Marine Environment & Food Safety Services (MEFS)

Cullen Fellow: Title PhD – GIS Decision and Plan Making Support System.

Background
The need for a forward looking, plan led approach to the sustainable development ocean economies is now well recognised worldwide. Directive 2014/89 establishing a Framework for Maritime Spatial Planning\(^1\) in the European Union must be transposed in Irish law by September 2016 and maritime spatial plans must be established as soon as possible thereafter but not later than 2021. Simultaneously, HOOW also identified the need to implement an integrated approach to marine and coastal planning. Effective Marine Spatial Planning (MSP) requires that social, economic and environmental spatial information is available so that opportunities and conflicts can be identified and managed to promote sustainable development and economic growth in Ireland. Ireland’s Marine Atlas\(^2\), developed as part of the implementation of the Marine Strategy Framework Directive, is an important starting point for the spatial integration of marine environmental and human use information. Significant research and development is needed to advance the atlas to a more comprehensive planning and decision making support tool.

Proposal
A three-year PhD project to further develop Ireland’s Marine Atlas to support the implementation of MSP in Ireland. The project will aim to:

- Identify and collate additional relevant social, economic and environmental data sets in a form that can be integrated with Ireland’s Marine Atlas
- Establish methodologies and protocols for data collection and configuration consistent with integration and analysis requirements
- Develop decision support tools and models, based on appropriate GIS tools, to examine trade-offs for use by planners and decision makers e.g. MARXAN and Ecopath.
- Draw conclusions with respect to these trade-offs and how appropriate weightings and a rules can be designed for decision making in an Irish context.

Outcome
Outcome for the project will be a GIS planning and decision support system that can be understood and used by plan and decision makers. It should also be designed for used in public and stake holder consultation processes. It will need to be flexible so as to accommodate data of different resolution, scales and types as well as the incorporation of new and developing analysis models.

Specific Requirements
The fellow should have a background in GIS and spatial analysis of complex and diverse data sets, as well as a foundation in socio-economics. Knowledge of existing spatial analysis methodologies such as constraints and opportunity mapping and Bayesian Belief Networks and tools such as MARXAN and Ecopath is essential.

Marine Institute Co-Supervisor
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