MarineTT

European Marine Research Knowledge Transfer and Uptake of Results

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Environment (Including Climate Change)

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Guidelines on Sustainable Management of Marine Resources

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Dissemination Level	
PU Public	**X**
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

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Introduction

The MarineTT project aimed to unlock Marine Research Knowledge using innovative approaches to identify and collect Knowledge Outputs from EU funded research and subsequently carry out an analysis for impact potential. Where high potential Knowledge Outputs were identified, MarineTT piloted a knowledge transfer methodology consisting of three key steps: a) due diligence, b) transfer and c) impact measurement. As a result of interim findings whilst implementing the project, MarineTT also carried out two open stakeholder workshops in the final stages of the project exploring the broader range of barriers in the research system that are preventing maximum value creation from research.

Deliverable 5.5 provides a critical review of the MarineTT project methodologies, revealing those elements that worked well as well as those elements that could be improved. Furthermore, D5.5 describes some of the findings and insights gained by the MarineTT team whilst implementing the project and interacting with actors in the research system. Though MarineTT focused on Marine research, it is strongly felt that the findings have applications across the research community, given the existence of common barriers. It is also hoped that through open publishing of the MarineTT results future knowledge transfer initiatives can build upon the significant work that has been carried out in the project.

Results

A) Knowledge Collection Phase

MarineTT reviewed projects funded under FP6 (2002-2006) and FP7 (2007-2013). Significant time and resources were devoted to identifying and then capturing accurate Knowledge Outputs (KOs) from projects (completed and in-progress). A number of issues were encountered during the Collection Phase.

Collection Phase Challenges:

- Lack of quality responses to the MarineTT survey by coordinators (261/509 = 51%) who responded to the initial survey. Upon review, it was decided that only 148 had responded in sufficient detail to be able to forward their reponses to the analysis phase.
- Surveys not completed adequately or with enough detail to evaluate the Knowledge Outputs
- Confusion between Knowledge Outputs and contractual deliverables, which was a term unfamiliar to the scientific community
- Difficulties in sourcing project information (e.g. final reports, publications, data repositories, portals and websites, etc.)
- Significant MarineTT person months devoted to 'cleaning' KOs – editorial content, validation of the KO fields and review of additional project information sources
- Under-estimation of the time needed to collect Knowledge Outputs.

In recognising the above factors MarineTT recommends the following for future Knowledge Collection Processes:

Recommendation 1: Knowledge Outputs from EC projects should be captured from projects at reporting stages (periodic and final reporting) using a standardised procedure.

Implementation Advice: a) Insert a Knowledge Output Table (KOT) into reporting templates to collect the correct fields for each Knowledge Output; b) Provide guidelines so that the entries are understandable for a non-expert audience; c) Incentivise Coordinators to complete the tables correctly by removing other generic sections related to results/impact.

Advantages of adopting recommendation 1:

a) it would eliminate the barriers and costs encountered when carrying out retrospective collection;
b) by identifying knowledge outputs at interim points in the project, consortia are encouraged to assess their knowledge outputs and potential end-users, thereby emphasising the importance of knowledge transfer within the project duration;
c) the EC as a funding agency has contractual authority over the projects and can demand high-quality completion and full disclosure, an authority that MarineTT lacked
d) reducing the burden of collection will allow Knowledge Transfer experts to focus on Analysis and Transfer where true value creation is realised
e) evaluators of projects will be better able to assess if knowledge transfer has been carried out and the impact of any transfer by cross-checking against each Knowledge Output

B) Knowledge Analysis Phase:

MarineTT analysed 148 marine research projects. Once the analysis was complete there were 593 validated Knowledge Outputs that were placed in the Marine Knowledge Gate 1.0 for open access by all stakeholders and the wider public.

The analysis phase included both internal and external analysis and was the most labour-intensive aspect of the project. The internal analysis included an AquaTT Project Officer initially reviewing each KOT and attempting to clean the table content. It was followed by internal team assessments (AquaTT & EurOcean) where the KOTs were reviewed for clarity and an initial knowledge potential assessment took place. The final analysis step was undertaken by using external experts who carried out a desktop study followed by an expert panel session where all KOTs were reviewed. Experts were selected so that there was representation from the following end-user groupings: Policy, Research and Industry.

Challenges in the Analysis phase included:

- Lack of understanding of the role of the MarineTT project, its objectives and the benefits of collaborating. Some coordinators might have feared that it was an assessment of their work
- Difficulty in contacting and/or lack of response from coordinators to requests for clarifications
- The need to correct or clarify Knowledge Output titles and descriptions so that they were understandable to a broad audience
- The lack of completion of the “End-User” and “Application” fields or incorrect identification of end-users and applications
- the lack of detail provided on dissemination and knowledge transfer activities carried out during the course of the projects
- Difficulty in assessing the level of completion and market-readiness of a Knowledge Output based on the information provided
- Due to the amount of KO’s and the level of information provided in the KOT, it was very difficult for analysers (internal and external) to assess the knowledge potential in the limited timeframe available.

In recognising the above factors MarineTT recommends the following for future Knowledge Analysis Processes:

Recommendation 2: That there should be an up-skilling of researchers in order to enhance their understanding of the fundamentals of Knowledge Transfer and a better understanding of end-users and markets for their knowledge

Recommendation 3: Initiatives should be undertaken to help narrow the gap between the worlds of science and industry/ policy so that there is a better understanding of each others’ values and priorities

Implementation Advice: the recommendations from the analysis phase are quite broad and link to underlying barriers that were identified in the MarineTT workshops. Overcoming such barriers will require multiple actions by many actors across the research system.

For example, achieving recommendation b) could include actions such as:

i) using end-users as advisors or evaluators of projects in progress
ii) including more end-users as partners in projects
iii) mobility exchanges so that there is a better understanding of each other's environments
iv) training provision on Knowledge Transfer
v) incentives to encourage engagement on both sides.

The merits of different actions would need to be further explored and cost-benefit assessed.

C) Knowledge Transfer Phase

The MarineTT knowledge transfer phase followed three sequential steps:
a) Due diligence
b) Transfer (development of a transfer plan and carrying out transfer)
c) Measuring the impact.

MarineTT devoted significant time and resources to the completion of the Due Diligence phase. This resulted in a significant amount of KOs being removed and not moved on to step b). It also diminished the time left for fully developing, carrying out transfer and measuring impact on the remaining outputs.

Challenges in the Transfer phase
The main challenges were encountered in Due Diligence were the following issues which prevented outputs being moved to b) the transfer step.

- KOs not ready for transfer - output was not fully developed or required further testing or validation before being suitable for transfer
- KOs were outdated (the state-of-the-art in the area had progressed) or had been superseded by later work (i.e. the KO formed the basis of another EU funded project and as such the original KO has been further evolved)
- Intellectual Property associated with KOs – in certain circumstances the IP of a project remained in the control of the Project Consortium and coordinators were unwilling to engage in Knowledge Transfer for a variety of reasons
- Unwillingness of the Coordinator to assist in the knowledge transfer process
- A large amount of time was devoted to completing the necessary Due Diligence

For outputs that moved to Transfer Phase, further challenges were encountered predominantly due to the limited time frame available in the project:

- It was difficult to complete the transfer activities
- It was difficult to measure impact of transfer
- Where initial transfer activities had limited success, it was not possible to try alternative approaches to transfer

In recognising the above factors MarineTT recommends the following for future Knowledge Transfer Processes:

Recommendation 4: To be successful in Knowledge Transfer requires sufficient resources competence, time and budget regardless of whether it is carried out within projects or externally by initiatives such as MarineTT

Recommendation 5: Measurements of the transfer activity as well as ultimate impact on society needs to be built into every transfer process so that success can be assessed.

Implementation Advice: The structure of knowledge transfer in projects and/or post project needs to be re-examined and where possible standardised so that dedicated efforts are put into knowledge transfer and understanding the requirements for effective transfer (competence, time and budget). Without measurement of impact it is difficult to assess if transfer and impact have been achieved. The MarineTT methodology for measurement breaks the process down into two simple components; a) measurement of successful transfer; b) indicators capable of assessing if knowledge is taken up and applied in the value chain.

Conclusion

Inherent differences exist between the research community, industry, policy-makers and other end users of knowledge, e.g., different technical levels, different priorities, different agendas, and different time scales, resulting in multiple barriers that prevent effective knowledge transfer and innovation. Incentives to engage in effective Knowledge transfer must be developed for researchers. Good knowledge transfer must be recognised, rewarded and promoted.

The findings from MarineTT illustrate that numerous Knowledge Outputs have been generated from EC marine research projects including de-novo knowledge, methodologies, products, tools and data. The Knowledge Outputs have applications to end users that have the potential to result in varying types of value creation at different levels in society. Unfortunately, for a combination of reasons many of these outputs have not been effectively transferred to appropriate end users for uptake and application.

MarineTT was ambitious in its objectives and scope given the limited resources and time available. The project implemented pilot methodologies to collect, analyse and transfer knowledge and in each phase insights were gained and processes refined so that if future initiatives were to try and carry out similar exercises, they could build upon the significant efforts of MarineTT. MarineTT has made strenuous efforts to record the processes it implemented at every stage and these will be made publicly available on the project website beyond the funding period.

What is clear from the experiences of the project is that whilst there are challenges with regard to the knowledge transfer process (what it is, how to carry it out, how to measure impact), there are also bigger issues at play which concern the manner in which the European Union carries out scientific research and the role it plays in society. These issues were highlighted in the two MarineTT workshops and the needs analysis survey (see D4.3, 4.4, 4.5).

Due to the broader system barriers that exist, MarineTT believes that collective action by multiple actors is required in order to bring about the change the Commission demands and Europe requires to maintain the European societal vision. All actors and institutional stakeholders need to re-assess

the role of their research in society and take measures to orientate their efforts to the needs of society at large. Closer engagement with end-users is essential to ensure that research is timely and responding to societal needs as well as ensuring that researchers have better accessibility to the value chains for their knowledge.

There also needs to be a change in culture within the research community with less emphasis on peer-reviewed publications, and more incentives to ensure that results are transferred and utilised by end-users. This can lead to an evolution of the entire scientific research lifecycle which in turn could result in an increased return on investment in research and a stronger, more robust knowledge-based bio-economy. Measurement of value creation will be a crucial element going forward in order to demonstrate how actors are responding to the ever-changing needs of society.

With regard to the Marine community, it should not be forgotten that the oceans cover 71% of the Earth's surface and contain 97% of the planet's water. The oceans play a key role in the world's weather and are essential for the production of oxygen and the absorption of atmospheric carbon dioxide. Nearly half of all living things on the Earth live in the oceans - some at extremes of temperature and pressure. Their abilities to live and thrive in such alien environments hold the key to new chemical processes for industry and medicinal compounds to promote human health. The oceans provide five percent of the total protein in the human diet. They transport 95% of the world's trade. Their waves and tides are a potential source of renewable energy, while the ocean floor is a major source of oil and gas. Its coastlines are not only home to the majority of the world's population but also a place to relax and commune with nature.

Yet, in spite of the importance of the oceans for human life on this planet, only 5% of the seabed has ever been observed by human eyes. Public knowledge of the ocean, the key roles it plays in supporting life on this planet and how we might minimise human impact on its delicate and complex ecosystems is vital.

Given the importance of the seas for planet Earth, it is essential that the marine community is better able to transfer its knowledge to policy, industry and society at large as protecting the oceans is indeed a “Grand Challenge” for the planet.