

London International Shipping Week 2017 – Theme ‘Tomorrows maritime world’

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Why is Automation a good thing for Society and Business?

The rapid proliferation of automation, or autonomy offers a significantly different future for all of us, as individuals, as society, and as businesses. In this talk, I want to set out my own vision for how I see the future of the Marine and Maritime Industries, anticipating the rapid rise of autonomous systems, intelligent systems and other emergent technologies and how they and other potentially fundamental changes, such as those postulated in the Fourth Industrial Revolution, will change our futures.

In this talk I intend to look at autonomy in a global context, address its impact upon the Maritime industries, before answering the question posed in two part, firstly looking at the impact upon business and then addressing the society element.

Before I begin, I would like to thank my former colleagues in QinetiQ, who have helped develop my thinking on this topic. If this talk sparks your interest in this area, the thinking here is expanded more fully in an insights report launched this week; the latest in the Global Marine Technology Trends work developed by QinetiQ, Lloyd’s Register and the University of Southampton.

This report provides a wider perspective on Autonomous Systems, exploring aspects including legal and regulatory issues. In addition, and, in my view more importantly, the people element, which is often overlooked in our race for technology, is also explored.

Writing this presentation has also given me the opportunity, as this is my first speaking engagement since I have taken over as CEO of BMT, to consider the future of my Company, and where we need to position ourselves against this backdrop of technology and innovation.

Strategic global trends are shaping the future of work, in ways that will have profound implications for the Maritime Industries. Emerging technology, socio-demographic shifts, and political and economic uncertainty are changing the nature of work and the working environment. In tandem, the nature of trade is undergoing a profound shift in an increasingly digital, interconnected cyber world and, with the advent of additive manufacturing technologies, we could see disruptive trade patterns emerge. These developments can only accelerate; traditional enterprise boundaries, skills and resources may fragment against fierce competition from potentially radically different businesses and industries, as this fourth industrial revolution takes hold.

Marine Autonomy, and the advent of unmanned ships, is a pivotal moment for all of us in the industry, opening opportunities to develop new business models, new regulation approaches, new insurance solutions and even opportunities to create new markets. It seems that virtually every week we see press releases on unmanned ships, new reports from our universities and research institutions on applications of autonomy. In October last year, the Royal Navy, through the Unmanned Warrior exercises, demonstrated a number of world firsts in cooperative operations between unmanned vehicles in sea and air, supported by a highly collaborative industrial enterprise.

Of course we are not the only industry pursuing these solutions. They are developing apace in areas as diverse as healthcare and medicine, automotive, and Fintech, all of which are receiving significant levels of funding through focussed and collaborative approaches to Government, with a clear sense of purpose. They have also demonstrated a willingness to change both culturally and in business practices.

We will need to engage with these developments closely. We will face new entrants (think Tesla in the automotive industry), and disruptive business models (think Uber) as technologies and innovation from other sectors seek opportunities to expand.

Taking a shamelessly parochial UK view for a moment, I would suggest that we as a Marine Industry have yet to fully embrace these changes. Whilst some progress has been made, such as the Maritime Growth Study which highlighted a need for unified action, and other groups, such as Maritime UK are actively pursuing this agenda, we have to ask ourselves - are we moving quickly enough?

So, let's start by asking, what is the evidence that we are not? Over 4 years ago now the Marine Industries Alliance published a Strategy for Growth. This strategy recognised, what was then, the UK's leading position in the field of autonomy, building upon our innovative community of SMEs, academia and the National Oceanography Centre. We were, and are, actively deploying unmanned systems for scientific purposes.

Working with the MIA, InnovateUK helped with the funding of a Marine Autonomous Systems call, and the MIA Regulatory Working Group was also formed. But this has not proved sufficient; Despite the efforts of a "few good" women, and men, in the enterprise, the UK has lost ground, other national governments and industries have responded quickly supporting breakthroughs, taking a long term view of the opportunities that may arise.

So, is it possible that the case for change has not been articulated clearly enough? This brings me back to the question "why is autonomy a good thing for business"? It will, in my view, start to fundamentally change the basic structures of a traditional industry, an industry that has evolved incrementally over centuries and where the UK has been at the forefront of developments, an industry that will now have to adapt, look at itself in a new way and start to take radically new approaches if we are to maintain and grow our market share. New concepts, technologies and solutions are required, fundamental organisational structures and functions will need to change, and we will need *strong and stable* leadership from Government to support us. Much as we have seen in the aerospace industry, we now need similar levels of investment. As a maritime nation dependent upon the sea for trade, we have a lot to lose BUT even more to gain through the development of a collaborative enterprise capable of leading, rather than responding to these changes.

There is evidence that shows that maritime industries are already adopting AI and automation technologies motivated by high expectations of cost savings, increased revenue and efficiency gains. Over the next 5 years, we must expect to achieve even higher levels of digitisation and integration¹. However, we must face the risk that if these new technologies are implemented solely to drive

¹ PWC, Global Industry 4.0 Survey – Industry key findings, 2016, www.pwc.com/gx/en/aerospace-defence-and-security/publications/assets/industry-4.0-aerospace-key-findings.pdf.

efficiency and cost savings, then the digital shift will be accompanied by job losses as automation increasingly substitutes for people².

So, to the next part of the question: is Autonomy a good thing for people and society? We cannot talk about unmanned systems without addressing skills and social aspects. I recognise that it is hard to see beyond the technology as it pervades every aspect of our lives, driven by colossal investments in consumer solutions. The press is full of reports about job losses, de-skilling, technology elitism and so forth, but are these real?

It is evident that this new tech, and in particular automation and artificial intelligence, is being fundamentally shaped by a growth and efficiency driven consumer business context and by technology companies. As I highlighted earlier, technological changes are increasingly focused on substituting rather than enhancing people in the workplace as a way to drive down labour costs and deliver efficiencies. But is this really the route we want to shape our seascape? It offers great opportunities but we need to be aware of the unintended consequences.

As 4IR technologies become mainstream, the labour landscape will undergo profound changes, although there is a lack of consensus around what the impact will be. Some predict catastrophic unemployment as jobs are 'hollowed out' and automated. Others foresee a less turbulent scenario where the types of employment available change as new jobs that compensate for those lost are created³. My view is that if technology adoption, specifically automation, continues to be driven by short-term business needs, then the former scenario is more likely.

We should also recognise that attitudes to long-term careers (job for life) are changing. Predominantly driven by the millennial / post millennial generations looking for financial rather than job security (although there is contradictory evidence to this⁴), along with modern working environments, flexibility unconstrained by traditional job factors, a willingness to blur work-life boundaries and high expectations of constant social connectivity. These do not play well into an industry where long periods are spent at sea and with very limited connectivity.

Less well understood is that current trends signal an older, multigenerational, more international and female workforce⁵ along with a gig-style economy driven by transient, on-demand or crowdsourced labour models⁶.

Evidence also suggests that people will be working for longer, leading to multi-generational workplaces where age profiles of 18 to 80 could become the norm^{Error! Bookmark not defined., 7}. We need to adopt new ways that support multigenerational working and through life training and development. We

² House of Commons Hansard, Fourth Industrial Revolution, 8 Sept 2016, <https://hansard.parliament.uk/commons/2016-09-08/debates/16090835000001/FourthIndustrialRevolution>.

³ M. Carney, Uncertainty, the economy and policy, June 2016, www.bankofengland.co.uk/publications/Documents/speeches/2016/speech915.pdf.

⁴ Manpower Group, Millennial Careers: 2020 Vision, May 2016, www.manpowergroup.co.uk/the-word-on-work/millennials/.

⁵ UKES, The future of work: jobs and skills in 2030, www.gov.uk/government/publications/jobs-and-skills-in-2030.

⁶ The Economist Intelligence Unit, www.eiuperspectives.economist.com/sites/default/files/Preparingdigitisationworkforce.PDF.

⁷ IoD, Lifelong Learning: Reforming education for an age of technological and demographic change, Policy Report, March 2016, www.iod.com/Portals/0/PDFs/Campaigns%20and%20Reports/Employment%20and%20Skills/Life%20Long%20Learning%20Report.pdf?ver=2016-09-14-124014-230.

have to ask ourselves, in an adversarial talent market, how can Maritime create a compelling demonstration of their worth and exceed people's expectations?

We should note that there are two key components at play here: the employer and the employee. Crucially the answer requires us to recognise that only one of these components is under our control. Instead of concentrating on how to make potential employees want to join, or current personnel stay, we should instead look at ways to position Maritime as the employer of choice, so that this happens organically. A disruptive 4IR context will provide a range of opportunities to do so.

In addressing these challenges in other industries, the ethos of collaboration and cooperation that underpins the enterprise is significant. It is unlikely that we will be different; however, how we develop and apply these emerging technologies is key. Automation will transform maritime operations, but instead of using technology purely to drive cost efficiencies, there is an opportunity to gain a strategic edge through role augmentation and human-system partnerships. Effective integration of automation and highly trained multi-demographic personnel will deliver versatile capability.

In summary I believe that Automation is a good thing for business. Within the maritime sector we have a number of challenges that will force us to adopt it. However, it is not so clear to me that it is necessarily wholly good for society. It will clearly change the nature of work, reducing drudgery, improving working environments and creating more interesting work, but it could also more generally drive greater competition and social resistance.

We need to address this by extending our strategic planning horizons to enable a long-term transformational approach to workforce capability that 'reads' these strategic trends to anticipate their impact on the 'future of work', and responsively adapt recruitment, selection, training, deployment and retention. For this we need to be pragmatic, recognising that planning should not be based on a single, 'perfect' future, but focused on delivering resilience against a range of possible future scenarios, integrating innovation and skills to create a dynamic industry, resilient to competition and leading rather than following change.