

## ***Joint IMO-Singapore conference on the future of shipping***

The Double-D Interface: Melding digitalization with  
Decarbonization

*Opportunities for global standards to be developed at IMO or IMO  
in collaboration with other standard-setting bodies*

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- Digitalization is a tool with multiple applications in changing how we interact with each other (other in the broadest sense) and how we understand and experience the world
- Decarbonization is a social objective and environmental imperative but ultimately requires engineering solutions

- International standards are the best way of overcoming technical and operational barriers caused by differences amongst the regulations and standards developed independently and separately by companies, governments, regions and national standards organisations
- This approach has proved successful thus far but emerging technologies and digitalization, in particular, are challenging the normative approach to standards setting

***Harnessing the opportunities of digitalization to the societal goal of decarbonization requires a new regulatory approach***

- Digitalization has the potential to provide IMO with the data and information it needs to implement and evaluate necessary, appropriate, relevant and sustainable responses to the decarbonization challenge
- Digitalization can support industry in enhancing the safety and efficiency of their operations using digital solutions which introduce new norms in ship operations and/or integrate shipping further into the global supply chain.

***If, however, digitalization is to support decarbonization at these points of convergence, the IMO and other standards-setting bodies need to respond to what can be described as ‘the pacing problem’***

- There is an increasing recognition that true and up-to-date knowledge and understanding of the capabilities and limitations of technologies is not widespread across the regulatory system
- As the pace of new technology implementation continues to accelerate, the regulatory system struggles to provide effective, meaningful and timely oversight of emerging technologies
- If the pacing problem is not addressed, then either there is a risk that digitalization does not achieve its maximum point of contribution to decarbonization or supports decarbonization but at a cost to society which is unsustainable

***As such, a temporary but important shift in focus away from business-as-usual regulatory development might be necessary.*** |

# A new regulatory approach

- Regulating the industry through the current format of treaties containing prescriptive regulations for the hardware of ships systems, takes a very long time to develop, adopt and enter into force
- Instead, a goal-based approach facilitates those moving at a faster pace to deliver the technology and requirements which underpin the goals.
- A successful goal-based approach requires effective measurement to be in place.

***Digitalization is the key to enabling IMO to deliver sophisticated legislative tools that provide for a level playing field of assurance***

***Regulatory goals can be demonstrably achieved via the collection and collation of meaningful results which are passed digitally and securely to the relevant oversight bodies for verification and certification***

# A paradigm shift to proactive regulation

- With the exception of traditional historical experience and application of first principles Engineering analyses, today, even with the GBS approach and the use of casualty investigation data to feed FSA studies, IMO and class societies essentially regulate by "failures" emerging from application and lessons learnt
- Digitalization, however, enables a regulatory approach similar to that of predictive maintenance for OEMs; using data to pre-empt accidents and incidents and drive environmental performance

## ***Data becomes a surrogate for experience***

- In an ideal world, IMO would develop an overarching treaty governing data to drive adherence to the goals the regulator has set and proactively identify improvements and enhancements
- This would likely also require flag States to share with IMO part of their evidence base related to compliance of ships with set goals

***Data streaming and analysis for regulatory development at the global level is more effective and efficient than on a flag by flag basis***

- Digitalization can ease the pathway to a decarbonized shipping industry, it cannot deliver it of itself; ultimately, decarbonization will be achieved through engineering solutions

***In the context of decarbonization the role of digitalization is to assist companies to enhance and improve the performance of their non-zero emitting ships before 2050***

As such, consideration should be given as to whether:

- Non-zero emitting ships are to be digitally enabled to allow for the delivery of systems performance data to the regulator
- If so, what type of data is required to be streamed from the ship in order to manage the industry's pathway to decarbonization



IMO should evaluate the benefits of legislating for ships to be designed and built with the capability (intelligent sensor technology) to "talk" to relevant regulators

The advantages of a "data enabling" protocol developed by IMO include:

1. how and what to measure from sensors, ships, systems and companies, and the security and corruptibility of data at any point in the data lifecycle needs to be agreed and included in international standards
2. Ownership of data is a key issue: who holds and has access to data is commercially sensitive and often precludes the sharing of that information. Removing data sharing restrictions are fundamental to enhancing the effectiveness of machine learning and will require legislation (market drivers will not be sufficient)
3. Standardisation of data is the other major element. This is where others, like ISO, IACS or CIMAC could develop standards for data formats, collection, management, storage and analysis of systems data

- It is increasingly apparent that a regulatory system which works to support digitalization in ship operations, whilst managing risk arising from specific technologies, is needed
- This imperative requires all involved in regulating shipping to collaborate in new ways
- If standardized data requirements can be developed, and data routinely shared, its utility as a tool to develop more effective, more focused and more timely regulations can quickly be leveraged
- By promoting the benefits of data for both the development of more responsive and informed regulations and for an improved operational performance that benefits industry and the environment, IMO can be a key player in encouraging efficient collection and sharing of data in support of global shipping's collective interests