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red-hot port matters

Photo: Pexels

ABB to furnish Iceland's new e-ferry

The Swedish-Swiss company will supply integrated power and electric storage solutions to the **Icelandic Road and Coastal Administration's** new vessel. The 70 m-long ferry, designed by Polarkonsult and due for delivery later this year from the **CRIST** shipyard in Poland, will feature a 3,000 kWh-strong battery pack as well as a diesel-electric generator set. Though the ship is designed to operate in the fully-electric mode for most of the time, the latter will be used to add power during particularly challenging weather conditions while covering the 13 km- and 45 min-long route between **Landeyjahöfn** on the mainland and the **Westman Islands**. The scope of the supply deal also includes generators, transformers, switchboards, the Power and Energy Management System, and the Energy Storage Control System. The ferry will be connected to **ABB Ability™** Collaborative Centers Infrastructure, a network that uses remote equipment monitoring and data analytics to enable remote technical support as well as predictive maintenance and planned interventions. The ferry will also have the ABB's power distribution system Onboard DC Grid™, which will allow the batteries to connect directly to the DC link and by doing so avoid losses of power during charging and discharging. The Swedish-Swiss company will deliver the onshore power supply system, too, in order to recharge the battery with a power of 2,500 kW. According to ABB, it will, on average, take about 30 minutes to recharge. The newbuild, offering space for up to 550 passengers and 75 cars, will replace the 1992-built *Herjólfur*, which during rough weather had to travel to an alternative harbour to berth safely, extending the sailing time from 45 minutes to close to 3 hours (the new ferry will be able to enter the destination harbour in challenging weather conditions most of the time, with the rare exception of particularly rough seas). "Opting for ABB's electric solutions allows the vessel to meet design constraints that initially seem in conflict: it is optimized for cleaner operation and reduced greenhouse gas emissions, whilst power is sufficient to navigate some very hazardous waters safely," **Sigurdur Gretarsson**, Director, Maritime Division, Icelandic Road and Coastal Administration, said. **Juha Koskela**, Managing Director, ABB Marine & Ports, added, "Selection of ABB's technologies for a vessel operating on such a tough route, where the water depth is sometimes limited to 4.5 meters, but wave heights can reach 3.5 meters, sets a new benchmark for battery power on board a ship. In line with our vision for electric, digital and connected shipping, this project demonstrates how system integration – whether on board the ship or between the ship's crew and shoreside expertise – is a key success factor for vessel management."

Russia's to have a new seaport in the Baltic

The 70mt of annual handling capacity **Primorsk Multipurpose Transshipment Complex** (PMTC), an investment valued at RUB90.6b (€1.21b), is planned to be up and running by 2022. The new port, spanning over 780 ha, is to handle coal, mineral fertilisers, containers, other general cargo, and grains. The PMTC will function as a special economic zone. The agreement on the construction of the new port complex was signed by **Alexander Drozdenko**, Governor of the **Leningrad Region**, and **Ramis Deberdeev**, Chairman of the PMTC's Board of Directors at the **Russian Investment Forum**. "The project approved by the Federal Marine and River Transport Agency is included into the Strategy for Social and economic development of the Leningrad Region through 2030 and long-term development programme of FSUE Rosmorport till 2020," **PortNews**, a Russian information agency, reported. PortNews also informed, "The project on construction of a multipurpose deep sea port is to be implemented in the Vyborg District of the Leningrad Region in compliance with the strategy on taking over Russia's foreign trade cargo from the ports of the Baltic states."

Stena RoRo to revamp a Japanese ferry

The Swedish shipping line bought the 2003-built ro-pax *Yamato* from **Hankyu Ferry** in order to remake it and put on the European charter market. The revamping is to take place in a European shipyard and is scheduled to be completed by spring of 2020. At present, *Yamato* is 195 m-long and offers 2,350 lane metres of cargo capacity. "This is a typical Stena RoRo project. We'll redesign and remake the ship so that through the adjustment and flexibility the specific needs of the customers will be met. We call it Stenability," **Mikael Abrahamsson**, Conversion and Project Manager, **Stena RoRo**, commented. **Per Westling**, CEO, Stena RoRo, added, "The demand in the European market for such a kind of a ship is higher than the supply, and that's the reason why we have probed the market as far as Asia and especially Japan."



Photo: Wikimedia Commons

Fincantieri cuts two €1.5b-worth in total deals with Norwegian Cruise Line Holdings

The Miami-based company has entrusted the Italian shipbuilding group with the delivery of three brand-new cruise vessels. The first €1.0b-big order comprises two ships for the Oceania Cruise brand. Each of the GT 67k-heavy units, the first in the new Allura class, will be able to take on-board up to 1.2k passengers. Once delivered in 2022 and 2025, the newbuildings will become **Oceania Cruise's** new flagships. "We are excited to expand the Oceania Cruises fleet with our new Allura-Class ships to meet the strong demand for culinary- and destination-focused cruise vacations around the globe," **Frank Del Rio**, President and CEO, **Norwegian Cruise Line Holdings**, said. He added, "This new class of ships will further elevate the already best-in-class guest experience at Oceania Cruises and meaningfully strengthen demand from both new and loyal returning guests, which will ultimately drive further returns for shareholders." **Giuseppe Bono**, CEO, **Fincantieri**, also said, "This new successful project for Oceania Cruises is yet another demonstration of our ability to capitalize on product innovation and diversification to meet the needs of every type of customer, a capability that distinguishes us in the world. The order [...] reiterates not only our first place in the luxury sector, but at the same time it further strengthens an unprecedented leadership in the cruise sector, with a backlog of 55 vessels to be built for most of the brands operating on this market, and deliveries extending all the way to 2027." Next, the **Regent Seven Seas Cruise** brand will receive in 2023 an ultra-luxury cruise ship worth some €474m. The GT 54k-big vessel, offering room for up to 750 travellers, will be a sister ship to *Seven Seas Explorer*, which took to the sea in 2016, and *Seven Seas Splendor*, scheduled to be floated out in 2020. "We are excited to build on the spectacular success of *Seven Seas Explorer* and *Seven Seas Splendor* as we embark on bringing to life a new vessel that will set even higher benchmarks for elegance, luxury and style. This new ship further strengthens our Company's robust yet measured growth profile with vessels now on order for all three of our award-winning brands [Fincantieri will deliver six cruisers of the Leonardo class to the Norwegian Cruise Line between 2022-2027], enabling us to expand our presence globally, further diversify our product offerings and continue to drive shareholder returns," Del Rio commented. To this Bono added, "This agreement is the perfect seal of the work our Group has carried out over the years and the role we have gained on the market. We are able to enter and maintain a reference market presence in every niche, including the most unique and competitive as the ultra-luxury one, in which Regent Seven Seas Cruises operates. Quality is the ship owner's hallmark and it entrusted Fincantieri once again. Today we have 10 ships on order for Norwegian Cruise Line Holdings Ltd. in our order book, 5 of which have been secured in the last 5 months, for all the three brands in their portfolio: this result confirms the strength of the strategies we carried out, allowing us to reiterate our leadership in the sector at a global level."

Launch of the Maritime Connectivity Platform Consortium (MCC)

On 8 February, the MCC was established to work on the **Maritime Connectivity Platform** (MCP), an open source digital maritime domain which wants to bring common Internet standards to maritime navigation and transport systems. Specifically, the MCP will enable infrastructures for efficient, secure, reliable, and seamless electronic data exchange among maritime stakeholders, both public and private, using available communication systems (importantly, MCP will be an open and vendor-neutral technology). As such, the MCC will act as the coordinator for the provision of guidelines and standards. The MCC has adopted the open structure of the **World Wide Web Consortium**, and interested parties are encouraged to join the initiative, bringing in their visions and competencies. The initial consortium comprises **OFFIS** (Germany), **KRISO** (South Korea), **RISE** (Sweden), and the **General Lighthouse Authorities of UK and Ireland**. At the same time, the **Danish Maritime Authority**, the **Swedish Maritime Administration**, and **South Korea's Ministry of Ocean and Fisheries** have joined the MCC as Governmental Observers. "The MCP could become an important framework for digitalisation of maritime sectors, for instance, e-navigation, SMART shipping & maritime logistics, Sea Traffic Management (STM) and MASS (Maritime Autonomous Surface Ship)," a press release from the MCC reads.

Grimaldi to upgrade its fleet's communication capacities

The Neapolitan shipping company spent €5m on a contract with the Rome-headquartered **Telespazio**, a JV between **Leonardo** and **Thales** (67/33), to provide satellite communication services. The first agreement provides for managing on-board communications for ro-ro, multi-purpose, and pure car & truck carrier vessels in the **Grimaldi** fleet that operate between Northern Europe, the Americas, West Africa, and the Mediterranean. Specifically, Telespazio will take care of the design and supply of on-board systems for satellite communications and related broadband services, including backup, on a multi-regional scale. These services will be provided via Telespazio's global coverage platform operated by the **Fucino Space Centre** located in L'Aquila, Southern Italy. The second agreement covers renovating basic (voice and data) satellite telecommunication services for crew and passengers on mixed cargo-passenger ships that the Grimaldi Group operates in the Med., between Italy (incl. Sardinia and Sicily), Greece, Spain, Tunisia, Morocco, and Malta.



Photo: Telespazio

Hapag-Lloyd to gas-retrofit one of its 15k TEU-big ships



Photo: Wikimedia Commons

The carrier has contracted the Shanghai-based **Huarun Dadong Dockyard** to convert *Sajir*, one of the company's 17 vessels that were originally designed to be LNG-ready. The ship's fuel system and its existing heavy fuel oil-burning engine will be converted into a dual-fuel one. The plan will be to operate the vessel using liquefied natural gas and also to use low-sulphur fuel oil if needed. According to **Hapag-Lloyd**, the conversion will make it possible for *Sajir* to emit 15%-30% less CO₂. "By converting the *Sajir*, we will be the first shipping company in the world to retrofit a container ship of this size to LNG propulsion. By carrying out this unprecedented pilot, we hope to learn for the future and to pave the way for large ships to be retrofitted to use this alternative fuel," **Richard von Berlepsch**, Managing Director Fleet Management, Hapag-Lloyd, commented.

PD Ports' Teesport is now AEO-certified

Her Majesty's Revenue and Customs (HMRC) has granted the **Authorised Economic Operator (AEO)** quality mark to the **Port of Teesport's** customs controls and procedures. Following a 12-month internal review process that culminated in an audit from the HMRC to ensure all port operational processes, IT, security, storage, procurement, and HR procedures met with EU requirements. According to **PD Ports**, Teesport has become the first port to gain AEO status within the **Northern Powerhouse**, an initiative proposed by the 2010-15 coalition and the 2015-2017 Conservative governments to boost economic growth in the North of England. "Gaining AEO accreditation reinforces the strength of our commitment to shippers currently using Teesport or looking to the Port as an integral part of their supply chain and is a solid vote of confidence in the high standard of our port operations," **Frans Calje**, CEO, PD Ports, commented. He furthered, "This will deliver some distinct benefits to many of our AEO accredited customers including greater access to priority clearance of cargoes, reduced administration, traceability of flows of goods and improved security between supply chain partners. There is much focus, in the light of Brexit, on the customs clearance of goods. AEO accreditation puts us on the front foot in making the movement of cargoes through Teesport as simple as possible." Calje ended by saying, "Delivering high quality, consistent and sustainable service levels to our customers has been instrumental in our decision to gain AEO accreditation across other parts of our business including our short sea ports located on the Humber, logistics and transport operations as well as our freight forwarding and customs clearance activities."



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HUPAC:

926,414 road consignments by rail in 2018 (+21.4% yoy)

"This strong growth is partly attributable to one-off effects such as the recovery of traffic losses due to the Rhine disruption in 2017 and the acquisition of ERS Railways in June 2018," a press release from HUPAC explained. ERS Railways contributed with some 92k consignments to HUPAC's non-transalpine traffic, which, in total, rose by 98k consignments in 2018. Transalpine traffic via Switzerland increased by 67k consignments, out of which more or less half was due to the recovery of the volumes lost following the seven weeks-long blockade of the Rhine valley route in August-September 2017. In 2019 Hupac expects transport demand to stabilise as a result of the economic downturn. "Now is the time to focus on the quality of the services. We must ensure a stable environment on which new growth can be built," Michail Stahlhut, Director, HUPAC Intermodal, underlined.

HUPAC Intermodal's volumes (road consignments by rail)

	2018	2018/2017
Transalpine via CH	535,777	+14.4%
Non-transalpine	351,870	+37.9%
Transalpine via AT and FR	38,767	-4.4%
Total	926,414 (equiv. to 1.72m TEUs)	+21.4%

The Port of Gdańsk:

1,948,974 TEUs handled in 2018 (+23.3% yoy)

In terms of tonnage, the turnover of containerised freight totalled 19.85mt, up by 20.9% on the result from 2017.

The Port of Gdańsk's volumes

	2018	2018/2017
General cargo, out of which	21,851.0kt	+21.0%
Containerised	19,850.8kt	+20.9%
Liquids	15,512.1kt	+17.8%
Coal	7,185.9kt	+41.4%
Other dry bulk	3,924.3kt	+11.0%
Grains	559.0kt	-27.8%
Total	49,032.2kt	+20.7%
Container traffic		
TEUs	1,948,974	+23.3%
Passenger traffic		
Ferry & cruise	148,294	+8.0%

The Port of Rotterdam:

468.98mt handled in 2018 (+0.3% yoy)

The increase was driven by containerised and wheeled (ro-ro) freight, as the handlings of both dry and liquid bulk contracted last year.

The Port of Rotterdam's volumes

	2018	2018/2017
Liquids (thousand tonnes)		
Crude oil	100,294	-3.7%
Oil products	77,673	-1.9%
Other	28,640	-0.9%
LNG	5,234	+164%
Total	211,840	-1.1%
General cargo (thousand tonnes)		
Containerised	149,111	+4.5%
Wheeled (ro-ro)	24,057	+1.1%
Break-bulk	6,361	-1.5%
Total	179,529	+3.8%
Dry bulk (thousand tonnes)		
Iron ore and scrap	30,059	-3.6%
Coal	26,356	+2.3%
Other	11,348	-6.3%
Agribulk	9,853	-11.6%
Total	77,615	-3.2%
GRAND TOTAL	468,984	+0.3%
Containers		
TEUs	14,512,661	+5.7%
No. of boxes	8,635,782	+5.4%



Photo: Port of Rotterdam

The Port of Szczecin-Świnoujście:

28.61mt handled in 2018 (+12.5% yoy)

The biggest increase, in absolute terms, was noted in the turnover of coal, up by 60.8% year-on-year to 3.44mt.

The Port of Szczecin-Świnoujście's volumes

	2018	2018/2017
General cargo (excl. timber), out of which	13,431.3kt	+4.4%
Ferry cargo	9,587.9kt	+3.0%
Liquids (incl. LNG)	3,972.9kt	+17.6%
Coal	3,440.0kt	+60.8%
Other dry bulk	3,373.3kt	+9.6%
Ores	3,226.0kt	+29.9%
Grains	1,095.2kt	-25.1%
Timber	75.5kt	+378%
Total	28,614.2kt	+12.5%
Container traffic		
TEUs	84,451	-13.0%

EUROGATE:

14,092,770 TEUs handled in 2018 (-2.2% yoy)

At the same time, the company's intermodal division took care of 1,046,703 TEUs, noting an increase of 2.8% on the result from 2017. "We can be satisfied with the handling figures for 2018. Above all, the fact that we were able to maintain a very stable level in Germany is gratifying and shows that we can hold our own against the western ports and the new competitors on the Baltic Sea coast. Although 2018 was without a doubt a successful year, the trend in handling volumes shows us that the spread of opportunities and risks, as well as their impact on our business, has increased against the background of the changed parameters. With this in mind, our priority is to leverage the opportunities in order to expand our market position," Michael Blach, EUROGATE Group Management Board's Chairman, commented.

EUROGATE's volumes (TEUs)

	2018	2018/2017
Germany, out of which	7,759,158	-0.2%
Bremerhaven	5,467,468	-1.3%
Hamburg	1,635,900	-3.0%
Wilhelmshaven	655,790	+18.3%
Italy ¹	4,356,419	-6.0%
Tangier	1,377,317	-0.5%
Limassol	393,574	+14.1%
Lisbon	137,411	-29.5%
Ust-Luga	68,891	-7.1%
Total	14,092,770	-2.2%

¹ Gioia Tauro, La Spezia, Salerno, Cagliari, and Ravenna



Photo: City of Antwerp Investdesk

The Port of Gdynia:

23.49mt handled in 2018 (+10.7% yoy)

The Polish seaport noted its new all-time freight high thanks to double-digit increases in the turnover of general cargo, coal and coke, and other dry bulk goods.

The Port of Gdynia's volumes

	2018	2018/2017
General cargo (excl. timber)	13,817kt	+10.9%
Grains	2,995kt	-14.0%
Coal and coke	2,629kt	+23.2%
Liquids	1,759kt	-3.3%
Other dry bulk	1,311kt	+21.5%
Timber	979kt	+318%
Ores	–	-100%
Total	23,490kt	+10.7%
Container traffic		
TEUs	803,871	+13.1%

TSCP:

13.04mt handled in 2018 (-8% yoy)

Exports of oil products via the Tuapse Sea Commercial Port (TSCP) decreased by 15.4% year-on-year to 5.4mt while the turnover of dry bulk remained at the same level of 7.6mt. However, both coal and grains contracted in their handlings, by 14.7% yoy and 8.5% yoy, respectively, to 2.62mt and 1.97mt. "The decrease should be primarily attributed to reduction of cargoes delivered to the port by railway due to more intense passenger traffic on the North Caucasus Railway in summer period, emergency situation caused by the flood in the Tuapse District in October and repair of a tunnel on the Belorechensk-Tuapse rail line in November-December 2018," a press release from the TSCP explained. At the same time, the throughput of ferrous metals marked a new all-time high of 2.94mt (+18% yoy). The volume of produce (fruits and vegetables) doubled, totalling 80kt.

The Port of Antwerp:

223.66mt handled in 2018 (+5.2% yoy)

The Belgian port noted its new freight turnover all-time high thanks to all major cargo groups marking an increase.

The Port of Antwerp's volumes

	2018	2018/2017
General cargo, out of which	138,296.4kt	+5.8%
Containerised	122,969.2kt	+6.4%
Break-bulk	10,274.2kt	-1.1%
Wheeled (ro-ro)	5,053.0kt	+5.4%
Bulk, out of which	85,364.8kt	+4.1%
Liquid	73,174.1kt	+3.6%
Dry	12,190.7kt	+7.2%
Total, of which	223,661.2kt	+5.2%
Imports	114,256.4kt	+6.0%
Exports	109,404.8kt	+4.3%
Container traffic (TEUs)		
Exports	5,481,642	+5.9%
Imports	4,969,241	+6.5%
Total	10,450,882	+6.2%
Finished vehicle logistics (cars)		
Exports	699,224	+4.8%
Imports	538,904	+4.6%
Total	1,238,128	+4.7%



Port of Hamburg:

8.7m TEUs handled in 2018 (-1.0% yoy)

Out of the total, railbound container traffic amounted to 2.44m TEUs, up by 4.7% on the result from 2017. Similarly, out of the 135.1mt (-1.0% year-on-year) handled in the Port of Hamburg last year, some 46.8mt came in or went out on rails, an increase by 2.7% yoy and a new all-time high for railborne freight transports.

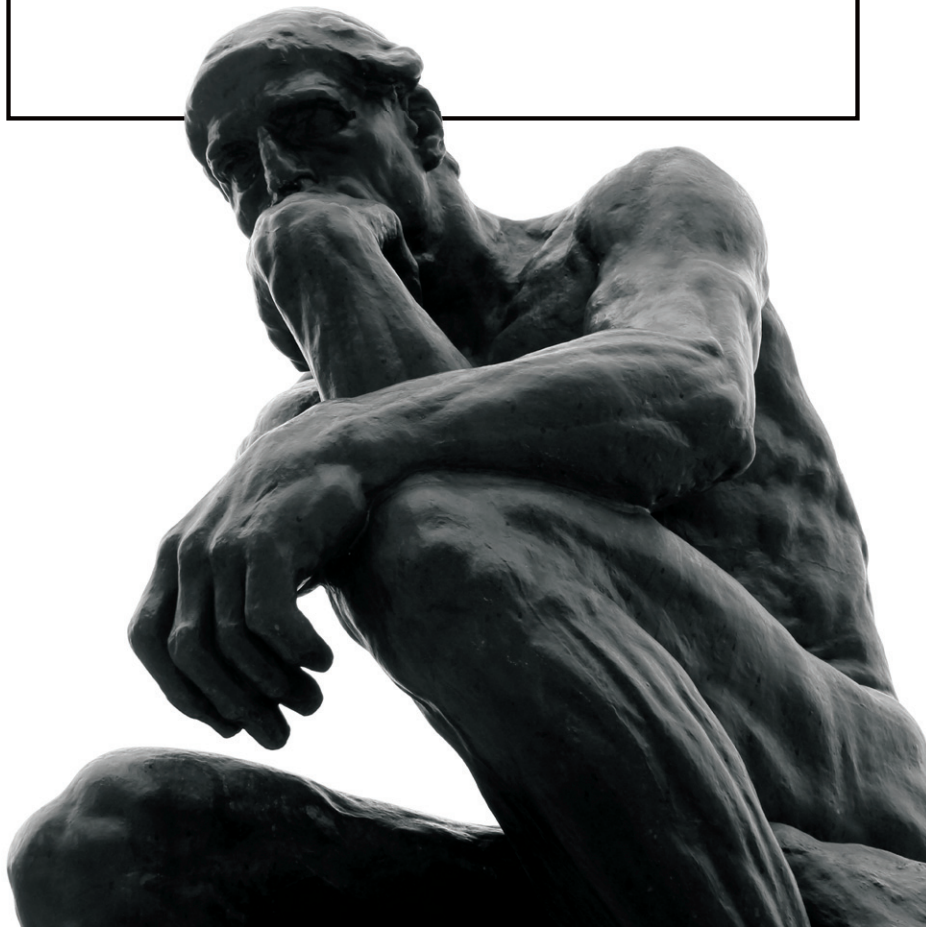
The Port of Hamburg's volumes

	2018	2018/2017
General cargo, out of which	90.9mt	-0.9%
Containerised	89.4mt	-1.0%
Break-bulk	1.5mt	+5.8%
Bulk goods	44.2mt	-1.2%
Total, out of which	135.1mt	-1.0%
Imports	79.7mt	+1.7%
Exports	55.4mt	-4.6%
Container traffic (million TEUs)		
Imports	4.6	-0.6%
Exports	4.2	-1.5%
Total, out of which	8.7	-1.0%
Laden	7.6	+/-0%
Pax traffic		
Passengers	900,562	+10.8%

Photo: Port of Hamburg

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Photo: Pixabay

Two prototype hybrid straddle carriers join CTT's fleet

HHLA has put into operation two battery-equipped **Konecranes** Noell Straddle Carriers at its **Container Terminal Tollerort** (CTT) located in the **Port of Hamburg**. The new machinery features lithium-ion batteries in which energy generated during braking, or when a container is being lowered, can be stored and used while driving, to ease the combustion engine load. According to the manufacturer, the hybrids consume at least 15% less diesel than comparable diesel-electric models, resulting in an annual reduction of 30-50t of CO₂ emissions per straddle carrier. The hybrids form part of HHLA's greenhouse gas axing strategy. Among many, the company wants to cut the CO₂ emissions per handled container by 30% by the year 2020 vs. 2008 levels. In 2017, HHLA announced that it has already achieved a 28.9% reduction. "With the new hybrid straddle carriers, we are cutting our energy costs and reducing emissions. This is further evidence that HHLA is a consistent supporter of cutting-edge technology and intelligent solutions. The company, the environment and the employees all benefit," **Dr Thomas Koch**, Managing Director, CTT, commented. **Hubert Foltys**, Director, Business Line Straddle Carrier, Konecranes, added, "HHLA and Konecranes are united by a long-standing partnership which has often involved pioneering work to introduce innovative container handling solutions. With the new hybrid-battery generation, Konecranes is taking the propulsion technology for straddle carriers to the next level and enabling HHLA to make further significant improvements to the economy and ecology of container handling at Tollerort."

HHLA completes rail-upgrading Burchardkai



Photo: HHLA

The company has added two rail tracks and installed two brand-new rail-mounted gantry cranes to the rail terminal at its **Container Terminal Burchardkai** (CTB). As a result, CTB has now ten rail tracks, and each of them can accommodate train sets up to 740 m-long, served, in turn, by four rail gantries. The two new cranes, delivered by **Kocks Ardelt Kranbau**, serve five tracks apiece. According to **HHLA**, all of the cranes are operated using eco-friendly electricity. "We have expanded our rail terminal once more to provide our customers with more than just extra capacity. The four rail gantry cranes, which work independently of one another, enable more flexible processing and faster reaction times for rail throughput," **Andreas Hollmann**, Managing Director, CTB, commented. In total, CTB's

rail terminal can now handle up to 850k TEUs/year, approximately 200k more than before the expansion. The data provided by HHLA says that 42.8% of the containers that went through the **Port of Hamburg** in 2017 were rail-handled. **Jens Hansen**, Executive Board Member, HHLA, said in this regard, "The numerous high-frequency rail connections give the Port of Hamburg a clear advantage against other European ports. We believe rail connections will increase considerably from 2020 through the improved transport connections of CTB. And we are already perfectly prepared for this." By 2022, HHLA intends to invest a total of €800m in the port logistics subgroup, of which €450m has been earmarked for the container and €350m for the intermodal segment.

INFORM among 2018's most promising AI solution providers

Artificial Intelligence in ports

Photo: INFORM

When humans meet algorithms

by Dr Eva Savelsberg

Senior Vice President, Logistics Division, INFORM



Dr Eva Savelsberg is Senior Vice President of INFORM's Logistics Division. She specializes in Agile Optimization Software that enables a wide range of terminal processes more productive, agile, and reliable. Eva is also a lecturer at the University of Aachen (RWTH), where she received her PhD in mechanical Engineering in 2002. Eva has published four books and over 30 papers on innovation in freight transportation.

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INFORM specializes in Agile Optimization Software to improve operational decision making. Based in Aachen, Germany, the company has been in the optimization business for nearly 50 years and serves a wide range of logistics industries including maritime and intermodal terminals.

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"You are my creator, but I am your master." These chilling words from Mary Shelley's novel *Frankenstein* were first published on January 1, 1818, amidst the First Industrial Revolution, a period of great social and technological change. Considered by many to be the first work of science fiction, the story influenced not only literature, drama, and film, but also the public's perception of science. This year being *Frankenstein's* 200th anniversary, and at the dawn of the Fourth Industrial Revolution, the myth of a creature turning on its creator seems more relevant than ever before. Having escaped the laboratories of many tech companies, Artificial Intelligence (AI) is poised to change our society for good.

While human-level AI is not yet looming around the corner, we constantly carry some form of AI in our pockets already today. The story is that Siri, Alexa, and Cortana, while comparable to the *Frankenstein's* monster in so many ways, aren't perceived to be frightening characters. Rather, these AI-enhanced assistants have become an ordinary, if not an integral part of our lives and workplaces.

This article will take you on a journey to the past, present, and future of AI. To unpack this story, we need to have a few stops along the way. Firstly, we need a quick reference point of what AI is and how it relates to other IT developments, e.g. machine learning. Then, it is worth identifying why INFORM is qualified to speak on the subject. From here we will explore how AI is being applied in the container terminal market today. Finally, we'll discuss what

the role of humans is likely to be in the future and whether any of us will have jobs.

The simple AI-ML-OR truth

Artificial Intelligence is an area of computer science that's concerned with building systems that demonstrate intelligent behaviour. Most people find it difficult to agree on a precise definition of intelligence, so views of what AI means also tend to diverge. For most people, when they hear the term 'Artificial Intelligence,' they think of a General AI or a human-level AI that can mimic all aspects of human intelligence. The simple truth, however, is that today AI is far from this. Instead, AI vendors have succeeded in building niche, so-called Narrow AI systems that know how to do reasonably specific things very well (for instance, play chess, understand natural language, translate between often very different tongues,



Drones, robots, and self-driving vehicles

Reshaping logistics

by Matthew Witteemeier

Marketing and Sales, Logistics Division, INFORM



Matthew Witteemeier brings over 10 years experience in marketing from a breadth of industries, incl. aviation, creative, financial, and software services. He holds a Bachelor in Management and Professional Studies from Southern Cross University in Australia.

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INFORM specializes in Agile Optimization Software to improve operational decision making. Based in Aachen, Germany, the company has been in the optimization business for nearly 50 years and serves a wide range of logistics industries including maritime and intermodal terminals.

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Drones, robots, and self-driving vehicles seem to have become a weekly discussion topic for the logistics industry. With major players like Amazon, Google, DPD, UPS, and even convenience stores committing serious resources to the development of these solutions, there is a consensus that technology will play a crucial role in shaping the future of the transportation business. If we accept this argument, then we, as an industry, must begin to consider the way that this will impact delivery organizations around the globe, so we can start to prepare our systems, processes, and people for what's to come.

One can easily imagine a future not dissimilar to the current state where by a parcel is carried between major central hubs by automated trucks before being shuffled to a local depot for dispatch by a driverless van equipped with a team of delivery robots who will facilitate the final leg to the door or parcel drop. While this is certainly a step forward, this is far too simplistic. The real benefit of autonomous technologies lies not in their ability to fit within the current distribution model, but rather to profoundly reshape it! For the sake of this article, these technologies will be divided into aerial (drones), land (robots), and automotive (self-driving or driverless vehicles).

Drones
There is much hype about drones providing a 10-30 minute aerial delivery service for lightweight consumables (generally up to 2.5kg). While this will allow companies to

offer a "convenience" service in the future, it is not where they will deliver lasting value. Their real worth lies in their ability to offer pick-up and drop-off at ad-hoc locations.

This will enable drones to provide new dynamic services never before possible. Imagine, for instance, that you've forgotten your office keys at home. In today's world, this would mean that you would have to return to collect them. For many commuters, this means an hour or more of lost time. In the future, you'll use your smartphone to order and pay for a drone to pick up the keys from your home and deliver them to you as you arrive to work. The entire service will be individualized and managed without any rigid logistics frameworks.

Robots
Robots already today come in all shapes and sizes. First, their future versions will offer a very broad range of delivery

INFORM Software was recently named one of the '20 Most Promising Artificial Intelligence Solution Providers of 2018,' a list created by *CIOReview*, a US technology magazine based in Fremont, CA. INFORM has been working with Artificial Intelligence (AI) for over two decades, with commercially available products in use since the early 2000s. "More than 20 years ago, we started developing knowledge-based AI systems that were based on the concept of using fuzzy logic and fuzzy reasoning for representing human knowledge. Over the years, we've added Machine Learning as a second area in our AI activities, and the two are now working in parallel together," Dr Ulrich Dorndorf, CTO, INFORM, commented. The unique property of INFORM's so-called "Hybrid AI" approach is that it uses both knowledge- and data-driven algorithms. The former are based on mathematical optimisation, Operations Research, and human know-how, while the latter on advanced analytics, machine learning, deep learning, etc. Hybrid AI helps customers get the best out of both worlds, as leveraging computer algorithms with human expertise yields results significantly superior to both. Data-driven AI techniques can harvest large amounts of information to detect hidden patterns leading to new insights. They also have the ability to learn, i.e., improve algorithmic decision-making over time. On the other hand, mathematical optimisation is typically more capable of solving complex planning puzzles. It also provides a much faster response to situational changes and process disruptions, elevating the agility of organizations. "We do not believe in AI running wild," Adrian Weiler, CEO, INFORM, said. "We believe that human control on a meta-basis is essential for AI to function properly. It is like auto-pilot in an aircraft; it performs its role very well 90% of the time, but depending on the situation, one can take control back from the autonomous system," he added. "We've been implementing Cyber-Physical Systems incorporating AI, data analytics, robotics, and human-machine interfaces at container terminals around the world for several years now," Dr Eva Savelsberg, Senior Vice President, INFORM's Logistics Division, explained. She continued, "We're always on the lookout for ways to implement further substantial improvements that better our customer's bottom lines. In 2018, we spent a good deal of time assessing how we could get the most out of implementing Machine Learning in combination with Agile Optimization and taking advantage of expert knowledge for the terminal industry. The findings are conclusive; Machine Learning offers our customers, and the industry, the ability to drive our already substantial efficiency gains even further. Where we're at with Machine Learning, Agile Optimization, and Expert Knowledge is a delta circuit co-evolution of human, math, and machine." Dr Savelsberg explained further, "Humans have a very significant role to play in the foreseeable future of any AI system; it is well documented that human/AI paired systems outperform their singular counterparts. INFORM's container terminal software is leveraging this phenomenon to develop market-leading solutions." Dr Savelsberg predicts, "We're seeing the first steps in the next significant evolution in niche AI solutions, one that will see a tightening of the human/AI partnership. Our next generation optimizers will create a more tightly integrated communication structure between our AI algorithm's decision-making capabilities and the expert operators." INFORM's Machine Learning assessment project reviewed data from different terminals and found several areas where improvements could be made to parameters that influence the optimization calculations of their add-on optimization modules. These included, among others: dwell time, outbound mode of transport predictions, and predictions around integrated robotic systems. Dr Savelsberg explained, "Take for instance container dwell time. Using Machine Learning, patterns for dwell time can be detected and used for more accurate input to AI systems. The same applies to improving our predictions about the mode of transport with which a container will leave the port. This would add to improvements in storage and prepositioning of containers. Furthermore, the behaviour of connected robotized systems can

be better understood. We analysed such systems and gained decisive knowledge on how reality might differ from expectations. And again, we're able to adjust important assumptions within the optimization parameters. In our assessments, we found that these variables could be improved considerably leading to a noticeable overall improvement in resilience and cost reductions."

Read more about the company's solutions and how the IT and transport industries collide in the following articles from the 4/2018 issue of the *Harbours Review*:

- *When humans meet algorithms. Artificial Intelligence in ports*, authored by Dr. Savelsberg
- *Reshaping logistics. Drones, robots, and self-driving vehicles*, written by Matthew Witteemeier, Marketing and Sales, Logistics Division, INFORM.

Antwerp lands a €3.0b-big investment



INEOS, a London-headquartered multinational chemicals company, will set up a brand-new propane dehydrogenation (PDH) plant and an ethane cracker unit in the Belgian port. These two will respectively convert propane into propylene and ethylene as the raw materials for chemical products that find their way into many industries, including car manufacturing, construction, clothing, cosmetics and personal grooming products, pharmaceuticals, electronics, and packaging materials. The plants will be built on the existing INEOS site in Lillo in the port area as well as on the unused parts of the concessions held by neighbouring companies which the British company will take over. The new facilities are expected to be operational by 2024. Once the

plants are up and running, they will provide 400 full-time jobs directly and five times that number indirectly. Some 3,000 people will be employed during the construction phase. "Our investment in a world-class ethane cracker and PDH plant is the largest of its kind in Europe in more than a generation. As such, it is a major development for the European petrochemical industry. We believe that this investment can reverse the decline in the European chemical industry in recent years," **Jim Ratcliffe**, CEO and Chairman, INEOS, commented. **Hans Casier**, CEO, **INEOS Phenol**, and Chairman, **essenscia** (a chemical and life sciences industry federation), also said, "The fact that Antwerp has been chosen as the location for this investment is a big new boost to the international competitive position of the existing chemical cluster. This is a great success not only for the chemical industry in the port but also for the economy of Flanders, Belgium and indeed the whole of Europe." **Frank Beckx**, Managing Director, **essenscia Flanders**, added, "After Borealis similarly opted for Antwerp a few months ago, this decision by INEOS puts the chemical sector in Flanders even more firmly on the world map. In particular, the construction of a hyper-modern cracking plant based on the very latest technology is of great strategic importance, as not since the 1990s has such an installation been built in western Europe. A cracker produces the essential simple molecules that form the basis of the entire chemical industry. And by creating at least 400 new jobs, the project will be a significant boost to employment in this sector." He also underlined, "This is undoubtedly the most important economic news in a long time. Such an investment – which in turn will probably attract others of its kind – further strengthens the position of the chemical industry as the key sector of the Flemish economy. This is a massive vote of confidence, inspiring us to maintain our collaboration with government in building up a strong competitive position internationally for this world-leading chemical cluster." **Jacques Vandermeiren**, CEO, **Antwerp Port Authority**, commented on the port's investment portfolio, "It is naturally very good news that INEOS has selected our port for this major new investment. It once more demonstrates that we as the largest integrated chemical cluster in Europe are very attractive to international investors. Furthermore, propylene and ethylene are the starting points for many other processes, so production of these basic components will further strengthen our raw materials position in the chemical industry and indeed many other industries in our country. This mega-investment brings the total amount of new capital expenditure that we have attracted to Antwerp over the past year to more than 5 billion euros. This will undoubtedly help to secure the presence of industry here in Antwerp and will make an essential contribution towards creating a sustainable future for our port and for the Belgian economy." To this **Bart De Wever**, Mayor of the **City of Antwerp**, added, "Today, we have the opportunity to announce the largest investment in the European chemical industry in 20 years. I have to admit that I am overcome by pride and humility. These are the moments you live and work for. Antwerp is thriving. A statement I will repeat again and again because we really have to stop doom-and-gloom scenarios once and for all. We can have every confidence in the future. The economic climate is healthy. Antwerp is open for business. This is an investment for an entire generation. It also demonstrates that even in times of Brexit uncertainty, investors still maintain belief in the process of economic growth, internationalisation and sustainable technology. There remains trust in progress." The Antwerp-INEOS deal has also been cut thanks to the so-called **Welcome Team for the Chemical Sector**, set up by **Flanders Investment & Trade (FIT)** and **essenscia Flanders**. "This initiative brings together a team of experts offering intensive support to foreign chemical companies, helping them with investment projects and highlighting the advantages for the chemical industry in Flanders in terms of innovation, tax policy and investment support, among others. With some 300 investment projects since 2010 the chemicals and life sciences sector represents around half of all foreign investment in Flanders," a press release from the Port of Antwerp read. **Geert Bourgeois**, Minister-President of **Flanders**, commented in this regard, "This is particularly good news, an exceptional event: the largest investment in Flanders in the past 20 years. The project is also a good illustration of a long-term collaboration between various ministries and government departments, the industry associations, the port etc., all with a shared objective and coordinated by my agency, Flanders Investment & Trade." **Claire Tillekaerts**, Managing Director, FIT, summed up, "An investment of 3 billion euros in the port of Antwerp by INEOS is particularly good news not just for the Flemish economy, it also underlines the efficient collaboration between government, the business world, centres of knowledge and Antwerp Port Authority that enables our region to attract such large investments. The Welcome Team for the Chemical Sector – which is coordinated by FIT – offers the necessary expertise for finding the ideal location, selecting the right local partners, etc. To give this investment a kick-start in Flanders various government departments were intensively involved. All those who participated in this project reacted very promptly and professionally to queries from INEOS, providing in-depth responses. The package of tailor-made services that was specially put together managed to brilliantly convince the British chemical company and landed the investment despite intense competition."

Atakaş Port Business buys another crane from Konecranes

The Turkish stevedore has ordered from the Finnish manufacturer a Gottwald Model 7 rail-mounted portal harbour crane, set to start operating in **İskenderun** on Turkey's southeast coast in mid-2019. The machinery is a four-rope G HSK 7528 B crane that's able to lift up to 125t. The gantry has a 50t grab curve and an outreach of maximum 54 m. The crane's individually designed portal has a clearance of 6 m, the track gauge measuring 14 m. To compensate for the different rail loadings due to the crane offset in relation to its portal, the bogies on the quay side are fitted with eight wheels each and on the land side with six. **Atakaş Port Business'** latest purchase, a deal which includes an option for another crane, follows two rubber-tyred Gottwald Model 7 mobile harbour cranes put into operation a year ago. "Our aim is to provide the greatest benefits to the Mediterranean, Central Anatolia and Southeastern Anatolia regions. To meet our goals, we have chosen reliable and high-performance Konecranes Gottwald mobile harbour crane technology once again. We started our operations with two flexible rubber-tired cranes to handle various types of cargo, but now need rail-mounted cranes for continuous-duty bulk handling. To enable the new crane to work on our rails, Konecranes will team its mobile harbour crane technology with a portal exactly designed to our needs. We are also preparing to load and unload large container vessels with up to 18 rows at a later date," **Vedat Ohri**, General Manager, Atakaş Port Business, commented. **Hans-Jürgen Schneider**, Regional Sales Manager, **Konecranes'** Business Unit Mobile Harbor Cranes, also said, "We are proud that this ambitious new Turkish port operator selected our technology right from the outset and continues to opt for it, having come to appreciate its assets."

Northern Ireland's BCT opts for Kalmar's AutoRTG system



Kalmar, a subsidiary of the Finnish **Cargotec**, has won a tender to supply eight automated rubbery-tyred gantry (RTG) cranes, to be controlled by the company's Terminal Logistic System (TLS) and remote control (RC) desks, to the **Belfast Container Terminal (BCT)**, part of the **Irish Continental Group**. The AutoRTG system will replace the manually-operated rail-mounted gantries currently used at the BCT. The RTGs will be factory pre-tested, and they will be delivered to the client fully erected. Delivery of the system is scheduled to commence at the end of 2019. The new machinery will be fully automated within the container stack, receiving orders from the TLS, which will perform planning, routing,

and execution of all operations based on the orders it receives from a terminal operating system (TOS). Crane gantry operation will be automated with supervision from the operator at the RC desk in the control room. Truck handling will be remote controlled, but the system will feature a positioning system to ensure accurate alignment of trucks under the RTGs. As part of the project scope, Kalmar will be responsible for the integrations between the TLS, the TOS, and other relevant systems. "The Kalmar AutoRTG system will provide significant benefits in terms of maximising both the safety and efficiency of operations. Kalmar's proven track record in complex port automation projects and their experience with AutoRTGs convinced us that they were the right choice. Their technical solution perfectly matched the needs of the terminal," **Trevor Anderson**, **Belfast Harbour's** Operation's Director, commented. **Ilkka Annala**, Vice President, Intelligent Crane Solutions, Kalmar, added, "The Kalmar AutoRTG system allows terminals of all sizes to reap the rewards of greater operational efficiencies, a safer working environment and better predictability in their day-to-day operations. We have supported BCT with equipment maintenance services for several years already, so we are delighted that BHC [Belfast Harbour Commissioners] have chosen to partner with Kalmar as they begin their automation journey."

Exolgan buys hybrid RTGs from Kalmar

By late 2019, the fleet of cargo handling equipment of the **Exolgan Container Terminal**, located in **Buenos Aires**, will grow with four rubber-tyred gantries (RTG) delivered by **Kalmar**, part of the Finnish **Cargotec**. The new machinery hybrid drivelines combine lithium-ion batteries with a diesel power unit. The latter is used to charge the battery packs, which, in turn, power all lifting and driving operations. The RTGs will have a maximum lifting capacity of 40t under the spreader, making it possible to stack containers 6+1 rows wide and 1-over-5 high. In addition, they'll be fitted with the Kalmar SmartRail automated gantry steering solution with Container Position Indication, which automatically controls the gantry steering and feeds container coordinates to the terminal operating system, and feature the Kalmar SmartProfile spreader anti-collision system. The deal with Exolgan also comprises the supply of a spare parts package for the machines. "Kalmar's Hybrid RTG solution was the ideal choice for us since it will both help us reduce fuel costs and improve the sustainability of our operations by reducing noise and airborne emissions. We value our relationship with Kalmar and are looking forward to working together to increase performance and reliability at our terminal," **Carlos Mancini**, Engineering Manager, Exolgan, said. To this **Alexandre Esse**, Manager, Sales, Ports & Terminals, Americas, Kalmar, added, "Our second-generation hybrid RTG is a highly fuel-efficient machine that makes no compromises on performance or sustainability. We are pleased to be able to continue our fruitful cooperation with Exolgan with this latest order, which further demonstrates the confidence that customers have in our hybrid technologies."

SCPA buys hybrid RTGs

The Finnish **Konecranes** will deliver by Q1 2020 three rubber-tired gantry (RTG) cranes to the **South Carolina Ports Authority's** (SCPA) **Wando Welch Terminal**, located in **Charleston**, South Carolina. The new machinery, combining a lithium-ion battery pack with a diesel Tier 4f engine, will be able to lift up to 50t and stack containers 1-over-5 and 6 plus high lane wide. The RTGs will be equipped with an active load control system, which eliminates container sway, and have installed the advanced features Auto-steering and Truck Lift Prevention. The status of the battery pack (charge level, general health) will be handled through a management system to which Konecranes will have monitoring access via its TRUECONNECT remote connection. "These hybrid RTGs mark a new era in SCPA's pursuit of eco-efficiency. At Konecranes we are constantly pushing battery technology and electrification forward to make our container handling equipment more eco-efficient without compromising crane performance in any way," **Jussi Suhonen**, Sales Director Americas, Konecranes Port Solutions, commented on the order.



Photo: Wikimedia Commons

VICT entrusts Kalmar with a maintenance and support services deal

The agreement covers the automated container handling solution used by the **Victoria International Container Terminal** (VICT), located in the **Port of Melbourne** and said to be Australia's first all-automatic container terminal. Specifically, the deal involves all aspects of the OneTerminal automated solution, which comprises the **Navis N4** Terminal Operating System (TOS), 20 **Kalmar** automated stacking cranes, 11 **Kalmar** AutoShuttles, and the **Kalmar** Terminal Logistics System, which conducts routing and execution for automated operations based on the orders it gets from the TOS and which is connected through open **Kalmar** Key interface to five automatic neo-Panamax ship-to-shore gantries. **Anders Dømmestrup**, CEO, VICT, commented on the latest order, "VICT is one of the most advanced container terminals in the world. With the strong collaboration of Kalmar's cutting-edge technology and equipment and Navis' industry-leading TOS, we have reached an important point in our development: going from implementation into optimisation to now achieve the highest standards in port safety and efficiency. This integrated maintenance and support agreement will allow us to maximise the productivity, equipment efficiency and availability of our OneTerminal automated systems, ensuring that we can provide our customers with world-class service." **Arto Keskinen**, Vice President, Intelligent Service Solutions, Kalmar, also said, "We are delighted to have the opportunity to further strengthen our relationship with VICT through this comprehensive maintenance and support agreement. This is a significant milestone for both parties and lays the groundwork for Kalmar to further support VICT with optimising and expanding their operations. This agreement is the result of the hard work and collaborative, customer-focused approach of the Kalmar Australia team."

Norfolk Southern chooses Kalmar to boost its US intermodal terminals

The US corporation has bought four 25 m of max span **Kalmar** SmartPower rubber-tired gantry (RTG) cranes, to be equally deployed between the facilities in **Chicago** and **Rossville** by end-2019. The cranes will be equipped with a suite of process automation solutions, including the **Kalmar** SmartRail automated gantry steering solution, the **Kalmar** SmartStack to eliminate the problem of lost containers, and the **Kalmar** SmartMap visualisation tool. An optical character recognition solution will enable the cranes to automatically identify containers, while the user interface will support operators to help streamline the stacking process, improve mobility and efficiency through the yard, and decrease truck waiting times. Additionally, the four will feature an electro-mechanical anti-sway system from Kalmar and a rotating **Bromma** spreader. According to the manufacturer, thanks to a smaller diesel engine and intelligent power management system, its SmartPower RTGs use up to 10 l less fuel per hour than most diesel RTGs on the market. **Troy Thompson**, Vice President, Sales, Kalmar Americas, said, "We are very pleased to be able to continue our collaboration with Norfolk Southern and to support them with the optimisation of their intermodal operations. The proven **Kalmar** SmartPower RTG provides the perfect balance between productivity and cost efficiency in a variety of container-handling applications."

Saqr Port will grow with three brand-new cranes

RAK Ports Group, operator of the dry bulk terminal **Saqr Port** located in Ras Al Khaimah, part of the United Arab Emirates, has bought three mobile harbour cranes from the Finnish **Konecranes**. The diesel-electric machines, the first two to be delivered in April 2019 and the last one a few months later in July, will be of the Model 8 four-rope G HMK 8410 B 63t grab curve type. The new equipment will join Saqr Port's fleet of 11 Konecranes Gottwald mobile harbour cranes and will be used for handling various dry bulk goods, including coal, limestone, and clinker. In addition to their hybrid design, the cranes will be prepared to be hooked up to the terminal's grid. "Ras Al Khaimah is one of the most rapidly growing Emirates. Our port not only plays a key role in the long-term strategy of our Emirate, but also as a logistic backbone of the entire Arabian Peninsula. To fulfil this dual role, we have operated mobile harbor cranes from Konecranes for many years which have proven themselves to be very efficient. The new Model 8 cranes form both the next step in our partnership with Konecranes and our terminal's performance. These large cranes will help us to sustainably boost productivity in Saqr Port," **David Owen**, Port Engineering Manager, Saqr Port, commented. **Dirk Stoll**, Regional Sales Director, Konecranes' Business Unit Mobile Harbor Cranes, also said, "The United Arab Emirates are situated in the center of an extremely dynamic world region. Reliable handling of bulk materials is thus crucial. We are proud that this important customer continues to trust in our technology for its bulk operations. Saqr Port's decision once again in favor of Konecranes Gottwald mobile harbor crane technology confirms that our large cranes perfectly meet the needs of terminal operators who are faced with the challenges of rapid growth."

Konecranes sells to China-Africa

JingJiang Port Shipbuilding & Engineering has ordered two **Konecranes** Gottwald Model 8 floating cranes. The pair will be used by **Cosco Shipping Bulk** to handle bulk off the coast of Guinea as of end-2019. Specifically, Cosco will tranship bauxite for the production of aluminium from river barges onto ocean-going Panamax vessels on the open sea. The cranes are designed in accordance with **Lloyd's Register Code for Lifting Appliances in a Marine Environment**, which allows them to be operated at wind speeds up to 24 m/s and maximum wave heights of 2.5 m. The two will offer a max outreach of 43 m and a grab curve of 63 m. Once deployed, the number of floating cranes manufactured by Konecranes and operating on the western coast of Africa will grow to 10. "We will operate the two floating cranes within the framework of our cooperation with China Aluminum group, an important step in the implementation of China's 'One Belt, One Road' initiative. The aim is to transport bauxite from Guinea to the aluminum plants in China. As transshipping raw materials at sea quickly and safely plays a key role in the supply chain, we opted for Konecranes Gottwald Floating Cranes. These cranes have proved themselves in Africa and beyond as particularly productive and reliable in rough open sea environments," **ZhiJun Fan**, General Manager of Technical Division of Cosco, commented. **Giuseppe Di Lisa**, Sales and Marketing Director, Konecranes' Business Unit Mobile Harbor Cranes, added to this, "We are proud that a global market leader like Cosco has opted for our technology for their bauxite transshipping operations in western Africa. The rapidly growing number of Konecranes Gottwald floating cranes around the globe confirms our leading position in this segment once again. Based on mobile harbor crane technology and launched in 2004, our floating cranes expanded their capabilities quickly from transshipping mid-stream to operation on the open sea."

Grimaldi and VTE join H2PORTS

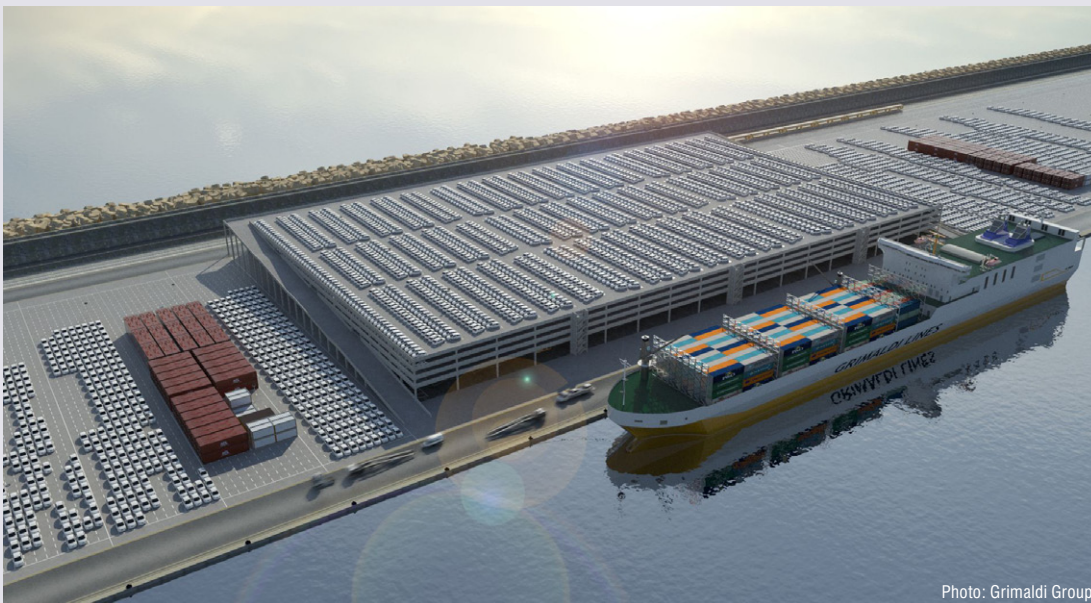


Photo: Grimaldi Group

The two have joined the initiative whose main goal is to provide applicable solutions, based on the use of hydrogen and fuel cells, facilitating a transition towards a zero-emission port industry. Specifically, two pilots will be carried out in real-world operating conditions at the ro-ro-specialised **Valencia Terminal Europe (VTE)** – a terminal tractor powered by hydrogen fuel cells, which, in turn, will be supplied through a mobile refuelling station. According to **Grimaldi** and **VTE**, the latter will become the first European port facility of

its kind to use hydrogen-run machinery. Meanwhile, the **H2PORTS** project will carry out feasibility studies on the development of a sustainable hydrogen supply chain catering to the needs of the port industry. The €4m-worth project is funded by the **Fuel Cell and Hydrogen Joint Undertaking**, a European public-private partnership whose aim is to promote the adoption of hydrogen as an alternative fuel. The **Valenciaport Foundation** is H2PORTS' coordinator, while apart from Grimaldi and VTE also the **Port of Valencia**, Spain's **National Hydrogen Centre**, **Atena**, **Ballard Power Systems Europe**, and **Enagás** are involved in the project.

The world's strongest reachstacker

N.C. Nielsen has supplied the Danish Esbjerg-headquartered **Blue Water Shipping** (BWS) with a reachstacker that's said to have the biggest lifting capacity in the world. The machinery – used by BWS in the **Port of Esbjerg** for the handling of wind turbines, nacelles, frames, and structures – can lift up to 152t. “Now we can handle the heaviest lifting and transport tasks by combining our equipment for the various tasks. For example, we can lift items up to 250 tons with the world's largest reachstacker at one end and one of our 100-ton reachstackers at the other end – or operate with extremely heavy items hanging on the hook. Thus we are geared for future transport tasks,” **Søren Messmann**, General Manager, Port Services Division, BWS, commented. “The ever bigger and heavier wind turbines, the carrying capacity of the soil of the storage area, new types of lifting gear, and the request for the hook being able to reach the ground were among the technical challenges,” listed a press release from BWS.



Photo: Blue Water Shipping

Hutchison invests in Felixstowe's ro-ro capacity

The company will replace one of the existing ro-ro bridges with a floating linkspan as well as create a park with space for 300+ additional trailers. The investment is a result of an agreement struck between **Hutchison Ports** and **DFDS**, which is aimed at improving the **Felixstowe-Rotterdam** service. “As well as being the UK's largest container port, Felixstowe is also a key gateway for Ro-Ro trade with Europe. Demand on DFDS' service to Rotterdam has been growing steadily for a number of years, and we are delighted to have agreed to a new contract with them to secure the service at Felixstowe for another 15 years,” **Clemence Cheng**, CEO, the Port of Felixstowe, and Executive Director, Hutchison Ports, commented. He also said, “We are seeing increasing interest in both ro-ro and short-sea container connections at all three of our UK ports [Felixstowe, Harwich, and Thamesport] as shippers seek to minimise risks to their supply chains resulting from Brexit.”

Liebherr's latest deliveries to the US

The company's container cranes branch, located in the Irish Killarney, recently supplied four ship-to-shore (STS) cranes to two terminals on the East Coast of the US. The **Port Newark Container Terminal, New Jersey**, took delivery of two 69 m outreach, 30.5 m span, 20 m backreach, 50.3 m lift height over rail, and 66t safe working load (under twinlift spreader) gantries. The cranes are fitted with semi-automation, electronic anti-sway, and a straddle carrier positioning system allowing for increased productivity. They also feature safety improving laser anti-collision systems as well as optical character recognition and a checkers cabin for better container tracking. Maintenance is optimised thanks to remote access and diagnostics. The STSes for **Penn Terminals**, situated in **Eddystone, Pennsylvania**, feature semi-automation of the trolley and hoist operation, with manual operation only required when operating under the pre-configured safe height. Electronic anti-sway (sway damping) of the load is provided too, while anti-collision systems and remote diagnostics are included as well. Each of Penn Terminals' new gantries has a span of 18.3 m, an out- and backreach of 48 m and 15 m, respectively, and can safely lift up to 66t (also under a twinlift spreader).

All-electric Dragons join OT Logistics' STK's locomotive fleet

The company has leased out three brand-new freight locomotives manufactured by the Polish **Newag**, which will be chiefly used to carry dry bulk goods on the routes connecting southwest Poland with OT's sea terminals in **Gdynia** and **Świnoujście**. Each 5 MW of power Dragon is able to pull a 40 wagon-long and 3.0kt gross-heavy train set at a speed of 120 km/hr. The lease deal also covers maintenance. According to the producer, Dragons' technical reliability stands at 98%. In addition, in years 2019-2022, **STK** plans to add diesel-electric Dragons to its fleet to take care on its own of shipments across parts of the rail network that aren't electrified.



Photo: OT Logistics

Photo: Rawpixel

What the Industrial Internet of Things can do for you

by Przemysław Myszka



Sue Rutherford, VP Marketing,
ORBCOMM

Thanks to the ongoing digital revolution, the world around us seems to be in a constant flux. The World Wide Web was a novelty at the beginning of the 1990s. Today, millions of things are connected via telematics devices, sensors and other Industrial Internet of Things (IIoT) technologies, making it possible to remotely monitor and control fixed and mobile assets thousands of miles away. We're talking with technology provider ORBCOMM's Sue Rutherford and Christian Allred about what their company makes of the opportunities and challenges this interwoven physical-cyber reality creates, asking how the transport and logistics industry can benefit from becoming part of the IIoT.



Christian Allred, VP International,
ORBCOMM

■ **Could you sum up how the past year turned out for ORBCOMM? What are you hoping to achieve in 2019?**

The past year was a good one, with sound financial results, strong revenues and profitability. In short, ORBCOMM continues to be a growth company, just as the markets in which we're active – including solutions for the transport and logistics sector based on the Industrial Internet of Thing (IIoT) – are on the upswing. Looking ahead, we'll surely press on with introducing new developments into the market, along with refining our existing solutions. Specifically,

companies that approach us are increasingly looking for better tracking technology including big data analytics, especially for refrigerated container and trailer operations.

By doing what we're best at, namely delivering IIoT devices, connectivity and software solutions that gather valuable data upon which informed decisions can be made, we're helping our clients around the world on their journey into digitalisation. And the proof of the growing appetite for IIoT is in the numbers, with our customer base now standing at over 2.3m subscribers from both the private and public sectors.

ORBCOMM BY THE NUMBERS

2.3 Million

Global subscriber communicators

\$254 Million

Total Revenue growth of 36% in 2017

\$135 Million

Service Revenue growth of 20% in 2017

\$45 Million

Adjusted EBITDA in 2017

800

Employees and full-time contractors in 18 countries

400

Engineers and technical experts across 15 disciplines

147

Customer care staff providing 24x7 support

125

Sales account managers and support with vertical expertise

100

Technology patents

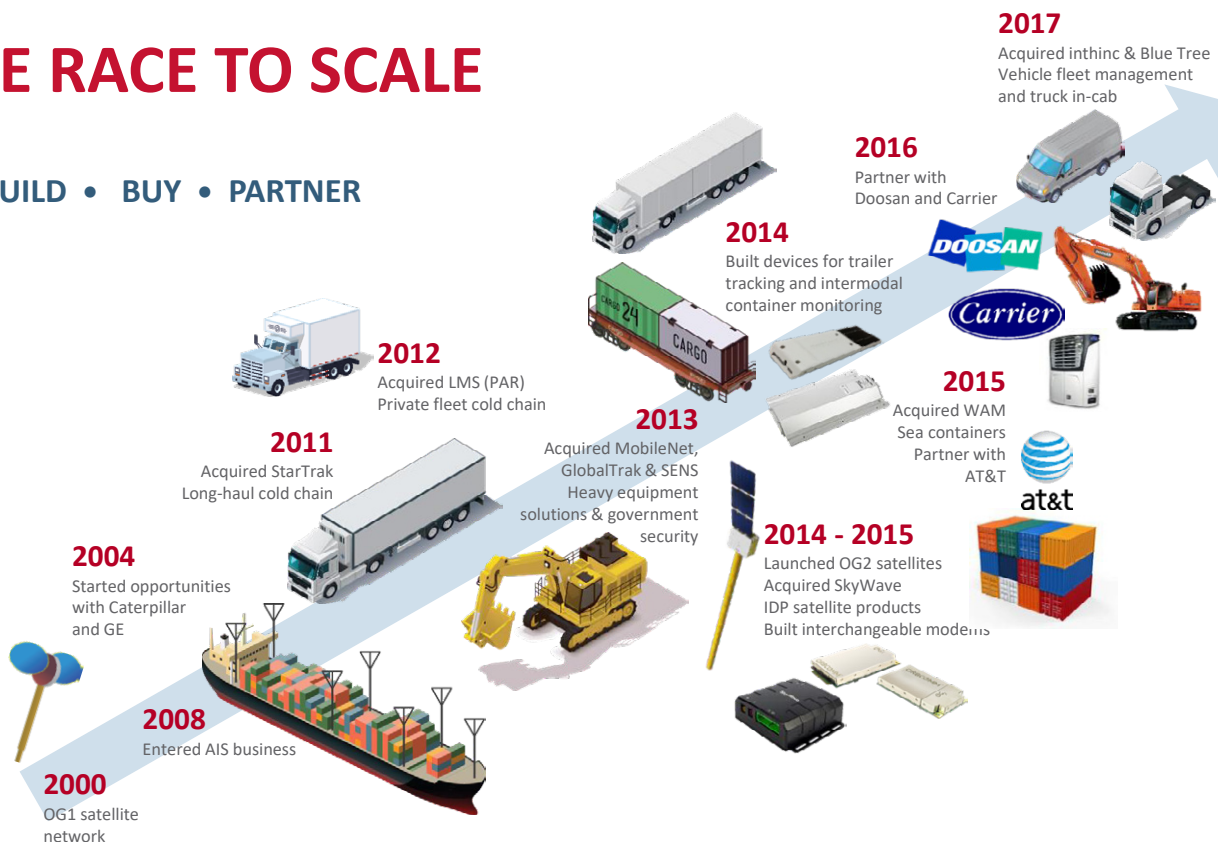
ORBCOMM is particularly strong in catering to the needs of the transportation, logistics and supply chain industries. Digitalisation is making big inroads in these sectors and adoption

of IIoT is an important aspect of digital transformation. That said, it's a challenging environment. The world today is awash with all sorts of technology buzzwords that can make it difficult

for a company to spot the right solution that will make a real difference. Back in 2016, we and J.B. Hunt, a Fortune 500 transportation company, joined forces to analyse what exactly

THE RACE TO SCALE

BUILD • BUY • PARTNER



SUCCESS STORY: HUB GROUP

Challenge

Efficiently manage a fleet of 29,000 intermodal containers throughout North America

Solution

ORBCOMM developed a customized solution providing real-time status and location of its container fleet.

Result

Increased operational efficiency, reduced costs

Developed new revenue opportunities

Enhanced customer satisfaction

Achieved ROI within one year

"We have estimated [savings]...at around \$6 million on an annualized basis once the entire fleet is up and running."

Mark Yeager, Former Vice Chairman & COO
Hub Group

"We can actually be a lot more proactive... it should help reduce container dwell times by at least a half a day."

Dave Yeager, Chairman & CEO
Hub Group



Investing in Hub's solution creates opportunities with larger intermodal operators

the IIoT could do to make its operations more efficient. The result of this collaboration was J.B.Hunt's decision to go ahead with a very large scale deployment, installing IIoT devices on some 85-90k intermodal containers and road trailers. That was for US domestic intermodal and road operations, but it's an example of a global trend. Today we are seeing container lines, road hauliers, intermodal operators, 3PLs and cargo owners (such as our client Walmart) all around the world monitoring how the technology and transportation worlds are colliding and reshaping business as we know it.

The past 12 months were also noticeably different from the atmosphere in 2017, when there was a lot of uncertainty in the air. In 2018, our clients displayed more optimism. Something has changed within the ocean shipping industry, especially, which we all know has been weathering one storm after another for many years. While we didn't see any major breakthroughs in 2018 with big new deployments, something's definitely brewing and shipping companies are positioning themselves to reinvent their core offerings with technology, including telematics for greater visibility.

The bankruptcy of Hanjin a couple of years ago may have played a role here. Suddenly, companies started to

ask if they actually knew where their assets were. This has helped drive increased interest in container track and trace solutions, especially for refrigerated containers transporting frozen products, fresh produce, pharmaceuticals and other temperature-sensitive cargoes. Though nobody envies Hanjin its fate, the industry has learnt the lesson – the more visibility you have, the better you sleep. Here at ORBCOMM, we think the reefer market will continue to be a rich source of customers. More and more companies are investing in the next generation of refrigerated containers, like those equipped with sophisticated systems for controlling the atmosphere inside the boxes.

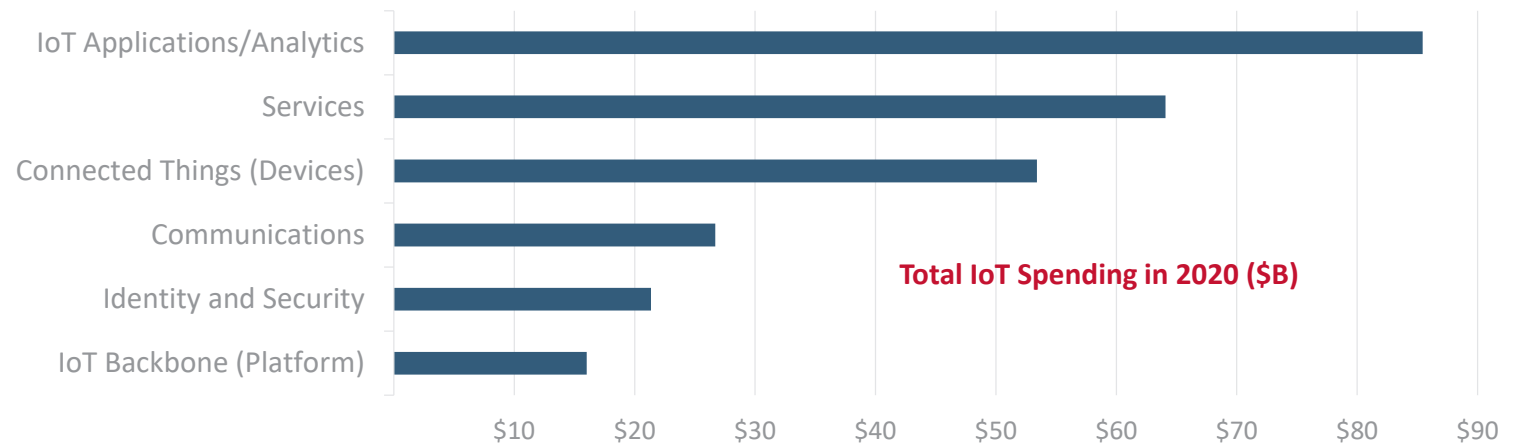
We've received many references from customers who said that after adding ORBCOMM's solutions to their business models, not only did their operations improve, but the companies they work with benefited as well. Take for instance first and last mile logistics, and specifically the companies and their employees who load or unload the containers. Thanks to telematics and geofencing, the container itself notifies when it will arrive, so the client can see in advance what the workload will look like and plan accordingly. For their part, container owners and operators like J.B. Hunt receive automated alerts when they

can collect their boxes. This greatly improves workflow on all sides, as people don't have to be on standby. Containers are like ships – if they don't move, they don't work and they don't earn money.

There's another advantage to be gained from adding software to the hardware. Cargo security has been an issue ever since the first cart was moved. Today, people want to know what's happening to their shipments 24/7 and technology enables this at a reasonable price (as it'd be absurdly costly to hire people to see what's happening with a box that's on its way from Asia to Europe, for example). So, containers are now equipped with seals that immediately dispatch a notification in case somebody tampers with the doors. There are also other cargo sensing measures that can be put to use in order to make sure that the shipment arrives intact. And if a container or trailer is stolen, the proper authorities can reclaim it fairly quickly because they know, thanks to data from our devices, when and where the equipment has been taken. Technology can also correct human mistakes. One example is setting the wrong temperature in a refrigerated container or trailer. Our devices pick this up fast, and allow the temperature to be remotely adjusted, avoiding damage to valuable cargo. While

THE INDUSTRIAL IoT MARKET IS TAKING OFF

- **60% of growth by 2020 will come from applications/analytics and services.**
- **All layers of technology stack will have at least 20% CAGR 2015-2020.**



IoT has the potential to be ‘utterly transformative’ for non-technology companies.

we are constantly researching better cargo sensing technologies, at the same time, as more and more software makes its way into the market, cyber-security has arisen as an issue. Luckily, if you operate a network that's based on satellites, as ORBCOMM does, it's virtually impossible to breach or decrypt our channels and disorientate the devices in order to hijack a shipment.

- **Last time we spoke with ORBCOMM's representatives, about one and a half years ago, we talked a lot about the IoT and how it's changing the transport and logistics business. Could you update us on the IoT developments that have been taking place since that time?**

ORBCOMM has been 100% devoted to IIoT since the concept came about. The IIoT products and solutions we're currently offering are already in their third or fourth generation. Take for instance our GT 1100, in the market for 5-6 years. This little fella is a ruggedized, easy-to-install device with a low profile that's used for tracking containers, trailers, railcars, and chassis. As it is today, GT 1100 allows for multi-cargo sensing and can also handle multiple IPs, so other peripheral devices can be connected to it. Future products we're already working on will be even smaller, have batteries that last longer, be more

price-competitive, etc. We continuously re-evaluate our portfolio – take what's good and see how it can be improved - that's ORBCOMM's approach. One trend today is making the devices more compact. In the past, a “single” device consisted of many parts, which made the solution more costly as well as time-consuming to install, maintain and replace. The idea now is to offer clients an all-in-one package - a single small box that they mount onto their assets and can roll on with their IIoT-enhanced business.

The same goes for the transmission channels; our devices offer now LTE/4G wireless communication. One could ask why not 5G, since this is the next big thing for telecoms and users who want to stream their HD or even 4K video instantly. While that's all 100% correct, we cater to a different market. With the current infrastructure, we believe LTE is better positioned for the time being to fulfil the requirements of industrial players that are concerned with making their operations more efficient thanks to having a secure and uninterrupted flow of data at hand, at an affordable price. That said, we remain agnostic when it comes to technology, meaning that if 5G matures enough to take the place of LTE in industrial applications, we'll be there to take advantage of it. Ultimately, it's not how fast you can go through a given technology that really

matters, it's what delivers the most bang for the buck.

One thing that hasn't changed over the years is the necessity to wrap these delicate electronic devices in a sturdy shell. So, no matter how harsh the weather or bumpy the road might be for a train or a truck that has to cross half the US, or travel thousands of miles on the New Silk Road from China to Europe, our products need to keep firing on all cylinders all the time, period. We recall one situation when a container was mishandled and broken to pieces – with the exception of our device, that is, which remained attached and functional. It's a matter of a few extra dollars only and the clients fully understand that's a good bargain in exchange for being sure that their data stream goes uninterrupted.

- **What is the ORBCOMMconnect platform?**

In a nutshell, it's a tool we use internally so that both we and our customers have complete access to the devices. The platform enables management of the entire lifecycle, suspending or deactivating a device if it needs to be changed from one carrier to another or when the firmware has to be updated. It sounds simple – and it has to be simple to be efficient – but it took a lot of effort to develop it. After all, it's a tool with which we're taking

THE INDUSTRIAL IoT MARKET IS TAKING OFF

The market is heavily driven by specific use case scenarios - track, control, monitor and communicate with fixed and mobile assets located throughout the world

- Companies are looking for **end-to-end solutions** to **increase** customer satisfaction, **improve** quality, **support** new business models (such as data-driven services), and **reduce** costs.
- **Predictive maintenance, track and trace, and fleet management** are leading applications.
- **Transportation and logistics, utilities, and discrete manufacturing** will be the three largest sectors.

2015
\$63B*

2020
\$267B*

*Boston Consulting Group (BCG),
2017 estimate

IoT has the potential to be 'utterly transformative' for non-technology companies.

care of more than 2.3m subscriptions on a daily basis.

- **In October 2018, ORBCOMM won a contract to track and monitor assets for the U.S. Department of Defense. How working for the government differs from taking care of private companies' needs?**

It's a great success story for ORBCOMM and Savi Secure, our partners from Alexandria, Virginia. The Defense Logistics Agency (DLA) is now using our products to track and monitor their remote, high-value military assets, some 24k of them in total, located across large yards in different parts of North America.

The technicalities are pretty much the same as when monitoring containers – the owner wants to know where its assets are and what's happening to them. That said, we take pride in the fact that the US government entrusted us with this contract, seeing us as the right people in the right place and, we should also add, with the right solutions. While this is a domestic project, we're looking into whether we can do the same for DLA assets in other parts of the world as well.

- **Earlier, in March of 2018, ORBCOMM joined the Blockchain in Transport Alliance. What are the company's views on the use of this technology in the transport and logistics domain?**

We interpret the technological sphere as an ecosystem that constantly evolves. New species appear, like blockchain, and it's our job to pay close attention whether these grow and replace older or less efficient technologies, or turn out to be nothing more than another fad.

As we see it, blockchain in the transport sector will find its place in providing increased security for financial transactions between shippers and end receivers. Once a container safely goes through the last mile – the part of the supply chain we can monitor – blockchain can kick in and take care of the payment. In this way the two technologies, IIoT and blockchain, can be combined. There are several companies in the US trialling the use of blockchain to see if the technology can really make a meaningful difference.

- **Wrapping up the discussion, what, in your opinion, does the future hold for ORBCOMM?**

It's our strong belief that multiple industries will continue zeroing in on how they can connect their assets to boost overall business performance. For sure, the container and trailer markets, especially the reefer segment, will continue to grow by placing new orders for IIoT track and trace

as well as cargo sensing devices. Transportation companies around the world are gearing towards a major technological shift that probably will leave no operation or process untouched. In North America alone, there are some 500k assets that can undergo this IIoT change in the near future. Added to this are other businesses that can take advantage of the IIoT revolution, such as the mining industry, where monitoring assets underground comes with its own distinctive set of challenges.

Back a quarter of a century ago, when ORBCOMM was taking its first steps, nobody imagined that by 2020 hundreds of millions of items, from wristwatches to reefers filled with high value pharma products, would be connected and talking to us over the Internet. And that's just the beginning! In markets where companies are running on paper thin margins, like ocean container shipping, any, and we mean literally any, new development that gives a company an edge over its competitors should be carefully investigated and put to the test. After so many mergers and acquisitions, alliance reshufflings, etc., it appears that the shipping industry may have reached the home straight and technology can deliver that stamina boost to make it to the finish line.



Interview with Karolina Parkitna,
Head of Administration Department, CRIST S.A.

Photos: Crist

CRIST shipyard confirms: “innovation distinguishes between a leader and a follower.”

by Przemysław Opłocki



Karolina Parkitna, Head of Administration
Department, CRIST S.A.

Gdynia's shipyard CRIST is a well-established and experienced company specializing in shipbuilding, offshore constructions, steel structures, and sea and civil engineering. We're talking with Karolina Parkitna, Head of Administration Department, CRIST S.A., about the company's ongoing projects, advanced international collaboration as well as the current challenges of the labour market.

- **CRIST S.A. is a 29 year-long tradition, a company well-respected in Poland and abroad, which was so well illustrated by a recent award for one of the best Polish exporters to France. Since its inception, CRIST has been involved in over 300 projects including the latest NB 70 (hybrid ro-pax ferry), P 310 Elektra, and NB S.C. 75/1 and 75/2 (last two for transporting live fish).**

On the European as well as the global market we were known for producing large jack-ups (*Thor*, *Innovation*, *Vidar*) for the offshore sector. The market has changed recently; therefore we modified our production profile and concentrated on building other units. Using our offshore experience we were able to make a jack-up for the construction of an overpass around

the Reunion Island (French: *Zourite*, or “Octopus” in Creole). We've also entered the hybrid-ferry market, an example of which is *Elektra*, built for Finferries. We are especially proud of that unit because it won one of the 2018 Marine Propulsion Awards (“Ship of the Year”) in a contest organized by the prestigious magazine *Marine Propulsion & Auxiliary Machinery*. What's interesting about *Elektra* is that it uses only electric engines that are charged during passenger boarding and disembarking; the installed diesel engines are only resorted to in case of emergency. In addition, we are currently building another hybrid ferry for Iceland (*NB 70*), which will be turned over to the client around the spring of 2019. In



the summer of 2019, on the other hand, we'll finalize another live fish carrier-type unit – NB S.C. 75/2 for the Norwegian shipowner Arctic.

- **Fruitful cooperation with international partners, such as the Ulstein, Meyer Werft, or Chantiers de l'Atlantique shipyards, resulted in many multinational projects in which CRIST took part.**

We're teaming up with the Norwegian shipyard Ulstein in the construction of hulls, i.e., in a vessel servicing wind farms (NB 313), a ship for the National Geographic (an expedition-type ship for researchers and tourists), or the world's largest hybrid ferry (NB 311). We're happy to be involved in building such large and innovative vessels. Another segment of our production includes partially equipped blocks and sections for cruise ships, which we're producing for a French shipyard Chantiers de l'Atlantique (formerly STX France). Recently, we've begun collaborating with another large-scale partner, shipyard Meyer Werft. We're also open to a broader variety of projects, such as the floating dock *Marco Polo* (NB 56) utilized to construct caissons as a foundation of the new embankment in Monaco, in addition to the previously mentioned ferries for Finns and Icelanders.

- **How, in the recent years as well as presently,**

have you built relationships with the European players in the shipyard industry, and has that translated into an increase in orders compared to previous years?

It's a very dynamic market. Just eight-ten years ago, the large passenger-ship building industry was very different. Due to the ageing of the current fleet, there's a dynamic exchange of the older vessels for the latest models taking place among the cruise ship companies like the Royal Caribbean. They need modern, ecologically compliant, comfortable ships. There are only a handful of shipyards across the world that are capable of producing such large vessels, among them, Chantiers de l'Atlantique in France and Meyer Werft in Germany. We're mindful of the fact that their order-portfolio reaches as far forward as 2025 or even 2028. This is an opportunity for the smaller shipyards to take part in these types of advanced projects.

- **If we're talking about projects currently in progress, are there any others that are especially important to you?**

Norwegian orders are a big bulk of our projects. That's a niche market that revolves around oil extraction and fisheries. In the case of offshore market stagnation, many of the units

that we have been building for the Norwegian clients are fishing ships and vessels to carry live fish. In this context, it's worth mentioning our already finished live fish carrier NB S.C. 75/1 and its twin NB S.C. 75/2, which we're working on right now and will be commissioned this summer, both for Norway. In the framework of the previously mentioned floating dock for Monaco, it's possible that more similar constructions will be produced in our shipyard. We can't be certain that these types of unique projects won't be something we'll be doing in the future. It's crucial for us to find a balance between what we can do production-wise and the number and size of orders.

- **Regarding the labour issue, presently you have around 1,300 people involved in the realization of your current orders (not including contractors). At this time, what are your needs when it comes to the labour force?**

At present, we need around 300-400 more workers. We'd prefer to have as many employees as possible to be directly affiliated with our company. Direct working relationship translates into better relations within the company, greater interpersonal integration, and stronger worker identification with our shipyard. When subcontracting, we don't have a

direct influence on workers who are involved in the production process. We would like to increase our own workforce, which requires a good understanding of the job market in Poland as well as abroad.

■ What's the situation in the labour market?

What we're dealing with right now is a worker's market. According to the labour departments that we're in communication with, the number of registered unemployed is very low at this time. There aren't very many well-qualified job seekers. Of course, we try to attract employees in various ways. We're also looking for people with no experience to train them, knowing that the market is lacking in specialized workers. We put emphasis on the recruitment of qualified blue collar workers because engineering positions don't have a high turnover and we don't experience comparable deficits in that sector. Unfortunately, school reforms from a few years back have adversely affected the status of vocational schools, the consequences of which we still feel in the labour market. In order to counteract this trend, however, we maintain a strong cooperative relationship with technical and vocational schools as well as universities. This year we want to engage in projects that raise awareness among students and their parents. Until now, young people could visit our shipyard with their teachers. We want to continue this programme, adding at the same time other elements such as lectures in schools, active participation in open houses, and we're also considering the possibility of introducing new internship programmes for the best students.

■ Given the problems in the Polish labour market, do you find it necessary to hire workers from abroad?

Yes, very much so. The present labour market dictates a flexible and open approach. Our company, as well as those who collaborate with us, work with people from other countries.

■ What are the pros and cons of working with subcontractors, especially in the light of your negative experience with one who employed North Korean nationals who weren't properly authorized to work in Poland?

This situation was a difficult one for us. In recent years, CRIST collaborated

with many entities both on the Polish and the international market. Armex, a company which was one of our local subcontractors, employed some North Korean workers. According to provided documents, the employees were legally in Poland and received an official work permit obtained from the Voivodeship office. After receiving information about possible irregularities relating to the employment of the North Korean nationals, in July 2016 we ceased our partnership with Armex, concerned about maintaining our high employment standards. We trusted the Polish employment control system and Armex, and even though the actual employer of the mentioned workers was Armex, the entire media odium and outrage fell on us. The control of legal status and employment rested on us instead of the government. Regardless, we approached the whole situation as a lesson that propelled us to improve our internal procedures in CRIST. Informed by this experience, we acted on an invitation from the Ministry of Investment and Economic Development to participate in a workgroup dealing with employer-employee relations. We're actively involved with a team working on developing a comprehensive guide for entrepreneurs. We're participating in the workgroup because we believe such a guide is an essential tool for businesses operating in the current market in situations where employing workers from other countries is necessary. It's important to learn how to identify risks associated with this type of relationship. Collaboration with subcontractors, especially those who employ foreign workers, might come with many hazards, such as whether the job is performed legally or if the employment and residence permits haven't been taken away from the worker. For this purpose, we carry out audits verifying the status and working conditions of employees on behalf of our subcontractors. We check, among others, workplace standards and employment legality. This, of course, isn't an easy task and requires a lot of work and certain procedural changes. We have created special anti-discrimination and employment legality procedures, thanks to which we can verify that workers employed by our subcontractors, via any type of contract, are legal residents with proper and valid residence permits.

■ How does CRIST get involved in the community?

We made a decision to get involved with various social projects and charitable organizations. Some examples include our collaboration with different schools, our involvement with the Dutkiewicz Hospice (Hospicjum im. Dutkiewicza) in Gdańsk, our support of Cancer Fighting Academy (Akademia Walki z Rakiem) and initiatives for young people such as Odyssey of the Young Minds (Odysėja Młodych Umysłów). We were also the sponsor of the Arka Cup – a small local football tournament organized by the Arka Gdynia Club. As part of the Tri-City community, we have decided to partake in these types of initiatives. They don't have to be events related to our industry; we get involved because our location is very important to us. After all, we're all a part of this Tri-City "courtyard" – so to speak. Returning to the shipbuilding industry, we would like to more actively carry on a dialogue with actors involved in our industry. When it comes to external communication, we try to maintain an on-going dialogue with entities in the global market as well as stay in contact with international media to keep them updated on our activities. We have also set up a YouTube channel which showcases our shipyard.

■ From the perspective of CRIST, what are the biggest challenges for the shipbuilding industry in the context of ecology?

Of course we are actively trying to implement all current environmental guidelines. Environmental policy, which we have implemented, is a requirement set by the International Organization for Standardization. The policy is at times difficult to integrate, but we collaborate with companies that help us resolve all the problems related to identification and reduction of environmental threats, and limit and report them, among others. We operate in full compliance with the law as well as the dynamically changing guidelines. We set realistic goals and try to implement them year by year. It's also important to remember that ecology is not just about procedures and waste management. In our case, it has a more direct aspect to it as well, i.e., caring for homeless cats that live in our shipyard. In this context, we're seeking to establish collaboration with the Kotangens foundation, which is an animal rights organization.



An overview of CRIST's completed and ongoing shipbuilding projects

Versatile as the ships it delivers

by Ewa Kochańska



CRIST S.A. is a leading European shipyard based in the Port of Gdynia. Established in 1990 by two Polish engineers, Ireneusz Ćwirko and Krzysztof Kulczycki, CRIST employs 1,500 workers and has 300 finished projects under its belt. The company specializes in shipbuilding, steel structures, offshore construction, “turnkey” vessels, and sea and civil engineering. With 28 years of experience and €100m in annual turnover, the dockyard is the industry leader in the European maritime construction sector and eco-innovation, collaborating with shipyards and clients worldwide.

CRIST offers high-quality products and services, experienced staff, timely delivery, and skill sets to resolve complex technical issues. Additionally, the company has made a name for itself in the maritime eco-sector with award-winning innovation in shipbuilding and offshore wind turbine installation and servicing vessels.

A glance at the portfolio

Some of CRIST's current projects include construction of a hybrid passenger ferry for Vegagerdin, the Icelandic Road and Coastal Administration, set to service

the route between the islands of Landeyjahöfn and Vestmannaeyjar. The Icelandic ferry with a 540-passenger capacity is expected to be ready around February or March 2019. This project follows the delivery of a double-ended hybrid ferry *Elektra* for a Finnish client Finferries in 2017, which won the “Ship of the Year Award” at the 2018 Marine Propulsion Awards.

CRIST also participated in the construction of *Colour Hybrid*, said to be the largest hybrid ferry in the world, expected to be finalized in the summer of 2019 in partnership with the Norwegian shipyard Ulstein, where the ship is currently awaiting



its final works. *Colour Hybrid* will carry a maximum of 2,000 passengers and 500 vehicles and will service the route between the Norwegian Sandefjord and the Swedish Strömstad. Additionally, CRIST is working on a multifunctional, polar passenger ship, also for a Norwegian client. The *National Geographic Endurance* will be outfitted with the X-BOW hull technology to improve passenger experience even in the most volatile sea conditions. Once again, Norway's Ulstein will finalize this project. CRIST also manufactures live fish carriers, most recently for a Norwegian company Arctic Group AS in 2018. This was a second of this type of a vessel built for Arctic, with accommodations for up to 3,000 m³ of specially treated water for transport of live fish and seafood.

Other ventures that CRIST took part in include the construction of a floating dock *Marco Polo*. The structure, which was built for a French shipowner and left Poland in 2017, makes it possible to erect a residential complex in place of today's gulf on the coast of Monaco. Thanks to *Marco Polo* as well as CRIST's construction of floating modules for the largest passenger ships in the world, the company earned recognition in December of 2018 as one of the best Polish exporters to France. ■





Photos: Combilift

Interview with Martin McVicar,
Managing Director, Combilift

Innovation is what makes the winner

by Agnieszka Pacholczyk



martin McVicar, Managing Director,
Combilift

The Irish Monaghan-headquartered forklift manufacturer and material handling solutions provider, Combilift, has a pretty successful year behind it. We're talking with Martin McVicar, the company's MD, about the current market situation, the predominant trends that are shaping it, and what are Combilift's plans for the nearest future.

■ **Could you sum up how the past year turned out to be for your company?**

It has been a very good year. Our extensive new manufacturing facility and global HQ were officially opened by the Irish prime minister in April, and we welcomed visitors from around the world (customers, dealers, journalists) to tour the new site.

We manufactured over 6,000 units in 2018 and saw increased demand across our product range. This includes the heavier duty models such as the straddle carriers, mobile gantries, and high capacity multidirectional forklift trucks. We will build 15% more straddle carriers in 2019 than we did last year.

■ **Which segments of the market and countries/regions delivered the best results; which, in turn, were the most challenging?**

We have seen a lot of investment in infrastructure and construction projects in various regions – in the UK, the USA, Germany, and Italy for example. There is also a growing demand for straddle carriers in the wind, oil and gas, manufacturing, and power generation industries.

■ **In turn, what are you hoping to achieve in 2019?**

Our order books are very full. We are on target to grow our revenue to €300m in 2019. As ever we are exploring new markets and regions where we can make an impact with our innovative products.

■ **On what products and service are you working right now?**

We have just completed Combi Xpress order for Lyttleton Port in Christchurch,

New Zealand. It's a high-speed container moving straddle carrier, specifically designed and engineered to move containers at the ground level. It offers exceptional visibility with ease of access to the operator's cabin. It is an excellent alternative to typical port straddle carriers and/or shunt lorries for moving containers from the ship-to-shore crane to the stacks as it eliminates the waiting time of shunt lorries by giving the Xpress operator the freedom to lift the container and move it directly to the stacks. Recent studies show that shunt lorries spend 35% of their time waiting to be loaded and offloaded while the Xpress can lift and go immediately. In general, Combilift invests 7% of turnover in research and development. Among many, we are working on a range of high capacity powered pallet trucks (PPT) at present. Combilift has been nominated as a finalist in one of the most prestigious and hotly contested international awards in the materials handling industry. From a large pool of applicants, just 15 products have been selected for the International Intralogistics and Forklift Truck of the Year Award (IFOY). The Combi-PPT powered pallet truck with 8t capacity is one of three products shortlisted by the jury in the Warehouse Truck category. It's a high-performance pedestrian-operated PPT with a range of capacities up to 16t, which enables the safe and secure transportation of very heavy loads without the need for a ride-on forklift. The features, which include Combilift's unique, patented multi-position tiller arm, as well as the design ensure optimum visibility of the load and surroundings for the operator and guarantee maximum safety in areas where other personnel may be present, in busy production plants for example. Also, its manoeuvrability enables efficient and productive operation in confined spaces.

Regarding other developments, we have developed a fork attachment for our straddles to enable loading of heavy coils into containers as well as specialised equipment to greatly ease the movement of wind turbine blades around ports.

■ **What's your short- to medium-term outlook? What holds the answer to becoming a successful future port equipment manufacturer?**

Combilift is a solution-focused supplier. While we don't plan to become a full line equipment supplier to the port industry, we, nonetheless, want to focus on bringing innovative products to improve efficiencies.



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