



# IOT FOR SPARE PARTS

## TRACKING AND SECURITY IN PORTS

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The ports and container terminals industry is under increasing pressure from growing volumes of trade, aging work forces, limited real estate availability, supply chain integration, regulatory requirements and capital management needs, to name a few. As an infrastructure-rich industry, ports and container terminals must continually manage their critical assets over their lifecycle to remain competitive to the global market. This means that effectively managing these assets is now more a high-profile activity than ever before. Businesses must have strong frameworks and tools to ensure success in operating in these challenging and dynamic environments. The management of port assets in limited land and space is crucial to sustaining core port functions. The ability to maximize the use of asset investments can be supported by detailed awareness of current asset condition via lifecycle predictions. Data collection is now encouraged by industry bodies to improve industry best practices and facilitate information sharing. Furthermore, data is collected in the ports and maritime industry more and more as automation is brought to bear in the supply chain. Data

collected from sensed assets is accordingly growing at a staggering rate. For example, information can be provided should an asset stay in one position for any extended period, helping to pinpoint crime and security weaknesses. Container theft can be monitored by tracking its whereabouts with GPS tracking devices, which can assist in the recovery of goods if the container has been moved without proper approval.

Operational assets that have been sensed, such as straddle carriers, can provide a wealth of other real-time data that can be used to trigger maintenance interventions. For example, if an engine is overheating, then a heat sensor could trigger a work order for the immediate inspection of that engine thereby reducing catastrophic failure and minimizing unscheduled outages.

Spare parts are one port asset that is increasingly tagged with sensors, enabling their movement to be tracked out of a storeroom via RFID readers. If the part is not booked to a work order, for example, misplaced or even stolen, this could highlight some process issues that need to be investigated.

### IOT CREATES NEED TO MANAGE BIG DATA

The volume of data being collected via sensors and IoT enabled assets across a container port's operations will grow at an even faster pace over the next five to seven years.

These asset networks, and their ever-increasing datasets being collected via sensors, must be managed strategically to ensure long-term planning across the entire asset life-cycle. This will ensure an appropriate level of service is maintained to customers and stakeholders at the lowest possible cost and within an acceptable risk regime.

IBM's Maximo Asset Management system is currently in use with some of the world's largest port operators. They use it to manage their physical assets like ship-to-shore cranes, straddle carriers, side-loaders, forklifts along with a multitude of other assets. BPD Zenith has recently developed a cloud offering called "MaxiCloud for Ports", a pre-designed solution for container terminals that includes a range of functionalities. As case examples demonstrate, the solution is capable of achieving best practice asset management. The cloud-based solution is based on the desktop accessible IBM Maximo Asset

Management solution. In addition to the works management, service management and inventory (spare parts) it features value-added functionalities such as mobility, mapping, IoT integration, finance system integration, planning and scheduling, as well as prebuilt dashboard reporting. The solution can include options for specific fleet aspects of asset management via a transportation add-on.

In essence, MaxiCloud for Ports is a one-stop shop for asset management across the entire asset portfolio for ports. Enabling improved finance, for example for spare parts, can be completed using MaxiCloud's asset management planning capability and capital forecasting capabilities. These capabilities, coupled with daily operational data via maintenance histories and real-time data, build a powerful information set. With the ability to view this data in IBM Watson an artificial intelligence platform, additional insights into the operations of a port can assist the port operators maximize their return on assets. BPD Zenith is currently working with a Container Port, and our partner IBM, to further refine this approach to real time asset management and improve the predictive capability for our Client.

#### SPARE PARTS INVENTORY

In a recent example of the application of the Maximo Asset Management solution, the technology was used to enable the nationalization of DP World Australia's spare parts inventory data.

DP World Australia is Australia's largest container terminal stevedore, operating in the marine ports of Sydney, Melbourne, Brisbane and Fremantle, which handles 50.4% of container volumes moving through the country's ports. DP World had in place a shared spare parts regime across its Australian sites, at which it used similar equipment. Spare part inventory data was trapped in silos at individual sites, so that each spare request was a manual and lengthy process. DP World Australia intended to fully aggregate its data so it could make use of it when negotiating national supply agreements or ordering bulk purchases of spares. In this case, small decreases in the price of spare parts added up to a considerable savings when spread across the entire organization.

By storing all the data within Maximo, DP World managers at the various ports gained the ability to run a report on assets from any site, and could also create a report on all the sites. Synchronizing the data, DP World Australia found it could improve predictive maintenance scheduling by comparing the performance of like assets across its sites, and reviewing live information on asset performance such as repeat failures. Identifying patterns in failures allowed scheduling maintenance, and therefore



reducing the potential for unplanned downtime.

#### KPI MONITORING

Accurate data gained through the project was also used to improve DP World Australia's Key Performance Indicator (KPI) reporting. Building on its success, DP World Australia is looking at extending Maximo's capability to provide mobile solutions for maintenance teams, so they can access and input data when they are out on site. DP World has considered potentially use Maximo's capability to provide mobile solutions for maintenance teams, so they can access and input data when they are out on site.

Another container terminal operator in the region, Port Otago Limited operates a deep-water, export-based container terminal at Port Chalmers in New Zealand. Port Otago lacked a formal system to manage their assets. In 2014, they embarked on their journey with MaxiCloud.

MaxiCloud has allowed Port Otago to be able to further analyze the procurement of all spare parts from suppliers. The absence of a way to predict maintenance needs had previously led to purchasing parts from European suppliers at short intervals, which incurred extra costs. This is now managed in a controlled fashion, leading to further improvements.

#### ABOUT THE AUTHOR

With over 20 years of asset management experience, Graeme Sharp is CEO Asia/Pacific for BPD Zenith. As Board Member, he drives growth in the Asia/Pacific region via strategic alliances and global partnerships. He is committed to assisting clients via world class systems and streamlined business processes to capture quality data to help businesses optimise the lifecycle and operation of their assets.

#### ABOUT THE ORGANIZATION

BPD Zenith is an award-winning global provider of enterprise asset management systems. As a Gold Accredited Partner for

IBM Maximo Asset Management, BPD Zenith provides Maximo expertise to all asset-intensive, providing no-nonsense, expert advice so that clients receive a system that matches their business requirements, on time and within budget. BPD Zenith's Clients in Australia including DP World Australia, Flinders Ports, and Australian Maritime Services, and in New Zealand Port Otago, Port Taranaki and Port Nelson. BPD Zenith also supports Patrick Container Terminal with its Enterprise Asset Management solution.

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