platform is a multi-sided network for many participants to develop smart port cargo flows and a future marketplace for selling and buying smart port & ship related services. Being an open data platform, the Awake platform ecosystem will be providing open APIs for both development partners and public use. Our ambitious goal is to be the world’s most trusted smart port platform and ecosystem orchestrator.

**REFERENCES**

[1] European Sea Ports Organisation, PRIORITIES OF EUROPEAN PORTS FOR 2019–2024, What ports do for Europe, What Europe can do for ports, Memorandum of the European Sea Ports Organisation for the new Commission and European Parliament. [https://www.espo.be/media/ESP-2484%20\(Memorandum%20ESPO%202019\)\\_DEF\\_LR.pdf](https://www.espo.be/media/ESP-2484%20(Memorandum%20ESPO%202019)_DEF_LR.pdf)

[2] Lind, Mikael & Bergmann, Michael & Bjorn-Andersen, Niels & Robert, Ward & Haraldson, Sandra & Watson, Rick & Andersen, Trond & Michaelides, Michalis & Evmides, Nicos & Gerosavva, Neofytos & Karlsson, Mathias & Holm, Henrik & Olsson, Eddie & Zerem, Almir & Herodotou, Herodotos & Ferrús Clari, Gabriel & Gimenez, José & Arjona, Jordi & Marquez, Miguel & Gonzales, Albert. (2019). Substantial value for shipping found in PortCDM testbeds. 10.13140/RG.2.2.26452.24966. [https://www.researchgate.net/publication/332223072\\_Substantial\\_value\\_for\\_shipping\\_found\\_in\\_PortCDM\\_testbeds](https://www.researchgate.net/publication/332223072_Substantial_value_for_shipping_found_in_PortCDM_testbeds)

[3] Magnus Gustafsson (docent), Magnus Hellström (prof), Irina Wahlström (2019). Driving Emission Out of Shipping- A race against time. PBI Research Institute White Paper. <https://www.pbi.fi/blog/2019/2/20/driving-emission-out-of-shipping>

**ABOUT THE AUTHORS**

Karno has been in the maritime industry all his working career. He created the smart & autonomous shipping business for Rolls-Royce Marine. He holds a double masters degree in automation engineering and international business. He has a background as an entrepreneur and founder, SVP and P&L owner of Rolls-Royce Ship Intelligence business. Currently, he is the CEO and Founder of Awake.AI, a company that aims to revolutionize the ports & shipping industry and enable autonomous shipping.

Sami is a software professional with 20 years of experience in software companies in various roles (from developer to CEO). He holds a Bachelor degree in Computer Science. Prior to joining Awake in 2019 he has been working for open source UI web framework company (Vaadin) where he was building commercial SaaS offering and building global sales organization. Currently, he is working as the VP of Sales & Marketing at Awake.AI.

**ABOUT THE ORGANIZATION**

Awake.AI is building a platform that will increase operational efficiency and create new digital service opportunities for all actors in the smart port ecosystem. Awake.AI platform is accelerating smart port development by providing a collaborative and open data platform as a service for the port actors. The platform improves the port call efficiency using predictive analytics and support for key processes involved with port calls.

**ENQUIRIES**

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