



# MARITIME LOGISTICS PROFESSIONAL

September/October | Volume 7, Issue 5

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*Brandy D.*  
**Christian**

*Putting Port of New Orleans  
on the Fast Track*

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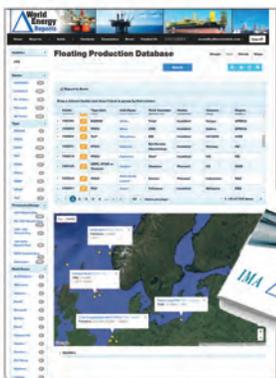
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*“Port NOLA is known as America’s Most Intermodal Port with good reason. Our Mississippi River Intermodal Terminal provides on-dock rail service, and we are in the process of acquiring the New Orleans Public Belt Railroad, which serves all six Class I railroads.”*

– **Brandy D. Christian,**  
President & CEO, Port of New Orleans

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## ON THE COVER



### On the Cover

Brandy D. Christian is at the helm steering investment and development at one of the fastest growing – and most important – ports in the United States: the Port of New Orleans. Coverage starts on page 19.

Image: Port of New Orleans

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# Editor's Note

## Managing Megaships

At this year's AAPA annual Convention held in Long Beach, CA, Jock O'Connell, a noted International Trade Economist and Advisor at Beacon Economics gave a talk on international supply chain logistics. Reading from a dated forecast made by an unnamed consultant who – not too long ago – advised ports and terminals to get ready for those 5,500 TEU mega-vessels, he won a laugh from the gathered throng of port stakeholders. But, O'Connell had made his point: short term predictions often give way to long term uncertainties. And, that's where we find ourselves today, especially when it comes to container shipping.

There are, to overstate the obvious, many variables impacting the global supply chain. Trade Policy – especially here in the United States – will be especially important, and place an outsized role for ports who hope to increase their throughput numbers in the coming years. To that end, the U.S. withdrawal from the so-call TPP agreement has been characterized by some as a particularly bitter blow for California ports, which handle at least 40 percent of every box that moves into this country from abroad. With many stakeholders – including Port of Long Beach Executive director Mario Cordero – calling the U.S. administration's move “a mistake,” more than one expert cautioned that the rise of protectionism and so-called nationalism puts the maritime sector at risk.

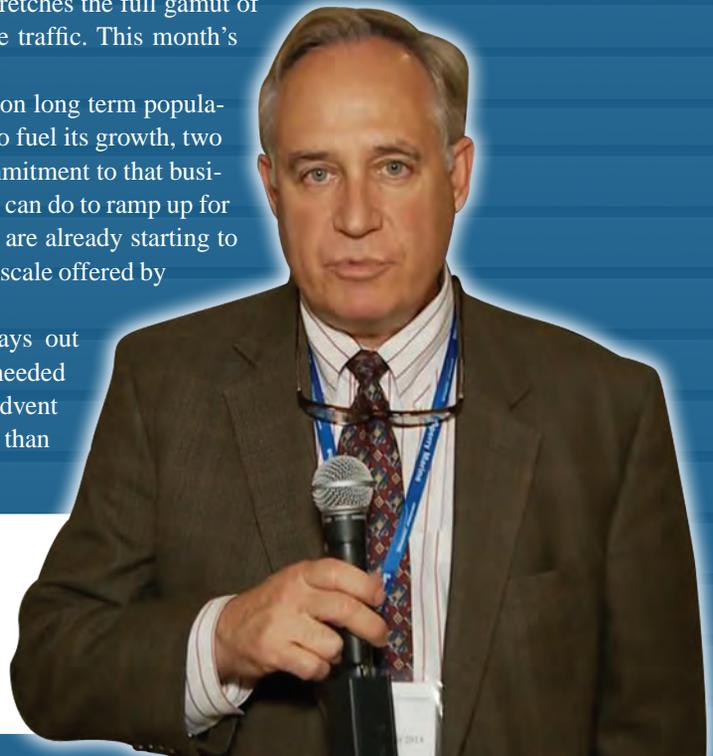
Another variable involves the intermodal aspect of trade itself. For example and just one year ago, a delegation from the Canadian port of Prince Rupert told a rapt audience in Hong Kong that any port – or any cargo transport mode – is only as good as the mode that immediately follows or precedes it, in the supply chain. That's a philosophy and business strategy that both the Port of New Orleans President and CEO Brandy Christian have long embraced. And, it is why Port NOLA is today known as America's Most Intermodal Port; actually, the only U.S. port served by all six first-class railroads. Leveraging those rail connections, Christian and Port NOLA also boast a diverse business mix that stretches the full gamut of breakbulk shipping all the way to robust and growing cruise traffic. This month's port feature starts on page 21.

Elsewhere, and as the South Carolina Ports Authority bets on long term population and economic growth in the southeastern United States to fuel its growth, two new inland ports with rail connections also attest to their commitment to that business model. But, that's just one of many things that U.S. ports can do to ramp up for the expected increased cargo volume and the megaships that are already starting to bring those boxes. It turns out that navigating the economy of scale offered by these monsters it is complicated.

Starting on page 36, MLPro contributor Barry Parker lays out what's already happening on the waterfront and what will be needed to address the changing logistics picture brought on by the advent of 20,000+ TEU boxships. **Spoiler Alert:** it will take more than just dredging to 50 feet. – *MLPro*



Joseph Keefe, Editor | [keefe@marinelink.com](mailto:keefe@marinelink.com)



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# HONG KONG FOLLOWS U.S. FMC LEAD ON LINER SHARING DATA

**IN AUGUST 2017, HONG KONG'S COMPETITION COMMISSION REFUSED TO GRANT A BLOCK EXEMPTION TO THE HONG KONG LINER SHIPPING ASSOCIATION'S APPLICATION FOR THEIR COMPANIES TO EXCHANGE MARKET INFORMATION, CITING 'COMPETITIVE CONCERNS.'**

BY WILLIAM P. DOYLE



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### Maintaining Separate Identities and Sharing of Competitive Information in U.S.

Since the advent of the proposed, but never implemented, P3 Alliance in 2013, the sharing of commercially sensitive information between parties to a vessel sharing agreement (VSA or Alliance) has been a hot topic. The proposed P3 Network Vessel Sharing Alliance (P3 Alliance) would have consisted of Maersk, CMA CGM and Mediterranean Shipping Company (MSC); the world's three largest ocean carrier companies by volume of containers carried. The Federal Maritime Commission (FMC) was concerned, in part, with the ocean carriers sharing competitively sensitive information such as pricing data and then use their collective market power to drive-up the transportation rates.

While the three largest carriers would be collaborating operationally, their Agreement filed with the FMC contained assurances that the carriers would continue to compete with each other on pricing and cost – meaning shippers would continue to be able to negotiate with each carrier individually. In fact, in the P3 vessel sharing agreement itself, proposed language stated, *“Each party shall retain its separate identity*

*and shall have fully separate and independent sales, pricing and marketing functions.”* The language further read, *“No information which is commercially sensitive may be exchanged directly or indirectly between any of the Parties ...”*

There was also an additional problem, in particular, that I as a Commissioner was concerned with – namely, joint contracting authority by the Parties. Basically, the P3 Parties originally proposed authority to use their collective network



in order to jointly negotiate with third parties including tug and barge operators. Objections were raised by the Commission and the P3 Parties subsequently withdrew the original language and substituted new language requiring each party to negotiate independently and enter into separate contracts with the third parties.

In the end, the People's Republic of China rejected the P3 Alliance, largely based on trade route market share and the proposed organizational structure of its "Network Centers." First, China's Ministry of Commerce held fast to a 30 percent market share threshold for controlling a trade route. In its review, China's Ministry of Commerce found that the P3 Network would control up to 47 percent of the container business on the Asia-Europe service route. Next, China took exception with the Parties' proposal to jointly establish a Network Center to conduct the daily management of operations according to pre-agreed working procedures. China concluded that the P3 Alliance was substantially different than traditional shipping alliances, and would act more like a "close joint venture." Therefore, the P3 was rejected.

Even though the P3 Alliance failed, its basic blueprint formed the foundation of what we see today in the new generation of alliances. All of the alliance agreements between carriers trading with the United States contain assurances that the carriers continue to compete with each other on pricing and cost. In addition, the agreements contain provisions on not sharing commercially sensitive information.

### Hong Kong Raises Concerns: Sharing of Competitive Data

This past summer, Hong Kong's Competition Commission (HKCC) refused to grant a block exemption to companies desiring to exchange market information, citing "competitive concerns."

In December of 2015, the Hong Kong Liner Shipping Association petitioned the HKCC seeking a block exemption order covering vessel sharing agreements (VSAs) and voluntary discussion agreements (VDAs). According to the HKCC, VSAs (which include consortia, slot exchange agreements, joint service agreements and alliances) are agreements between shipping lines on certain operational arrangements. VDAs are agreements pursuant to which shipping lines discuss certain commercial matters relating to particular shipping routes.

The HKCC did not have a problem with the VSAs because the parties to a VSA do not collectively exceed a market share limit of 40 percent. Further, HKCC noted, the VSAs do not authorize or require the shipping lines to engage in cartel conduct. The HKCC also determined that the liner companies have the ability to withdraw from a VSA without incurring a penalty after giving reasonable notice to withdraw. Thus, HKCC issued a conditional five-year block exemption order

for liner vessel sharing agreements.

However, the HKCC did have a problem with allowing a block exemption for the VDAs. The HKCC decided not to issue a block exemption for VDAs, or the revised VDA scope, on the basis that it "was not demonstrated that the criteria for the economic efficiency exclusion were met." In particular, the HKCC noted a lack of evidence or data in support of the arguments put forward in the application. The HKCC's stated that the empirical evidence presented did not adequately substantiate the efficiency claims to allay the Commission's concerns. The sharing of competitively sensitive pricing information between competitors and the agreement of recommending pricing guidelines may give rise to competition concerns said the HKCC in an accompanying statement. Accordingly, the HKCC believed carriers are more likely to raise prices high above the market level under such discussion agreements.

The sharing of competitively sensitive information between competitors remains an important issue in the liner trades. The Federal Maritime Commission early on recognized the competitive concerns related to pricing and costs if members of an alliance are allowed to share competitively sensitive information. Now, it appears Hong Kong has laid down its marker in the same manner – outlawing sharing of competitively sensitive pricing information between competitors. I am fairly certain more jurisdictions are paying close attention to matters regarding information sharing between competitors.

#### The Author



#### William P. Doyle

is a Commissioner with the U.S. Federal Maritime Commission. The FMC, among other things, regulates liner companies, ocean transportation intermediaries and marine terminal operators. The thoughts and comments he expresses here are his own and should not be construed to represent the position of the Commission or his fellow Commissioners.

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# West Coast Intermodal Update

It has been a busy year at the port of Long Beach, CA. Lou Anne Bynum, Harbor Commission President at the Port of Long Beach, declared in early October, “Simply put, we are having the best trade months in port history.” Indeed, the port moved more containers last month than in any September in its history. The 701,619 twenty-foot equivalent units (TEUs) processed in Long Beach for September — up 28.3 percent — resulted in the port’s best quarter ever. In the third quarter, the Port of Long Beach handled 2,114,306 TEUs, as volumes swelled 15.9 percent over the same period last year.

Imports increased 29.5 percent in September to 366,298 TEUs. Exports rose 4.1 percent, to 125,336 containers. Empty containers moving out of Long Beach to be refilled with goods overseas totaled 209,985 TEUs, up 46.4 percent. But, says the port, the huge jump in cargo last month relative to a year ago is only partly due to the Hanjin bankruptcy that hit West Coast ports in September 2016. But, there’s much more than that to report.

In April, the nationwide search for the Port of Long Beach’s Executive director ended, when the Long Beach Board of Harbor Commissioners voted to name Cordero, former chairman and member of the Federal Maritime Commission (FMC), as the Port of Long Beach’s new Executive Director. Cordero brings to Long Beach considerable experience, both in terms of global commercial savvy, and as someone who knows his way around the Hill.

Cordero, a Long Beach resident and attorney, served previously as president of the Long Beach Board of Harbor Commissioners. His tenure at FMC stretches back to 2011, where he served as chairman from April 2013 until January 2017. Today, he oversees the nation’s second-busiest seaport, leading the port’s Harbor Department staff of more than 500 people with an annual budget of nearly \$800 million.

In October, Cordero sat down with *MLPro* Editor Joseph Keefe at the annual AAPA Conference for a one-on-one discussion that ran the full gamut of local port issues; from local chassis issues, all the way to global market drivers.

Many economists insist that the economy is “in a sweet spot right now.” Projections are for the global economy to grow more than 3 percent in next year. On the other hand, in order to plan, port executives need to know what’s going to happen a decade from now. What are you planning for?

In the latest panel here [at AAPA], I gave the report of what’s been forecasted. In 2040, you’re looking to the tune of maybe 40 million TEU’s. In 2025; somewhere in the neighborhood of 27 million TEUs. So it is significant growth, and when I say ‘significant,’ these weren’t the expectations that were made early on. And, to be more specific, 2030 we’re projecting to 28.3 million TEU’s, in 2040, 41 million. This year, we’re seeing growth – at least for the calendar year – to the tune of 6.4 percent, so our projection is 7 percent.

**Your predecessor told me in March that you [Long Beach] are nowhere near capacity and you could do a lot more with what you have. Where do you see your capacity at right now? If you had to go to maximum capacity right now inside these terminals that you have, what do you think you could handle?**

Let me give you a good example of that question. Our latest development of our terminal is the Long Beach Container terminal. After Phase 3, and we’re entering the last phase of that project, after Phase 3, it was scheduled to be completed late 2019. That terminal alone will be able to move 3.5 million containers. So it actually will be double of what that container terminal was able to move in years past, prior to this development.

**So, that’s just around the corner?**

That’s just around the corner. We have six terminals on the Long Beach side, container terminals; four of which I think will have capacity that will be significant, given that those terminals will have the ability, in the case of Long Beach Container Terminal, of receiving a vessel as large as a 22,000 TEU capacity. I think that we’re prepared for this cargo growth and I feel very optimistic that we will have that capacity.

***New POLB Executive Director Mario Cordero weighs in from his new West Coast chair, on the most pressing issues of the day. Arguably the industry authority from both the regulatory and commercial sides of the equation, his opinion carries weight and, sometimes, surprises.***



**One of the issues that the Northwest Seaport Alliance [Tacoma and Seattle] struggles with is when and how and how to pay for opening up for night operations. They'd love to open up for night operations, but they need to figure out who's going to pay for it. How many hours a day are your ports open right now?**

Presently, we do have night gates here at the Port of Long Beach. And we have it, that being facilitated by way of the Pier Pass program, which as you know, involves a traffic mitigation fee to address this issue about paying for that night gate. So having said all that, what we need is night gates that are predictable. I'm talking about something that's sustainable and predictable. So the good news is we do have night gates now that we have been moving forward, but it's not at the point that I believe has been maximized in order to prepare us to move the kind of volume that we're expecting. How you measure the success of a night gate is in the truck turn time. Right now this is a challenge for many gateways, and we've made some movement on that, but at the end of the day, I think to your point, the real question is "Who's going to pay for it?" Here in Long Beach and this greater port called LA/Long Beach, Pier Pass was an answer to that. But again, we still have to fine tune that so that, again, we have night gates that are predictable and true night gates, because you're not going to be able to move this cargo between 8 and 5.

**Let's shift gears a little bit. When you think about chassis, on the surface, it might not be the most interesting topic in the world. But, on the intermodal docks, it is one of the most important. Tell us about your ideal chassis pool and why it works best.**

Sometimes, there's a misperception that we don't have enough chassis. For example, in the Southern California Port Complex, I think we have somewhere in the neighborhood of from 90 to 100,000 chassis. When a problem does occur, it's not because of not enough chassis, it's a misallocation of chassis assets. That mutual manager – what we call a 'gray pool' – would have the ability to have chassis at like a staging



**Port of  
LONG BEACH**  
*The Green Port*

area where people could pick up and return them. That creates efficiency and that maximizes productivity. In this country, we have three major equipment operators. So if we get those people together to find a common ground, then I think we'll make some real productive steps.

**You said that your goal is, in the very near future, to go to 50 percent rail off the dock.**

Our goal is 50 percent – in the near future, 35 percent and then, ultimately 50 percent. It's absolutely paramount to have an inland connectivity.

**Let's talk about CAAP – the California Clear Air Action Plan. The ports have already done a remarkable job and I think the record speaks for itself. All the low-hanging fruit is gone. And the last 3 to 4 percent is going to be 5 times as expensive as the first 95 percent. Can you get to this zero percent [port emissions] in 2030?**

I believe we can. I think, in fact, the question is in terms of whether or not the technology is available by that time. If you look forward to 2030, which is the goal that is set for cargo handling equipment, and the 2035 goal for zero-emission trucks, technology is moving so fast that I'm very optimistic that option will be there. The question is what will be the cost and who's going to pay for it. Those are fair questions. So, for us, it's a full court press to seek government funding to achieve this goal. That is the option that we are seeking, because again, this whole issue of the environmental push to reduce emission is a politically-captured event. It's not just happening in California – it's happening throughout the

nation, in various forms, of course. It's happening throughout the global community. I just came back from China, in Shanghai, and in that city of millions and millions of people, scooters are all electric. I was amazed. I think the point I'm trying to make is that the political will is there to get to zero emissions. The Clean Air Action Plan is a living document – I want to make that clear, it's not something that's set in stone. The goal is to get to zero emissions and right now my colleague on the [AAPA] panel, Mark Sisson, was quoted in a recent maritime article that in his view, you could get to 82 percent zero emission cargo handling equipment at the cost of 1 billion dollars. That's a lot of money. But, there is a debate: is it going to cost 1 billion dollars or is it going to cost far in excess of that? I think the market ultimately will answer that question, but what I want to make clear, what my message is, what our message is as ports, is that this is all dependent on government funding, because I believe government funding to do this is very realistic.

**International Trade Economist and Advisor Jock O'Connell gave a very good talk on trade economics. In that talk, he said, "Pulling out of TPP was incredibly disappointing for California." Would you agree?**

I agree, because again, international trade and the globalized concept, there's no back-step to that. Nothing's going to change. The Trans-Pacific Partnership agreement involved 12 nations that together, made up as much as 40 percent of the world's GDP. When people ask me this question, I would suggest that we just step back and say, 'What's our competition doing?' Like President Obama would say many times, do you want to set the tone of your own destiny or do you want somebody else to do that? So I think for California, specifically, it was unfortunate that this didn't move forward because it would have been very, very important to the West Coast because the middle class of the world is going to be a great opportunity for the American export market. By 2050, just China alone is forecasted to be the largest middle class in the world. I think that's an opportunity for the United States – particularly for the agrarian and agriculture sectors. You saw that China now is accepting American beef exports. What it means to our economy and for that particular commodity is in the billions. So going back to your question, I think, yes, that was a mistake.

**What can you bring from the experience at FMC to the Port of Long Beach that's going to improve things here? And, what can the Port of Long Beach teach FMC about what they could be doing better?**

I was at the right place at the right time as it relates to the FMC. Why? Because I was able to, as chairman of the FMC, navigate the filing of the P3, the first of what I call the New Generation of Alliances, these major carriers who were coming together with vessel sharing agreements. The P3 eventually was withdrawn, but I was there to navigate that, until the last filing. So, I think that through the experience in understanding alliances, and understanding the importance of those relationships that I was able to gather from those discussions, I believe that I bring value to the Port of Long Beach. Based on that experience, it's a new day in terms of the maritime port authority industry. When you're no longer negotiating or dealing with just one carrier, you're dealing with an alliance that represents four carriers; in this case we're down to three alliances. The second and last answer to that part of the question rests in the understanding of the supply chain. At the FMC we studied that. It was a national study: the movement towards this inland connectivity and moving a container not just when it arrives, unloading and loading, or even within the terminal – but also following the movement of that container throughout the supply chain. At the end of the day, that's important at Long Beach because our market share is also dependent on it. Because of our proximity to Asia, we could get that container to Chicago and the Ohio Valley 11 days quicker than the direct water route from Shanghai to the East Coast. Now, what can FMC learn from Long Beach? Long Beach is part of the nation's largest port complex. When you talk about the movement of cargo – and the mission of the FMC is to foster the efficient and reliable movement of waterborne international cargo – what better place to start than to look at the nation's largest port complex? I think what the FMC needs to learn from Long Beach is "how does this work or not work?" Anytime you're part of the nation's largest port complex, collectively moving 340 billion dollars' worth of cargo, it's a case study that will benefit any business plan, especially in terms of how we move the cargo and how we address efficiency in the supply chain.

# The IMO Orders Fuels of the Future:

*The New Sulfur, Carbon Dioxide Limits Will Demand Precise Understanding by Ship Owners and Operators.*

By James Morgan, Opportune LLP

**G**lobally, new regulations are coming into effect governing the Sulfur Oxide (SOx) limits and CO2 emissions. The International Maritime Organization (IMO) has updated the maximum amount of SOx allowed in fuels and the European Commission is introducing new reporting requirements to monitor CO2 emissions. Understanding the impacts of these changes on ship owners and operators is critical given the market conditions for maritime services.

## IMO 2020 and Bunker Fuel Pricing

As of January 1, 2020 the IMO will require a reduction in the sulfur content of fuel oil of all ships to a global sulfur limit of 0.50% m/m (mass/mass), from the current global level of 3.5% m/m. While this new limit will not change the lower limits in SOx Emission Control Areas (ECAs), it will cause a significant change in the demands for certain bunker fuels. By Jan 1, 2020, the IMO's new standards should reduce heavy fuel demand by more than 2 million barrels a day, according to industry consultant FGE. Separately, a Wood Mackenzie study estimates meeting the new fuel standards will cost the world shipping industry \$60 billion a year.

Fuel Oil, high in sulfur content, has been the traditional bunker fuel for the maritime industry. With the new IMO regulations, ship owners are left with few options:

- *Switch to a lower sulfur fuel, such as LSGO or MGO or refit to run LNG;*
- *Install scrubbers to enable them to continue using the higher sulfur fuels; however scrubber installation can run up to \$6 million per vessel; and/or*
- *Or less ideally, ignore the regulations and hope they are not fined.*

Changing fuels completely across the world will be difficult, as refiners aren't necessarily able to quickly scale to higher demand and potentially will need to build new coker units to fill the need. The International Energy Agency (IEA) stated that the lowering of the bunker fuel emissions cap is

“easily the most dramatic change in fuel specifications in any oil product market on such a large scale.” Since most vessels are presently using High Sulfur Fuel Oil (HSFO) for long haul trade, and only using Low Sulfur Gas Oil (LSGO) in ECA zones or for certain coastal carriers, there isn't an abundance of supply for LSGO at this time.

Due to the current lack of demand, there are not enough refineries or suppliers to absorb the dramatic increase in necessity for LSGO that will result when this regulation goes into effect. Refiners are evaluating investments in capital projects to account for this demand increase so that they can produce more LSGO. Forecasts have shown costs for lower sulfur bunker fuels rising anywhere from 40 to 200%, with most trending on the higher end. More specifically, a Very Large Crude Carrier (VLCC) with an average fuel cost of \$6.2 million in 2018 could see a fuel costs rising to between \$8.5 and \$12.5 million in 2020. An Aframax which would average \$2 million in fuel costs for 2018 could see fuel costs over \$4 million in 2020.

If scrubbers are the chosen solution, ship owners will need a clear view of their finances to see if they have access to credit, for the large up-front capital costs of a scrubber. In addition to the capital costs, ship owners will have to consider the loss of revenue during servicing time in dry dock to install the scrubber. Depending on how many ship owners choose the scrubber route to solve the emission requirements, yard space will likely be at a premium and require longer lead time to schedule.

Another alternative is to look at converting the vessel engine to run on less expensive LNG, but this option requires an even higher investment by the vessel owner that will need to be weighed against the commodity prices, fuel spreads and availability of LNG globally as a fuel.

While certainly not recommended, ship owners will need to take a view on the potential risks of ignoring the regulation, including the expected negative reaction from investors, clients, regulators and the general public if they are caught. While this may be an alternative in the short term, when low sulfur fuel is not readily available, it is a risky option over time.

## The EU Complication

Further complicating the maritime control space is the new emission reporting requirements for CO<sub>2</sub> in Europe. European Commission is adding maritime emissions into its 2009 climate and energy package. European Union's upcoming Monitoring, Reporting and Verification (EU MRV) regulation requires ship owners and operators of ships over 5,000 GT to monitor and report their CO<sub>2</sub> emissions on all voyages to, from and between any EU or EFTA port. This regulation, 2015/757, came into force on July 1, 2015 and requires per voyage reporting beginning in January of 2018. By August 31, 2017 all ship owners are required to provide monitoring plans to an accredited verifier.

The EU MRV requires ship owners to report on specific parameters of fuel consumption. Presently, there are four acceptable fuel consumption monitoring methodologies:

- **Bunker Fuel Delivery Note (BDN) and periodic stock-takes of fuel tanks**
- **Bunker fuel tank monitoring on board**
- **Flow meters for applicable combustion processes**
- **Direct emissions measurements.**

Other relevant voyage details will also be required, including distance travelled, time spent at sea, port of departure and

arrival with date and time of departure and arrival, cargo carried and transport work.

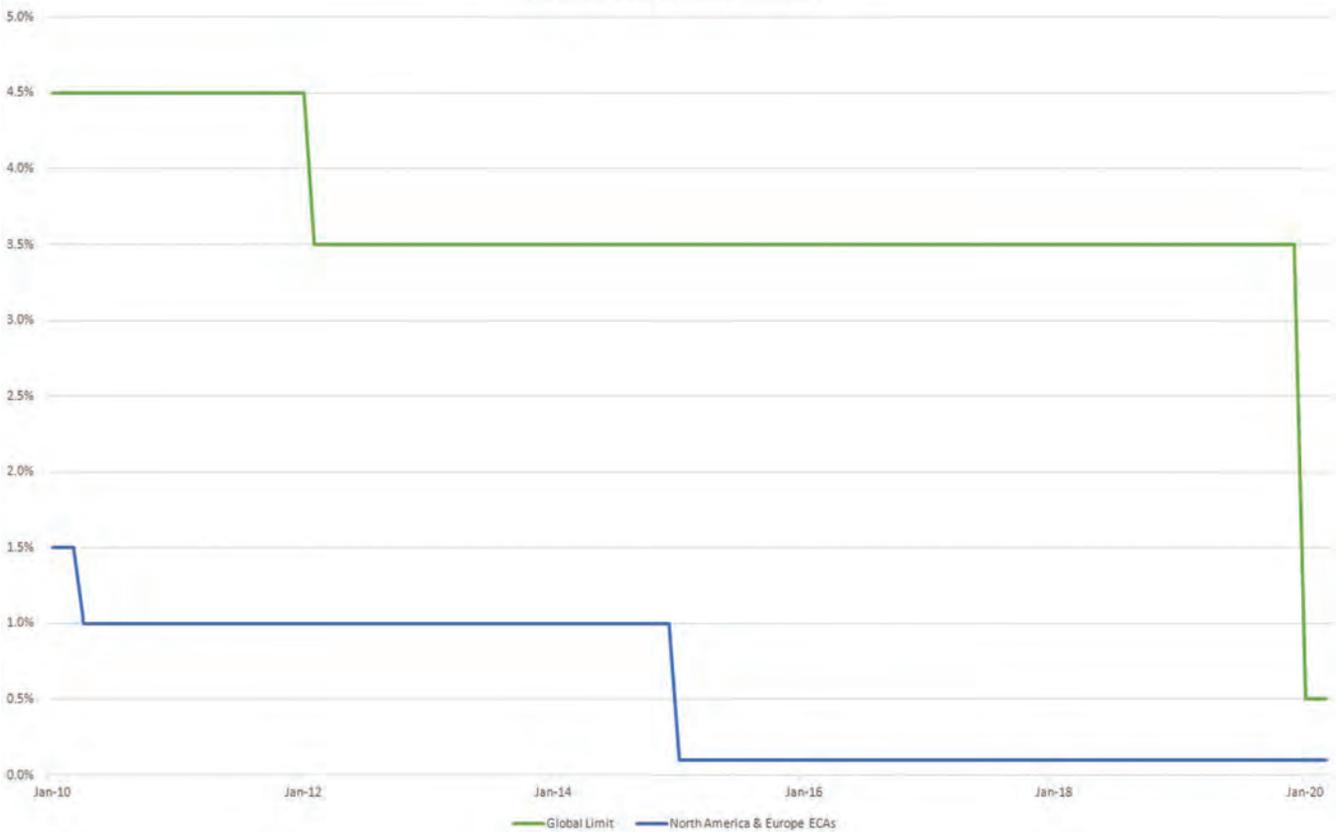
The shipping industry is critical for global trade, responsible for transporting about 90% of goods; fuel costs account for up to 80% of total voyage expenses, according to Platts. These regulations are coming at a time of prolonged financial stress for much of the maritime industry. Ship owners and operators need to choose wisely in their strategy for dealing with the sulfur cap and their emission reporting methodology. Those able to offer the lowest freight rates stand to increase their market share as shipping margins become even tighter.

## The Author

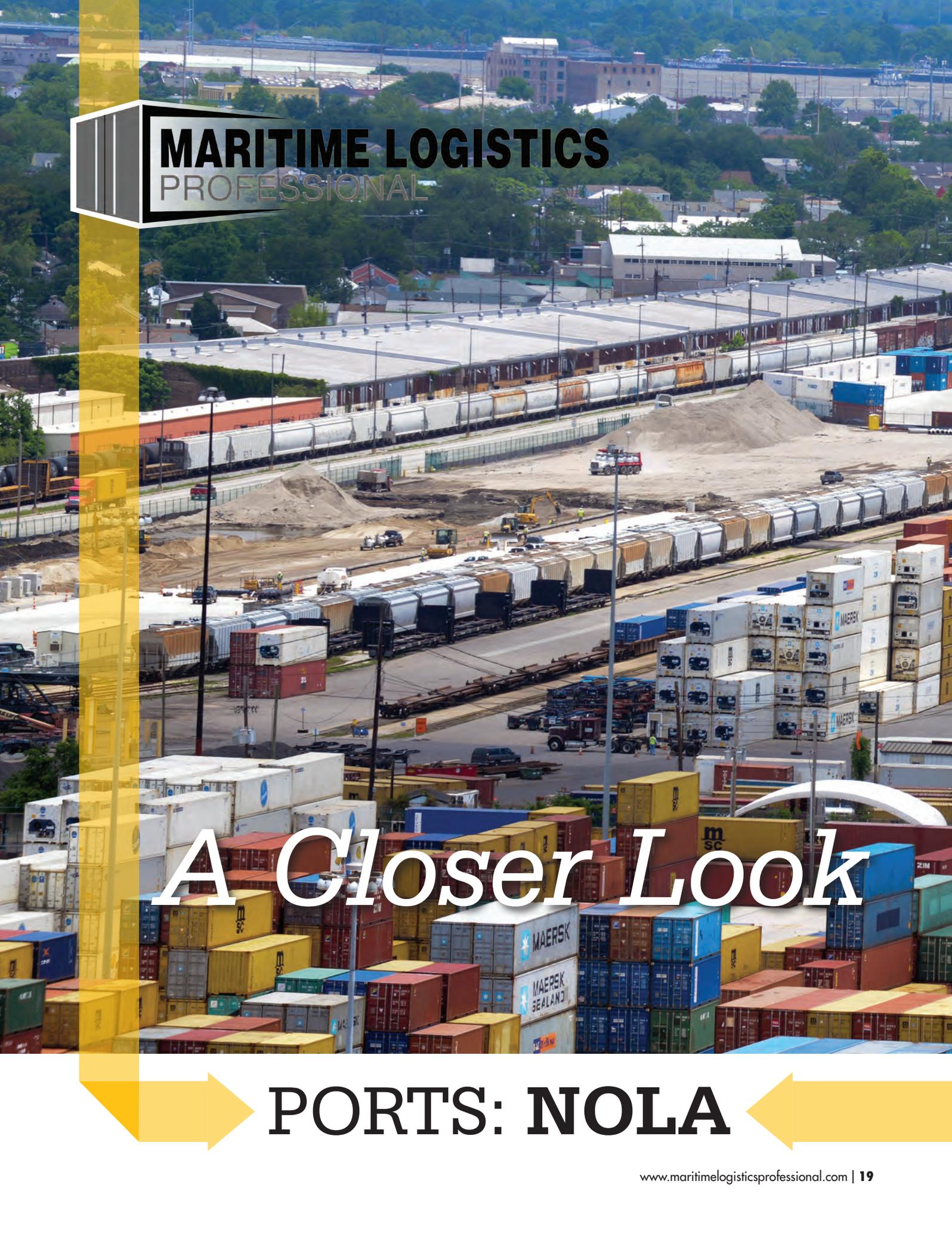
**James Morgan** is a Director in Opportune LLP's Process & Technology practice. He has more than 17 years' experience in the energy industry, primarily focused in the trading and risk management area. He is experienced in all aspects of a project life cycle from strategy definition and business case development to production support, for both packaged and custom software implementations. He can be reached at [jmorgan@opportune.com](mailto:jmorgan@opportune.com).



Maximum Sulfur Emission Timeline



Source: IMO



**MARITIME LOGISTICS**  
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*A Closer Look*

**PORTS: NOLA**



# The Port of New Orleans

*Executive Interview***Brandy D. Christian**President & CEO,  
Port of New Orleans

**“** *While serving as chief operating officer, I recognized that Port NOLA’s success could be multiplied and its economic impact substantially increased with targeted investments and operational improvements, so I initiated the development of a strategic master plan.*

**B**randy D. Christian serves as the President and CEO of the Port of New Orleans, a public agency that manages more than \$60 million in revenues, nearly 300 employees and \$200 million in capital projects. Christian is one of 11 female port directors in North America and the first female CEO in the Port of New Orleans’ 120-year history. She brings a global perspective and experience building high performance teams in complex organizations to the role, and emphasizes strategic focus, collaborative partnerships and bold action.

Prior to joining Port NOLA, she served 14 years with the Port of San Diego, California’s fourth-largest cargo port and one of the State’s largest public land developers with a portfolio encompassing maritime, industry, hospitality and tourism. Serving as vice president of strategy and business develop-

ment, Christian was the driving force behind streamlining the public agency’s operational processes, reducing costs, securing major accounts, and negotiating leases for the cruise and cargo business lines.

Before joining the Port of San Diego, Christian worked for KPMG Consulting as a quality management consultant in their public sector practice. She earned a bachelor’s degree in political science from the University of Arizona and a master’s degree in public administration from the University of Southern California. Christian is a Certified Port Executive, Certified Six Sigma Green Belt, Board of Examiners - Malcolm Baldrige, and the recipient of the Examiner of the Year by the California Award for Performance Excellence.

Additionally, Christian serves on the Green Marine Board



## ▶ Port of New Orleans: *Interview*

of Directors, as Cruise Committee Chair for the American Association of Port Authorities, and on the University of New Orleans Transportation Institute (UNOTI) Advisory Board. Follow along in this edition as she brings *MLPro* readers up-to-speed on one of the fastest growing – and most important – ports in the United States.

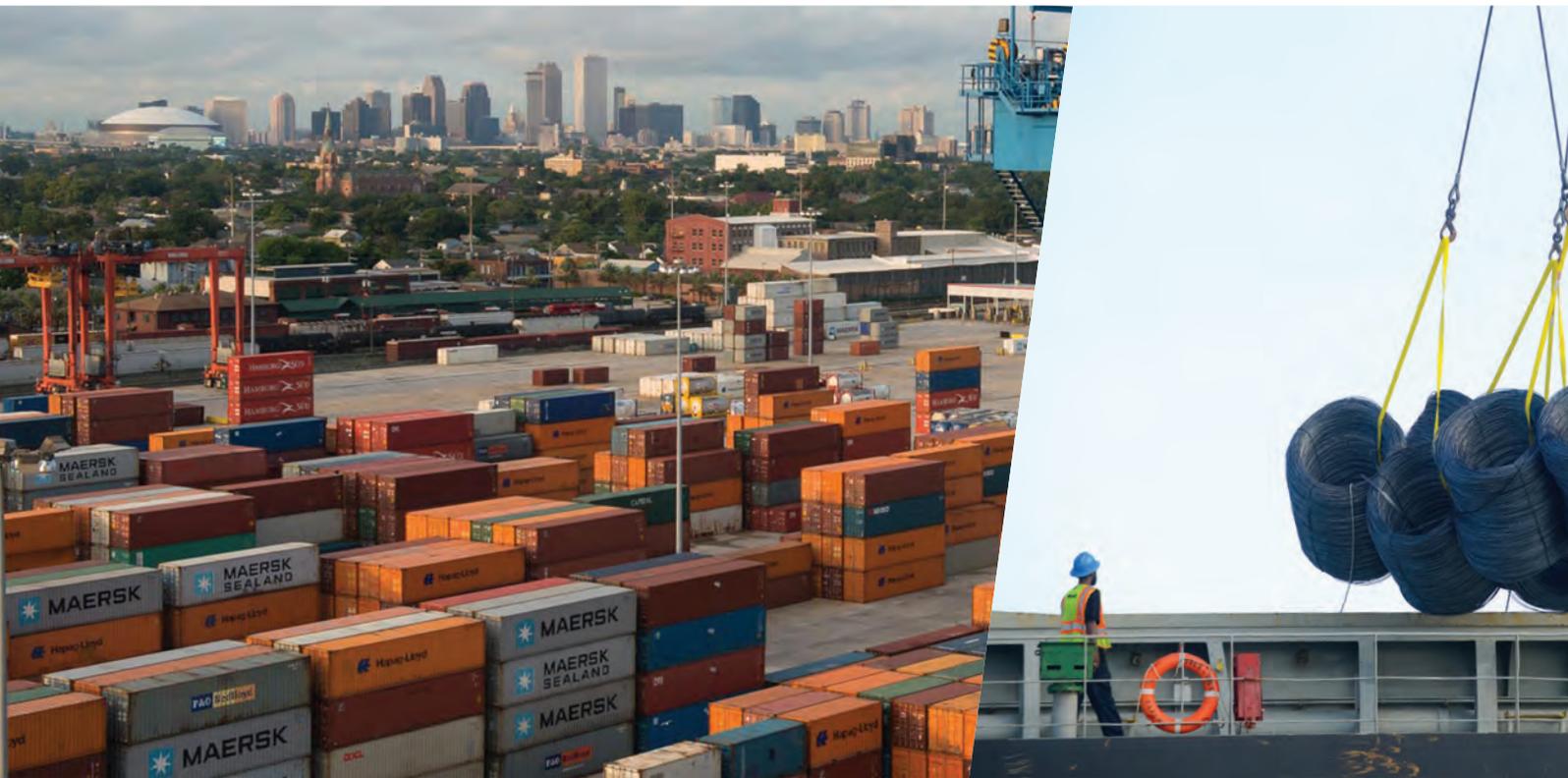
**Your tenure as the Port's president and chief executive officer began in January, following two years of service as chief operating officer. You've got much on your plate, but if you had to focus on just one goal, then what would it be? Why?**

While serving as chief operating officer, I recognized that Port NOLA's success could be multiplied and its economic impact substantially increased with targeted investments and operational improvements, so I initiated the development of a strategic master plan. We are nearing the end of that process and I am confident that the outcome will ensure we serve as a true gateway port with integrated facilities and transportation solutions, staying ahead of market demand and exceeding expectations by all measures.

**You also serve on the Green Marine Board of Directors. Green Marine is a voluntary environmental certification program for the North American marine in-**

**dustry, a rigorous, transparent and inclusive initiative that addresses key environmental issues through its 12 performance indicators. Where would you rank your port in terms of achieving excellence in all of those important areas?**

Green Marine's emphasis on continuous improvement and a framework with clear standards allows its members to hold themselves accountable. The 12 performance indicators provide broad yet measurable goals. I am pleased with the progress we have made toward overall excellence, with our measurable successes in all areas, and our partnerships with stakeholders in the effort. One of our terminal operators was so impressed with Green Marine that they joined the program. A recent initiative enabled 35 local truck owners to reduce diesel emissions by replacing older model trucks with newer models. The Clean Truck Replacement Incentive Program, or Clean TRIP, is a cost share program, funded by federal EPA and state grants. We are also partnering with the City of New Orleans and working with stakeholders to revitalize brown-field property along the Inner Harbor Navigation Canal, utilizing an EPA planning grant. This two year project will create a vision and implementation plan to help bring a number of underutilized and vacant properties back into commerce, as well as create jobs and other benefits for surrounding communities. Another environmental leadership initiative is our



By-You Drainscapes program, which spreads awareness by installing artwork on storm drains as a reminder to the public that the city's drains eventually lead to Lake Pontchartrain and the Mississippi River. As a member of the Green Marine Board of Directors, it's a privilege to have Port NOLA positioned as a leader in increasing awareness of the maritime industry's activities and environmental benefits.

For so many ports and terminals today, the two most important keys to the future involve (a.) infrastructure improvements and (b.) the state of its intermodal connections. Describe your port in these terms today.

Investing in infrastructure is both capital intensive and necessary to maintain a competitive advantage. We are carefully evaluating our options as part of our strategic Master Plan process to ensure our investments support the business well into the future. Port NOLA is known as America's Most Intermodal Port with good reason. Our Mississippi River Intermodal Terminal provides on-dock rail service, and we are in the process of acquiring the New Orleans Public Belt Railroad, which serves all six Class I railroads. In partnership with SEACOR AMH, Port NOLA provides a weekly container-on-barge shuttle service between New Orleans, Baton Rouge and Memphis. This service is becoming more popular faster than was expected.

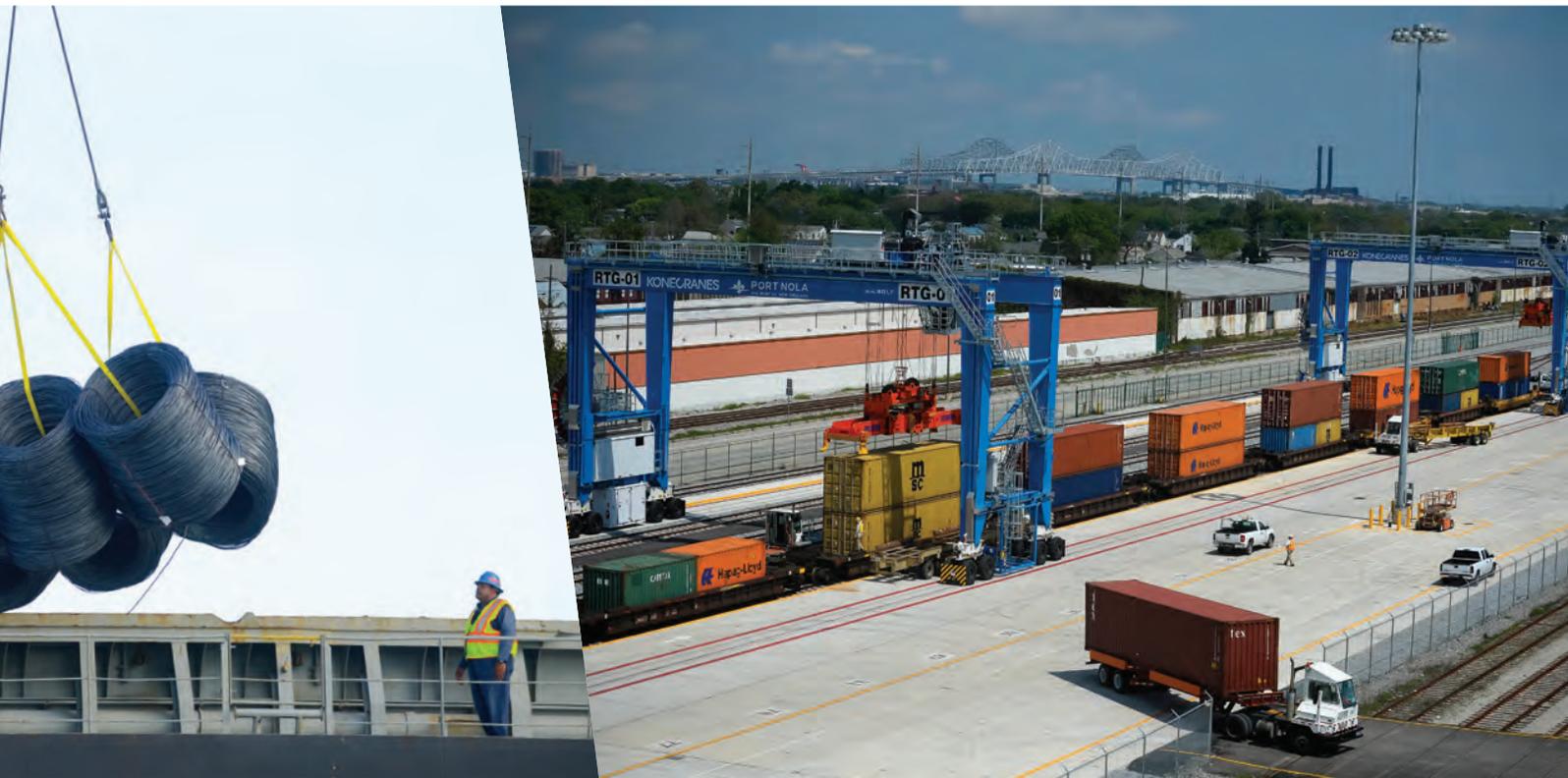


# PORT NOLA

THE PORT OF NEW ORLEANS

This year's AAPA Facilities Engineering Award will go to the Port of New Orleans for its Mississippi River Intermodal Terminal Improvements Program entry. Tell us about this project, what made it special and what it means for the future of the port.

The Port dedicated the \$25 million Mississippi River Intermodal Terminal in April 2016. The terminal was made possible by a \$16.7 million federal transportation TIGER grant. The terminal is equipped with on-dock rail access to move cargo via the New Orleans Public Belt Railroad which serves Port tenants and switches for all 6 Class I railroads. Additionally, the terminal has the capacity of moving 160,000 TEUs per year by rail and is equipped with two rubber tire gantry cranes. Since the opening of the Mississippi River Inter-



“ **Port NOLA recently became the first port in the U.S. to pilot the use of Transport Canada’s Port Emission Inventory Tool to study our emissions with the long-term intent to develop a plan with targets and timelines.** ”

dal Terminal, Port NOLA has seen increased interest from our rail partners to reach key inland markets efficiently served by New Orleans, including Memphis, Chicago, Detroit, St. Louis, Dallas and Kansas City. The Port is served by the three major global container carrier alliances, and this February, CMA CGM launched their direct all-water Asia container service which has served as a launch-pad for intermodal growth. Supply chain partner CN Railroad, has provided intermodal service at the Port for many years and in 2015 signed an MOU to attract more container traffic through New Orleans.

**Box Shipping: you were after 2016, the 18th ranked U.S. box port, with a year-on-year gain of 3.6%. Encouraging, but not as robust as some others. What’s the long-term goal of the port for this sector?**

We are working to attract investment from both the public and private sectors to our container facilities to retain our place as the premier regional container terminal on the Gulf Coast. In the first quarter of 2018, we expect to begin an expansion project at our Milan Street Wharf in the Napoleon Avenue Container Terminal to increase our annual throughput capacity.

We anticipate the more than \$32 million project to attract new customers seeking dedicated terminal space. Also, the expanding chemical industry sector in Louisiana is forecast to triple its current volumes in the next three years, and we expect to compete and win the majority of that cargo. The challenge we have in Louisiana in the container market is with

growing imports. So, we are actively working with regional and state economic development officials to attract new distributions centers and manufacturers, to help bring more inbound cargo to New Orleans and Louisiana as a whole.

**The ports of Los Angeles and Long Beach recently announced plans – prompted in part by local regulatory and political pressures – to bring emissions to zero by the year 2030. Is there a similar pressure in Louisiana and/or is this something the port itself will address and set benchmarks for? To that end, what are your goals?**

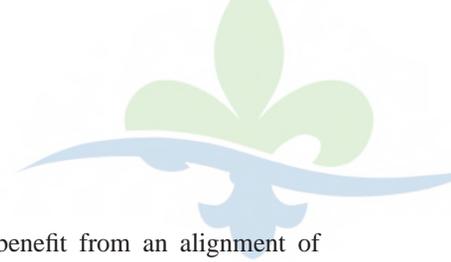
Port NOLA has a number of programs aimed at reducing air pollution from port activities, including the previously mentioned Clean TRIP program that helped 35 truckers replace older dray vehicles with models that meet current emission standards. Additionally, Port NOLA recently became the first port in the U.S. to pilot the use of Transport Canada’s Port Emission Inventory Tool to study our emissions with the long-term intent to develop a plan with targets and timelines.

**Your nascent Container-on-Barge (COB) service, intended to be an integral part of the regional intermodal equation, is gathering momentum – and customers. Give us a sense of how it started and your assessment of what it can someday be.**

The success of the container-on-barge shuttle service is a result of the \$81 billion infrastructure investment boom in the chemical and petrochemical industry on the Lower Mississippi River. SEACOR AMH operates the COB shuttle service to export products of the investment boom via Port NOLA. Year to date, the COB shuttle service has moved more than 25,900 TEUs between Memphis, Baton Rouge and New Orleans. Factoring in the chemical industry’s investment boom and more Port NOLA carrier partners participating in the COB shuttle service, we are poised to continue to grow.

**You were appointed to the Railroad Shipper Transportation Advisory Council, a group that advises the Surface Transportation Board on Rail operations and issues. That said; what is the biggest issue today for rail as it interacts with the waterfront – both globally and locally? What are we doing about it?**

Rail and maritime traffic must interchange efficiently and seamlessly to meet the expectations of shippers and consumers. As the supply chain becomes more complex, we must prioritize investments in aging infrastructure and incorporate technological advances so we can continue to facilitate global trade and serve as a local economic driver. Both ports and rail-



roads are require ongoing capital investments. Many of the most transformative projects are multi-year and extremely expensive. Both maritime and rail associations have been making the case about the need for investment at the Federal and local level – we need to continue that effort. The alignment of the Port of New Orleans and the New Orleans Public Belt railroad allows us to share operational plans and work toward a shared vision. This will include an emphasis on strategic infrastructure investments.

Royal Caribbean International has announced that it will return to New Orleans in 2018. That's good news for a tourist destination rich in culture, history and hospitality knowhow. The Port handled 1,070,695 cruise passengers in 2016 (and that number is increasing year-on-year, and impressively ranks as the sixth-largest cruise port in the United States, with direct industry expenditures in Louisiana of \$406 million). What's the long-term goal for those numbers? What are you doing about keeping, and attracting even more business?

We are fortunate that New Orleans is such an appealing location, both as a standalone destination and cruise port, as well as being easily accessible by air, rail and car. Sixty percent of our cruise guests spend an average of two nights in the city either before or after their cruise, so the region truly benefits economically. Our goal, not surprisingly, is to provide superior service to the cruise lines and passengers, so we can continue to attract newer and larger ocean going ships and grow our river cruise business. We enjoy close and positive relationships with our longtime cruise line partners, Carnival and Norwegian Cruise Line and Royal Caribbean, who will return to Port NOLA next year. A key aspect of growing cruise opportunities includes optimizing capacity at our two state-of-the-art cruise terminals and planning for our future needs. We also partner with tourism and economic development groups on initiatives that contribute to the region's appeal, such as working to attract more direct domestic and international flights.

The Port of New Orleans, the New Orleans Public Belt Railroad and the City of New Orleans have agreed to align the Public Belt Railroads and its assets under the Port of New Orleans. The Public Belt will continue to effectively serve the Port of New Orleans and the move is expected to give the Port greater competitive advantage in international trade. What trades do you see benefiting the most from this move? Break Bulk, containers, bulk, cruise traffic or perhaps all sectors in different ways?

We expect all sectors will benefit from an alignment of NOPB and Port NOLA. With control over a larger portion of the supply chain, the Port can plan future investments and operations synergistically and strategically. Cargo, including container and breakbulk, is an obvious beneficiary of the NOPB acquisition, though cruise passengers will benefit as well, with more access to the riverfront along nearly three miles of contiguous open space.

The plan also calls for the Port to transfer the Governor Nicholls Street and Esplanade Avenue Wharves along the Mississippi River to the City of New Orleans. This move, showing unusual community outreach, ensures that the port and the city's tourism industries can operate side by side in prosperity. What else prompted the decision?

When the City of New Orleans began exploring options to sell the shortline railroad or outsource its management, the resulting uncertainty had a chilling effect on NOPB's business. For nearly 100 years, the railroad has served as a utility, providing cost effective service without favoring any one railroad. During the City's process, Port NOLA came to a new appreciation of the competitive advantage our access to six Class I's has been. We also recognized that having a shared vision for the railroad and port could result in greater efficiencies and growth. The City had long hoped to provide contiguous riverfront access in the French Market area for residents and visitors and the configuration of the two wharves that interrupted the flow of public access are less than ideal for today's maritime operations. From the Port perspective, an acquisition of NOPB provided a greater benefit. Together, the City and the Port realized that a realignment of assets would be more beneficial and a win-win-win for all involved.

Port NOLA has announced and launched Architectural and Engineering Services Roundtables Discussions Promoting Professional Services Opportunities with Port. Who are these roundtables reaching out to, and what is the ultimate goal of the effort?

As part of a commitment to ensure greater opportunities for all who want to work with the Port and a complete overhaul of the procurement process, the Port held a series of roundtable discussions to promote professional service opportunities to small, local architectural and engineering companies. The goal of the roundtables is to ensure qualified businesses have the opportunity to work with the Port. In return, the Port obtains a larger pool of prospective professional service providers.



## America's 'Most Intermodal' Port: on 'Track' for future Growth

*Careful planning, savvy market analysis and one of the most diverse cargo bases in the nation has the Port of New Orleans chugging along – and evolving – towards tomorrow. That train has indeed left the station.*

**By Joseph Keefe**



*“We expect all sectors will benefit from an alignment of NOPB and Port NOLA. With control over a larger portion of the supply chain, the Port can plan future investments and operations synergistically and strategically. Cargo, including container and breakbulk, is an obvious beneficiary of the NOPB acquisition, though cruise passengers will benefit as well, with more access to the riverfront along nearly three miles of contiguous open space.”*

*– Brandy D. Christian,  
President and CEO,  
Port of New Orleans*

**J**ust one year ago, a delegation from the Canadian port of Prince Rupert told a rapt audience in Hong Kong that any port – or any cargo transport mode – is only as good as the mode that immediately follows or precedes it, in the supply chain. That’s a philosophy and business strategy that Port of New Orleans President and CEO Brandy D. Christian has long taken to heart. She knows only too well that the port’s future will depend on developing its infrastructure, riding that train all the way to new and expanded opportunities.

Port NOLA is known as America’s Most Intermodal Port with good reason. Its Mississippi River Intermodal Terminal provides on-dock rail service, and the port is in the process of acquiring the New Orleans Public Belt Railroad, which serves

all six Class I railroads. In fact, Port NOLA today is the only U.S. port served by all six first-class railroads.

It is also no accident that Christian today sits on the Railroad Shipper Transportation Advisory Council, a group that advises the Surface Transportation Board on Rail operations and issues. “Rail and maritime traffic must interchange efficiently and seamlessly to meet the expectations of shippers and consumers,” she told *MLPro* in October, adding, “As the supply chain becomes more complex, we must prioritize investments in aging infrastructure and incorporate technological advances so we can continue to facilitate global trade and serve as a local economic driver.” She also conceded that both ports and railroads require ongoing capital investments and that many of the most transformative projects are multi-year and extremely expensive.

## Featured Port

Expensive or not, that is nevertheless the direction that Port NOLA finds itself moving. Christian explains further, “Both maritime and rail associations have been making the case about the need for investment at the Federal and local level – we need to continue that effort. The alignment of the Port of New Orleans and the New Orleans Public Belt railroad allows us to share operational plans and work toward a shared vision. This will include an emphasis on strategic infrastructure investments.” With the port’s direction clearly defined, it is now the Port CEO’s mandate to make it happen. To that end, she is hardly sitting on her hands.

### If You’ve Seen One Port ...

For so many ports and terminals today, the two most important keys to the future involve infrastructure improvements and the state of its intermodal connections. That’s even more important when you consider that industry studies peg the impact of deepening the river to 50 Feet generates \$89.40 for every \$1 spent. For her part, Christian held leadership positions with the Port of San Diego for 14 years prior to arriving in New Orleans. From that experience, she brings many ‘take-aways,’ none more important than her understanding that every port is unique. And, she continues, “The truism that ‘if you have seen one port, you have seen one port’ is even more relevant if one port is on the West Coast and the other on the Gulf Coast.”

That’s because one of the biggest differences between the two ports is the need to dredge. “In San Diego, we last dredged the cruise terminal berth 30 years ago. Port NOLA owns its own dredge, which operates every day to maintain our berths to a minimum depth of 45 feet. The Army Corps’ Dredging the Mississippi at the mouth of the river is important, not only for ports, but also for the markets we serve through 14,500 miles of the river’s tributaries,” she said.

The U.S. Army Corps of Engineers has a plan to deepen the Mississippi River Ship Channel from its current 45 feet to a 50-foot draft, the controlling draft of the expanded Panama Canal locks. Port NOLA, of course, hopes that the USACE will issue and approve the deepening effort in a report expected to be released in March 2018.

Another variable that sets New Orleans apart is its diversified cargo base. Few ports can match its array of cruise traffic, tankers, containers, break bulk and bulk commerce, says Christian, who insists, “Our diversity is a strength, both in terms of our ability to serve as an economic driver in the region, our competitiveness in the global marketplace and for our growth long-term. Containers now account for nearly 50% of our cargo revenue and we handled more than a half million TEUs at our container terminal in 2016.”

### Savvy Deals + Local Outreach = Global Success

In San Diego, and then serving as vice president of strategy and business development, Christian was the driving force behind streamlining the public agency’s operational processes, reducing costs, and negotiating leases for the cruise and cargo business lines. That sort of experience comes in handy when planning the realignment of port infrastructure and local properties. And, that’s exactly what is happening at Port NOLA today.

“While serving as chief operating officer, I recognized that Port NOLA’s success could be multiplied and its economic impact substantially increased with targeted investments and operational improvements, so I initiated the development of a strategic master plan. We are nearing the end of that process and I am confident that the outcome will ensure we serve as a true gateway port with integrated facilities and transportation solutions, staying ahead of market demand and exceeding expectations by all measures,” said Christian.

Successful execution of that master plan will depend on a lot of things, not the least of which will entail working with stakeholders during the planning process so they felt informed and heard, invested in developing mutually beneficial solutions and committed to the Port’s success. In a port that so closely coexists with the city’s deep historical roots and robust tourism trade, anything less might be a recipe for disaster.

That master plan is broad, and anything but short of ambition. For example, the Port of New Orleans, the New Orleans Public Belt Railroad and the City of New Orleans have agreed to align the Public Belt Railroads and its assets under the Port of New Orleans. The Public Belt will continue to serve the Port of New Orleans and the move, says Christian, and is expected to give the Port greater competitive advantage in international trade.

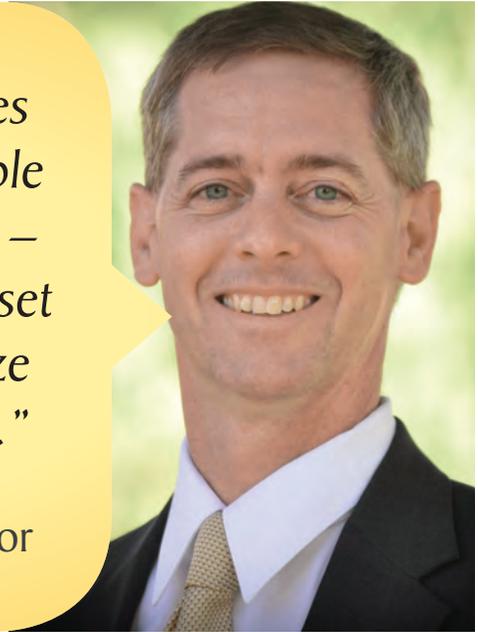
Leaving no intermodal stone unturned, the latest port decisions are expected to have wide impact on the commercial waterfront. “We expect all sectors will benefit from an alignment of NOPB and Port NOLA. With control over a larger portion of the supply chain, the Port





*“One puzzle is that since nobody moves (freight) this way, it’s harder to get people to participate and to get cost estimates – that’s been the challenge. ‘COB’ will upset habits, that COB will help people realize there are other ways to move products.”*

– Dennis Wilmsmeyer, ACP executive director



can plan future investments and operations synergistically and strategically. Cargo, including container and breakbulk, is an obvious beneficiary of the NOPB acquisition, though cruise passengers will benefit as well, with more access to the riverfront along nearly three miles of contiguous open space.”

The plan also calls for the Port to transfer the Governor Nicholls Street and Esplanade Avenue Wharves along the Mississippi River to the City of New Orleans. This move, showing unusual community outreach, ensures that the port and the city’s tourism industries can operate side by side in prosperity.

How that came about is also important. “When the City of New Orleans began exploring options to sell the shortline railroad or outsource its management, the resulting uncertainty had a chilling effect on NOPB’s business,” explained Christian, adding, “For nearly 100 years, the railroad has served as a utility, providing cost effective service without favoring any one railroad. During the City’s process, Port NOLA came to a new appreciation of the competitive advantage our access to six ‘Class I’s’ has been. We also recognized that having a shared vision for the railroad and port could result in greater efficiencies and growth.”

In New Orleans, little gets done if it doesn’t also take into consideration the area’s deep roots in tourism. In this case, the City had long hoped to provide contiguous riverfront access in the French Market area for residents and visitors. The configuration of two wharves that interrupted the flow of public access is less than ideal for today’s maritime operations. From the Port perspective, an acquisition of NOPB provided a greater benefit. In the end, says Christian, “Together, the City

and the Port realized that a realignment of assets would be more beneficial and a win-win-win for all involved.”

### **An Eye on the Container Sector**

The Port dedicated the \$25 million Mississippi River Intermodal Terminal in April 2016. Made possible by a \$16.7 million federal transportation TIGER grant, the terminal is equipped with on-dock rail access to move cargo via the New Orleans Public Belt Railroad which serves Port tenants and switches for all 6 Class I railroads. Additionally, the terminal has the capacity of moving 160,000 TEUs per year by rail and is equipped with two rubber tire gantry cranes. Because of those types of investments, overall container volumes have grown significantly. The Port now handles about 540,000 TEUs on an annual basis, but can handle more – up to 840,000 TEUs annually.

Equipped with six post-Panamax gantry cranes, the Napoleon Avenue Container Terminal has the ability to handle vessels up to 9,600 TEUs in size. More growth is expected, as early as the first quarter of 2018, when an expansion project at the Milan Street Wharf in the Napoleon Avenue Container Terminal could allow up to 1.5 million TEUs per year and 12 gantry cranes.

The Port is also served by the three major global container carrier alliances, and this February, CMA CGM launched their direct all-water Asia container service which has served as a launch-pad for intermodal growth. Supply chain partner CN Railroad, has provided intermodal service at the Port for many years and in 2015 signed an MOU to attract more con-

tainer traffic through New Orleans.

Although just the 18th ranked U.S. box port, the port recently reported with a year-on-year gain of 3.6%. That's encouraging, but not as robust as some others. Nevertheless says, Christian, the port is force in container shipping on the Gulf Coast, and working to get bigger. "We are working to attract investment from both the public and private sectors to our container facilities to retain our place as the premier regional container terminal on the Gulf Coast. In the first quarter of 2018, we expect to begin an expansion project at our Milan Street Wharf in the Napoleon Avenue Container Terminal to increase our annual throughput capacity."

### Container-on-Barge

Quietly, the Port of New Orleans (NOLA) has marked other accomplishments in the past two years.

For example, and in partnership with SEACOR AMH, Port NOLA provides a weekly container-on-barge shuttle service between New Orleans, Baton Rouge and Memphis. This service is becoming more popular faster than was expected.

Last year, in June (2016), SEACOR AMH started regularly scheduled container-on-barge (COB) service between Baton Rouge, NOLA and Memphis. The start-up was small, involving five barges per week, from Baton Rouge to NOLA. In February, NOLA's Board signed an MOU with the St. Louis Regional Freightway to expand trade and business relationships. The Freightway wants to 'swiftly capitalize' on new container-on-barge services, established and ready to go in St. Louis ports.

Separately, US DOT projects that freight movements across all modes will grow by 42 percent by the year 2040. Container traffic will increase steadily. And, COB is one transport mode with plenty of room to expand. Lessons learned now will be very valuable; like-

ly sooner, not later.

At its roots, the success of the container-on-barge shuttle service is a result of the \$81 billion infrastructure investment boom in the chemical and petrochemical industry on the Lower Mississippi River. SEACOR AMH operates the COB shuttle service to export products of the investment boom via Port NOLA. Year to date, the COB shuttle service has moved almost 30,000 TEUs between Memphis, Baton Rouge and New Orleans. Factoring in the chemical industry's investment boom and more Port NOLA carrier partners participating in the COB shuttle service, Port NOLA says that this is one venture that is poised to grow.

### State, Federal – and Commercial Support

US DOT's Maritime Administration (MARAD) has a steady, and active, interest in NOLA's projects. A MARAD

TIGER (Transportation Investment Generating Economic Recovery) grant provided \$16.7 million for the intermodal terminal. Last December, MARAD helped to jump-start the COB service by providing a \$1.75 million grant for specialized container loading equipment.

State and federal transportation officials, and not just at NOLA, want to fully leverage all truck, rail, and maritime capabilities. Expanded COB operations enhance the port's multimodal capabilities. One federal policy goal is for a transparent market providing an apples-to-apples comparison of the costs associated with shipping by truck, rail and of course, via barge.

The US DOT calculates that the State of Louisiana saves \$118 per round-trip when a 40-foot container travels by barge, not highway, between New Orleans and Baton Rouge. Or, put another way, Louisiana's taxpayers provide a



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## Featured Port

\$118 round-trip subsidy to the truckers. That's big money for state highway officials. If more freight shifted to the maritime sector, highways would function more like they are supposed to and less like parking lots.

All of that is music to Brandy Christian's ears. "We anticipate the more than \$32 million project to attract new customers seeking dedicated terminal space. Also, the expanding chemical industry sector in Louisiana is forecast to triple its current volumes in the next three years, and we expect to compete and win the majority of that cargo." That growth equates to an estimated increase of 400,000 TEUs of plastic resin exports from the Gulf region between now and 2020.

Elsewhere and last October, America's Central Port (ACP), in Granite City, IL, received a MARAD grant for an 18-month demonstration project providing shuttle service for agricultural customers moving containerized exports to access the Union Pacific and BNSF rail ramps. The shuttle service will operate on the Illinois and Mississippi Rivers between Channahon and Granite City, Ill., with an option to extend container-on-barge service to the Gulf. Right now, that 'ag' freight moves by truck.

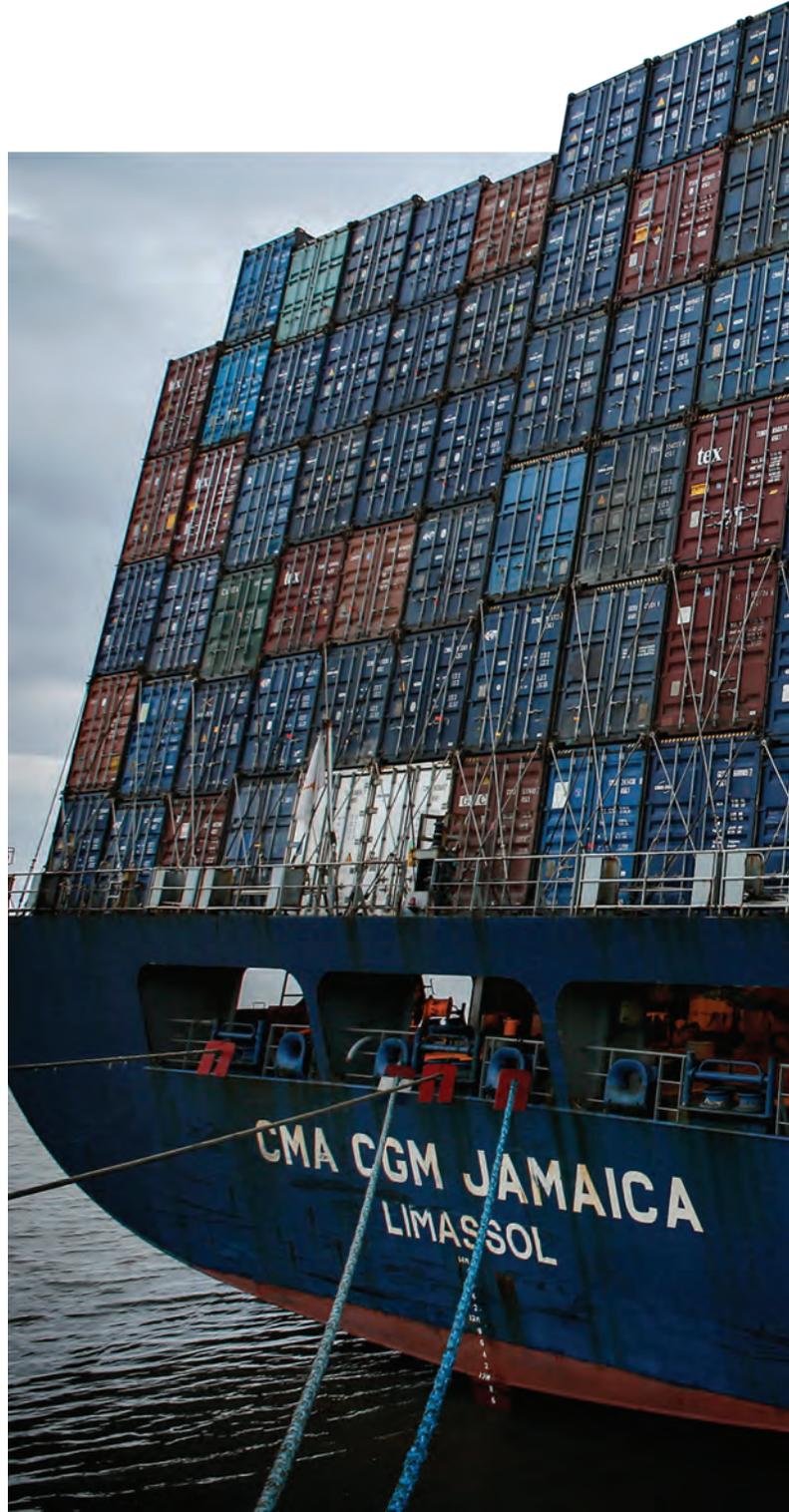
Dennis Wilmsmeyer is ACP's executive director. He said in September, "One puzzle is that since nobody moves (freight) this way, it's harder to get people to participate and to get cost estimates – that's been the challenge." Wilmsmeyer predicts that 'COB' "will upset habits, that COB will help people realize there are other ways to move products."

### Cruising Smoothly into the Future

In another bit of good news, Royal Caribbean International announced that it will return to New Orleans in 2018. As a tourist destination rich in culture, history and hospitality knowhow, the Port handled 1,070,695 cruise passengers in 2016 (and that number is increasing year-on-year) and impressively ranks as the sixth-largest cruise port in the United States, with direct industry expenditures in Louisiana of \$406 million.

With those heady numbers in hand, Brandy Christian knows the importance of maintaining the delicate balance between commerce and tourism. "We are fortunate that New Orleans is such an appealing location, both as a standalone destination and cruise port, and easily accessible by air, rail and car. Sixty percent of our cruise guests spend an average of two nights in the city either before or after their cruise, so the region truly benefits economically. Our goal, not surprisingly, is to provide superior service to the cruise lines and passengers, so we can continue to attract newer and larger ocean going ships and grow our river cruise business," she told *MLPro*.

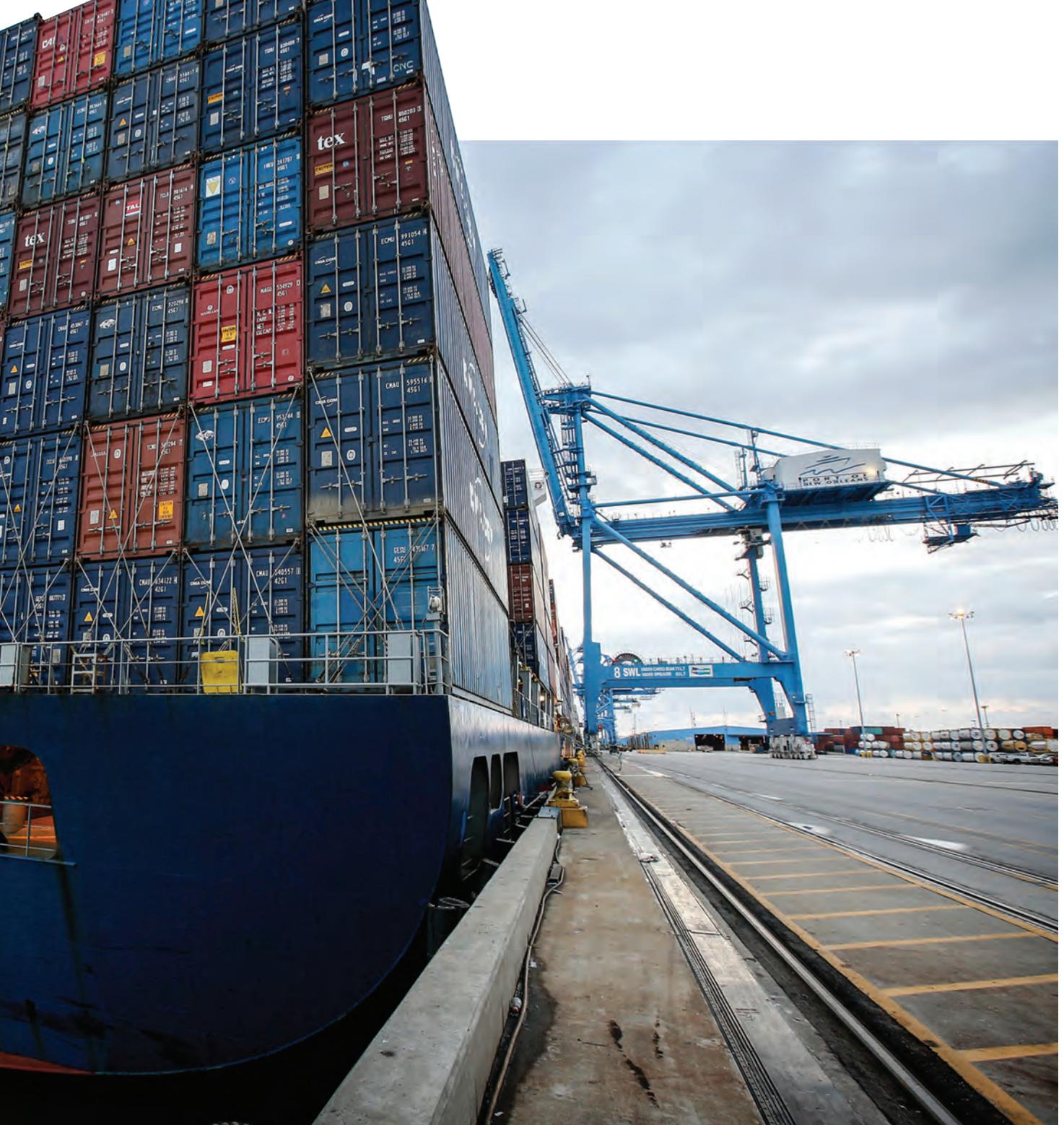
A key aspect of growing cruise opportunities includes optimizing capacity at two state-of-the-art cruise terminals and planning for our future needs. And, that effort does not end on the docks. Port NOLA also partners with tourism and eco-



economic development groups on initiatives that contribute to the region's appeal. That includes working to attract more direct domestic and international flights to New Orleans.

### America's Most Intermodal – and Multimodal – Port

The Port of New Orleans – a public agency that manages more than \$60 million in revenues, nearly 300 employees and \$200 million in capital projects – is known in some circles as the nation's most intermodal port. If so, then the descrip-



tor “most multimodal” should also be added to its moniker. Serving all marine sectors – cruise, bulk, container, tanker, breakbulk, and now container-on-barge – the port packages a powerful economic one-two punch in a region better known for peel-and-eat crawfish and other local culinary delicacies.

With recently installed CEO Brandy Christian at the helm – one of just 11 female port directors in North America and the first female CEO in the Port of New Orleans’ 120-year history – there are many layers to this onion. In an era where some

ports find their commercial waterfront slowly being eroded by creeping regentrification, New Orleans somehow finds a formula that allows both sides of the equation to peacefully co-exist, side by side, leveraging the resources of the other.

Multimodal, intermodal and interconnected to the region, city and people that it serves, Port NOLA finds itself poised for growth across multiple business sectors. That train has left the station and is on track with a full head of steam. It is not, however, too late to get on board.

# NOLA PORT TRAFFIC ... BY T

They don't call the Port of New Orleans America's '*Most Intermodal Port*' for nothing. That's because Port NOLA today is the only U.S. port served by all six first-class roads. But it also enjoys several other distinctions, another being one of the nation's diverse ports. With breakbulk, bulk, container, tanker, and cruise traffic all calling at the port in robust numbers, there is little that the port doesn't handle in a commercial fashion. The U.S. Army Corps of Engineers has a plan to deepen the Mississippi River Ship Channel from its current 45 feet to a 50-foot draft, the controlling draft of the expanded Panama Canal locks, something that will no doubt increase the port's tonnage totals when it comes to fruition. But, even the advent of bigger megaships hasn't (yet) slowed the port's total ship call numbers, which have spiked to 1,676 in the past five years alone. A look at the data also tells us that in most categories, tonnage totals, TEU's, port calls, and passenger numbers are all headed in the same direction: UP.

The port's diversity is its real strength, serving as an economic driver in the region, and able to transcend down years in one sector by strong years in another. Containers now account for nearly 50% of its cargo revenue. That trend is like to continue, as the Port dedicated the \$25 million Mississippi River Intermodal Terminal in April 2016. Made possible by a \$16.7 million TIGER grant, the terminal is equipped with on-dock rail access to move cargo via the New Orleans Public Belt Railroad which serves Port tenants and switches for all 6 Class I railroads. Beyond this, the terminal has the capacity of moving 160,000 TEUs per year by rail. Because of those types of investments, overall container volumes have grown significantly. Today, the Port handles about 540,000 TEUs on an annual basis, but can handle more – up to 840,000 TEUs annually. Finally, supply chain partner CN Railroad in 2015 signed an MOU to attract more container traffic through New Orleans. Although just the 18th ranked U.S. box port, the port recently reported with a year-on-year gain of 3.6%. In total tonnage, however, the port ranks an impressive 7th nationwide, with robust growth in recent years. A partnership with SEACOR AMH for a weekly container-on-barge shuttle service between New Orleans, Baton Rouge and Memphis is becoming more popular faster than was expected, and is expected to further boost both domestic and international box traffic.

Separately, the expanding chemical industry sector in Louisiana is forecast to triple its current volumes in the next

three years. That growth equates to an estimated increase of 400,000 TEUs of plastic resin exports from the Gulf region between now and 2020. Port NOLA aims to win the lion's share of that volume.

And, while it is rare for a port to be able to peacefully co-exist with a robust industrial cargo sector while also hosting a thriving cruise business, that's exactly what the Big Easy has done. Where other ports fret about harbor 'regentrification' and loss of commercial waterfront space due to encroaching hotels, condos and retail growth, Port NOLA has – in an innovative fashion – engineered land swaps that maximize both sides of the equation. Notably, Royal Caribbean International has announced that it will return to New Orleans in 2018. As a tourist destination rich in culture, history and hospitality knowhow, the Port handled 1,070,695 cruise passengers in 2016 (and that number is increasing year-on-year) and ranks as the sixth-largest cruise port in the United States, with direct industry expenditures in Louisiana of \$406 million. A key aspect of growing cruise opportunities includes optimizing capacity at two state-of-the-art cruise terminals.

The Port of New Orleans – a public agency that manages more than \$60 million in revenues, nearly 300 employees and \$200 million in capital projects – is known in some circles as the nation's most intermodal port. If so, then the descriptor "most multimodal" should also be added to its moniker.

Calendar Year	IMPORTS	EXPORTS	TOTALS
2016	255,768	<b>266,596</b>	522,364
2015	<b>260,837</b>	264,648	<b>525,485</b>
2014	245,099	245,418	490,517
2013	229,081	221,787	450,868
2012	237,291	231,049	468,340
2011	240,993	235,242	476,235
2010	215,009	212,419	427,428
2009	<b>167,024</b>	<b>158,833</b>	<b>325,857</b>

Source: Port of New Orleans (\*) Agents Totals

# THE NUMBERS, OVER THE YEARS

Short Tons of Cargo, Port of New Orleans (2012 – 2016)

	2016	2015	2014	2013	2012
<b>General Cargo</b>	8,064,190	8,622,507	8,379,668	6,546,061	7,108,442
<b>Bulk Cargo</b>	27,347,255	24,034,804	21,864,083	17,381,437	24,203,308
<b>TOTAL PORT</b>	36,496,146	33,576,064	31,050,437	24,319,705	31,754,579
<b>Ship Calls</b>	1,676	1,654	1,540	1,349	1,588
<b>Cruise Passengers</b>	1,070,695	1,023,700	1,014,325	987,860	977,703

Source: Port of New Orleans

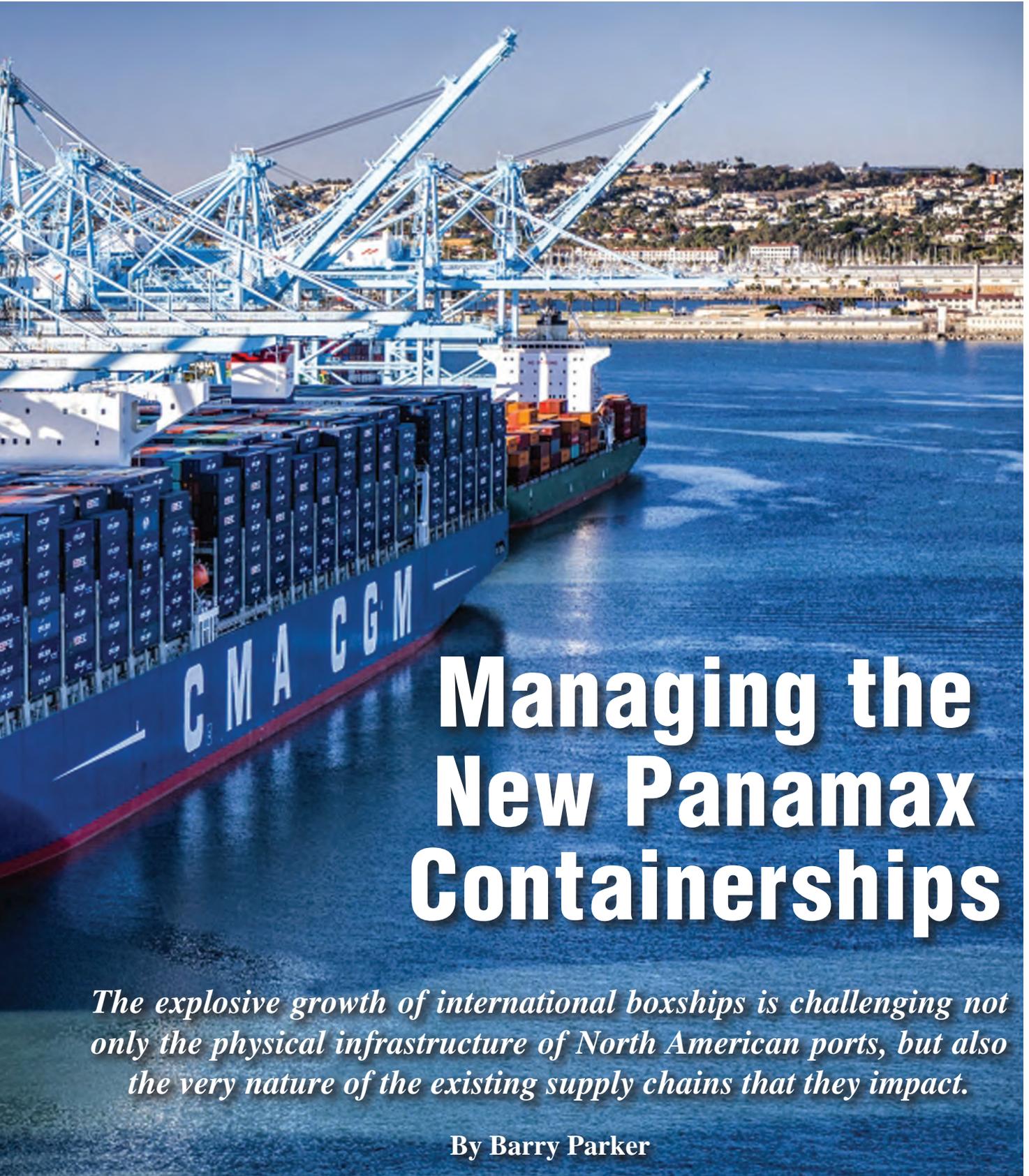
Tonnage of Top 10 U.S. Water Ports, Ranked by Total Tons

Ports	2014		2013		2004		PCT change 2013-14
	Rank	Total tons (Millions)	Rank	Total tons (Millions)	Rank	Total tons (Millions)	
<b>Port of South LA</b>	1	267.4	1	238.6	1	224.2	12.1%
<b>Houston, TX</b>	2	234.3	2	229.2	2	202.0	2.2%
<b>NY and NJ</b>	3	126.2	3	123.3	3	152.4	2.3%
<b>Beaumont, TX</b>	4	87.3	4	94.4	4	91.7	-7.5%
<b>Long Beach, CA</b>	5	85.0	5	84.5	5	79.7	0.6%
<b>Corpus Christi</b>	6	84.9	7	76.2	6	78.9	11.5%
<b>New Orleans</b>	7	84.5	6	77.2	7	78.1	9.5%
<b>Baton Rouge</b>	8	69.2	8	63.9	10	57.1	8.3%
<b>Mobile, AL</b>	9	64.3	12	54.0	11	56.2	19.1%
<b>Los Angeles, CA</b>	10	61.0	9	57.9	14	51.4	5.3%

Source: U.S. Bureau of Transportation Statistics (2014 is latest year for available data)



*The CMA-CGM Ben Franklin, an 18,000 TEU containership, was, in 2015, the largest vessel to call on a U.S. port.)*



# Managing the New Panamax Containerships

*The explosive growth of international boxships is challenging not only the physical infrastructure of North American ports, but also the very nature of the existing supply chains that they impact.*

**By Barry Parker**

Photo: Marad

The recent dialogue on container shipping has been all about so-called “mega-ships;” those vessels that with larger capacity than those that are already in service at any point in time. In the container trades, as in tanker and dry-bulk arenas, ocean-going vessels are one link, albeit an important component, within broader supply chains. Unlike most other transport supply chains where the cargo side determines the overall architecture of the chain, the liner companies carrying containers appear to have dictated the critical linkages that make up supply programs. This fundamental dissimilarity has profound implications: the landside infrastructure for handling containerized cargo, rather than leading the charge, will always be playing catch-up. Mega-ships are (depending on your viewpoint) symptomatic of the problem, or – alternatively – part of the logistics solution.

### EXPLOSIVE GROWTH

The July 1998, port calls of the 6,000 TEU Regina Maersk along the U.S. East Coast, set in motion a chain of events that the supply chain is still sorting out – nearly 20 years later. Maersk told the ports that such ships would become the norm. In 2016 and 2017, 18,000 TEU vessels have similarly made the circuit on both coasts. In 2016, an 18,000 TEU vessel, Benjamin Franklin, visited ports along the U.S. West Coast and in late summer 2017, the 18,000 TEU CMA CGM T. Roosevelt visited the East Coast. At the American Association of Port Authorities (AAPA) annual convention, held in early October, Mr. Mark Sisson, Senior Port Planner at engineering behemoth AECOM, told his audience: “The pace of the ship size increase has really caught a lot of folks by surprise, and ports are scrambling to catch up to this day.”

The Panama Canal also got the message, embarking in 2006 on a \$5.5 billion project that would allow vessels of up to 14,000 TEU to transit (contrasted with the previous size constraint of roughly 5,500 TEU). Though only 500 boxes were discharged by the Regina Maersk at New York, port planners there began looking in earnest at deep dredging (in a project that began in 2004), and at raising the air-draft of the 1930’s vintage Bayonne Bridge to 215 feet, in a \$2 billion project that commenced in 2013 and is now complete. Down the East Coast and into the U.S. Gulf, ports have already finished, or are now in the midst of channel deepening projects – typically to 50 feet depths that will allow transits of ships as big as 18,000 TEU.

Upon completion in 2016, the “neo-Panamax” vessels began transiting through Panama – bringing Asian cargo to the East Coast. CMA CGM, owners of the Franklin and Roosevelt, is now set to begin a regular routing of vessels up to 14,000 TEU from Asia to the East Coast.

“We’re thrilled to have CMA CGM T. Roosevelt call at

our port and serve as the celebratory vessel for the raising of the Bayonne Bridge,” Molly Campbell, Port Director at the Port of New York and New Jersey, explained in a prepared statement. “We invested billions of dollars to raise the Bayonne Bridge, deepen harbor channels, install rail facilities at all of our terminals and improve our port road network, with the goal of attracting the world’s biggest ships and cargo to our port and the jobs and economic activity they provide,” she added.

But, harbor development is not restricted to the East Coast. In Southern California, the 10 year channel deepening at the Port of Los Angeles (completed in 2013) saw creation of a passage of 53 feet in depth. A \$1.5 billion bridge replacement for the Desmond Bridge in Long Beach is also underway. When completed in 2018, the larger vessels will be able to enter terminals near downtown.



## BEYOND DEEPER DRAFT

The larger vessels pose challenges for ports, and the landside infrastructures that link them to hinterlands. With economic growth, TEU throughput will continue to grow. At the AAPA confab, Mr. Mario Cordero, the former Chairman at the Federal Maritime Commission (FMC), who recently became Executive Director at the Port of Long Beach, provided some guideposts on anticipated growth. Referring to the San Pedro Bay port complex (Long Beach and Los Angeles), Mr. Cordero pegged 2015 throughput at 15.4 million boxes, and then offered forecasts of 28.3 million and 41 million boxes for 2030 and 2040 respectively. He continued, “Moving forward, we need to focus on efficiencies in the supply chain,” explaining that Los Angeles and Long Beach are working cooperatively on a supply chain optimization project (after gaining FMC approval to do so, in 2015).

Existing infrastructure is stretched. Commenting on the im-

pact of liner alliances, Mr. Cordero said: “Going forward, we may have fewer port calls, but each port call may involve more significantly more container movements within the port terminals.” These comments jibe with results of a recent survey by Navis (part of Cargotec Corporation), a leading provider of Terminal Operating System (TOS) software, where 76% of respondents listed “optimizing operations to improve productivity” as their biggest challenge.

*MLPro* also spoke with FMC Commissioner William Doyle regarding the challenges of mega-ships, and the reverberations down the supply chain. He said, “Ocean carriers are building larger ships and those larger ships are now coming to East and Gulf coast ports as a result of the newly expanded Panama Canal. If you are a port and you want more business, the ocean carriers need the proper infrastructure to be in place. And that means the harbor and channels must be dredged, purchasing

*The CMA CGM T.Roosevelt heads for Port Newark and to the Kill Van Kull before transiting under the newly raised Bayonne Bridge. In the foreground (L to R): FMC Commissioner William Doyle, PANYNJ Port Director Molly Campbell, FMC Commissioner Dan Maffei and Panama Canal Administrator Jorge Quijano.*





**MARIO CORDERO,**  
Port of Long Beach, CA



**MARK SISSON,**  
AECOM



**WILLIAM DOYLE,**  
FMC

## 50,000 TEU Boxships?

In late October, consultants McKinsey & Company issued a report on: **Container shipping: The next 50 years**, which projects a host of developments, including the advent of 50,000 TEU vessels digitally entwined into supply chains. FMC Commissioner William Doyle – himself a licensed and experienced mariner engineer and ship’s officer – offered some strong thoughts on that possibility, saying “As for a 50,000 TEU autonomous ship: We have some of the most modern technology onboard commercial vessels and navy ships right now that includes automated engine rooms, autonomous navigation and radar identification systems for traffic. We still have accidents. Sometimes reliance on technology is not a substitute for a sailor’s hands, eyes and ears.” He continued, “Pumps in the engine room break down and need to be repaired or replaced by humans. Radar systems fail or bridge personnel become so reliant on technology that they lose situational awareness. Watchstanders should still be required to walk out on the bridge wing and take a look around, whether the wing is enclosed or not. And, finally seasoned deck and engine personnel know what equipment should sound like and often accidents can be prevented ahead of time because a piece of equipment just does not sound right.”

of new cranes and/or retrofit existing cranes by placing them on platforms to raise their height and reach, bridges must be raised ... and also building distribution centers off-site, but close enough to the ports.”

AECOM’s Mark Sisson, in the same session following Mr. Cordero, elaborated on how vessel size impacts other links in the chains, telling the AAPA listeners, “... big ships like big terminals and vice versa. If you’re going to try to move 10,000 containers off of a single ship, it helps to have a lot of real estate to manage those containers.” The financial dimension is also impacted. Sisson insists, “It also helps the things like economies of scale of purchasing expensive equipment...and sophisticated operating systems and software. There’s a lot of consolidation – not just on the liner side, but even on the terminal side.”

Where land is scarce and that’s certainly the case in urban U.S. ports on all three coasts, it’s important to move boxes out of the port area as quickly as is possible. And, dwell time for boxes has become even a bigger issue when a mega-ship can discharge thousands in a single port call. Indeed, Mark Sisson says, “The hinterland connection is where a lot of the competition is going on.” Separately, Mr. Cordero highlighted steps taken to prepare for the new dynamics, notably a \$4 billion program to get ready for mega-ships. Inland connectivity, taking the form of increasing rail infrastructure, with the additional benefit of getting trucks out of the port district, was stressed. In Long Beach, he says that the Port Commissioners have established a goal of 50% of boxes moving out through on-dock rail (compared to the present 28%). Such a strategy is intertwined with another emerging strategy; that of inland port/ shuttle trains.

## The lesson of Ultra Large Crude Carriers (ULCCs):

*The crude oil tanker business in the 1970s saw efforts to build massively large vessels, ultra large crude carriers (ULCC). Already ordered prior to the late 1973 oil shock, Asian shipyards built massive ULCCs exceeding 500,000 tons deadweight, providing double the capacity of the standard 2 million barrel capacity VLCCs. But these capacious vessels had numerous technical issues and were never commercially viable as industry-wide overcapacity negated the benefits of economies of scale. Even where water depths were sufficient for these monsters, landside supply chains (think tankage and piping) were overwhelmed in all but a handful of ports. The last ULCCs, four double hulled Tankers International (TI) vessels still operating, were built from 2001 to 2004. Two of them remain in tanker service, while the other two were converted into oil storage vessels (as were the handful of 1970s vintage single hull ships). Prophetically, the four "TI" ships, painted white by their original owner, were known colloquially as the "White Elephants." A possible lesson in 20/20 hindsight.*

### BEYOND THE PORTS

The logistics business, if anything, is not static; with e-commerce retailers now seeking proximity to population centers. Cordero, for his part, emphasized the importance of having warehouses around a port area, closer to consumers, as quick deliveries become a selling point for new age retailers. When asked about this evolving aspect of supply chains, Doyle replied, "It's a distribution center construction bonanza throughout the I-78 and I-81 corridors extending from the Port of NY and NJ through the Lehigh Valley, into central Pennsylvania and south into Baltimore Maryland on I-83. These areas can be serviced relatively quickly by the Ports of Philadelphia and Baltimore as well as NY/NJ." But he pointed out that business practices would need to evolve to support this new model, telling MLPro, "Remember, in order to run more shifts at the ports in the Mid-Atlantic and Northeast, the Distribution Centers would need to be open for additional shifts as well to receive the containers. And, this point is a serious discussion point."

Another part of efficiencies at all ports is quick container pickup, with Mr. Cordero, speaking at the AAPA event, emphasizing Long Beach's goal of having "uniform appointment systems" at terminals throughout the port. Efficient uses of chassis are a big part of that equation. In Long Beach, which has had a 'pool of pools' since 2015, port officials are now looking towards a 'gray pool,' one managed by a neutral entity, to keep cargo moving. Improved data capability (with increased transparency) is a key component of any supply chain optimization, and Mr. Cordero discussed ongoing ef-

forts underway. He hinted at upcoming news regarding cooperation with Los Angeles, in a container data portal project spearheaded by GE Transportation Systems.

Though vessel technology was not subject at the AAPA meetings, Commissioner Doyle noted a group of issues concerning the mega-ships themselves, amidst an uncertain environment concerning pricing and availability of fuels going forward. He explains, "MARPOL ANNEX VI, is a topic of discussion because of the sulfur caps that must be adhered to globally come 2020 ... more and more of the top-10 ocean carriers are announcing plans to build new ships with dual-fuel technology with low sulfur diesel/LNG engines. United Arab Shipping (Hapag-Lloyd), Mitsui and CMA CGM are companies that have committed to build or are considering the technology."

Mega-ships are still a work in progress. The revolution in efficient transportation that began in the late 1950's is powering onwards. But just because the yards can build vessels of 21,000 TEU capacity (and larger) such as the recently delivered OOCL Hong Kong, the ocean going vessel link must be fitted into a twisting supply chain of enormous complexity. This process is not without numerous fits and starts, as port planners in the States, and elsewhere, have experienced.

#### The Author



#### Barry Parker

of bdp1 Consulting Ltd provides strategic and tactical support, including analytics and communications, to businesses across the maritime spectrum. The company can be found online at [www.conconnect.com](http://www.conconnect.com)

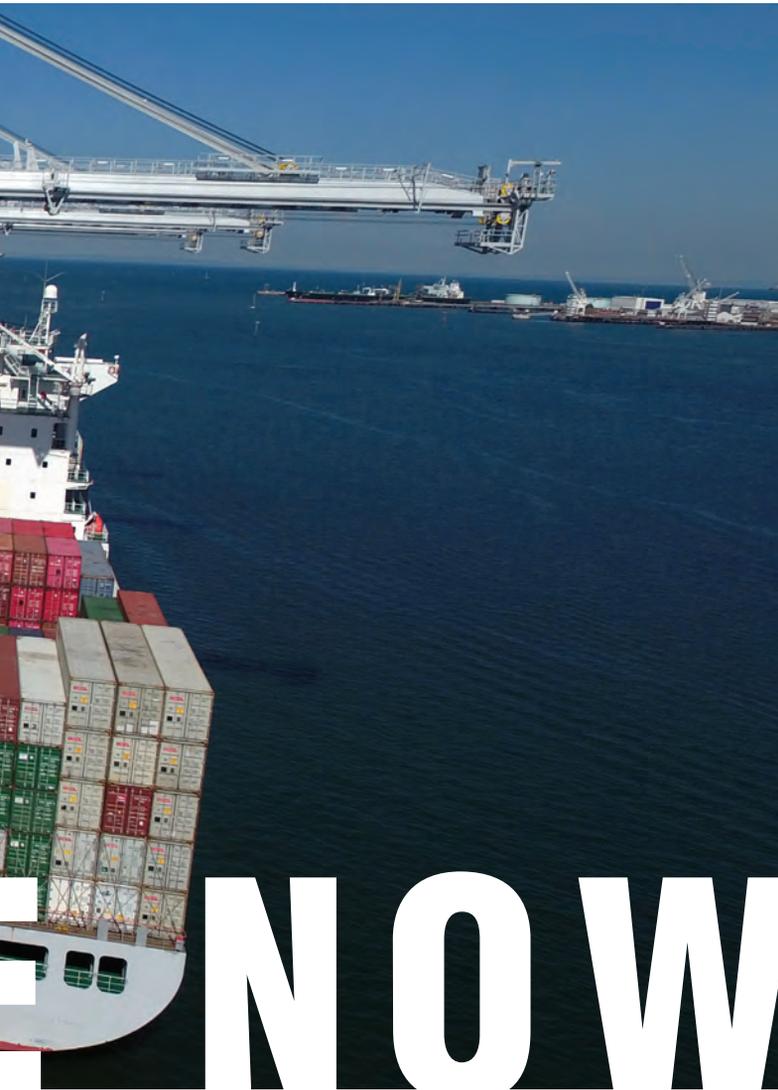


*Kalmar and Navis Enable ICTSI to Complete the World's First Fully Automated Terminal.*

**By Joseph Keefe**

**K**almar and Navis recently announced the delivery of the first OneTerminal automation solution to International Container Terminal Services Incorporated (ICTSI) at the Port of Melbourne, Australia. That news brings to the commercial waterfront changes that can and will impact logistics, how the supply chain utilizes human resources, and additionally brings economies of scale to the global waterfront. But, first, the container shipping industry needs to wrap its arms around what it is that an 'automated terminal' entails.

According to Oscar Pernia, VP, Terminal Operational Innovation at Navis, within this solution, all of the container movements in the terminal are automated and remote controlled, from the moment when the container arrives at the terminal all the way to the point where the container is placed onboard a vessel and vice-versa. Pernia continues, "Since signing the contract in August 2014, Kalmar, Navis and VICT teams have worked hard to complete the project ahead of schedule and to the full satisfaction of the customer."



Kalmar's Project Director, Jyri Saarijoki laid out the timeline, saying, "The initial contract between VICT and Kalmar was signed in August 2014 and the end-to-end live equipment testing started in September 2016. Kalmar, Navis and VICT worked closely together during this time so this great result was achieved as a team effort." In just two years, the world's first fully automated container terminal came to life. Pre-integration played a significant role in completing the project ahead of schedule, allowing the team to make necessary adjustments to the system early in the process to ensure a smooth operation down the line.

Many portions of the system have been successfully implemented elsewhere, such as Trapac, DP World London Gateway and DP World Brisbane to name a few, however the VICT terminal in Melbourne is the first instance of implementing the Kalmar OneTerminal approach, with fully automated con-

tainer handling operations.

In a nutshell, Kalmar OneTerminal provides an integrated automation solution, delivered by one team, bringing together Kalmar and Navis software systems, equipment and services for a seamless deployment. In this case, the deployment was completed ahead of schedule, making Victoria International Container Terminal (VICT) the world's first fully automated international container handling facility. Kalmar, is a part of Cargotec, and Navis, is part of the Kalmar Business Area within Cargotec. As one, they may have changed the box handling business forever.

### The Future of Box Terminals: here today

Melbourne's newest container terminal, VICT is located north of Port Phillip Bay at the mouth of the Yarra River in the Port of Melbourne's Webb Dock East. The 35-hectare terminal has an annual capacity of one million plus twenty-foot equivalent units (TEU), and an additional 400,000 TEUs on full build. VICT has a straight berth of 660 meters, which can accommodate two large vessels with capacities of up to 8,000-12,500 TEUs at once.

"VICT was designed, and is now equipped, to be fully automated, making it the most advanced container terminal in the world," said Christian Gonzalez, VICT Chairman and SVP of ICTSI's Asia Pacific Region," adding, "We chose Kalmar's cutting-edge technology and equipment and Navis' software and it is enabling us to reach the highest standards of port safety. The project was completed on budget and ahead of schedule. This has never been achieved in the port industry for a fully automated terminal. It is especially noteworthy when considering the unprecedented complexity of the civil works requirements, along with the level of pioneering automation governing the design."

The equipment that accompanies the new system is equally impressive. Kalmar's OneTerminal deployment at VICT includes the Kalmar Automatic Stacking Crane (ASC) system with 20 ASCs, 11 Kalmar AutoShuttles, Kalmar Automated Truck Handling (ATH), Kalmar Terminal Logistics System (TLS) and the Navis N4 Terminal System. Additionally, Kalmar provided a range of project services required to deploy and support the solution.

### Automation Defined

At VICT, containers are picked up and placed automatically to and from trucks, in the container stacks in the yard as well as in the waterside apron. Semi-automated/automated supervised quay crane operation handles the loading and discharge of the vessels. In addition, information flows, bookings, planning and yard equipment controls represent the state-of-the-art automation.



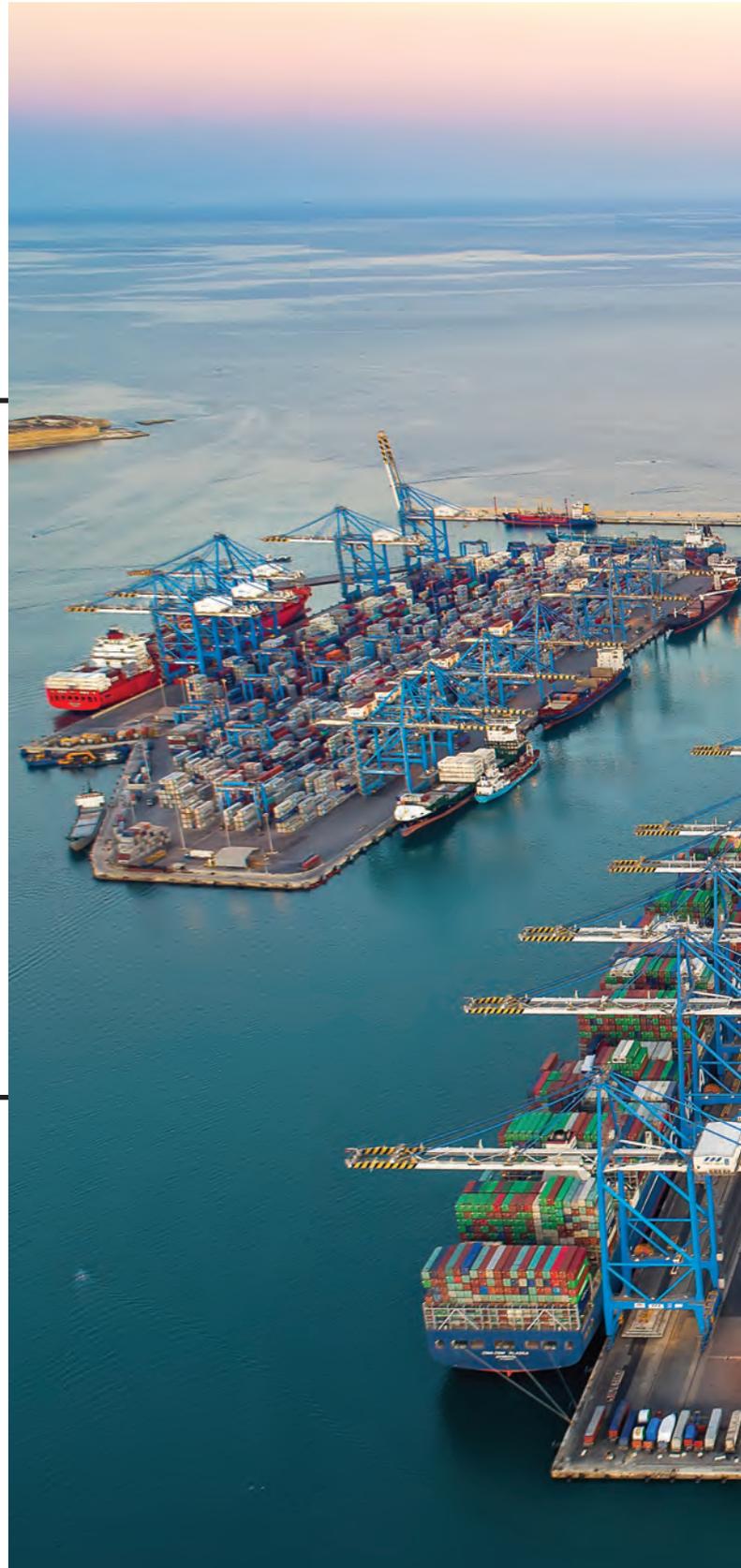
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*Development on OneTerminal began back in 2013, when we initiated a technology integration program, and the concept for the industry's first integrated offering for automated terminals was launched in June 2015 at TOC Europe 2015. Since then, we have continued to develop our automation offering through a collaborative effort. The most recent addition to our joint offering is the OneTerminal software pre-integration product that we started to develop last year. VICT was the first customer who has benefited from this software pre-integration, and it contributed significantly to the fast delivery time of the deployment project.”*

**— Jyri Saarijoki, Kalmar's Project Director**

Beyond equipment automation, processes such as container identification, twistlock-handling and landside operations are completely automatic, combining VICT's truck appointment system, automatic gate and fully automated truck handling at yard transfer areas. From the perspective of the terminal operating system (N4), different components and interfaces help combine and unify the terminal 'package,' providing operational performance and business continuity as a result.

Within the terminal, the automated container handlers 'talk' to the system, communication is effected using a combination of wireless and optical fiber networks, where both work in unison. Oscar Pernia explains, "The integration and interaction between different software applications is key. For automated terminals, the value is not in a single platform, but





rather the ability for multiple systems to work together seamlessly. Combined, the TOS and ECS are the ‘spinal cord’ and core foundation of automation, with other software modules connected to them. The interaction between them, and its support to operational processes, is conceived jointly between two companies who had to align development and testing processes. The result is a truly integrated solution.”

The project was, in truth a marriage of software and equipment to produce a turnkey solution. But, the cooperation between Navis and Kalmar as individual companies started many years ago. Kalmar’s Project Director, Jyri Saarijoki, explained the relationship, saying, “Cargotec acquired Navis in 2011, and the synergy potential was of course acknowledged before the acquisition. Development on OneTerminal began back in 2013, when we initiated a technology integration program, and the concept for the industry’s first integrated offering for automated terminals was launched in June 2015 at TOC Europe 2015. Since then, we have continued to develop our automation offering through a collaborative effort. The most recent addition to our joint offering is the OneTerminal software pre-integration product that we started to develop last year. VICT was the first customer who has benefited from this software pre-integration, and it contributed significantly to the fast delivery time of the deployment project.”

### Future Economies: Labor & Safety

It is a little early to determine what the Project’s ultimate savings will be, but both Navis and Kalmar are studying the matter closely. According to Kalmar, the firm follows a simpli-

fied P&L comparison (since 2015) to illustrate the differences in cost elements and overall profitability development between manual and automated terminals. Still, this data is based on Kalmar’s own estimation in a typical automated terminal and it does not (yet) reflect any data gathered from VICT.

Navis’ Pernia is nevertheless confident that the project will yield long term savings. “The value of automation in terms of operational performance and business continuity will bring more value in the areas of cost-per-move and revenue-per-move. As VICT manages more volumes and becomes connected to more carriers, the economies of scale that will be generated will open new opportunities for efficiency and savings.”

Efficiencies are important. At the same time, safety was another primary driver in the decision to select this integrated and automated solution. Automation helps improve port safety by physically separating people from automated areas and thus reduces the possibilities of accidents. Instead of having people in the machines or moving about near the equipment, the workers are housed in a control room overseeing the operations. As the number of workers involved in the physical act of moving containers and operating heavy equipment is reduced, the number of accidents reduces significantly. In fact, existing automated terminals have recorded significant reductions in the lost time injury index.

### High Tech Nuts & Bolts

Kalmar OneTerminal provides an integrated automation solution, delivered by one team, bringing together Kalmar and Navis software systems, equipment and services for a seam-

### *Cost saving example in a typical automated terminal*

#### Indexed P&L manual terminal\*

Revenue	100
Labour Cost	40
Maintenance	8
Power & Fuel	4
IT	2
Depreciation	10
Other Costs (land, overhead)	18
Total costs	82
Profit	18

#### When converted into an automated operation:

>>> 60% less Labour Costs	16
>>> 20% less Maintenance	6.5
>>> 25% less Power & Fuel	3
>>> 50% higher IT	3
>>> 30% higher Depreciation	13
>>> Assuming same overheads	18
>>> 27% less costs	59.5
>>> 125% profit increase	40.5

Additionally, improved safety reduces number of lost working hours, equipment damage costs and insurance premiums



”

*The value of automation in terms of operational performance and business continuity will bring more value in the areas of cost-per-move and revenue-per-move. As VICT manages more volumes and becomes connected to more carriers, the economies of scale that will be generated will open new opportunities for efficiency and savings.*

— Oscar Perni,  
VP Terminal Operational Innovation at Navis



Credit: VICT

less deployment. For VICT, the integrated solution consists of the Navis N4 Terminal Operating System, Kalmar TLS Terminal Logistics System, coupled with one of three terminal concepts: ASC, Auto-RTG or AutoStrad terminal.

At VICT the deployment included the Kalmar Automatic Stacking Crane (ASC) system with 20 ASCs, 11 Kalmar AutoShuttles, Kalmar Automated Truck Handling (ATH), Kalmar Terminal Logistics System (TLS) and the Navis N4 Terminal System. Additionally, Kalmar provided a range of project services required to deploy and support the solution.

On the ground, Kalmar's TLS equipment control system ensures that the automated equipment and Navis N4 terminal operating system (TOS) work in harmony, conducting the right sequence while accommodating the exceptions that are typical

in terminal operations. And, Kalmar TLS is able to interface with any type of system, thus integrating the automated equipment, process automation solutions and access control, safety and fault monitoring systems together.

It is also worth talking about the environmental footprint of the Kalmar hardware. At VICT, the deployment included fully electric Kalmar Automatic Stacking Crane (ASC) systems and 11 diesel-electric AutoShuttles.

### OneTerminal: Beyond VICT

VICT was arguably the ideal place to test the OneTerminal concept. That said; Kalmar's OneTerminal can be configured as an optimal solution for larger facilities. For smaller terminals, depending on the lay-out, equipment and software details,

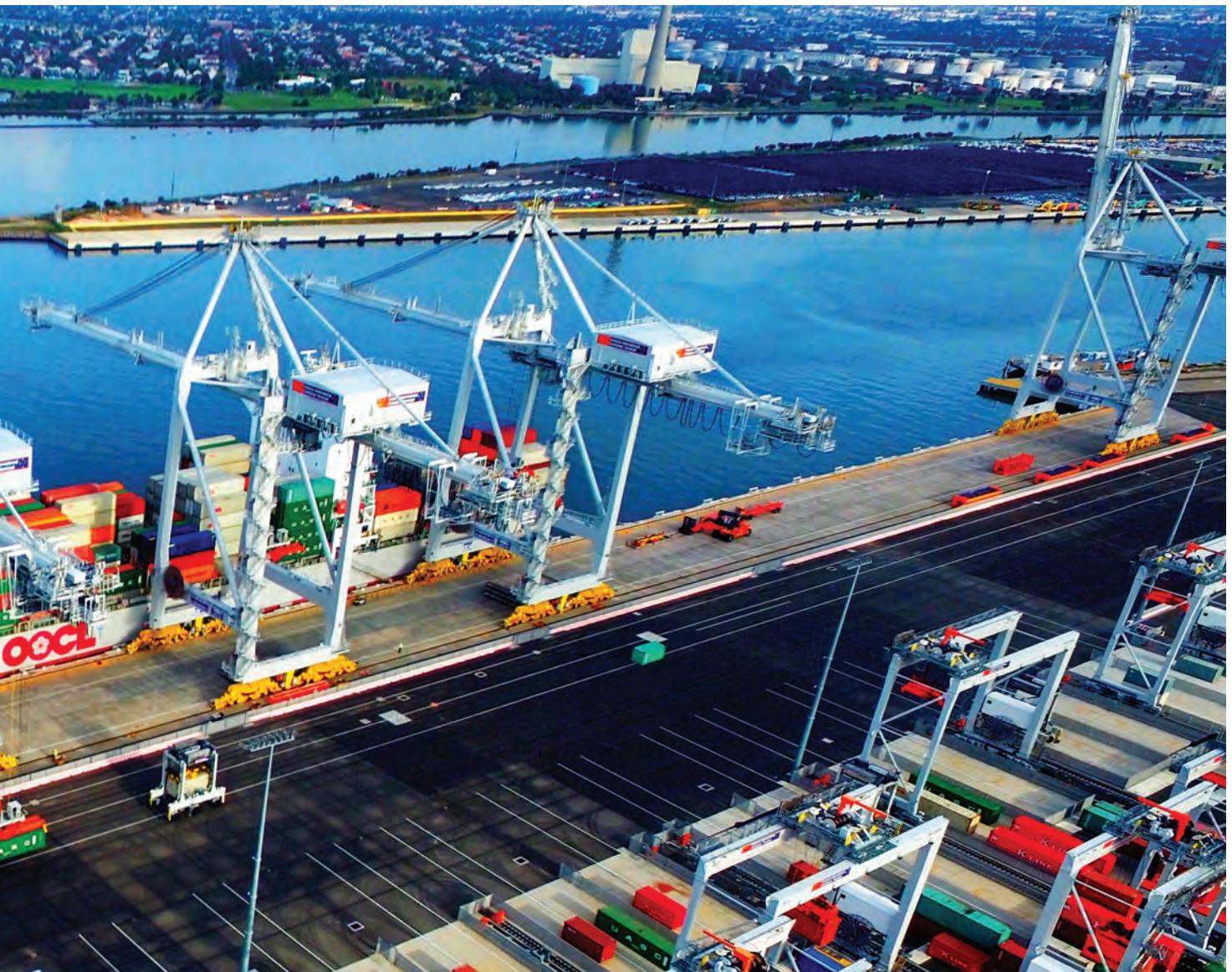


the system is also worth a look. That's because smaller ports and terminals that lack the wherewithal to staff an in-house technical crew can also depend on Kalmar to provide a range of project services required to deploy and support the solution. Kalmar provided professional services to support VICT through the testing for after-hours, variations to the scope, training on-the-job, productivity as well as optimization of the system. Beyond this, Kalmar Services furnished VICT with preventive maintenance and service of the equipment.

Looking still further ahead and afield, other terminal operators and ports will be watching the VICT case study closely for clues about what they can also do to add efficiencies to their own operations. For example, and as U.S. and North American ports struggle to cope with the reality of 20,000 TEU box-

ships, a dozen variables come into play as those megaships come and go. Leveraging the Navis N4 Terminal Operating System to organize an adequate and properly deployed chassis pool and other previously stovepiped data into one smoothly running operation will be an attractive reason by itself for terminal operators to make a move towards the future.

In North America – and on the U.S. West Coast in particular – the removal of still more labor from the waterfront will pay dividends in not only a safer, less expensive and more efficient operation, but also one that is less exposed to work stoppages and slowdowns that have plagued the intermodal supply chain here for decades. Terminal operators and shippers alike have been looking for that kind of integrated solution for a long time. Looking for the container handling solution of the future? It's here now.



# The Turnkey Supply Chain of Cranes



Cranes are much more than just critical equipment. At ZPMC, it means the supply chain itself.

By Joseph Keefe

In post-Panamax world – *that is to say one which includes an expanded, deepened and improved Panama Canal* – there are many layers to the logistics onion. These include reinforced and improved berths and bollards, deepened blue water harbors, improved intermodal connections ashore and a re-shuffling of ever larger tonnage for ports that can handle those ships. All of that is important, of course, but it is the post-Panamax sized cranes which may be the hottest commodity on the water as the race for the cargo reaches full speed.

How those cranes are sourced and acquired may surprise

you. It turns out that the global crane business is very much a ‘turnkey’ operation. The firms that embrace that idea today find themselves in a very good spot as today’s market moves forward to realize what the Panama Canal promised when its operators announced that they would expand what is arguably the world’s key global supply route. One such firm, Shanghai Zhenhua Heavy Industry Co., Ltd. (ZPMC), a global heavy-duty equipment manufacturer listed on the Shanghai Stock Exchange, has arguably perfected the art of the container crane supply chain.

## MEET ZPMC

ZPMC is the world's largest heavy-duty equipment manufacturer and owns 22 heavylift ships ranging in capacity from 60,000 DWT to 100,000 DWT, delivering products all over the world. ZPMC North America is the operating company for North America, and ZPMC Crane Services is its North American service subsidiary. The firm boasts annual revenues of \$5 billion and employs more than 30,000 personnel. With eight factories in the Shanghai area, the firm claims a 70% global market share of the STS Crane market. What is particularly noteworthy is that when ZPMC sells a crane, the sale typically (but not always) involves the manufacture of that crane, its transport from point A to point B, the dismantling and/or removal of the old crane and the in situ delivery of the new one. All that, and the logistics piece, as well.

According to Jeff Rosenberg, ZPMC Crane Service's Jeff Rosenberg, VP, Sales & Marketing, the firm delivered more than 200 STS cranes last year alone. Here, as is the case overseas, his firm has captured over 70% of the North American Market. And, says Rosenberg, it is very much a conscious decision to create a business model that in reality does it all when it comes to box cranes. "This service business is modeled after a very successful contracting company which did all this work, East Coast Cranes. ECC was purchased by Kalmar in 2006. This team is the same team."

## THE SUPPLY CHAIN OF CRANES

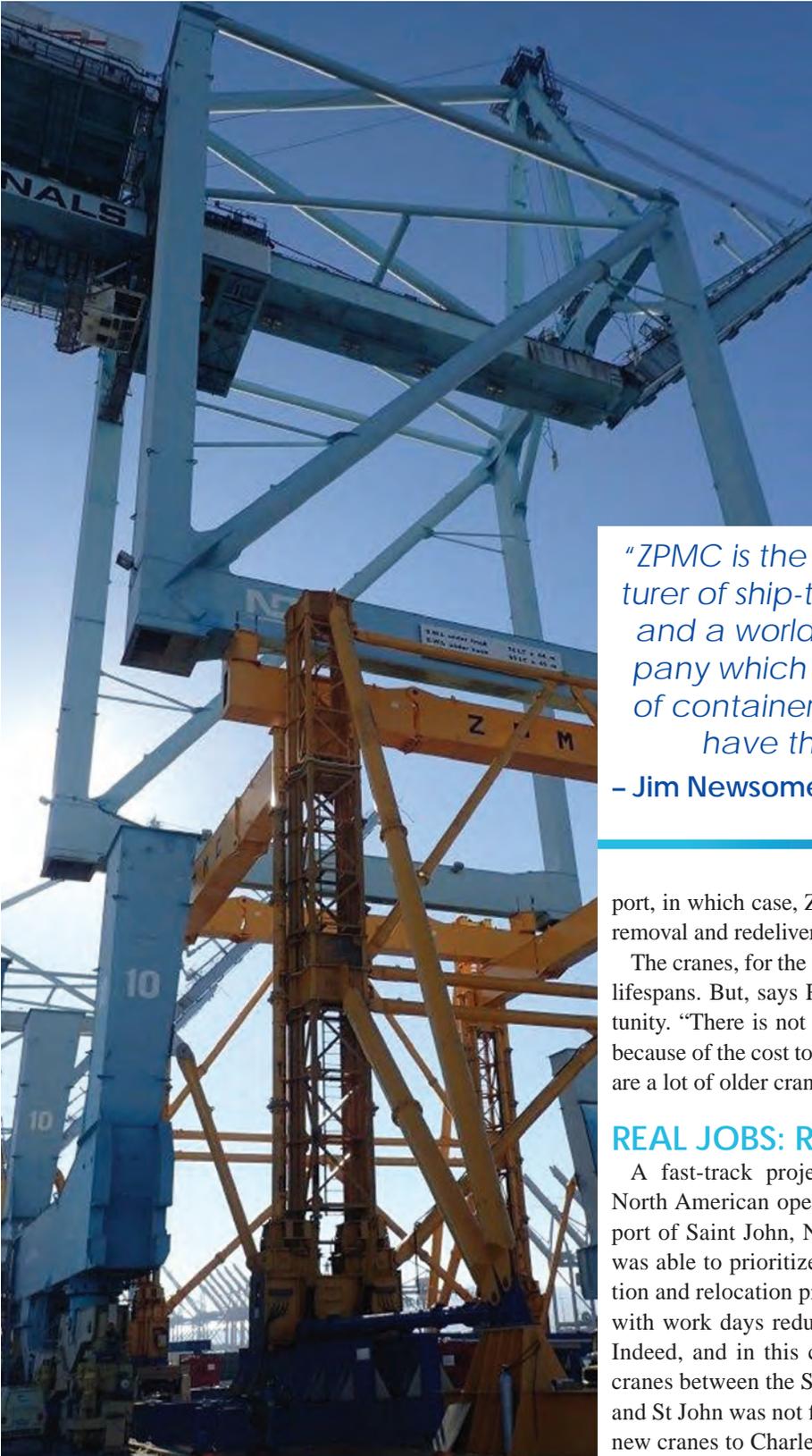
When Rosenberg says that his firm 'does it all,' he literally means 'everything.' One recent assignment involved the delivery of two new STS Cranes to the port of Charleston, SC followed by the loading of two older, smaller cranes at the same berth and then transporting the used units to St John, New Brunswick.

Rosenberg explains further, "I don't know of anyone else who handles it all. There are contractors that do the lifting, moving, etc., but none of the other OEM's has service companies with our capabilities."

For those contemplating the purchase of a new crane, Rosenberg says the typical turnaround time of a large post-Panamax crane order – from contract signing to delivery – can range from 12 to 18 months. And, the market has been booming. All during the construction of the Panama Canal, ports and terminals everywhere have been preparing to handle bigger ships. This means new cranes, raising existing cranes, dredging, and wharf improvements; all in the hope they will attract new business from the Panama Canal expansion.

No two assignments are exactly alike. A port might choose to have ZPMC demolish and remove an existing crane and then dispose of the scrap. Rosenberg adds, "The scrap value is factored into the demo price." Or, a port or terminal might get lucky and be able to sell its older, smaller crane(s) to another

Recent North American ZPMC Orders at a Glance ...	Port / Location	Type Crane	Number
	Gulfport, MS	Post-Panamax	3
	Port Tampa, FL	Post-Panamax	2
	Jaxport, FL	Post-Panamax	3
	Charleston, SC	Post-Panamax	2
	Houston, TX	STS Cranes	3
	Mobile, AL	STS Cranes	2
	Philadelphia, PA	STS Cranes	2
	Charleston, SC	"Crane Raises"	5
	Elizabeth, NJ	STS Cranes	4



*"ZPMC is the world's largest manufacturer of ship-to-shore container cranes and a world class engineering company which has enabled the growth of containerization. We are proud to have them as our partner."*

**– Jim Newsome, SCSPA's President and CEO**

port, in which case, ZPMC might also be tasked with its safe removal and redelivery.

The cranes, for the most part, are quite robust and have long lifespans. But, says Rosenberg, it is usually a sale of opportunity. "There is not a great demand for used cranes, mostly because of the cost to transport them," he said, adding, "There are a lot of older cranes available for sale."

### REAL JOBS: REAL RESULTS

A fast-track project by ZPMC Crane Services helped North American operations for DP World this month at the port of Saint John, New Brunswick. ZPMC Crane Services was able to prioritize and complete an STS crane modification and relocation project with an extremely short deadline, with work days reduced even more by Hurricane Matthew. Indeed, and in this case, the agreement for the sale of the cranes between the South Carolina Ports Authority (SCSPA) and St John was not finalized until ZPMC was delivering the new cranes to Charleston.

“The idea to use our ship to move these cranes was presented, and a contract was negotiated and signed. Things moved very quickly as the ship was now waiting for the cranes which had about 3-4 weeks’ worth of preparation before being ready to load on the ship. During this time Hurricane Matthew hit the east coast and shut down operations for over a week. Finally, with prep work completed, the cranes loaded, transported, and unloaded, we received an e-mail from DP World last week with a picture of both cranes working a ship for the first time.” This assignment was truly the ultimate ‘turnkey job,’ attempted and completed under sometimes trying circumstances.

ZPMC’s heavylift vessel Zhen Hua 14 stood by in Charleston for the preparation work to be completed as a 30-man ZPMC crew jacked up the cranes and performed the alterations. But on October 7, five weeks into the project, the vessel was ordered out to sea to take it out of the path of Hurricane Matthew. The project was idled for 10 days until the ship could return. Eventually, the vessel made the six-day trip to New Brunswick, and offloaded the first crane on November 1. Notably, ZPMC offloaded the first crane on a rising tide in 35 minutes using the ship’s specialized gear. The second crane was unloaded in just 28 minutes.

Before all of that could happen, however, the delivery of SCPA’s two super post-Panamax cranes marked a significant milestone in the Port’s big ship readiness. This is to be followed in the coming years by the completion of the Wando Welch wharf project and harbor deepening to 52 feet. The ZPMC-manufactured cranes now provide SCPA with 155 feet of lift height from the dock to enable SCPA to work larger container cargo ships. Last month the SCPA Board of Directors approved the purchase of two additional cranes of this size for delivery at the end of 2017, coinciding with the completion of the wharf project. The deal represents still more repeat business for ZPMC.

For his part, Jim Newsome, SCPA’s President and CEO was effusive in his praise of the ZPMC team. “ZPMC is the world’s largest manufacturer of ship-to-shore container cranes and a world class engineering company which has enabled the growth of containerization. We are proud to have them as our partner.” And it wasn’t too long after the cranes were delivered and began working that SCPA reported its strongest November container volumes on record. Fiscal year-to-date pier container volume at the port is up 4 percent, with 487,924 boxes moved at its North Charleston and Wando Welch container terminals.

The arrival of new cranes, especially post-Panamax units is typically a joyous event at most ports. SCPA was no different and in a concerted outreach to the local community designed,

in part, to raise the port’s exposure to the general public, two Charleston elementary students earned \$500 from SCPA for their school, thanks to their winning entries in a Port contest to name cranes at the Wando Welch Terminal. A team of SCPA employees selected two entries, which have been painted onto the cranes. Cranebob Bluepants and Heavy Metal were the winning entries.

Elsewhere, the tallest port crane in North America was recently raised to that height by ZPMC, which raised the crane 33 feet (10.08 meters) to prepare for Ultra-Large Container Vessels calling at APM Terminal’s Pier 400. In a landmark project that kicked off July 1, 2016, ZPMC is upgrading 10 cranes for APM Pier 400 Terminal. When complete, the cranes will be able to service ships carrying up to 20,000 twenty-foot equivalent containers (TEUs). Prior to this crane raise, the largest vessels that could be serviced at the Port of Los Angeles were 13,000 TEUs. The scope of work also includes installing a new energy-efficient LED lighting system, forestry repairs, and repositioning of all 10 cranes.

## LOOKING AHEAD: NEW TOYS, BETTER SERVICE

As good as its performance has been over the course of the past 12 months, ZPMC is always looking to improve its service signature. That effort includes making sure its crews have the best equipment available to speed the jobs along even faster. To that end, ZPMC Crane Services recently acquired a second specially designed jacking system that offers a significant speed advantage during a crane raise. Because the jacking system is built on the dock rather than the crane’s sill beam, it does not need to be disassembled between cranes. A completed crane can be moved out of the way leaving 90 percent of the structure intact. This approach can speed up the process by as much as a week for each crane. Beyond this, the firm also purchased 16 new Self-Propelled Modular Transporter (SPMT) trailers for current and future work.

It is these kinds of decisions – and others like them – that dominate the ZPMC business strategy. In turn it continues to dominate that markets that it serves. That’s because STS cranes aren’t just necessary equipment anymore. In fact, the process of acquiring or shedding one is a carefully planned event – in and of itself a supply chain; all its own. The success or failure of that kind of operation can be the ‘make or break’ for any port or terminal in the fast moving world of bigger ships, demanding shipping alliances and deeper channels. No one wants to get left behind is the unbelievably competitive quest to get, keep and grow TEU market share. For its part, ZPMC makes sure that doesn’t happen, all in one neatly packaged turnkey operation.

# Secure Wireless Communications Streamlines and Protects Modern Box Terminals

*Having access to mission-critical information helps port officials, inspectors, employees and tenants perform their tasks more productively as they move around the seaport. Rajant's wireless solution delivers military grade comms to vulnerable supply chains – just in time.*

By Joseph Keefe

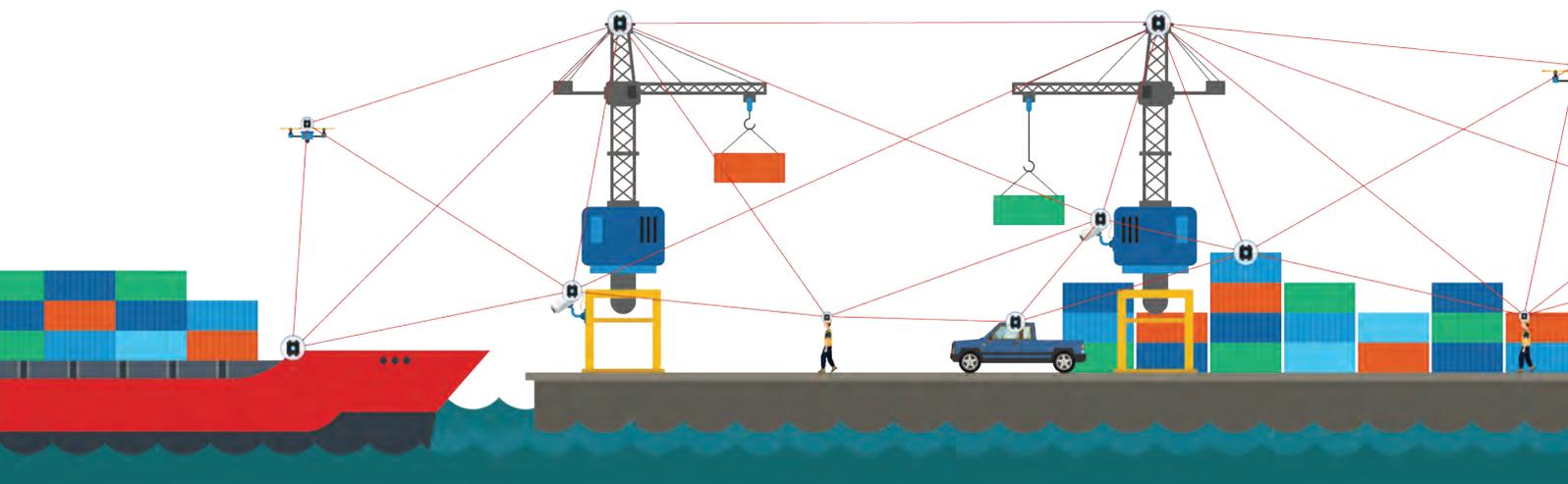
If anyone still doubts the critical importance of dependable, secure and robust terminal communications within today's modern container terminal, then the news that the world's first fully automated container terminal in Melbourne, Australia is up and running should give those contrarians some serious pause. Kalmar and Navis – both part of the Cargotec group – recently delivered a turnkey automation solution to International Container Terminal Services Incorporated (ICTSI) at the Port of Melbourne, Australia. Unspoken in all of that is the need to securely communicate with all that remotely operated equipment, in real time and with absolute reliability in a 24/7 mode.

Todd Rigby, Director of Sales at Rajant Corporation, says that the answer is quite simple, field proven in the toughest of conditions and ready now to meet the needs of tomorrow's global supply chain. Getting the waterfront to wrap its arms around the futuristic, cutting edge communications solution will, however, be another thing altogether. When that happens, the route to automated and highly efficient terminals will have become much shorter.

## Industrial Wireless Comms 101

Rajant is a technology company with a focus on delivering wireless network solutions that address the challenges of modern day Wi-Fi. The Philadelphia-based Rajant team implements wireless network infrastructures that deliver reliable, scalable and secure communications in industrial settings, while delivering on the promises of today's IIoT.

Incorporated in 2003, Rajant's Kinetic Mesh networks are made up of intelligent nodes called BreadCrumbs which are powered by its proprietary InstaMesh protocol. These networks have been successfully deployed across the globe and offer customers sustainable investments that change the way



they deliver voice, video and data, while bringing real-time data to streamline operations and positively impact decision making. Todd Rigby sums it up by explaining, “Rajant’s specialty is providing mission-critical communications to the many industrial verticals that provide critical services.” That sounds like something the waterfront – particularly today’s rapidly changing box terminals – are thirsting for.

### On the Waterfront

Many ports struggle with connectivity issues. Not enough bandwidth, frequent outages, not enough range and little to no security. That’s because traditional Wi-Fi mesh networks simply aren’t built to work, let alone thrive, in mobile, dynamic environments, like ports. These networks use a “break-before-make” or “make-before-break” paradigm of connectivity. *Here’s what that means:*

Mobile nodes are constrained by only having a single connection at any given time, via a single frequency. As these assets move, they continually break and re-establish connectivity as they travel between access points. This is a significant problem; you would never consider disconnecting your computer or tablet from the network during a save or transmission event. So why should it be considered acceptable to have a port asset like a forklift lose connectivity? Lost containers have a huge impact on a port’s ability to track location and movement of containers.

A far bigger problem is the loss of connectivity of an autonomous crane or straddler. That causes an immediate shutdown of the equipment and can lead to tens of thousands of dollars an hour in lost production. And, there’s no point in having a completely autonomous terminal if the remote assets can’t talk to the central control apparatus.

Beyond this, Wi-Fi networks have limited routes, competitive mesh assess routes based only on RSSI (Received Signal Strength Indication), not accounting for other significant factors like interference, congestion and transmission speed. Rajant’s Kinetic Mesh network, on the other hand, aims to allow port operators to not only enjoy continuous connectivity, but also have a self-healing network, capable of autonomous adaptability to route data along the fastest path, load balance, promote improved throughput, and have virtually unlimited scalability.

The numerous workers, ships, containers, equipment and vehicles roaming this complex environment must be properly orchestrated to ensure the speedy flow of goods – and none of this happens without a reliable communications network. Rigby adds, “Unfortunately, many ports are still limited by outdated, disparate networks that restrict expansion and make the scale and mobility needed to create a truly connected ‘Port of Things’ feel out of reach. This is compounded by the fact that ports are vital hubs of international trade, and therefore key targets of both physical and cyberattacks. As greater amounts of mission-critical information traverse the network, redundancy (to mitigate communications downtime) and data security (to protect against advanced hacker threats) become even more essential.”

Having access to mission-critical information helps port officials, inspectors, employees and tenants perform their tasks more productively as they move around the seaport – but there are many challenges affecting current networks, including:

- **Wi-Fi is a networking protocol:** The protocol standards determine the operation of the network. Wi-Fi clients can only have one connection at a time, and they have to break that connection before they



make a new connection. Loss of connectivity is never a good thing. Having a network in a mission-critical environment with planned losses of connectivity when the network is operating “normally” should be unacceptable.

- **Inconsistent throughput:** The two primary causes of this are client density (the number of client devices connected to an AP) and mobility. These problems are both inherent in the Wi-Fi protocol. Access Points have to divide their bandwidth equally between clients. More clients mean less bandwidth/lower throughput per client. When a client only has a single connection to a network, it is subject to variability of signal. Throughput is directly correlated to signal quality. As Wi-Fi clients move away from an AP, signal degrades and throughput decreases. A little-known fact is an AP cannot transmit data faster than its weakest client connection. It may seem obvious that a client with a weak connection has reduced throughput, but the effects are much further-reaching. In this scenario, every client attached to a common AP suffers reduced throughput. In a port environment, you can almost guarantee at least one client will have poor signal strength at any given time. This translates to a network that can never achieve optimum performance during normal operations.

- **Large volume of container movement affects topology:** Wireless networks are designed specifically to address the topography of the area to be covered. An enormous volume of containers is constantly moving from ship to shore and from shore to ship. As an example, in 2016, the Port of Los Angeles recorded 877,564 twenty-foot equivalent units (TEUs) flowing through its port in one month. Container movement can create additional interference and restrict signal range for many competitive wireless communication systems because radio frequency (RF) waves cannot penetrate the metal containers, thus disrupting data flow. Because of Rajant’s multiple connections, it has the ability to adapt to rapid changes in topology.
- **Security:** The sheer volume of containers moving in and out of ports presents a security risk. Terrorists know that striking a port facility can significantly impair a nation’s economy, and criminals view containers as inviting targets for theft or smuggling. The recent announcement of the Wi-Fi encryption standard WPA2, long thought of as impenetrable by hackers, now has a vulnerability called KRACK. Rajant’s InstaMesh protocol is proprietary. Multiple military-grade encryption standards can be employed to protect your data. KRACK does not affect Rajant networks.

“ *There are a number of viable use cases for using drones in a port environment. A drone can be used to act as part of the network infrastructure, or it could be used for observation of operations or security by streaming real-time 4k video directly to a site’s video management server. Many ports are exploring the use of drones to enhance and improve situational awareness with the objective of improving port-wide operational and personnel safety.* ”

– *Todd Rigby, Director of Sales at Rajant Corporation*



- **Harsh coastal environments:** Weather and temperature extremes are common to seaport environments, and they can wreak havoc on wired and some wireless systems. Most manufacturers do not offer industrial-grade equipment. Rajant BreadCrumb enclosures are made from billet aluminum and are designed to meet IP67 (dust proof/water proof).

### Rajant's Solution

Rajant's Kinetic Mesh private wireless network gives ports the ability to rapidly deploy the fully mobile, highly adaptable, and secure connectivity they require, powering a network that works autonomously to deliver robust applications in real time. Kinetic Mesh enables this by giving operators the ability to transform virtually any asset, fixed or moving, into network infrastructure. Deploying Rajant's ruggedized, multi-radio BreadCrumb nodes, equipped with InstaMesh networking software, directly on the asset – be it a vehicle, quay crane, material handling equipment, surveillance camera, or drone – essentially turns that asset into a network node.

In practical terms, each transceiver in each BreadCrumb maintains multiple redundant connections. New connections are formed without having to drop a connection. All connections are live. Each node manages its own routings by evaluating things like transmission speed, signal-to-noise ratio, signal strength, retries and throughput. Routing decisions are made on

a packet-by-packet basis. Connections are made and rated between 50 to 200 times per second. Instead of each BreadCrumb only communicating with centralized access points, they are all able to share information back and forth in a highly interconnected web of communications.

Rajant's patented peer-to-peer InstaMesh technology performs real-time evaluation of network links to direct traffic via the fastest pathways between any wired, wireless, or in-motion points. A completely distributed Layer 2 protocol eliminates controller node or single point of failure. The network instantaneously redirects traffic via the next best available link if any one path is compromised or obstructed, creating a fully redundant, self-healing network.

### Military Grade / NSA-Certified

All military communication products that are entrusted to process classified data are required to have undergone NSA certification processes prior to being used in the field. The NSA certification process is extensive, requiring products to meet the most stringent of security requirements. The certification process also requires continuous review, documentation, and inspection stages to ensure that all requirements are met. According to Rigby, this is particularly important. "The NSA certification process typically takes well over a year and requires engineers that are knowledgeable of this process to successfully receive NSA certification. Rajant was the first network

### Rajant-xCraft x2i drone



company in the world to be certified on the NSA's most recent encryption standard. This is important to our commercial customers because it speaks to Rajant's knowledge and experience in protecting sensitive data."

In today's increasingly technical marine container terminals, having a product that works isn't good enough, anymore – especially in the wake of the Maersk hacking debacle (and other high profile events). Security for wireless connections is therefore paramount. Born from military applications, Rajant's network offers robust security capabilities, including:

- *Multiple cryptographic options*
- *Configurable data and MAC address encryption*
- *Configurable per-hop, per-packet authentication between BreadCrumbs*
- *Layer-2 and Layer-3 client/server and peer-to-peer security solutions compatibility*

As a bonus, Rajant's Kinetic Mesh network also provides the high bandwidth needed to support video surveillance initiatives throughout a port, from streaming live remote camera video to dispatchers, security officials, and first responders to maintaining visual communications with patrolling unmanned aerial or ground vehicles.

Separately, Rajant is also a leader in drone communication. "We have successfully modified one of our existing BreadCrumb models to enable a Rajant-equipped drone that can interoperate with any Rajant network," explains Rigby, adding quickly, "There are a number of viable use cases for using drones in a port environment. A drone can be used to act as part of the network infrastructure, or it could be used for observation of operations or security by streaming real-time 4k video directly to a site's video management server. Many ports are exploring the use of drones to enhance and improve situational awareness with the objective of improving port-wide operational and personnel safety."

### **No Problem: 20,000 TEU Megaships calling at Autonomous Terminals**

Kinetic Mesh is easily scalable to hundreds of high-bandwidth nodes, giving ports the ability to leverage their legacy network investments while adding capacity and reach whenever and wherever it is needed throughout the port. At a time when so many ports are dredging to allow port calls from those post-Panamax-sized tonnage, those vessels also mean more cargo being discharged in a tighter time frame. Through InstaMesh, each BreadCrumb node can maintain tens to hundreds of peer connections simultaneously, even while in motion, and autonomously make new connections to other nodes as they come into range.

No connections need to be broken for new ones to be made,



so communications and data packets are not dropped. Its ability to maintain multiple simultaneous connections removes any single point of failure and virtually eliminates downtime, and in fact, adding more nodes establishes more pathways to increase network resilience and aggregate bandwidth. At the same time, Rigby says that bandwidth and throughput are two of the most confused terms in networking.

"Bandwidth is a theoretical capacity. If you compared it with a water pipe, this would be expressed in the measurement of the pipe, i.e., a 24-inch culvert. Throughput is a measurement of the amount of data flowing between two points; to use a water analogy again, this is similar to flow rate and would be expressed in terms of gallons per minute."

Rigby continues, "Someone might say their Wi-Fi network is a 100-MB network. They are most likely talking in terms of bandwidth. Throughput is never more than 50 percent of bandwidth, even in a laboratory environment. Interference poses the biggest threat to attaining the necessary data rates to move high volumes of data. If you do not have a means of managing this interference in real time without packet loss, your network will be severely challenged to move large amounts of data and support other critical assets, such as video surveillance and autonomous vehicles."

Rajant attacks the problem in a different way. Because of the intelligence within each BreadCrumb, and the capability of the InstaMesh protocol in routing data to the optimum connection, automatic load balancing and avoiding outages, Rajant networks are by far the best equipped for maximizing throughput. Rigby insists, "We often see discrete transmission speeds between two BreadCrumbs of 95 Mbps, and can assist port operators in designing a wireless network with aggregate throughput of 200-300 Mbps."

The advent of the 20,000 TEU boxship is upon us. That vessel will, very soon, call at a largely autonomous marine terminal. Thousands of boxes will be discharged and loaded in a single eight-hour shift, involving millions of bytes of data, passed securely between roving unmanned reach stackers, remotely operated post-Panamax cranes and then into an organized queue that promises to reduce so-called 'dwell time' dramatically. Chances are, if all of that comes together, Rajant will be there to help.

# INTTRA Innovates with Information for Measurable Improvements

*Digital transactions for the ocean shipping industry have arrived. Are you part of it yet?*

By Joseph Keefe

**I**t may well be true that INTTRA is today the largest neutral electronic transaction platform, software and information provider for the ocean shipping industry. At the same time, however, it is also a fact that fully one-half of all shippers still book container orders in a manual fashion. Technology, often a trailing development for the global waterfront, has fully arrived for the international container shipping industry. Convincing everyone that this is the way to go hasn't been easy, and it is very much a work in progress. Nevertheless, those who do not get on board the 'e-train' risk being left behind forever, once it leaves the station.

According to INTTRA, leveraging innovative products and the vast scale of its network empowers customers to trade with multiple parties and leverage ocean industry information to improve their business. Connecting over 225,000 shipping professionals with more than 50 carriers and 120 plus software alliance partners, INTTRA aims to streamline the ocean trade process. According to the firm's President and COO, Inna Kuznetsova, more than 700,000 container orders are initiated on the INTTRA platform each week, representing more than one quarter of global ocean container trade. And, she says, those shippers who do not leverage one booking e-system or another are quickly ceding a competitive advantage to their industry rivals.

Before joining INTTRA in early 2015, Kuznetsova was the Chief Commercial Officer at CEVA Logistics, and prior to that she spent 19 years at IBM. As the first Vice President of Russian origin in IBM headquarters, Kuznetsova is a frequent speaker at industry events and has two best-selling career books in the Russian market. In October, she shared her insights with *MLPro* on the future of digital transactions in the intermodal equation.

## Robust, Flexible IT Solutions

INTTRA's solutions are designed as Software as a Service (SaaS) and provide the flexibility of either using INTTRA's interface or being integrated with a customer's existing internal infrastructure. That's because greater network connectivity, insists INTTRA, is needed to drive the industry forward. But, that can also create problems. "In the physical world of logistics, the bigger your network, the more value you can create for your customers. Now, each of the connections with customers, partners and agents needs to be digitized," explains Kuznetsova, adding quickly, "That not only creates inconsistencies, but can be costly to maintain hundreds of EDI connections or train the staff to fill forms on multiple sites. Therefore digitization elevates the importance of networks and platforms, allowing stakeholders to connect once and reach many trading partners. An average shipper connects to 25 carriers on INTTRA's platform. That's a real-world example of how booking and shipping instructions through INTTRA's digital platform reduces costs compared to doing it one-on-one, or going to multiple web sites."

There will be, according to INTTRA, interconnections across operational, informational and financial data in the future. In other words, the end of so-called 'siloed business practices.' From INTTRA's perspective, it is this digitalized, unified approach that is the panacea that industry craves today, especially in an era of massive over-capacity, wildly fluctuating (but often too low) freight rates. Hence, in a time when overcapacity causes high fluctuation of prices, maintaining high controls on operational efficiencies becomes an important way to grow profitability without impacting the quality of service.



*... digitization elevates the importance of networks and platforms, allowing stakeholders to connect once and reach many trading partners. An average shipper connects to 25 carriers on INTTTRA's platform. That's a real-world example of how booking and shipping instructions through INTTTRA's digital platform reduces costs compared to doing it one-on-one, or going to multiple web sites.*

**– INTTTRA President and COO,  
Inna Kuznetsova**

Kuznetsova explains it this way: “Improving operational excellence starts with standardization as well as visibility and the ability to compare units in the same chain with how they perform against each other. You have to standardize everything, and then you can compare various segments in the chain, so you can then identify actions that will improve your weakest links. It starts with digitization, which reduces silos by bringing operational and financial data together to allow you to optimize by different aspects and parameters.”

### Security

INTTTRA, like everyone else, addresses the cyber threat daily. To that end, there were, says Kuznetsova, lessons to be learned from the most recent cyberattack on shipping. For example, those looking to find another layer of protection in these uncertain times might consider leveraging INTTTRA as a booking channel may create an alternative in situations where the primary system goes down. Like many stakeholders, INTTTRA also sees promise in so-called ‘blockchain’ technology as another way safeguard critical and proprietary data.

“The neutral digital network means that we are not owned by a single Carrier or Freight Forwarder, so that allows us to create value for all customers. Blockchain potentially has great value across a neutral network since it provides secure transactions with information only going to the parties that

need to be involved. However, scaling from pilots to full implementation will require a use of a platform with strong identity management. It is needed to avoid the anonymity, typical for bitcoin implementation, as well as a disproportional impact on IT resources by requiring every supplier or vendor to become a part of hundreds of different blockchain networks,” said Kuznetsova. INTTTRA, she said, is currently involved in a pilot right now to test this approach.

### Big Data Defined - & Delivered

Predictive analytics is a term often bandied about, but seldom fully understood. In context of what it means to ocean container shipping, data analytics, for all stakeholders from every part of the supply chain, provides a way to build and maintain high standards of operational excellence. In the carrier business, as one example, it may facilitate a better pricing planning based on the uptake in bookings. Freight Forwarders can use analytics to develop more accurate plans by comparing past shipment reliability with the initial ETA of a container against the actual travel and arrival time. But transitioning from ‘big data’ accessibility to a more user-friendly business analytics tool is another thing altogether.

The INTTTRA approach involves the packaging of data products to quickly deliver a return on investment for customers. But, logistics, and especially for the shipping industry, operates with low margins and thus has a low appetite for huge, massive IT projects, which typically can take three to five years to show a return on investment. That’s where INTTTRA comes in.

Kuznetsova told *MLPro* in October, “In our experience, packaging access to data with an easy-to-use interface with targeted tasks to address, such as reducing dwell time, has great success. We develop our Decision Support Dashboard products with that in mind. For example, we offer a Dashboard that enables customers to analyze shipment reliability, comparing container ETA versus actual arrival time, which allows them to identify the most reliable shipping plan. Another helps to analyze detention and demurrage in various ports. All these solutions are packaged as separate products allowing our customers to select which features match their strategy, needs and operational priorities, and most importantly deliver the best return on investment within the same year.”

### A Look Ahead

Digitization is rapidly transforming the ocean container shipping industry. The intermodal supply chain has come a long way, to be sure, but there is more work to be done. In fact, as many as 51% of all shippers still book manually –

meaning either by telephone, email or fax – far from realizing the full benefit of digitization. The adoption rate is, nevertheless, accelerating. For example, says Kuznetsova, the filing of VGM, done predominantly electronically today, following INTTRA’s eVGM initiative last year calling for a preference for digital has been a particularly bright spot in that way.

Digitization can benefit the industry in many ways. Looking at operational and financial data on the same cloud will potentially enable shippers to analyze and reduce dwell time charges. Kuznetsova points to another advantage, saying “Another area where we expect to see convergence driven by digitization is with the ocean and land movement of containers. Traditionally, these two areas have been handled separately, but we’re now seeing companies look for ways to reduce those inefficiencies, such as managing empty containers to avoid excessive charges. It’s one of the reasons behind INTTRA’s acquisition of Avantida, which enables a more efficient utilization of containers by enabling a driver to pick up one locally when possible rather than drive to the port.”

All parties in the transaction win, while improving the inland movement of containers. The driver spends less time on the road, the customer receives the container faster and the carrier is compensated while avoiding unnecessary delays. Even the environment can win, since CO2 emissions are reduced as delivery trucks spend less time on the road as they drive more efficient routes. And in ports like LA / Long Beach, the so-called Clean Air “CAAP” program that mandates zero port emissions by 2030, and small advantage that can be leveraged will be important, especially since all the low hanging ‘environmental improvement fruit’ has already been picked.

### Don’t Miss the Boat

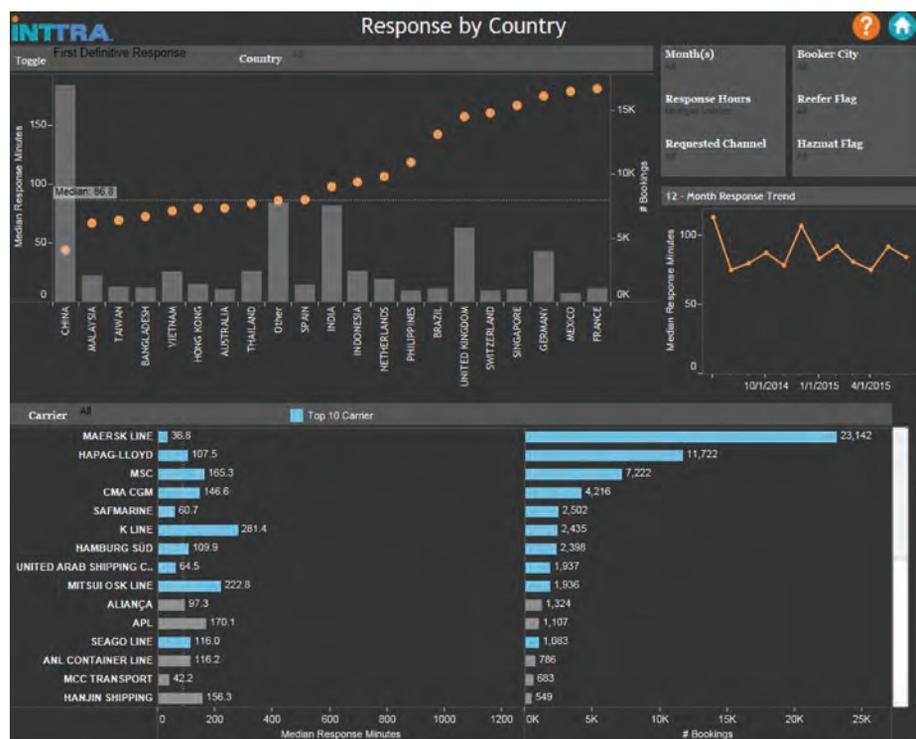
In the end, industry looks at targeted solutions, ones that offer quick analysis of specific problems with the ability to solve them cost effectively. Digitalization of the supply chain is one vehicle that will allow just that. And, without a doubt, the digital divide between companies embracing full digitalization and those lagging will widen. Tomorrow, advanced technology will be an absolute business requirement. For those who do not jump on board, it could create a two-tier mar-

ketplace where laggards will not be able to charge top rates for their services.

Kuznetsova agrees. “We do see a lot of former ‘nice to have’ services becoming a standard of good customer service today, such as the full and timely information on container tracking or the booking response time. So, yes, the digital divide will continue to grow further and it will reflect on the ability of some customers to compete.”

Today, says INTTRA, it is not uncommon for alliance partners to provide booking instructions through INTTRA, offering a standard interface, access to ocean schedules and container tracing events. Reducing the errors and time associated with accessing multiple sites to book containers is a good example of the value that can be provided when that happens.

Ultimately the ocean industry will use technology to drive out costs and increase efficiency. Using electronic booking and shipping instructions through a common platform reduces the time spent by shipping professionals on performing those operations as well as reduces the potential errors and improves data quality. INTTRA’s COO sums it all up nicely, saying, “Performing those operations through one platform such as INTTRA as opposed to multiple connections reduces IT costs. Managing and checking on sourcing a container at a loading facility rather than bringing it all the way to port improves the utilization of the container for the carriers.” Isn’t that what we’re all looking for?



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