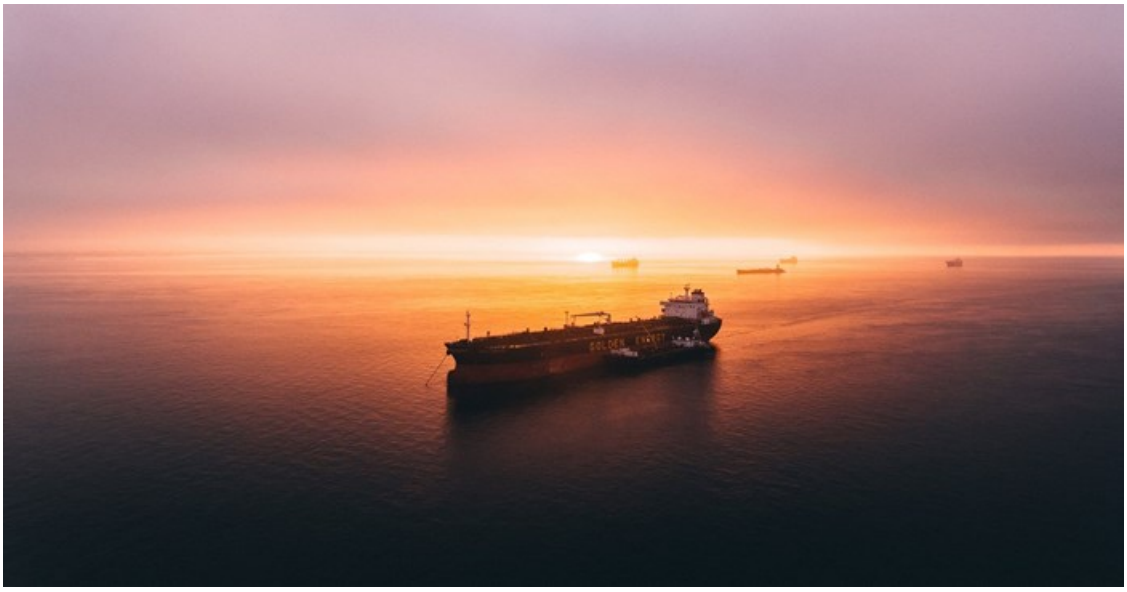
The digital evolution of South Africa's shipping industry

As South Africa's maritime and shipping industry continues to benefit from technological interconnectivity, the sector is on the brink of a true digital evolution - but requires dynamic changes to be made to its policies.



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“The maritime sector is undergoing its own digital transformation. The sector requires increased monitoring, and creates the perfect conditions for the internet of things (IoT) to thrive. IoT impacts all areas of shipping, from cargo carriers to cruise liners and fishing boats,” explains Olivier Ondet, SVP IoT and Analytics, Orange Business Services.

The secretary general of the African Shipowners Association, Funmi Folorunso, spoke at the South African Maritime Industry Conference (SAMIC) in Port Elizabeth, in April 2017, saying, “South Africa’s maritime policy should be as dynamic as the industry is it is written for. Changes should be made.”

At the event, Higher Education and Training Minister Blade Nzimande said the following about the economic opportunities of the industry, “It is projected that maritime has the potential to make a contribution of between R129bn and R177bn to the GDP by 2033, and in so doing, creating 800,000 to 1,000,000 jobs.”

Digital transformation revolutionises maritime shipping

Alongside the rise of the IoT, every aspect of shipping has been touched by the integration of automation and big data. Through the use of technological solutions, shipping companies are managing their fleets more efficiently, achieving fuel savings, and outsourcing more tasks to the shore.

“Big data shipping solutions are designed to monitor data which captures the input and output of the shipment,” says Ondet. This data correlates against information such as weather and temperature and provides an accurate delivery time estimate, for example. Thus connectivity is critical to help increase accountability and transparency, especially when it comes to automated or unmanned ships.

In addition to revolutionising life on board, digital transformation is also impacting on ports. IoT, cloud computing and enhanced connectivity are enabling new tools such as vehicle booking systems (VBS), with a mobile app designed specifically for the port’s haulers. Other tools include apps that help reduce pollution and enhance efficiencies by optimising truck routes and cutting congestion around ports using Bluetooth, Radio-Frequency Identification (RFID) and license plate readers to gather data in real-time.

Nearly 96% of South Africa’s exports are conveyed by sea, and the commercial ports are channels for trade, as well as hubs for traffic between southern African and Europe, Asia, America and the east and west coasts of Africa, according to Brand South Africa, (2017).

“Thus these ports should be using new platforms to enable improved data sharing between different port stakeholders, combining data, interoperability of existing platforms and new apps within the supply chain. Essentially, the solutions are designed to synchronise goods and logistics processes at the port and reduce costs and delays. Furthermore, IoT apps are being used to enable smart tracking of containers and schedule operations,” comments Ondet.

A digitised shipping minimizes maritime shipping risk and error

For instance, Transnet National Ports Authority introduced a new port security system for South Africa, to safeguard customer cargo, port users, assets, and to track theft of cargo and damage, according to a Safety4Sea report, (2016). Thus the new system, apart from managing online and real-time operations, further strengthens the ports security dubbed as “smart people ports.”

Using blockchain technology offers end-to-end bill of lading access by all entities in a supply chain, from freight forwarders and shipping carriers to port operators and regulators. “Blockchain technology will assist South Africa’s shipping sector to effectively manage all transactions or issuing of new currencies with a higher accuracy, full transparency, quick processing, increased security and a paperless system. Essentially the technology can simplify all transactions between sellers, buyers of cargo, customs and port authorities with a shared database that runs a blockchain protocol.

“With the rise of blockchain and high throughput satellite services, we are entering an era of re-defining maritime connectivity,” says Ton Ebbenhorst, business development manager of Satellite at Orange Business Services.

This transformation opens up opportunities for maritime operators to capture intelligent data, improve their operations and make more informed decisions. Following on the rise of big data, the deployment of onboard applications and the management of integrated intelligence will ultimately change the way the shipping industry operates; making it greener and more efficient.

Further, Electronic Chart Display and Information System (ECDIS) is a geographic information system that ships use for navigation and it is required by the International Maritime Organisation (IMO) as an alternative to paper nautical charts. ECDIS was a step along the path to what today’s connectivity enables – real-time route planning and optimization. “Ships can receive up-to-the-minute data and information about weather, incidents, potential obstacles and more, letting them re-route to a safer or calmer path if necessary,” adds Ebbenhorst. “Route planning also impacts fuel consumption and helps shipping companies save money.”

Enhanced connectivity means more security

Innovative advances in satellite technology mean shipping companies can move large amounts of data back and forth faster and more conveniently than ever, while data analytics can be used to improve their operational efficiency.

Being efficient and connected to the corporate network requires the same degree of emphasis on cybersecurity as it would in a land-based office. About 44% of ocean carriers have low levels of basic cybersecurity, while 95% of cybersecurity incidents are due to human error, according to Inmarsat, (2016). With vessels increasingly becoming extensions of the corporate network, a change in philosophy is needed.

“Businesses should think of vessels as branch offices rather than isolated silos, and should ensure crew is trained on cybersecurity. The human error element can be, if not eliminated, at least mitigated and minimized through smart training,” says Ebbenhorst. For example, there are as much personal devices on board as in any office. Companies need to implement policies around bring you own device (BYOD) and the appropriate security processes around this.

“As the South African shipping industry looks to leverage on the benefits of the digital age, the future of the industry is in applications, which promise to simplify the shipping cycle. When application are fully adopted, they have the potential to vastly reduce costs and complexity of trading, which could save the industry in costing, reduce errors, reduce time spent in transit and overall improve inventory management,” concludes Eric Piquet, head of business development and strategic projects in satellite at Orange Business Services.