



PORTS & HARBORS

Official Journal of the International Association of Ports and Harbors

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Pioneering smart ports serve as an example of what's possible, but not all smart solutions are relevant to all ports

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Getting to zero

The recently refocused strategy further aligns IAPH's objectives through WPSP

Santiago Garcia-Milà
IAPH President



We got off to a flying start after the summer break with a flurry of IAPH activities during London International Shipping Week in early September. The absolute highlight was our first council meeting at the International Maritime Organization (IMO) headquarters, where we had a very good discussion with secretary-general Kitack Lim about how we can engage the ports industry and IAPH more actively and systematically in the work of IMO.

Port call optimisation was one of the topics discussed, and at London International Shipping Week we organised a successful roundtable with our media and events partner IHS Markit, where delegates discussed the concept and its implementation in practice. We can expect concrete proposals to move forward in December, under the auspices of the International Taskforce on Port Call Optimization (ITPCO).

Port call optimisation will help in reducing greenhouse gas (GHG) emissions from shipping, next to producing efficiency

and safety gains. But we must be equally clear that it will not be a game changer for the decarbonisation of shipping. The IMO GHG reduction targets will only be reached through the full-scale deployment of zero-emission fuels or other means of propulsion.

This requires intensive dialogue between all parties in the maritime supply chain.

That is the spirit of the new 'Getting to Zero Coalition', which was initiated at the UN Climate Summit in September. We were present at the launch in New York to express our support to make the ambition happen of getting the first zero-emission ships on deepsea routes by 2030.

Turning to matters internal, I am very happy that at the London Council meeting, we identified two priorities on which to refocus the strategy of IAPH.

On the one hand, we will focus our leadership role on a limited set of truly global issues already on the agenda of global regulators such as the IMO. On the other hand, we will develop the business case for a broad assistance package to facilitate the sustainable development of ports worldwide, under the auspices of the World Ports Sustainability Program (WPSP). **PH**

Port call optimisation will reduce greenhouse gas emissions but will not decarbonise shipping

Port updates

► JORDAN PHOSPHATE

A USD240 million rock phosphate export terminal is being developed at the new Aqaba port in Jordan. On completion the new terminal will feature an export jetty, storage areas, shiploading equipment, as well as dust and spillage control facilities. Conductor Installation Services recently completed a pile-driving operation comprised 165 of piles. The offshore area will eventually consist of a 190 m-piloted berthing area with two parallel-to-coastline structures that support two loading bays, two mooring dolphins, an access bridge, and two bridges that connect the structures.

\$240m

► INCHEON POWER

The port of Incheon in South Korea has commissioned ABB to install shore power capacity to serve passenger vessels. The port lies close to Incheon city centre, and the installation will reduce harmful emissions from docked ferries and cruise vessels. The enclosure on the dock comprises a 2,000 kVA capacity Static Frequency Converter with 50/60 Hz output, a transformer, and neutral grounding resistor unit.

► LIVERPOOL2 EXPANDS

McLaughlin & Harvey has been contracted to deliver Phase 2 of Liverpool2 container terminal expansion. The new phase will increase the surface area of the UK port, adding a new ship-to-shore (STS) interface on the coast-facing side of the terminal, by way of 10 additional rail-mounted gantry cranes and 3 STS cranes, which are expected to arrive this month (November). The project is expected to be completed by 2021. Detailed design and preparatory civil works have already started.



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Port of Dover in the UK is likely to be the most affected by Brexit

Ports still bemoan Brexit uncertainty

As the UK and the EU continue negotiations before the deadline for the former to leave the EU, ports and their clients have been scrambling to prepare for a no-deal scenario. The UK has proposed a compromise that would keep Northern Ireland within the EU customs union for certain goods, creating in effect a border in the Irish Sea, but the move has not met with universal approval.

Richard Ballantyne, chief executive officer of the British Ports Association, said the proposal presented challenges. "The majority of Northern Ireland's trade is with Great Britain and a border in the Irish Sea would be extremely challenging for the ports in Northern Ireland and those in England and Scotland who have freight routes," he explained. "Ironically also in a 'no-deal' situation there could be displacement issues for Welsh ports.

"We recognise the sensitivities and issues around the land

border and have always said that the best resolution and the best way to meet the government's commitment to frictionless trade is a deal that has no customs or regulatory checks at all, anywhere," he said.

In Ireland a political row has broken out over the ability of Irish ports to cope with a no-deal scenario. Ireland Finance Minister Paschal Donohoe has confirmed that the Office of Public Works (OPW), which is responsible for the delivery of the necessary infrastructure to handle a no-deal scenario, is preparing temporary facilities in Rosslare Harbour.

"These will include public office facilities, basic driver comfort facilities, and exam areas for SPS and Customs controls," said Donohoe. "OPW is working to provide permanent facilities that will be in place by 1 January 2021."

Reports say that there is concern over the ability of other Irish ports, including Dublin, to handle the potential queues of traffic that would be

caused by a no-deal Brexit.

The UK government has pledged a further GBP30 million (USD38.5 million) to ports around the UK to aid their Brexit preparations. The port of Liverpool has said it is set to spend its share creating more space for HGV parking and container storage to support smooth trade operations by ro-ro ferries, especially across the Irish Sea. Mark Whitworth, CEO of Peel Ports, said, "We're doing everything we can to help our customers continue delivering import and export trade throughout our port network. This government funding helps us to put in place additional measures to achieve that."

The port of Dover CEO Doug Bannister has said it is ready for any outcome on 31 October. He said, "Dover is a fast-paced operation unlike anywhere else and has been dubbed Britain's just-in-time trade conveyor belt; but it is Ireland's too with around 40% of Irish exports to the EU travelling via Dover. Business as usual means Dover as usual and that is what we have been working on."

He added, "Alongside ongoing major investment in our operational capacity, we've prepared for Brexit, working hard to ensure our assets are ready, critical spare parts stocked and the right level of resources are in place."

James Hookham, deputy CEO of UK's Freight Trade Association (FTA), warned the situation was still far from settled. "FTA has offered to help the government develop and implement an effective solution for trade on the island of Ireland and, while this offer has yet to be taken up, our door remains open," he said.

In an effort to move forward Brexit negotiations, UK Prime Minister Boris Johnson has called a general election for 12 December. The deadline for the leaving the EU has also been extended to 31 January.

Port updates

► DUBAI BREAKS GROUND

The Dubai Maritime City maritime cluster has begun construction of supporting infrastructure for its Phase I development. Work comprises new roads, telecoms connectivity, electrical works, street lighting, sewerage and drainage systems and irrigation. The project will also improve local infrastructure to enable various commercial-sub developers to complete their projects, and will integrate DMC with the Mina Rashid commercial area. This comprises the QE2 hotel, as well as residential, fitness, and commercial facilities.

► LNG FUELS BOX SHIP

The first LNG-fuelled container ship was launched in Shanghai in September. The CMA CGM Jacques Saade, named after the group's founder, is the first of nine French-flagged 23,000 teu ships. It reduces CO₂ emissions by around 20%, emissions of SO_x and fine particles by 99%, and cuts NO_x emissions by up to 85%. Its size will limit its access to hub ports on the Asia-Europe trade where so far this year, 10 vessels of 20,000 plus teu capacity, and seven ships of 15,000–20,000 teu have been delivered.

► NEW JERSEY LNG

A new port facility currently being built in New Jersey will export liquid fuels, including LNG as well as refrigerated cargo, ro-ro, and bulk. Gibbstown Logistics Center's handling of LNG has generated some attention and local headlines, and is a sign of accelerating change for ports in this region of the US near Philadelphia. Some concerns have been raised locally about the safety of handling LNG, which would be transported for export via an access road and possibly at some point by rail cars. The loading of LNG to ships by pipes will be a continuous operation every day.



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Hapag-Lloyd is using Portchain to optimise its assets

Hapag-Lloyd optimises reliability

Shipping line Hapag-Lloyd will use technology from the Copenhagen-based port and liner schedule optimisation solutions provider Portchain to better predict disruptions to the container line's sailing schedules, the companies said.

Portchain, founded by a trio of McKinsey alums, uses artificial intelligence (AI) to optimise planning of terminal assets and better connect the terminal operators and liner carrier through data sharing and predictive insights. The company refers to its product as decision-support tools meant to complement existing systems.

"We're using AI to optimise assets, to help planners make more informed decisions," Thor Thorup, chief commercial officer and co-founder at Portchain, *P&H's* sister publication, *JOC.com*, in mid-2018. "The question for these planners is, 'how do I maximise my assets when there are literally millions of outcomes?'"

Hapag-Lloyd's use of the technology represents a key milestone for the start-up. Portchain's predictive algorithms will assist Hapag-Lloyd's

marine operations teams identify potential issues in schedules earlier to improve schedule reliability and reduce bunker fuel cost.

The company in 2018 ran a pilot in Antwerp where it approached a carrier and terminal in parallel to optimise calls. Its two product categories – port optimisation for terminals and schedule optimisation for container lines – are designed to work in a standalone manner, but can be linked if both parties agree.

Portchain uses AI to reduce the time it takes to conclude on what to do when a disruption occurs. As Thorup put it, many times a carrier will conclude on a course of action, but too late to impact the vessel call in question.

"And by then the situation has resolved itself, but not optimally," he said. "By combining a myriad of data surces with our machine learning algorithms, we're able to predict scheduling issues much further out in the future, enabling an increased planning horizon, and increased schedule predictability." Hapag-Lloyd says it sees the technology as improving its ability to improve schedule

reliability for customers.

"We're always looking for better and pioneering tools that enable us to improve our voyage control," Jörn Springer, senior director of fleet support centre at Hapag-Lloyd, said in a statement. "Portchain's cloud-based solution provides powerful insights into the robustness of schedules and allows us to quickly make changes in real time."

Thorup said in a statement that "this partnership will allow us to grow our solution with one of the most important players in the shipping industry".

The Portchain system is not designed to replace existing terminal operating systems or carrier management systems, but rather work alongside them via application programming interface. Portchain has received USD5 million in funding, most recently raising USD2.5 million from several former shipping executives and the founders of TrackMan, a sports data analytics company. It previously received USD2.5 million in seed funding (primarily from the European Union and the Danish Maritime Fund).

Port updates

► ABU DHABI NUMBERS UP

Abu Dhabi Ports reported volume growth in the first half of 2019, including a cargo handling increase of 10% across its ports. Khalifa port saw container volumes increase by 82.4% year-on-year, handling 1.14 million teu in the first half of 2019. ADP also saw an increase in passenger volumes at 320,000 passengers in the first half, representing a rise of more than a third. The company said its “success was driven in part by concession agreements signed with leading maritime firms, such as Mediterranean Shipping Company and Cosco Shipping Ports”.



► FLNG STUDIES

Gastech Conference in Houston saw the results of feasibility studies for a floating LNG- (FLNG-) barge installation at Mega Terminal in Bahia Blanca (Argentina), presented by Siptort21. The methodology of the studies comprises compatibility analysis, and dynamic mooring and passing ships studies, both for the barge TFLNG moored alone and for the set barge LNG carrier moored alongside for STS operations. Siptort21 has been involved in 59 LNG Terminals.

► INDIA'S DUTCH SUPPORT

Port of Rotterdam Authority is increasing its activities in India. It has signed two MOUs and has appointed Broekman Logistics India to represent the port through its 16 offices, with locations including Mumbai, New Delhi, Chennai and Kolkata. Port of Rotterdam Authority also supports the establishment of a maritime university in Gujarat.



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Jacksonville harbor is to be dredged to 14.3 m

Port of Jacksonville secures dredging funding

The Florida Department of Transportation has allocated USD35.3 million to a Jacksonville harbor deepening project to dredge the harbor to 14.3 m along an 17.7 km stretch to the Blount Island Terminal by 2023.

Jacksonville port officials believe the USD484 million dredging project is necessary to keep the port competitive with neighbours to the north in Savannah, Georgia, also currently dredging to 47 ft, and Charleston, South Carolina, currently dredging to 16 m. JAXPORT's newest influx of cash will be spent on the second of three contracts to complete its digging to 14.3 m.

The money will go towards the second half of work to dredge 5–13 km. The first contract (contract A) covers the first 5 km and should be completed next spring. The second contract (contract B) covers the next 8 km, of which the USD35.5 million covers 4 km, which should wrap up in May 2021, according to the port authority.

The final contract (contract C) will deepen an additional 5 km to SSA Marine's terminal in Blount Island, which is currently in the design phase. A pending contract (contract D) would deepen another 3.2 km to the TraPac terminal, which has received federal authorisation but has no dedicated funding mechanism yet.

“The support we have from the state of Florida – combined with support at the federal and local levels and a public-private partnership – all ensures JAXPORT will continue to thrive as a global gateway into the Southeast US,” JAXPORT CEO Eric Green said in a statement.

Imports through Jacksonville in the first half rose 0.5 % to 171,330 teu compared with the same period a year ago, according to IHS Markit's PIERS product. Jacksonville's laden imports grew at the slowest pace of any East Coast port, only faring better than Everglades, which saw volume retract.

Jacksonville's deepening projects come as other US southeast ports dredge their channel to be able to better handle the up to 14,000 teu ships able to traverse the expanded Panama Canal locks. The largest vessel currently to call Jacksonville is 13,000 teu, but dredging would be necessary to regularly handle vessels of these size without tidal restrictions.

The USD973 million Savannah Harbor Expansion Project is due to be completed in September 2020. The USD558 million Charleston deepening project is due to be completed in 2022. Both projects recently moved forward in August when the Army Corps of Engineers awarded contracts to Norfolk Dredging. Aside from the Jacksonville, Savannah, and Charleston's projects, the port of Philadelphia recently completed a deepening to 13.7 m. The port of Boston has also proposed to dredge to 14.3 m, Everglades to 14.6 m, New Orleans to 15.2 m, and Virginia to 16.7 m.

Milford Haven tackles alternative energy

Milford Haven Waterway in the UK is to become the site of a new marine (tide and wave) energy development and engineering hub, thanks to a collaboration between the port of Milford Haven, Marine Energy Wales, Offshore Renewable Energy Catapult, and Wave Hub.

The development will act as a staging point for new development at a 90 km² leased site for the commercial deployment of a 100 MW combined wave energy and floating offshore wind array. If it can be harnessed properly, wave energy offers extraordinary potential with 24-hour renewable energy on offer. With water depth of 50 m, the Pembrokeshire site is calculated to have a potential of 19 kW of wave energy per metre.

Milford Haven plans to accommodate a marine energy

hub and centre of excellence, which would extend its findings to elsewhere throughout the British Isles and further afield if wave energy is found to be a commercially viable source of renewable energy.

The Pembrokeshire Demonstration Zone will also feature an array of floating wind turbines, which are still relatively scarce on the west coast of the UK mainland, relative to a major presence off the east and north sea-facing coastlines.

Pembroke Dock Marine will also comprise a new research and innovation facility close to the test site, enabling continuous research and development support for developers of the new energy source. According to the port of Milford Haven, the new development will "expand upon the region's existing high-

skill cluster site, to develop and enhance the existing infrastructure and facilities to ensure this young industry can benefit from maximised operational efficiency and innovation opportunities".

Areas of the deepwater waterway – referred to as a Marine Energy Test Area (META) – will also be allocated, and associated infrastructure assembled for the *in-situ* testing of tide and wave energy devices and components. "Together, these elements will help drive the commercialisation of marine energy technology whether tide, wave or floating wind enhancing the UK's current industry proposition," Milford Haven said.

Marine Energy Wales calculates that the country has some 6.2 GW of wave energy resource available, over a surface area of 1,912 km².

LA trials battery-powered top handlers

Port of Los Angeles unveiled a battery-powered top handler on 2 October as part of a California Clean Air Day event to highlight the progress the port and neighbouring Long Beach have made towards reaching the goal of deploying zero-emission cargo-handling equipment (CHE) by 2030. Los Angeles and Long Beach are further along than many non-maritime industries in reducing pollution as the ports have been enforcing standards that were set in their joint Clean Air Action Plan (CAAP) adopted in 2006.

Los Angeles and Long Beach are seeking grants from government agencies and are contributing their own money to help fund pilot projects of zero-emission CHE. Long Beach port is participating in pilot projects involving eight or nine different types of zero-emission CHE.

Some of those units that are already undergoing testing at the ports include hybrid and battery-powered yard tractors that move containers horizontally between vessels and container stacks.

Electrifying large pieces of equipment like rubber-tired gantry cranes and top handlers, such as that unveiled by the port of Los Angeles, is more challenging than developing small zero-emission equipment such as yard tractors because the larger

equipment must lift containers vertically. The port believes that having battery-powered top handlers ready for testing is encouraging, as if manufacturers can have this equipment commercially available over the next few years, it will enable terminal operators to engage in long-term planning of equipment purchases to meet the 2030 goal.

Testing these units in actual cargo-handling activities at marine terminals will allow the terminal operators, and the longshore workers that drive the equipment, to offer their input to manufacturers so they can produce equipment that can perform efficiently in rugged duty cycles of at least two eight-hour shifts a day.

The port has also highlighted that actual experience with the equipment will help the terminal operators to determine the proper location for battery recharging stations, and to plan for any other changes in the terminal infrastructure that might be necessary to accommodate the multiple units that will be deployed each day.

Because there is more than one manufacturer of each type of equipment, the ports face a major challenge working with the companies on developing a standard for charging equipment.

Port updates

► UK SHIP REPAIR

In a deal with Portsmouth International Cargo Terminal (Portico) in the UK, SMS Group will provide a dedicated shiprepair facility, allocating existing wharfage. "Berthing for ship repair in the Solent can be, and often is, expensive," said Chris Norman, managing director of The SMS Group. "This fact often works against operators when they consider the region for alongside ship repair works and short, sharp refits – which is an area of expertise that we specialise in."

► CANADIAN EXPANSION

Québec Port Authority (QPA) has signed an agreement with Hutchison Ports and Canadian National Railway to build and operate a new container terminal, known as project Laurentia (previously Beauport 2020). The USD775 million project will be financed primarily through the joint investment of the three partners. The QPA also has ongoing discussions with the federal and provincial governments to complete the financing. When fully operating, the new terminal facility will support hundreds of jobs, Hutchison Ports said in a statement.

► PRODUCTIVE BARCELONA

APM Terminals (APMT) Barcelona broke its own record in October when it registered 5,394 movements on vessel *Millau Bridge*, which belongs to The Alliance, the terminal's main service. A sustained productivity of 135.46 berth moves per hour was reached during the operation, said APMT in a statement. The terminal has seen investments made in recent months, said to be "decisive" for handling the *Millau Bridge* call, including the acquisition of two super post-Panamax cranes. These investments are to modernise the present fleet of the terminal.

Slow but sure wins the race

IAPH managing director for policy and strategy Patrick Verhoeven, and John Michael Radziwill, CEO of C Transport Maritime and GoodBulk, discuss the upcoming sulphur cap, carbon targets, and why slow steaming may be the best short-term answer to the industry's woes, writes **Penny Thomas**

The International Maritime Organization (IMO) has set tough targets for the shipping industry to reduce emissions from its operations, and this has spawned new ways of thinking and technological advancement from fuel companies and equipment manufacturers. And shipping will need to pull in all the help it can to meet its goals. The IMO agreed in 2018 to reduce total annual greenhouse gas (GHG) emissions from ships' exhausts by at least 50%, compared with 2008 levels, by 2050. Closer on the horizon in 2030 is a further IMO target to reduce carbon intensity, as an average across international shipping, by at least 40%, pursuing efforts towards 70% by 2050, again in comparison to 2008 levels.

These mandates will rely heavily on technological advances and new government policy. As trade facilitators, port authorities will play their part too, and although their route to becoming a responsible and sustainable node in the logistics chain will be different to that of shipping, ultimately, reducing GHGs is a high priority for both.

According to IAPH's Patrick Verhoeven and John Michael Radziwill, a dry cargo ship management company and GoodBulk, a shipowning company, there is a lot one can do to support the other.

Radziwill has been busy preparing his companies to meet the imminent IMO deadline – the 1 January 2020 fuel sulphur cap of 0.5%. He is well prepared for the disruption and the extra costs that compliance will

bring. At up to 80% more expensive than heavy fuel oil (HFO), Radziwill said that ship operators must "be ready with their cash flow management". These costs could be passed on to charterers, he said, "but you still need to have a much more working capital than before".

The industry's tank cleaning operations began as early as May 2019 on those vessels that are not having scrubbers installed. Radziwill recommends that operators think strategically about the order in which ships are being cleaned, and this is dependent on the cost of very-low-sulphur fuel oil (VLSFO) at individual ports. "You'll need to factor in at least a 30–90-day process to clean the tanks. To manage the cleaning process, some of our ships will use VLSFO in the near future [before the 1 January deadline] because at some ports the price differential is not huge. But at most ports, you'll need more working capital ready to get you over financial bridge."

The landscape is as yet uncharted, and he is aware of potential "potholes" such as different fuel mixes in different ports. "You need to be careful how new fuel interacts and you may have different fuel quality at different ports," he said, adding that the VLSFO market will eventually settle and a network of trusted suppliers will emerge.

Radziwill asks ports to remain competitive and have an adequate supply of scrubber-compliant fuel and VLSFO fuel to match their turnover. Barges to transport the different fuel types – VLSFO, MGO, and HFO – will have to be cleaned, depending on fuel to be carried going forward, and available in the correct ratios and quantities.

Verhoeven sees these challenges facing shipping and agrees that ports' responses to the sulphur cap are inconsistent. "We all share the issues – availability, quality, and assurance in the supply chain – but to what extent ports are involved in the process is different across the globe." He points to Rotterdam and Singapore as examples of ports that have been active in preparing for VLSFO bunkering operations, but notes that others may not have the necessary jurisdiction to deal with bunkers.

"At the last MEPC [IMO's Marine Environment Protection Committee] meeting, the International Chamber of Shipping and BIMCO [non-governmental

“The environment comes first, and then the bottom line”

John Michael Radziwill
GoodBulk and CTM



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Transitional fuels like LNG do help even if they aren't carbon neutral

Patrick Verhoeven, IAPH



IHS Maritime 5048774

organisation that represents shipowners] proposed that port authorities take responsibility for monitoring ships' fuels, but IAPH pointed out that in some states it may not be port authority's mandate, but other parties' responsibility. There is a lot of institutional diversity," said Verhoeven.

What IAPH can do is encourage its port members to take an interest and control the situation where they can, he said, noting that the organisation has developed tools to help members navigate the changes and support shipping. "Whether we are talking about fuel provision or single windows, we want to make the network more cohesive and customer-friendly, but we can't change the institutional diversity overnight. All we can do is create tools to allow port authorities to step into these conversations," he said.

"The checklists and accreditation tool we developed for safe bunkering of LNG fuel is a good example, which we are now extending to other clean marine fuels," Verhoeven added.

The same philosophy applies to scrubbers, says the IAPH managing director for policy and strategy – it needs dialogue. "Port authorities have a role as community managers to bring parties together and to ensure the dialogue takes place even if the port authority itself does not control the supply chain. It's all about information sharing."

He notes, however, that enforcement of the 0.5% sulphur fuel cap is a government role, typically carried out by Port State Control. "Some ports who are very close to government may have that task or delegate it to the harbor master. But largely, enforcing regulations is a government responsibility."

When 0.1% fuel was introduced into emission control areas (ECAs), fuel was monitored through the same structure and, despite huge concerns initially, there were no major enforcement issues. Verhoeven sees a similar scenario rolling out. Radziwill also believes that it is a relatively straightforward situation, which should not be overcomplicated. "All it means is that as well as the owner checking the fuel is good, a government authority will also be checking that the fuel is compliant."

Neither see any upsides to cheating, with both saying it makes no business sense at all, as well as being morally, ethically, and environmentally irresponsible. "Some people will cheat – it always happens," Radziwill acknowledged. "But for us, the environment comes first, then the bottom line for all our clients, which include myself."

Slow steaming as an immediate solution to cut emissions and costs makes total sense to the CTM CEO. "I've said this before and will keep saying it, for the short term, slow steaming is the best way forward," he opined. "The most low cost, practical, efficient, and environmentally considerate thing to do is to put a speed cap on the global fleet. I don't understand the push back from the industry."

Verhoeven sees a similar trend in shipping's response to just-in-time arrivals, which could lend itself to slow steaming, and port call optimisation. These concepts have piqued the interest of shipping and ports alike, but data sharing between parties is a sticking point to its take-up. "There are benefits for shipping, safety, ports, and more," Verhoeven asserted, which is in everyone's interests. "This is low-hanging fruit in liner and tramp shipping, but we have seen pushback against port call optimisation and this doesn't make sense."

Taking a long-term perspective, Verhoeven is quick to point out that only new fuels can lead to decarbonisation of shipping and the 50% reduction required by 2050. "IAPH is encouraging its members to join the Global Maritime Forum's Getting to Zero Coalition, and facilitate the deployment of zero-emission ships on deepsea trades by providing safe bunkering facilities. It will be a huge task," he said. "Transitional fuels like LNG do help even if they aren't carbon neutral. Environmentalists don't consider this to be the case, but LNG can form part of puzzle that brings things together. I wouldn't be dismissive of any low carbon fuels."

Radziwill calls out for shipping to retrofit engines to burn alternative fuels. "Anyone ordering a new ship should keep this in mind." He wants ports to offer a variety of bunkering options: LNG, hydrogen, biofuels, and ammonia. "Keep fuel options and technical options open as much as you can," the shipowner advised ports, including shoreside power.

Verhoeven is prudent about shoreside power as a general offering citing high costs, which in certain circumstances have led to stranded assets due to lack of take up from lines. Radziwill acknowledges the financial barriers. "All these ideas are wonderful but of course the costs must be taken into account as well. We work with what we have, maintaining environmental protection at the top of our agenda.

"That is why this this opportunity to slow steam is so important. The best things in life are simple and practical so we just need to use common sense to get there. You should keep an open mind to every solution even if it isn't super sexy and that's what we have done here," he concluded. **PH**

People, planet, profit, and ports

What will the next wave of port ecosystems look like?

Pascal Ollivier believes in a more holistic public-private approach to deliver what he calls S2PC – smart and sustainable port cities of the future

Ports and cities are historically strongly linked to deliver prosperity, power, and progress. But relationships between the two have, in many cases, become strained over time as increasing urban populations and growing maritime trade create environmental and societal challenges. We have yet to address many of the challenges resulting from the Fourth Industrial Revolution (4IR), which we are currently experiencing. Public policies around port cities, for example, are still at their inception in most ports. The creation of such policies should be a priority when one considers that 17 of the top 25 world megacities are also port megacities, with a population of 293 million people and 22% of world port container traffic handling 167 million teu.

The time has come for the two key pillars of the previous decade – ‘smart’ and ‘sustainable’ – to be treated holistically in terms of policy making, not only in developed countries but also in developing countries, when making decisions about critical port city populations, infrastructure and trade logistics.

A new era of governance to support smart and sustainable port cities (S2PC) of the future will be needed beyond what exists today. New clusters of excellence will be required – some are already forming at key hubs – that mix traditional port and maritime disciplines in new ways. A new wave of incubators and

accelerators must be fostered to enable technology start-ups, supported by academic research, skills development and retraining, and outreach to attract a new generation of S2PC people in the public and private sectors.

PortXL, born in Rotterdam and now active in Antwerp and Singapore; The Dock innovation hub in Israel; and Pier 71 founded by the Maritime and Port Authority of Singapore and National University of Singapore, are all examples of new waves.

From a policy making and governance perspective, security, mobility, energy, and environment will be the four pillars of S2PC port cities over the next decade.

Security: port cities are increasingly viewed as critical infrastructure from an international trade, security, and defence perspective in the face of new geopolitical, economic, environmental, and technological risks. In particular, cyber security has become one of the top three risks for public and private organisations.

It comes as no surprise that in 2018 the World Economic Forum (WEF) established the Centre for Cybersecurity. According to the WEF, economic loss due to cyber crime is predicted to reach USD3 trillion by 2020, representing 3.4% of global GDP.

The development of Maritime Autonomous Surface Ships (MASS) will not only bring new regulation from the International

Maritime Organization (IMO) as part of its 2018–23 Strategic Plan to integrate new and advancing technologies, but will also see the emergence in ports of Fleet Digital Remote Operation Centres and Digital Fleet Security and Supervision Centres where cyber security will be a primary risk that needs to be managed robustly.

In a similar context, the development of unmanned aerial vehicles (UAVs – more commonly known as drones) poses threats as well as benefits to critical infrastructures and populations, as has been seen in cruise port cities in 2019, and will require regulatory and security initiatives.

The rise of autonomous systems along with the internet of things (IoT) and industrial internet of the things (IIoT) infrastructure, 5G networks, and the massification of digitisation, will make security a number one priority for port cities over the coming decade, including the development of command, control, communication, computer, cyber, and intelligence (C5I) systems.

This situation should prompt the IMO to integrate cyber security into the global maritime regulatory framework and to amend the 2004 International Ship and Port Facility Security (ISPS) Code to force the port ecosystem to develop a resilient infrastructure.

Mobility: many port cities are dying, with massive congestion due to the

combined forces of fast-increasing populations and trade growth.

In Lima, Lagos, Mumbai, and Jakarta, a holistic approach is needed to manage strategy-to-execution decision making. Digital twinning will be part of the answer, creating a digital representation of a real-world entity or system including the relationships between all the relevant entities and all means of transport for cargo and people.

According to Gartner Group, by 2022, over two-thirds of companies that have implemented IoT will have deployed at least one digital twin in production, and digital twins are now entering mainstream use. The port of Rotterdam, for example, is creating a digital twin of the port to track ship movements, infrastructure, weather, geographic, and water data, and Singapore is experimenting with its digital twin to improve city life.

Energy: beyond traditional offshore and mainland sources, there is a high level of ambition to improve the generation and use of renewable energies to power port cities.

GE has selected the port of Rotterdam to install in 2019 the most powerful wind turbine in the world. Installed at Rotterdam's Maasvlakte port area, the Haliade-X 12MW turbine is expected to produce 67 GWh in gross annual energy and power 16,000 households.

Over the past decade, the port of Los Angeles has undertaken a number of projects to promote solar power, installing panels that can now produce 13MW, with the clean energy fed to the utility grid operated by the Los Angeles Department of Water and Power.

The solar systems generate approximately one-sixth of the port's current power demand, enough to power approximately 2,500 homes.

In 2017, the Indian Ministry of Shipping announced that it would set up 135 MW of solar energy capacity at eight major ports. In January 2019, Visakhapatnam port announced that it has been running on 100% solar energy since it commissioned a 10MW captive solar power project.

Environment: in May 2019, IMO's Marine Environment Protection Committee (MEPC)

adopted resolution MEPC.323(74) inviting Member States to encourage voluntary co-operation between the port and shipping sectors to contribute to reducing greenhouse gas emissions from ships, including support for the optimisation of port calls and facilitation of just-in-time arrival of ships.

The port call optimisation initiative was launched by the ports of Algeciras, Busan, and Gothenburg, Houston, Rotterdam, Singapore, and Ningbo-Zhoushan in 2014, endorsed by IAPH, and is a cornerstone of the World Port Sustainability Program.

A joint study by research institute TNO and Port of Rotterdam in 2018 analysed all container vessel traffic to Rotterdam and found that advising approaching ships 12 hours before arrival on 'just-in-time' sailing schedules for berth availability could save 4% or 134,000 tonnes of CO₂ emissions a year as well as 20% of waiting time.

As multiple demands and forces converge on port cities, we now have a tremendous opportunity for all the public and private stakeholders to come together and craft a new ecosystem to harness the potential of technological innovation and deliver S2PC – truly smart and sustainable port cities that enable national economies and world trade without sacrificing the health and wellbeing of their citizens or further damaging the environment. It's all about people, planet, profit, and ports. **PH**

Pascal Ollivier is the president of maritime street, a digital trade logistics strategic advisory and expert services firm. He is the founding chairman of IPCSA, the International Port Community System Association, and chairman of IPCSA's research committee. In 2018, he chaired the digital committee of the third national session on Maritime Issues and Strategies from the French Institute of National Defence Studies.



“Policies in developed and developing countries should now be smart and sustainable”

Pascal Ollivier
President of Maritime Street

Maritime Street: 5126299



Show your smarts ... to secure port's prospects

The 'smart port' model is not necessarily a smart fit for all ports, and technology will only get you so far.

Penny Thomas reports

More than four years ago in 2015, Hamburg Port Authority hosted the IAPH World Ports' Conference under the banner – Calling at the smartPORT. Since then, the 'smart port' concept has been widely discussed, dissected, and is now commonly described as an automated port that integrates data from blockchain, artificial intelligence (AI), internet of things (IoT), and harnesses this data to improve a port's productivity, reduce its costs, and improve its environmental footprint.

The investments Hamburg made in digital intelligence have served the river port well, and according to the port have improved its efficiency and reduced its environmental impact. However, experts warn that not all ports should consider AI and other cutting-edge technology as means to stay current and relevant in the years ahead.

As political and environmental pressures continue to play out, globalisation of trade is decreasing and regionalisation is taking a strong foothold, a trend that experts believe will continue for the mid-term. Location will therefore continue to be as important as it always has been, with traditional demographics driving imports and exports.

The move to regionalisation, said Neil Davidson, Drewry's senior analyst – ports and terminals, is driven by near-shoring economics and increased use of robotics in manufacturing, and environmental pressure, coming from customers and stakeholders to

cut the carbon footprint of commodities, and in the form of environmental regulation, such as enforcing CO2 emission reductions. "Supply chains will shorten significantly," he added.

This means more intra-regional trade in smaller ships, he said, with reduced teu-miles on average, supporting the drive for smaller environmental footprint in operations. Small- and medium-sized gateway ports will have an opportunity to grow, said Davidson, and increase their importance. "Of course the deepsea intercontinental trade will still be there, but the proportion of regional trade will increase we believe," he told *P&H*.

Tiedo Vellinga is professor of Ports and Waterways at Delft University of Technology, Rotterdam, and previously a project manager at Rotterdam Port Authority. He agrees that regional trade and smaller ships will feature heavily in the projected port landscape of 20 years' time. "Smart people," he told *P&H*, "have changed course already", and are seeking more sustainable solutions, which he believes will be a defining characteristic of ports of the future. He sees the drive to get the biggest ships into the biggest ports as out of kilter with the requirements for most ports going forward and promotes sustainability as a solution that will result in economic rewards.

The continued shift of middle-class wealth from west to east will also result in shorter trade routes, and altering East West trade patterns. Indra Vonck, port





expert at Deloitte Port Services predicts increased local production in Asia, as “Asia is producing more for Asia”, that could lead to a “shift from the large hub-to-hub transport flows into a more dispersed regional flow, smaller, and more frequent sailings”.

Ports globally that are able to deal with not only demographic changes, but also political uncertainty and increased protectionism and can “gain the support from their local government will have a leg up on the competition”, and reap the benefits from more “regional trade and a different product mix over the coming years”, Vonck said.

Beyond location, ports will be expected to offer good services and facilities and competitive pricing. Integration will also be a key component, including inland transport, which Davidson noted is the most expensive part of the chain. “Smart ports and digitisation will be a key part of this,” he said.

Drawing attention to Rotterdam’s port community system (PCS), Antwerp’s experimentation with drones (see page 32), Hamburg’s IoT systems, Los Angeles’ smart solutions in partnership with IBM, and Jebel Ali’s automation, Vonck told *P&H* that these examples should “serve as inspiration for what’s possible”, but should not be an ambition for every port.

“Just as in other sectors, certain companies and organisations are leading the pack – Schiphol in the airport industry, Maersk in the shipping industry, and New York in the smart city scene. It is often safer for others to be more selective in which innovations to pursue,” said Vonck.

The high financial investment levels associated with smart ports may not reap the required rewards. In regions where labour remains relatively cheap, for example, in certain parts of Africa, automation and other labour-reducing technology may not be in a port’s best interests.

“A smart port as advertised by most companies and major ports would be [like] buying a custom-made Rolls-Royce, while most ports would be very happy with a decent stock car, ranging from a Skoda to a BMW depending on the budget and complexity,” Vonck said. He added that even the smartest ports in the world struggle to derive the maximum amount of value out of their technological innovations and cautioned that just as important as the technology is the way a port

organises its operation. Deloitte uses the Strategy Cascade model to determine the best solutions for an individual port, which considers:

- Why a smart port is required, or which value or business does an organisation want to create
- Which technologies can help a business in this endeavour – automation, digitalisation, IoT, PCS, terminal operating system, or any combination of the aforementioned
- How an organisation adapts to these changes, does it want to team up with others, or alternatively do everything inhouse, and under which structure.

If one of these steps is skipped, the “chances are quite high that the smart outcome will only be moderately intelligent”, said Vonck.

That is not to say that smaller ports should not look to pioneering ports for inspiration. By showcasing what is possible in a digitised landscape, “ports can shape the new generation of maritime rules and regulations linked to these technological evolutions,” said Vonck.

Vellinga supports this argument and believes that port authorities’ actions can play a huge part in shaping a greener future, despite having limited power beyond the port gates. He gave an example of Rotterdam’s aim to be carbon-neutral by 2050.

“Port authorities have no power to make rules, but they can influence decisions and accelerate processes.” He points to the Maasvlakte 2 complex as an example, whose policy allows only bio-based industries to operate.

The terminal, which opened in 2013, has also invested in the offshore industry and its related activities. While offshore “does not bring in shipping lines paying port dues, it is supporting the energy transition, and preparing for a sustainable future”.

Harnessing data from blockchain, AI, and IoT has brought benefits to certain ports. Such technology may become increasingly relevant to port operations as customers’ demands change. But experts warn that smart port technology should not be considered the single best solution to advance a port in the future. Ports of the future will also need to be interconnected and active participants in the wider supply chain, offer good services to their clients, and have a location that remains relevant to evolving trade flows. **PH**

**Smart ports:
strategy is as
important as
technology**

Sustainability pioneers

Ports are integral to overall reduction of emissions in the supply chain. **Charlie Bartlett** looks at the way ports are lifting shipping into the green



Port of Los Angeles: 5125817

LA received two new battery-electric top handlers in October that can operate continuously for 18 hours without charging

In times past, ports were situated out of the sight from cities, close enough to be able to serve them but far enough away that the less photogenic realities of day-to-day port operation could be ignored. Now though, many cities have sprawled dramatically toward these facilities. Ports cleaning up their act is now not only a source of abstract brownie points on the international stage, but also an imperative. Experts said that in the future, ports' sustainability credentials will increasingly be a factor in their success.

Many pioneering ports are adopting this ethos, for example, at the Port of Los Angeles (LA). Here, Environmental Protection Agency (EPA) said that cargo-handling equipment at the Ports of Los Angeles and Long Beach is responsible for an annual contribution of 500 tonnes of nitrogen oxides (NOx) into the Pacific air basin, linked to the development of respiratory conditions such as asthma in children.

In response, the Port of LA embarked on a campaign dubbed the Clean Air Plan in 2017. This strategy, and other previous initiatives at Port of LA, has involved various steps to reduce the impact of shipping on the local area. In October, the port debuted two

new battery-electric top handlers, one of several electrification initiatives to replace diesel-powered infrastructure at the port.

Each vehicle, constructed by Taylor Machine, comprises a large 1 MW battery pack that enables them to operate continuously for 18 hours without charging. Part-funded by the California Energy Commission (CEC), the handlers are the first of their kind, and will be used in a year-long trial at Everport Container Terminal as a proof-of-concept for electrification of mobile infrastructure at ports.

"Today shows we are making good on our pledge to do the hard work of advancing commercially feasible solutions to meet our goal of transitioning all cargo-handling equipment to zero emissions by 2030," said Port of LA Executive Director Gene Seroka in an announcement in October. "We're excited to power up these battery-electric top handlers and test them under the real-world conditions of a working container terminal."

The Everport Advanced Cargo Handling Demonstration Project, of which the vehicles are part, comprises a total investment of USD7.7 million,



The large seawater pools that form the Vasco 2 project to derive biomass from CO2 emissions

USD4.5 million of which has been provided by the CEC. Each top handler is fitted with a tracking system recording information about uptime, energy usage, and charging intervals.

This is because while electrification of static machines such as cranes and straddle carriers are considerably more straightforward, since it derives power from the grid and negates the need for batteries, mobile infrastructure is much more challenging. Such machines were written off as recently as a few years ago, given that they must be continuously operational, and so could not be afforded time for long intervals of recharging.

In fact, the Port of LA said, these electric-battery top-handlers are the first of their kind in the world. At the time of their unveiling Energy Commissioner Patty Monahan weighed in, "Projects like this are critical to showcasing zero-emission equipment that can make the state's freight industry more efficient and competitive, while helping clean California's air."

It appears to be working. An analysis at the adjacent Port of Long Beach pointed to an 87% reduction in ambient diesel emissions more than 2005 levels, despite a 21% increase in overall traffic in the same period. Meanwhile, NOx emissions were halved, and atmospheric SOx was down by 97%.

"We've accomplished these reductions even while container traffic has risen 21% since 2005," said Mario Cordero, Long Beach executive director. "We are proud of what we've done in co-operation with our many partners, but we're not finished. The port is managing USD150 million in projects all across our port, all in the name of cleaner air. This includes USD80 million in grant funding to demonstrate zero-emission equipment and advanced energy systems in port operations."

Given that Los Angeles and Long Beach are the two busiest ports in the United States by some margin, the bold steps under way here have considerable positive repercussions for the nation as a whole. Pivotal to their success is shore power, otherwise known as cold ironing. As of 2020, a new phase of California's Air Resources

Board (CARB) cold ironing requirements will enter effect, ensuring that 80% of all ship calls are supplied with plug-in shore power rather than burning fuel at berth. Even using fossil-fuel derived power, plugging in can more than halve the total CO₂ emissions from vessels at berth. But here in the golden state, dirty energy is by no means universal; in 2018, California produced more than 40% of its energy using renewables, which was in turn a 10% increase on 2017 numbers.

California might be leading the way in the US, but ports elsewhere in the world are looking to leverage shore power technology to clean up their act as well. Its usage has typically been dominated by Norway, thanks to its unique abundance of hydroelectric energy; just like every other energy user in the country, a vessel running its hotel load on shore power here can enjoy cheap energy bills and a 99% clean emissions profile.

In September, the South Korean port of Incheon announced its intention to get in on the act. In the first such contract in the country, it will be installing a 2,000kVA static frequency converter and transformer box supplied by ABB, as well as the associated electricity cabling. The large amount of power will be supplied to cruise vessels and ferries calling at the port. Like many of today's shore power solutions, the system can provide power at 50hz and 60hz, to cover all types of vessels.

However, some ports want to play a positive role not only in greening their own operations, but also having a net positive effect on shipping in general.

Marseille Fos Port will set aside USD22 million to install shore power connections, which will be used to support the ferry and cruise industries in the Mediterranean. Thanks to France's high percentage of nuclear power of 70–75% and 17% renewables – vessels connected here will be able to boast a high percentage of non-fossil-derived energy while at berth.

Nevertheless, Fos has other exciting news. This year the port saw results of the Vasco 2 experiment, a three-year feasibility study to test the viability of deriving usable biomass energy from CO₂ emissions. The CO₂ is used to grow micro-algae in 10 m x 160 m seawater pools. The algae is collected via centrifuge, then converted from a solid to a liquid via a process known as hydrothermal liquefaction, producing a synthetic crude that can be cracked in the usual way to produce useful fuels.

Currently, the initiative is being used to offset exhaust emissions from various companies located at the Fos-sur-Mer industrial site. However, some companies, including Mitsubishi Heavy Industries, have been looking into the possibilities of carbon-capture equipment on ships as a method of compliance with International Maritime Organization's 2050 CO₂ targets. Scaled-up, the Vasco 2 method might be provided as a service to ships calling at Marseille Fos Port. Applied globally, ports could enable shipping to cut carbon emissions, with wider repercussions – as in California – across the entire value chain. **PH**



Port of Marseille Fos: 51 25821



Shutterstock/Travelerpix: 5126490

Singapore looks to digitalisation to stay ahead

The island port hub is using incentives and expertise to initiate uptake of digital processes to increase digital connectivity, attract business, and position itself as a port of the future. **Martina Li** reports

The Maritime and Port Authority of Singapore (MPA) has announced that it will focus on digitalisation over the next three years to make the maritime sector more productive. The Singapore Maritime R&D Roadmap 2030 will form a strategy for Singapore's shipping trade and allocate resources from funding agencies to the nation's research and technology communities.

MPA chief executive Quah Ley Hoon said, "Innovation and digitalisation are key areas for Maritime Singapore to sharpen our competitive edge.

"We recognise that some companies need help to kick-start their digitalisation journey. With this in mind,

we've formed the Circle of Digital InnOvators [CDO] network to champion the adoption of technology and innovation." As part of the road map, in March 2019, the Sea Transport Industry Digital Plan (IDP) was rolled out to help small and medium enterprises to implement digital solutions. The plan targets harbor vessel operators and ship agencies, which can tap an SGD3.7 million (USD2.7 million) fund to implement digitalisation.

For the harbor vessel operators, they will be introduced to digital tools and given the required guidance to improve their digital literacy, leveraging digital platforms for inventory management and finally, making use of drones and autonomous piloting. For

the ship agencies, there are schemes in place to help them simplify documentation with digitalisation and optimise operations with data analytics.

The MPA said that it is working with Singapore Shipping Association (SSA) to encourage more companies to join the CDO network.

Established in late 2018 to help transform the maritime industry through the adoption of advanced technologies, the network began with 23 members. This number has now doubled to 46.

The IDP, developed by the MPA in partnership with Info-communications Media Development Authority (IMDA), Enterprise Singapore (ESG), and SkillsFuture Singapore (SSG), will offer guidance to small and medium enterprises (SMEs) on how to implement digital solutions.

MPA has opened a digital lab to explore innovative port services and intelligent ship operations, complementing the physical testbed that MPA has to future-proof the seaport. Industry partners, research institutes, and local universities will be able to plug into the testbeds, data hub, and regulatory sandbox to develop maritime solutions and capabilities.

Several projects that are undergoing testbedding include the Next-Generation Vessel Traffic Management System, Remotely Assisted Pilotage, and Maritime Autonomous Surface Ships.

With Singapore building a new mega-port in the western industrial estate of Tuas, it goes without saying that the new facility will run on the newest technologies to stay ahead of regional competitors.

Tuas port will also be highly digitalised to optimise processes and enhance information-flow and sharing. As a one-stop portal, MPA's Maritime Single Window (MSW) will transform reporting and port clearance processes for ships calling at Singapore through data exchange amongst relevant stakeholders. Phase 1 of the MSW will be launched later this year, and will streamline processes of agencies such as MPA, National Environment Agency, and the Immigration and Checkpoints Authority.

To be operated by PSA International, Tuas port (which is located alongside an industrial hinterland) will be physically and digitally integrated into the wider supply chain network, enabled by its proximity and partnerships with synergistic industries. CALISTA, PSA's supply chain network developed by GeTS, is an example of a digital solution that will be integrated in the Tuas ecosystem. Digital connectivity with key industry sectors in Tuas will help to make the supply chain – vessels, cargo owners and logistics service providers – more efficient and better coordinate cargo flow in a secure and intelligent manner.

Singapore's prime minister, Lee Hsien Loong, broke ground on the development on 3 October and said that constructing the mega port on a greenfield site enables innovation and sustainability to be built into the operations.

Innovation at Tuas will include fully-electric driverless automated guided vehicles to transport containers between the wharf and the yard. Currently being tested at Pasir Panjang Terminal, these vehicles emit 20% less emissions than conventional vehicles. Meanwhile, automated rail-mounted gantry cranes – which are fully electric and use cameras and laser sensors for precision – will allow crane specialists to remotely supervise multiple cranes.

The MPA and PSA International are also considering the use of drones and robots for tasks ranging from inspection and repairs to the distribution of spare parts. Singapore's territorial waters off the future Tuas port are subject to an ongoing dispute between the city-state and neighbouring Malaysia over maritime boundaries.

When completed in 2040, Tuas port will be able to handle up to 65 million teu, up from some 40 million teu, a figure that many hope will enable Singapore to retain its title as the world's largest container transshipment port.

Analysts who spoke to *P&H* noted that the development of Tuas port is concurrent with Singapore wooing major liner alliances, who has succeeded to some extent. French liner group CMA CGM, which acquired the liner operations of Neptune Orient Lines from Singapore's sovereign wealth fund, shifted considerable box volumes from Malaysia's Port Klang to Singapore in the process. Pan-Japanese liner group Ocean Network Express has also made Singapore its headquarters. All of this comes at a time when competition between ports continues to intensify, each vying to anchor big shipping alliances, while digitalisation is driving change in waves in the maritime industry with big data and automation.

PSA International CEO Tan Chong Meng agrees that the take-up of digitalisation in shipping is lagging behind compared with the services and financial sectors. "But we're not expecting a revolution. Digital connectedness will be slow but it is getting there," Tan said. According to Tan what matters is to stay focussed on optimising assets, continue to create value and find new ways to do things. He opined that even without digitalisation, the shipping industry is already going through rapid changes in the Internet age and a much more globalised world. Tan pointed out that just eight years ago, there were no large containerships. "Today we have more than we can cope with. Ports have to work very hard to keep up. We have to be aware of the needs of the society of the future, and then work backwards into our logistics both on land and for shipping," he said.

However, Alphaliner analyst Tan Hua Joo said that digitalisation is not the only factor to retain business. He said, "Competition among the rival ports remain intense and the digitalisation of Tuas port will not alter the dynamics significantly. Pricing, connectivity, ancillary services, and joint ventures between ports and shipping lines have all played a much greater role in securing volumes." **PH**

Singapore is digitising now to win customers to position itself as a port of the future



Getty Images/monkeybusinessimages: 5128181

Seeing further with simulation

High levels of accuracy can be achieved on today's simulators making them a useful tool for ports. *P&H* investigates how different stakeholders are increasingly relying on simulators for training purposes and how the technology will impact future port design and planning.

Gabriella Twining reports

The Port of Singapore receives on average about 140,000 vessels calls a year, making it one of the busiest ports in the world. The complex day-to-day operations that take place need to be carried out efficiently and safely to optimise port facilities and ensure the least amount of delays or accidents.

The success of these complex operations often relies on the skills and knowledge of a port's employees, but training using live port equipment is time-consuming and carries certain financial and safety risks.

The increase in ship size has also brought its challenges as these behemoths of 400 m may require specific pilot knowledge and vessel traffic service (VTS) operator assistance to bring them safely alongside. Training for such scenarios can be supported by simulators, an idea promoted by Kersi Deboo, director and principal of Anglo-Eastern Maritime Training Centre.

He told *P&H*, "Ships continuously grow in size over the years, however, the ports built in the 1970s and 1980s were not constructed to take in such large ships. It is important for navigation simulator trainers to constantly innovate and design simulator exercises depicting the real scenarios along with the ship handling principles training need in mind."

Such are the challenges that terminal operators are increasingly turning to simulators as essential training devices for their workers, as they offer a safe, stress-free environment, and gives them gives the chance to assess their own skillset and improve upon it, while experiencing first-hand the equipment without endangering themselves or others in the port. The training options open to operators are constantly growing as technology evolves, with virtual reality (VR) being the latest trend. It is one that has found particular



Virtual reality is a nascent technology expected to support future port training

favour with classification societies such as KR, LR and DNV GL. Using headgear to simulate a 360 degree learning environment provides a truly immersive experience for seafarers, surveyors and port crew. The technology is expected to be intuitive for the younger, digital-savvy generation. One provider, OMS-VR uses an environmental maths model which allows the software to simulate familiarisation and accident scenarios. However, this is a nascent technology and traditional, simulator training methods remain popular.

Simulators have already gained extensive traction as a port training tool to support a number of skills. CM Labs, a Canadian company specialising in simulation-based solutions, provided North Carolina Ports in May this year with its Vortex Port Equipment Simulators, specifically its crane training models. CM Labs' product marketing manager, David Clark, explained to *P&H*, "The simulators are designed to be as complex as the cranes they simulate. It is important to replicate all the challenges that operators experience in the seat of the real thing." The company offers a variety of simulator training solutions, ranging from quay-side and yard-side equipment, ship-to-shore cranes, mobile harbor cranes, ship pedestal cranes, and rubber-tyred gantry cranes to name a few, illustrating the demand for such training across the port environment.

Training takes time, and in a port, time is money, and so training carried out solely on live equipment only is not always a viable option. Clark pointed out that port terminals that do rely on live equipment to train crane operators can see three-week training programmes take up to two months to complete, owing to the fact that the loading and unloading vessels will take priority over the training. These time constraints, combined with the safety factors involved in allowing inexperienced crane operator to practise on a real crane, no matter how well supervised, are cited as two of the main advantages of simulators.

Upskilling port personnel is also possible using simulators as experienced crane operators can familiarise themselves with new equipment before it has been delivered to the terminal, saving time on familiarisation once the equipment has been delivered and reducing safety concerns.

It is not only crane skills that can be gained through simulation. Ports are increasingly turning towards simulators as a situational training tool owing to the realistic depiction of complex operations and situations they offer.

Kongsberg, as part of its K-SIM simulator range, has released its K-SIM VTS system simulator. To keep the scenarios as authentic as possible for the best learning experience, Kongsberg has included "real VTS operator stations and simulated VTS geographical area environments ... all radar nodes and camera views are modelled", explained Terje Heierstad, business developer at Kongsberg Digital.

Heierstad also put great emphasis on the immersive

experience of the K-SIMVTS. The training scenario allows the VTS operator to communicate with all simulated ships and other players. To increase understanding and communication, users can switch roles and become the ship's captain on the bridge instead of the shore-based VTS operator, and vice-versa, to fully understand the importance of correct communication and reporting in the VTS area. Controlled scenarios can be selected with specific ports and weather conditions, so that the scenarios the operators and crew will face are as realistic as possible. This in turn will also prepare and train them sufficiently to deal with such a situation should it be encountered in real life and thus, improves safety in the port.

Design and engineering solutions company, BMT Group, explained that its simulator solution Real Time Manoeuvring, Berthing, and Training (REMBRANDT)

“The simulators are designed to be as complex as the cranes they simulate”

David Clark, *CM Labs' product marketing manager*

can be used to train pilots tasked with handling larger vessels entering port for the first time, for example following an expansion project.

Phil Thompson, director of simulation and training services at BMT, used the example of the recent expansion taking place at Dar es Salaam Port, where REMBRANDT simulators are being utilised for pilot training. Thompson explained that the charts that are fed into the simulator to create a replica of the port, can be digitally edited to show the additional new berths, as well as any new dredging channel depths. This allows for greater accuracy and prepares the pilots in anticipation of the completed project.

Simulators are also crucial ships ports entries and berthing. Catherine Maria Steenberg, head of department Simulations, Port, and Training at FORCE Technology, another provider of simulators, has noted how the development of the shipping industry has had a knock-on effect on ports. She explained that FORCE Technology has seen port access get increasingly tighter over 10–20 years. She told *P&H* that it is "more and more on the limit. The vessels sail closer to the banks, the under-keel clearance is smaller, the distance to other vessels either passing or moored inside the port is smaller and likewise distance to port constructions. And most importantly, the vessels themselves are getting bigger and bigger".

She wants to see any ship simulators developed in the future to focus on the "accuracy of the modelling



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Simulators are crucial for vessels entering ports and berthing

and the interaction effects from ship-to-ship and ship-to-banks, shallow water effects, wave forces, etc. The accuracy of the simulators is critical!

These challenges are faced by the sea and the land side, and in recognition of this BMT has created a portable version of its REMBRANDT simulator. For such large and critical vessels such as cruise or liquefied natural gas (LNG), such simulators are extremely useful, the company said. BMT simulators are LiDAR-enabled, incorporating sensing technology and using lasers to collect data to create 3D map models, or high-definition mapping of topology. This means all buildings and landmarks, as well as cranes and other structures in the port are inserted into the simulation. For ports in Southeast Asia or Africa that do not have LiDAR capabilities, satellite imagery is used to reconstruct the port images for the simulation and so the catalogue of

BMT port simulations is continuously expanding.

The technology also takes into account the change in currents created by ships' manoeuvres in port, as well as the impact on breakwaters and other port infrastructure. Open sea currents are in comparison more uniform. It is important that these anomalies are imported into the simulator and taken into consideration during pilot training, asserted BMT. This information also helps pilots increase their experience and knowledge of interaction with passing ships, safe ship speeds and distances between ships at sail, and moored ships. S

Simulators have not only been proven useful in port expansion training projects, they can also be used to inform potential port expansion construction design projects. An example is BMT's REMBRANDT simulator, as its electronic charts can be digitally edited, and so a new berth or new terminal can be put into the programme and its impact can be assessed on, for example, vessel traffic, before it has been built.

The programme can also advise the port on how much dredging will be needed, how many berths can be accommodated, how many tugs would be needed to guide larger vessels in safely, and wind constraints of certain vessels, for example, car carriers. This not only saves valuable time and money, but also increases safety as all impacts of the new planned constructions can be tested, and port employees familiarised on the specific set-up before construction work begins. BMT said its simulators have been deployed for this purpose at a number of locations including Indonesia, Thailand, Vietnam, and West Africa.

These developing nations can make good use of the technology, explained Thompson, whereas European and US ports have already been built without further land around to be able to expand and so use simulators that focus on port efficiency using the existing footprint. Ports in Southeast Asia and Africa are essentially blank slates for construction as the land is available. PH

Simulating the automated future

The shipping industry is moving towards an autonomous future with such vessels now on the horizon. Port simulators are following suit and preparing themselves for this inevitable development.

Kongsberg is involved in two digital projects that include port construction and optimisation. Its K-Sim Navigation tool model tests and verifies autonomous ships, taking into account port design and autonomous docking of vessels in new fully automated ports.

Solent University's Warsash School of Maritime Science and Engineering maritime simulation centre, which opened in May 2019, boasts the largest simulator centre in the United Kingdom with an estimated USD56 million investment. It is currently involved with the MAXCMAS project, using its port simulators as a test environment for investigating issues affecting the practical operation of automated vessels. This may include research into further advanced collision avoidance techniques, remote sensing, communication and control issues, and the development of rules and best practices for operating environments with automated vessels.

Anglo-Eastern, which has specified it will invest in the development of simulators for autonomous vessels, has said it is developing simulators specifically for Arctic ports, where there is no margin for error given the harsh environment and the difficulty of port manoeuvres.

Phil Thompson, director of simulation and training services at BMT, however, said that the level of investment required to develop the technology and upgrade and implement the sensors, beacons, light guides, and other technology imports required for automated ports, could be significant, and might not outweigh the benefits of saving a few salaries of pilots and crew onboard ship.

APMT trains for automation in LA

Pier 400 moves towards automation with longshoremen benefitting from upskilling to maintain the electric-powered straddle carriers, writes **Bill Mongelluzzo**

APM Terminals (APMT) is reskilling and upskilling its longshore mechanics at the Port of Los Angeles to maintain and operate the automated cargo-handling equipment it is introducing at Pier 400.

The international operator is incrementally introducing 130 driverless, battery-powered auto-straddle carriers at the terminal, eliminating the need for longshore workers to drive diesel-powered yard tractors to shuttle containers between the vessel and the container stacks. However, in an agreement between the International Longshore and Warehouse Union (ILWU) and APMT, longshore workers who have been trained in the maintenance and repair (M&R) of diesel equipment are being retrained to work on zero-emission electrical equipment.

This training will become valuable in the coming years under the Los Angeles (LA) - Long Beach (LB) Clean Air Action Plan, which calls for the use of zero-emission cargo-handling equipment by 2030, at a cost of USD2.6–4.3 billion. Two terminals in the LA-LB complex – TraPac and Long Beach Container Terminal – have installed automated container handling equipment. APMT's Pier 400, the largest container port terminal in the Western Hemisphere, whose infrastructure stretches over 507 acres, including 19 super Post-Panamax ship-to-shore cranes, will be the third. At least one other terminal has plans to automate, sources say, and others in Southern California are exploring automation options to drive down costs.

"The Clean Air Action Plan changed the game in the

sense that those terminals have to figure out how to electrify. It's cheaper for them to electrify with automation than it is for them to electrify with [human-operated] equipment," Weston LaBar, CEO of the Harbor Trucking Association (HTA), told *P&H* sister publication, *JOC.com*.

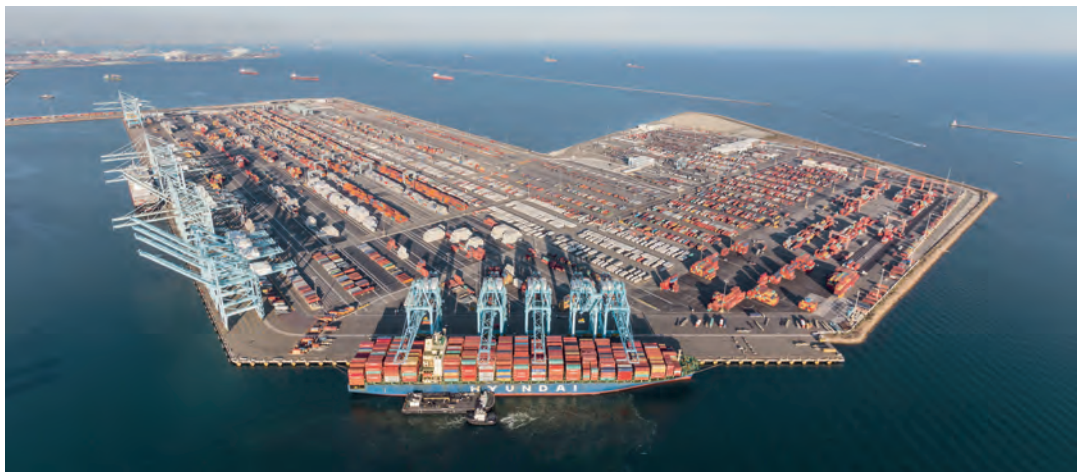
James McKenna, president of the Pacific Maritime Association (PMA), the employers' organisation that negotiates and administers the coastwide contract with the ILWU, said the training programme has two parts. One part for reskilling regular longshore workers who want to become mechanics, and another part will upskill existing ILWU mechanics to perform M&R work being created by automation.

The training programme in Southern California is terminal-specific. While it might become a model upon which similar training programmes could be established, McKenna observed, "As a practical matter, let's get this one up and running first."

APMT said dockworker training is crucial to the future of the port and the industry. "We believe that it is critical to the continued success of the Port of Los Angeles that the ILWU is trained for the jobs of the future. As we prepare to modernise Pier 400, we are glad to be working in partnership with the ILWU and PMA on implementing a training programme that complements the changes at Pier 400, and in the broader industry," APMT said.

Gene Seroka, executive director of the Port of Los Angeles, said the tentative agreement will benefit labour, APMT, and the port. "If finalised, this would be a major step forward in securing the future of work at the port complex for years to come," he said. **PH**

Los Angeles' Pier 400 is introducing battery-powered automated straddle carriers



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Technology drives Indian port turnaround push



APM Terminals 5127048

As the emerging Asian economy pitches for a greater role in international trade and commerce, technology has become the dominant buzzword in Indian port efficiency lexicon, writes **Bency Mathew**

For long, Indian ports had earned the sobriquet 'productivity laggards', often clogged with heaps of dockside containers and serpentine truck queues waiting to enter and exit the terminal gates, but things have come a long way from there. And one key factor driving that transformation is the use of digital solutions.

Technology-enabled logistics applications into the Indian port sphere primarily took root in 2014 when Jawaharlal Nehru Port Trust (JNPT), the country's busiest container harbor, began using radio-frequency identification (RFID) readers for container visibility through the supply chain. The RFID tagging and tracing tool allows stakeholders to track goods in transit through the port to inland container depots (ICDs), container freight stations (CFSs), and to end-

users, thus bringing down logistics costs on the back of improved predictability and optimisation of cargo flows.

Other key container ports have also adopted the sensor-based offering since then as the government put a heavier focus on improving fluidity of cargo movements to and from the hinterlands. The idea of a landside digital logistics tool stemmed, in large part, from a government view that ports along the country's west coast, more notably JNPT, Mundra, and Pipavav, would see an upswing in container volumes upon completion of the high-stakes Delhi-Mumbai Industrial Corridor (DMIC), an Indo-Japan bilateral investment initiative.

Then, in late 2016 came a government decree calling on all ports to move onto paperless gate operations, thus making truck turn times shorter and easing port congestion that had long been a major source of concern for ocean carriers and other stakeholders. To cite an example, despite a steady volume upturn, notching a new throughput high last fiscal year, ocean carriers and shippers using terminals at JNPT have confronted significantly fewer delays and congestion in recent years.

That investment effort has also dovetailed with healthy cargo gains at other port locations in the country. While those developments proved tailwinds for the growth of Indian ports, an advanced port community system (PCS) that went live in December 2018 is driving a more transformational impact on the country's vastly fragmented freight industry as beneficial cargo owners (BCOs) increasingly seek real-time, or near real-time, visibility and transparency across the supply chain to keep pace with ever-evolving global trade dynamics.

The collaborative platform – dubbed PCS1x – connects marine terminals, transport service providers (shipping lines, forwarders, truckers, and railroads), and related intermediaries (customs brokers, storage yards, and stevedores, among others) through a single window. The Indian Ports Association (IPA) – a governing body for countrywide port entities – along with its technical services provider Portall Infosystems, has been leading the PCS project. “PCS1x has, in fact, transformed the entire landscape of logistics in India, paving new paths for the maritime industry to march ahead in less than a year since its launch,” Portall told *P&H*. “The benefits of PCS1x in Indian trade are too great for stakeholders to ignore.”

Mumbai-based Portall said previous pilot runs at JNPT showed PCS1x has the potential to significantly improve vessel processing times, which it believes can translate into greater economies of scale for carriers battling global economic headwinds.

“In less than a year since its launch, PCS1x has tripled the user base across 29 stakeholder categories with services ranging from vessel to terminal and CFS [container freight station] co-ordination to delivery orders and regulatory clearances,” Portall said, adding that it enables users to also share B2B encrypted invoices, issue transport orders, share terminal gate open cut-off times, delivery gate schedules, gate activity bookings, and schedules electronically.

According to Portall, the government is also considering establishing integration links with similar global collaborative digital platforms to further increase transparency and visibility across the supply chain. Abu Dhabi Ports' customer portal, Maqta Gateway, is reportedly being considered.

At the same time, industry adoption and data standardisation under PCS have been an onerous process, given the inherent complexities in Indian trade. Some industry groups had previously voiced concerns about data security and sought corrective actions. However, stakeholders spearheading the PCS project said the government has taken adequate data protection measures to assuage those fears and that industry participation in the PCS network has quickened in the past months.

“The [PCS] platform itself is on its way to becoming a ‘platform of platforms’ with several neighbouring countries also looking for ways to integrate and communicate with the Indian port community system,”

Portall added. The company recently also concluded a strategic partnership deal with INTTRA – a neutral party electronic booking system developed for the shipping industry – whereby Indian users can access the ocean freight portal's booking and track-and-trace functionalities through the PCS gateway.

With global transport giants arduously exploring supply chain innovations to enhance efficiency, the high-tech PCS tool has arguably become a defining factor for the future of logistics in India – a relatively buoyant economy amid prolonged lacklustre demand in larger global markets. “We strongly believe in and support port community systems across all ports as they enable all stakeholders to communicate one with another electronically,” Maersk told *P&H*. “This system is helping in digitising the process of documentation, thereby ensuring transparency, avoiding error-prone transactions, improving efficiency and above all, reducing labour costs by diminishing the need for manual labour.”

Maersk, the largest carrier to and from India, however, stressed that the Indian government should work to comprehensively and holistically develop and implement the PCS platform. “There is also a need to get PCS established in such a way that it can link to other international trade networks, such as Tradelens, to enable the exchange of information globally and also within a port or airport ecosystem. While creating this vast and digitally connected network, data integrity should be on top priority too,” Maersk said.

Further, the carrier said as inland logistics play an integral role in supporting containerised trade in India, there is a need to deepen the functional reach of tech solutions farther into the interior to maximise efficiency gains in an evolving trade environment.

Besides the PCS excitement, Indian logistics tech start-ups have caught the eye of global carriers and terminal behemoths looking to cement their presence in the growing market. Maersk and DP World have already jumped on the tech start-up collaboration bandwagon. Maersk's OceanPro accelerator, launched in October last year, signed seven local start-ups in the first stage and five players in the second edition that took ground in July this year.

DP World, which holds six terminal concessions in India, has also had its share of headlines as a budding “tech-preneur” when it rolled out a similar accelerator – dubbed Log X – under which it aims to enrol 10 start-up businesses for interactive innovation in smart trade solutions. Digital transformation is not, however, a panacea for every problem plaguing India's freight transport ecosystem. In addition to large-scale investment in infrastructure development, a co-ordinated effort at the human level is critical to building a conducive, productivity oriented business environment. What is noteworthy is that Indian transport stakeholders have lately demonstrated intent on both fronts as the economy expands. **PH**

Maersk wants to see India's port community system (PCS) linked to international trade networks

Chile awards green operators

Infrastructure and environmental projects rejuvenate handling figures and attract new services, reports **Michele Labrut**



Getty Images/maunow1:5127049

San Antonio is Chile's biggest port and is projected to handle 1.1 million teu this year

Chile's Biobío Region is at the heart of the country's forest industry and is an important port complex with an average annual transfer of 25 million tonnes of cargo. Seven ports located in the South Central Region have recently been issued a three-year Clean Production certificate by Chile's Sustainability and Climate Change Agency.

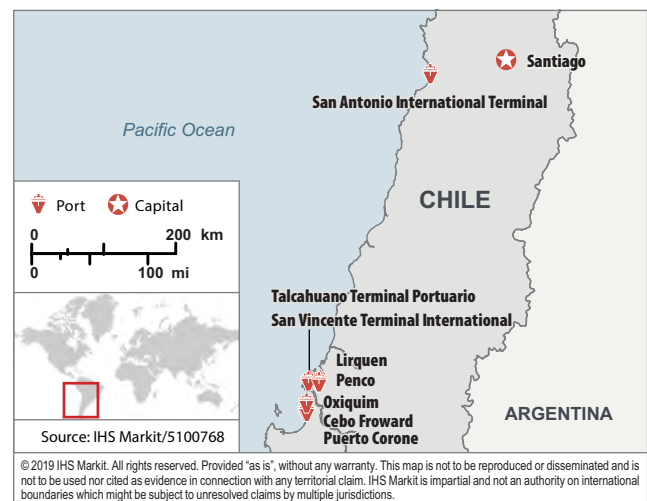
The ports – Puerto Coronel, Cabo Froward, Lirquén, Oxiquim, Talcahuano Terminal Portuario (TTP), Penco, and San Vicente Terminal Internacional (SVTI) – implemented this voluntary agreement to achieve a more sustainable performance. "The incorporation of this agreement allows us to present ourselves very well in international markets," said Chilean Wood Corporation president, Jorge Seron.

The agreement has enabled the seven ports to implement programmes for marine environment protection, dredging and waste management, energy efficiency, occupational safety, and training. Puerto Coronel, one of the seven ports, has introduced high-capacity electric forklifts to its operations, the first port terminal in Chile to incorporate such equipment.

Located in the second urban and industrial centre of the country and situated 500km south of the capital, Santiago, the port of Coronel receives four weekly

services to Asia, the Americas, and Europe. In March 2018, the company announced a USD30 million investment to strengthen its infrastructure and acquire two new super post-Panamax cranes.

"By the end of the year, we hope to duplicate that park, and we will work so that within two or three years



100% of the five-tonne cranes are electric. We have to change our current structures to a greener world. This is one more step of a series of actions that we have been taking to reduce emissions," said Javier Anwandter, Puerto Coronel general manager. Coronel is only one Chilean port that is being boosted by new infrastructure.

San Vicente Terminal International (SVTI) – a joint venture between Seattle-based SSA International and Chile-based SAAM Logistics – was in 2010 severely damaged by a strong earthquake. Reconstruction of the port is now 85% complete and as part of this process the terminal has recently been equipped with two ship-to-shore (STS) cranes.

Situated in the eighth region, south of Valparaíso, San Vicente is now focused on developing exports and imports of refrigerated cargo. Its general manager, Gonzalo Fuentes, has told local media that it has introduced an inspection chamber for refrigerated products. The port also has 1,400 fixed reefer connections for containers.

These investments have led to a Maersk- and Hamburg Süd-service calling at the port, which includes eight post-Panamax vessels. This service will promote the export of refrigerated cargo and trade between the West Coast of Latin America and Northern Europe. Hamburg Süd said that the service will allow it to reduce the transport times of perishable products.

Chile's largest port, San Antonio International Terminal (STI) situated in the fifth (central) region may also be the recipient of new investment. Its general manager, Jose Iribarren, believes that President Piñera's administration is looking to push for infrastructure projects that could help maximise current port capacity and improve the land infrastructure.

Plans to develop the San Antonio Big Port project (Puerto de Gran Escala) are still on the table, but port operators believe that there is no need for the project as the region's ports are already at 30% overcapacity.

The global economic slowdown also continues to be a challenge for the fifth region, with experts predicting that in the medium term more consolidations among the shipping lines will be seen, which will in turn put pressure on terminals to lower their tariffs as they face a very competitive scenario, making them more efficient in terms of service.

San Antonio has, however, benefited from some big lines reshuffling their services and has attracted some new services and cargo volumes. STI moved more than a million teu for the seventh year in a row, with 1,173,160 teu handled in 2018. It was a record year, posting 9.5% increase compared with 1,074,983 teu in 2017 and is forecast to reach the 1.1 million teu mark in 2019, said Iribarren.

It has also benefited from MSC's decision to bring volumes to its terminal and away from Valparaíso, situated north of San Antonio. However, the high levels of competition in Chile's centre has resulted in a very dynamic region. **P.H**

DP World to serve five key gateways

Dubai-based DP World continues to show interest in Latin America with an acquisition in January of a 71.3% stake in Chile's Puertos y Logística (Pulogsa) from Minera Valparaíso and other shareholders associated with the Matte Group, one of the major industrial conglomerates in Chile.

Pulogsa operates a long-term concession for Puerto Central in San Antonio, in the central region, and owns and operates Puerto Lirquén in Chile's south. Puerto Central is a multipurpose terminal with capacity to accommodate post-Panamax ships with a 15 m draught.

Puerto Lirquén is also a multipurpose terminal, located in Concepcion Bay, in the eighth Biobío region, which is the main consumption and production hub for the country's agricultural, forestry, and salmon industries.

The terminal has two finger piers with six docking sites, 148,000 m² of warehouses and more than 330,000 m² of paved yards for storage.

"These new assets will allow DP World to serve cargo owners and shipping lines at five key gateways on the west coast of South America in Posorja [Ecuador], Callao and Paita [Peru], and San Antonio and Lirquén [Chile]. Puerto Central and Puerto Lirquén are 'best-in-class' terminals in their respective markets, with long-term operating rights, strong cargo diversification, and significant capability for expansion," said DP World Group Chairman and CEO Sultan Ahmed Bin Sulayem at the time of the announcement.

"The overall value proposition for these terminals is compelling and the addition of capacity to our portfolio will help drive long-term value to all our stakeholders."

DP World has also announced that it will support the development of Puerto Lirquén, with a complete review of its operational design and a USD45 million investment in three ship-to-shore super post-Panamas cranes, with a 22 row reach. A statement released by the international port operator said that investment in new equipment, as well as the introduction of optical character recognition (OCR) technology would help increase productivity by 50% and improve security at the port. **P.H**



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Mexico investment reaps rewards

Container volumes continue to be upbeat for the country’s ports, with private and public money playing a key role in improving operations, writes **Michele Labrut**

Mexico has huge container growth potential, an asset which has been underpinned in recent years by considerable investment in the region. This investment is starting to translate into throughput and in the first half of 2019 cargo volumes increased by 7.4 % on the previous year. In 2018, an increase of 9.6% to 6,987,620 teu on 2017 figures was reported and new infrastructure that came online in 2017 boosted throughput, with 6,376,328 teu cargo

movements representing a significant 17.3% increase over 2016 figures.

APM Terminals’ second terminal (TEC2) at Lazaro Cardenas on Mexico’s west coast opened in 2017, during which it handled 345,085 teu followed by 776,802 teu in 2018, a 124% increase on the previous year. The terminal’s general manager, Jose Rueda, estimates that TEC2 will close 2019 having handled 790,000 teu.

TEC2, which remains Mexico’s newest terminal, has attracted new services and now has ships call from MSC’s Andes Service, Maersk Line’s AC2 (Latin America/ west coast South America) and AC3 services, Sealand’s WCCA (west coast Central America), and ONE’s MAREX (Margarita NEO-Express Service).

The first phase of expansion at Port of Veracruz on the Gulf of Mexico opened for business in 2019 and in July received its first container vessel. Operated by Hutchison Ports ICAVE, the terminal is being developed

“ The main reason behind the expansion is the growth in size of new vessels ”

Francisco Orozco Mendoza, Hutchison Port Mexico



A USD50 million expansion project was completed last year at Manzanillo, Mexico's main port

in two stages, the first being a 1.2 million teu, USD450 million container terminal.

The Veracruz expansion is the most prominent of 25 port upgrades planned by the Mexican government at a cost of USD5 billion in private and public money, which are designed to provide a maritime system that can cope with the country's rising cargo volumes and rapidly growing manufacturing sector, especially its auto factories. The Mexican Secretary of Communications and Transportation refers to the Veracruz upgrade as the "most important port infrastructure project of the last 100 years".

Hutchison Ports director for Latin America and the Caribbean, Jorge Lecona, said that "the services of our clients have been transferred smoothly through a sensible plan, which has been executed successfully, bringing great benefits to the operation".

The expansion aims to improve the port's container handling efficiency and solve a shortage of berth space

that sparked sporadic vessel congestion and left vessels waiting for more than a day to get into the existing port.

The terminal now covers an area of 41 ha and boasts an increased berth length from 507 m to 700 m as part of the project's first phase. This will be increased to 1,050 m with three docking positions in phase two, by which time the terminal will cover a total area of 73 ha, and have an annual capacity of 2.1–2.5 million teu. Current depth is 15 m, with a potential of up to 20 m.

"The main reason behind the expansion is the growth [in size] of new vessels," said Francisco Javier Orozco Mendoza, commercial director for Hutchison Ports Mexico. "In the past, we used to accommodate simultaneously two vessels. Now it's not possible, because vessel sizes have grown." Lecona pointed out that in 2017 it handled 986,291 teu and that in 2018 that figure was up by 3% to 1,011,000 teu. He estimates that despite the general economic environment, the port will see a further 3% uplift in 2019, bringing the projected total to 1,039,000 teu.

Mexico's largest terminal Manzanillo on the west coast, operated by SSA Mexico, last year completed a USD50 million expansion project to increase its annual capacity by 17% to 2.1 million teu. Manzanillo's SSA terminal and International Container Terminal Services, Inc's (ICTSI's) Contecon terminal combined moved 3,078,505 teu in 2018, up 8.8% and grew 3% to 1,177,020 teu during the first half of 2019.

Contecon expanded its terminal through technological investment and new gates, increasing its annual capacity to 1.6 million teu. The terminal will receive two new dock cranes and five-yard cranes by the end of 2019.

Manzanillo often experiences truck congestion at the entrance of the port, and ICTSI hopes that its new gate equipment will help ease traffic flow for its clients. Contecon is Mexico's gateway to the Pacific coast and is close to major consumer markets. **PH**

Panama volumes see slight increase

Many shipping lines have concentrated and reshuffled their services, which translated into less transshipment than expected navigating the expanded Panama Canal. According to P&H's sister publication, *Journal of Commerce*, the canal's administration has lowered its tolls for container ships via a loyalty programme to entice greater cargo volumes to the transshipment hub. The Panama Canal Authority modified its tolls with an eye toward staying competitive with the Suez Canal, particularly on the Asia-US East Coast trade, amid the escalating US-China trade war.

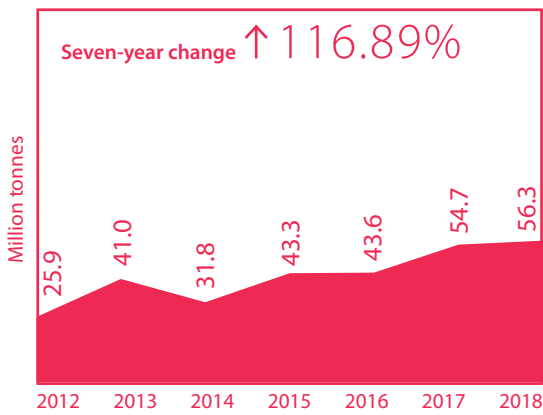
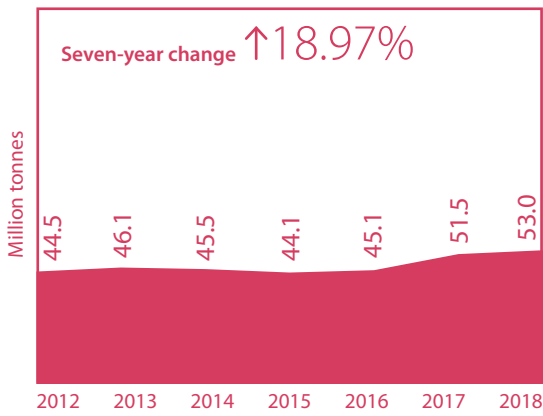
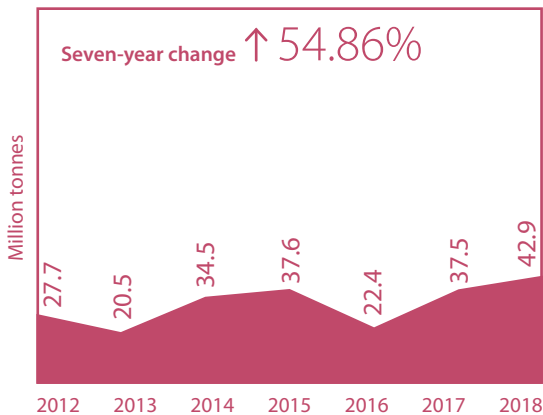
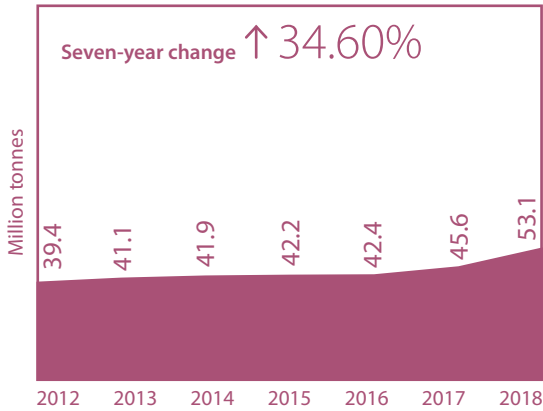
Lately, however, reconfigurations across a number of carriers have resulted in some incremental volumes landing in Panama, and in 2018, growth remained

visible at Panama's ports as teu volumes rose by 1.7% to 7,014,410 teu. During the first half of 2019, however, cargo volumes grew only by 0.6% to 3,340,507 teu compared with 3,313,805 teu the year before. Transshipment accounts for around 85% of these volumes, with a further 12% approximately of this throughput from Panama's free trade zone.

The US-China trade war and Panama's slower economy seen over the past 12 months have worried some ports operators. "On the short term, the world and regional trends do not point to a recovery for an economy [Panama] that relies more than 75% on [the] service sector. For the long term, structural economic reforms are needed," commented Stacy Hatfield,

general manager of Manzanillo International Terminal situated on the Atlantic side of the canal.

New Panama president, Laurentino Cortizo, was sworn in on 1 July, and Colon Container Terminal president, Stephen Shaffer, is optimistic and encouraged by the new government's approach to the sector. During the impending trade war, he believes Panama's ports will still see volumes. "For Panama, whether it comes from China, Vietnam, or Malaysia, it will still arrive at one of five ports and the port that has the carrier/service combination connecting manufacturers and buyers will benefit most," he said. "For the ports on aggregate, demand has held up relatively well despite the global slowdown."



04 San Lorenzo – San Martín
This river port is dredged to 34 ft and can receive Panamax-sized vessels. It handles 50% of Argentina's soybean product exports.

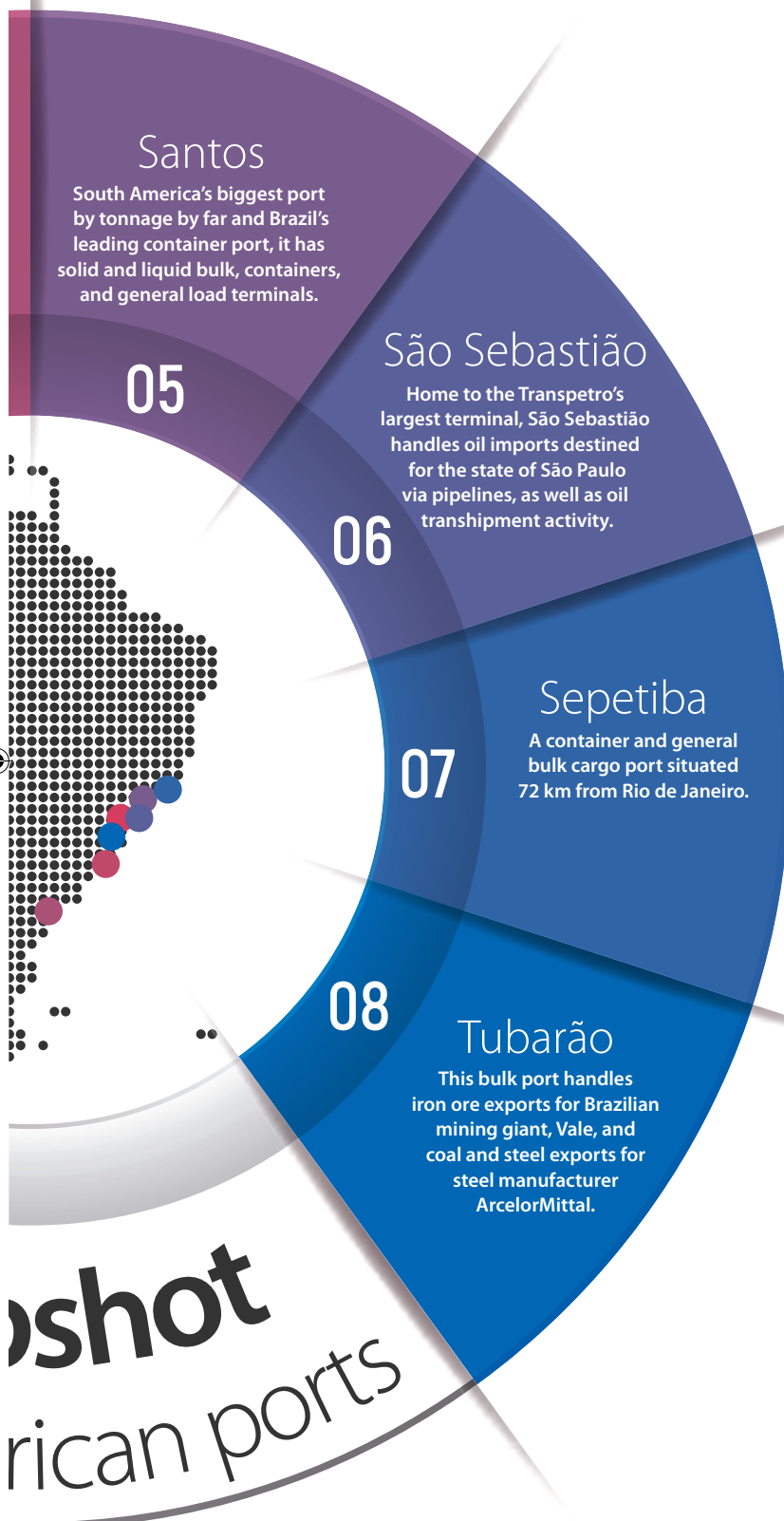
03 Rio Grande
This bulk and container seaport has a 40 ft (12.2 m) draught that is connected to the hinterland by road and rail.

02 Paranaguá
The Port of Paranaguá is a main exporting port of agricultural products in Brazil, especially soybeans and soybean meal.

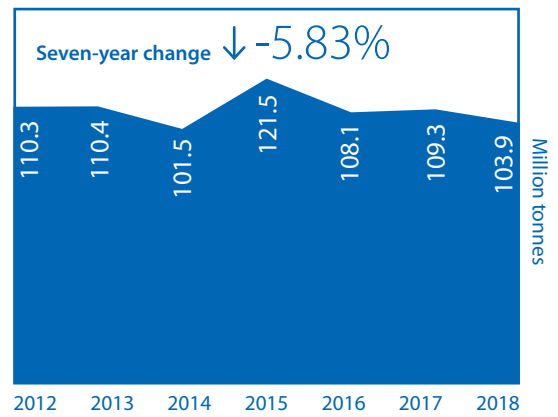
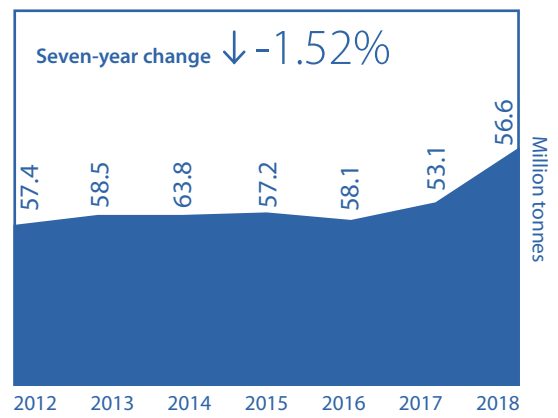
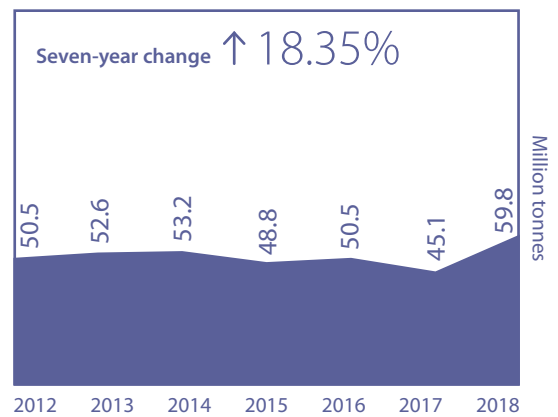
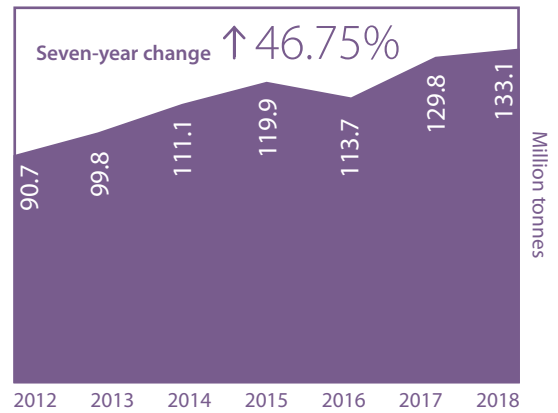
01 Callao
This general cargo port is 15 km from the capital of Lima and features container terminals run by APMT and DP World, as well as bulk, breakbulk, and cruise terminals.

Snapshots of Latin American Ports

Despite recent investment, Mexico's ports lag behind Brazilian ports in tonnage lists. Santos leads the pack by handling about one third of Brazil's trade.



shot
rican ports



Note: all volumes displayed in metric tonnes
Source: IHS Markit – Ports and Terminals © 2019 IHS Markit/Shutterstock: 5100739



IHS Markit: 5128170

Calling for consensus

Port call optimisation offers the maritime industry a ready-made solution to lowering emissions to meet targets, but will require precise synchronisation of data and operations, writes **Namrata Nadkarni**

In early September 2019, various factions of the global maritime industry gathered in London for the London International Shipping Week (LISW) – a celebration of the maritime world that featured more than 200 official events and offered a platform for discussion of pressing issues by over 20,000 speakers. At the top of the agenda was the need for the industry to come up with a concrete plan to deliver on its decarbonisation agenda, which seeks to reduce total greenhouse gas (GHG) emissions from shipping at least by 50% in 2050 compared with 2008 levels, as well as reduce the average carbon intensity (CO₂ per tonne-mile) by 40% as of 2030, and as much as 70% in 2050.

As trade hubs, ports must play an important part in assisting the shipping sector meet these ambitious targets, particularly as they themselves are being held accountable for air and water quality standards by the

local shoreside communities. An obvious first step in the right direction is better synchronisation between vessels and ports so that the former can optimise their speeds to reach the ports with 'just-in-time' (JIT) arrival, and the latter can organise their services for efficient turnarounds.

Not only would this bring environmental and safety benefits, but it would also have commercial advantages for ship operators and logistics providers. However, as with many solutions, there are a variety of factors that must be considered before it can be successfully implemented.

Accordingly, IAPH and IHS Markit hosted a panel debate on port call optimisation (PCO), as part of LISW, that delved into the issues of implementing such a system. The event, which brought in close to 100 attendees, featured scene-setting keynote

There're some small ports where PCO has not even come up in conversation

Sabrina Delelis, *International Harbour Masters Association secretary*

presentations by Camille Bourgeon from the International Maritime Organization (IMO), captain Ben van Scherpenzeel from the International Task Force for PCO, and Turloch Mooney from IHS Markit followed by a panel discussion with additional speakers, including shipowners, ship agents and brokers, maritime pilots, harbor masters, and port authorities.

Bourgeon, technical officer at the IMO, highlighted the fact that PCO and the ability for vessels to slow steam is an easy win for the IMO's GHG emission targets for 2050 and that the organisation was already taking a bigger role in creating regulations for port operations, such the single maritime window concept, waste reception facilities, and more. Mooney's presentation used IHS Markit data from the company's Port Productivity Project to demonstrate the commercial benefits of optimising port calls, demonstrating the financial benefits of quicker vessels turnarounds, reduction of time spent at anchor and also the lower fuel consumption.

Referring to IHS Markit port productivity data for the period 2016–18, Mooney observed that "call sizes are growing quite enormously and outstripping ship size growth by quite a large margin, and we don't see berth productivity keeping pace with that". Pressed by session chair Namrata Nadkarni (head of content, maritime publications at IHS Markit) on whether automation would help address this escalating challenge, Mooney said that "the bigger gains are around cross-industry stakeholder collaboration, data sharing, and better communication in general".

The panellists felt that adoption of PCO would hinge on stakeholder buy-in

IMO and IAPH strengthen ties

September and LISW week also brought another milestone when the IAPH Council met at the International Maritime Organization (IMO) in London for the first time in its history. The meeting, which was hosted by IMO secretary-general Kitack Lim on 13 September, offered attending council members the opportunity to exchange views with IMO officials on topics relevant to both organisations' agendas, including de-carbonisation of shipping, automation, trade facilitation, and the global deployment of the single window concept.

The value of ports to the IMO was particularly clear when Lim emphasised that IAPH has a 'home' at IMO and is always welcome to use the organisation's platform to engage with maritime authorities and the shipping industry.

IAPH president Santiago Garcia-Milà welcomed the offer and vouched to strengthen the engagement of IAPH in the work of IMO. The partnership between the two parties is likely to feed into the work of the newly established IMO internal task force setup to co-ordinate its port-related work and strengthen dialogue with the ports industry.

The most nuanced presentation came from captain van Scherpenzeel, who is also the director of nautical developments, policy and plans at the port of Rotterdam. He highlighted the issues holding back industry-wide adoption of PCO such as a reluctance towards data sharing; non-standardisation of terminology; variations in capabilities within vessels, ports, and other stakeholders; and established speed agreements in charter contracts. That said, the task force for PCO (of which he is chairman) is working to resolve the issues with buy in from various stakeholders.

Many of these stakeholders were present on the panel that followed the presentations and participated in an extremely lively debate and question and answer session. Perhaps the biggest takeaway for attendees was the need for regulators and ports need to 'meet in the middle' to make PCO a reality and build an environment with greater collaboration and trust.

Nick Cutmore, secretary-general of the International Maritime Pilots' Association, pointed out that "we have to be able to accommodate a huge spectrum and not the big players [in the container sector], who have bought into the exercise". Referring to smaller stakeholders in the port and terminals sector, he added, "if we can't communicate with the vessel, JIT will remain in the future".

International Harbour Masters Association secretary Sabrina Delelis agreed that a broader and simplified information campaign around PCO would be needed. "I think there're some small ports where it's not even come up in conversation," she said.

Many panellists also felt that a grassroots approach would be more inclusive of the spectrum of stakeholders than a top-down, regulations driven approach. That said, Patrick Verhoeven, IAPH managing director policy and strategy, warned that the bottom-up approach must also be balanced by a clear IMO framework for PCO and JIT operation, that was "absolutely necessary" in terms of offering guidance and leadership to the shipping industry.

Verhoeven and a few of the other panellists also took pains to frame the drive for improved JIT operations in the context of improved outcomes for operators and terminals. "The essence of a port is to add value," he said. "The emissions context provides the political momentum, but in essence it's about the core business of adding value and offering an efficient product."

The discussion of PCO is set to continue during the IAPH World Ports Conference 2020, held in Antwerp, Belgium, on 17–19 March 2020 and presented by IHS Markit. The port of Antwerp is the host sponsor for the three-day IAPH conference, which will bring together leading ports, their customers and stakeholders, as well as regulators in a world-class interactive event. The goal of the event is to imagine and deliver a future where ports lead on the key topics of energy transition, data collaboration, reputation management, and business innovation. **PH**



Ocean Infinity-5120237

Sediment surveillance

Ports are turning to seabed mapping technology to address an anticipated increase in sedimentation created by changing storm patterns, writes **Charlie Bartlett**

Unmanned surface vehicle *Seaworker*. The technology is being used at Port of Antwerp

The onset of global warming and more extreme weather patterns, including a greater number of seasonal tropical storms, will require coastal infrastructure, such as ports, to draw up plans to protect themselves and limit damage to their assets.

These changes will also bring increased amount of sediment to a port's doorstep. More storms will dislodge more silt from the seabed, which will cause not only general increases in water turbidity in many areas, but also a greatly accelerated build-up of detritus within harbors. Multibeam echosounder (MBES) technology, combined with the application of artificial intelligence, modelling and algorithms to understand its findings, can now be used to map sea beds. In shallow waters, such as those in ports and their waterway access channels, using an MBES is extremely advantageous, as the proximity means that the triangular array can cover a much larger swath of sea floor, completing the job much faster.

In recent years this has allowed a single vessel to conduct a faster and more comprehensive survey, whether in deep-sea environments or in ports.

Unmanned surface vehicles (USVs) and autonomous underwater vehicles are growing in popularity. Their ability to conduct operations without vessels, and much more cheaply without staff on hand makes it possible for survey operations to be not only regular and cheap, but virtually continuous should the need arise.

The Port of Antwerp is drawing on this technology to monitor siltation levels at the Deurganck tidal dock. Situated directly in the path of the Scheldt river, with no locks or breakwaters to shield it, an average of 1 cm of silt a day gathers at the tidal dock. Keeping up to date with the geography of the seabed in this area is paramount, as Deurganck handles 9 million teu annually; a significant portion of Antwerp's annual throughput, which was 11.1 million teu in 2018.

The dock is scanned for changes in depth by battery-powered, twin-hulled *Echodrone*, which can navigate the port at any time. Scans can be handled in-house without having to commission a hydrographic vessel.

Though still at the prototype stage, this approach promises major improvements to Antwerp's depth-imagine regime, allowing the port to behave proactively in the face of Deurganck's high siltation rate. The cloud-driven navigation of the *Echodrone*, as well as its small footprint and collision-avoidance mechanisms, enable it to perform its scanning regime 24 hours a day, weaving between vessels as they move freely in and out of the port. The technique will eliminate the use of berths during scanning operations, eliminating any hydrography-related down time that might once have been incurred by boats.

"With the help of the *Echodrone*, it will be possible in future to carry out other types of measurements, such as environmental surveys, inspecting quay walls and so on," said Piet Opstaele, innovation enablement manager at Antwerp Port Authority. "This technology is a real breakthrough for us in our quest for smart solutions for the port of the future. It is also a good example of our role as an initiator and facilitator of innovative initiatives."

Another emerging scanning option is light imaging, detection, and ranging (LiDAR or Lidar). A similar concept to sonar, except that rather than sound waves, it employs laser light and a sensor to measure the light being returned from surfaces. It is growing in importance, thanks in large part to its uptake as one of the technologies fundamental to the development of self-driving cars.

The field of airborne Lidar bathymetry has been around for some time, but it is only recently that Lidar systems have become light enough to be fitted onto unmanned aerial vehicles. Weighing 15kg, one such system, distributes laser beams in a swath pattern, much like the MBES, and can make 25,000 range observations per second. The technology is currently limited to shallow waters, since it is sensitive to water turbidity, but as a relatively new technology there is every suggestion that it will improve in the coming years, becoming lighter, more powerful, and less power-hungry. **PH**



A crane outside her window

Meet 28-year-old Adriane Whiley, New South Wales (NSW) Ports planning officer. Colleagues describe her as capable, good to work with, and someone who gets great wraps from port stakeholders. She talks to **Zoe Reynolds** for *P&H*

New South Wales Ports: 5125553

Australia's NSW Ports Planning officer Adriane Whiley, can gaze at the new ship-to-shore cranes on the wharves at Port Botany, Sydney, from her office window every day. It was her job to oversee the operation of putting them there.

"Sitting at my desk watching the installation, knowing I've contributed to a trade gateway is very exciting," she said. "With a lot of planning roles you don't get to see your work come to completion. It was my job to oversee the planning approvals for the cranes."

The 28-year-old graduate in town planning has a niche role in the privatised NSW Ports taking responsibility to ensure the multi-million dollar projects go to plan.

As planning officer for the port, Whiley takes a lead role even when projects are financed and owned by tenants, like the stevedoring companies. Any work that take's place on the port's property passes through her desk. "My job is to ensure it follows the correct procedures and pathways," she said.

Whiley is currently tasked with the planning approvals for a joint Patrick Stevedores/NSW Ports AUD190 million (USD128 million) project to double the on-dock rail capacity at Port Botany. The project aims to overcome port bottlenecks and reduce road congestion.

"The port environment is so dynamic," said Whiley. "It's very important for young people to be involved because youth is the future. We give a fresh approach

to things." At the same time she says work equips young people like her with new skills. "Knowing I'll be given the opportunity to work on big projects is exciting," she said.

When asked about the International Maritime Organization's 'empowering women' theme for World Maritime Day, Whiley was enthusiastic. "I work with empowering women," she said. "They share their knowledge with me. Having the opportunity to work under a female CEO [Marika Calfas] is great to have."

She believes women's engagement in ports brings the right balance. "Women sometimes take different approaches to men and have different ways of doing things," she said. "Having everyone contributing their thoughts and skills helps give a bigger picture."

Whiley has been in her job for just over a year and still finds the work stimulating. "There's always a lot happening," she said. "Every day is different. We have a variety of assets. There's a lot of development happening. It's an exciting place to be."

NSW Ports is a consortium of leading institutional investors that lease Port Botany and Port Kembla. It is made up of global IFM Investors, pension funds and Tawreed Investments Limited. In September IFM Investors announced an emission reduction targets plan ranging from 8–25% by 2024 to 38–100% by 2030 for all its investments. NSW Ports already runs a sustainability hub encompassing carbon management, businesses, infrastructure, environmental shipping incentives, the on-dock rail, and other initiatives. It also believes that sustainability is about making sure the supply chain is working efficiently.

This year, Ports Australia, which represents Australian ports and of which NSW Ports is a member, accepted an invitation to join the World Port Sustainability Program (WPSP), an IAPH initiative. NSW Ports is also a member of the Environmental Shipping Index (ESI) – another IAPH project. **PH**

“Watching the cranes from my desk, knowing I’ve contributed to a trade gateway is very exciting”

Adriane Whiley, New South Wales (NSW) Ports planning officer

Mentorloop connects two women pilots across continents

The IAPH Women’s mentoring programme brings together a seasoned senior pilot from Florida’s Tampa Bay Port with a new pilot in New South Wales ports of Botany Bay and Sydney



The IAPH board recently announced the allocation of a budget fund of USD10,000 to develop a Women in Ports Mentoring Program, designed to attract, empower, and retain female talent in the industry. The initiative builds on the activities of the IAPH Women’s Forum, which has been actively sponsoring professional development of member female port professionals through its Biennial Training Scholarship and Annual Meeting Scholarship for a number of years. It has been nominated for this year’s Career4Sea Europort Awards in the category ‘Women in Shipping’.

Jeanine Drummond, harbor master – Newcastle and Yamba, Port Authority of New South Wales, is the newly-appointed IAPH Women’s Forum chair, and has been instrumental in implementing a mentoring software system, Mentorloop, to connect women port professionals online with male and female mentors who are principally involved in port operations.

Jacqui Kenyon is one pilot who has already felt the benefits of the mentoring programme. Kenyon

enjoyed extensive time at sea with the navy. Visiting ports in Australia and other parts of the world gave her a real interest in pilotage as a potential career move in the merchant sector. “The ability to be able to commence a new career, focusing on the favourite part of my job [pilotage and shiphandling] each day was a fantastic opportunity.”

“Females generally make up about 30% of the crew on board Australian warships, whereas in the merchant sector about 2% are females,” Kenyon commented. “Overall, I do get welcomed by male colleagues and crews when I board.”

Kenyon joined the Harbor Master’s Division covering Sydney and Botany Bay in February this year, and achieved her first licence, and is now handling container ships of up to 185 m and tankers of up to 150 m in length. Her next step is to get her second licence. Drummond introduced her to the mentoring programme, and now has an online profile with Mentorloop and connects using her iPad.

Kenyon’s mentor is Carolyn Kurtz, who is based 15 timezones away from Kenyon, at Port Tampa Bay in the United States. She has more than two decades’ worth of experience as a senior pilot. She found Mentorloop through social media, which she has used to connect to other port professionals. “The common interest recommendations pointed me to the Women’s Forum,” she explained, where she was offered the chance to be a mentor on the programme, an opportunity “which I happily accepted”, she said.

“With only 30 women pilots out of an approximate total of 1,200 pilots in the country, we still have some way to go to balance the gender scale,” she added.

Tampa Bay is Florida’s largest commercial port, and Kurtz is Florida’s first woman pilot. “Tampa Bay receives a lot of chemical tankers, as well as gas carriers bringing in components, which get combined with locally mined phosphate for exports by bulk ship of fertilisers and other products. We handle a lot of reefer cargo as well, including fruit. Container ships are getting much larger and we now receive post-Panamax vessels exceeding 330 m in length,” she said.

As one of the training co-ordinators in her port, she has led courses recommended to pilots for continuing education requirements.

Jacqui Kenyon with master Bayani Belale, of container ship *Hansa Freyburg*, berthed by Kenyon in Botany Bay



Port Botany: 5127025



Carolyn Kurtz: 51.27028

Carolyn Kurtz captures the view from the ship

Kurtz and Kenyon now connect with each other via the Mentorloop system on a weekly or bi-weekly basis depending on their work schedule. While they converse about the profession and their experiences at work, their conversations go beyond mentoring now that they are familiar with one another.

“By definition, pilotage is a job requiring high qualifications, and overall, Jacqui has had a pretty good start to her new role so my mentoring role itself does not focus too much on the technical side. As with the training programmes I lead, aside from the procedural deal-breakers I always explain to Jacqui how I would approach a specific task or role and then let her interpret how she would put that into practice in her own way,” explained Kurtz.

Kenyon is positive on the impact of the mentoring system. “It’s really nice to be able to connect with someone who shares the same job and challenges. When we talk, it’s often really a catch-up on what we have been up to at home and at work, but some of the tips I get from Carolyn have been valuable. For instance, she mentioned that the time when you need to be most focused and in a state of readiness is when everything appears to be calm and predictable,” advice that Kenyon found invaluable in a manoeuvre not long after.

“More women should look at a maritime career, specifically in ports,” commented Kurtz. “As a pilot, with my shift running two weeks on, two weeks off, I can spend more time dedicated with my family. Even on my working days I am coming home so that has been really important domestically.”

“As for the working environment, it’s really up to the men to find their own way of adapting to working with myself and other women in a professional capacity.

By avoiding acting like a woman doing a man’s job and getting on with it confidently and professionally, officers on board generally respond positively.

“I get immense satisfaction from a thankful captain who asks me if I will be taking the vessel back out of Tampa,” Kurtz added.

Kenyon noted that in “the navy, I could be away at sea for up to nine months at a time, come home for maybe a month and then go back to sea again.”

“Now that I am working and resting on alternative weeks on shore, I have more time than I used to and speaking to Carolyn about her experience has been useful. She has encouraged me to pursue interests and hobbies outside of work. Our regular chats have been really nice as we are at different stages in our lives.” **RH**

If you are interested in being a mentor or mentee for IAPH’s women’s mentoring programme, email:

 womeninportsmentoring@iaphworldports.org

Sustainability awards now awaiting your entry

IAPH is pleased to announce its call for entries to the second edition of the World Ports Sustainability Program (WPSP) Awards. Winners will be declared in five WPSP areas of interest at a gala dinner at the IAPH 2020 World Ports Conference in Antwerp on the evening of Wednesday, 18 March 2020. As with the awards this year, IAPH regular port members, and associate members acting on behalf of an IAPH member ports as client, partner, or collaborator can enter a project, by submitting a simple online form on our sustainableworldports.org website.

Once accepted, the project will automatically qualify as a potential award candidate. Entries will be accepted until 31 December 2019, after which the nomination of a

long list per category that best meets the selection criteria will be submitted to an international judging panel for scrutiny in mid-January.

Finalists will then be asked to present their project credentials on the WPSP website for public scrutiny, who will have until the end of February to select their favourite projects and whose vote will count for 30% of the final decision on winners and runners up. The awards will be given based on the judge’s view of the measurable impact of the project on the sustainability of the port and its environment, integrating the factors of people, planet, prosperity, peace, and partnership.

Collaboration with commercial stakeholders to ensure a

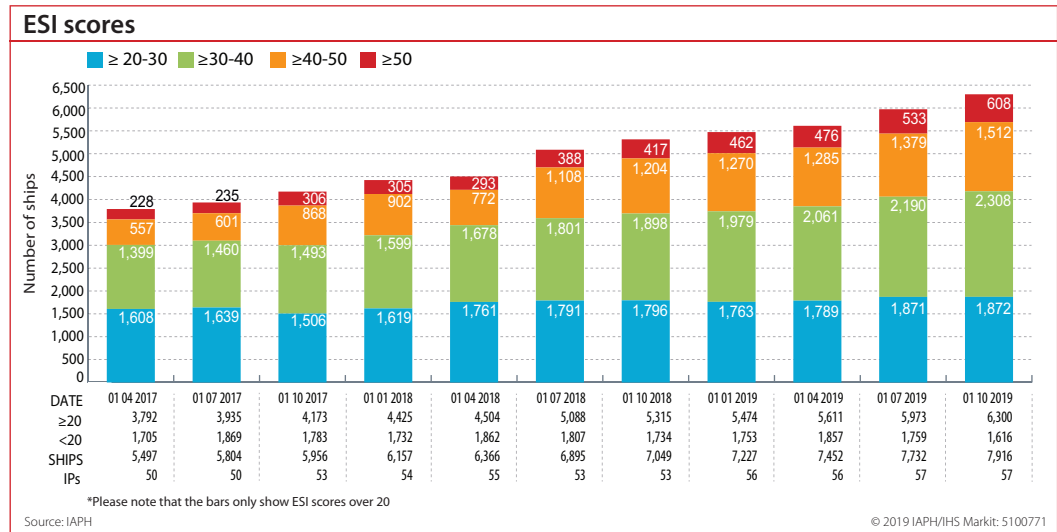
solid business case and the engagement and buy-in of societal stakeholders will also be considered. The original and innovative character of the project, the vision and leadership shown by management in its deployment and the level of co-operation with other ports, where relevant, will also be considered. For regular and associate IAPH members, project submissions are accepted online at sustainableworldports.org/submit-your-project. For those organisations who are interested in participating and who would like more information about how to apply, please contact:

Dr Antonis Michail – Technical Director, WPSP
 antonis.michail@sustainableworldports.org

High-scoring ESI growth continues

Nearly 8,000 ships were registered with the Environmental Ship Index (ESI) as of 1 October 2019, a dramatic increase in the number of vessels taking part in the scheme from the same period last year. At time of press, 7,916 ships were registered, which is an overall increase of 867 from the previous year. Ships with a high ESI score of 40 points and above continued to see strong growth, accounting for 499 of those additional vessels. Low-scoring ships (less than 20 points) also went up by 486 vessels

The ESI is a voluntary tool that rewards and incentivises ships that meet and exceed emissions standards, and is an indicator of the environmental performance of oceangoing vessels. It includes a formula-based evaluation of vessels' nitrogen oxide (NOx) and



More than half of the ships that joined the ESI over the past year have received a score of 40 or more

sulphur oxide (SOx) emissions. It also features a reporting scheme for greenhouse gas emissions from ships. The scheme has more than

57 incentive providers (IPs), many of which are ports, with four more IPs having joined since the same period last year: Port of Tallinn,

Dunkirk, Bordeaux and NSW Ports.

MORE INFO: <https://esi.wpci.nl/Public/Home/ESIFundamentals>

Increasing piracy attacks at Douala anchorage

The port authority at Douala in Cameroon will be providing armed guards to vessels at anchorage at its Base Buoy (B9) pilot station following a spate of pirate attacks at the river port. An information notice issued in late August said that the service is free of charge and will continue indefinitely. Three armed forces guards will remain on board a vessel for the entire time it is at anchorage, and they will only leave once the vessel has berthed. According to P&I Club local correspondent, BUDD Group, congestion levels at the berths means that vessels may stay at anchorage for as long as two to three weeks.

"The new arrangement will limit the administrative delays that arise when

completing an application for government armed guards on board. In the past, the presence of armed guards on board had to be authorised by the Ministry of Defence and the Presidency of the Republic. Ships that needed the presence of armed guards on board were obliged to authorise their agent to complete the formalities. The process was slow, and vessels rarely had the time to complete it," BUDD Group said.

There have been three cases of piracy at Douala since March 2019, all of which have involved kidnapping crew members, according to the International Maritime Bureau's (IMB's) Piracy Reporting Centre. BUDD Group believes the attacks were carried out by Nigerian

gangs. In the latest attack, 8 of the 12 crew members on board MC Schiffahrt's general cargo vessel *MarMalaita* were abducted by pirates. The shipping line secured the crew's release nearly six weeks after the attack following negotiations with the kidnapers. The crew members arrived at Frankfurt airport on 22 September, its website stated.

Besides these three attacks on ships at anchorage, the Gulf of Guinea off the West African coast has become the new piracy hot spot. The IMB reports that the region accounted for all of the worldwide crew kidnappings in the first quarter of 2019. In five separate incidents, 21 members were reported as kidnapped.

Notable numbers



85%

Rebuilding progress on Chile's SVTI following 2010 earthquake

2,916

Ships taking part in ESI

IAPH supports new Getting to Zero Coalition

Members of the maritime, energy, infrastructure, and financial sectors have formed a new coalition that aims to lead commercial efforts to decarbonise international shipping and have set a goal of deploying a zero-carbon vessel by 2030.

Supported by more than 70 public and private organisations, including IAPH, the Getting to Zero Coalition has committed to the development of commercially viable zero-emission cargo ships to meet the goals set out in the IMO initial strategy on greenhouse gas (GHG) emissions reduction. The announcement coincides with the leaders of 14 countries – Australia, Canada, Chile, Fiji, Ghana, Indonesia, Jamaica, Japan, Kenya, Mexico, Namibia, Norway, Palau, and Portugal – calling for ocean-based climate action, including decarbonizing ocean industries. The group of countries represent 30% of global coastlines and one-fifth of the world's shipping fleet.

Members of the Getting to Zero Coalition include AP Møller - Mærsk, parent company of the world's largest container carrier Maersk Line

and terminal operator APM Terminals, among others; oil and gas 'supermajor' Royal Dutch Shell; investment bank and financial services firm Citigroup; the Global Infrastructure Facility (GIF), a collaborative partnership among governments, development banks, private sector investors, and financiers focused on complex infrastructure projects; US-based international food and agricultural conglomerate Cargill; and maritime classification societies Lloyd's Register and the American Bureau of Shipping.

Released in 2018, the IMO strategy calls for a minimum 50% reduction in global GHG emissions from the container shipping industry from 2008 levels by 2050. Equally importantly, the IMO requires finalised short-term measures by 2023 and mid-term measures to achieve a carbon dioxide (CO₂) emission decline of 40% by 2030 and encourages efforts to phase out GHG emissions completely. Ocean freight currently accounts for 2.4% of global GHG emissions, and those emissions are projected to grow between 50% and 250% by 2050 if no action is

taken, according to industry estimates.

To reach the reduction goals, the Getting to Zero Coalition has set a target of 2030 for the deployment of commercial vessels that run on zero-emission fuels.

"Achieving the 2050 target requires immediate action," the coalition said in an "ambition statement" released in September at the UN Climate Summit in New York. "Ships can be operated for 20 years or more, which means that the ships entering the world fleet around 2030 can be expected to be operational in 2050.

"Similarly, infrastructure associated with fuel supply chains can have a long economic life of up to 50 years, and reconfiguration to new fuels can be a lengthy process. As a consequence, there is a need to have technically feasible, commercially viable, and safe zero-emission deep sea vessels entering the global fleet by 2030, as well as a clear path to provide the large amounts of zero-carbon energy sources needed to allow the rapid uptake of ZEVs [zero-emission vessels] in the following decades."

UK charity to build and operate disaster relief ship

A new UK-based charity Britannia Maritime Aid (BMA) plans to build and operate a GBP150 million (USD190 million) training and disaster relief ship by 2024. It also plans to charter or buy suitable ships to run operations until its purpose-built ship is ready.

At the project's launch during London International Shipping Week in September, the charity said, "The first-of-its-kind ship will be based in the Caribbean 365 days a year where it will deliver humanitarian aid and provide sea training berths

for the next generation of UK and Commonwealth officer cadets, rating apprentices, and trainees in trades associated with aid and reconstruction."

Explaining how the project will be funded, BMA chair captain Kevin Slade said, "BMA

has launched a crowdfunding campaign for initial costs needed to finance a detailed business plan required for the next stage – obtaining the necessary funding to progress from concept to reality."

On its training role, a BMA

statement said that the ship's regular crew will be supplemented by maritime trainees, cadets, and apprentices who would gain ship handling, navigation, engineering, boat work, and pilotage experience. It will be fitted with full mission bridge and engine simulators.

The statement added, "BMA's project will provide much needed sea training berths at a time when the government plans to double the number of merchant navy officer cadets under its SMaRt Plus initiative."



The vessel will train cadets as well as providing disaster relief

Canell LandPoint Media 5/23/2019

 3.4%

Global GDP lost through
cyber crime by 2020

USD2.7 million

Singapore fund
to support
digitalisation

IAPH conference – be part of the conversation in Antwerp

Energy transition, data collaboration, risk and reputation, and business innovation are the four central themes of IAPH's next World Ports Conference in March next year (2020).

Hosted by the Port of Antwerp, delegates will be invited to discuss what constitutes a desirable business climate for port cities, safety and anti-corruption cultures from the top down, data competition versus collaboration and how ports can help decarbonise shipping, amongst many other topics.

Expect a new format at next year's event, which has been designed to foster high-level debate and to create a think-factory for new ideas in sessions led by panel experts.

Patrick Verhoeven, IAPH MD for strategy and policy, is involved in



Shutterstock/RossHelem:5128186

The visually stunning city of Antwerp will host the big port debate

shaping the conference themes, and said: "The World Ports Conference is the most important annual event in the calendar for

key industry stakeholders.

"The programme has been curated to give authorities and operators the opportunity to

consider the most pertinent topics affecting their ports. Where else can you discuss energy, data, security, and business as part of a sustainable port environment in one conference?"

Ports seeking sustainable solutions can consider their options in a sustainable environment. The event will take place at the sustainably-operated Flanders Meeting and Convention Center, in Antwerp's historic centre, which features old and new architecture, and even boasts a zoo.

Time is running out on the early bird discount, which ends on 17 November. The advanced booking option also offers a discount that ends on 29 December.

MORE INFO:
www.worldportsconference.com

Membership notes

The IAPH Secretariat is pleased to announce that the following have joined the association

Regular member

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Temporary member

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Representative: Stephan Hirth, COO



IAPH 5126295

From left, new IAPH secretary-general Masahiko Furuichi; IAPH Vice President (Europe region) Jens Meier; IMO Secretary General Kitack Lim, IAPH President Santiago Garcia-Milà; and, IAPH Managing Director-Policy and Strategy Patrick Verhoeven

Changeover completed

The IAPH Board appointed Masahiko Furuichi as the Secretary General, effective 1 September, succeeding Susumu Naruse, who retired from the position. During Susumu's tenure IAPH went through considerable change, such as the rewriting of the IAPH constitution and re-organisation of the governing structure and decision-making process. Assisted by the then president, Grant Gilfillan, and current president, Santiago Garcia-Milà, Susumu successfully completed the task.

In charge of administration and

finance, the new secretary general will form the management duo with Managing Director Patrick Verhoeven, who continues to drive the policy and strategy agenda. They will jointly prepare an assessment of the current resources deployed in Tokyo and Antwerp. Masahiko said on his appointment: "I know that together, Patrick Verhoeven and I, with the help of my excellent team at the Tokyo secretariat, will transform IAPH into a sustainable and dynamic organisation, which will attract more members than ever before."

KL regional meeting

The most recent meeting for the IAPH's Asia, South East, and Oceania region took place in Kuala Lumpur in August, hosted by Port Klang Authority, and discussed topics relevant to the region's ports such as cruise, steel stowage initiatives, port developments and sustainability, and digitalisation and automation. Capt. K. Subramaniam, IAPH vice president for the region and General Manager of Port Klang Authority drove the meeting's agenda, during which he encouraged participants to actively engage in IAPH Technical Committee activities. He also invited members to attend the 2020 IAPH World Ports Conference in Antwerp where Technical Committee meetings will be held.

i MORE INFO: www.iaphworldports.org/news/6305

2019-20

2021

2022

Dates for your diary

A selection of forthcoming maritime courses and conferences



November

- 26-28:** 22nd Intermodal Africa 2019
Rabingha, Cameroon
www.transportevents.com/ForthcomingEventsdetails.aspx?EventID=EVE162
- 26-28:** IADC Dredging Seminar in Mumbai
Mumbai, India
www.iadc-dredging.com/ul/cms/fck-uploaded/documents/PDF%20on%20seminar/iadc-dredging-brochure-seminar-on-dredging-and-reclamation-mumbai-2019-v2.pdf

December

- 2-6:** TTPM: Strategic Port Policy, Governance & Stakeholders Management
London, U.K.
www.ttpminternational.co.uk

January 2020

- 13-27:** IHE Delft: Port Planning and Infrastructure Design
Delft, Netherlands
www.un-ihe.org/port-planning-and-infrastructure-design
- 14-16:** 23rd Intermodal Africa
Dar Es Salaam, Tanzania
www.transportevents.com/ForthcomingEventsdetails.aspx?EventID=EVE168

February

- 19-21:** Cartagena cruise dialogue 2020
Cartagena, Colombia
cruisedialogue2020.org

March

- 17-19:** 2020 IAPH Conference
Antwerp, Belgium
www.worldportsconference.com



Solomon Islands Port Authority: 5125551

Solomon stands strong for sustainable future

Smart, green solutions are a priority for **Eranda Kotelawala**, CEO of the Solomon Islands Ports Authority (SIPA), as he shares his vision for Solomon and the neighbouring Pacific islands

SIPA has come a long way since it began operating as a state-owned enterprise in 1956, and since then has been integral to the socio-economic development of the islands, as well as connecting the Solomon Islands with other neighbouring Pacific countries.

SIPA has, over the past three years, embarked on an unprecedented journey to improve its efficiency and productivity and has become a champion for 'smart' and green port strategies in the Pacific region.

SIPA is determined to address the sustainability challenges that lie ahead for the geographically-isolated Pacific islands. It has proactively invested in improving technology to achieve productivity and efficiency in vessel turnaround and reduce berth congestion, which have been an issue in the past.

A brand new berth made possible with infrastructure development assistance from Japan, coupled with a terminal operating system, billing system, and state-of-the-art smart gate weigh-in motion system, has resulted in significant improvements in overall productivity of Port of Honiara, the main port of entry into the islands. Further solutions will be implemented by SIPA as it continues to implement smart technology to improve sustainability by reducing inefficiencies.

As part of the IAPH World Port Sustainability Program and the Pacific's 'Green Champion', SIPA recently commissioned the region's first and largest LED yard lighting system and Solar PV perimeter lights in line with ISPS (International Ship and Port Facility Security) Code requirements, which also reduce the port's energy consumption, and hence its carbon foot print. SIPA is also planning to implement a 1MW solar farm at Port of Noro by 2020, which will eventually fulfil 100% of its energy needs through renewable sources.

SIPA is setting a global precedent in sustainable strategies that enables smaller ports to become dynamic and achieve unparalleled growth while contributing to their own national economies. **R&I**

Solomon Islands Ports Authority is setting a global precedent in sustainable strategies for smaller ports





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