

Cullen Scholarship: Performance optimisation in port community systems through digitalisation (PhD Award)

Background

The maritime industry has been slow to adopt new digital technologies and has fallen behind other parts of the supply chain that have turned to technological innovation to optimise digital processes, drive efficiency, reduce cost and bolster competitiveness.

As Ireland is more dependent on maritime transport than any of our trading partners and as connectivity to the single market has been weakened by Brexit, the Irish maritime industry must seek to restore its competitiveness by all means possible. Digitalisation, which is central to the EU's ambition for competitive, efficient and sustainable EU transport networks, offers such an opportunity. Digitalised processes can protect connectivity within the single market and are a reliable means of maintaining and enhancing the bloc's competitiveness as a trading entity.

From an Irish perspective, digitalisation can mitigate the negative effects of Brexit that create trade barriers, add cost for importers and exporters and reduce access to the single market. In order to overcome these challenges, the Irish Maritime Development Office is leading an EU funded project that will digitalise operations and processes that form part of a shipping service between Dublin and Cherbourg. The project, which is funded through the Motorways of the Sea funding stream, is a test case that will establish general principles, capable of being replicated on other routes and in other ports. The project, entitled "International Fast and Secure Trade Lane" or IFSTL, is supported by the Department of Transport and by the Irish maritime industry. It will have important ramifications for Ireland's connectivity and for national competitiveness.

There is an urgent need to identify the opportunities that exist within the Irish maritime industry to take advantage of innovations in the digitalisation and integration of data across port community systems, so as to protect the competitiveness of the industry and overcome the disadvantages of peripherality that have been exacerbated by Brexit.

Proposal

We propose a **structured four-year PhD project** on a full-time basis to identify how the efficiency and competitiveness of Ireland's maritime industry can be enhanced through digitalisation processes. The project will aim to:

- Establish best practice in the digitalisation of operations and processes in port community systems, by reviewing extant literature and benchmarking Irish ports against comparable ports internationally.
- Carry out a comparative study between digitisation in the Irish maritime industry and an industry that has been an early adopter of such technologies, to identify the most fertile areas of opportunity, as measured in terms of cost and benefit.

- Identify common problems, as between Irish ports and in the ports with which they trade, that will allow the benefits of digitalisation to be quickly and uniformly dispersed across Ireland's national and international port network.
- Establish the views of key stakeholders throughout the Irish maritime industry as to the processes and operations that offer the most potential.
- Identify, assess and analyse new processes that build on the work of the IFSTL project or similar initiatives that will be supported and adopted by key stakeholders in the maritime industry.
- Develop a methodology that can be applied as further technologies are considered for use in the network as to the cost-benefit implications of implementing these systems.
- Develop a number of metrics that can be used in order to assess the performance of key processes and how these can be benchmarked against other systems in use in Irish ports and terminals or in other ports and terminals internationally.

Location of Scholar

The PhD student will be based in their host Higher Education Institute (HEI) and in the Marine Institute in Dublin (split circa 50/50 in modules of time as agreed between the HEI and MI supervisors).

Outcome

The student will undergo a four-year training period learning new research methodologies resulting in a PhD thesis. The expected outcomes from the project will be:

- The validation and implementation of new operations and processes in the Irish maritime industry that drive efficiency, reduce cost and bolster competitiveness.
- The creation of digitalised operations and processes within the Irish maritime industry that are capable, due to their design, of being adopted and integrated into port community systems in other EU states, particularly those that trade with Ireland.
- The generation of a robust and validated methodology that establishes the benefits of digitalising particular operations and processes on a cost / benefit basis.

Links with Marine Institute Strategic Plan 2018-2022

This proposal falls principally under Strategic Focus Area 3 - Research & Innovation, but also links to Strategic Focus Area 4 – Ireland's Ocean Economy.

Specific Requirements

The scholar should have a primary degree in information technology or a business or economics discipline. It will be an advantage if candidates have gained experience or have background knowledge of transport, logistics, distribution or business process analysis.

Financial Details

Scholarships will be up to €27,500 per annum (maximum funding of €110,000 over four years). This amount comprises a maintenance award of €18,500 (Irish Research Council rate effective 1-Jan-21) to the student as well as payment of fees to the host higher education institution (HEI). The maximum fees payable to the HEI will be €6,000 per annum. The scholarship award also includes a budget of up to €3,000 per annum for eligible research costs (travel & subsistence, publication costs, consumables and other costs e.g. laptop) for the sole use of the student, and are payable on a reimbursement basis direct to the host institution where the postgraduate student (scholar) is registered. There are no overheads payable on the scholarship. Publication costs are intended to cover publications on which the scholar is listed as first author and are published under Open Access. Scholars can also apply for additional funding under the [Marine Institute's Networking Initiative](#), which is an annual call.

Marine Institute Co-Supervisor

Dr. Edel O'Connor, Irish Maritime Development Office (IMDO) edel.oconnor@imdo.ie

Alternative contact for queries funding@marine.ie