Emerging Maritime Tech Challenges and Opportunities

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Originated in 2011 by the German Government, “Industrie 4.0” was originally used to describe a highly computerised manufacturing process. Siegfried Dais, Deputy Chairman of Robert Bosch GmbH, remarked that it is highly likely that the world of production and logistic will be revolutionised as the world “becomes more networked until everything is interlinked with everything else”. That was 2013.

Today, the shipping industry is rapidly evolving into one that utilises advancements in interconnectivity to better manage their resources globally. Maritime Digitalisation is home to a wide spectrum of activities ranging from what is seemingly a simple digital conversion of physical logbooks and records to the holy grail of autonomous shipping. The maritime digital landscape is vibrant and dotted with bubbling technologies, but due to its nascent state, challenges and opportunities come in nearly equal dosage.

LACK OF A COMMON DATA STANDARD

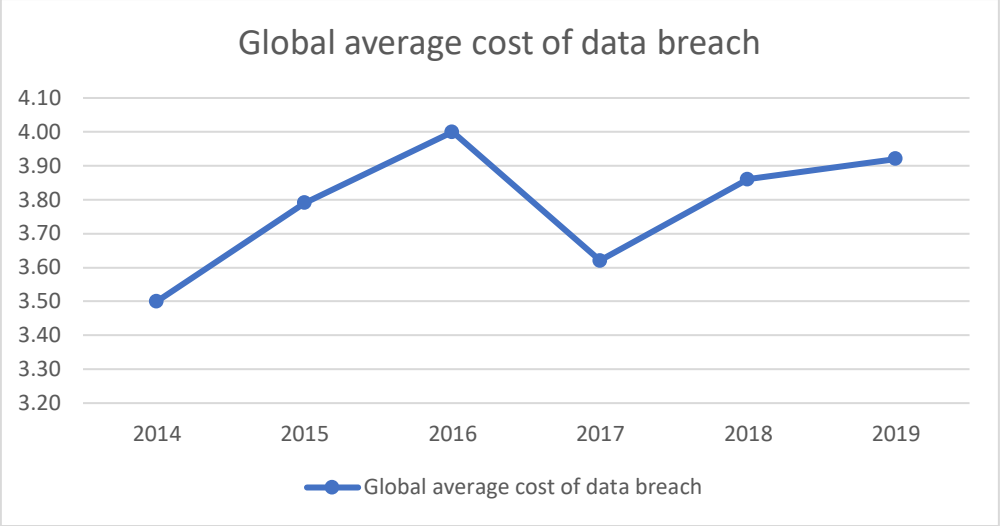
Having come off from a fairly recent analogue past, there are no shortage of new use cases for digitalisation within the maritime sector. However, with every new digital product, comes with it new data standards in terms of quality, security, access rights and curation. This lack of uniformity is not unique to the maritime sector but a norm in most early developments – anyone remembers the VHS and Betamax war of the 70s? This diversity in standard will inevitably impede interoperability between different systems and ultimately the proliferation of data services within the industry.

Things are definitely changing as more and more large shipowners are working with maritime NGOs such as Classification Societies and other Original Equipment Makers, to establish basic “ground rules” such as data standard. One such collaboration is between engine maker Wartsila and DNV GL, where both parties would focus on establishing a common way to classify data, the requirements for their usage and cyber security for maritime application.

LACK OF DATA SECURITY STANDARD

On 27 June 2017, cyber-attacks were made on Maersk’s various IT systems affecting all business units at Maersk, exposing its cyber underbelly. The attack however was only part of a larger coordinated assault on the Danish giant along with several large corporate and government agencies targeting mostly western entities. For the maritime industry, the episode was the wake-up call that brought together more wholesome discussions around maritime data security.

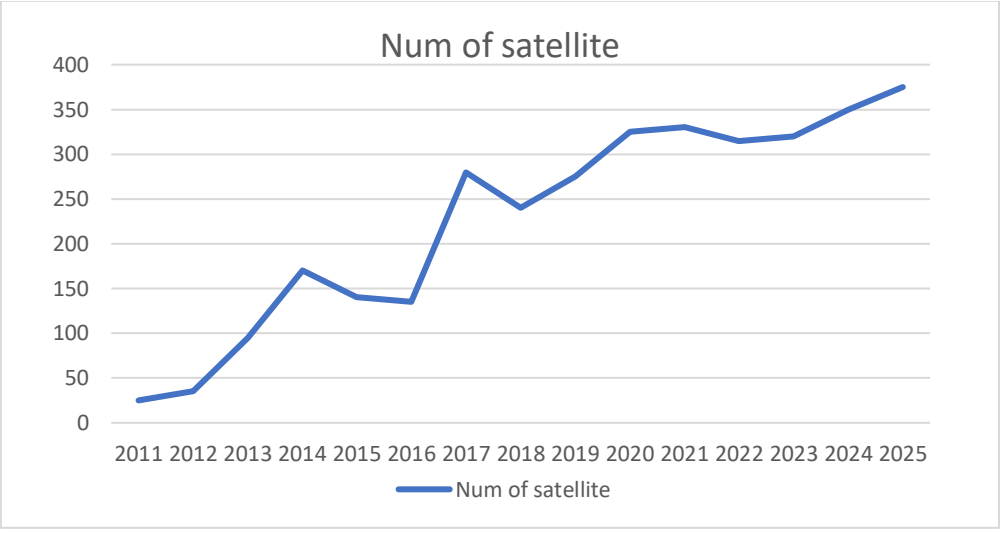
Most shipping companies today would regard cyber security as one of its top priority as more of their daily functions are being moved to the digital realm. Not only that, each attack has become increasingly expensive – with an average of US$3.9MM per attack in 2019 – an average growth of 12% per annum.



What is concerning is that, while most recognise the importance of cyber security, the industry focus so far has been in the form of voluntary guidelines from the shipping industry NGOs. Among the slew of costly environmentally-driven regulations that are currently underway, regulators are concerned that a more hard-line approach would pile more financial woes on ship-operators, when the overall shipping market is already besieged by weak margins.

STRENGTHENING MARITIME CONNECTIVITY

One of the key hold-ups to maritime innovation has been the affordability of satellite communication technology. In recent years, the cost of satellite communication has been reduced substantially as more satellites are being launched. Satellites are getting smaller (SmallSats) and they are designed to be launched significantly less expensively, such as using reusable rockets. SmallSats are also being launched into Low Earth Orbit (LEO), which is potentially a game changer for maritime automation. Satellite constellations such as the Iridium Constellation can now provide low-latency connectivity through a network of 66 satellite.



On top of all that, the maritime communication sector is at the cusp of being disrupted, as “industry outsiders” such as Google and SpaceX are coming into the fray with revolutionary products unseen by the industry. Elon Musk had previously stated his ambition to station a network of 12,000 satellites in orbit above Earth. They were 60 satellite closer in November 2019, when they launched its Starlink

satellites into orbit. This should ultimately benefit shipowners as connectivity cost continues to plummet.

AUTONOMOUS SHIPPING

Of course, the ultimate prize is a fully autonomous ship. In 2019, there were 2 major developments that had taken the industry closer to a fully autonomous vessel. In June 2019, NYK completed their first sea trial navigating a retrofitted vessel autonomously from China to Japan, using the Sherpa System for Real ship (SSR). The sea trial was guided by the newly published IMO autonomous ship trial guide, and had secured an approval from the Panama flag state. The vessel only took 6 days to complete its trial. The second breakthrough was the collaboration between Yara, KONGSBERG and VARD to build MV Yara Birkeland – a 120 TEU fully autonomous coastal vessel plying the Norwegian coast. This vessel is slated to be delivered in Q1 2020. The Norwegian maritime cluster and government has shown support and collaborated to lead the technology, design, legislation, testing and all other aspects on this autonomous development.

The autonomous concept is not without its critique and not everyone is a believer. Maersk CEO famously remarked that a fully autonomous vessel wouldn't appear in his lifetime, while GM of Chord X, Jon Loken shared similar views too. Some of the challenges often quoted are the lack of high speed connectivity at sea, technological scepticism, difficulty in NGOs establishing a common comprehensive framework for autonomous shipping, and last but not least, the economic viability of pursuing autonomous shipping.