

2018

*Kale Europe Ltd – Smart Port 2.0 –
Second Generation – Digital
Approach*



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The Global Shipping Sector is Radically Changing

During the last 3 years we have seen some major game changing events within the Global Shipping sector – the overall number of Ocean Carriers have diminished thru consolidation, bankruptcies and mergers and acquisitions. Carriers have seen over capacity, as next generation container / cargo ships come on stream, coupled with diminishing freight rates, world trade embargoes and much higher bunker costs. Environmental factors demanding low sulphur fuel have also driven greater pressure on these operators. So, Ocean Carriers are changing their conventional business models – all seek ways to streamline and consolidate and use their vast TEU volumes to ply their trades as part of these shifts will be the evaluation and refocusing of their various trade routes as all seek to realigning and shift their global Port and Terminal Calls. Of course, this has thrown a major disruptive force into an already fragmented and challenged Port and Terminal Market and their traditional development / short, mid and long-term investment strategies are being questioned by their corporate shareholders.

The Industry Move Towards – Smart Ports

So global Port Operators are facing a rapidly evolving market – driven by both internal and external pressures most are facing daunting times with uncertain economic and commercial pressures. The Large Global Port and Terminal Groups are looking at being early adopters of the latest technology platforms and millions of dollars are annually spent in pursuit of this becoming the most innovative and market leading operator. However, it's important to reflect on the core industry challenges which all Groups are facing: -

External Pressures

- ✓ Changing Global Economy (Shifting Trade Patterns)
- ✓ Evolving Customer Base (Global Ocean Carriers are merging; consolidation and realignment of Port and Ocean trading are having major impacts on Port growth and development strategies).
- ✓ Environmental Pressures – Government controls on Co2 emissions and the demand to become more environmentally friendly – has hampered development and driven operating costs higher.
- ✓ Growth Restrictions – Land and environment restrictions – preventing expansion and growth in certain geographic regions.
- ✓ Greater demands from Carriers to improve “Service Level Agreements” – reducing Vessel Dwell times -and being able to turn the vessels faster – whilst also facing lower “THC” rates.
- ✓ Shippers and Cargo Operators demanding greater visibility on cargo movements and improved data flows.

Internal Pressures

- ✓ Increased pressure on Land side Operations (as some facilities are having to deal with larger vessels and greater TEU throughputs).
- ✓ Inland Infrastructure – pressure to improve traffic and cargo flows across the Port, Terminal and into the onward Hinterland transportation network.
- ✓ Asset Costs keep increasing and the demand to switch to more expensive cleaner handling equipment is pushing costs higher.
- ✓ Lower Rates are exerting tremendous pressure to achieve sustainability across their enterprises.
- ✓ Greater demand to reduce internal operational costs.

- ✓ Investment strategies are hampered by shifting Carrier Groups – (The impact to a Port is significant – with large scale capital investments normally looking at 8 to 10 years financial returns and with long term Terminal investments ranging from 15 to 25 years terminal groups face major challenges when looking at where and when to invest.
- ✓ Demand to maintain higher levels of safety across their facilities.
- ✓ Drive towards more secure facilities to meet stringent ISPS and IMO international restrictions.

Ports are Raising to these Challenges

Of course, Port and Terminal Operating Companies are not sitting back many are raising to meet these challenges “head-on” working with the support of local & Central Government and Private enterprises development of inland and port infrastructure and large-scale capital investments are being poured into streamline operations and developing the necessary infrastructure; whilst looking at ways to improve customers experiences in using their facilities. Of course, these are never going to guarantee a Ports success, but it can go a long way in retaining their customer base and developing longer term capital investment strategies.

Ports Moving towards the Smart-Port Technology

Port and Terminal Operators have never shined away from investing in technology to improve efficiencies and look at deriving higher levels of performance – many have had to invest in expensive land-side handling equipment (STS Cranes, RTG’s, Yard Hustlers and other expensive operating machinery to help speed up the processing of vessels and cargo. Many leading and Secondary Port and Terminal Operators have invested in terms of :-

- ✓ Advanced Terminal Operating Solutions
- ✓ Auto Gate Systems (adoption of OCR Gates)
- ✓ Asset Management and Engineering Systems
- ✓ Management Information Systems
- ✓ Vehicle Booking Systems
- ✓ Port Operating Systems
- ✓ Yard Planning Automation
- ✓ Vessel Positioning systems
- ✓ Laser Detection on the Quay Cranes
- ✓ RFID and Intelligent Tagging of Trucks, Cargo and Owned Operating Equipment.
- ✓ ERP Systems to track and record all commercial, financial and operational requirements.
- ✓ Rostering and Human Resource Planning Systems.
- ✓ Security and CCTV systems across the facilities.

Millions of dollars have been spent on adopting new technology – but many facilities have suffered due to the sheer number of systems being deployed and, in many cases, overwhelmed with “Big Data” masses of Excel reports that are continually generated and the lack and capabilities to actually channel filter and process data into useable chunks which the Port and Terminal Management can actually act on.

Today’s SMART Ports are not just about having the best of breed technology deployed – @Kale Europe we have witnessed to often that many of the solutions deployed are not always fully functioning, many features which could bring benefits are not properly defined and deployed – the loss of business and Opportunities is far greater than most of today’s Terminal Management are willing to accept. The question must lie deeper into the analyse phase of the Ports and Terminal

actual requirements. The Core Foundations relating to the level of integration across these multiple platforms and the ability to extract maximum operational returns on the technology deployed is paramount.

We are seeing the Birth of the Next Generation Smart Port 2.0 Solutions.

So, what will the next Generation of Smart Ports look to deliver -well @ kale Europe we are seeing that operators that are handling more than 1.0m TEU are starting to migrate towards fully or semi-Automated facilities – adoption of advanced handling equipment that will allow facilities to run seamlessly 24x7x365 in all weather conditions are becoming the norm. Cutting down the risks to human life and increasing the handling rates are all the rage -but the demand for more intuitive technology will be become far greater. Volumes will exert pressure on the traditional Terminal Operating System’s – the ability to process and manage greater volumes at:-

- ✓ Pre-arrival Notifications of vessels / trucks / trains / cargo.
- ✓ The Vessel
- ✓ The Yard
- ✓ The Gate
- ✓ The Rail Hub
- ✓ The Truck Lanes



Global Port & Terminal Market Ripe for Change

SMART PORT 1.0 IS READY FOR CHANGE AS THE INDUSTRY ENTERS THE NEXT PHASE OF EVOLUTION – TECHNOLOGY IN ISOLATION IS NOT THE ANSWER – SMART PORT 2.0 IS READY AND WAITING!!! KEEP A HEAD OF THE CURVE AND BE AN EARLY ADOPTER.

Will become paramount – work orders and interactive projected modelling tools will be essential – allowing for advanced algorithm and virtual planning tools will be critical. Having the ability to extract essential data from the various operational systems and being able to plug and play different scenarios from yard stacking thru to vessel loading and discharging will need to go further. Of course, pre-warning of vessel arrivals and having better anticipated Estimated Time of Arrivals will allow for more efficient berth optimization and provide more flexibility in how vessels are handled. Considering that vessels continue to grow in terms of their carrying capacities and natural girth the pressure on ports and terminals to manage multiple vessel calls will be critical and ensuring that the necessary handling equipment is available during the various shifts will be the essence in successfully turning the vessel.



However, as we have mentioned – having automated machinery is not the only area that will need to be addressed as the question pertaining to the amount of data that these facilities systems are having to handle, and process comes into question. The backbone of the Port & Terminal facility needs to be well structured the agile business model is where the level of integration and interconnectivity can be leveraged.

What will SMART PORT 2.0 Next Gen Look Like ?

The driving factors for implementing the 2.0 next Gen Smart Port will look at embracing the following key attributes: -

- ✓ **DIGITAL COMPANY STRATEGY** – One of the main barriers that big companies struggle with is having a dedicated digital strategy – the ability to understand the complex nature of implementing a digital strategy across your enterprise. The barriers to entry are considerable and enough financial budgeting must be allotted whilst a clear set of objectives and goals must be defined from the outset. We have seen many companies within the maritime sector dive into digital and block chain projects – but without having a clear set of objectives the strategy can soon get dissolved and strategy gets fragmented. The big push seems for companies to embrace “Block Chain” but to achieve a cohesive interactive community within your customers and suppliers – companies must first address ways to streamline their IT platforms and this is where the importance of a digital transformation plan comes into play.

THE TOP CHALLENGES FACING DIGITAL TRANSFORMATION

		Very important	Somewhat important
	Changing company culture	63%	34%
	Thinking beyond a "campaign mentality" in digital strategy efforts	59%	32%
	Cooperation between departments and team silos	56%	39%
	Resources (people, technologies, expertise) and budget allocation	56%	39%
	Understanding behavior or impact of new connected customer	53%	42%

- ✓ **FULLY INTEGRATED** – Core Platforms must conform to higher levels of integration across all existing and new solutions that will be deployed -highly scalable – the ability to maintain optimal performance with minimal downtimes will be the essence.
- ✓ **GREEN and ECO FRIENDLY** to an ever Demanding Social and Corporate Responsibility.
- ✓ Advanced Optimal Modelling Tools embracing 6th dimensional holistically functionality – the ability to predict traffic flows and measure against the status of the Facilities infrastructure and fixed and variable assets -the essence to the long-term stability and financial capabilities of the Port or Terminal Facility.
- ✓ Processing and manipulation of large volumes of data – within most of today's busy Port and Terminal facilities copious volumes of documents are being handled either via paper flows or electronically – however the volumes and ability to manage these documents create bottle necks and high levels of operational costs for the facilities to process –today's objective is to reduce the sheer volumes - and be able to remap business processes in order to streamline the flow -todays documents need to be common in format with data being shared thru a single window – the benefits for a single common document will provide :-
 - Lower Costs (Resources to Process / lower administration costs)
 - Higher levels of efficiency (Speed to handle and process the doc's / the ability to handle greater volumes of cargo)
 - Reduced Lost Opportunity (Cutting out errors and omissions that are common and can take considerable time to resolve).
 - Improved visibility and transparency across the business.
 - Greener and More Eco-Friendly reduced Paper / wastage.
- ✓ The introduction of newer technologies such as Artificial Intelligence, IOT, Robotics, HoloLens and Virtual 6th dimension modelling.
 - **Artificial Intelligence and Robotics** need to be imbedded into the core of the systems – within the Port and Terminal Sector – there tend to be many repetitive manual processes which takes resources and time all factors which can be automated – and machine learning can be adopted. By clearly identifying these processes (thru business mapping and work flow analyses) the software can be trained to perform repetitive tasks automatically - thus speeding up and reducing the need for human elements to get involved – these processes can run 24x7x365 in the background – as more terminals and ports head towards full automated facilities

AI and Robotics will play a fundamental role in keeping these facilities continually operational. AI can also be used to address and assess complex planning and work flow decisions – as container and cargo volumes increase the pressure to optimize and plan will become more like a game of Chess -with the software having to think 10 steps ahead – “creating what if-scenario’s” the optimal planning from pre-vessel arrival to vessel loading will need even greater consideration.

“AI and Robotics’ are becoming more common – and it will be important that all new systems to be adopted should have this designed in to the core or allow for API’s to interface with advanced Planning tools”

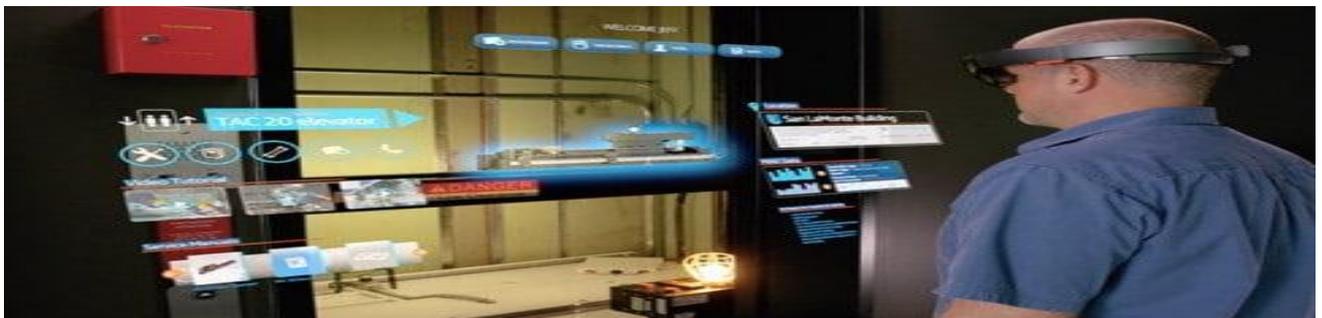


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- **“Internet of Things” (IOT)** is also being introduced – when looking at the sheer volume of data connect points across a large multi- faceted Port & Terminal facility having the finger on the pulse and being able to monitor, track and make decisions on the fly is paramount. IOT allows for processes to be performed automatically and the ability to track all aspects – from traffic flows to monitoring energy consumptions across the facilities – having automated (AI/Robotics) learning systems the performance and cost reductions can be achieved right across the business. From Operations to Engineering every aspect of the business can be tracked. IOT provides valuable data to be collected across the enterprise delivering a true real-time picture of events and transactions.

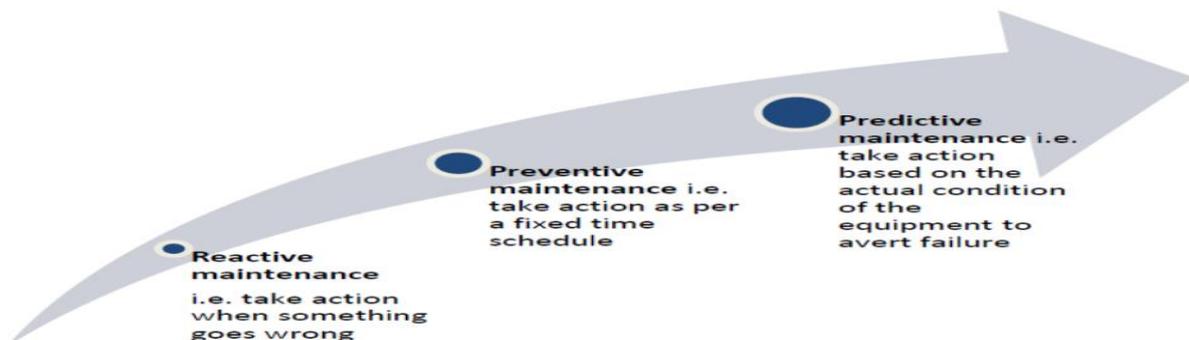


- **HoloLens Virtual Reality** – When VR was initially introduced it was based on the gaming industry to provide a true interactive experience – however when VR is deployed within a business environment it can become a very powerful tool to help management to better visualize and plan their facilities – when predicting modelling

and growth its highly complex. Traditional paper plans have been replaced with advanced 6th dimensional models – with the ability to project current and future layouts – taking into consideration traffic and cargo volumes, physical layouts, where space between lanes and stacks can be maximized – having the ability to project at what point both physical infrastructures starts to lose its effectiveness. Coupled to the ability for virtual intelligent learning models can help Management better understand at what points capital investments in terms of assets and infrastructure will need to be made. HoloLens systems can also deliver in several other very specific areas such as helping engineers on port and terminal handling equipment carry out virtual inspections, they can virtually review equipment, they can help engineers in the field with complex electrical and mechanical documents, and by linking with IOT devices predictive maintenance can be performed and monitored.



- ✓ **Advanced Asset Management Solutions** – Again Asset Management Systems are not new to be deployed across a Port or Terminal facility but the need to integrate the asset utilization back into the work flow Operational solutions such as the Terminal Operating Systems (TOS) is critical. Advanced Planning solutions can of course embrace optimal positioning, space and terminal configurations – but the need to assess available equipment to meet the vessel calls is paramount. Having the ability to process and ensure that equipment is in service and when the most optimal times for maintenance scheduling is performed is critical. The move towards Predictive Maintenance and extended manufacturers claims is pushing the envelope – maintenance schedules are worked around a number of factors :-
 - **Operating and Running Hours**
 - **Scheduled Maintenance inspections (as per Manufacturers recommendations)**
 - **Daily Checks and Routing Physical Inspections**
 - **Health and Safety Inspections**



What is starting to happen is that when maintenance is performed – Engineering departments will use predicative routines – having AI and Robotics adopted and embedded within the next generation Asset Management Systems will help to identify which items should also be inspected or replaced – these can ultimately ensure more effective running of the equipment – extend the operational life of the equipment and ensure a much safer environment within the facility. Predicative maintenance can also help ensure that enough spare parts are always ordered in time thus minimizing any potential downtime of the equipment. At a higher level the overall efficiencies of the equipment in terms of running costs, depreciation and effective operational performance can be measured and compared against manufacturers claims. Better decision making in terms of purchasing can be made at the end of life so ensuring maximum output and best financial returns when replacing equipment.

- ✓ **Port & Terminal Wide Security** - Although security and monitoring are not new at busy Ports and Terminals the awareness to become even more secure is critical especially as Terrorism, Smuggling (narcotics and human trafficking) and theft are all very prevalent and salient points in today's global markets. I have already mentioned that first generation Ports / Terminals had deployed both physical and electronic measures to secure facilities. The second gen Smart Security will start to look at deploying such technology as DRONE monitoring having drones patrol large areas of the Ports facilities operating 24x7x365 with heating seeking, and infra-red detection camera's the ability to monitor and patrol large areas is both cost effective and highly efficient. Other forms of security will look at smart identification systems at the gates incorporating both Finger and Facial recognition systems – preventing illegal access to the Port. Smart ID badging (although not known) can incorporate real time tracking and if monitored at a central security point can see who is where on the port – auto securing and triggering alarms and sensors when illegal access is recorded. Having the ability to monitor all visitors and track time logs on where people are within the facilities will allow for a safer and secure facility.



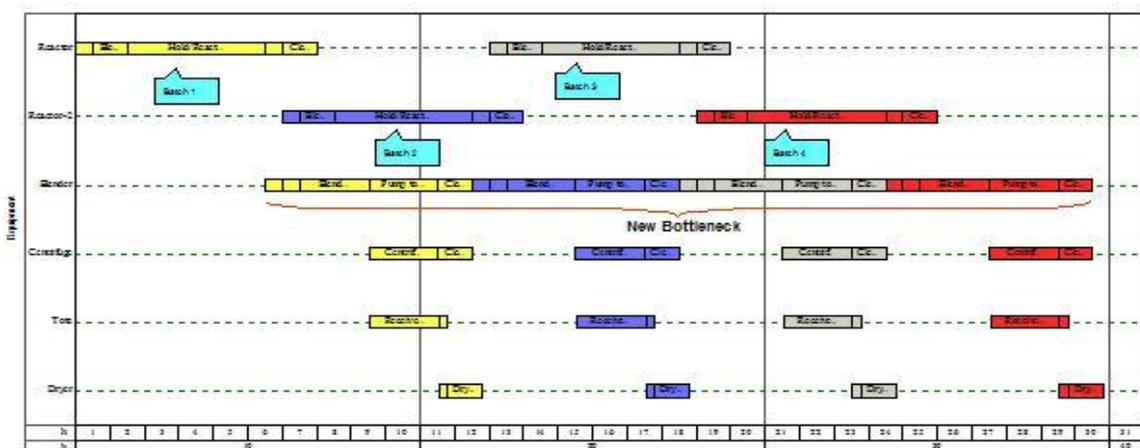
- ✓ **Next Generation Data Security** – Of course physical security of the Port & Terminal facility can be delivered via the areas I touched on above. However, we are starting to see a lot more interaction with regards to Cyber Security and the ability for illegal infiltration by

today's IT Hackers – their alternative motives stem from acts of Terrorism thru to criminal theft of cargo and general chaos across the whole supply chain. We have already witnessed an increase in Cyber crime with the costs to business running into millions of dollars of losses and massive disruptions to the in and out bound supply chain. **Shutting down a Port can have massive economical and social implications and world trade could be impacted if collective attacks were mounted against the Maritime sector.**

However, the issues arise as many parties need to access and share data across the Port and Terminals Operations -and as we talk about becoming more transparent and open to allow for easier commercial and operational trade the electronic doors for illegal entry raise their heads. Thus, newer advanced fire-walls need to be adopted – better training and security polices need to be introduced preventing corrupt transactions to occur.



- ✓ **Vessel Notification Systems** – Ports already have a reasonable notification on when vessels are scheduled to arrive – however in many cases allotted berth schedules can slip – reasons might be late departure of the vessel, engine or mechanical failures, and of course inclement weather conditions. Port Community solutions provide a mediocre alert on vessels arrivals (via the Carriers Sailing and Ports schedules). New interactive planning systems can be adopted within the community solutions to provide actual real time arrivals – when a vessel enters the Ports sea channels, or when a vessel is moored awaiting berthing – by providing optimal times when tide and conditions are best for the vessel type this can help the terminals land side operations prepare. Other services such as Pilots, tugs and stevedoring services can be alerted, better information can be provided to the Ships agents that might need to align services such as spare parts, clean water, food and supplies and waste removal whilst also looking at potential bunkering of the vessel. (For every hour a 20,000 TEU vessel is delayed at berth the costs can be anywhere from \$70 to \$80,000 in lost earnings.)

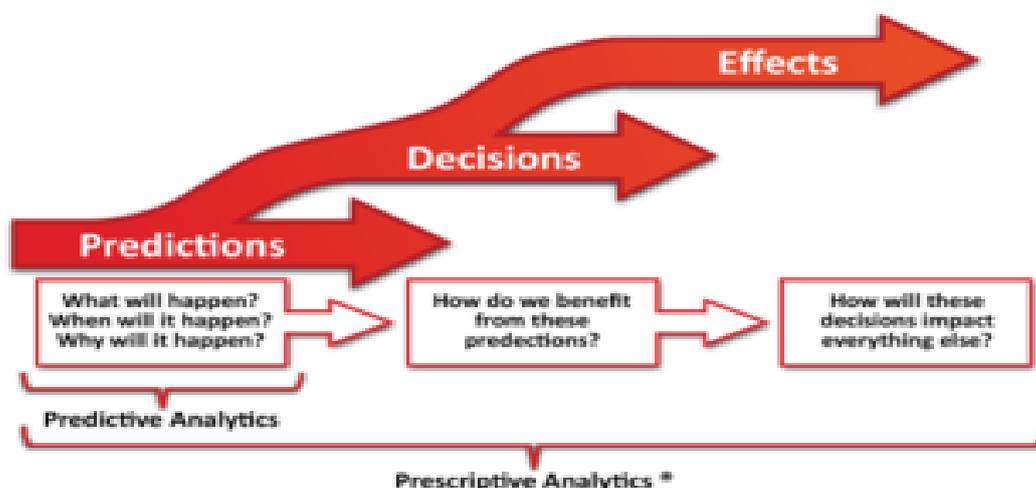


- ✓ **Forecasting and Yield Management Models** – Predicting trends for a terminal and Port operations is complex in nature – we have already indicated that having advance 6th dimensional planning systems can provide management with a more definitive way to capsulize the way in which their operations might take shape. However, the demand to assess the financial growth is critical – having the ability to assess and monitor all containers handled and measured against contractual terms is essential. Capturing fixed and variable operating costs against agreed THC contracts can be processed and this is where Yield management can kick in measuring the value of each carrier and cargo customer and helping the Port and Terminal Operators evaluate what the true value and revenue opportunity of each of their customers are. At the end of a contract period the Port and Terminals commercial departments can better analyse which customers deliver the most value – whilst also looking at ways to increase rates or measure additional service revenues earned or indeed which Carrier or Cargo clients are costing their operations money and might be cut lose. The Ocean Carriers that **decided to call and potentially offer big TEU throughputs (due to consolidation) will look for** 5 main factors: -

- **High Service Level Agreements**
- **Lower THC Rates (Due to increased volumes)**
- **Better Information Flows**
- **Better Inland and Hinterland Distribution Networks**
- **Faster Vessel Turn-times**

Port & Terminal Management are faced with raising operating costs, tighter margins and greater pressure to maintain Investors financial returns. By capturing costs and comparing against revenue – the ability to drill into areas where cost savings could be improved can be addressed these might include the following areas: -

- **Better Management of Work flow orders**
- **Optimizing Yard Equipment**
- **Extending Equipment Life**
- **Reducing Equipment Fuel Costs**
- **Streamlining Business Processes (Improving ways that processes are performed).**
- **Reducing Head Count (thru going towards full automated machinery).**
- **Seeking Additional Revenue Streams – Charging for more nonstandard tariff services.**



- ✓ **Intuitive Business Analytic Systems** – All of today's Ports and Terminals have multiple reporting levels and access to masses of data which is being generated across their various operational and financial management solutions. However, as I reflected at the start of this document – many operators struggle with data overloads. We have witnessed at first hand large Port Groups that are still mapping reports and preparing and compiling excel sheets – these tend to become out of date by the time the right decision makers have access to make informative decisions. Data becomes historical almost immediately – and the questions must be asked “what were the lost opportunities that occurred during the vessels call at the facilities.” What could have been done differently and when equating these potential losses that can equate to higher costs, vessel delays, and lower ratings on expected Service Level Agreements whilst also driving operating margins lower. The benefits of integration across the core Smart Port 1.0 framework will be essential – Smart 2.0 Business Analytics will allow for streamlining of data – channelling essential versus non-essential data – whilst these new analytical systems will use AI and Robotic Processing. Repetitive non-essential reports can be processed automatically, and the systems will be given guidelines as to the actions that need to be taken. AI can also be used to perform essential requirements automatically – thus providing a very clean and highly configurable reporting capability to the Ports and terminals key management. Dashboards monitoring all aspects of KPI's can be projected to management using the latest mobile data mediums. One aspect that can be displayed centrally could be the “what If Scenario's” Machine learning that continually learns from the way an action is carried out or performed can be monitored and tweaked thus allowing processes to be adopted on the “fly” as today's Port and Terminal Operations are very fluid in nature and continually change having the ability to measure activities will allow the systems to become more in-line with the business. Today's systems will need to be able to deliver these learning capabilities.



- ✓ Interactive active data which can be shared to all 3rd parties, and reports will help provide a window of efficiency and transparency to the Port and Terminal Customer base. Being able to visualize key data such as vessel loading performance, container availability, and pick up and drop off containers to and from the facilities whilst also allowing operators to obtain more specific details on the cargo, documentation and transportation orders.
- ✓ **6th Dimensional Predictive Modelling tools** – Big Data is banned around the Digital market place – but the question must be what value this data brings to the operators and general management of these large multi-faceted facilities. With the large global terminal groups having to assess across their portfolio of terminals and ports where they have invested in –

the impact to their operations will be highly disruptive. As the see shifting within their carrier client base – the impacts will be mixed with some facilities potentially gaining vessels and TEU volumes whilst others might see a diminishing throughput. Thus, the traditional model of investing across the board will have to change. The questions on Corporate Management will ultimately cover the following: -

- Which Terminals will suffer (loss of overall cargo & what sort of plans must be adopted for its continued survival. (Many facilities that might lose the main trade operators will have to switch to become feeder service facilities (smaller vessels, lower THC throughputs but more frequent faster calls – changes in operating and commercial decisions will have to be adopted).
- Those terminals or facilities that will see growth will be faced with major hurdles – as to being able to cope with the increased volumes and vessel calls.
- For those Facilities that gain they will have to be able to measure at what point will my facility start to max out, what berthing space do I have, what yard capacity can I grow or handle? when will my operating equipment start to max out and need replacing?, What environment restrictions might the facility be faced with ? When will their in-land hinterland transport start to become overwhelmed congestion will kill the terminals productivity. These sorts of questions can be captured in a holistically based modelling tool, which will embrace the latest Artificial Intelligence that can process and allow for “what -If” scenario’s to be played out. This at a local level and of course at a corporate level where the bigger decision-making processes might take place on what long term investment strategies might be adopted.
- Corporate Management can visualize their whole global and regional business and play out scenario’s in a virtual environment – coupled to commercial rates, operating costs and KPI’s on terminals performances a centralized control centre can be embraced that will process big data but provide it in a format that Big Groups will ultimately benefit from.



- ✓ **Vehicle Booking Systems** - As ports and Terminals become busier in throughputs of containers and cargo having the ability to provide automated time slots to the trucking companies is critical. The ability to manage the flow of traffic will help to expedite congestion levels both within the facilities and in the hinterland. VBS systems are imbedded into the Terminal Operating Systems or within the Automated Gate Systems. The benefits for regular trucking companies that visit these facilities will be significant in terms of faster transiting through the facilities – dedicated express lanes can be established providing priority access.

- ✓ **Totally Automated Machinery** - Again Semi and Fully Automated operating equipment is not new to the Port and Terminal sector – but the need to embrace integration across the various operating platforms is critical – many of today's automated platforms can suffer from delayed work flow orders being received. Next Generation Machines need to embrace – predictive maintenance and self-learning applications – knowing when to report potential mechanical or electronic faults prior to failure. Cleaner Hybrid machinery is becoming the norm as the move away from diesel engines will continue – the drive for greener cleaner ports is the essence. The need for port wide networks and communication systems are essential – we have seen several big facilities suffer due to things as simple as poor internet connections. Handling Equipment will also be linked with IOT technology so that performance monitoring can be processed, and the operational efficiencies can be continually monitored and tracked. This new generation handling equipment will be equipped with OCR camera's laser detection systems, and RFID tracking to ensure that optimal returns are achieved from all operating equipment. Of course, total automation costs are very high and yard configurations become very complex to change once they have been set up – as fibre optics and hard wiring all need to be laid across the facilities so much planning must be taken before moving to fully automated facilities.
- ✓ **Cloud Based Platforms** – Of course the question for Ports and Terminal Groups to streamline their operations and lower their local data infrastructure costs has always been a bon-of contention as IT systems become more focused on cloud-based deployment – and with the move towards SAAS models the need to reduce and be able to run virtual cloud based networks is going to play a bigger role. The move towards digital and block chain projects will necessitate the need for Port and Terminal Groups to adopt highly secure cloud-based platforms. All core operating systems can reside in the cloud – the ability for upgrades and real time maintenance from the various software vendors will help to reduce local IT costs whilst always ensuring that the latest software versions are deployed. The old question of having data reside in local servers will ultimately need to be addressed but when looking at other industries such as the Banking and Insurance markets much of the data resides in secure cloud-based environments -with built in redundancy to ensure minimal operational downtimes. If the Industry wants to change then moving to the cloud will be essential.



Summary

The objectives of this paper have been to address fundamental changes that the Global Port and Terminal sectors are facing – Ports will need to leverage both their existing and adopt new technology that will help to deliver greater returns. Having greater visibility, and control over your facilities will be key – being able to respond to situations faster will be secret to success. Being able to assess where and when to invest will be essential to the bigger picture.

About Kale Europe Ltd

Kale Europe Ltd – has been set up to bring a global team of digital maritime transition experts together. The world is full of industry consultants, but we look at delivering a more focused boutique service are ability to scale and source the skilled resources combined with our extensive of network of software solution providers we can deliver winning combinations. We have access to skilled technical resources located in Australia, India, Egypt, Ukraine and North America allows us to deliver on a global basis.

About the Author



Richard Butcher has been involved in the Global Maritime Sector for over 30 years having held several Senior Executive roles and having worked closely with ocean carriers and Port and Terminal Operators his ability to address and identify mission critical areas is forefront in his approach. Technology is a big driver and he has been engaged with some of the leading technology solution providers in the market this has allowed him to address the shortfalls that the industry is facing. Richard has written several leading Industry White papers and now is the Managing Director of Kale Europe Ltd – a new digital transformation Consulting Firm that specialises in the Global Maritime sector.

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