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Contents

Introduction	4
Key Terms.....	4
The COLUMBUS Knowledge Transfer Methodology.....	5
Step 1: Collect Knowledge	6
Step 2: Assess Knowledge	10
Step 3: Profile Target User	14
Step 4: Develop Knowledge Transfer Plan.....	17
Step 5: Carry Out Knowledge Transfer and Measure Impact	20
Acknowledgements.....	22
COLUMBUS Partners.....	22
COLUMBUS External Advisory Board	22

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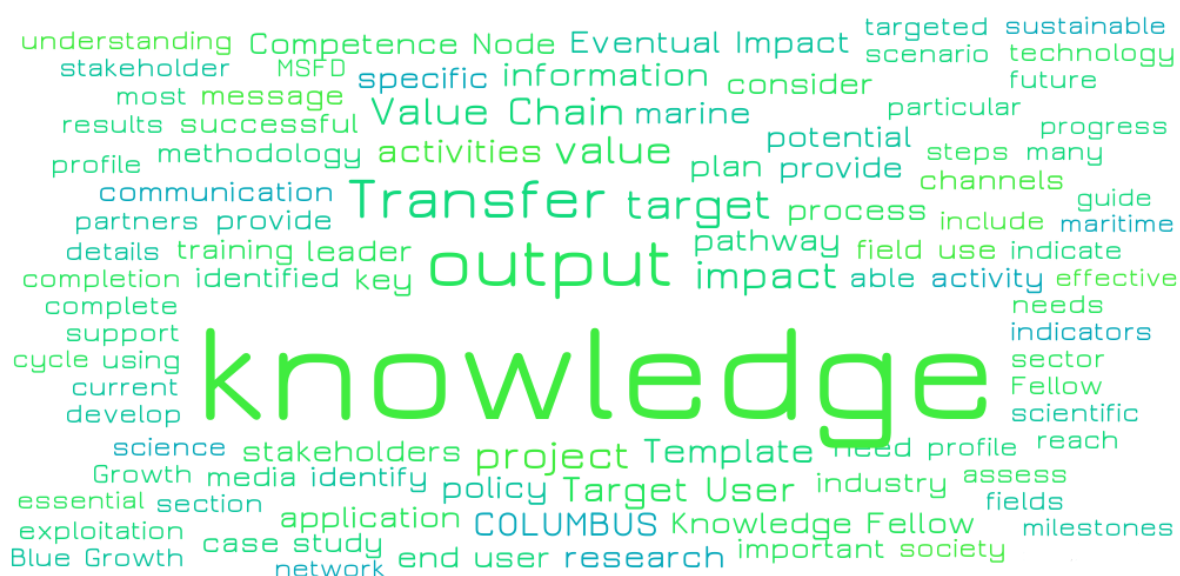


www.aquatt.ie

Funded under the EU Horizon 2020 programme, COLUMBUS (www.columbusproject.eu) was a 36-month EU project (March 2015 - February 2018), involving 25 partners with a budget of €4 million.

With a view to achieving optimal exploitation and enhancing the impact of research funded by the European Commission, the COLUMBUS project was designed to deliver the widest range of benefits to society from marine and maritime research. COLUMBUS focused on developing robust structures and methodologies to facilitate carrying out a large-scale pilot of Knowledge Transfer across the marine and maritime sectors of Europe, to simultaneously contribute to Blue Growth and the implementation of marine and maritime legislation such as the Marine Strategy Framework Directive (MSFD). COLUMBUS achieved measurable value creation to a range of end-users – policy, industry, science and society - within the timeframe of the project.

Developed by AquaTT, this handbook combines learnings, results and recommendations from the COLUMBUS project. It is intended to be shared to allow others to adopt and replicate the COLUMBUS Knowledge Transfer methodology for their own research in any sector.



Introduction

The knowledge acquired from research is hugely important to its stakeholders, whether they be from industry, policy, society or from other academic backgrounds. For industry and science, it can catalyse innovation and the subsequent emergence of new technologies and business thus advancing economic growth; and, for the policy community, it provides the latest scientific evidence for informed decision making. Not only are these improved economic and political landscapes advantageous for society; but an improved understanding of the marine environment, resulting from research, allows us to maintain a sustainable and healthy world in which to live.

Over several years and through many projects, AquaTT has refined its methodology for performing targeted communication, known as ‘Knowledge Transfer’, to ensure that research achieves its full impact potential. This handbook provides a step-by-step guide through the COLUMBUS Knowledge Transfer Methodology: collect, analysis and transfer, illustrated with templates as well as hints and tips from the COLUMBUS experience throughout.

Key Terms

Several terms are regularly used in this handbook and this section provides an explanation of how these terms relate to each other. Please note that these definitions may differ from other sources (such as where others may use knowledge exchange or knowledge mobilisation) but should be recognised as the adopted definitions when implementing the COLUMBUS Knowledge Transfer methodology.

Knowledge Transfer: The term for the overall process of moving knowledge between knowledge sources to the potential targeted users of knowledge. *Knowledge Transfer* consists of a range of activities which aim to capture, organise, assess and transmit knowledge, skills and competence from those who generate them to those who will utilise them.

Knowledge Output: A unit of knowledge or learning generated by or through research activity. They are not limited to de-novo or pioneering discoveries but may also include new methodologies/processes, adaptations, insights, alternative applications of prior know-how/knowledge. For example, a single publication or report may contain several such units of knowledge.

Eventual Impact: The ultimate end benefit of the application of the *Knowledge Output*. It is defined as an enhanced situation that is contributing to a need (political, industrial, scientific or societal).

Knowledge Output Pathway: A single step or a series of steps that are required to carry a *Knowledge Output* to its *Eventual Impact*. It can include detailed mapping of the steps, the users involved at each step and their predicted role in the pathway to *Eventual Impact*.

Transfer Impact: The demonstrable evidence that a *Knowledge Output* has travelled down a single step on the *Knowledge Output Pathway*.

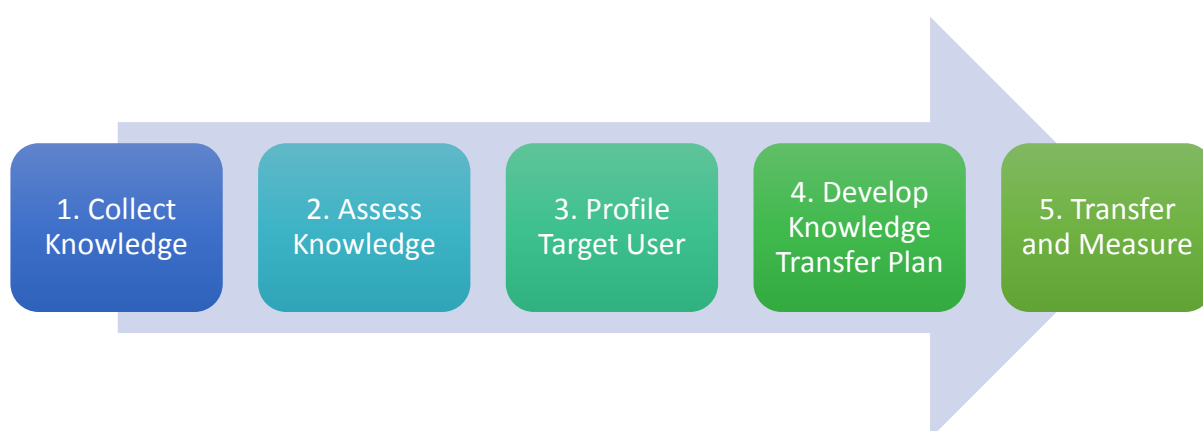
Target User: The individual(s) identified in a *Knowledge Output Pathway* to whom a *Knowledge Output* will be transferred.

End User(s): The last Target User identified on the *Knowledge Output Pathway*, i.e. individual(s) who will apply the *Knowledge Output* at the end of the *Knowledge Output Pathway*.

Exploitation Partner: An external organisation/institution/individual who has an interest and/or expertise that may assist in transferring the *Knowledge Output* down the *Knowledge Output Pathway* to its *Eventual Impact*.

The COLUMBUS Knowledge Transfer Methodology

The COLUMBUS Knowledge Transfer Methodology ensures that the transfer of collected Knowledge Outputs is strategic, coordinated and effective. The methodology is comprised of five steps:



The steps are progressive, however as each step is implemented it may be necessary to go back to earlier steps considering new findings or insights. Each step requires a template to be completed. These are provided at the end of each section.

"Be a researcher of knowledge – be self-questioning, be inquisitive"
AquaTT, Ireland

Step 1: Collect Knowledge

Objective: To be able to identify a Knowledge Output and complete a Knowledge Output Table for a project.

Before devising a Knowledge Transfer Plan (Step 4), it is essential to have a proper in-depth and critical understanding of each Knowledge Output. To help do this, the Knowledge Output Table has been developed that contains fields to capture key information about each Knowledge Output.

By Knowledge Output, we mean a unit of knowledge or learning generated by or through research activity. They are not limited to de-novo or pioneering discoveries but may also include new methodologies/processes, adaptations, insights, alternative applications of prior know-how/knowledge. For example, a single publication or report may contain several such units of knowledge.

To bring new knowledge to relevant users, it is first necessary to gain a thorough understanding of the specific knowledge generated by research. This first step aims to identify the Knowledge Outputs from projects; obtain an understanding and clear description of these outputs; and, initially identify possible applications and respective end users of the knowledge.

Gather knowledge and develop a Knowledge Output Table

The first part of the COLUMBUS Knowledge Transfer methodology is to put in place a collection process, whereby generated knowledge is identified and described on an ongoing basis. As part of step 1, you will need to set up a process where on a regular basis (e.g. six-monthly), all research partners identify and describe, or update, their Knowledge Outputs in the Knowledge Output Table. The Knowledge Output Table includes several fields to be completed per Knowledge Output, with guidance provided.

If collecting retrospectively, carry out a review on any available material from the project, such as project reports, publications and presentations, to provide initial information on the Knowledge Outputs coming out of the project. This information can be used to begin populating the Knowledge Output Table before asking the project's researchers to validate the knowledge and ensure it is correct.

Perform quality control

It is important that a Knowledge Output can be clearly understood by others, for example those working in other disciplines who may not have an in-depth understanding of the science. When reviewing the contents of a Knowledge Output Table, write abbreviations in full and re-word overly technical or scientific language. It is vital that every Knowledge Output is written in a way that it can be understood individually, without the project context. It is critical that the reader can understand the importance of the Knowledge Output; for example, why it matters, why is it unique, what it could influence and what it's unique selling point might be.

If collecting knowledge that isn't your own retrospectively, contact the respective researcher(s) and organise an interview slot. Using a drafted Knowledge Output Table, guide the interviewee through the collection exercise. The objective of this interview is to capture all Knowledge Outputs generated by the project and ensure that they are fully described in the Knowledge Output Table. Once completed,

the final Knowledge Output Table should be sent to the interviewee to validate the quality and completeness of its contents.

HINTS AND TIPS

- When identifying Knowledge Outputs, remember that project outputs or publishable knowledge such as project reports or publications individually may contain many units of knowledge, “Knowledge Outputs”, each of which should be described separately. It is important to focus also on tacit knowledge as well as unpublished explicit knowledge and grey literature, e.g. methodologies, processes, by-products.
- Defining Knowledge Outputs from research projects is a way to carry out self-analysis and reflection on the work that has been completed. This process may assist in project reporting.
- Quality control of the Knowledge Outputs and Knowledge Output Tables is essential and a major weakness of many collection efforts. It can be a good idea to get others to review the Knowledge Output Table to make sure enough detail has been provided.
- Storing Knowledge Outputs in a spreadsheet and making them available on a repository will aid accessibility and standardisation of content.
- The research community are in an excellent position to collect Knowledge Outputs, and assure their quality within a project timeframe, rather than for others to attempt to collect them retrospectively. It is advised that projects are designed to incorporate knowledge management processes at development stage, or implemented into their planned communication, dissemination or exploitation activities.

Template 1: Knowledge Output Table

Instructions: Use one template for each Knowledge Output in a research project

Field:	Guidance	Answer
Knowledge Output Short Title:	Please provide a short and concise title to describe an existing Knowledge Output. Note that Knowledge Outputs can be non-deliverables or milestones too ('grey knowledge') or multiple Knowledge Outputs could exist within one deliverable, in which case they should be separated.	
Knowledge Output Description:	Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert/non-specialist. If relevant, please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to? What is innovative about the Knowledge Output? What is the unique selling point?	
Knowledge Type:	In what format is the Knowledge Output available: exploitable scientific result, exploitable technical result, scientific publication, report, book/review, RTD protocol/technical manual, guidelines/standards, training activity/learning module, software/modelling tools, product, prototype, services/tools, multimedia, data, or other. If data or other, please provide specifics in the 'Knowledge Output Description'.	
Contact Information:	Please provide contact details of the most relevant person to provide further information if required on the Knowledge Output. Please indicate if the owner of the Knowledge Output differs from the contact person.	
Link to Knowledge Output:	Please provide a link to the Knowledge Output then please do so, e.g. website address, scientific journal details, etc. If this is not publicly available currently but will be in the future, please provide details. Please state if there are no plans to make publicly available.	
Intellectual Property Rights:	Please indicate whether an application is in place for IPR or if IPR exists for this Knowledge Output (applied for a patent, copyright etc).	
Status:	<p>Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</p> <ul style="list-style-type: none"> • Is the knowledge conclusive enough that it provides sufficient evidence to make an impact on a value chain? • Is there a corroborating body of evidence or are contradicting results available? • Does the knowledge progress beyond the current state-of-the-art/evidence base? 	



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Field:	Guidance	Answer
	<ul style="list-style-type: none"> Is more research or demonstration needed to validate the results? If the Knowledge Output is technology based, please indicate Technology Readiness Level (1-9) If the Knowledge Output could inform evidence-based policy, please indicate whether further validation/contextualisation would be required. <p>If the Knowledge Output could be used by the scientific community to progress its knowledge base, then please indicate whether the Knowledge Output is conclusive or whether further detail would be required.</p>	
Sectors and Subsectors:	List all sectors that might benefit from this Knowledge Output. Complete the rows 'End User', 'End User Description', 'Application' and 'Project Exploitation' for each sector.	
End User:	List all end users think would benefit from this Knowledge Output. Complete the rows 'End User Description', 'Application' and 'Project Exploitation' for each end user.	
End User Description:	Try to be as specific as possible, for example for 'Policy Makers' indicate the exact type and level also, e.g. European Commission – DG Research & Innovation / Directorate E (Health) / E1 Strategy.	
Potential application:	Per identified end user, please identify possible applications (one or more) of the Knowledge Output.	
Potential Impact:	Please provide details of the potential resulting impact this Knowledge Output could have if it were transferred to the End User.	
Project Exploitation:	<p>This field is directly related to the identified end users, as the exploitation mechanism could depend on type of end user. In this field, indicate:</p> <ul style="list-style-type: none"> Any past and current activities to reach the identified end user. Any end users which were already targeted in the project's exploitation activities and any impact that was achieved. <p>If future exploitation/dissemination activities are planned by the project - this is to ensure no overlap between what the project intends to do and planned Knowledge Transfer activities. Examples are: publications, events and networking, collaborative research / researcher mobility, consultancy / training courses, licensing, new business / spin-offs, etc. Please include hyperlinks, reference material, project reports so further investigation can be carried out.</p>	

Step 2: Assess Knowledge

Objective: To understand the positioning and profile of a Knowledge Output and to identify the specific user that should be the focus of the transfer activity. This will ensure that the planned Knowledge Transfer activities are more impactful.

To determine how best to transfer a Knowledge Output, the individual, also termed as “user”, to whom the Knowledge Output should be transferred must be identified. To ensure that this process is efficient and to maximise the potential for achieving impact, a full assessment of the Knowledge Output and the landscape in which it sits is essential. This requires the identification of potential applications and respective impacts for a Knowledge Output (if transferred effectively) as well as a prioritisation of these applications to determine the most appropriate one to consider. This information can then inform the development of a Knowledge Output Pathway and the identification of a Target User, the first user within the proposed Knowledge Output Pathway, and the person whom will be the target of the planned Knowledge Transfer activity.

In Step 1, all identified Knowledge Outputs are described in a Knowledge Output Table. At this stage, it may or may not be clear what specific applications the Knowledge Output might have. This step aims to:

- understand the current landscape in which the Knowledge Output sits;
- clarify what eventual impact(s) a Knowledge Output could equal;
- prioritise the eventual impact with the most potential for success;
- determine the actors, timelines, and activities required to move the Knowledge Output down the Knowledge Output Pathway from its current position to reaching its eventual impact;
- Identify the Target User – the first user in the Knowledge Output Pathway and the future target of your Knowledge Transfer activities

Become familiar with the landscape and/or value chain

Consider first carrying out a stakeholder mapping exercise of the sector to gain a better understanding of the actors, activities and timelines (i.e. relevant events or processes required to affect policy processes or carry a product to market). It is important to consider the Knowledge Output landscape: the relevant authorities, influential parties, their roles, responsibilities and mandates.

Determine an Eventual Impact

Drawing from the project partners’ networks, set up a panel of experts to validate the Knowledge Output(s) as well as enrich your landscape mapping in an analysis meeting. Use this opportunity to determine which proposed application (in the Knowledge Output Table) has the most merit, bearing in mind the available resources and timelines. Once the application has been determined, it is possible to propose the Eventual Impact, the ultimate end benefit of this application of the *Knowledge Output*. It is defined as an enhanced situation that is contributing to a need (political, industrial, scientific or societal). An Eventual Impact could, for example, include the adoption of a best-practice standard in



research laboratories world-wide; a change in monitoring protocols for an existing policy; a more sustainable product reaching the market; or, adoption of a more efficient process.

Plan a pathway to Impact

Using this information and input from the analysis meetings develop a Knowledge Output Pathway. The Knowledge Output Pathway is a single step or a series of steps that are required to carry a Knowledge Output to its Eventual Impact. It can include detailed mapping of the steps, the users involved at each step and their predicted role in the pathway to Eventual Impact. This is the chain of users finishing with the end user to whom the Knowledge Output will be transferred to, to be able to achieve the Eventual Impact.

Identify the Target User

Finally, the first individual(s) along that pathway is considered the “Target User”. This individual should be identified for profiling in Step 3.

HINTS AND TIPS

- If the Knowledge Output is a pre-commercial technology application, assessing the Technology Readiness Level could inform the development of an appropriate Knowledge Output Pathway, where a Knowledge Output requires further research, validation or scaling.
- An Eventual Impact does not have to be the impact that will be achieved within a project lifetime, it can go beyond this. It should be the maximum potential impact that could be achieved with the Knowledge Output. Mapping with this as a target will allow a plan to be developed to contribute towards this vision, and will allow measurable steps towards achieving this vision, “Eventual Impact”, to be achieved.
- Whilst it is important to think big in terms of the Eventual Impact of the Knowledge Outputs, consider if it might be strengthened by clustering it with others.

Template 2: Knowledge Output Pathway

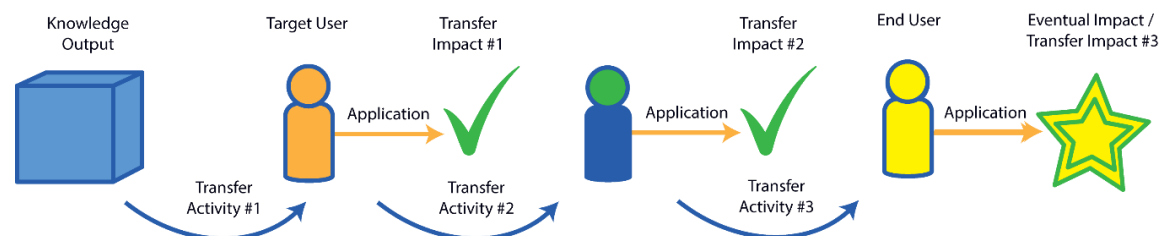
Instructions: (A) Conduct a desk-based study and/or use contacts to map out the landscape in which the Knowledge Output sits

Sketch or outline the Knowledge Output landscape
<p>Guidance: Consider first carrying out a stakeholder mapping exercise to gain a better understanding of the actors, activities and timelines (i.e. defined time frames for policy processes or the typical time it would take to enter a new product or service into a market) in the sector. Consider the following:</p> <ul style="list-style-type: none"> • Identify the sectoral landscape (e.g. value chain, policy process) for which the Knowledge Output has a potential application? Try to determine the sectoral landscape where the Knowledge Output has relevance. Think about all opportunities within policy, industry, science and society. • What are the key activities/milestones that are expected to be achieved within the sector? These could be diverse depending on the sector and the stage in its process. For example: In policy - key decisions, initial assessments, characterisations; In industry - Technology Readiness Levels; In science - funding rounds, maturity of discipline, research need; and, In society - any occasions and events of relevance. Try to identify the full breadth of activities/milestones related to the sector. • Who are the actors (organisations or individuals) with specific roles/responsibilities within the sector, who have relevance to the Knowledge Output, and what are their roles? Try to identify the key actors (i.e. within policy, industry, science or society) who may have a specific role/responsibility in ensuring that the Knowledge Output progresses to the next stage. • Are there other stakeholders that can have an influence on this sector that should be considered?



Template 2: Knowledge Output Pathway

Instructions: (B) Identify the impact that could be achieved with the Knowledge Output and use this map of actors, activities and timelines to identify (and then describe) the quickest pathway to impact.



Describe the Knowledge Output Pathway			
Describe the Eventual Impact			
Transfer Activity Number	User <i>Who is the next person along in the Value Chain – the person that is responsible, mandated and influential in achieving the necessary objective?</i>	Activity <i>How does the Knowledge Output fit in to the process and what can be done to transfer this Knowledge Output to the next User in the Knowledge Output Pathway?</i>	Success <i>What would be considered a successful outcome of this activity? What must be observed (behaviour of the user perhaps) to illustrate that the user is applying the knowledge?</i>
1			
2			
3			
4			
...			

Step 3: Profile Target User

Objective: Understand how to profile an identified Target User to gain valuable information and insights to inform a successful Knowledge Transfer Plan.

Profiling the Target User is a crucial step. These individuals are not necessarily the end user or beneficiary of the Knowledge Output; rather they can be the stepping stone needed for the Knowledge Output to progress towards an Eventual Impact. In Step 2, the Target User was identified. This step ensures that sufficient information is collected about a Target User to design Knowledge Transfer activities that will suit their profile, including their incentives, motivations, preferences and needs.

Describe the Target User

Drawing from contacts, experience and a desk-based study, to develop a profile of the Target User. It is important to consider the following when profiling a Target User as it could provide relevant data to inform the Knowledge Transfer Plan:

- Understand the Target User's mandate or responsibilities
- Consider their background knowledge, attitude and practice in relation to the issue
- Understand their knowledge needs
- Understand what and who may influence their decisions
- Be aware of their preferred sources of information and knowledge

Understand what you want the Target User to do with the Knowledge

Consider what your target user will do with your KO so that it moves to the next stage along the KOP. Do you want him/her to assimilate it into an expert recommendation, or to pass it on to a decision maker, or test your product? The applications can be wide ranging and can play a role in determining the type of message you need to transfer to your target user. This information should already be considered by you when developing your Knowledge Output Pathway. Go back and review it again – who is the next user in the chain who will receive the Knowledge Output from your target user – will this affect how you present the Knowledge Output to your Target User?

HINTS AND TIPS

- A Target User is not an organisation; rather it is the individual (or individuals) within an organisation, with a specific mandate or responsibility to carry out activities, whom should be reached.
- Always remember why you are profiling a Target User – to inform a bespoke, fit-for purpose Knowledge Transfer Plan to move a Knowledge Output along a Knowledge Output Pathway towards its eventual impact



- Within any organisation, the exact department and individual to be targeted should be identified based on their job title, role and level of influence. This individual should be targeted because they have a specific role and responsibility which positions them to be the person best suited to apply the Knowledge Output and carry it along the Knowledge Output Pathway, towards its Eventual Impact. With policy, for example, it may be that there is only one Target User of a Knowledge Output at a national level (e.g. Chief Scientific Advisor); however, at the transnational level, there could be a similar individual in each country or even several at regional level with the same mandate and responsibility. In which case, there will be several Target Users of a similar profile. Similarly, in industry, a global distributor may have many regional managers with the same mandates and responsibilities and they might all, therefore, be considered Target Users.

General notes on Stakeholder profiles by Type

Policy Actors Remember that persons associated with policy (e.g. politicians, policy makers, decision-makers) typically come from very different backgrounds, including scientific disciplines. They have many issues to deal with in their job and varying roles and responsibilities, without the correct pitching it is difficult to gain their attention and become a priority. They also have conflicting sources of information and knowledge. They are likely to be getting information from mass media, lobby groups, civil society organisations, or other scientists.

Definition: Any individual(s) who by mandate or interest plays a role in policy decision making at any stage within the policy process. The position encompasses many roles from influence or direct involvement in the creation of a policy, to enabling its compliance.

Industrial Stakeholders In industry, profitability will be at the forefront of any organisational decision. It is important to be aware of competition and the market, and to have a deep understanding of the landscape of that distinct industry. The breadth of industry relevant to marine science is near to endless, so innovative thinking is required to discover opportunities for transferring knowledge to create value, and successful case studies. **Definition:** Any individual(s) who by employment, association or interest plays a role in decision making at any stage of the industrial process. The position encompasses many roles including investment, invention or distribution and to enabling its adoption through marketing.

Peer Scientists and Academics Albeit operating in a similar way (testing hypotheses and reporting the outcomes), academics and peer scientists will often be a specialist in a very particular discipline and may have no comprehension of closely related fields and cross-disciplinary opportunities. The level of their understanding within a specific area will be robust and rigorous. Their depth of knowledge in associated fields, and therefore the insight into what benefits their Knowledge Outputs could lead to, may be lacking. **Definition:** Any individual(s) who by employment, association or interest plays a role in decision making at any stage within the research acquisition and development process. The position encompasses many roles from influence or direct involvement in the creation of a policy to enabling its compliance.

Society and Its Citizens This group will cover a greater scope of backgrounds than the stakeholder groups, in culturally and academically, and varying in age and interest. They are likely to be getting disproportionate information from mass media, lobby groups and civil society organisations, and competition for intellectual space, particularly to lead to action, will be high.

Template 3: Profile Target User

Instructions: Use one template for each Knowledge Output in a research project

Field	Answer
Target User identified as:	
Is the Target User aware of the Knowledge Output already?	
What level of technical understanding does the Target User have of the surrounding topic? Does the Knowledge Output need translation (from technical to layman's terms) or do they require training to take up the Knowledge Output?	
What is the relevant role/responsibility of the Target User?	
Is the Target User actively seeking information related to the Knowledge Output and why would they be interested in the Knowledge Output?	
Where does the Target User currently get their information/knowledge from and what is their preferred method for communication?	
Who else could be influencing the Target User's decisions? Do they have the authority to apply the knowledge? If not, who has access to this person?	

Step 4: Develop Knowledge Transfer Plan

Objective: To be able to develop a successful Knowledge Transfer Plan by selecting the appropriate messages, communication channels, materials and tools customised to the Target User profile.

Implementing an efficient Knowledge Transfer Plan that is tailor-made to the needs and capacities of a specific Target User will maximise the chance of successful transfer resulting in uptake and application. The key to success is achieved through fully understanding the Target User and developing the Knowledge Transfer plan around them. The profile of the identified Target User, developed in Step 3, will provide the insights required to develop a tailored Knowledge Transfer Plan, with high potential for success. In this step, specific consideration should be given to the type of message, as well as the channel by which it is, to be communicated.

The Message

- ✓ What is the technical level of the Target User; depth of information needed; and, the style and language used (i.e. a layperson is less likely to read and interpret a scientific paper, as a scientific adviser is not likely to extract information from an outreach article)?
- ✓ Consider the background knowledge of the Target User.
- ✓ Consider any preconceived ideas that the Target User may have relating to the area of interest.
- ✓ Identify ways to relate the knowledge to examples that they are familiar with or can easily envisage.
- ✓ What is the level of evidence or validation that the Target User requires?

The Communication Channel

- ✓ How does the Target User prefer to receive and assimilate knowledge?
- ✓ How will the channel affect the message (i.e. highly technical knowledge would not be used in a Twitter post or on the radio)?
- ✓ Combining communication channels as part of the Knowledge Transfer Plan can have several benefits:
 - It makes it possible to layer the knowledge, thereby firstly catching the attention of the Target User and then providing in-depth material once they are engaged.
 - Where there is a mixed profile of Target Users, it allows them to have a choice of their preferred channel to receive the same knowledge (e.g. different age profiles of the same Target User).
- ✓ If the Target User profile allows for a choice of channels, then compare the cost versus effectiveness of each channel by considering the following questions:
 - How many Target Users can be reached by this channel?
 - How much would it cost to use this channel?
 - How much time resource would it require?

Determine how you will Measure your Knowledge Transfer impact

Evaluating the success of your Knowledge Transfer activities is a very important part of the process. Depending on your knowledge and its application, you may or may not have transferred your knowledge through its KOP to achieve the projected situation where your KO has a positive effect on policy. Thus, as part of your Knowledge Transfer plan, you should start thinking about how you will:

- Ascertain the **success of the Knowledge Transfer activity**
- Measure the **effective uptake** by your target user.
- Assess the **application of the knowledge** by your target user.
- Indicators to **track progress** through the Knowledge Output Pathway (KOP).

HINTS AND TIPS

- It is important to have a clear understanding of what the Target User can do with the Knowledge Output, to be able to understand if it should be presented in a certain way or in a certain format. It is important to make it easy for the Target User to apply the Knowledge Output to maximise the potential for impact being achieved.
- It is important to consider the amount of resource that is available to fulfil the Knowledge Transfer activities, in terms of time and money. External support can be accessed, particularly where the exploitation of the Knowledge Output might benefit the relevant organisation.
- When possible, elements of the Knowledge Transfer Plan should be tested on a smaller scale before implementation.
- It is crucial to determine what is and is not achievable.

Template 4: Knowledge Transfer Plan

Instructions: Use one template for each Target User, per Knowledge Output Pathway

Field	Answer
Proposed Knowledge Transfer Activity: Please describe the proposed activity.	
Message: Reasons why the knowledge is innovative, beneficial and, addresses the Target User's needs.	
Channel: Examples: Email, face-to-face, social media, active networks.	
Format: Examples: website; policy briefing; guidelines. Where, when and how will the activity occur?	
Persons responsible: Who will perform/lead the Knowledge Transfer?	
Timeline: Are there external considerations/events to be taken into account when organising the activity?	
Resources: What budget, time or materials are required to perform the activity?	
IMPACT INDICATORS	
Knowledge Transfer Activity: How this Knowledge Transfer activity be evaluated? For example, how many Target User(s) were engaged in the activity?	
Knowledge Output Uptake: How will uptake of the Knowledge Output by participants be measured? For example, what measurements will be taken to determine if the Target User understood and took on board the knowledge? Did they change their behaviour, attitude and/or practice?	
Knowledge Output Application: How will application of the Knowledge Output by participants be measured? For example, what demonstrates that the Knowledge Output is moving down the Knowledge Output Pathway? Was the Knowledge Output applied, by the Target User, as predicted in the Knowledge Output Pathway?	

Step 5: Carry Out Knowledge Transfer and Measure Impact

Objective: To carry out and report on Knowledge Transfer activities whilst measuring the impact of both the activity and the application of the Knowledge Output by the Target User.

Once a Knowledge Transfer Plan has been developed, Knowledge Transfer activities can begin. As well as having a monitoring process in place to ensure that Knowledge Transfer activities are being effective, measurement indicators need to be in place to quantify and qualify the success of their impact. The application of each Knowledge Output by the Target User and any subsequent user will be assessed and recorded in a case study.

All elements of a Knowledge Transfer Plan were designed in Step 4. Step 5 requires for this Knowledge Transfer activity to take place. It is a good idea to continually monitor the Knowledge Transfer Plan to ensure that it is effective. Risk should be continually assessed and, if necessary, adaptations should be made to the Knowledge Transfer Plan in response. Measuring the successful completion of Knowledge Transfer activities can be done using both quantitative and qualitative measures. Usually a combination of both will help assess if transfer was successful and the knowledge was taken up by the Target User. Some examples of the measurements that could be taken to measure uptake might be the number of people attending an event, the feedback received following a meeting or the number of people that signed up to a project newsletter.

If knowledge has been transferred, it does not mean that it has been applied. Even if a Target User said they would use the knowledge, it does not mean that they did. It is important, therefore, to try and assess if the activity had the intended result. This impact measurement should be based on whether the transfer impact was achieved, e.g. were changes observed in a Target User's knowledge, attitude or behaviour.

HINTS AND TIPS

- The Knowledge Output Pathway can be used to identify impact indicators: i.e. when Knowledge Outputs are transferred to a Target User; measurements can be taken on how many Target Users were approached; if the Target User shared the information; if the Target User applied the information; and, if the Knowledge Output was carried further down the Knowledge Output Pathway.
- Evaluating the effectiveness of your Knowledge Transfer activities is a very important step. Being able to demonstrate successful transfer, uptake and, if possible, the eventual positive effect, is an essential element of any Knowledge Transfer Plan. It will help you to demonstrate to funders that you took the task seriously, that you were impact focused and if necessary you adapted your strategy to ensure success.
- The difference in Technology Readiness Levels and Societal Readiness Levels of Knowledge Outputs before and after Knowledge Transfer activity has occurred can also be used as a measurement of impact.
- It is important to recognise that impact is often best described as a story and experience; hence, reporting the whole journey can be useful for others who may wish to carry out further activity.

- If a Knowledge Transfer activity was unsuccessful, it is important to understand why and amend this for future activity.

Template 5: Impact Measurement

Instructions: Use one template for each Knowledge Output Pathway

Field	Answer
Provide a short title and description of the Knowledge Output (including project acronym and project website)	
Provide a brief narrative as to why this KO was prioritised for transfer?	
How the Target User was identified?	
Show the Knowledge Output Pathway and where the Knowledge Transfer activities fits in.	
ACTIVITY	
Please describe the Knowledge Transfer activity.	
Provide details on the Knowledge Transfer activity, e.g. what was it, who was involved, and where and when did it occur?	
How many Target Users took part in this transfer activity?	
What was the profile of the Target Users (e.g. types, organisations) that took part in this transfer activity?	
IMPACT	
Briefly outline the achieved impact.	
What was the intended impact of this Knowledge Transfer activity?	
How was uptake during the activity measured/assessed (i.e. survey, feedback, test)?	
How was application following the activity measured/assessed (i.e. survey, feedback, test)?	
Please provide details/reflections if achieved impact differed from intended impact.	
Provide evidence that the performed activity increased the impact of the Knowledge Output project (above that which had been originally planned). For example, was a different application highlighted, more relevant Target User identified, or knowledge repackaged to make it more easily transferred?	

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