



# DIGITAL TRANSFORMATION: REAL RESULTS



Richard Morton, Secretary General, International Port Community Systems Association (IPSCA)

Ask a port operator about their strategy for the next few years and there's a word you will always hear: digitalisation. Yes, that has been the case for some time – but the difference now is that we are seeing real projects, real results and a genuine understanding of what can be achieved.

While 2020 was hardly a year we will remember fondly, there are always silver linings to be found. The COVID-19 pandemic focused minds even more on digitalisation and the way in which it can transform operations by increasing safety, improving efficiency, cutting costs and delivering greener solutions.

IPCSA welcomes this acceleration towards digital technology. As we celebrate our tenth anniversary of our association – IPSCA was officially formed in June 2011 – we will, of course, be reflecting and looking back on the past decade. But, at the same time, our members are focusing firmly on what happens next and we are celebrating that too!

Among the many examples of members' digital transformation work, and as well as several collective projects such as our Network of Trusted Networks (NoTN), I would like to highlight the Port of Ravenna's Digital Twin project; Djibouti Port Community System's (PCS) work to enable tracking, transparency and visibility in the cross-border supply chain; and the Indian Ports Association's various Digital Ports Projects in India.

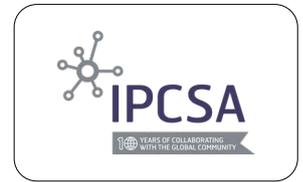
## DJIBOUTI PCS

In Djibouti, a package of digital solutions is proving transformational for the flow of cargo through its ports and across the border into landlocked Ethiopia.

"Our PCS implementation is driven by Djibouti Ports and Free Zones Authority (DPFZA) strategies," explained Warsama Mouhoumed Bouh, CEO of Djibouti PCS. "We are working to create an interconnected environment for maritime investment in ports, in feeder services and in bunkering, etc., transforming Djibouti into an international maritime centre. Second, we are working to

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provide better transit services to our landlocked neighbours. About 95% of Ethiopia's imports pass through our ports. The focus of our PCS has a lot to do with tracking and tracing; we have to provide as much transparency and visibility to the final customers as we can, since they are not here."

In this, Djibouti PCS (DPCS) has connected all the different stakeholders – terminal operators, shipping lines, forwarders, port authority, Customs authority – to provide a 360-degree view of cargo and documentation flows.

"We are tracking the cargo operations to identify when it has been unloaded at the port, container position, gate-in/gate-out, and at the same time tracking the documentation – including clearance, port fees invoicing and booking collection of the cargo," said Bouh. "Recently we have integrated systems with Djibouti Corridor Agency to provide 'check points' in the corridor where the customer can follow his cargo and its documentation all the way through to Ethiopia."

This tracking capability has generated a lot of interest from the Ethiopian logistics community as well as government entities of Ethiopia, whose transport authority contacted DPCS with a view to integrating systems to provide full tracking and visibility of Ethiopia-based trucks, from starting their journey, through loading goods at the port to final delivery. "From our side, we wanted

more information about the transport companies and drivers registered in Ethiopia," said Bouh. "Through this integration, the Ethiopian transport authority aims to provide full information on the truckers that are heading our way.

"Our biggest objective is reducing the time and cost of logistics. We have demonstrated that just through digitalisation, existing customers have been able to save four to five hours on each consignment. Where there were nine manual processes taking up a full day, we have reduced this down to five, all electronic. We expect documentation to be finalised within an hour."

By continuing to analyse data, DPCS has been able to identify bottlenecks, assess customer behaviour and adjust processes accordingly, in collaboration with its stakeholders. At the same time, the final importers, whether they are based in Djibouti or in Ethiopia, can check vessel arrival details, container status and position, and truck progression in the corridor, as well as allow verification of invoicing from forwarders against the correct port prices.

#### **PORT OF RAVENNA**

A Digital Twin project will assist the Port of Ravenna, Italy, in managing its assets, planning projects and maintenance, and fulfilling a major port dredging programme.

The port is working with Ancona-based CNT Technologies, whose managing director, Saimon Conti, told us the idea of a port Digital Twin started when working with two shipyard clients.

"We were working out how we could control a shipyard and optimise the process of shipbuilding and realised that it was not a matter of just the shipyard, but of the whole port," he said. "We began to consider if there was a way to digitalise an entire asset and to get benefit from it independently, wherever you are in the value chain of a port."

CNT wanted to find a port with many complexities in terms of shipping and the environment. Ravenna was the answer; one of Italy's biggest ports, stretching 14km from sea to city centre, Ravenna is home to a range of operations, including oil and gas, while the city is a UNESCO World Heritage Site.

The Digital Twin will provide the port authority with an information model which Conti likened to an interactive video game. It will include layer upon layer of information and will, of course, never stand still.

Andrea Minardi, IT and security manager at the Port of Ravenna, added: "As part of the Ravenna Port Hub project, in the next few years we will be dredging the entire port canal – from 10m depth to 12.5m in the first phase, with plans to reach 14.5m. This will open up new markets and oppor-





tunities for the port. The Digital Twin will provide real-time information on the depth of water – how it is changing and how it has changed. This will be helpful in evaluating the works to be done in the different sections of the port canal.”

Conti continued: “Up to now, the port authority has had all the historical and current information on the status of the seabed stored in many folders, from many surveys; in the future, this Digital Twin will provide a unique database showing the chronology of the water depths and how they have changed.”

The Digital Twin is bringing together information on everything from light towers and buoys to port infrastructure and assets, and also incorporates data collected from regional and local authorities, public service providers and other interested parties. To give an idea of the diversity, it ranges from information on soil to the layout of cables.

The result will be a valuable tool for planning port developments or simulating new operations or vessel calls – but equally, it could be used for planning a city concert or event, visualising a proposed building, working out traffic flows or even analysing emergency response plans.

#### INDIAN PORTS ASSOCIATION

India has been working on its digital infrastructure and enabling of e-governance for many years, and digitalisation is gathering pace across all industries, explained Dr Abhijit Singh, executive director of the Indian Ports Association (IPA), an apex body of major ports under administrative control of the Ministry of Ports, Shipping and Waterways, Government of India.

“The arrival of technologies such as the Internet of Things, AI and big data, blockchain, etc., have made it possible to collect and process larger and larger volumes of information at increasingly lower costs. Ports, too, have embarked on this journey with an objective to

improve port performance, bring efficiencies and increase productivity,” he said.

A number of digital transformation measures have been taken across major ports of India to speed up import/export processes and improve the ease of doing business, he said – including Direct Port Delivery, Direct Port Entry, the PCS, the installation of container scanners and radio-frequency identification (RFID) systems, and eliminating paper forms.

“IPA has taken forward the Government’s initiative to establish a centralised/uniform web-based PCS covering all its major ports, to move towards a paperless regime. As a part of its collective, collaborative and cooperative approach to EDI implementation, for the benefit of the whole Indian port ecosystem, this is covering non-major ports as well.”

An upgraded version PCS1x, launched in December 2018 as an open platform, is evolving into a National Logistics Portal (NLP-Marine). A secure, neutral and open electronic/internet-based platform for all stakeholders in maritime trade and Indian seaport communities, it will optimise, manage and automate logistics-efficient processes through a single submission of data, linking the entire maritime transport and logistics chain and enabling real-time information exchange and business transactions.

Other developments include implementation of an Enterprise Business System (EBS) at five major ports, which harmonised and standardised port operation processes to a minimum; the introduction of RFID-based gate automation systems; real-time cargo tracking; and automatic berth allocation.

These achievements have undoubtedly helped improve India’s ‘Ease of Doing Business’ ranking, which has risen from 152 in 2015, to 63 in 2020.

As Dr Singh pointed out: “Ports are the gateway to prosperity for the country. Adoption of next-generation technology is critical to revamp the maritime industry – to enhance user experience and make it more efficient and safer.”

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#### ABOUT THE AUTHOR

Richard Morton has been Secretary General of the International Port Community Systems Association (IPCSA) since its beginnings as a European organisation in 2011.

As an expert in trade facilitation and the exchange of electronic information, Richard is in demand across the globe as an adviser and speaker. He is a member of the Experts Committee of the APEC E-Commerce Business Alliance and an Expert at UN/CEFACT.

#### ABOUT IPCSA

IPCSA is an international association of sea and air port community operators, sea and air port authorities and single window operators that is recognised across the globe for providing advice and guidance on the electronic exchange of information across borders and throughout the whole supply chain.

The association has nearly 50 members from across the globe who handle the exchange of information for Business to Business, Government to Business and Government to Government processes and facilitate the smooth cross-border movement of goods. This equates to the electronic exchange of information relating to more than 500 million TEU movements and 10 billion tonnes of cargo for air, sea and land transport – estimated to be in excess of 50 billion million exchanges every year.

