



PORTS-AS-AN-APP (PAAA)

INNOVATING DIGITAL ARCHITECTURES ON SMARTPHONE PLATFORMS

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The digitization train has left the station, with 9% of companies now ahead of the curve and reaping the rewards. Advanced ports have experimented with the new possibilities brought about by the Fourth Industrial Revolution, yet now they are entering the next stage of digitization: capturing the potential of platforms and smartphone applications (apps). Platforms are now pulling everything together while apps provide the services through software built upon the architecture. The previous wave of technology startups transformed and disrupted industries by digitizing location, identity, behaviour, and so forth, and the next wave will enhance the digital universe by continuing the work and building software to provide value for the ecosystem.

Conceptually, ports themselves are apps of the maritime ecosystem and the digital economy, as well as society. At the same time, they function as platforms for port stakeholders – including themselves – to build their apps upon. Therefore,

ports that establish digital platforms can provide relevant data and services to reap the digital dividend – and help their business partners to do the same. Over the next 10 years, platform-driven interactions are expected to enable approximately two-thirds of the value for business and society.

PAAA: PORTS-AS-AN-APP

Accelerated technological development has significantly impacted port businesses. Even though the impact might not have reached the level some wished, or others expected, we now see digitization across the world of transport. Example are the numerous platforms and applications recently developed, co-developed or invested in by ports. Platforms provide access to any kind of resource available in the ecosystem. We can make use of platforms through apps, installed for example on our smartphones. Apps offer services that enable navigation of the physical space. A new layer of operating

is thereby unfolding where creativity can break through traditional limitations into new spheres of precision management, planning and customer experience.

Reaching this level of digitization requires a complete rethink regarding the way we do business. Platforms and apps change the way we experience, evaluate and utilize assets and capacity, as well as the interactions and transactions along the value chain. McKinsey states (1) that in the next two to three years, Supply Chain 4.0 might be able to deliver “up to 30% lower operational costs and a reduction of 75% in lost sales while decreasing inventories by up to 75%”.

EXPANDING THE UNIVERSE

In the Fourth Industrial Revolution, opportunities and threats are growing exponentially. Complexity is on the rise while time to respond is in decline. This dilemma is forcing traditional companies to come up with faster ways to respond and innovate.

Startups innovate fast. Hyperloop Transportation Technologies (HTT), a production and design company with the vision to revolutionize transportation has set up a network of 900 professionals and 50 business partners, ranging from startups to Fortune 500 companies. This network can be activated to instantly solve any kind of problem. The 'crowd-powered' company can bring new solutions as well as disruption to any industry. HTT and logistics firm Hamburger Hafen and Logistik AG (HHLA) have recently established a joint venture (2) to transport containers at incredibly high speeds through a tube between the Port of Hamburg and its hinterland (inland ports included). Beyond the physical transport, HTT aims also at significantly improving customer experience through digital services.

Patrice Caine, chairman and CEO, Thales, writes "Yes, you may have the capacity to invest massively in research and development (R&D) to hire the best engineers in your field.... But it is not enough, for one simple, statistical reason: there will always be more groundbreakers outside of your company than within." (3) Caine sees two ways out. The first is incubating internal start-ups with a degree of liberty towards the central hierarchical structure. The second is partnering, i.e. identifying the most promising start-ups in your field and finding ways to work with them.

NEXT GENERATION TECHNOLOGY INNOVATORS

The previous wave of technology startups benefited from the spread of smartphones and affordable cloud computing. Companies like Uber and Airbnb took existing business spheres and made them smart and mobile. However, this way of disrupting industries is drying up (4).

The up-and-coming wave of technology startups are largely focused on software for specific industries. They will support the modernization of the economy, solve traffic and capacity issues, further reduce cost and waste, but also help to deal with new challenges like increasing natural disasters and the potential collapse of the oceans. Some next generation startups will serve the first wave of technology innovators, such as Checkr, a digital service to expedite background checks for drivers. This startup works with Lyft and Instacart but also functions alongside other types of clients, such as the insurance company Allstate.

LOGISTICS AND TRANSPORT DIGITIZERS

According to Forbes (5), 9% of companies, the progressives with the highest levels of supply chain digitization maturity, are ahead of the curve and reaping rewards.

Amazon is one of these. It has revolutionized logistics. The 1994 incepted company has robotized warehouse handling and has created entirely new delivery options, and is presently in the process of cracking the complex code of forecasting through artificial intelligence. This would allow the e-commerce giant to preposition goods to reduce costs and delivery times.

Maersk has tested, launched, introduced or was involved in the creation of many different advanced technology-based solutions. This includes cloud computing, ship supply by drones, internet-of-things equipped reefer containers, and partially blockchain-powered trade platforms. In 2018, APM Terminals launched an online platform to offer a range of services, including booking of appointments and slots as well as the processing of payments and invoices – first at Khalifa Bin Salman Port (KBSP) in Bahrain.

PORTS IN MOTION

The Port of Rotterdam, one of the world's leading smart ports, offers PRONTO, an application that shipping companies, terminal operators and other port stakeholders can use to manage their tasks during a port call based on standardized data exchange. PRONTO links into the Hamburg Vessel Coordination Center (HVCC) to exchange port call information. In turn, Antwerp invested in NxtPort, a data platform offering a range of port services, focusing for example, around container weight data and customs information. Also, Singapore has launched Calista, an open supply chain platform that invites other ports and logistics players to join. The above are all examples of advanced ports that have jumped on the train of digitization.

Given the above shows an appetite for innovation, digital ports will push platforms and apps. Innovative ones will give ground and incentives for beneficial cargo owners, railways, trucking companies, forwarders, agents, and even truck manufacturers and city governments to connect, join and build upon. This cannot only be triggered by providing valuable data, but also by functionalities like planning and monitoring tools that stakeholders wish to use, leverage and integrate. Conversely, ports will find value in building apps on others' platforms also. The more apps are built, the more services are available and the higher the value of the platform. Eventually, the entire global port ecosystem will have been digitally wired and connected with other systems beyond the gate.

Port authorities are best placed to facilitate this development. Firstly, by supporting the digitization of everything

that's happening in the port, and secondly by helping the different stakeholders to build apps. This can be done by the means of establishing or facilitating alliances and setting up startup incubators and accelerators.

Platform-driven interactions are expected to enable approximately two-thirds of the value for business and society over the next 10 years – according to the Digital Transformation Initiative of the World Economic Forum in collaboration with Accenture. Ports are physical platforms and nodes of the world of trade and commerce. Their future lies not only in overlaying those with digital architectures but also in driving digital connectivity and developing and co-creating app-based services on their own and other platforms.

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