DIGITAL PORTS

THE EVOLVING ROLE OF PORT AUTHORITIES

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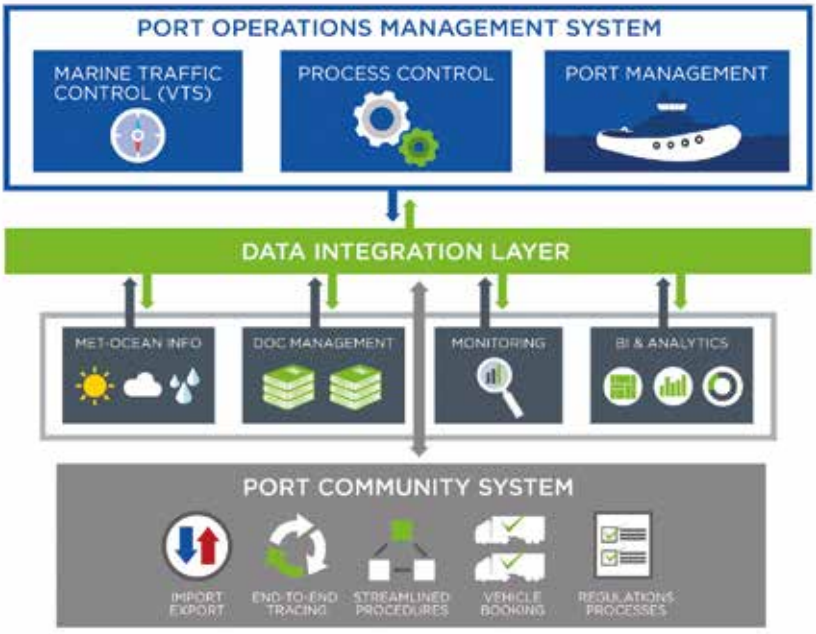
Ports are complex operational environments comprised of different stakeholders who need to work together to maximise efficiencies for the entire supply chain. Increasingly, port authorities are taking a more active role in optimising operations at the port by coordinating each aspect of the vessel visit. By redefining the mission and role of each stage of the vessel visit, ports can significantly improve their efficiency, security and environmental impact.

With mega-vessel port calls becoming a reality, improving operations management through optimisation is an important area of focus for port authorities. Pilots, line men, tugs, and other vessel services can optimise their operations through a focus on collaborative information sharing. To manage congestion, create business value and increase a port's competitiveness, the collaborative sharing of data is critical and will enhance port operational excellence and quality of service: ultimately leading to the "Digital Port".

Overall, port operations management



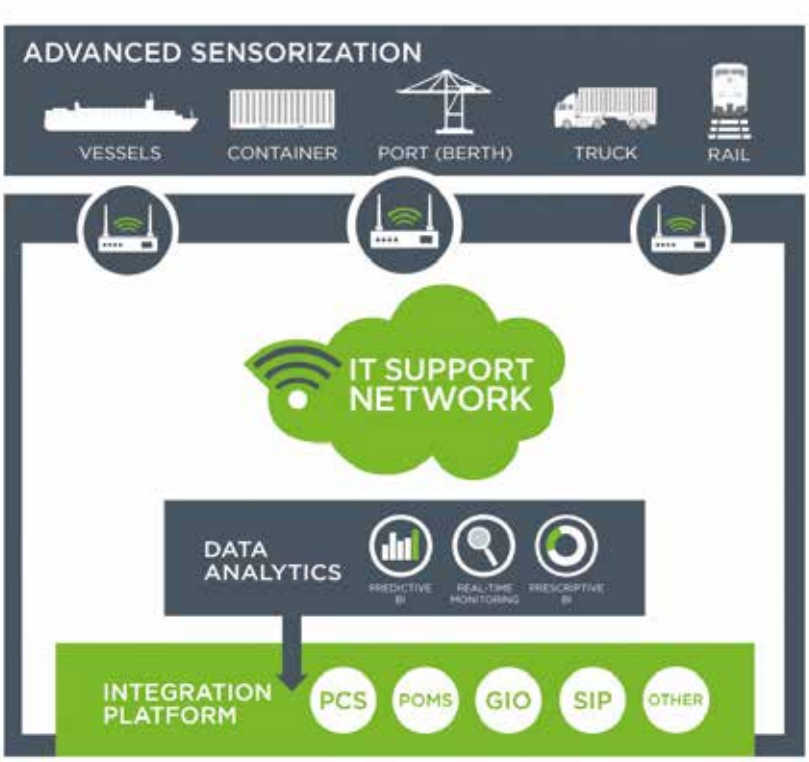
need clear focus areas regarding the optimisation of operations to get tangible results. These include:

- Process & 'Recording': There has traditionally been a lack of definition on the different planning, monitoring and control processes supporting port operations, as well as a lack of clarity on definitions and nomenclature across the different data-points and key performance indicators (KPIs). Removing these constraints will help to optimise related operations
- Meaningful Information & Data Integration: Before focusing on integrating system applications, ports must first take into account the information that needs to be integrated. By leveraging data and sharing information, opportunities for the 'inter-connection and integration' of the different processes supporting operations can be identified
- User Interfaces & Operations Management: Data has to be shown first with an optimal algorithm. Tackling the specific problems that become evident from the data should be secondary. That data should also be shown in simple and intuitive ways to enable the staff in charge of planning, monitoring or analysis to manage operations in a safe, secure and efficient way
- Business Intelligence & Analytics: Real-time and historical data should be easily accessible and analysed to enable the port to make operational and strategic decisions based on the knowledge derived from the data

Traditionally, from a software perspective, port authorities have focused on Port Community Systems (PCS) and Port Operations Management Systems (POMS). New requirements on efficiency, security and environment present a scenario where additional technological investment is critical to incorporate both "process intelligence" and "operational optimisation" across all the logistic processes within the port. New port eco-systems go far beyond PCS and POMS and reinforce the use of operational data to 'connect the dots' between different port processes, enabling process coordination and holistic optimisation at waterside and landside, and supporting the strategy of port authorities to increase transparency and visibility in order to enable better collaboration between key port stakeholders.

PORT OF ALGECIRAS'S DIGITALISATION & INNOVATION PROGRAM

Port authorities such as Singapore, Long Beach, Rotterdam and Hamburg have initiated large technology projects. Digitalisation programs are driven to promote the value of data driven solutions to 'connect the dots' between the different applications supporting the port's business and operational processes. Ports realise that their future is not only tied to infrastructure development, but also to smarter approaches and a seamless integration of the port community.



A culture emphasising continuous improvement with operational efficiency across the whole port community will be the most important differentiator for port competitiveness. The use of technology becomes critical to enable process improvements across port logistics, including both water and landsides.

Algeciras is following a similar path to these ports. The Port of Algeciras Bay Authority (APBA) has the privilege and responsibility of managing one of the four main global maritime transshipment hubs, where Algeciras serves as a fundamental node for the different trans-oceanic routes and services articulating the global scenario for container shipping.

APBA is driving an innovation program named Algeciras BrainPort 2020 (ABP2020), strongly driven to better support the 'Container Shipping' and 'RoPax' businesses, emphasising quality of service excellence. This program on 'Research' + 'Development' + 'Digital Transformation' (R+D+I) is focused on:

- Re-engineering of port processes and port management tools
- Technology and software developments in areas such as PCS, POMS, Advanced TELCO and Analytics/Simulation
- Culture and mindset that is focused on operational excellence and continuous improvements

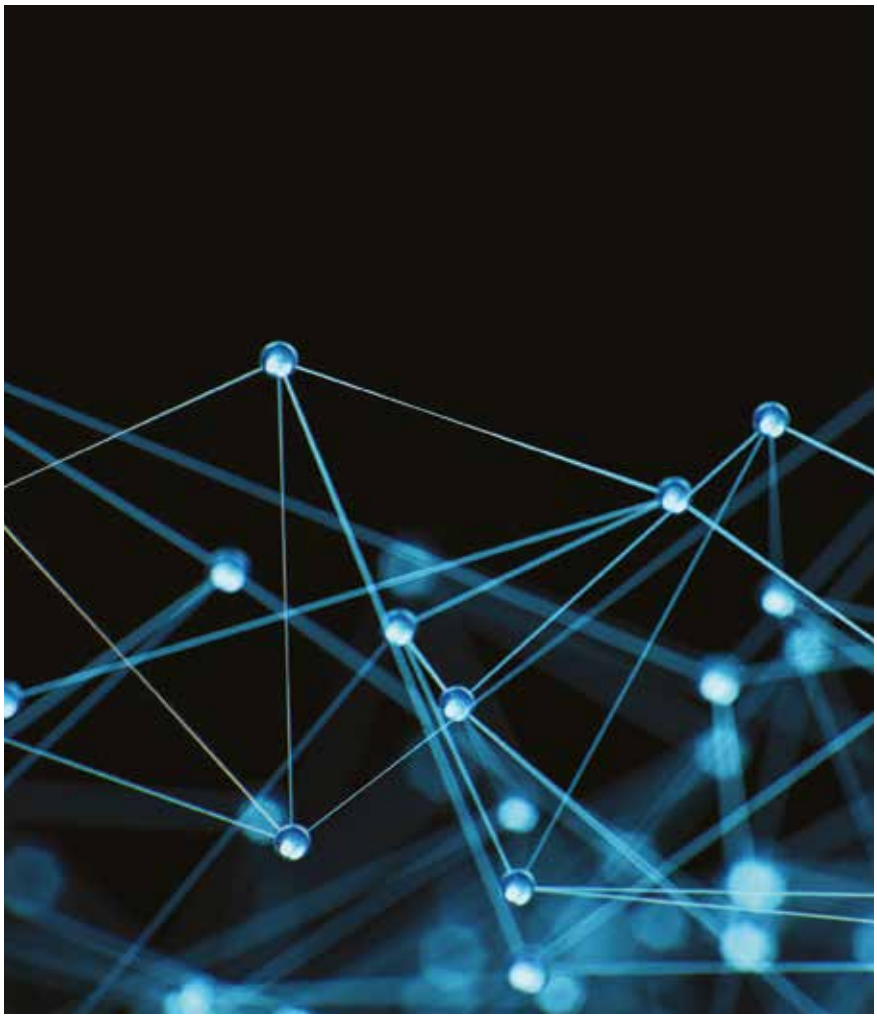
Algeciras BrainPort 2020' represents a move toward a new port management model where, besides improving port products and services for enhanced efficiency, security and sustainability, it also serves to instill a new culture and mindset focused on continuous improvement and operational excellence.

During Phase 1 of ABP 2020 (2014-2015), IT infrastructure and innovation frameworks have been created as the core for the digital transformation journey. Phase 2 will focus on improving collaboration and synergies among the whole port and logistics community.

NEXT STEPS FOR DIGITAL TRANSFORMATION

In Phase 2, the 'ABP 2020' program is being designed to maximise the impact on the whole port community with involvement from many different constituents. While ABP 2020 is consolidated, APBA is planning the next steps for technology and innovation deployments that will impact APBA's ports business and the value delivered to its customers:

- The APBA value proposition aims to promote advanced integration within the Algeciras port community to establish new boundaries for collaborative decision making (CDM) supporting port operations
- Other initiatives like the EU-Funded Monalisa 2.0 Project are also working on



the concept of sea traffic management (STM) and port collaborative decision-making (PCDM) to improve the transport chain and optimise operations making real-time information available to all interested and authorised parties

The philosophy behind this is clear: better Information – better coordination – better operations – more shared value.

APBA is concentrating their technology efforts on:

- A Port Operations Management System and its impact on port operational processes and vessel call management
- A Port Community System and its impact on port logistics, landside management and port 'integration' with logistics zones
- Smart Sensors for Vessel & Terminal Operations and the created value for port authorities' vision on becoming 'full service ports' (container terminals, bunkering, ship M&R)
- Simulation and Business Intelligence for high-value analysis for promoting high-value analytics, continuous process improvements and advanced training methods for the port community

APBA is strongly focused on implementing these projects in 'ABP 2020' and following international standards, as well as developing solutions that are not only specific to Algeciras, but have global implications to ecosystem sustainability and maintainability. APBA's vision of a port involved in a digital transformation journey includes:

- Building a port digital layer with real-time information of every business process to control efficiency
- Developing a business analytics platform to learn more about the business and enabling an improved decision-making process
- Setting up a port collaboration platform with smart integration of systems and agents to share meaningful information and thereby enable a high-quality seamless logistics chain
- Development of a holistic port process simulator for planning (scale of years) and management (scale of hours), in order to try different scenarios and optimise operations
- Building of a systematic innovation culture within the entire port community which makes it possible to challenge the status-quo and adopt new business models

ABOUT THE AUTHORS

Dr Oscar Pernia is part of Navis Strategy team, with an intense focus on analyzing industry driving forces regarding operational efficiency and then developing effective operational innovation input to Navis and XVELA Roadmap. Prior to joining Navis, Oscar worked for Hanjin Shipping at TTIA as Process, System and Innovation Team Leader for three years for terminal implementation, go-live and optimization. Early in his career Oscar spent eight years in IT with Algeciras Bay Port Authority focused on technology, process optimization and integration in Port of Algeciras. He holds a MsC in 'Telecommunications Engineering', and a PhD in 'Industrial Engineering'.

Dr Francisco de los Santos is Chief Digital Officer at Algeciras Port. He is responsible for Technology and Innovation, where his main goal is to lead the port digital transformation to enhance operational excellence and quality of service. He holds an MSc in Civil Engineering and a PhD in Coastal & Harbour Engineering.

ABOUT THE ORGANISATIONS

Navis understands that as operational processes become more complex, efficiency, collaboration and productivity are essential. As a trusted technology partner, Navis offers the tools and personnel necessary to meet the requirements of a new, and ever-evolving, global supply chain. The Navis N4 terminal operating system is a platform that can integrate partner technologies, enabling terminals to optimise productivity and enhance the service delivered to its customers.

The Port of Algeciras Bay is the leader of the Spanish Port System. It is located on a geostrategic location, the Strait of Gibraltar, which sits at the crossroads of the world's main shipping routes. The Port of Algeciras Bay is a natural distribution platform for goods coming from the Far East, destination Europe, Africa and America. The 4.5 million TEU handled in 2015 put the Port of Algeciras Bay up amongst the leading ports in Europe and the Mediterranean.

ENQUIRES

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