Maximising the Impact of Marine Knowledge with Knowledge Transfer

David Murphy, AquaTT
david@aquatt.ie

DG Mare Expert Group on Marine Knowledge
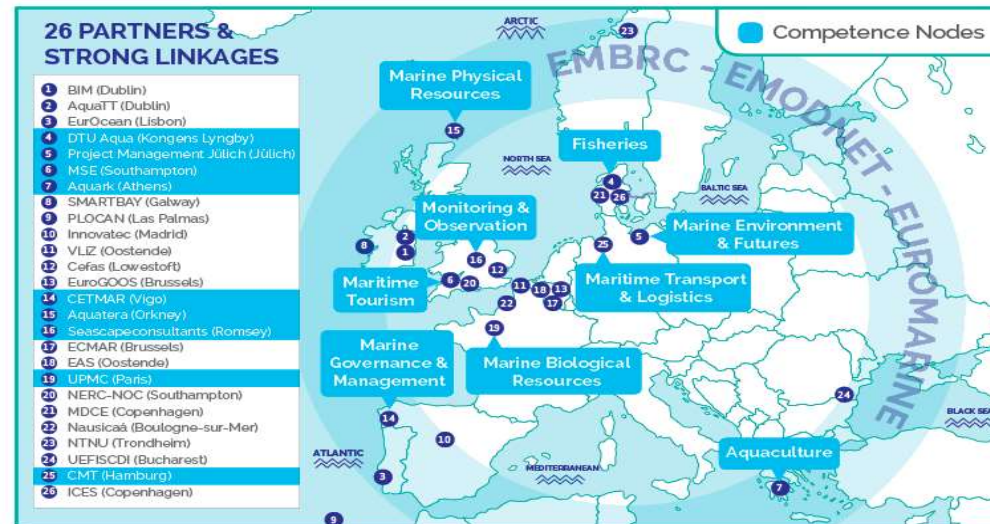*12 September 2018, Brussels*

The COLUMBUS Project

Number of partners: 25

Duration: 36 months
(Mar 2015 – Feb 2018)

H2020 Coordination and
Support Action (CSA)

"Ensure that **applicable knowledge** generated through EC-funded science and technology research can be **transferred effectively** to **advance** the governance of the marine and maritime sectors while improving competitiveness of European companies and **unlocking the potential** of the oceans to create future jobs and economic growth in Europe (**Blue Growth**)"

Key Principles

- More **Knowledge Transfer actors** are needed to carry out effective Knowledge Transfer (KT)

- KT needs to be **embedded in the research system** and culture

- KT needs to be **focused on end-user needs**

- KT activities need to be a **sustained activity** in the research lifecycle

- Need to demonstrate **value creation** from research

The COLUMBUS Project

What is Knowledge Transfer?

Dissemination: The act of spreading something, especially information, widely (Oxford English Dictionary)

Definition

* Knowledge Transfer describes how knowledge and ideas move between knowledge sources to **targeted** potential users of the Knowledge.
* It consists of a variety of activities which aim to capture, organise, asses and transmit on knowledge, skills and competence from those who generate them to those who can use them.

Successful Knowledge Transfer can lead to measurable impact and value creation.

…so how do we define Knowledge?

What is a Knowledge Output (KO)?

"**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.

From the MarineTT project, precursor of COLUMBUS

![COLUMBUS — KNOWLEDGE TRANSFER FOR BLUE GROWTH]

What is a Knowledge Output (KO)?

In many formats,

* Peer-reviewed publication

* Poster/presentation

* Article/book/review

* Thesis/dissertation

* RTD protocol/technical manual

* Case study

One publication or report can contain many KOs

...as many types,

* Guidelines/standards

* Training activity/learning module

* Software/modelling tools
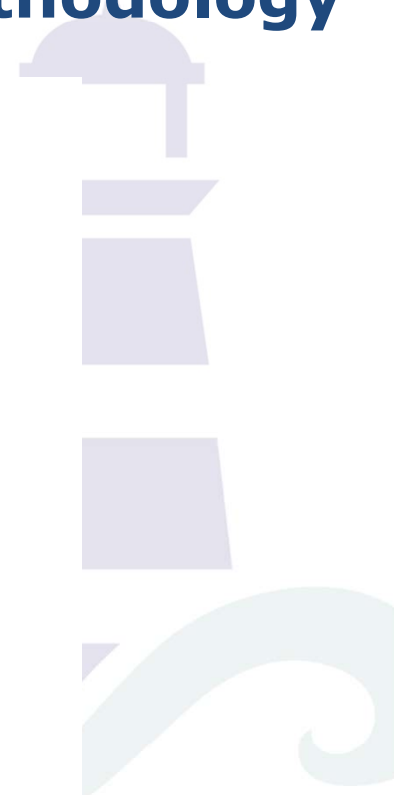
* Product

* Prototype

* Services/tools

* Patent

* Data

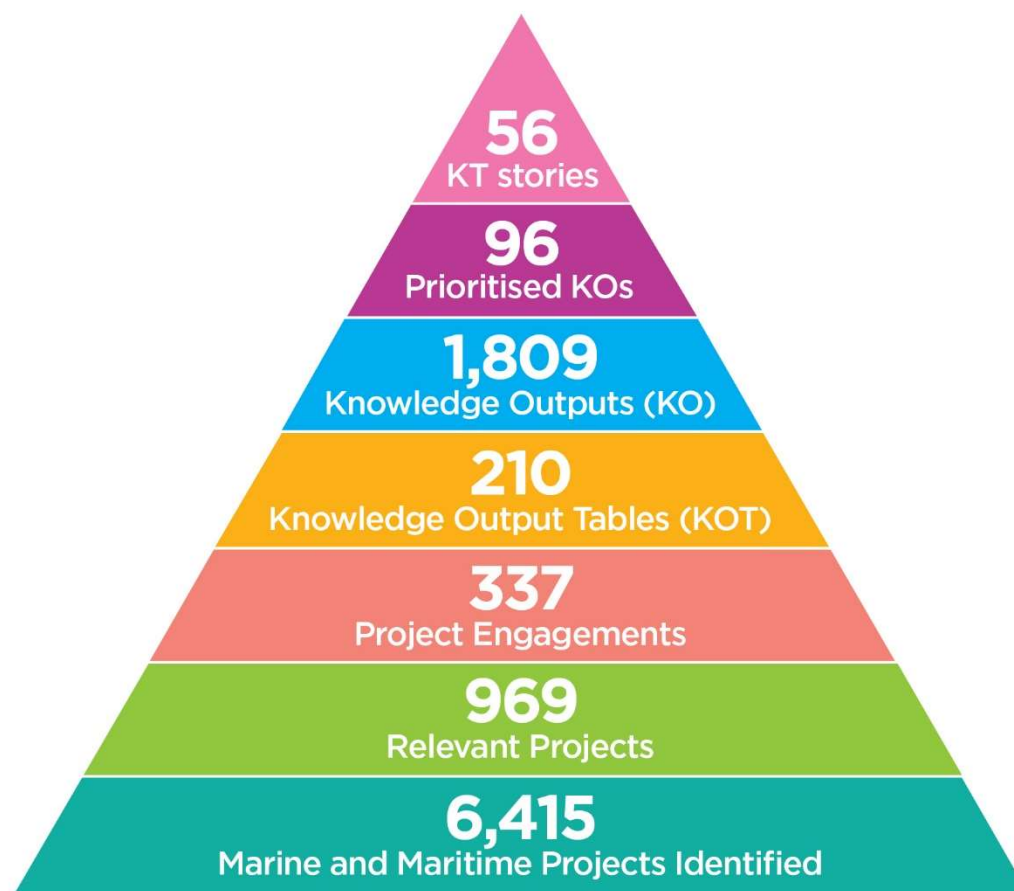# Systematic KT Processes

See Project website for full details, guidelines and video on methodology

Key Activities & Achievements

COLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

Piloting a Knowledge Transfer (KT) Methodology

56
KT stories

96
Prioritised KOs

1,809
Knowledge Outputs (KO)

210
Knowledge Output Tables (KOT)

337
Project Engagements

969
Relevant Projects

6,415
Marine and Maritime Projects Identified

PERSEUS/PORTOPIA Projects

KO description: Two complementary computer based tools that identity and support implementation of environmental aspects and indicators in ports; to assist environmental management of port areas

Need/Relevant Knowledge Gap: Port activities cause multiple environmental pressures directly related with Descriptors 2, 10 and 11 of the MSFD. TEAP and TEIP can help in identifying those pressures and, as a consequence, define monitoring needs and actions required to reduce the environmental pressure on coastal areas.

Target User: 17 Target Users - Port authorities environmental managers, port operations project manager, environmental consultants, researchers, and public bodies managing ports at regional level
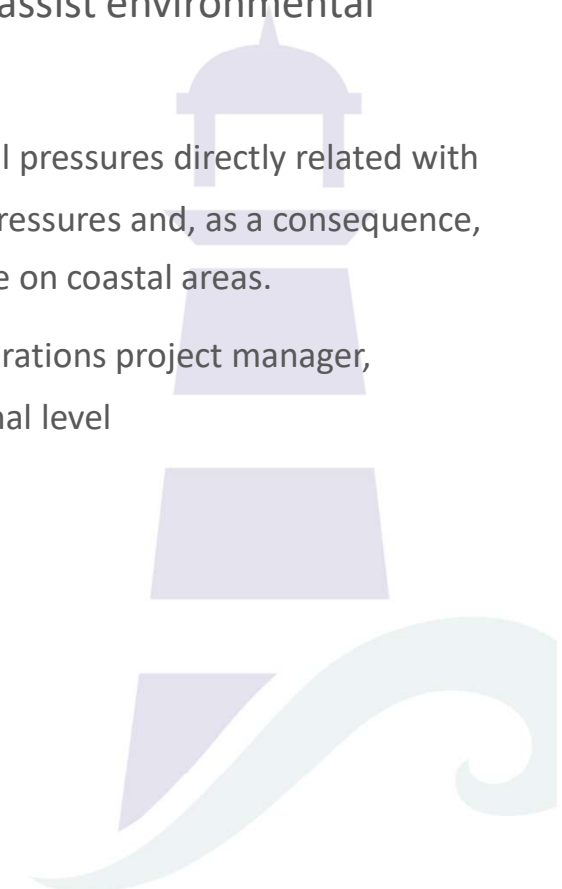
KT Activity:

- Training web seminar on the tools
- Contents: development and validation of the tools, case study, debate

Impact Indicators:

- Engagement in the training session
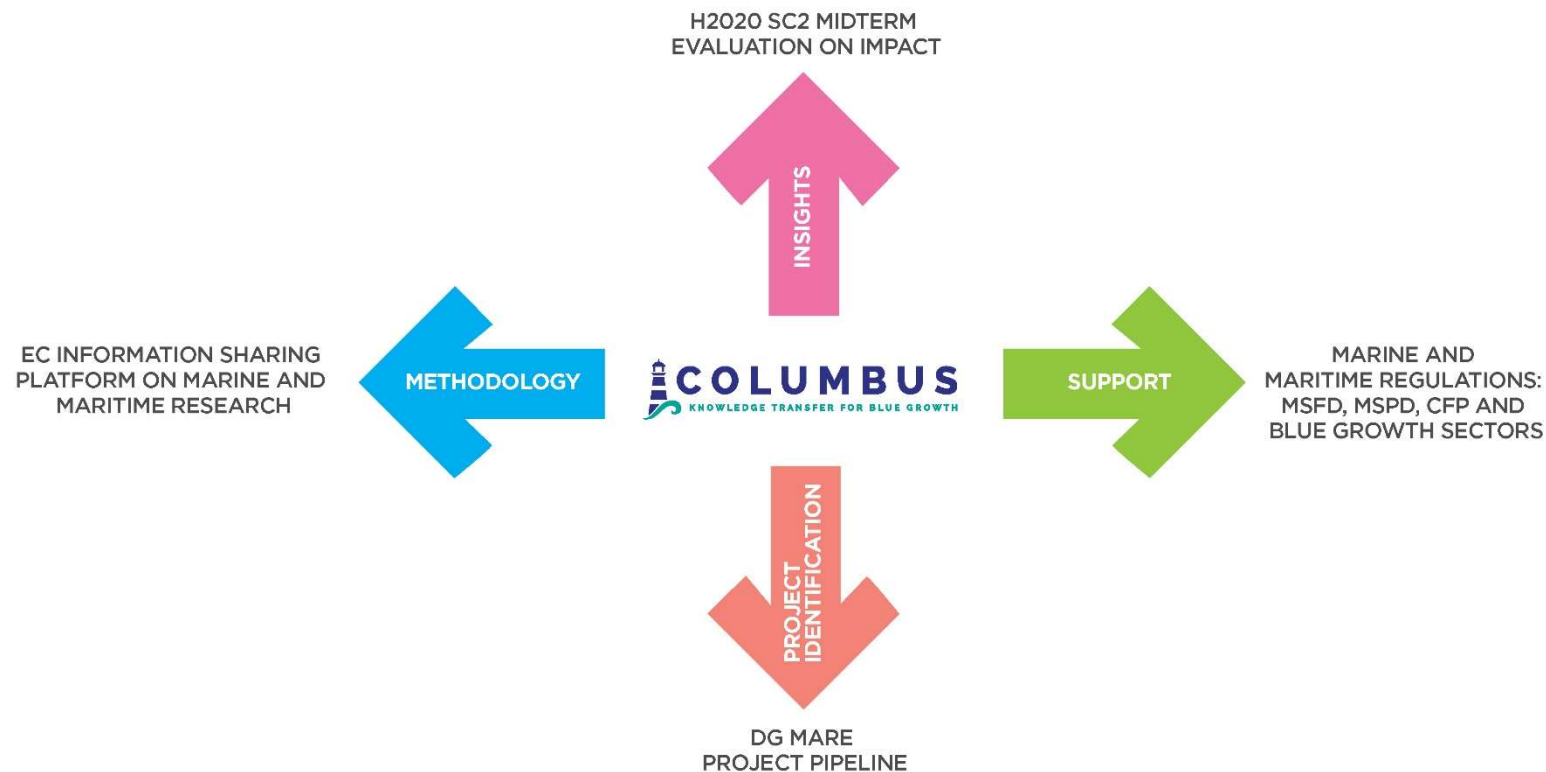- Application of tools by end-users

Outcome:

- Three public bodies managing ports at a regional scale expressed their intention to implement the tools in their operational context. Commitment of using TEAP and TEIP by three environmental consultancies.
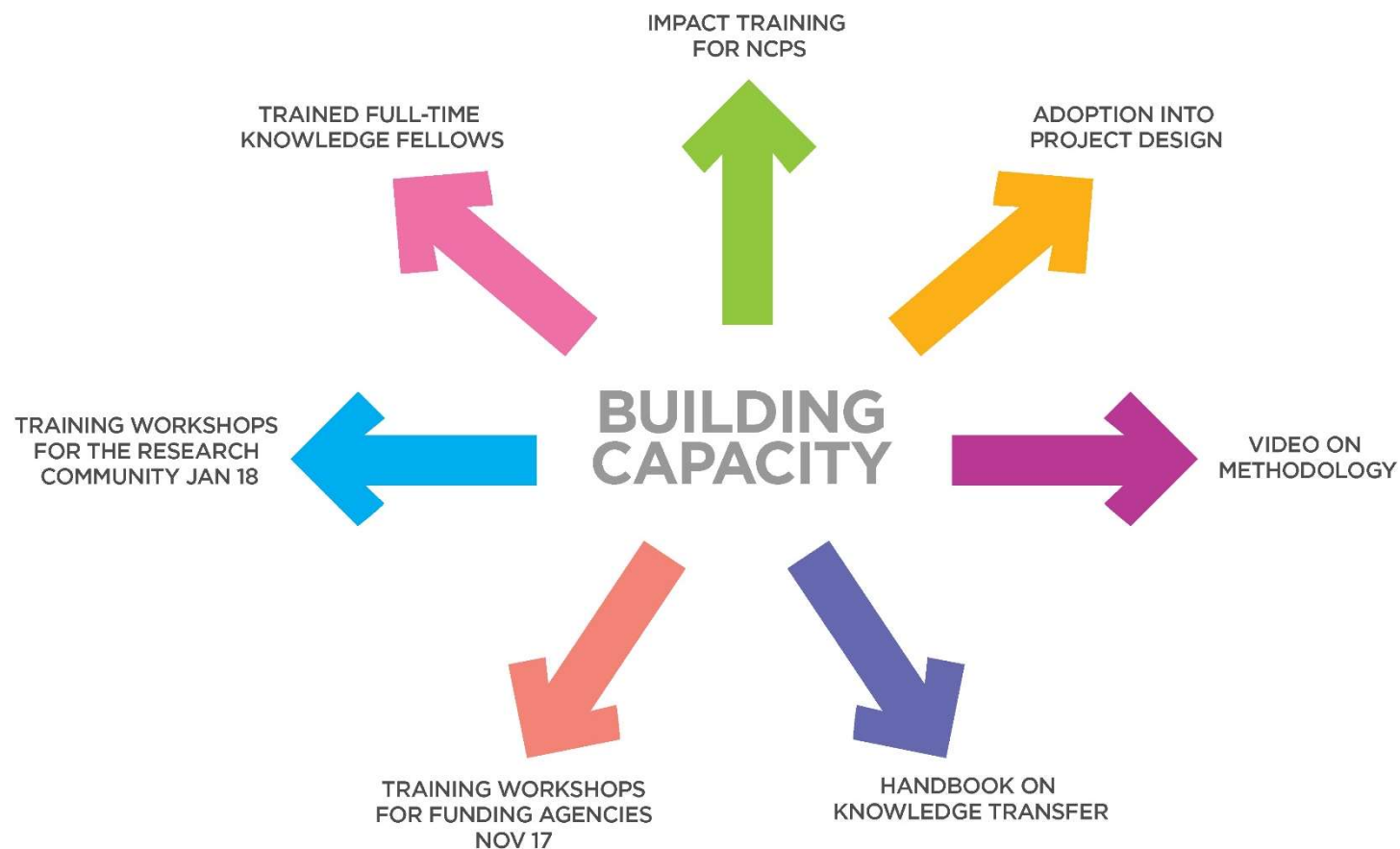
Key Activities & Achievements

Linking with Relevant Initiatives

H2020 SC2 MIDTERM
EVALUATION ON IMPACT

INSIGHTS

EC INFORMATION SHARING
PLATFORM ON MARINE AND
MARITIME RESEARCH

METHODOLOGY

COLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

SUPPORT

MARINE AND
MARITIME REGULATIONS:
MSFD, MSPD, CFP AND
BLUE GROWTH SECTORS

PROJECT
IDENTIFICATION

DG MARE
PROJECT PIPELINE

Key Activities & Achievements

COLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

IMPACT TRAINING
FOR NCPS

TRAINED FULL-TIME
KNOWLEDGE FELLOWS

ADOPTION INTO
PROJECT DESIGN

TRAINING WORKSHOPS
FOR THE RESEARCH
COMMUNITY JAN 18

**BUILDING
CAPACITY**

VIDEO ON
METHODOLOGY

TRAINING WORKSHOPS
FOR FUNDING AGENCIES
NOV 17

HANDBOOK ON
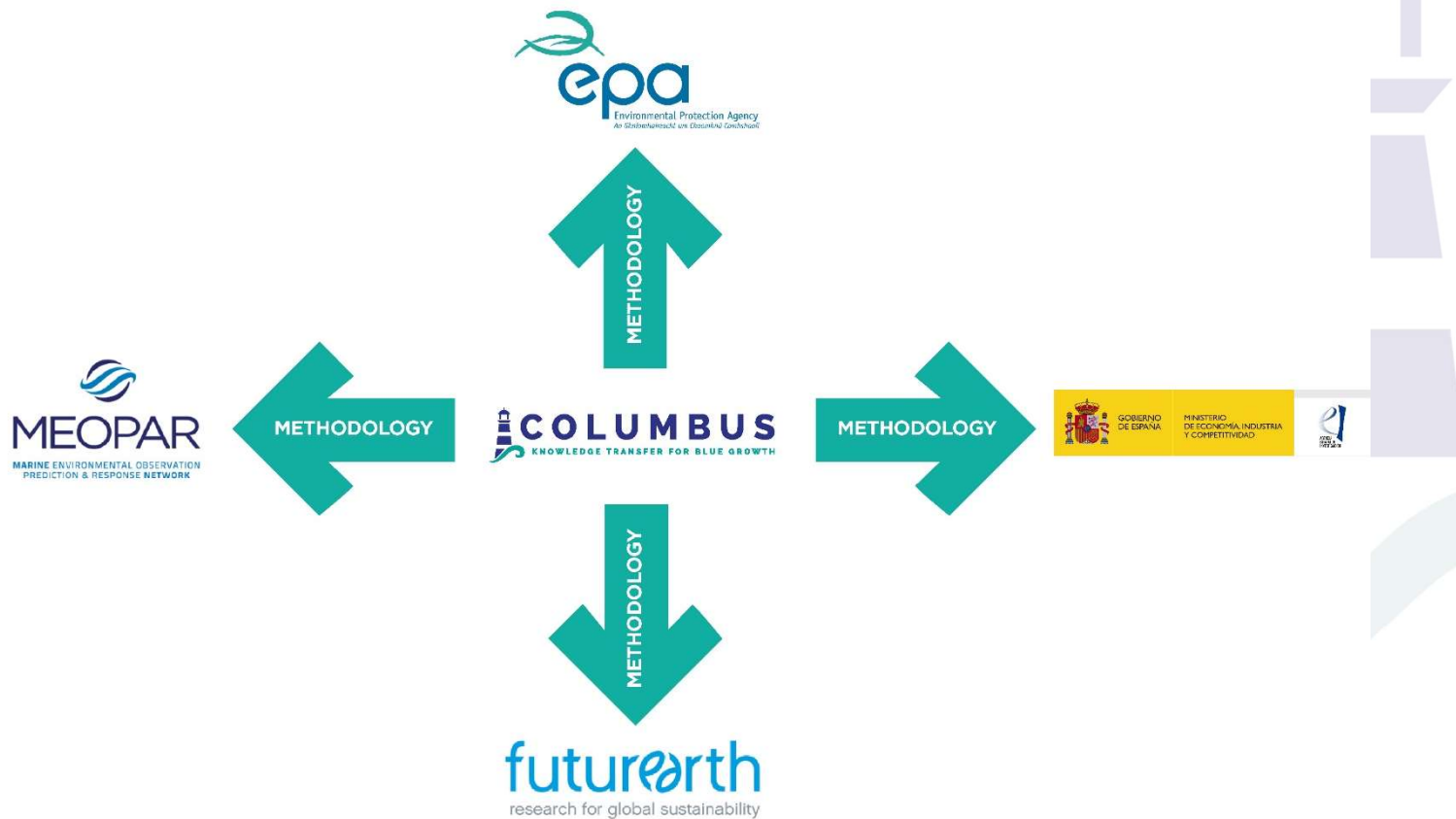KNOWLEDGE TRANSFER

Key Activities & Achievements

Linking with Relevant Initiatives

Use and sharing of marine observations and data by industry

Good practice guide

CHALLENGES

ICOLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

" Marine data and information sharing initiatives are not visible to industry"

" Industry may be less likely to make long term decisions based on short term initiatives"

" Public data is for public users"

" Industry represents a diversity of actors with a diversity of needs"

" Marine data managers and private sector users speak different languages"

" Europe's marine data and information sharing landscape is too complex"

" Availability doesn't Imply usability"

" Industry are largely willing to share data but there are barriers"

Use and sharing of marine observations and data by industry

Good practice guide

ICOLUMBUS

seascape

VLIZ

EuroGOOS
European Global Ocean Observing System

marine

PLOCAN

SMARTBAY
IRELAND

Version 1, 2017

www.columbusproject.eu

www.columbusproject.eu

SOLUTIONS cont'd

Communications and marketing must be active, imaginative and targeted

Signpost the landscape for users

Develop the user interface with the user in mind

Product development should be driven by the user base
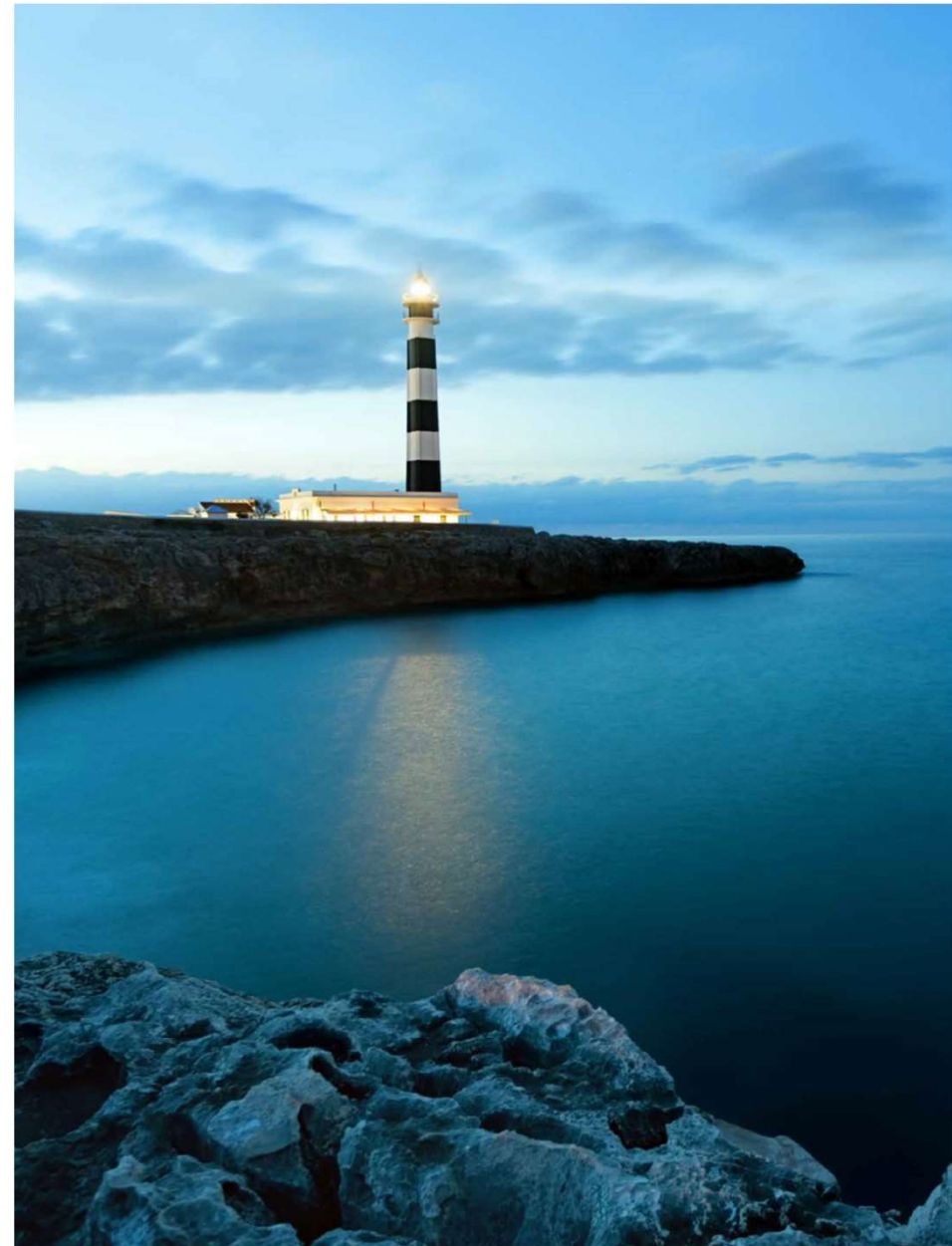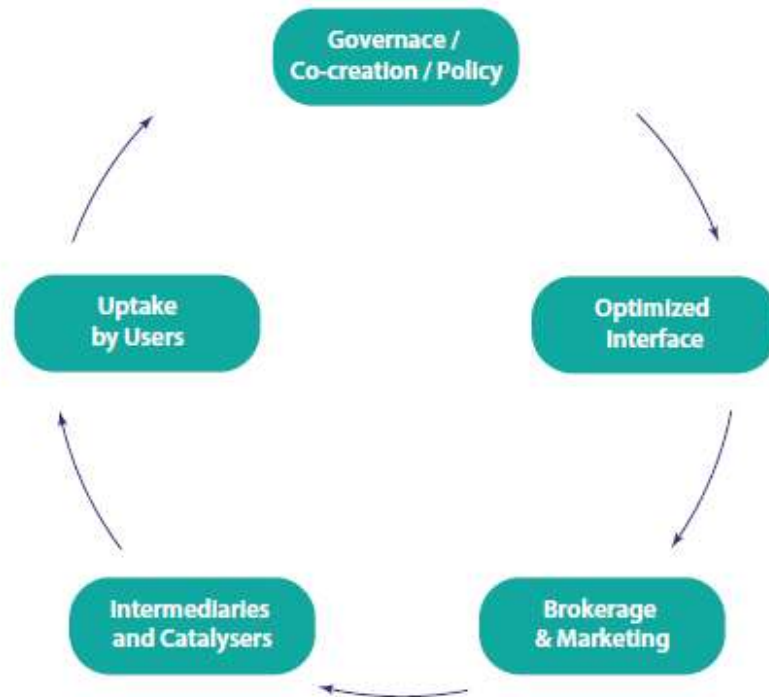
Brokerage

Cultivate creative and innovative ways to facilitate data-sharing by private sector actors

Engage with intermediaries and catalysts

SOLUTIONS

Industry must be involved in the entire life cycle and embedded in the governance

- Governace / Co-creation / Policy
- Optimized Interface
- Brokerage & Marketing
- Intermediaries and Catalysers
- Uptake by Users

Further Reflections from Node Fellow
Oonagh McMeel (Seascape Consultants)

COLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

- **Engaging Industry**
  - One-to-one meetings are by far the best way to talk to industry
  - Connecting the correct people at the appropriate technical level is necessary, who should be talking to who?

- **Management of Expectations**
  - Can be a mismatch in expectations and understanding of purpose of data collection
  - Typically these data layers/ products are built because it is something the creators are interested in doing and/or have capacity to do.
  - They are seldom built solely to meet the needs of industry.

- **Awareness and Usability**
  - Are the data/products being effectively and professionally marketed ?
  - Is the platform appealing, easy to use and efficient for industry to quickly assess usefulness?

- **Who are Industry?**
  - Can be very broad and big companies with lots of resource and expertise are very different from small enterprises (e.g Tourism operators.
  - Different types of industry may need different marketing approaches and will require different types of data/information.
  - The conversion from data to information to knowledge needs to meet end-user profiles and needs

Reflections from Node Fellow

- **Awareness of Repositories and Tools**
  - innovative approaches to raising the profile of these resources should be considered e.g. hackathons,
  - presence at events that fall outside of the usual comfort zone of marine data management..e.g. tourism conventions etc. there is a need to think outside the box here.
- **Industry Data Sharing**
  - Who owns the data (clients?)
  - licensing issues that prohibit sharing;
  - why share data that was obtained at a cost so that competitors can access for free;
  - liability issues if others make decisions based on their data;
- **Standardisation and Interoperability**
  - See maritime sensor technologies best-practice guide in relation to standardisation and interoperability and the need for sensors to be developed to consider end-to-end data flow comprising interoperable data and metadata formats, as well as interfaces that cover the pathway from sensor to end-user application. This maximises the usability by diverse end-users
- **Research Data**
  - Initiatives (in H2020) are ongoing to ensure research data is made available, however there are opt-out options.
  - Much data is maintained confidential for publication reasons etc., and eventually is lost.
  - Publicly funded data collection should be made available, albeit after a reasonable period for exploitation.
  - Data should all be assigned a digital object identifier.

Data challenges and opportunities for environmental management of North Sea oil and gas decommissioning in an era of blue growth

Fiona Murray[a,*], Katherine Needham[a,b], Kate Gormley[c], Sally Rouse[d], Joop W.P. Coolen[e,f], David Billett[g], Jennifer Dannheim[h,i], Silvana N.R. Birchenough[j], Kieran Hyder[j], Richard Heard[k], Joseph S. Ferris[l], Jan M. Holstein[h,i], Lea-Anne Henry[a], Oonagh McMeel[m], Jan-Bart Calewaert[m], J. Murray Roberts[a,*]

[a] School of GeoSciences, The Grant Institute, University of Edinburgh, King's Buildings, James Hutton Road, Edinburgh EH9 3FE, UK
[b] Institute of Biodiversity, Animal Health and Comparative Medicine, Graham Kerr Building, University of Glasgow, Glasgow G12 8QQ, UK
[c] School of Biological Sciences, University of Aberdeen, Zoology Building, Tillydrone Avenue, Aberdeen AB24 2TZ, UK
[d] Scottish Association for Marine Science, Kirk Road, Oban, Argyll PA37 1QA, UK
[e] Wageningen Marine Research, P.O. Box 57, 1780 AB Den Helder, The Netherlands
[f] Wageningen University, Chair group Aquatic Ecology and Water Quality Management, Droevendaalsesteeg 3a, 6708 PD Wageningen, The Netherlands
[g] Deep Seas Environmental Solutions Ltd, Ashurst, Southampton SO40 7AP, UK
[h] Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, P.O. Box 120161, D-27515 Bremerhaven, Germany
[i] Helmholtz Institute for Functional Marine Biodiversity, University of Oldenburg, Ammerländer Heerstraße 231, 23129 Oldenburg, Germany
[j] Cefas Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk NR33 0HT, UK
[k] INSITE Programme, c/o Oil & Gas UK, 3rd Floor, The Exchange 2, 62 Market Street, Aberdeen AB11 5PJ, UK
[l] ECAP Consultancy Group, Spean Bridge, Scotland PH34 4EG, UK
[m] Seascape Belgium, Secretariat of the European Marine Observation and Data Network (EMODnet), Wandelaarkaai 7, 8400 Oostende, Belgium

ARTICLE INFO

ABSTRACT

Maritime industries routinely collect critical environmental data needed for sustainable management of marine ecosystems, supporting both the blue economy and future growth. Collating this information would provide a valuable resource for all stakeholders. For the North Sea, the oil and gas industry has been a dominant presence for over 50 years that has contributed to a wealth of knowledge about the environment. As the industry begins to decommission its offshore structures, this information will be critical for avoiding duplication of effort in data collection and ensuring best environmental management of offshore activities. This paper summarises the outcomes of a Blue Growth Data Challenge Workshop held in 2017 with participants from: the oil and gas industry; the key UK regulatory and management bodies for oil and gas decommissioning; open access data facilitators; and academic and research institutes. Here, environmental data collection and archiving by oil and gas operators in the North Sea are described, alongside how this compares to other offshore industries; what the barriers and opportunities surrounding environmental data sharing are; and how wider data sharing from offshore industries could be achieved. Five primary barriers to data sharing were identified: 1) Incentives, 2) Risk Perception, 3) Working Cultures, 4) Financial Models, and 5) Data Ownership. Active and transparent communication and collaboration between stakeholders including industry, regulatory bodies, data portals and academic institutions will be key to unlocking the data that will be critical to informing responsible decommissioning decisions for offshore oil and gas structures in the North Sea.

COLUMBUS
KNOWLEDGE TRANSFER FOR BLUE GROWTH

Blue Growth Data Challenge Workshop held in 2017 focused on Oil and Gas (UK)

Five primary barriers to data sharing were identified:
1) Incentives
2) Risk Perception
3) Working Cultures
4) Financial Models
5) Data Ownership

To address these, **active and transparent communication and collaboration between stakeholders** including industry, regulatory bodies, data portals and academic institutions will be key to unlocking the data.
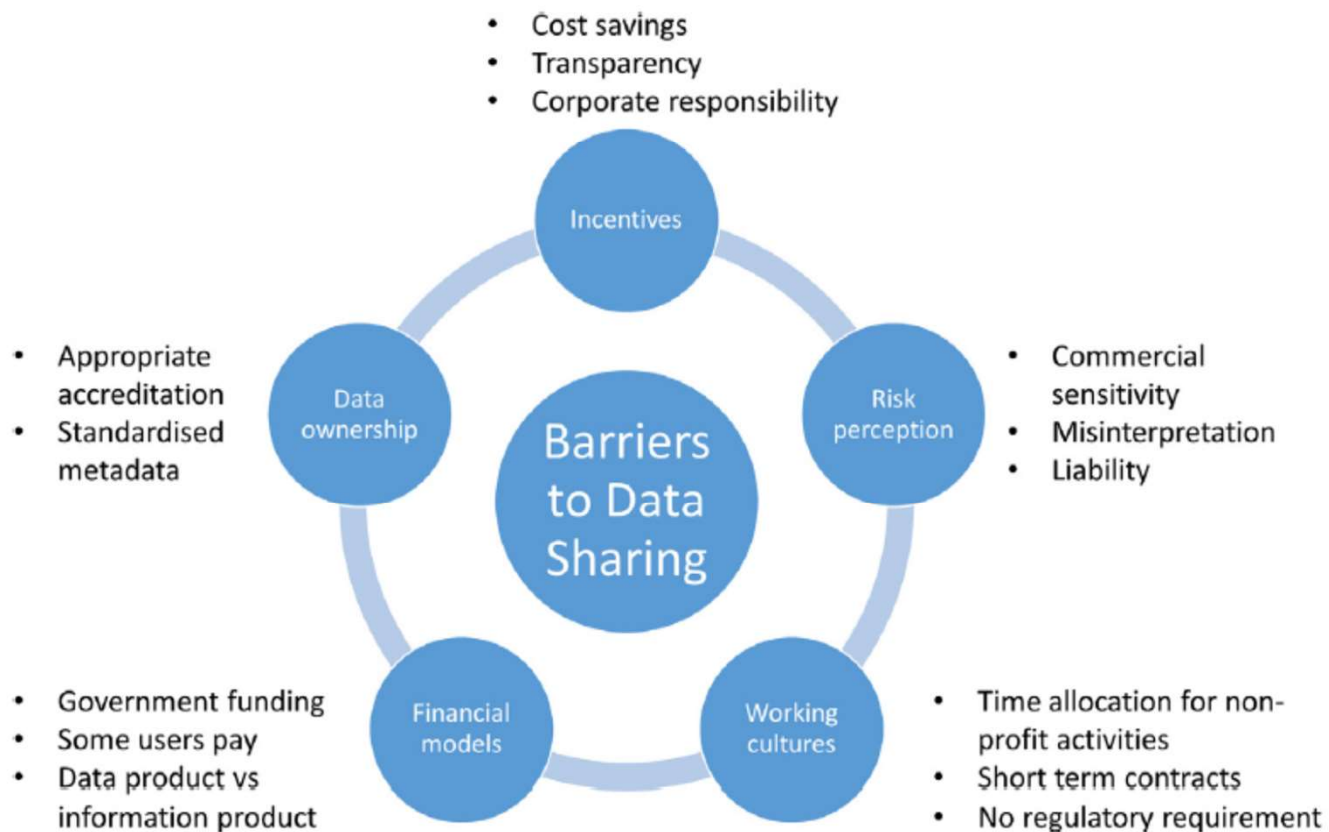
Fig. 2. Identified barriers to depositing industry environmental data in open access repositories.

Data challenges and opportunities for environmental management of North Sea oil and gas decommissioning in an era of blue growth (Murray et al, Marine Policy - In Press)
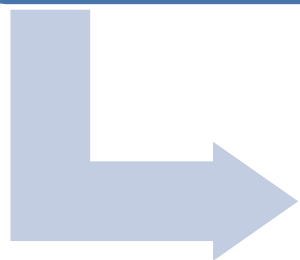
"Sea Change" in Approach

Fish

School of Fish

- **Need for more Knowledge Transfer**
- **Benefits of Science for and with Society**
- **Self benefits for Science of showing impact**

- **Increased Critical Mass**
- **Capacity building in broker space**
- **Clearer Roles & Responsibilities**
- **Proportional Investment in R&I : KT**
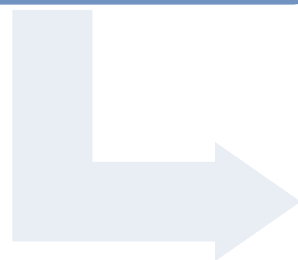
Plenary Discussion
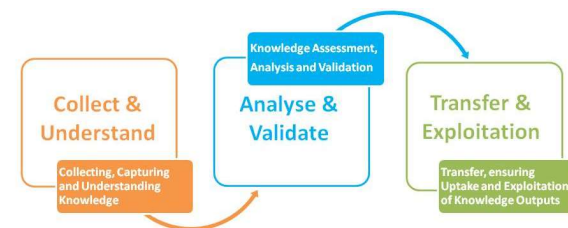
Date Ingestion

- Data Portals
- Standardisation
- DOI
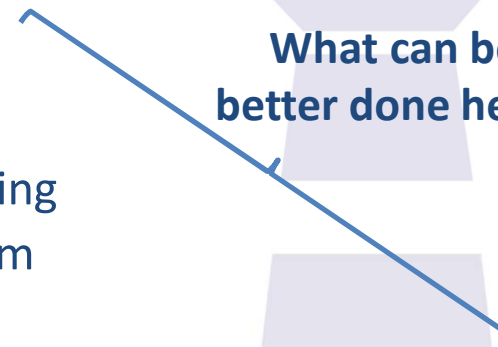
Digestion

- End-user Profiling
- Format/Medium
- Products/Tools

"Egestion" Extrusion

- Supporting uptake
- Brokerage
- Knowledge Transfer
- Impact Measurement

Collect & Understand
Collecting, Capturing and Understanding Knowledge

Analyse & Validate
Knowledge Assessment, Analysis and Validation

Transfer & Exploitation
Transfer, ensuring Uptake and Exploitation of Knowledge Outputs

What can be better done here?

Thank You

David Murphy
david@aquatt.ie

www.aquatt.ie
www.columbusproject.eu