

Marine Research Sub-Programme  
(NDP 2007-'13) Series



# Investigation into the Establishment of an Irish Online Marine Archive

Industry-Led Award, Final Report



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**Central Solutions Limited**  
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The Marine Institute is the national agency which has the following functions:

“to undertake, to co-ordinate, to promote and to assist in marine research and development and to provide such services related to research and development that, in the opinion of the Institute, will promote economic development and create employment and protect the marine environment”  
Marine Institute Act 1991.

### Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland

Sea Change—A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013—was launched in early 2007 and was the outcome of extensive analysis and consultation with government departments, state agencies, industry and the third-level sector. It outlines a vision for the development of Ireland’s marine sector and sets clear objectives aimed at achieving this vision, namely to:

1. Assist existing, and largely indigenous, marine sub-sectors to improve their overall competitiveness and engage in activity that adds value to their outputs by utilising knowledge and technology arising from research.
2. Build new research capacity and capability and utilise fundamental knowledge and technology to create new marine-related commercial opportunities and companies.
3. Inform public policy, governance and regulation by applying the knowledge derived from marine research and monitoring.
4. Increase the marine sector’s competitiveness and stimulate the commercialisation of the marine resource in a manner that ensures its sustainability and protects marine biodiversity and ecosystems.
5. Strengthen the economic, social and cultural base of marine dependant regional/rural communities.

The Sea Change strategy was developed as an integral part of the government’s Strategy for Science, Technology and Innovation (SSTI) and the Marine Institute as the lead implementation agency is working within SSTI policy and with government departments and agencies to deliver on the Strategy.

The Marine Institute managed Marine Research Sub-Programme, one of eight sub-programmes within the Science, Technology and Innovation (STI) Programme of the National Development Plan 2007—2013, targets funding to meet the objectives of the Sea Change strategy.

Over the lifetime of Sea Change, funding will be provided for:

- Project-Based Awards
  - o Strategic Research Projects
  - o Applied Research Projects
  - o Demonstration Projects
  - o Desk/Feasibility Studies
- Researcher Awards
  - o Strategic Research Appointments
  - o Research Capacity/Competency Building
  - o Post-Doctoral Fellowships
  - o PhD Scholarships
- Industry-Led Research Awards
  - o Company Awards
  - o Collaborative Awards
- Infrastructure Awards
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ISSN: 2009-3195

# Marine Research Sub-Programme 2007-2013

## Industry-Led Award

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### ***Investigation into the Establishment of an Irish Online Marine Archive***

*(Project Reference: ILA/07/003)*

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Project Duration:	01/02/2008 to 31/07/2009



## Acknowledgments

This project (Grant-Aid Agreement No. ILA/07/003) was carried out under the Sea Change strategy with the support of the Marine Institute and the Marine Research Sub-Programme of the National Development Plan 2007–2013.

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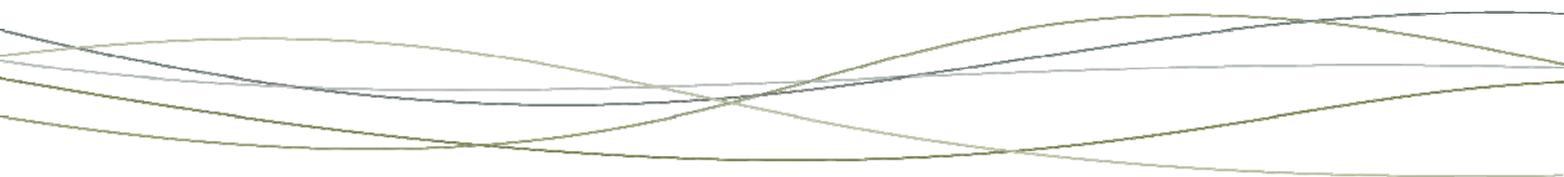
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## I. PROJECT SUMMARY

The main objective of this project was to research the key issues pertaining to the development of an Irish Online Marine Archive Portal (IOMA) for the Marine Sector in Ireland. The purpose of such a Portal would be to give immediate, permanent and free access to published and non-published the work of marine researchers across Ireland.

For Central Solutions, this industrial research project focussed on planned research aimed at the acquisition of new knowledge and skills for developing new products, processes or services required for the development of such Online Archive Portals and in particular the use of Open Access standards and Harvesting technologies for this purpose.

The project is in response to an identified gap in the support infrastructure for the Marine Sector in Ireland and is also in line with the EU Commissions call for Thematic Digital Repositories to be developed to help drive innovation and R&D at both a National and European Level. (See i2010<sup>1</sup>).

The project was performed according to the following 5 phases:

1. Project Establishment
2. Desk Review/ Training/Site visits
3. Data collections protocols and consultations with stakeholders.
4. Technology Analysis and Comparator Review
5. Final Assessment and Evaluation

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<sup>1</sup> i2010- A European Information Society for growth and employment.  
[http://ec.europa.eu/information\\_society/eeurope/i2010/index\\_en.htm](http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm)



A number of key findings were identified through this research:

- Following recent European Research Advisory Board (EURAB) recommendations, the HEA, SFI, IRCSET and HRB specified an Open Access mandate for any research they fund. These mandates have been effective from late 2008.
- The establishment of an Irish Marine themed Institutional Repository would address several critical needs. Generally researchers felt that access to marine research outputs could be better. Additionally, as evidenced by the comparator study, the sector in Ireland lags behind its international counterparts.
- Both Institutional Repositories and Thematic Portals offer many opportunities to organisations seeking to improve the visibility and reach of their research outputs.
- Managers of research outputs, predominantly librarians are well informed about Open Access concepts.
- The technologies and standards associated with the operation of Open Access portals have matured and are well researched and documented.
- A key issue of concern for many stakeholders in the Irish Marine Science research community is that access to some publications is no longer available in any format. There is therefore a critical need for digital preservation of such publications.

This project has provided Central Solutions with a significant opportunity to establish linkages with a wide range of comparators, technology platform providers, research institutes, third-level institutes and other sectoral bodies. These will play an important role for Central Solutions in future developments in this area.

## 2. PROJECT DESCRIPTION

### 2.1. Description of issue/problem the project aimed to address

The project is in response to an identified gap in the support infrastructure for the sector in Ireland and is also in line with the EU Commissions call for subject specific Digital Repositories to be developed to help drive innovation and R&D at both a National and European Level. (See i2010<sup>2</sup>). The proposed project is also in line with the objectives of the “Aberdeen Declaration” issued by experts in Marine Science and Policy meeting at the EurOcean 2007 Conference on the 22nd June by supporting the development of open and standardised access to Marine Research in Member States.

The purpose of the Irish Online Marine Archive Portal (IOMA) will be to give immediate, permanent and free access to published and non-published work of marine researchers across Ireland. It will hold peer-reviewed articles, pre-prints, locally published articles, press releases, reports, symposium contributions, presentations, scientific posters, theses, photos, videos, etc.

Overall the IOMA will increase the competitiveness of the Marine Sector in Ireland by enhancing the visibility, distribution and use of Irish Marine Research both on the Island and beyond. This project will support the sector’s main R&D interactions of Resource discovery, Resource Access, Resource re-usage and Resource dissemination.

### 2.2. Project aims and objectives

The main objective of this project was to research the key issues pertaining to the development of an Irish Online Marine Archive for the Marine Sector in Ireland. It is envisaged that this thematic portal will harvest metadata from a range of relevant sources including Institutional Repositories in Ireland as well as providing added value services of relevance to researchers in the sector.

While the primary focus of this project was on investigating the feasibility of establishing a thematic harvesting portal, it was recognised at an early stage in the project that the current status of Institutional Repository (i.e. the sources from which a thematic portal would harvest)

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<sup>2</sup> i2010- A European Information Society for growth and employment.  
[http://ec.europa.eu/information\\_society/eeurope/i2010/index\\_en.htm](http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm)

deployment in Ireland would also need to be investigated as part of the project scope in order to support a comprehensive assessment.

The scope of this project was:-

- An assessment of the availability, management and access to marine research outputs in Ireland.
- A brief outline of existing initiatives in the marine research sector.
- Analysis of technology components.
- Survey of marine researcher attitudes, opinions, preferences and experiences.
- Assess qualitative opinion and commentary from the managers of marine research outputs.
- Draw conclusions from research activities and make recommendations.
- Prepare a prototype Institutional Repository and Harvester for evaluation.

## **2.3. Methodology/work carried out**

The project requirements were addressed through using a staged methodology as outlined below.

### **Stage 1: Project Establishment.**

The first stage of the project included kick off meetings with the Marine Institute, the recruitment of a Researcher by Central Solutions, building a database of contacts and baselining a detailed project schedule by the Project Manager.

### **Stage 2: Literature Review / Training / Site Visits.**

This stage includes an extensive review of marine research publishing practices in Ireland. Standards, technologies and comparator experiences with Open Access initiatives were researched.

### **Stage 3: Data Collection Protocols & Consultations.**

In this stage of the project a detailed survey was prepared for administration to a large population of marine researchers and users of this research in Ireland. With assistance from the Marine Institute a large database of contacts for the survey population was defined and

verified. Consultation with several managers of research information was completed via structured interview to assess the challenges associated with establishing a marine portal.

#### **Stage 4: Technology Analysis.**

The main focus in this stage was detailed evaluations and assessments of the various open access Institutional Repository and Harvester products available and their suitability to the task of hosting the Irish Online Marine Portal. Fully functional demonstration Institutional Repository and Harvesters were commissioned and made available to several key informants for feedback.

#### **Stage 5: Final Assessment and Evaluation.**

The final stage of the project was spent completing documentation from interviews and evaluations, consolidating this information into the structure of this final report. This report includes overall conclusions and recommendations that would assist in the delivery of the most economically advantageous and useful portal solution.

## **2.4. Details of difficulties encountered**

Broadly speaking, the project proceeded without any major difficulties. Those issues and difficulties which were encountered are outlined below:

- The first difficulty encountered was in relation to the recruitment of a project researcher. This is in part due to market conditions and in part due to the fact that the breadth of disciplines required by the researcher was found to be quite demanding as it required a strong mix of technical, market research and financial skills. A project researcher was hired, albeit approx. 3 months later than originally envisaged. In the interim and with a view to maintaining progress on the project, the scope of work was split between two other project personnel.
- We had identified VLIZ as being the most suitable comparable initiative for a site visit. At the early stages of this project, we discussed with a contact in VLIZ the idea of such a site visit and he was very enthusiastic for such a visit. However, during the course of this project, this original contact person left VLIZ and his replacement wasn't as keen on a site visit when we recently discussed this. Through desk research and a series of phone conversations, we have been to carry out most of the required comparator research and are satisfied that the work was done without a site visit.

- Attempting to quantify the total body of Marine Science research publications in Ireland proved difficult. There is no consistent publishing policy for government agencies or third level institutes. Some government agencies like the Marine Institute and Bord Iascaigh Mhara publish a lot of information on their websites, but there is no policy stating the criteria for document publication on their website. Furthermore, there are no consistent publishing guidelines or standards in the third level sector across the various institutes. Individual departments in some third level institutes maintain detailed lists of their department's publications, but quite often only some of this list is available in the respective institution's Institutional Repository. Also it must be noted that the publications lists maintained by these departments may not be complete. Some institutes prefer to list researcher's publication portfolio on the individual researcher's staff home page.

However, none of the difficulties outlined above impacted on completion of the overall objectives and goals of the project.

A key goal of this research project was the acquisition of new knowledge and skills for developing new products, processes or services required for the development of Online Archive Portals. This goal has been achieved with the acquired know-how documented and retained in-house by project staff.

### 3. RESULTS AND OUTCOMES

A comprehensive project report has been completed. The key findings as detailed in that report are outlined here:

- **Legislation and Mandates:** Following recent European Research Advisory Board (EURAB) recommendations the HEA, SFI, IRCSET and HRB specified an Open Access mandate for any research they fund. These mandates have been effective from late 2008 and were commended by the international Open Access community. Researchers in third level institutions were much more familiar than government agency colleagues with the open access concept and international examples of such resources in their field. In light of the recent Irish Open Access mandates and based on the findings from the research herein, there is an urgent need for funding agencies including the Marine Institute to formally communicate these mandates to the research community in Ireland, particularly to researchers not based in a third level institution.
- **Existing access to the overall body of Marine Science research:** A recurring theme emerging from both the qualitative and quantitative research is that access to the complete body of Marine Science research in Ireland is highly fragmented and could be better. There is no central focal point where postgraduate theses, journal articles, reports and conference proceedings can be viewed. This leads to inefficient or incomplete searches for information by researchers. Irish researchers often depend on their informal networks of contacts within the sector to retrieve research publications that are freely available online.
- **The critical need for digital preservation:** Arising from the Stakeholder interviews with Research Managers, Researchers and Information Managers, a key issue of concern for all stakeholders in Irish Marine Science research community is that access to some publications is no longer available in any format. Often the publisher or owner of these original publications no longer has either a printed hard copy or electronic soft copy because over time they have been lost, distributed or destroyed. In the absence of a permanent archive the material has not been preserved digitally. All stakeholders feel that an IR would be a very useful tool for archiving and locating their institutions research documents and the need for such a resource was critical.
- **Technical barriers:** There are no technology barriers preventing the development of an Irish Marine Institutional Repository. The technologies available to create such a resource are mature, standards based and open source with formal development roadmaps and active user communities. Most stakeholders favour the Google search engine and Google Scholar as very important resources when searching for relevant information, therefore it

would be extremely important to ensure that any IR or Harvester portal deployed could be indexed by the Google spider to ensure as high a rating as possible for search returns.

- **Awareness of Open Access concepts:** Managers of research outputs, predominantly librarians are well informed about Open Access concepts. All Irish third level libraries have already deployed or are planning to deploy an IR. They expect adoption of these resources to be slow but steady and that the library will need to assist researchers by making it as easy as possible for their work to be published in the IR. Generally licensing, copyright and intellectual property issues associated with Institutional Repositories are not expected to be any more difficult to deal with than they currently are. The recent use of Creative-Commons licences for researchers work is welcome.
- **Comparators:** The only significant Open Access Marine Harvester portal is Ifremer's Avano which harvests nearly 200,000 unique marine metadata records from 263 different sources, none of which are in Ireland. There are several examples of successful comparator portals based on Institutional Repositories; the most common are Aquatic Commons, OceanDocs and VLIZ IMIS. There is some awareness of these resources in the Irish Marine Science research community and most stakeholders believe they are very useful. Overall, it was found that the Marine Sector in Ireland lags significantly behind international counterparts in this area.
- **Establishing an Irish Marine IR and Harvester:** The establishment of an Irish Marine themed Institutional Repository would address several critical needs. Firstly it would allow the Marine Institute satisfy any Open Access mandates that apply. Secondly it automatically serves as a digital archive that would preserve permanent access to the Marine Institutes research publication catalogue. Such an IR would also be useful marketing tool for the international dissemination and showcasing of Irish Marine Science research. It would also provide an important building block for the establishment of Irish Marine Open Access Harvester Portal to index publications relevant to Irish Marine Science from any IR in the world.
- **Unique opportunity for the Marine Institute:** The deployment of a Marine research related IR and the subsequent deployment of an Irish Online Marine Harvester would allow the Marine Sector in Ireland to leap frog its international peers due to the current lack of such infrastructure for the Marine Sector in Europe and worldwide. Leading such an initiative could be an important strategic opportunity for the Marine Institute.

In addition, demonstration Institutional Repository and Harvesting Portal systems were provisioned and made available to the Marine Institute for review and evaluation.

Overall, the project has successfully captured the key issues pertaining to the development and deployment of an Irish Online Marine Archive and provides a roadmap for the rollout of such a portal.

The research provides a strong business case for the development and deployment of an Irish Online Marine Archive. It also identifies that for the project to proceed it will require strong leadership from within the Marine Research sector in Ireland. Significant challenges to advancing the project do exist, from both a financial and project standpoint. However the benefits for the sector are very significant and the initiative provides Ireland with the opportunity to become leaders in the area internationally.

## 4. IMPACTS AND BENEFITS

The research has provided the Marine Sector in Ireland with a solid foundation in this specialist area and has developed the capabilities and expertise required to plan and deploy an Irish Online Marine Archive.

Furthermore the project has provided a vehicle for the company, Central Solutions, to develop its skills and expertise further in the area of Open Access standards and Harvesting technologies for the purpose of deploying sector specific OA portals.

As a result the company has identified two product offerings which it plans to commercialise.

Over the course of the project strong linkages have been established with a range of comparators, technology platform providers and research institutions and higher education institutions both in Ireland and internationally.

It is hoped that the project will be used to leverage additional grant-aid to support the deployment of an Irish Online Marine Archive in Ireland either through national sources or via European sources.

The successful commercialisation of the product offerings identified would result in new employment opportunities. Furthermore the deployment of the IOMA would indirectly support additional research efforts and research posts in Ireland.

## APPENDIX I: COMPANY DESCRIPTION

Central Solutions Limited is an Irish private limited company (Reg no. 402284), founded in 2005, with 8 staff and headquarters in the Innovation Centre, National Technology Park, Limerick, Ireland.



Central Solutions is a leading provider of specialist information management and archive solutions and services to a number of target sectors including the environmental, marine, heritage and energy sectors in Ireland and abroad.





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