# CREATING THE SMART PORT

## THE QUEST FOR INTERCONNECTIVITY & DATA TRANSPARENCY

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Representing some 170 ports in over ninety countries, member ports of the International Association of Ports and Harbors (IAPH) handle about 80% of world container traffic and more than 60% of all international maritime trade. Earlier this year the IAPH established the World Ports Sustainability Program (WPSP). The fundamental aim of this program is to demonstrate global leadership of ports in contributing to the 17 Sustainable Development Goals of the United Nations (pictured on page 3).

The World Ports Sustainability Program focuses on enabling ports to deliver tangible value to their stakeholders in terms of resilient infrastructure, energy transition, safety and security, community outreach and governance. It is clear that digitisation and how ports embrace technological change will impact how they positively impact each and every one of these 17 UN SDGs. There is not one SDG where technology or digitisation cannot play a pivotal role.

## INTERCONNECTIVITY BETWEEN PORT PLAYERS

Interconnectivity that improves efficiency, increases transparency and reduces complexity in the movement of cargo and passengers has in essence a dependence on the data interaction between the various organizations that all play their own crucial role in the daily functioning of a port.

Simply making the data available openly to all parties is far from straightforward. A public port authority, a federal seaway navigation entity, a national customs or immigration body, or a federal organization for sea pilots will be bound by legislation and its governing organ as to how it gathers, processes and shares data on its operations. Similarly, private sector enterprises that are commercially involved in a port serving the vessels that call there will be bound by their own corporate governance policy, their own commercial interests and in many cases linked at the hip with their closest clients and business partners – sharing data on

operations, customer details and financial transactions may in some cases create internal or external conflicts. Also new legislation, such as the European Union's General Data Protection Regulation will determine how individual data on people is processed, stored and shared.

International shipowners, forwarders, traders, importers and exporters on the bill of lading transporting cargo or those responsible for the safe passage of persons on board frequently using a port are also involved in the complex, real time exchange of commercially-sensitive information, often on a global scale. In this respect data cybersecurity policies also determine just how much an enterprise is willing to share information as the risk of a data breach is ever-prevalent.

Consolidation, mergers and joint ventures are resulting in the reduction in the number of local players at the world's main ports and transhipment hubs. Differing commercial strategies,

divergent inter-departmental and inter-regional priorities as well as constantly-changing organizational structures are commonplace in today's multinationals who now dominate the majority of ports around the world, whether they are liner shipping companies, port agents, bunker suppliers, terminal operators or ships chandlers.

How fast these organisations are prepared to move in terms of the data they share with other port community stakeholders will also determine how interconnected and competitive a port can become.

### DATA SHARING ENABLERS
A potentially lucrative market for digitisation and data sharing at ports inevitably creates opportunities for innovators and first-move application developers who endeavour to bridge the gap between theory and practice. The label 'disruptive' has often been given to inventions and possible solutions which in could in fact simplify processes and data interchange at a port without massive investment in ICT infrastructure. The creation of secure, cloud-based platforms that enable various port community players to share specific information between parties under set conditions and controlled data interchange protocols are beginning to emerge in ports in countries such as The Netherlands, Belgium, Germany, Singapore, South Korea and the United States.

Cloud-based logistics platforms that optimise the request for quotation, booking acceptance and slot allocation, shipping instruction and bill of lading processes are now beginning to impact which ports are being selected by shippers and forwarders as favoured cargo destinations for their simplicity and openness.

The emergence of blockchain technology crosses borders, organizations and organizational processes and has the proven potential to simplify cargo movements. With blockchain's distributed ledger shared across thousands of computers making tampering or deleting data virtually impossible, the chronological path of a product's progress from factory floor to container, to stack, to vehicle, to port gate, quayside, ship's hold right through the converse path to importer and buyer can be traced and approved by all parties in blocks. Each block forming a transaction in such chains will transform the way port players process cargo. The use of interconnected devices in a port, from tide depth measurers to gantry crane locators and RF ID tags for containers and moving machinery will create vast databases of information that could be used to provide predictive forecasts of future vessel, cargo and intermodal movements at a port. The application of artificial intelligence has the additional potential to transform the efficiency of vessel calls, minimising emissions and energy use.

### DIGITISATION: THE 'SINGLE WINDOW'
All these rapidly changing technological developments and seemingly insurmountable transparency challenges faced by public bodies and private organisations alike give rise to the need for common understanding and consensus on how to approach digitisation in way that everyone benefits from. Under the auspices of the IMO Trade Facilitation Committee, recent discussions have been held on amendments of the IMO FAL Convention that introduce mandatory requirements for the electronic exchange of information on cargo, crew and passengers. In addition, the IMO is encouraging governments to use the 'single window' concept, to enable all the information required by public authorities in connection with the arrival, stay and departure of ships, persons and cargo, to be submitted via a single portal, without duplication. This is a good starting point in the quest for interconnectivity and data transparency at ports.

Shipping companies and ports alike both support the 'single window' concept. Shipowners are keen to have the 'reporting once' principle adopted so that ship crews can be relieved from a considerable administrative burden. The priority for ports is to simplify administrative procedures and harmonise different reporting data formats so that the same data elements can be reported by interested parties to each competent authority in the same way.

## THE ROLE OF PORTS

Ports are not just part of wider transport and logistics supply chains. In themselves, ports are clusters of companies and businesses that provide a mixture of transport and logistics services.

Port authorities play a particular role in this microcosmos. They generally bear the overall responsibility for the management of the port estate. You could say they are hybrids, functioning partly as regulators, looking after safety and environment, and partly as commercial partners of shipping and logistics companies.

There are some front runners such as Los Angeles and Hamburg who have made digitisation a full-fledged part of their business strategy. In 2015, they set up a network of 'smart ports' under the name 'ChainPort' which aims for a 'smart port network' where different port platforms connect and share information across geographical borders, stimulating innovation and boosting efficiency within the global maritime supply chain.

One example of this coming into action is the ChainPort participants – the Port of Antwerp and Port of Los Angeles – are to simultaneously hold a 'Hackathon' in which several teams of creative 'hackers' from inside and outside the industry will meet for three days and two nights to focus on six port-related challenges. These include mobility, the sharing of data between ports, safety and security, process and document flow, sustainable energy provision, and education. The aim is to generate new ideas and potential projects with which the port community might not come up with by itself.

ChainPort is a platform of frontrunning ports. But that does not mean that these ports are not ready to share their knowledge with other ports in the world. That is where IAPH comes in. Through the World Ports Sustainability Program, we want to stimulate innovators such as ChainPort and at the same time ensure that these innovations find their way to the global port community.

### ABOUT THE AUTHOR

Patrick Verhoeven is Managing Director of the International Association of Ports and Harbors (IAPH), responsible for policy and strategy. The organisation represents about 170 ports and some 140 port-related businesses in 90 countries worldwide. Prior to joining IAPH in 2017, Patrick spent twenty-four years in Brussels representing the interests of shipowners, port authorities, terminal operators and ship agents at EU level. He started his career in 1991 with the Antwerp-based ship agent Grisar & Velge. Patrick holds a PhD in applied economics and a bachelor in law from the University of Antwerp. He is assistant professor at the university's Centre for Maritime and Air Transport Management (C-MAT).

### ABOUT THE ORGANIZATION

The International Association of Ports and Harbors (IAPH) aims to promote the interest of ports worldwide through strong member relationships, collaboration and information-sharing that help resolve common issues, advance sustainable practices and continually improve how ports serve the maritime industries.

### ENQUIRIES

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