

The Role of Digital Technologies to Achieve a Decarbonized Maritime Industry

Patrick Ryan
Senior Vice President of Global Engineering and Technology
American Bureau of Shipping

The topic of decarbonization is driving behaviours in maritime markets industry. Some see digitalization as a distraction to the more urgent challenges of carbon emission reductions. A solution to cost escalation, perhaps, but no more.

From the experience and perspective of the American Bureau of Shipping (ABS), digitalization and decarbonization are two sides of the same coin. This discussion will cover four major digital technologies emerging in the maritime domain: 1) CADBased construction, 2) modelling and simulation, 3) SMART systems, data analytics, and AI, and 4) remote survey/operations – and their technology adoption state today and their ultimate role in the maritime industry.

With this basis and status understood, the connections of these technologies to their role in decarbonizing the industry will be presented. Challenges to this role – such as data rights and ownership – will be discussed.

The presentation will close by discussing the industry digital infrastructure needs, as seen by ABS. ABS will discuss the role of integrated data structures and systems, the role of lifecycle management systems, and the resulting emergence of the digital twin. ABS will address their own approach to this challenge, and discuss the impacts of this solution for the industry for environmental protection and statutory compliance.

Speaker's Short Biography:

Patrick Ryan is Senior Vice President -- Engineering and Technology for ABS. He is responsible for global engineering, digital engineering, rules and software, research and development, and the Global Ship Systems Group. Ryan is known for his vision and energy in digitizing maritime engineering and is leading ABS through their digitalization of Class in engineering, plan review, and beyond. His team has the unique responsibility to help ship owners, designers, and builders bring their plans into the digital world, and to lead the development of new technologies that will support remote and condition-based class services -- all while never deviating from the ABS mission of making the world a safer place and protecting the impact on the environment. Ryan believes that digital technologies go hand-in-hand with the ABS mission.

A naval architect, Ryan's career has always been focused on great ships. For over 20 years prior to joining ABS, he was in a design and construction role, and most recently responsible for digital innovation around those two big processes at Newport News Shipbuilding. Ryan was at the forefront of their digital transformation; he founded their digital innovation lab, led the development and implementation of CAE, CAD, and digital twin technologies to support Engineering and Design for several major shipbuilding programs, and held a senior position in Corporate Strategy where he wrote several of their digital strategies. Ryan has authored seven U.S. and international patents on industrial augmented reality technology, and in 2017, Smart Industry Magazine named him one of the "Top 50" industrial innovators in Smart Technology.

Early in his career, he was well-known as a computational fluid dynamic expert for the US Navy, and he won the prestigious Doug Ensor Award for his leadership and work in Naval hydrodynamics. Ryan is a SNAME member, has a bachelor's degree in Aerospace and Ocean Engineering, and a master's degree in Ocean Engineering, all from Virginia Tech.