

### Post-Doctoral Fellowship: Proposal Outline

<b>Topic</b>	The Digital Transformation of the Maritime Industry
<b>Research Theme(s)</b>	<ol style="list-style-type: none"> <li>1) Digitalisation</li> <li>2) Ports and Maritime</li> </ol>
<b>Background and Rationale</b>	<p>The efficiency of the maritime industry is central to Ireland’s economic success. As a trading nation, Ireland relies on maritime transport to a greater extent than any of our trading partners. This has been brought into sharp focus in recent years given the challenges posed by events external to the industry, such as Brexit and Covid-19.</p> <p>The industry demonstrated significant resilience in overcoming these challenges. However, recent experience also highlights the pressing need to ensure that the maritime industry is fully prepared to address future risks and challenges as they emerge. The ability of the industry to perform competitively in the future will be driven by its efficiency and its ability to respond to emerging demands in areas such as connectivity with developing markets, offshore renewable energy, the provision of infrastructure for alternative fuels and the decarbonisation of the maritime industry itself.</p> <p>There are a number of future challenges to which the maritime industry will be required to respond, in particular, those related to achieving the net-zero targets by 2050, set out by the EU, in addition to the interim targets contained in measures such as Fit for 55 and FuelEU. Ireland’s maritime industry will also be required to support the roll out of the offshore wind sector, through the provision of appropriate infrastructure, while meeting the growing demands of our trading economy. Trade growth is reported annually in the Irish Maritime Transport Economist (<a href="#">here</a>). Despite the suppressive effects of exogenous shocks on the Irish economy in recent years, trade volumes have recovered well and are set to increase by circa 3% per year.</p> <p>Irish ports are of major importance at a regional and national level as gateways for trade and as hubs that catalyze growth across many sectors of the blue economy. Their efficiency is a significant driver of economic growth. The strategic importance of the industry has been well recognized in Government policies ranging from National Ports Policy to the National Marine Planning Framework and more recently to its role in supporting the ambitious targets set out for offshore wind in the Climate Action Plan (2021) and the Programme for Government. The digitalisation of Ireland’s maritime industry is consistent with the “Digital Transformation” ambitions set out in Science Foundation Ireland’s Impact 2030 (<a href="#">here</a>) and has the potential to create benefits in the maritime industry, which carry through to virtually all sectors of the Irish economy.</p> <p>Digitalisation has a key role to play in helping the maritime industry to meet these challenges. This has been recognized both nationally and also through the recent developments at an EU level. For example, the Connecting Europe Facility (CEF) for Transport - the funding instrument to realise European transport infrastructure policy; Horizon Europe - the EU's key funding programme for research and innovation; the addition of a Ports Pillar to the new Atlantic Strategy 2.0; and the detailed implementation</p>

	<p>plan for Motorways of the Sea. Across these policies and funding mechanisms, digitalisation is advanced as a means to ensuring more competitive, efficient and sustainable development in the maritime sector. Efficient and sustainable ports support economic growth and contribute to the achievement of national and EU decarbonisation ambitions.</p> <p>Ireland has significant expertise nationally in transforming sectors of its economy through the use of technology. This expertise can be further leveraged into the maritime industry in order to ensure its future resilience, efficiency and competitiveness.</p>
<p><b>Scope of Research (Scientific/ Technical Challenge)</b></p>	<p>The maritime industry consists of a number of key stakeholders, including, but not limited to ports, terminal operators, shipping companies, ship agents, freight forwarders, road haulage companies, customs authorities and other regulatory authorities involved in the movement of goods. Whilst many of these activities are within the remit of the Department of Transport, the ubiquitous nature of maritime transport means that other Government Departments are also involved, including, inter alia, DETE, DECC, DAFM, and DoF.</p> <p>The overarching aim of this fellowship is as follows:</p> <ul style="list-style-type: none"> <li>- Carry out an analysis of the current state of the art of digital technologies being applied internationally in the maritime sector or in other sectors that could potentially be adopted to optimise the performance of the maritime industry.</li> <li>- Investigate the current state of the art in relation to international port community systems, traffic management systems, and safety and security systems.</li> <li>- Analyse emerging trends in relation to the use of existing and emerging technologies in order to optimise the logistics value chain.</li> <li>- Analysis existing data assets that exist within the industry and how these can be optimised.</li> <li>- Analysis of existing processes that exist along the value chain including those used to engage with regulatory authorities and agencies.</li> <li>- Develop a range of toolsets and digitalisation plans that can be used to re-engineer processes where bottlenecks have been identified and/or an optimised solution exists elsewhere (e.g. in another sector/in the industry internationally).</li> <li>- Provide an evidence based approach to determining the key areas of benefit e.g. increased efficiencies in throughput, optimised use of port lands, less congestion, reduced emissions, new knowledge generating capabilities from existing data through integration of data silos; increased intelligence for regulatory authorities; the enablement of new business models; the development of new trade routes; reduction in costs.</li> <li>- Develop a number of scenarios that demonstrate these benefits and carry out a cost-benefit analysis to enable the assessment of each.</li> </ul>

<p><b>Expected Impact(s)</b></p>	<p>The fellow will engage with relevant stakeholders nationally including the IMDO, the Department of Transport, Department of Agriculture Food and the Marine, Revenue, Ports, Shipping companies, freight forwarders, road hauliers.</p> <p>The fellow will also develop relationships with the ports and shipping industry internationally with a particular focus on Ireland’s trading partners in the UK and the EU. The impact will be an increased understanding of innovative processes being enabled through digitalisation internationally and steps Ireland can take to adopt these where appropriate.</p> <p>This research will inform national policy including the upcoming revision of National Ports Policy and the contribution of the maritime industry to targets set out in the Climate Action Plan.</p> <p>There will be an opportunity through this research to build on opportunities to secure funding from other sources such as CEF/MoS, Horizon Europe and other EU funding sources. This will build on existing funding that the IMDO has secured for projects such as the International Fast and Secure Trade Lanes (IFSTL) and will open up new opportunities through initiative such as the Alliance for Logistics Innovation through Collaboration in Europe (ALICE) and the the European research and innovation platform for waterborne industries (WATERBORNE)’. </p> <p>This fellowship will build national expertise in this research area and will produce policy briefs for stakeholders, and publish related research findings as widely as possible through peer-reviewed papers, conference presentations, articles, etc.</p> <p>The proposed research will impact policy across the maritime industry by providing evidence based advice to Government Departments on the development of the maritime industry in a way that maximises the digitalisation opportunities. The impacts of such advice will be felt in terms of the future efficiency, competitiveness, and sustainability of the industry, all of which have ramifications for national economic growth.</p> <p>Importantly, research outputs will also inform practice, and by extension, industry development. Digitalisation will open up new opportunities for innovation and the development of integrated, digitalised solutions.</p>
<p><b>Outcomes</b></p>	<p>The outcome of this research will be an evidence based strategy founded on state of the art research for identifying the key areas of intervention for digitalisation in the maritime industry in Ireland.</p> <p>This will support the digital transformation of the sector and secure its efficiency, competitiveness and effectiveness into the future.</p>
<p><b>Specific Collaboration</b></p>	<p>Marine Institute (Irish Maritime Development Office), Department of Transport and the Maritime Industry</p>

<p><b>Location of Fellow</b></p>	<p>The fellow will be immersed in the maritime industry, working closely with the Irish Maritime Development Office (IMDO) and the Department of Transport to identify specific digitalisation opportunities and to develop subsequent implementation plans. The fellow will be based in the IMDO's office in Dublin. Up to 50% of the fellow's time will be spent outside the IMDO, engaging with the Department of Transport and stakeholders across the maritime industry. It is envisaged that up to 20% of the fellow's time will be spent within a research environment, in a third level institution or research centre.</p> <p><b>Contact points:</b></p> <p>Dr Edel O'Connor, IMDO <a href="mailto:Edel.OConnor@Marine.ie">Edel.OConnor@Marine.ie</a></p> <p>Mary Dunning, Department of Transport <a href="mailto:MaryDunning@transport.gov.ie">MaryDunning@transport.gov.ie</a>.</p>
<p><b>Duration and Funding Available</b></p>	<p>4 years</p> <p>€100,000 per annum (i.e. total €400,000 maximum for duration of four years)</p>
<p><b>References</b></p>	<p><a href="#">The Irish Maritime Transport Economist Volume 19</a></p> <p>Climate Action Plan <a href="https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/">https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/</a></p> <p>Programme for Government <a href="https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/">https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/</a></p> <p>National Ports Policy <a href="https://assets.gov.ie/11557/277d22d364fe4c13be390493282c0557.PDF">https://assets.gov.ie/11557/277d22d364fe4c13be390493282c0557.PDF</a></p> <p>Detailed Implementation Plan for Motorways of the Sea <a href="https://www.onthemosway.eu/wp-content/uploads/2020/06/MoS-DIP-FINAL-1.pdf">https://www.onthemosway.eu/wp-content/uploads/2020/06/MoS-DIP-FINAL-1.pdf</a></p> <p>Strategic Research and Innovation Agenda for the Partnership on Zero-emission Waterborne Transport", Waterborne TP, June 2021. <a href="#">(SRIA Zero Emission Waterborne Transport)</a></p> <p>"Roadmap to the Physical Internet", the European Technology Platform (ETP) Alliance for Logistics Innovation through Collaboration in Europe (ALICE), 2020. <a href="#">(Roadmap to the Physical Internet)</a></p>