Shipping and maritime have been one of the oldest and most thriving industries. Ports are major centers of commerce teeming with people, capital intensive assets and major trade consignments getting hauled in and out. In countries that rely on ports and shipping for major share of revenue, technology will prove to be an innate factor in driving margins and running smooth and efficient operations - both on land as well as the sea. There are close to 1000 ports across the globe and 100 major cargo ports. The technological advancements of today place this industry on the cusp of a digital transformation to become more systematized and efficient.

In this article let’s delve into how the Internet of Things (IoT) technology can bring about transformation in the shipping industry. The shipping industry involves huge capital assets and consignments and quite a few operations at ports are often unorganized. IoT can bring in digital transformation and organize it. IoT can create smart, organized and connected ports that can deliver value in the supply chain early on. Besides, IoT can improve port traffic management, fleet operations, energy efficient operations and help steer ports and shipping into a connected, organized and digitally proficient industry.

**Smart Ports:**

The impact of technology across the shipping industry has progressed with the advent of smart assets/equipment, smart harbours and ports. IoT technology and the magnitude of data it derives can transform the businesses involved in maritime, cargo, logistics and value chain on land, in a tremendous manner. Ports can establish real-time communication with cargo fleet in transit. On any given day ports witness hundreds of cargo, shipments and fleet dealing with consignment worth billions of dollars. The ports are additionally equipped with capital intensive machinery whose health and functioning are critical to smooth operations. Unwarranted downtime of those machinery can cause delays in shipment and in turn affect the trade and business at large. Smart and data driven ports can improve vendor services, vendor management, safety and reliability.

**Consignment monitoring and value chain**

Ports and shipping make a huge part of the value chain. Logistics, supply chain and leasing vendors can benefit from real-time tracking and centralized management of consignment

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**How can IoT and Data driven operations transform the Shipping Industry?**
right from their respective sources to the final destination. Apart from ensuring safety, quality and timely delivery, the operational insights can provide information that can help in optimizing costs and minimize waste. Let us consider the case of shipping expensive and fragile goods. It is imperative to keep the fragile goods intact to prevent losses due to damaged material. Using the Internet of Things to monitor them real-time, send alerts in case of deviations and identify causes of damage at the root level can improve quality, save costs and improve customer satisfaction. Proactive monitoring and data analytics from IoT can provide a holistic approach in managing all aspects of the shipment including people, fleet and the processes. An IoT solution can monitor storage environment of the consignment to maintain quality, manage fleet operations to improve efficiency and connect various other dots of the business through seamless data transmission.

**Asset Monitoring:**

Ports are swamped with heavy port equipment like dockyard cranes, mobile port cranes, straddle carriers, stationary cranes, reach stacker, etc. IoT technology can prove to be a cornerstone in monitoring and managing the health of such capital-intensive assets, proactively. By connecting the assets to an IoT network, the data can be extracted to check the critical parameters time to time and notify immediately in case of discrepancies. The technology can help improve asset life cycle, minimize wastage and use the OEE (Overall Equipment Efficiency). The loading and unloading of cargo can also be managed in a proactive manner with the help of data. This helps to save time and boosts value chain efficiency. IoT will also help with compliance management.

**Data driven and connected business environment:**

The massive success of IoT solution in ports and shipping industry is its ability to drill down to granular data in the value chain. Keeping several stakeholders connected, managing trailers and fleet on the go and tracking consignment in an effective and holistic manner makes IoT driven solution industry’s new torchbearer. IoT can really help in understanding the root cause of discrepancies in the value chain. In case exotic fruits perish during the transit and result in huge losses for the vendor, IoT can trace back and identify the potential reason for the cause; it could be temperature in cold chain or it could be the delay in loading and unloading and external temperature in the region could have been a cause. IoT can also help to proactively and intelligently execute the entire shipment in a planned manner prioritizing shipments based on factors like shelf life of product, criticality of delivery and SLAs. The data can also be passed on to other applications like supply chain software, ERP, HRMS, etc, to facilitate synchronized business operations for the user.

IoT can solve every day tactical challenges as well as strategic management challenges in the most effective and informed way. In the wake of advanced technologies like IoT and AI and digital transformation across various industries, leadership should think through on how to push the paradigm of managing ports and shipping industry.

WebNMS offers IoT platform with built-in capabilities that can address a plethora of challenges faced in the shipping and maritime sector. The platform offers real-time monitoring of the capital-intensive assets like cranes at the harbour and assets or vehicles on the move. WebNMS additionally offers a wide range of customization and industry ready IoT solutions for remote asset management and fleet and logistics management that can digitize and transform operations at an enormous level for the industry.

**Technology**

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