EVERYBODY WANTS DATA. To quote The Economist, data are to this century what oil was to the last one: a driver of growth and change. Flows of data have created new infrastructure, new businesses, new monopolies, new politics, and — crucially — new economics.

Transportation needs good, accurate, usable data as much as any other industry — arguably more, because it involves multiple, dispersed stakeholders coordinating to get cargo from one point to another. Ports, in particular, have traditionally been snaggle points, not just for cargo, but for the accompanying data streams. As the supply chain industry becomes more and more focused on driving unnecessary costs and latency out of operations, ports are coming under increased pressure to offer more sophisticated information technology services.

That’s why companies involved in the operations of US ports, including associated technology companies, are transforming ports into efficient hubs of important information for the incredibly diverse range of clients they serve. Ports are gathering, verifying, and disseminating data to stakeholders such as shippers, shipping lines, Customs and Border Protection agents, 3PLs, forwarders, and
Ports are adopting technology to gather, verify, and disseminate data to supply chain stakeholders, improving operational efficiency.
PORT AND TERMINAL INNOVATION

truck drivers, giving all of them better, more accurate, more easily accessible information that brings improved efficiency to the operations of the ports themselves and makes everyone’s lives easier.

They have done this in the face of resistance and difficulties springing from myriad causes, including paper-based systems, incompatible computer operating systems, differing standards, and an irrevocably complex set of operations. Although the pressure to get data right is coming mostly from shippers, the ports are emerging as the natural hubs for providing crucial information. Although the story isn’t yet complete, it is one of remarkable success.

From a shipper’s perspective, it is no longer satisfactory to be informed when a ship carrying a particular load docks, then have to play a guessing game about how long the cargo will take to make its way through the many processes before it leaves the port complex on a loaded truck or rail car en route to a distribution center. This timing can vary by many hours — even days, if there’s a problem with Customs or congestion, for example. Getting more information about when each one of those steps occurs doesn’t just benefit the shipper. It gives every participant in the process the opportunity to be more efficient.

Ideally, information would be available in real time on an extraordinary number of events in a port, including the time a container was unloaded, when it was picked up on the dock, when it entered an on-site warehouse or free-trade zone, when it cleared Customs, when it was ready to be picked up by a truck or rail car, and so on. There’s a corresponding set of desirable information points for breakbulk and auto, which also make up a considerable proportion of port traffic.

True, the days when ports formed an effective information dead zone — where you had no idea what was going on inside until your cargo emerged — are diminishing. But the information available still remains spotty.

The problem with any type of commercial multiparty data exchange is siloed information. EDM for Maritime, a workflow automation platform provided by JOC parent company IHS Markit, serves the maritime, shipping, and logistics sectors. EDM for Maritime business lead James Kwan explained that companies relying on a large number of different data sources typically find the data resides in silos — one person or team or function or geographical region relies primarily on data from one silo; another person or team or function or geographical region relies on another. The company lacks the ability to aggregate the data and validate the quality. As a result, there is no centralized version of the truth; everybody is working from and making decisions based on different sets of data, which have not been validated, and nobody knows which set of data is correct. Worse, Kwan said, the company may be paying for the same data source more than once or not using an expensive source to the full extent, perhaps because it is not easily accessible.

When it comes to port operations, specifically, the problems continue, said Graham Howe, business development director at ION Geophysical, which provides temporal and spatial awareness software tools to the maritime industry. He explained how standardization of information is an issue from before the ship even docks. For example, there’s no universal agreement on marking what time a vessel arrived in port. Some put it at the time the vessel came alongside a berth, while others record it from when the pilot disembarked. Sea traffic management systems must also be agreed upon, determining how messages will be sent back and forth between the port and the vessel — via VHF radio, or possibly satellite.

“You don’t just phone up a ship and find out what’s going on,” Howe said.

Dustin Stoker, chief operations officer at The Northwest Seaport Alliance (NWSA) said the alliance has a unique perspective on the burgeoning need for digestible, shareable data, because it manages bulk terminals at Port of Tacoma and container operations at Port of Seattle. This includes hiring labor, managing cranes and container handling equipment, and moving cargo in and out of gates and onto rail or trucks.

INVESTMENTS LEAD TO GROWTH

PORT HOUSTON, ONE of the fastest growing container ports in the United States, continues to expand and estimates that capital investments of about $1.3 billion will be allocated through 2024.

More than $584 million of those capital expenditures are planned for infrastructure and rail expansion at Port Houston’s two container terminals, with another $70 million for improvements at the general cargo and bulk terminals and $507 million for channel development.

After a record-setting year in 2019 with volumes just short of 3 million TEU, in September 2020 Port Houston hit the 2 million TEU mark for the year, despite the global pandemic, and now is in a robust peak season preparing for the holidays — and October activities indicate strong growth. This signals an upward trend and resurgence of commerce through our port, where we consistently see more than 10,000 truck transactions through our gates daily.

Expanding the Houston Ship Channel

Currently, Port Houston is partnering with the US Army Corps of Engineers as well as private industry on a plan to expand the channel at an accelerated pace. The Houston Ship Channel expansion – Project 11 – will widen the channel by 170 feet along its Galveston Bay reach, from 530 feet to 700 feet. It will also deepen upstream segments to 45 feet, make other safety and efficiency improvements, and craft new environmental features. We aim to begin this work as early as 2021, making the channel safer and more efficient to remain a national economic treasure.

Port Houston is the largest container port on the US Gulf of Mexico, handling nearly 70 percent of the boxes moving through the US Gulf. The greater Port of Houston, which also includes nearly 200 companies along the ship channel, is the nation’s largest port for the foreign waterborne tonnage and supports the creation of nearly 1.35 million jobs in Texas and 3.2 million jobs nationwide.

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PORT AND TERMINAL INNOVATION

“We’re a little bit different than other port authorities on the West Coast; more hands-on,” Stoker said. “We focus on public plans to drive the local and wider economy and trade, but we’re also an operating port. And that’s critical for the data component. We have a different vantage point because we’re strategic, but also involved in day-in, day-out operations.”

One of NWSA’s biggest pushes at present is the effort to enhance its data management systems and the information it collects in order to operate its facilities better by more fully informing its users. “We’re really digging into those systems,” Stoker said. NWSA has made recent investments in what he described as “really 21st century” breakbulk and waterway management systems. He also said the alliance has doubled down on equipment maintenance management technology.

“As a port authority, our biggest data challenge is with simply how the supply chain is formulated,” Stoker said. “Most of the data is not ours. It’s owned by the terminal operator or BCO (beneficial cargo owner) or trucking company or container line. There’s a very fragmented make-up in terms of players.”

That means challenges in disseminating the data, too. “For example, we have hundreds of trucking companies, ranging from large ones with 300 trucks down to very small ones with one or two. They are all on varying levels of sophistication in terms of technology, from people working on spreadsheets right up to the latest and greatest truck management systems. So, some of the challenge is how various entities can even consume the data if they’re not tech savvy.”

The situation is the same with shippers, which vary from very large to very small. Steamship lines can be reluctant to share their information for competitive reasons, Stoker said. However, the external pressure from the customer, in the form of the shippers, is forcing the steamship lines to share more. “What we’re seeing is that larger customers are driving steamship lines to demand this information. They’re pushing them for more real-time information. It’s actually pushing the lines and the terminal operators to provide more information,” he said.

It’s not just data points of direct interest to shippers that are valuable. Stoker wants to see information available on every touch point of the container, and more besides. “What we’re trying to do is a gateway is provide as much information as we can get our hands on to share with the supply chain. We want more high-level information, in terms of real-time and historical turn-time, for drayage, anticipated arrivals and departures, everything. We would love to engage in more predictive business intelligence, too, but that will come with more data,” he said.

Once NWSA has the data, it then has to perform the not-inconsiderable task of getting it all in the right format, standardized and consolidated so that it can be used. “As a port authority, we are trying to bring those stakeholders together to communicate the information that’s necessary and to make it all happen,” he said. NWSA is becoming increasingly adept at forming system-to-system communication, using such technologies as application programming interfaces (APIs) and data-sharing platforms, such as TradeLens, that give access to steamship line data to technologically under-developed businesses. It’s a mammoth task, but Stoker is confident the trend is positive. “As we move forward, data will be shared much more easily than it is today,” he said.

North Carolina Ports identified information management as so important to its strategy of aggressive growth that it created the role of chief information officer in 2018, bringing on veteran maritime IT executive, William Corcoran, to fill the position.

MAKE YOUR PORT MORE PREDICTIVE, PRODUCTIVE, AND PROFITABLE

ION’S MARLIN SMARTPORT™ is a software platform that provides port and terminal operators with a well-defined map for accurate, real-time port data visualization. It delivers a Common Operating Picture and a digital whiteboard that enable managers to make critical decisions for the safest, most streamlined operations. Users can be fully confident in Marlin SmartPort data, from port call management and back office support to port community collaboration and synchronization.

Marlin SmartPort has been proven to reduce port call administration time by over 50 percent, giving ports and terminals accurate data that feeds seamlessly into their financial processes. The solution has been built upon the accomplished track record of its base software platform, Marlin, which has been employed on more than 150 maritime projects around the world. Marlin uses real-time data to improve operational efficiency, reduce costs, and strengthen overall safety performance. This core operating software powers SmartPort to do all of that — specifically for port operations.

**Product architecture and key features:**

Marlin SmartPort features include a port call and berth management tool that enables ports, terminals, and agents to book a/nd manage port calls online. In addition, berth map, berth occupancy, and vessel movement visualizations give port and terminal operators complete, up-to-date situational awareness. ETA projections based on a combination of agent’s input, Automatic Identification System (AIS) data, and direct vessel communication equip ports and terminals with a reliable awareness of incoming vessel traffic. Remote services allow pilots to access and input to the system directly. Marlin SmartPort also features a finance tool that enables accurate billing of port tariffs and ancillary services. Ports and terminals can analyze and optimize their operations through state-of-the-art KPI Dashboards.

Marlin SmartPort has been developed in collaboration with ports and terminals to provide a user-friendly solution that meets key port call requirements in an efficient and flexible software platform.

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**Powering data-driven decisions**

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PORT AND TERMINAL INNOVATION

Corcoran’s task has been to get operations technologically up to speed while always keeping an eye on the substantial physical infrastructure projects underway at its two port locations, including expansion at Port of Wilmington to accommodate multiple ultra-large container vessels simultaneously.

“The objective was to get the terminal big-ship ready and double or triple our volume, and the final piece is the technology piece, to ensure the assets were properly taken advantage of,” Corcoran said. He sees terminal technology as being about three things. First off, there’s safety, in the form of keeping people in the terminals for as little time as possible. Then there’s the business of moving more cargo, faster, through the facilities, with fewer obstacles. Finally, technology should maximize visibility to all the supply chain stakeholders using the port directly, or with an interest in exactly how operations there are going. “On a high level, those are the things we set out to do, and we’re doing it in a very broad way,” Corcoran said. “We’re rebuilding everything from the ground up, technology-wise.”

Corcoran wanted to implement systems that could manage both the general cargo and container terminals, which each account for roughly half of North Carolina Ports’ cargo volume. “The first thing we sought was a terminal operating system that could manage both terminals; we didn’t want two operating systems,” Corcoran said. After lengthy analysis and due diligence, they chose the Navis N4 Terminal Operating System. “It’s the predominant system in the container world,” Corcoran explained. “The question was: could it work for general cargo? And it did.” The implementation was not without its challenges, as general cargo trading partners are not as sophisticated as those involved in the container trade, Corcoran said, with more paper-based interactions and small companies that haven’t invested in technology. Also, the data is different — more focused on piece counts and weights, for example. But Corcoran and his team learned to figure it out.

“Data is king, and we’ll take it from anybody.

MOVING FORWARD!

CARGOS AT THE state-owned, public marine terminals of the Port of Baltimore continue to improve from low points caused by the COVID-19 pandemic. Autos and containers, two of the key commodities handled at the public terminals, have had the largest increases, while general cargo numbers have shown impressive growth.

September’s year-over-year container volumes would have reflected a 3 percent increase, but Tropical Storm Beta delayed three ships from arriving in September. Instead, all three ships arrived October 1.

For automobiles and light trucks arriving at Port of Baltimore terminals, the low point was in May. Compared to that May low, September numbers were up 169 percent higher. Comparing September 2020 to September 2019, autos were up 8 percent, the first year-over-year increase for autos during the COVID-19 time.

“This is great news that we continue to see improving cargo volumes and other positive trends during these difficult times,” said MDOT Maryland Port Administration Executive Director William P. Doyle. “We’re attracting additional ocean carrier services, new product brands, and increased bulk trade through the port. While these are good signs, the COVID-19 pandemic is still prevalent and continues to make this a very unpredictable maritime trade environment.”

The port has also seen rebounds in other ways. Evergreen Line, one of the port’s top container customers, is adding two additional ships from Asia with service through the Suez Canal. One of the world’s largest international forest product producers, Metsä Group of Finland, signed a new three-year contract with options for three additional years.

Dredging for a second, 50-foot deep berth at the Seagirt Marine Terminal begins later this year. Four new Neo-Panamax cranes will arrive and be operational next summer. The second 50-foot-deep berth will allow the port to handle two supersized ships simultaneously.

The Port of Baltimore will also soon have long-awaited double-stacked container capabilities when Baltimore’s Howard Street Tunnel expansion project is completed in 2024.

Despite a historic pandemic, the Port of Baltimore, with its outstanding location, large consumer market, excellent highway and rail access, and ability to handle some of the largest ships in the world, is well-positioned for continued success into the future.

PORT OF BALTIMORE

Howard Street Tunnel expansion project is completed in 2024.

Despite a historic pandemic, the Port of Baltimore, with its outstanding location, large consumer market, excellent highway and rail access, and ability to handle some of the largest ships in the world, is well-positioned for continued success into the future. ■
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Governor Larry Hogan   MDOT Secretary Gregory Slater   MDOT MPA Executive Director William P. Doyle
in any form ... even email,” Corcoran said. “Or we’ll build web portal interfaces, so that people can enter data themselves. We’re pioneering. Most people don’t bother with this stuff with general cargo. We’re running a proprietary system, and we’re putting tablets inside the terminal to get all the data into the terminal operating system, which is the ultimate goal both for the customers and the operations.”

North Carolina Ports has installed a complex suite of technologies at its soon-to-open new container complex. These include security measures, such as worker identification readers and automated gate operating systems that employ a series of cameras, optical character readers, and license plate readers, in order to identify the trucks coming through the gate and check their security seals. That way, data is captured electronically without having to get verification from each vendor or truck driver, Corcoran explained: “They just roll on through.” North Carolina Ports gets pre-advise data from customers, too. “They can say: ‘This truck is coming, here’s my data, here’s what I’m coming to get.’ That gets matched with the gate operating system, which works together with the terminal operating system, so it’s all done without stopping the truck,” Corcoran said. “So, we know who he is, why he’s there, and where he’s going.”

The real-world challenges of upgrading physical infrastructure and adding the equipment that makes all this technology run smoothly adds an extra layer of difficulty in coordinating everything. “It’s all happening at once,” Corcoran said. “We’re digging conduit, putting up buildings, installing gate hardware, and more. It becomes a risk management exercise. You have to figure out how to stagger the process so you’re not doing it all at once.”

For Port Houston Executive Director Roger Guenther, the drive for technological sophistication comes from astonishing growth, based in part on the recent local energy boom — a 50 percent increase in volume over the last four years. “We’re doing everything within our reach to make sure we stay ahead of the demand to efficiently handle cargo,” he said. “The first thing we did was implement a lot of technology.”

Guenther acknowledged that shippers are the most high-profile stakeholders demanding more data out of ports, but he also recognized information is critical in making the port run more efficiently and continue growing.

“We’ve been very successful with our ILA (International Longshoremen’s Association) labor, with whom we have a great relationship. So, from the terminal side, we’ve been able to employ technology to allow people to do their jobs more efficiently. Instead of eliminating jobs, we look to make them more efficient.”

Guenther remembers when truck drivers entering the port would have to get out and insert a piece of paper in a pneumatic tube that transported it to an administrative office, “like a bank.” In those days, it took 17 minutes to process a truck. “Now, it’s less than a minute, and we wouldn’t have managed to survive and manage the thousands of transactions we handle every day without good technology,” he said.

As elsewhere, even with highly sophisticated data management tools and a ton of free-flowing data, the challenge is compiling those data sources into a cohesive picture of what’s actually going on and what needs to happen. Guenther embraces the emerging role ports have as central hubs of useful supply chain information. “We have so many people using the port. We’re like a node,” he said. “It takes an extensive effort to correlate all this data and find the key points where decisions can be made. We continue to have the systems and

BEYOND FAST: IMPROVEMENTS YIELD EVEN GREATER CAPABILITY

THE NORTH CAROLINA State Ports Authority offers crane and truck gate productivity rates that are among the highest on the East Coast. And beyond speed, new developments continue to expand our capabilities. As part of a comprehensive, $200 million expansion plan, recent improvements at the Port of Wilmington are ready to bring an even higher level of personalized service, efficiency, and capacity to customers.

New Neo-Panamax Cranes
In 2018 and 2019, we welcomed three neo-Panamax cranes to the Port of Wilmington. With an operating height of more than 150 feet, these cranes are taller and have a longer outreach, allowing them to accommodate the loading and unloading needs of ultra-large container vessels.

Berth Renovation
Another landside development at the Port of Wilmington is berth renovation. By creating 2,600 contiguous feet of container berth space, we can now service two ultra-large container vessels simultaneously for faster, more efficient operations.

Turning Basin Expansion
A renovation to our turning basin at the Port of Wilmington allows 14,000-TEU and larger ocean vessels to safely and efficiently turn around in the harbor. We’re also working with federal partners on necessary navigational harbor enhancements that will enable the Port of Wilmington to better accommodate deep-draft container vessels.

Refrigerated Container Yard Expansion
Cold storage is heating up, too. Completed in April 2020, the Port of Wilmington’s expanded refrigerated container yard boosts the port’s on-terminal refrigerated container plugs from 235 to 775. Beyond this initial expansion, a second phase will increase the location’s capacity to more than 1,000 plugs.

Large-Scale Capabilities Meet Personalized Service
With quick turn times and excellent connections to highway and rail infrastructure, the Port of Wilmington is a model of efficiency. In addition, we have another advantage: Our port is often less congested than many in the region, which can mean quicker operations and less red tape. Finally, customized service means that whatever problem you have, we’ll work hard to find a solution.

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These latest improvements are just the beginning. Beyond greater speed, efficiency, and capacity, we continue to develop our capabilities as our customers’ needs evolve. Ready to grow your business now and into the future? Visit ncpports.com to learn more.
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PORT AND TERMINAL INNOVATION

interfaces and things we need to share that data. It’s all about data these days.”

Data, yes, but not necessarily automation. “It wouldn’t be possible to have this growth without the support of labor. This is not about automation. It’s about deploying technologies that enable us to handle the level of volume and grow,” Guenther said. He cited examples such as the interfaces the port has built with the trucking community, where the latter can pre-advise the port of intended pick-ups, as well as mobile applications for customers to get detailed visibility of freight. A trucker, he said, can make sure on a cell phone that a container is ready to be picked up before he makes a run at the terminal. “We have to be efficient getting trucks in and out, and the trucker has the right to make a decent living,” he said. “Everybody wins.”

Then the port’s Navis TOS allows them to run analyses of performance at the terminals, in order to identify opportunities for improvement. “We’re using some of the data to advance our berth scheduling and maximize efficiency of using equipment in the yard. These things are always in play in order to enhance the experience of using the port, whether for a vessel or a trucker. All of this is just allowing us to do it faster tomorrow than we can do it today,” Guenther said, noting the port now has best-in-class turn times.

Although all these port authorities and operators are doing admirable work in the field of data management, it is perhaps not surprising that some of the most advanced participants in this sector are ones that came to the maritime industry via another one. IHS Markit’s EDM business began life addressing the data management challenges of financial services firms, and it soon became clear those challenges went across many industries. After EDM’s parent company, Markit, merged with IHS, EDM quickly developed a strong client base in the upstream energy industry, and has now also entered the maritime industry.

Pure-play technology companies with experience in other fields can bring a fresh perspective to how ports might best leverage their technology capabilities, IHS Markit’s Kwan said. Cloud computing and managed IT services, for example, have yet to become common in port operations, and yet have a great deal to offer. “Everyone is looking to become leaner across the board, in terms of assets, capital, and labor,” Kwan said. Outsourcing data-crunching power to the cloud ensures that any technology a port is running is the absolute latest version, updated automatically without the need to rely on in-house IT, offering maximum return on the investment. “Making switches to new technology using in-house technology staff tends to be more costly in the long run,” Kwan said. “The cloud makes it all more scalable, more easy to maintain. That’s only going to accelerate.”

ION’s Marlin software — a temporal and spatial awareness tool, which is able to lay a vessel movement plan on top of a map showing actual routes — was originally developed for the oil and gas industries. Port operations was a logical place to start expanding the customer base, Howe explained, because, like oil and gas exploration and production, it involves multiple stakeholders and lots of moving parts. It was relatively simple to add applications to the Marlin system that make life easier for ports when they’re managing vessels and bringing them into berth. “It’s very user-friendly,” Howe said. The technology even helps ships turn around in tight spots in the notoriously congested Mississippi River.

“If you’re a port, and you want to know where the vessels are, most technologies are good at showing you where they are now,

WORKFLOW AUTOMATION WITH EDM FOR MARITIME

AS THE FOCUS on digitalization strategies increases, access to actionable, trusted data is more critical than ever for those looking for new ways to drive growth, mitigate risk, and adapt to ever-changing supply chain environments. The increasing volume, variety, and complexity of data, and the use of spreadsheets, databases, and siloed systems, make it difficult for ports and terminals to leverage their data as an asset. Many rely heavily on manual processes and legacy technologies. This increases operational risk and decreases response times.

EDM, a workflow automation platform with data management at its core, addresses these challenges by automatically synchronizing data across disparate data sources, applications, and users.

EDM integrates data from multiple sources and transforms it for use in downstream systems. Robust, customizable business rules ensure the quality and accuracy of the data. EDM’s aggregation and master data management functionality produces a centralized, single version of the truth across all user groups. As a workflow automation platform, EDM automates the collection, normalization, and processing of data, and its intuitive user interface layer enhances business user workflows and interaction. EDM also stores historical data and makes it available for reporting. The benefits of EDM include:

**Critical decision support**
EDM’s ability to centralize, link, and amalgamate data gives users a more comprehensive view of their operations and internal and external market factors, and supports decision-making.

**Increased efficiency**
By eliminating the need to manually manage and transform data, EDM enables users to focus on analysis and decision-making to drive business performance.

**Deployment options**
EDM can be leveraged as a managed service in the cloud, enabling companies to reduce implementation times, mitigate the burden of technology maintenance, reduce costs, and scale up and down quickly.

**Cross-team collaboration**
EDM breaks down functional and technical silos and supports cross-team collaboration by synchronizing the distribution of validated, mastered data across multiple applications. Users can be confident the data they are using is consistent across the organization.

IHS Markit

For more information, visit ihsmarkit.com/EDMforMaritime or contact James.Kwan@ihsmarkit.com

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PORT AND TERMINAL INNOVATION

but they’re not good at what was supposed to happen,” Howe said. “So, we have a multi-stake tool that shows you the plan, and then what actually happened, so you can go back and figure out what went wrong.”

Any new tool that can help make port operations run more efficiently is worth considering, Howe argued: “Ports make their money on the vessel fees from vessels that stop in their ports, and then extra from selling fuel, water, and other services. So, they want to optimize use of berths, making sure they’re occupied as much as possible.” Chartering ships also have plenty of skin in the game, he said. “They’re the ones paying for the fuel on the vessels. They want to see the vessel going from point A to point B for the least amount of money possible. They don’t want to hang around ports, unable to get in.”

Achieving excellence in port data management is a work in progress, Guenther said, and Port Houston continues to expand the detail and amount of data that it exchanges with its large pool of stakeholders. “We’re going to require increased coordination and understanding of what our operational requirements are and establish common platforms so we can talk to one another and synchronize our systems. It will take time,” he said. “We’re sticking with it and putting an emphasis on it in our organization — making sure our operations and IT are working hand-in-hand.”

Guenther noted that the available technology is always evolving, and the port is continuously looking at working with service providers, partners, and technology firms in new ways, to improve database administration and make sure they have the infrastructure they need. “We’re planning ahead — we’re about to release our 2040 plan,” he said. “If there’s one thing ports may be guilty of, it’s not planning far enough into the future. We’re preparing for the port of the future. That’s what our whole focus on technology is about.”

Meanwhile, even as ports press ahead to be shining examples of IT excellence, they recognize the importance of accommodating the incredibly broad range of technological sophistication of their users.

“We see a broad spectrum,” IHS Markit’s Kwan said. “Some users are still paper-based, spreadsheet-heavy, and archaic in some ways. But, at the other end of the spectrum in the port authority and terminal operator space, there are those that are really on an amazing journey. They’re doing predictive analysis, making the most of business intelligence tools. The point is, it’s important to remember that data management has relevance to bring to the table wherever these businesses are on that spectrum.” Hasty adoption of advanced technology can be disastrous, Kwan said. It’s better to go at your own pace. “You need to lay a data management foundation from the start, establishing a governance framework, performing due diligence, and so on. At the sophisticated end of the spectrum, these steps have an equally important role. Data management is relevant for organizations of all types, sizes, and levels of sophistication.”

Still, there’s no doubt ports will continue to embrace their role as providers of superior data management services, for the very compelling reason that it gives them a competitive edge. “I talk about digitization all the time,” North Carolina Ports’ Corcoran said. “When we have data, we know more. Period. And that means we can tell our customers more. People come here because we can tell them more about their cargo. It’s a big differentiator.”

MORE FLEXIBILITY AND BETTER VALUE FOR ASIA IMPORTS

THE NORTHWEST SEAPORT Alliance is a marine cargo operating partnership between the ports of Seattle and Tacoma, two of the nation’s premier harbor complexes. We are the first alliance of its kind in North America.

Strategically located in the northwest corner of the United States, we offer shorter transits from Asia, and are the first and last ports of call for many trans-Pacific liner services. We are also a major gateway to Alaska and Hawaii; more than 80 percent of trade between Alaska and the lower 48 states moves through our harbors. In addition to containers, we also handle bulk, breakbulk, project/heavy-lift, as well as automobiles.

Shorter transit times from Asia make NWSA the natural port of choice for time-sensitive container cargo headed to the Midwest, Ohio Valley, and the East Coast.

Our on-dock rail, international and domestic rail service options, and near-terminal transload warehouse facilities offer the flexibility to move cargo how and when you want. Our close proximity to the second-largest concentration of warehousing on the US West Coast also makes us an ideal location for warehousing, distribution, and transload operations.

We pride ourselves on being proactive and performance-driven, and we put unrelenting focus on delivering operational excellence and best-in-class service for our customers. Our commitment to working hand-in-hand with our supply chain partners to provide cost-effective, innovative shipping solutions is unparalleled. At the end of the day, it’s all about helping you, the shipper, get the job done.

THE NORTHWEST SEAPORT ALLIANCE

MAKE YOUR SEAPORT SELECTION

Big-ship ready: Most container ports are 50 feet or deeper at berth and equipped with modern cargo-handling equipment.

Room to grow: We offer plenty of available land and terminal capacity to handle your business.

Hassle-free connections: On- and near-dock rail plus major highways within minutes of the port keep your cargo on the move.

Cargo-handling experts: More than 25 near-terminal transload, warehousing, and cross-dock facilities add flexibility to your supply chain.

Best-in-class customer service: Seaport Alliance staff are highly skilled and passionate about our customers and their cargo.

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We’re ready for the biggest ships. Naturally deep water, efficient on-dock rail and nearly $1 billion in terminal modernization investments.

We’re The Northwest Seaport Alliance – dedicated to delivering today while investing for tomorrow.
PORT AND TERMINAL INNOVATION

Ports tackle tech resistance

By Helen Atkinson

THE SHIPPING INDUSTRY has a well-earned reputation for being slow to adopt new technology. I’ve been writing about transportation and logistics for 30 years, and 25 years ago, I began developing what turned into the technology beat at The Journal of Commerce. This nifty thing called the Internet, which had been around for a while but was only just becoming widely available, was often talked about in the mainstream media as a solution in search of a problem. It seemed to me, however, that a worldwide web capable of transmitting digitized information in the blink of an eye almost anywhere on the planet, aided by the exponentially increasing data-crunching power of computers, was just the sort of thing the maritime industry needed.

And yet, here we are, 25 years later, and bills of lading are still often in paper form, ocean-going vessels carrying billions of dollars’ worth of cargo can arrive at their destination ports days or even weeks late without much warning, and the industry lacks a global governing body comparable to the International Air Transport Association (IATA) that would drive standardization of electronic documentation.

In many ways, this is most glaringly obvious at ports, because there are so many processes involved, and they can all cause substantial delays. Ports, therefore, stand to benefit the most from sophisticated, broadband information-sharing and data management systems. In the past, they’ve operated more like black holes through which cargo has to pass, with little information forthcoming. Now, at last they’re beginning to adopt cutting-edge technology, but it’s valuable to consider the challenges they have had to overcome to achieve this.

“Shipping is 30 years behind the aviation industry,” said Graham Howe, business development director at ION Geophysical, which provides temporal and spatial awareness software tools to the maritime industry. The reasons, he said, include a lack of common global standards, the fact that commercial enterprises are often reluctant to share their data, and the sheer range of factors in dealing with different ports around the world, exacerbated by the sea, which is the most random of factors there is. “One port is so different from the other,” Howe said. “It’s a real challenge to put all of this widely diversified industry into one box.”

“Other industries are leveraging big data, pumping vast amounts of information into data lakes for analysis,” said James Kwan, business lead for IHS Markit’s EDM for Maritime offering, which is a workflow automation platform for participants in the maritime, shipping, and logistics sectors. “But maritime companies are still missing foundational elements of data management that other industries have already put in place. They’re still asking: Can I trust the data? Is it correct? Do I know where it comes from? Do I even know what information I need from which providers, internal or external? The financial industry has solved these fundamental data challenges. Maritime has not.” Kwan said that, although some companies in the maritime field are applying business intelligence, they’re not taking the time to get the basics right first. “A lot of data management in maritime is done post mortem. It’s fixed after errors appear in downstream reports and other systems, when it’s too late. So, there’s kind of a missing link. You need to check the data before you stick it into a report, decision-making system, or BI (business intelligence) tool, for example,” he said.

For ports, the trouble, just for starters, is that it’s a whole heap of data, from a gargantuan number of sources. And those sources — shippers, steamship lines, freight forwarders, agents, Customs, other ports, and truckers, just to name a few — have wildly differing levels of data management sophistication. Even if they have impressively advanced systems, they’re often proprietary and don’t easily communicate with one another.

Roger Guenther, executive director at Port Houston, is extremely enthusiastic about putting data management front and center when harnessing the power of technology to handle the port’s extraordinary throughput growth of 50 percent over four years. But he’s also eager to emphasize the other technologies that drive
PORT AND TERMINAL INNOVATION

port efficiencies and improvements in user experience. “We’re putting enormous effort into our equipment,” he said, citing a pilot program to test out the concept of crane operators working the cranes remotely. The idea is to put them where they can see better than perched on top of a giant crane.

“One port is so different from the other. It’s a real challenge to put all this widely diversified industry into one box.”

Another project is to deploy electronic yard mules, part of the port’s strategy to enhance sustainability, which is always a technology-heavy proposition. It is already planning to cut emissions from cranes by 70 percent.

Dustin Stoker, chief operations officer at the Northwest Seaport Alliance, agreed it’s important not to forget hardware. “In terms of data and tracking containers, we’ve moved on from 10 years ago, when we had pretty rudimentary technology,” he said. “We had to put sensors everywhere. They were expensive and had to be hard-wired. Plus, there wasn’t necessarily the push from the end user for all this information. That is changing.” Stoker and all the other ports and terminal operators I talked to agreed that end users, particularly shippers, are demanding more, real-time data out of ports. The demand coincides with technological advances in terms of computing power and wireless communications technology that make it much easier for all parties to invest in tracking technology and to process the data. “It’s all going to change,” Stoker said. “We’re not there yet, but we’re right on the cusp.”

What about putting data technology in the cloud? William Concoran, chief information officer at North Carolina Ports, said he can imagine ports running data management operations via cloud computing in the future. But there are concerns. “The trouble is you’re moving this data around, and the latency and security is not strong enough that we can trust putting that API (application programming interface) data in the cloud. It’s too public,” he said. NC Ports is planning to take a secure copy of a select set of operational data and put it in the cloud in order to perform analytics on it. “We put a Microsoft Azure cloud platform on top of it so we can see what happened yesterday and today,” Concoran said. The idea is to apply powerful business intelligence tools in order to get performance indicators and other dashboard-type analysis. “That enables end users and analysts to drill and dive into that data and find out why we’re not performing, where are the bottlenecks, and how we improve performance over time,” he said.

Along with others, Concoran agreed that the COVID-19 pandemic has accelerated, albeit slightly, an already tangible appetite amongst all port users to get more tech-savvy. “Customers who were not so sophisticated before want to doEDI (electronic data interchange), and we embrace that,” he said. “They don’t want paper anymore. We’re willing to work with anyone who wants to work with us to get rid of paper.”

BIG YEAR AHEAD AS RETAIL VOLUMES GROW

SC PORTS IS investing more than $2 billion to build timely, world-class infrastructure, ensuring ample capacity and big-ship capabilities as it expands into retail distribution.

“The recent arrival of the 15,072-TEU CMA CGM Brazil — the largest container ship to ever visit the East Coast — points to our successful long-term strategy of investing in port infrastructure and deepening our harbor to handle up to 19,000-TEU vessels next year,” SC Ports President and CEO Jim Newsome said.

In 2021, SC Ports will open Phase One of the Hugh K. Leatherman Terminal, further enhance Wando Welch Terminal, and achieve 52 feet of depth in Charleston Harbor.

The opening of the Leatherman Terminal in March will mark the country’s first container terminal to open since 2009. It will have a 1,400-foot wharf, five ship-to-shore cranes with 169 feet of lift height above the wharf deck, 25 hybrid rubber-tyre gantry cranes, and efficient operations to handle growing cargo volumes. Phase One will add 700,000 TEU of annual throughput capacity to the port; full buildout will yield 2.4 million TEU of capacity.

Wando Welch Terminal investments include 15 ship-to-shore cranes with 155 feet of lift height, 65 rubber-tyre gantry cranes, a strong wharf to handle big ships, a new refrigerated container yard, an efficient terminal layout, and a capacity of 2.4 million TEU.

The Charleston Harbor Deepening Project complements these infrastructure investments by achieving the deepest harbor on the East Coast. The 52-foot depth will enable mega container ships to access port terminals any time without tidal restrictions.

“When these investments come online, SC Ports will be able to handle four 14,000-TEU container ships simultaneously,” Newsome said. “We are adding capacity to serve our customers, while growing and diversifying our cargo volumes.”

SC Ports has supported advanced manufacturers like BMW Manufacturing Co. and Michelin for decades. That expertise will enable SC Ports to seamlessly serve Walmart’s future 3 million-square-foot distribution center in Dorchester County, SC.

“We are pros at handling high-demand supply chain needs for the automotive and advanced manufacturing industry, which will translate seamlessly into supporting retail distribution,” Newsome said.

Cargo owners benefit from SC Ports’ efficiently run marine terminals and two rail-served inland ports, as well as crucial access to Southeast consumers.

“We remain dedicated to providing excellent service, long-term growth capacity, and timely infrastructure to our customers,” Newsome said.