

# **Deliverable No. D 5.2**

## **Communication, Dissemination and Exploitation Plan including Stakeholder Engagement Strategy**



### **PARadigm for Novel Dynamic Oceanic Resource Assessments**

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# Deliverable D 5.2

## **Communication, Dissemination and Exploitation Plan including Stakeholder Engagement Strategy (agreed by all partners)**

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<sup>1</sup> PU: Public, 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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## The PANDORA Project

The Blue Growth of European fisheries is at risk due to over-exploitation, unforeseen changes in stock productivity, loss of markets for capture fisheries due to aquaculture, future trade agreements opening European markets to external fleets, and fluctuations in the price of oil and other business costs. All of these risks need to be considered when providing advice needed to sustainably maximize profits for the diverse array of fisheries operating in European waters and to help safeguard the benefits this sector provides to the social coherence of local, coastal communities.

### **PANDORA aims to:**

1. Create more realistic assessments and projections of changes in fisheries resources (30 stocks) by utilizing new biological knowledge (spatial patterns, environmental drivers, food-web interactions and density-dependence) including, for the first time, proprietary data sampled by pelagic fishers.
2. Advice on how to secure long-term sustainability of EU fish stocks (maximum sustainable /"pretty good" and economic yields) and elucidate trade-offs between profitability and number of jobs in their (mixed demersal, mixed pelagic and single species) fisheries fleets. Provide recommendations on how to stabilize the long-term profitability of European fisheries.
3. Develop a public, internet-based resource tool box (PANDORAs Box of Tools), including assessment modelling and stock projections code, economic models, and region- and species-specific decision support tools; increase ownership and contribution opportunities of the industry to the fish stock assessment process through involvement in data sampling and training in data collection, processing and ecosystem-based fisheries management.

The project will create new knowledge (via industry-led collection, laboratory and field work, and theoretical simulations), new collaborative networks (industry, scientists and advisory bodies) and new mechanisms (training courses and management tools) to ensure relevance, utility and impact.



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## List of symbols and abbreviations

WP	Work Package
DoA	Description of Action
MSY	Maximum Sustainable Yield
SE	Stakeholder Engagement

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# 1 Executive summary

## 1.1 Introduction

Both in academic research and in environmental planning and management, the participation and inclusion of non-academic actors is becoming more and more mainstream. “It has become increasingly apparent that achieving successful management outcomes depends on stakeholder support for, and participation in, diverse governance activities” (Cvitanovic et al. 2018: 195). Successful integration of non-transdisciplinary approaches into research projects requires a braid of communication, dissemination and engagement activities without which the inclusion of alternative forms of knowledge is impossible (Harris & Lyon 2014). The PANDORA project takes the importance of stakeholder dialogue very seriously. Therefore, one of the cornerstones of PANDORA is close communication and cooperation with its key stakeholders from the fishing industry, interest groups, policy- and decision-makers, non-governmental organisations (NGOs) and science. The two central components of this stakeholder dialogue are 1) efficient and audience-friendly communication, dissemination and exploitation of the progress and results of PANDORA, and 2) the involvement of different stakeholder groups in the research and problem-framing of the project from the start. The overarching aims of involving stakeholders in PANDORA are to generate new biological data that can complement existing stock assessments and to co-frame management scenarios for simulations run in the project and to tailor management recommendations. As a result of these steps, the final output of the project will be the co-development of PANDORA’s Box of Tools, an openly accessible online repository of stock assessment tools, best practice guides, manuals and online training courses from and for fishers and scientists.

In the PANDORA project, stakeholders will be engaged in seven Case Study regions across Europe, covering selected fisheries in the EU and Norway. These Case Study regions are the North Sea, Northwestern European Shelf, Eastern Baltic Sea, Bay of Biscay, Western Mediterranean Sea, Strait of Sicily, and Aegean Sea. These Case Studies cover stakeholders from various countries in the EU and beyond, in which fisheries significantly contribute to the economy and to the creation of jobs. To facilitate dialogue with regional stakeholders, a number of engagement methods will be conducted throughout the lifetime of PANDORA; tailor-fitted to the needs and specificities of the different stakeholder groups and Case Study areas of the project. In parallel to the active engagement of stakeholders to generate data for the project, there will be an array of ongoing communication, dissemination and exploitation activities directed at specific audiences and broadcasted through various channels. This deliverable outlines these communication and outreach activities as well as PANDORA’s stakeholder engagement strategy.

## 1.2 Defining the Challenge

In the past decade, it has become common practice in the academic world to conduct research projects not only with the input and from the perspective of scientists, but also to include more diverse forms of knowledge, information, and experiences. This inclusion is made possible through transdisciplinary research that looks beyond the realm of academic fact-finding and seeks to incorporate the viewpoints of practitioners, policy-makers and civil society into the design and findings of research projects (Harris & Lyon 2014). Although in theory this integration of different

knowledge can enable more broadly accepted planning and management solutions, stakeholder engagement is not without challenges. First, on the theoretical level, it can be challenging to bridge different theoretical schools, ways of thinking and ,worldviews‘ on the sides of the involved actor groups. Second, in terms of methodological challenges, it can be problematic to integrate different kinds of knowledge and data; especially when it comes to integrating qualitative, statistical data with experiential, qualitative data from local stakeholders and practitioners. Third, when it comes to the practical implementation of stakeholder engagement, the various actors involved in a research project might desire different outcomes, there can be challenges of communication and finding a common ,language‘ (also with respect to terminology and scientific vs. every-day language). Moreover, building trust with stakeholders and fostering productive collaboration and participation have time and again shown to be particularly challenging.

It is therefore particularly important to have a good strategy on how to engage stakeholders, the methods suitable for this, and how to communicate and disseminate the results of research data and analyses based on these engagement activities. Part of this strategy must be to acknowledge the challenges posed by the involvement of stakeholders into research projects, and to develop ideas of how to meet these challenges. In the case of PANDORA, particular challenges are posed by the diversity of stakeholder groups relevant for the project (see section 3.1.2) as well as the geographical, cultural, social and economical differences between the project’s Case Study regions (see section 3.1). Both these stakeholder groups and individual regions make it necessary to not develop only one joint engagement approach to be used within PANDORA, but to ,customise‘ the implemented methods of engagement to the different regional situations and requirements of the stakeholder groups. To acknowledge the challenges described above, section 2 of this deliverable outlines the audience-specific communication and dissemination tools used within this project as well as its output in terms of training courses and PANDORA’s Box of Tools. Section 3 goes into detail about PANDORA’s stakeholder engagement approach and touches upon the differences between the Case Study regions, stakeholder groups, and the methods used to address both. Moreover, it highlights the time schedule of stakeholder engagement activities in PANDORA.

### **1.3 Approach**

It is the aim of PANDORA to address important, practical, and region-specific research gaps for European fisheries. Crucial for the success of this endeavour is a methodical approach that takes communication and engagement activities seriously and thoroughly implements them from the start. Two components of the project design are vital for reaching this goal: effective external communication of project contents, activities and results as well as active engagement with PANDORA’s stakeholders. Key steps in our approach therefore include the co-framing of management, biological and future (climate, socio-economic) scenarios to be explored in dialogue with fisheries and RFMOs, the creation of training programs, the joint compilation of knowledge and the development of tools and products urgently required by the fishing industry and fisheries managers. Additionally, an array of communication and outreach activities will take place that transport the message of PANDORA and create an awareness for the project among relevant audiences.

Throughout the entire duration of the project, PANDORA relies on close **cooperation with the stakeholders** identified as most relevant in terms of this project’s research questions and goals (for details, see section 3.1.2) (see Figure 1):

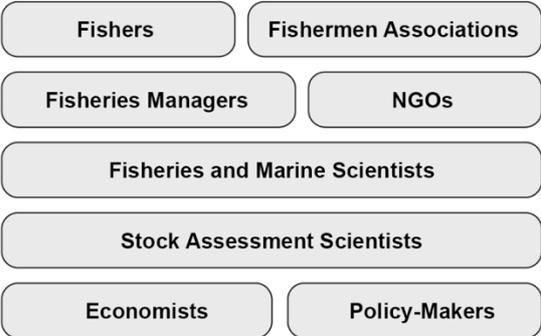


Figure 1: Stakeholders in PANDORA

Stakeholder engagement, external communication and the dissemination of project results go hand in hand throughout the lifetime of PANDORA. Effective external communication will be ensured through a project website, social media contributions, flyers and brochures, the creation of short videos and films, as well as fact sheets and report cards (digital and in print) (see section 2.1, Figure 2). Dissemination activities in PANDORA cover scientific publications that display the obtained research results, visits to conferences and events by the project partners, the creation of open access research data, articles, reports, management recommendation, and PANDORAs Box of Tools (see section 2.2, Figure 2). The last of the three columns of outreach is the engagement of relevant stakeholders in the Case Study regions. This includes the use of existing and building of new networks, joint data collection and generation, involvement in tool development, as well as continued dialogue throughout the entire project (see section 3, Figure 2).

In addition to these columns of outreach, PANDORAs work packages are linked with each other, and with the Case Study regions, through a **matrix-like project structure**. The tasks of communication, dissemination and stakeholder engagement overarch all the work packages and the seven, regional Case Studies. This central role within PANDORAs WP structure gives WP5 high importance throughout the entire duration of the project and ensures that approaches, methods and results can flow easily between the Case Studies and work packages. Each work package (1-4) thereby relies on the outcomes of the stakeholder engagement activities, creating different kinds of data and information for each task. Section 3.2 goes into detail about the connections between the different WPs and the different stages of the project’s SE activities.

The **integration with producer organisations, NGOs and policy makers** in PANDORA will help ensure continued participation, co-ownership and uptake of project results by these important stakeholders. Instead of the ‘classical’ approach of generating new knowledge and disseminating it afterwards to relevant stakeholders, PANDORA relies heavily on the process of co-creation through communication with its stakeholders at each stage of the project. An important impact of PANDORA is therefore, that knowledge-creation is shared between scientists and stakeholders, resulting in a much more effective uptake of project results than in top-down projects. This effort is possible through the consortium’s existing stakeholder networks, building on longstanding successful collaboration. The process of co-creation of knowledge and tools is illustrated in Figure 2: from the outset of the project, management questions and scenarios will be co-framed with the

PANDORA stakeholders. Through close cooperation between industry and scientists, regional management gaps will be identified and new biological data generated. Altogether, this approach constitutes a continued dialogue with the project's stakeholders to ensure that the outcomes of PANDORA will target its end-users needs.

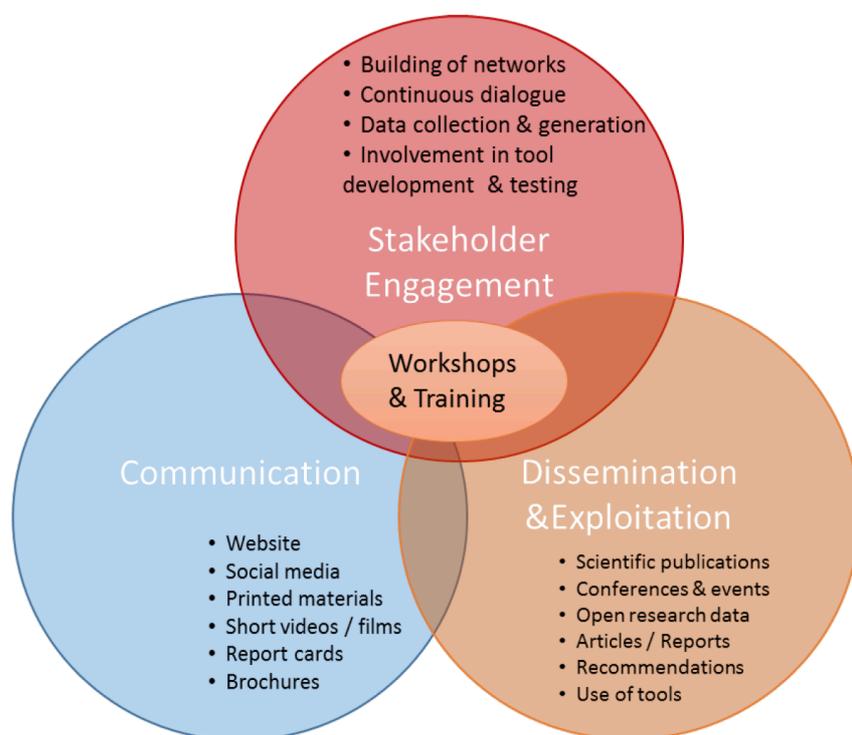


Figure 2: Interconnections between dissemination and exploitation, communication and stakeholder engagement

## 1.4 Contribution to the project

The contribution of communication, dissemination and stakeholder engagement to PANDORA is crucial for the success of the project. The external communication activities will ensure that the project is known among relevant audiences, and dissemination tasks are targeted to the most effective sharing of the project results with fellow scientists, all stakeholder groups, and the interested public. Stretching through all stages of the project, work packages and Case Studies, the results of the stakeholder engagement activities form the basis of the majority of research undertaken in WP 1-4. This deliverable and the activities it suggest hence form a cornerstone of PANDORA. All stakeholder workshops and activities of co-framing and co-development of knowledge and management scenarios will significantly contribute to a positive uptake of the project results, recommendations, and the online toolbox.

## 1.5 Dissemination and Exploitation

The communication and stakeholder engagement are not aiming at producing input that, in itself, are supposed to be disseminated or exploited. The results from the stakeholder activities will be used in the research and development processes of the various work packages and disseminated accordingly. However, in addition to the practical implementation of communication and stakeholder engagement in PANDORA, a social scientific research project will be conducted by Vera Köpsel (UHAM) regarding barriers to and problems of stakeholder engagement specific to EU projects and to the fisheries sector. The outcomes of this research project will be disseminated in the form of peer-reviewed academic papers in respective journals as well as through the PANDORA website. Moreover, a further possibility to exploit the process of engaging stakeholders into PANDORA would be the creation of a best practice guide that particularly focuses on large-scale research projects in the fishing sector and addresses the challenges of engagement encountered during the lifetime of the project.

## 2 Communication & Dissemination Strategy

The successful communication of the contents and goals of PANDORA and dissemination of its research results form an important building block of making the project known to the relevant audiences and encouraging them to get engaged. PANDORA has identified its key audiences (see section 2.2.1, 3.1.3), the main objectives of engagement (see section 3) and the key materials and activities used in communication, dissemination and stakeholder engagement (see section 2.1, 3.1.3) (Figure 4).

Appendix 1 (see excerpt in Figure 3) shows a summary of the communication and engagement tasks planned by the different project partners for targeting key audiences as well as general project materials aimed at these and wider audiences. For each action, a timeframe for completion is indicated using the following key:

- B = in the beginning of the project,
- O = on-going: available throughout the project and updated regularly as appropriate,
- R = regular: as new information/results/findings become available but with the aim of providing regular outputs/dialogue to keep a steady flow of information via this channel, and
- C = culmination: summary of project findings and research to be created during the final stages of the WP or Task to incorporate all project results and outcomes.

PANDORA will explicitly ensure robust communication and engagement with each of these primary groups throughout the four years of the project. The project partnership has extensive experience in multi-national, multi-lingual, multi-disciplinary, and multi-partner collaborative research, and in the effective communication of progress and results.

Target group/ Audience (Who?)	PARTNER	CASE STUDY	WP1	WP2	WP3	WP4	WP5	ACTIVITY (what? which (starting) month? one-time or ongoing?)
General public	1. DTU Aqua							- speaker and panel member in "Forage fish, marine mammals and optimal fisheries yields" (M6) - give talk at ICES ASC 2019 and Society of Experimental Biology annual conference 2019 (M16, 18) - organisation of meetings with local fisheries organisations (M 8, 9) - publications in peer-reviewed scientific journals (M 8, ongoing)
	2. Bangor University							
	3. CNR							
	4. University of Hamburg	all					X	- creation and maintenance of <b>project website</b> (dissemination) (online ca. month 4, then updates ongoing) - maintenance of <b>social media channels</b> : Twitter, ResearchGate (ongoing, from month 1) - creation of <b>project flyer</b> (month 3), <b>fact sheets</b> and brochures for download (months 5, 6) - <b>press releases</b> and news on third party websites, e.g. UHAM CEN website (starting before month 1) - potentially, dissemination of <b>newsletter</b> to stakeholders (through database) (ongoing)
	5. Cefas	North Sea	X	X	X	X	X	- Publications in peer-review journal (M12 onwards)
	6. IEO							
	7. University of Bergen							
	8. Ifremer	Bay of Biscay						- potentially, dissemination of newsletter to stakeholders (M6-24)
	9. University of Kiel	Baltic			X			- Radio interview WDR5 "Quarks" at 10.08.18 on Sustainable Fisheries in the Baltic and North Sea - presentations the wider public on local science niches or open events
	10. SNF Centre for applied research							
	11. HCMR	Aegean Sea					X	- press releases on industry related media (M6-24) - potentially, dissemination of newsletter to stakeholders (M6-24)
	12. University of Portsmouth	Economics and Governance of CS				X		- potentially, dissemination of newsletter to stakeholders (M6-24) - Publications in peer-review journals (M12 onwards)
	13. CSIC							
	14. TI Sea Fisheries	North Sea						X

Figure 3: Excerpt from PANDORA communication and engagement overview

As demonstrated in Figure 4, communication tools will be developed regularly during the project and will be adapted as needed to target particular audiences (e.g. sending the correct messages to the correct people). Initial activities will be aimed at raising awareness of the project and promoting its objectives and the tools applied will evolve with the project to most effectively share PANDORA’s achievements and findings as these are realised. The following graphic represents our vision for when key messages will be communicated:

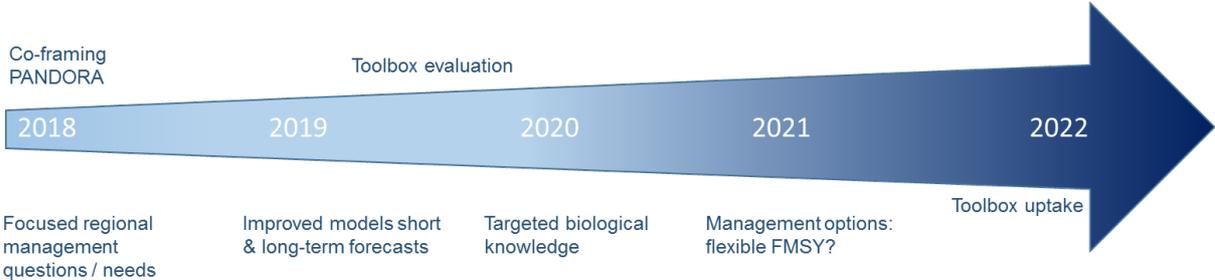


Figure 4: Time schedule of highlights to be disseminated throughout the project’s lifespan

All communication and outreach materials will be designed to be accessible and engaging and will consider cultural and gender issues to ensure products and services appeal to as wide an audience as possible and do not discriminate in any way. All products will be written using nontechnical terminology and will be produced in English but with translated versions created where required in order to target wider (regional) audience(s). Encouraging multi-directional communication (dialog) is a key activity within PANDORA, which will be facilitated in a number of ways; through stakeholder engagement and scoping (central to WPs 1-5) via regional workshops and face-to-face interviews, an active PANDORA Advisory Board (PAB) and an informative and interactive website. This will help ensure that the project is effectively co-framed with the European fisheries industry and RFMO’s (to the mutual benefit of the project and its stakeholders) and that the project remains adaptive to industry and policy trends (e.g. new technologies such as pulse trawling or policy implications of the landings obligation or Relative Stability of TACs in light of Brexit). The following sections go into detail about the specific means of communicating and disseminating the progress and results of PANDORA throughout its lifetime.

**2.1 Communication and Dissemination Activities in PANDORA**

Ultimately, PANDORA will develop outreach materials to enable the dissemination of project results and encourage the uptake and exploitation of its tools and recommendations. To achieve this, communication activities will foster an ongoing relationship with our audiences and engage them in the project as it progresses to ensure they are receptive to our output materials and responsive to our progress. Outreach materials and tools are described in sections 2.1.1 – 2.1.7 below. Figure 5 illustrates the prospective time line of outreach efforts over the lifetime of PANDORA. For a more detailed overview of all planned outreach and communication activities, listed by project partners, see Appendix 1.

Project start:  
May 1, 2018

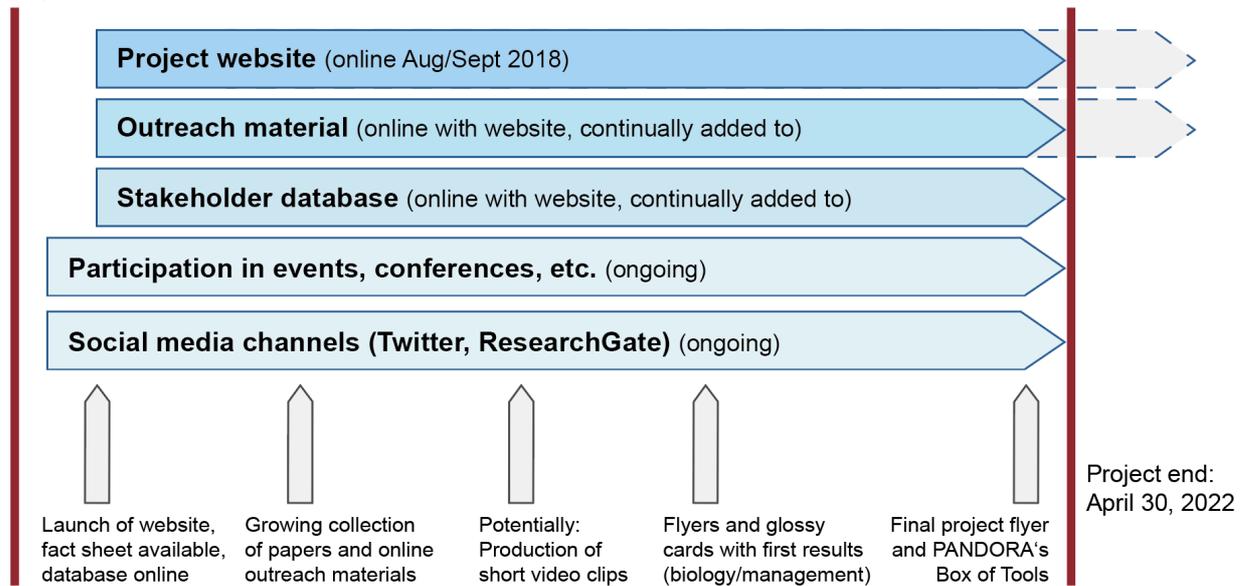


Figure 5: Timeline of communication and dissemination activities in PANDORA

### 2.1.1 Project Website

Launched in mid-September 2018, the PANDORA project website is the flagship of the project and its main path of information sharing with stakeholders, academia and the interested public. The URL is: [www.pandora-fisheries-project.eu](http://www.pandora-fisheries-project.eu). Digital media content on the PANDORA website will provide description of the project well understandable for wider public, as well as up-to-date information regarding progress, outcomes and analysis of scientific work. Figure 6 shows the sitemap of the website, its main and sub-sites and all facets of PANDORA represented on its online presence.

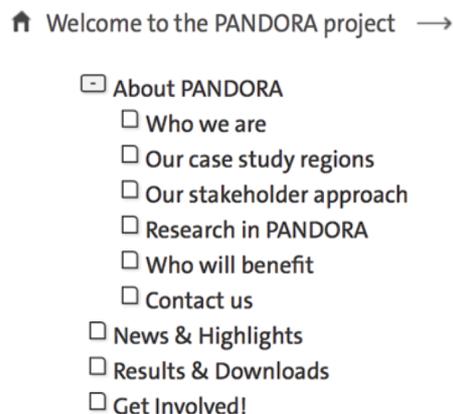


Figure 6: Sitemap of [www.pandora-fisheries-project.eu](http://www.pandora-fisheries-project.eu)

An important feature of PANDORA's website will be the sign-up form for the project's stakeholder database. For more information on this database, please see section 3.3. The entire project website will be built and hosted via the UHAM content management system and on UHAM University servers. It hence complies with University of Hamburg's data protection regulations. This procedure ensures compliance also with the most recent EU data protection laws.

### 2.1.2 Social Media

In addition to its project website, PANDORA will make use of social media (primarily Twitter and ResearchGate) to tap into existing contact networks, create new groups and encourage followers in order to capitalise on these current and active communication channels to keep stakeholders up-to-date. This will enable to communicate timely and efficient about new project developments, events and project results. Twitter and ResearchGate accounts for the project have already been set up prior to the submission of this communication strategy (see Figure 7).



Figure 7: PANDORA's Twitter profile in Oct 2018

### 2.1.3 Newsletter

PANDORA foresees an electronic newsletter which will be sent to project partners, voluntary subscribers as well as to relevant people (those people engaged in the area and issues relevant to the project who are likely to have a strong interest in the development of the project). This will require the creation of an e-mail list. Invitations to subscribe to the newsletter will be circulated via PANDORA partners' newsletters and on the PANDORA website and social media. Furthermore, subscribers to the newsletter will have the option to unsubscribe at any time by contacting the PANDORA outreach team in writing (electronically).

It is part of PANDORA's activities to monitor the efficiency of the diverse channels chosen for communication and dissemination (see section 2.2.5). If the newsletter format proves to not be efficient in relation to the effort in time and costs needed to produce it, other means of effective communication will be sought.

### 2.1.4 Knowledge transfer via project flyer, brochure, fact sheets

A project flyer will outline the ambition of the project and invites stakeholder to get involved. This flyer will be translated by key partners (if necessary) into other languages (especially for the Case Studies). Report cards will present information as bullet points at a glance and in a handy format. Hardcopies and online versions (in the section “downloads” of the project website) will be available. A fact sheet outlining the focus, Case Study regions, methods and goals of PANDORA, and motivating stakeholders to get involved in the project, is already available for download on the project website (see Figure 8). All materials for knowledge transfer will be developed and updated throughout the lifetime of PANDORA and made available digitally via the project website, advertised via social media channels (see Figure 5). Moreover, two informative roll-ups (vertical banners) will be designed and produced for placement at workshops and conferences, raising awareness for the main contents of PANDORA and motivating the audience to participate in the project’s surveys and stakeholder activities. Altogether, the informational value of flyers and brochures will grow step-by-step during the course of the project.

#### — Outreach materials

In this section, you can find and download all public outreach materials that will be created throughout the duration of PANDORA. Feel free to distribute these materials within your network, at events, and any other awareness-raising activities related to the project.

### PANDORA Fact Sheet 2018



Figure 8: Download section of PANDORA website with Fact Sheet (2018)

### 2.1.5 Outreach at Events and Conferences

An important part of PANDORA’s communication and outreach activities will be the representation of the project at symposia and joint sessions at key science and industry events. The project’s findings and tools will be presented by the various project partners and scientific research results will be disseminated to academic audiences at topic-related conferences. This will ensure active exchange with stakeholders, other researchers, and the wider scientific

communities for which PANDORA is of interest and from which the project can benefit. An important component of outreach activities at events is undertaken by the Case Study leaders: they will attend regional fisheries council meetings (e.g. Advisory Council meetings of North Sea AC, Baltic Sea AC) where they can introduce PANDORA, its goals and stakeholder cooperation aspirations. Moreover, it is planned to distribute a questionnaire on existing gaps in regional fisheries management as well as biological and environmental developments in the Case Study areas to the members of these ACs (see also section 3.1.3).

### **2.1.6 Videos**

Project partners will create short videos explaining their research and – at a later stage – the project results. Also, short videos of workshops and training courses (those with strong involvement of the policy makers and industry members) will promote the PANDORA project and attract more stakeholder interest. An additional option for communication with videos would be the cooperation with TV stations through science- or policy-related formats.

### **2.1.7 Open Access Material**

PANDORA will target industry-related magazines (e.g. Eurofish, EU Commission Maritime Affairs and Fisheries) and these and other websites that are key communication channels for many of PANDORA's stakeholders (both regional and EU-wide). To ensure general access, our peer-reviewed articles will be deposited in an institutional and/or subject-based repository (Green Access), as plain text, and as editorial open access for those producing new tools and reviews (i.e. outputs). When possible, peer-reviewed articles will be published in Open Access format (Gold Access). This strategy follows from the "Guidelines on Open Access to scientific publications and research data in Horizon 2020". This will enhance transparency, credibility and efficiency of our research and further promotes the use of data and results for policy and/or business, by stakeholders and other end-users. Key, synthetic/synthesis articles produced by PANDORA will be published as Open Access (gold). PANDORA partners have set aside funds to publish 1 to 2 OA articles and the coordinator also maintains a publication budget to support OA.

## **2.2 Impacts, Capacity-Building and Monitoring**

With the strong participation of fishing industry stakeholders, PANDORA will generate information for fishermen and decision makers that encompasses (i) manuals on collecting biological samples on commercial vessels, and (ii) a set of region- and stock-specific diagrams visualizing the application of data collected on a vessel, in a harbour or on scientific survey all the way through the assessment process and which metric are being influenced (TAC, by-catch estimation, reference points, etc.).

### **2.2.1 Expected Impacts of PANDORA**

PANDORA is designed to fulfil the expected impacts of this research with an overarching goal of improving fisheries management under the Common Fisheries Policy (CFP). This goal will be ensured by:

- Increasing the knowledge base, share new findings, provide new tools and promote their uptake by end-users to more efficiently manage fish stocks within European waters.
- Increasing the long-term profitability of the EU fleet and increase the number of jobs in the fishing sector.
- Improving the market supply and food security in Europe by fishing sustainably at MSY.
- Contributing to adjusting fishing exploitation to levels that ensure the MSY.
- Improving the professional skills and competences of those working and being trained to work within the blue economy via workshops, training courses

By striving for these goals, PANDORA will contribute to enhancing stock assessment tools by providing new biological knowledge and, thus, help to ensure the sustainability of the Blue Growth of Europe’s marine fisheries sector. The approach of targeting seven Case Study regions helps ensure that assessments and management scenarios are of high relevance to a large number of EU fisheries; especially in nations where the fisheries sector is an important component of the overall “blue” economy (Spain, Greece, Italy, Portugal, France, Norway, the UK). On the other hand, the wide range of Case Study regions makes it possible to develop and test approaches to stock assessment and fisheries management that are tailor-fitted to specific regions and fisheries. Comparisons of these Case Studies may also reveal large regional differences in data availability, fishing techniques/cultural heritage, and in the ecology and status of fisheries targets that exist across Europe; thus, providing the best possible uptake at the regional and/or local level, where fisheries management and fishing practice are implemented on the ground (cf. Mackinson et al. 2008). Table 1 gives an overview of the planned communication, dissemination and engagement activities; Appendix 1 details which PANDORA project partner is going to contribute to these activities in which form and project month.

Table 1: PANDORA’s target audiences, key messages, communication channels and expected impacts

Target group/ Audience (Who?)	Message/ Objective of the engagement (What?)	Channels, tools and materials used and timeframe / regularity (How?)	Expected outcome / Impact
General public	<ul style="list-style-type: none"> <li>• Help the wider public understand fish stock status, management goals, ecosystem considerations and challenges and opportunities for European fisheries (create cultural change in consumers – from fishery to fork)</li> <li>• Raise consumer awareness of the food security challenges and positive, societal impacts of European fisheries (food security and employment)</li> <li>• Raise awareness of the importance collaborative research for European fishers and Blue economy</li> </ul>	<ul style="list-style-type: none"> <li>• Project website (O),</li> <li>• Short introductory videos (B, R)</li> <li>• social media (O)</li> <li>• press releases (B, R),</li> <li>• project flyer(s) (B),</li> <li>• newsletters (R),</li> <li>• newspaper/magazine articles (R, C)</li> </ul>	Raised awareness of general public about key elements of the PANDORA project and its research goals and accomplishments

Scientific community (research and education)	<ul style="list-style-type: none"> <li>• Provide new understanding to the fisheries scientists and the broader scientific community (i.e. researchers in fisheries policy and social-science) to support advancement of research and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Peer-reviewed publications (R), research publications on “Advancing basic biological knowledge” (C),</li> <li>• Data sets for ICES data centre (C)</li> <li>• Presentations at EU and international symposia (R)</li> </ul>	Cutting-edge, high-profile research articles advancing the science and policy (e.g. biological knowledge of stocks / ecosystems,
		<ul style="list-style-type: none"> <li>• Public Deliverable Reports (R)</li> <li>• Workshops/Training (R),</li> <li>• The approach of peer review by appropriate scientific communities will ensure quality standards (R),</li> <li>• The website will provide links to publications, reports etc. (O)</li> </ul>	reliable, stock projections, sustainability, etc.)
Key end-user: Policy makers & Fisheries Managers	<ul style="list-style-type: none"> <li>• Co-frame key questions and needs</li> <li>• Provide new knowledge and project results to the people who implement rules, regulations and statutes, prepare to maximize Blue Growth and long-term sustainability of European fisheries</li> </ul>	<ul style="list-style-type: none"> <li>• Report cards &amp; “cheat sheets”(R)</li> <li>• Website summaries of key PANDORA research linked to specific policy areas (C)</li> <li>• Direct input to national, regional, European and international advisory bodies e.g. ICES, GFCM, RFMO’s, STECF, FAO, etc. (R)</li> <li>• Description of case study results (R, C)</li> <li>• Demonstration of improved assessment models (R, C)</li> <li>• Final PANDORA Toolbox users workshop (C)</li> <li>• Manuals and DSTs for Fisheries Managers, detailing the trade-offs between incentives, job creation, regulations and resources conservation needs (C)</li> <li>• Web-link to PANDORA toolbox.</li> </ul>	Access to and up-take (implementation) of Pandora’s Box of Tools; Adjusting fishing exploitation to levels that ensure both short- and long-term MSY
Key end-user: European Fisheries	<ul style="list-style-type: none"> <li>• Co-create PANDORA with the European fisheries industry, co-frame questions, and provide continual dialogue as the project proceeds; provide the European fisheries industry with the knowledge, tools and training that will support them to make vital business decisions in a changing</li> </ul>	<ul style="list-style-type: none"> <li>• Pandora’s Box of Tools with online training resources (sustainably hosted at ICES)</li> <li>• Manuals / Films on best practice</li> <li>• visualisation of economic projections for fleets, etc. (C);</li> <li>• articles in industry magazines and on websites (R)</li> </ul>	Provide new tools (e.g. online fishery data repository), training courses (physical and web-based) and best-practice manuals and promote their uptake by

	environment (both politically and from a biological resource perspective).	<ul style="list-style-type: none"> <li>• presentations at industry events (R)</li> <li>• specific pages on project website (O)</li> <li>• Regional stakeholder engagement workshops (WP1-4) (R)</li> <li>• One-on-one interviews for fact finding (R)</li> <li>• Specific information material designed to present relevant PANDORA results refined for each region / fleet with opportunities for feedback and co-development (R)</li> </ul>	fishers; Improve the professional skills and competences, create transparency and more participatory management.
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Source: PANDORA project sealed proposal

### 2.2.2 Capacity-Building: Training Courses

The PANDORA consortium is uniquely placed to provide hands-on training courses for the European fisheries industry and fisheries scientists. Project partners have long-standing experience in either facilitating or teaching training courses. For almost a decade, ICES has hosted training courses primarily for fisheries scientists (e.g. advanced statistical methods and other courses needed to provide science-based advice for implementing ecosystem-based fisheries management).

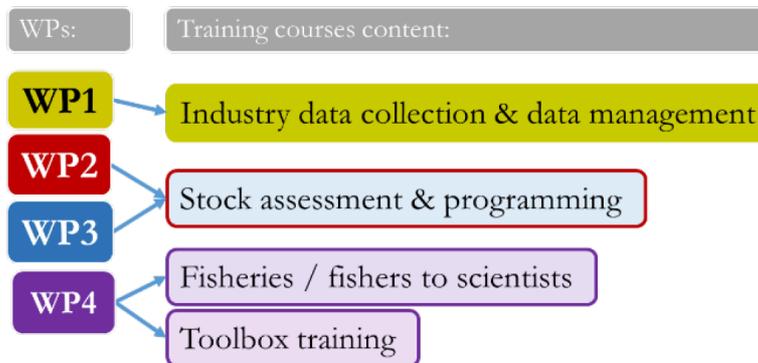


Figure 9: Contents of the training courses developed in PANDORA

To facilitate industry self-sampling and, in turn, enable scientists to better understand the challenges faced by practitioners, four training courses will be conducted. Courses are implemented across WP1-4 to provide a breadth of topics representing PANDORA’s activities as well as its mission to create activities which best match the needs of the community (from fishers to scientists to managers). Each course is associated with at least one (course 1) or two (courses 2-4) WPs (see Figure 9). One course is envisioned that will be taught by fishers and will be for assessment scientists. Course content will be discussed with stakeholders as part of PANDORA’s co-framing and co-creation with stakeholders (see section 3.1.3).

Training courses will cover the topics of i) survey sampling techniques, ii) data required for assessments, iii) state-of-the-art tools providing science-based advice for fisheries management,

and iv) stock assessment challenges (run by fishers *for* scientists). Training courses will be augmented with updated, online resources. These courses will be designed to be accessible by the industry and fisheries scientists. Best practices will be applied as revealed via previous successes and challenges in creating on-line courses (e.g. MOOC - Massive Open Online Course). Participants will be given certificates for course credit. All videos will be captioned for accessibility.

### **2.2.3 PANDORAs Box of Tools**

PANDORA's output will be synthesized to produce PANDORA's box of tools for industry, RFMOs and fisheries scientists. Tools are produced in WP1 to 4 and are made available (online) in task 5.4 (WP5). The toolbox will be an interactive website including a variety of resources ranging from simple meta-data and links to pre-existing tools to more complex, front-end platforms for displaying outputs from improved assessment and economic models (e.g. short- to long-term changes in distribution and/or productivity of fish stocks as well as economic trade-offs associated with different management strategies). Tools included will be based on scoping exercises (Task 5.1, see sections 3.1.3, 3.2.1) with fisheries industry, managers and policy makers and will be specific to a variety of audiences such as

- improved code for stock assessment models for fisheries scientists,
- region- and stock-specific decision support tools for managers (RFMOs),
- data portals for fishers,
- online training lectures,
- best-practice manuals (e.g. survey and commercial data collection techniques, stock-specific optimal survey designs), and
- a publication library.

All tools produced in PANDORA will be made publicly available in an online-repository, "The Box of Tools". This box of tools will be hosted by ICES. PANDORA aims at integrating all new knowledge gained into tools used by the relevant expert groups conducting stock assessments and management evaluations. In this way, the application of PANDORA results (implementation) is maximized.

### **2.2.4 Monitoring of Dissemination Activities**

The effectiveness of the materials, channels and various tools will be continuously evaluated during the project and, if necessary, adapted. This continuous improvement process and use of best-practices will help ensure that communication, dissemination and engagement activities yield high project impact. An important component of the monitoring process is the overview of communication and outreach activities filled out by the project partners prior to the submission of this deliverable (see Appendix 1). This list will serve as the basis for monitoring which activities were carried out and if they showed any effectiveness. Effectiveness analysis will, among others, be undertaken on the basis of the user statistics of the PANDORA website.

A second tool for monitoring is the scheme displayed in Figure 10. To help ensure high project impact, PANDORA tailors its outreach and dissemination activities to different target audiences. These audiences are the general public, the scientific community (research and education), and two key users: 1) policy-makers and fisheries managers and 2) the fisheries sector (fishers,

fishermen associations and industry). For every outreach and communication activity, the following questions will be asked: *Who* is the target audience for this activity? *What* is the message to bring across or the objective of the engagement activity? *How*, by using which channels and tools, can we best tailor this activity to the target audience? The triangle of these three questions is put in place to ensure the best possible impact of any activity and will, at the same time, be used to scrutinise its impact on the target group. Should an outreach activity show to not have much impact, we will either improve the process or seek other ways of reaching the respective target group.

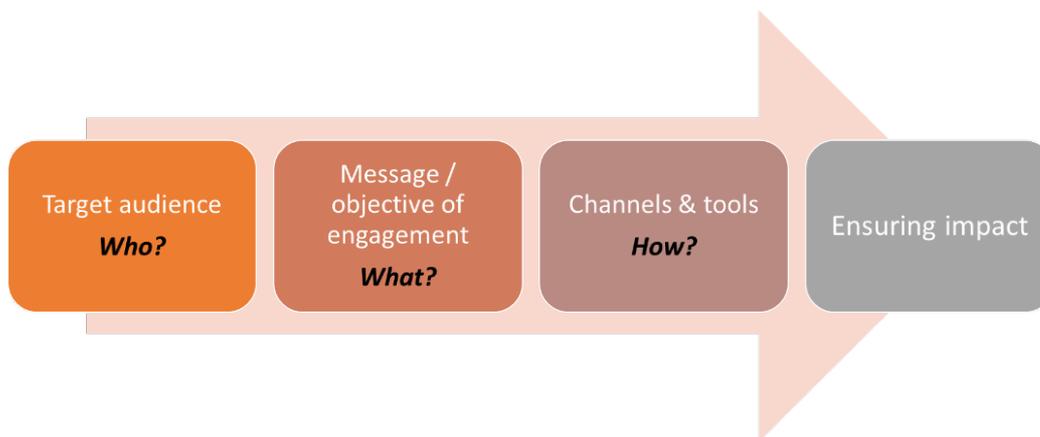


Figure 10: PANDORA tailors its dissemination and exploitation activities by answering three key questions (“who”, “what” and “how”) to help ensure high project impact.

### 3 Stakeholder Engagement Strategy

PANDORA will be co-framed together with key European fisheries stakeholders through a scoping exercise conducted at a series of regional workshops and during face-to-face interviews. The first workshop will be conducted at the onset of the project to pinpoint gaps in data and process knowledge and gain insight on historical and recent patterns of change in fishing grounds as observed by the industry (input to WPs1, 2 & 4). At least two follow-up workshops will be conducted. The first will re-visit key activities to gain feedback needed to fine-tune analyses and tools, and the final one to train industry, fisheries scientists and managers to utilize (and update) the tools after the project’s completion. PANDORA will work closely together with these identified stakeholders, as accomplishing actionable (implemented) advances is only possible via dialogue. Therefore, key steps in the PANDORA approach include co-framing (with fisheries and RFMOs) the management, biological and future (climate, socioeconomic) scenarios to be explored throughout the duration of the project, the training programs to be created, knowledge to be compiled and the tools and products most urgently required by those implementing fisheries management in practice. The following section goes into detail about these stakeholder activities, their methods, time line, and how they relate to PANDORA’s different work packages.

### 3.1 Stakeholder Engagement Activities in PANDORA

The United Nations Development Programme (UNEP) gives a comprehensive overview of different means of stakeholder engagement that can be employed in research projects (UNEP 2005). UNEP differentiates various activities including communicating with, consulting, entering into dialogue and forming partnerships with stakeholders (see Figure 11). The PANDORA project covers each of these four steps of stakeholder engagement by applying specific methods.

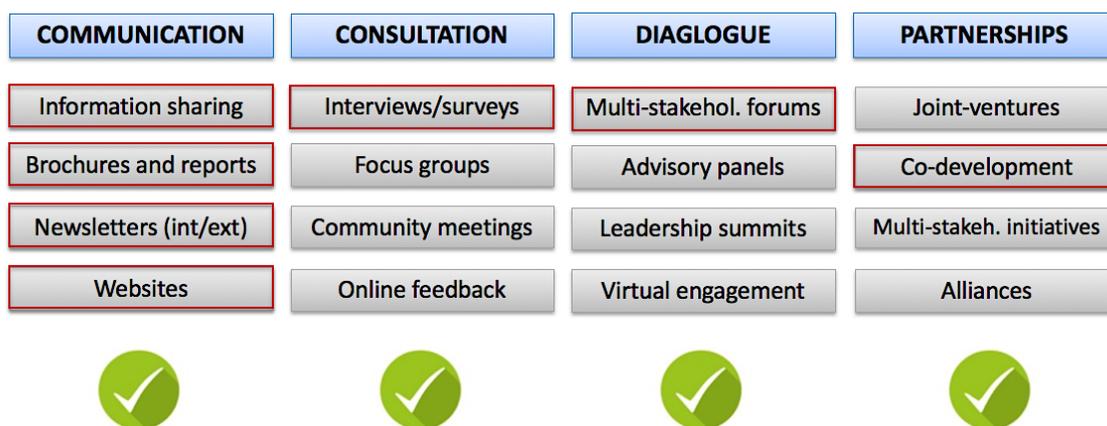


Figure 11: Forms of stakeholder engagement employed in PANDORA

#### Communication

*General examples:* sharing information with stakeholders (e.g. through newsletters, flyers or a website), providing training, technical briefings, presentation at conferences and meetings, as well as press releases on scales (UNEP 2005: 14).

*PANDORA:* all outreach activities (see 2.1), training courses and industry self-sampling (for both see section 2.2.2), the distribution of information through presentations at conferences and at Advisory Council meetings.

#### Consultation

*General examples:* Gathering input from stakeholders (perspectives, knowledge, attitudes) through questionnaire surveys, focus group discussions, qualitative interviews, stakeholder advisory meetings or online feedback forms (UNEP 2005: 14).

*PANDORA:* survey questionnaires cover several WPs and topics (see 3.1.3) and assist the development of the training course program; formal and informal dialogue with stakeholders in project partner’s regional networks (e.g. at meetings or via skype); round tables and focus group discussions.

#### Dialogue

*General examples:* Active exchange and co-framing of project goals and workflows in dialogue with relevant stakeholders through multi-stakeholder forums, advisory panels and virtual or non-virtual engagement exercises (UNEP 2005: 14).

*PANDORA:* the digitally-distributed questionnaire on regional management needs is a means of virtual engagement for framing the management scenarios and research directions of the project

(see section 3.1.3); multi-stakeholder fora will be created in the form of a series regional workshops with, if possible, the same set of stakeholders from different sectors.

## Partnerships

*General examples:* Stakeholder partnerships can be created in the form of joint ventures (rather in the industry sector than in science), joint sustainable development projects and local alliances focusing on a range of current issues (UNEP 2005: 14).

*PANDORA:* Most engagement activities in PANDORA are undertaken with the aim of co-developing the project, its goals and foci together with its stakeholders. This approach will make sure that the results and tools developed by PANDORA are addressing relevant regional and Europe-wide issues in fisheries management and stock assessment, and to ensure that there will be good uptake of the project outcomes by practitioners and policy-makers.

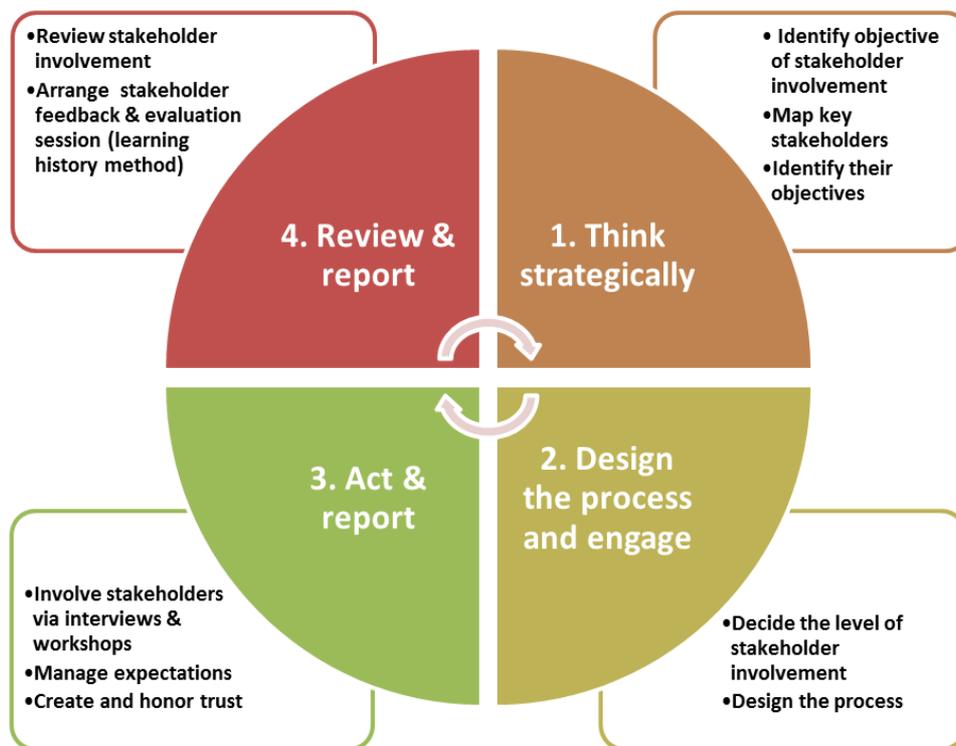


Figure 12: Co-creation and stakeholder cooperation in PANDORA

In combination, these methods of engagement make PANDORA a transdisciplinary project that co-creates content with stakeholders from the fishing sector. All engagement activities are implemented in a 4-step cycle helping to ensure the high quality of PANDORA's transdisciplinary approach (see Figure 12). This cycle consists of (1) strategically identifying relevant stakeholders and their objectives; (2) designing meaningful engagement activities that are tailored to the Case Studies; (3) involving the stakeholders through interviews and workshops, thus creating trust among all participants; and (4) seeking feedback from the stakeholders about the engagement process and documenting lessons learned for future project activities. These four steps are described in more detail the following sections on identifying stakeholders, methods of

engagement in PANDORA (both section 3.1), and how these methods relate to the contents of the project's work packages (section 3.2).

### 3.1.1 Identifying Relevant Stakeholders

The foundation of stakeholder identification in PANDORA were the existing networks held by the different project partners in the Case Study regions. These networks cover actors from science, the fishing and processing industry, fishermen associations, NGOs, decision- and policy-making and politics. An overview of the initial stakeholders of the PANDORA project can be found in Table 2 below.

Table 2: Overview of initial stakeholder network

<i>Initial list of key stakeholders that are in close contact with PANDORA and will likely be involved in it.</i>		
Anglo Norther Irish Fish Producers Organisation	FAO FIAF	Panhellenic Union of Professional Coastal Fisheries Ship Owners
Catalonia National Federation of Fishers' Associations	FAO's General Fisheries Commission for the Mediterranean (GFCM)	PELAC
Cornish Fish Producers Organisation	Federation of Greek Mariculture	Pelagic Advisory Council
DG Fisheries (Catalonia)	FRI - Fisheries Research Institute	PEW Charitable Trusts
DG Fisheries (Spain)	General Fisheries Commission for the Mediterranean (GFCM)	SA Les Pêcheurs de Bretagne
EAPO/Northern Pelagic Working Group	General Fisheries Commission for the Mediterranean (GRCM)	Shetland Fish Producers Association
Environmental Defense Fund	Greenpeace	Shetland Fishermen's Association
ETANAL - Fisheries Development Enterprise (Auction Fish Markets)	ICES MIACO	Scottish Fishermen's Federation
European Commission/ DG ENV	ICES MIRIA	Scottish Whitefish Producers Association
European Commission/ DG RTD	MEDAC (Mediterranean Advisory Council)	Sicilian and Maltese Fisheries representatives
European Commission/DG MARE	National Federation of Fishermen's Organisations (NFFO)	The International Commission for the Conservation of Atlantic Tunas (ICCAT)
European Environment Agency/EEA NSS2 Water and Marine	Natural England	WWF
European Parliament/Committee on Fisheries (PECH)	NSAC	
Europeche	OCEANA	
	Panhellenic Union of Middle Range Fisheries Ship Owners	

On the basis of these existing regional networks, new stakeholders will be continually identified and invited to the project by ongoing effort both within the different Case Studies as well as through outreach activities at events, conferences and fisheries-related meetings at different levels (local to international). This sampling of further stakeholders will thus occur in a so-called snowball sampling approach (cf. Richie et al. 2013).

Moreover, interested stakeholders get the opportunity to sign up for the PANDORA stakeholder database through the project website (see section 3.3) and thus enter the pool of stakeholders involved in PANDORA. Awareness for this database will be raised at science and industry events such as conferences, workshops and meetings through presentations, banners and other materials (see Appendix 1).

In addition to the use and broadening of existing networks, the stakeholder identification strategy of PANDORA includes the formulation of audience-specific contentual incentives that communicate clearly the benefits for different stakeholder groups of participating in PANDORA. These incentive statements will be developed in the early stages of the project and tailored to the different stakeholder groups in the project (see section 3.2.1).

### **Stakeholder groups in PANDORA**

PANDORA unites marine scientists (e.g. marine biologists, ecologists, geneticists, modellers and physical oceanographers), fisheries assessment scientists, economists, natural resource managers, partners from the industry (e.g. fishermen associations) as well as decision- and policy-makers to create a fully trans-disciplinary project. Close links with the fishing industry, RFMOs and LFMOs formed from day one of the project. The particular constellation of stakeholders in PANDORA is specific to its Case Study regions, which are the following:

- Northwestern European Shelf (industry self-sampling)
- North Sea
- Western and Eastern Baltic Sea
- Bay of Biscay
- Western Mediterranean Sea
- Strait of Sicily
- Aegean Sea

The participants of the PANDORA project reach from local-level to international-level stakeholders. These different stakeholders can be divided in the following categories:

- Fisher**
- Processing industry**
- Producer organization**
- Government/policy**
- NGO**
- Research/science**
- Stock assessors**
- Other**

These categories cover stakeholders from the local to the international level, reaching from small-scale fishermen to organisations such as Greenpeace or ICES. Table 3 showcases some of those stakeholders at the different levels using the example of PANDORA's Baltic Sea Case Study. More stakeholders at all levels will likely be added to the PANDORA stakeholder list during the lifetime of the project through snowball sampling and the extension of the existing regional networks through outreach activities and regional events.

Table 3: Excerpt from stakeholder list by level (local to international)

<b>BALTIC SEA</b>		
<b>Level</b>	<b>Organisation</b>	<b>Main focus</b>
<b>Stakeholder group: Government/Policy</b>		
<i>Inter-national</i>	Helsinki Commission	International cooperation
	EU Parliament	EU decision-making
<i>National</i>	Swedish Environmental Protection Agency (SEPA)	Environmental politics
	Social Democratic Party Germany (SPD)	Political party
	German Ministry for Food and Agriculture (BMEL)	Food and agriculture politics
	German Federal Nature Protection Office (BfN)	Environmental politics
	Ministry of Environment and Food of Denmark (MFVM)	Environmental and food politics
	The Danish Agrifish Agency (LFST)	Agriculture and fisheries politics
	The Danish Maritime Authority	Marine politics
	Swedish Agency for Marine and Water Management (SwAM)	Marine and water management
<i>Regional</i>	Ministry for Food, Agriculture, Environment and Rural Areas Schleswig-Holstein, Germany	Food and agriculture politics
	Ministry for Agriculture, Environment and Consumer Protection Mecklenburg-Vorpommern, Germany	Food, agriculture and consumer politics
	Federal Office for Agriculture, Food Security and Fisheries Mecklenburg-Vorpommern, Germany	Agriculture and fisheries politics
	Chamber of Agriculture, Schleswig-Holstein, Germany	Agriculture politics
<b>Stakeholder group: NGOs</b>		
<i>Inter-national</i>	Greenpeace	Environment protection
	World Wide Fund for Nature (WWF)	Nature protection
	Marine Stewardship Council (MSC)	
	The Pew Environmental Group (PEW)	Environment protection
	OCEANA	Marine protection
	The Fisheries Secretariat (FishSec)	Fisheries management
	Seas at Risk (SAR)	Marine Protection
<i>National</i>	Nature And Biodiversity Conservation Union, Germany	Nature protection
	Union for Environment and Nature Protection Germany (BUND e.V.)	Nature protection
	Swedish Society for Nature and Conservation	Nature conservation
	Greenpeace Denmark	Environment protection
	Greenpeace Sweden	Environment Protection

<b>Stakeholder group: Producer Organisations</b>		
<i>Regional</i>	AktivRegion Ostseeküste e.V., Germany	Regional initiative
	Coalition Clean Baltic (CCB)	Marine protection
<b>Stakeholder group: Producer Organisations</b>		
<i>National</i>	German Fisheries Association (DFV)	Fishermen association
	German Association of Anglers (DAFV)	Anglers' association
	Association of German Cutter and Coastal Fishing e.V. (DMAV)	Fishermen association
	Sveriges Fiskevattenägareförbund	Fishermen association
	The Swedish Cod Fishermen's Producer Organisation	Fishermen association
	Danmarks Fiskeriforening	Producer organisation
	Denmark Pelagic Producers Organisation (DPPO)	Producer organisation
<i>Regional</i>	Federal Fisheries Union Schleswig-Holstein, Germany	Fishermen association
	Fisheries Protection Association Schleswig-Holstein	Fishermen association
	Federal Anglers' Association Mecklenburg-Vorpommern, Germany	Fishermen association
	Fiskernes Fremtid Hvide Sande	Fishermen association
<i>Local</i>	Fisheries Association Vilm Island e.G.	Fishermen association
	Fisheries Association Hiddensee	Fishermen association
	Fisheries Association Fehmarn	Fishermen association

### Stakeholder lists for the coordination of engagement activities

To maintain an **overview of the stakeholders** engaged in PANDORA (and those who should be engaged), lists will be compiled for internal project use only (UHAM/WP5). These lists will comply with EU data regulations in being anonymous and used for the purpose of engaging stakeholders only, and will gather the following information per Case Study:

A	B	C	D
<b>Case Study</b>	<b>Organisation/institution/company</b>	<b>Stakeholder group (please choose)</b>	<b>Level (local, regional, nat., intern.)</b>
E	F	G	
<b>Focus of work (e.g. fisheries management)</b>	<b>Species/stock of interest</b>	<b>Size of organisation/institution/company (for producer organisation: please choose fleet size)</b>	
H	I		
<b>Years involved in fisheries (contact person) (please choose)</b>	<b>Language (for workshops and materials)</b>		

The main aim of collecting this information is to be able to tailor-fit the engagement activities to the stakeholder structure in the specific Case Studies, and to enable cross-case comparisons of engagement activities. No person-specific data will be saved in these lists.

Another overview created for the sake of coordinating stakeholder activities is the PANDORA *stakeholder engagement registry*. This document will be a living file that can be edited at any point by the project partners, whenever engagement activities have taken place within the Case Studies. It will contain the following data:

A	B	C	D
Date/time	Organising partner	Type of activity (e.g. workshop, round table, skype call)	Group size
F		G	H
Organisations/ institutions/stakeholders represented		Topic/focus of activity	Invitation given for stakeholder database (website)?

### 3.1.2 Steps of stakeholder engagement in PANDORA

The fact that the stakeholder networks differ between the regions makes it necessary to tailor-fit the engagement activities to these specific cases. This ‘customisation’ of engagement activities will be coordinated by WP5 (UHAM, P4) and will be an ongoing activity throughout the lifetime of PANDORA. Nonetheless, the project follows an overall stakeholder engagement schedule that was agreed at the proposal writing stage and stretches throughout the entire duration of PANDORA. Figure 13 shows this process of engagement in its different steps, starting at the onset of the project and ending with the finalisation and uptake of PANDORA’s Box of Tools (see section 2.2.3). As outlined above, this engagement strategy covers all steps of stakeholder engagement from information to co-design.

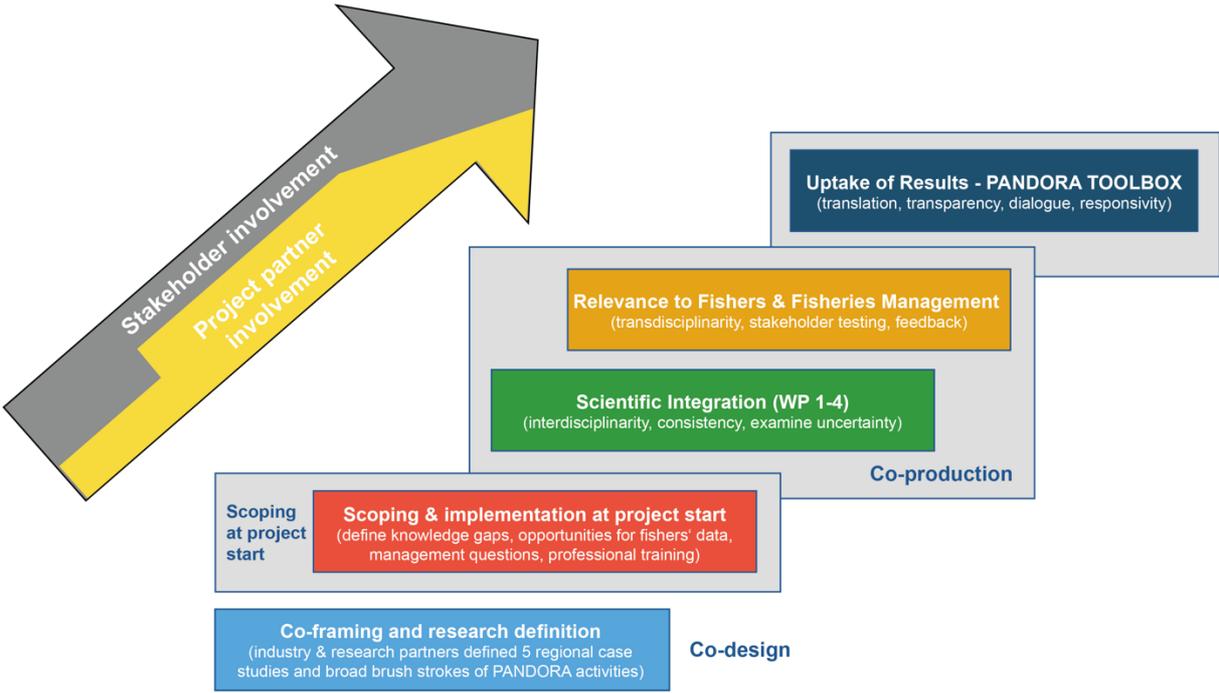


Figure 13: Co-creation, scoping and co-production in the PANDORA project

## Co-designing PANDORA from the start

As shown in Figure 13, the engagement of stakeholders in PANDORA already began before the start of the project. In the initial stages of the proposal, the project goals, Case Study areas and research topics were co-framed together with partners from research and industry. PANDORA was thus co-designed in a transdisciplinary manner from the start. The steps taken to involve stakeholders in the project are outlined in the following paragraphs.

### I. Informal dialogue with project partners and stakeholders in regional networks

A first important step for co-framing PANDORA and gathering input for various deliverables (especially D1.1, D4.1) will be informal dialogue in the form of face-to-face or virtual conversations among the project partners and with individuals in the existing regional stakeholder networks. Topics of conversation in this context will be, similarly to the structured survey (see below), region-specific developments in fish biology/ecology as well as gaps in current stock assessment methods and fisheries management practices. These informal consultations will be carried out at the start of the project specifically (months 1 – 6), but will be an ongoing part of the activities through which PANDORA engages with its stakeholders.

### II. Survey questionnaire: scoping management needs through survey questionnaires

Beyond improving assessments and stock projections for calculation of reference points, a corner stone in PANDORA is that fishermen not only collect data, but that a mechanism is developed integrating these data in the assessment process. Data from the industry will provide a means of supplementing and ‘reality-checking’ survey data important for the assessment. Furthermore, biological processes important for management, such as changes in growth or spatial distributions, will be assessed in collaboration with the industry and their implications for management developed collaboratively.

An important engagement tool in the early stages of PANDORA will be survey questionnaires that are distributed among different stakeholder groups. The aim of this survey is to create content for the deliverables D1.1, D4.1 and D4.2; namely **scoping regional developments** in fish biology/ecology, lacks in **stock assessment procedures** and methods (D1.1), as well as perspectives on current and future **fisheries management practices** (D4.1, D4.2) in the different Case Study regions. To increase the efficiency of this survey, two separate questionnaires will be designed; one for fishers/fisheries managers/policy- and decision-makers/NGOs in the Case Study regions focusing on biological/ecological developments and management practices (S1, Appendix 2), and second one for stock assessment scientists focusing on the stock assessment process (S2, Appendix 3). In addition to gathering contents for the deliverables, this survey fulfils the aim of co-shaping the direction of research within PANDORA together with the different stakeholder groups involved in the project.

The survey is carried out in a number of consecutive steps.

1. **September 2018:** survey questionnaire S1 was distributed to the Case Study leaders of the PANDORA project for initial input in.
2. **October 2018:** survey questionnaire S1 is circulated among the regional networks of the Case Study leaders for input from fishers/fisheries managers/policy- and decision-makers/NGOs in the Case Study regions.

3. **September/October 2018:** survey questionnaire S2 is sent to the Working Group Chairs of relevant stock assessment groups within ICES and the Mediterranean for further distribution.

### III. Series of regional workshops

PANDORA will be co-framed via a scoping exercise involving key European fisheries stakeholders attending a series of regional workshops and face-to-face interviews. This is a major activity for all project partners. The goals of these successive workshops reflect the stage of maturity of PANDORA (e.g. initial co-framing, is followed by evaluation and feedback on the Box of Tools, and then final training and implementation/uptake). The first workshop will be conducted at the onset of the project to pinpoint gaps in data and process knowledge and gain insight on historical and recent patterns of change in fishing grounds as observed by the industry (input to WPs1, 2 & 4). At least two follow-up workshops will be conducted. The first will re-visit key activities to gain feedback needed to fine-tune analyses and tools, and the final one to train industry, fisheries scientists and managers to utilize (and update) the tools after the project's completion. Figure 14 gives an overview of the contents of these workshops and the order in which these contents will be addressed.

The **first regional workshop** or scoping activity will have the aim of co-framing the foci of PANDORA together with its stakeholders. It will thus cover the topics of regional developments in fish biology/ecology (WP1) and fisheries management gap analysis (WP4). Moreover, it will assess demands and wishes for the training courses (WP5) that will be developed and scope stakeholder input to possible tools of the PANDORA's Box of Tools (WP5).

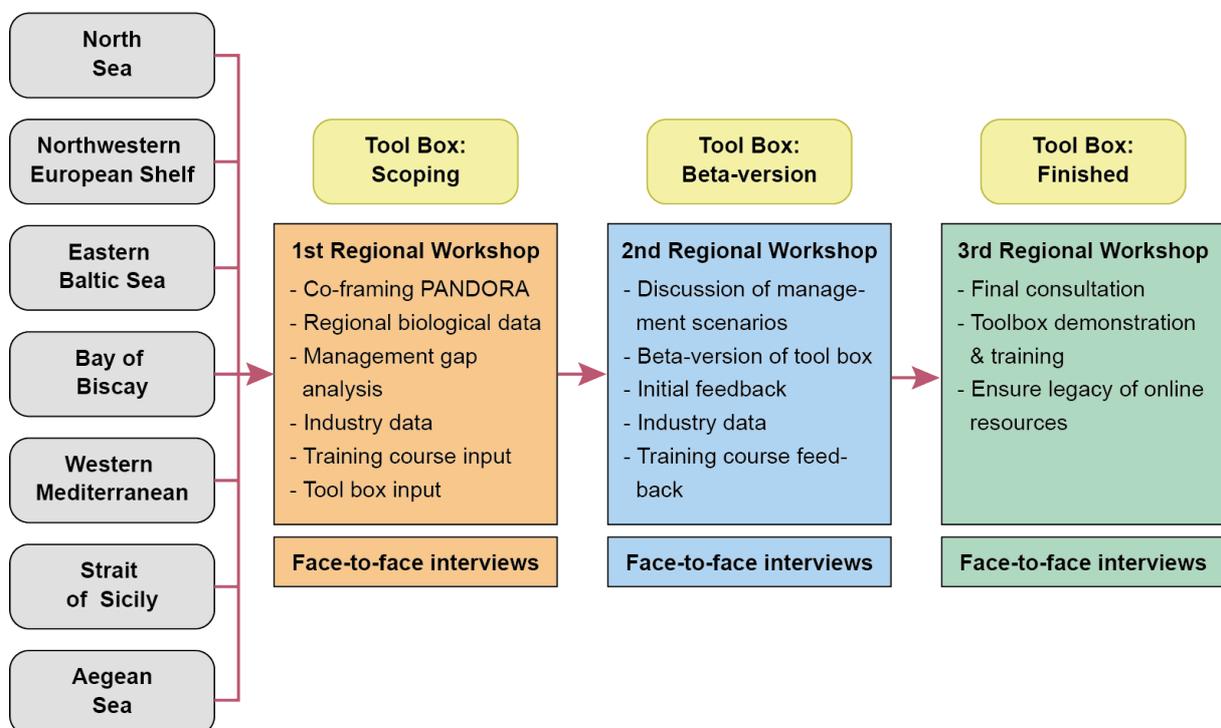


Figure 14: Contents of the three workshops in the Case Study regions

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The **second regional workshop** will focus on discussing the results of the survey exercise (WP1) and development of possible new scenarios for fisheries management (WP4). The beta-version of PANDORA's Box of Tools will be discussed with the participants in terms of usability and usefulness. Feedback on the new training courses should be gathered, too.

During the **third regional workshop**, there is planned to be a final consultation with the stakeholders about the results and outputs of the PANDORA project as well as demonstration and training for the final version of PANDORA's Box of Tools. This workshop will ensure that the legacy of PANDORA's online resources (= the tool box) will be well accepted among the different user groups and will aid in Europe-wide stock assessment and decision-making for sustainable fisheries management.

#### **IV. Fisheries self-sampling**

When requirements for biological data are linked clearly to identified management needs, data collected with and by fishermen has the potential to improve fisheries assessment, management and the long term prosperity of the sector. As part of their quality assessment procedures, pelagic fishing vessels and factories often measure several biological parameters of the catch (e.g. species compositions, weight and fat content), as well as information linking the biological data to each specific haul location and depth. Besides the commercial interest in this information, it is potentially also very valuable for stock assessment and ecological research, but rarely is it stored or used for purposes beyond immediate commercial needs. Through PANDORA, we will design and pilot industry self-sampling programmes that are able to build upon existing QA procedures to provide finely resolved spatial and temporal information on the size and age composition of species, their condition, growth rates and changes in their distribution and abundance. Specifically, we plan to ensure that the data collected is relevant to application in the scientific assessment of fish stocks by designing the program with auditable processes that lead to data quality consistent with the requirements of the EU data collection framework. The main tasks of implementing, two sampling trials and monitoring the quality of its results. Necessary parallel work includes ensuring that the data has utility in the stock assessment process and establishing the skills and training to make the pilot successful. In the Northern Shelf area, the pilot study will focus on mackerel, with 3 (initially) pelagic fishing vessels and a processing factory. Furthermore, mackerel and herring will be targeted in the North Sea, covering catch composition, sizes, maturity and condition. This work will expand the ongoing self-sampling programme of pelagic fisheries, by training crew members and factory samplers in biological determinations (notably sampling techniques, maturity, condition, possibly stomach contents) which will make the data directly relevant for biological analysis, for example on growth rates and energy-budget modelling.

#### **V. Co-creation of training courses**

To include all people from the Blue Economy in the assessment processes facilitating and facilitate co-creation of the training course program, scoping exercises for needs and demands for training courses will be carried out among relevant stakeholder groups. This scoping will likely be undertaken during the first set of regional workshops (see above) as well as in dialogue between the regional project partners and the members of their networks in the fishing industry and producer organisations.

## VI. Co-creation PANDORA's Box of Tools

For the development of its Box of Tools, PANDORA will apply a simplified spiral development model (Boehm 1986), where the Box of Tools will be developed, tested, evaluated and improved in an iterative process in the Case Studies (Figure 15).

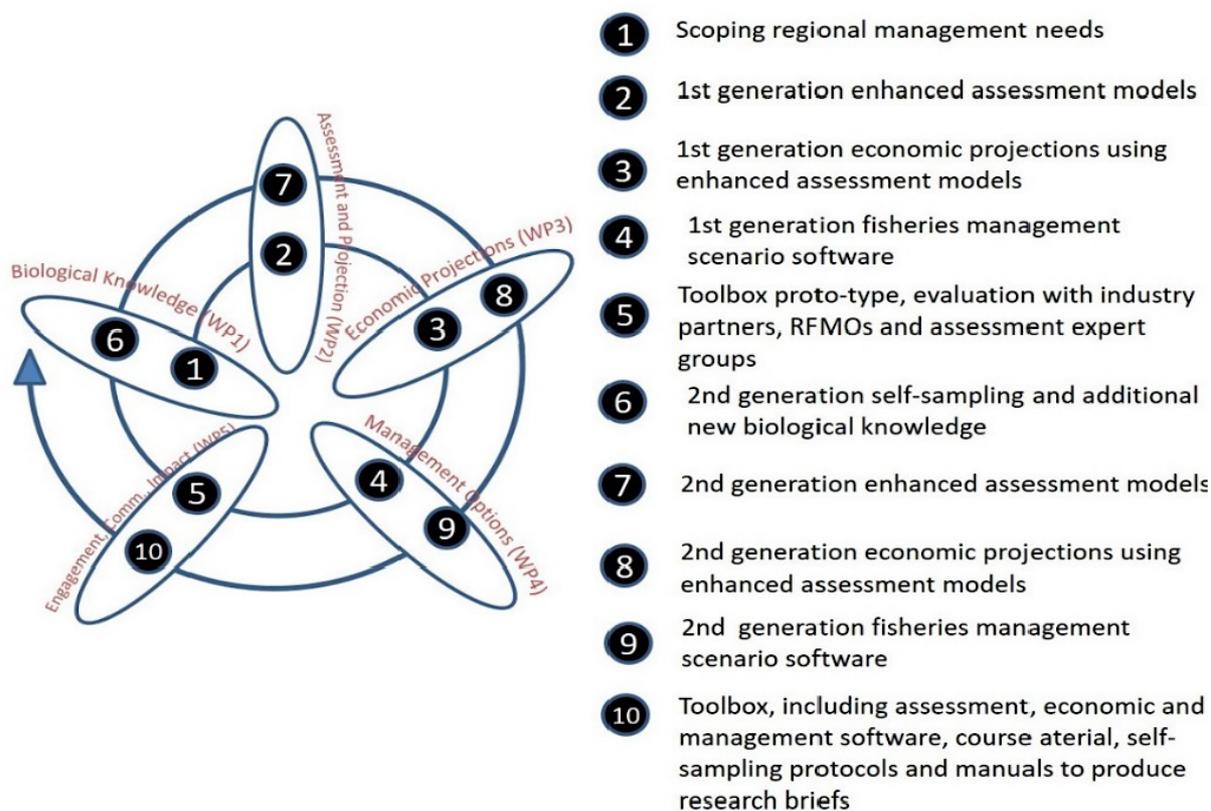


Figure 15: The spiral development model used for the PANDORA Box of Tools

The spiral model is an ideal approach to develop the legacy Box of Tools for PANDORA, because the Box of Tools can in principle be considered a software product. However, we work with a simplified version of the spiral model, because (i) objectives of the Box of Tools have not to be developed, they already exist, (ii) alternative means of implementing have largely been investigated in the past, and (iii) the risks imposed to the application of alternative methods, which form the major evaluation criterion in the spiral approach, are replaced by the risks (and contingencies) of PANDORA (see Deliverable 6.3).

### 3.1.3 Ethical concerns: consent and data protection

According to new EU data protection laws, consent by the participants of stakeholder events is required for the usage of data, but also for the usage of photographs or videos taken during events on any social media platforms or the project website. To ensure the explicit consent of all participants to these uses, consent forms will be created and distributed to the project partners for the stakeholder activities. These consent forms will be distributed prior to every stakeholder activity. For the complete consent form, please see Appendix 4. More information about ethics in the PANDORA project can be found in the Ethics Deliverable, D 6.2.

## **3.2 Engagement activities by Work Package (1-5)**

The stakeholder engagement activities carried out in the PANDORA project are designed to produce input into the project's different Work Packages in the form of quantitative and qualitative data. This section goes into detail about which information is needed from the stakeholders in the different WPs and which methods of engagement will be used to obtain this information. Figure 16 gives an overview on information from the stakeholder activities needed by each Work Package.

### **3.2.1 WP1 (Existing and New Biological Data)**

PANDORA will draw on broad participation from various stakeholders and for each Case Study region organise a series of workshops conducted with fishers, scientists and RFMOs. The overarching aim is to scope regional management needs for biological information, for example reach an agreement on potentially upcoming new resources, and focal species showing large changes in biomass and/or distributions within recent years. Examples include changes in distributional patterns, species interactions or vital rates such as growth to later be communicated via information sheets made available by PANDORA supplementing e.g. the fisheries and ecosystem summaries prepared annually by ICES. In other cases, the biological information received from the stakeholders is integrated into stock assessment models. Moreover, there will be scoping of the stakeholders' perspectives on cooperation with science and scientists as well as of necessary information required for improved stock assessments in their views. Existing (from literature and previous own projects and surveys) and new (from sampling and laboratory experiments) data will then be compiled in ready-to-use data for WP2.

The first step in this scoping process will be a survey questionnaire distributed to a variety of stakeholders in the Case Study leaders' existing contact networks. Topics relevant for WP1 covered in this survey are observed developments in fish biology, focus species, environmental changes and gaps in current management approaches. For details about these questionnaires and workshop process, see section 3.1.3.

### **3.2.2 WP2 (Resource Assessment and Projection)**

WP2 builds directly on the results from WP1's engagement activities in terms of data for improvement of resource assessments and stock projections (e.g. about fish biology). Moreover, this WP will build on the results of the stakeholder workshops and survey questionnaire undertaken to gather information for WP 1 and 4. Drawing on the new knowledge and insights emerging from WP1, the work in WP2 is structured in improving hindcasts and status quo descriptions of the stock, improving long-term predictions to determine sustainable fishing mortality rates, starting with fishing mortality at MSY, but focusing on alternative formulations that increase security at only marginally lower yield ("Pretty Good Yield, PGY"), and improving short-term predictions resulting in management recommendations (total allowable catch or effort). The input from the stakeholder activities is therefore important for the model improvements undertaken in this WP.

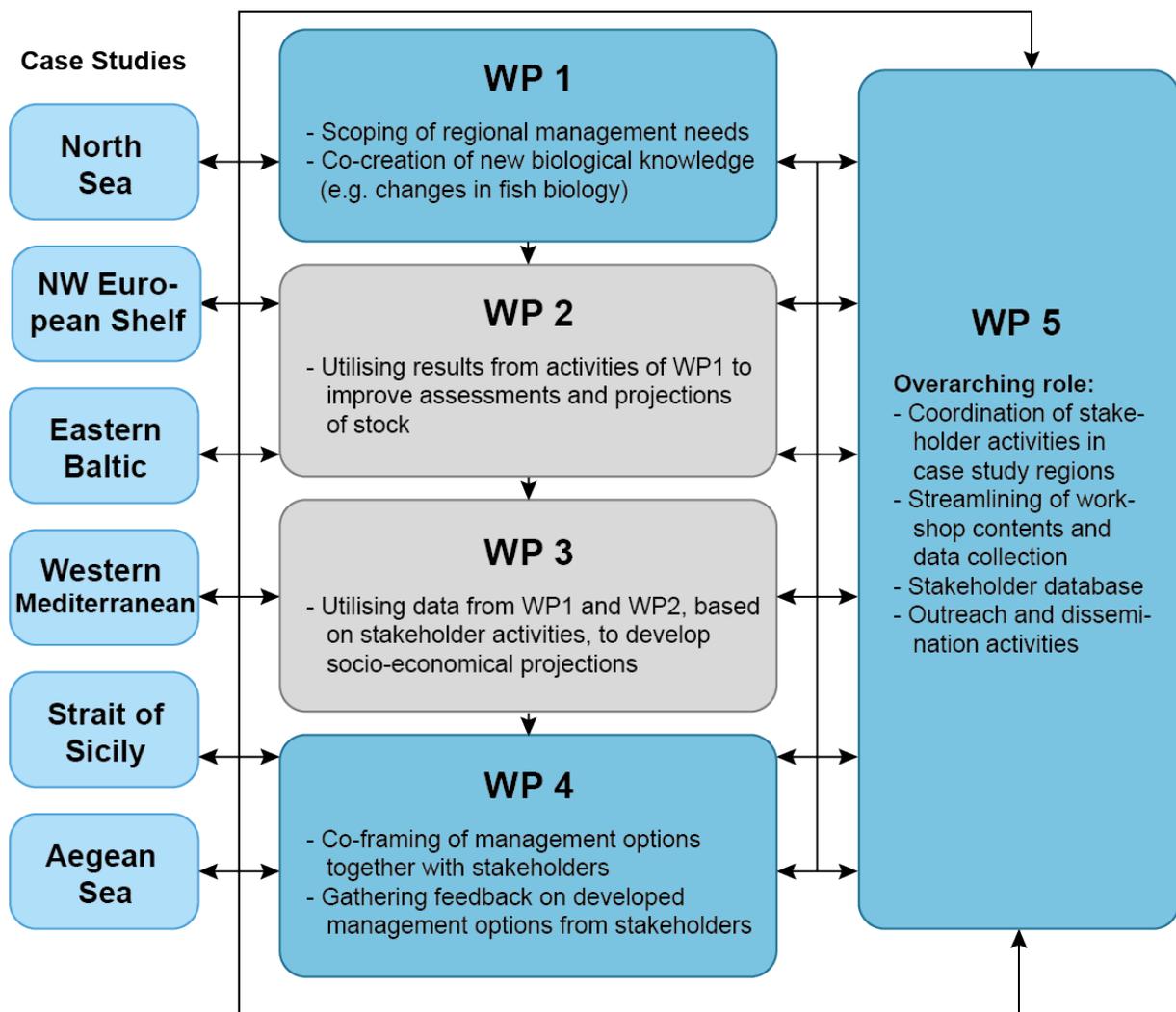


Figure 16: Stakeholder engagement activities by work packages (overview)

### 3.2.3 WP3 (Economic Projections)

A major task in this WP 3 is to include economic, behavioural and social-political dimensions as additional modules in the assessment and projection models of WP2. The implementation of new and improved management systems will have impacts on EU market supply and food security. To adequately improve existing models with regards to multi-species and multi-fleet fisheries, market prices, ecosystem changes, food and job security, the input of stakeholders' and policy-makers' perceptions and experiences into this WP is important for realistic accounts of current and future socio-economic developments in Europe. To this end, 3.1 will draw on interviews with regional operators in Northwest Mediterranean demersal mixed fisheries to disaggregate costs and revenues in time and space. Moreover, this WP will build on the results of the stakeholder workshops and survey questionnaire undertaken with the aim of direct gathering data input for WP 1 and 4.

### **3.2.4 WP4 (Management Options)**

This WP will be carried out in collaboration with relevant organisations and stakeholders in the countries of Case Studies, including Regional Fishery Management Organisations (RFMOs), Local Fisheries Organisations (LFO), the scientific community and Fish Producer Organisations. The RFMOs and LFOs will provide ongoing and detailed advice on the development of scenarios and the effectiveness of the proposed management solutions based on their practical experience and knowledge. The two-way communication with stakeholders (in conjunction with WP5 and in collaboration with project partners in charge of the regional Case Studies), through regular email exchanges and a series of 3 workshops will assist the project in developing the best management options to arrive at optimal management solutions. The work will moreover draw on the findings of the other work packages (WP 1-3) and the results from stakeholder activities undertaken in these WPs as well as the results from the survey questionnaire distributed at the start of the project (see section 3.1.3).

### **3.2.5 WP5 (Engagement, Communication & Impact)**

WP5 includes five tasks which, taken together, provide a logical, iterative approach to producing actionable science (i.e. the uptake and implementation of advice and tangible products and tools) to increase the Blue Growth of European fisheries. The approach includes active engagement with key actors, co-creating our activities with the fishing industry, RFMOs and policy makers via workshops and face-to-face interviews (Task 5.1). Thus, the oversight over and organisation of PANDORA's stakeholder engagement activities are the core tasks of WP5. Lead by UHAM, WP5 will be involved in drafting and distributing the survey questionnaire about biological data and management challenges in the Case Study. It will co-organise the workshops in the Case Study regions, working together with the Case Study leaders to tailor-fit the engagement methods to the various stakeholder groups. In addition, WP5 is responsible for creating and conducting training courses (Task 5.3), producing a diverse array of practical, long-lasting tools (PANDORA's Box of Tools, Task 5.4) and effectively disseminating and communicating our project to a variety of audiences (Task 5.5).

All partners participate and actively collaborate in WP5, embracing the Responsible Research and Innovation (RRI) approach taken in the EU Blue Growth work programme. This multi-level governance approach will be used to develop and deliver the knowledge exchange and training to provide the best possibility of this project accomplishing its ambitious goal of compiling tools and data products within PANDORA's "ToolBox".

## **3.3 The PANDORA Stakeholder Database**

A key activity will be to identify contacts and develop a database of relevant stakeholders who will be interested in PANDORA and its results. Key stakeholders will be actively involved in the project (e.g. industry partners), while others will be added as the project progresses and networks are established. Additional key stakeholders will be identified at the first regional workshops held in each of the five European Case Study regions.

A second, passive route to building this contact list will be via a client database implemented with PANDORA's website to collect contact information from stakeholders and other members of the

public. This database will be a resource for the project as it goes forward helping to ensure that communication materials, invitation to the project events as well as interview requests are distributed to the correct people and organizations. A form on the website allows visitors to easily contact the PANDORA office and join the database (see Figure 17). As per the new EU data protection regulations, stakeholders will need to agree to join this database and to the privacy and data use policy of the project website (which is hosted at University of Hamburg, hence complying with UHAM’s data protection regulations).

**GET INVOLVED!**

<b>Sign up for the PANDORA Stakeholder Database:</b>	
Your email address	<input type="text"/>
Company, institution or organisation	<input type="text"/>
Last name	<input type="text"/>
First name	<input type="text"/>
Website	<input type="text"/>
Street / P.O. Box	<input type="text"/>
ZIP Code	<input type="text"/>
City	<input type="text"/>
Phone (with country code)	<input type="text"/>

Figure 17: Excerpt of sign-up form for stakeholder database on PANDORA website

The sign-up for the stakeholder database will request the following information:

- Email address,
- Company/institution/organisation,
- Last name of contact person,
- First name of contact person,
- Website,
- Street/P.O. Box,
- Zip Code,
- City,
- Phone,
- Country (via drop-down menu),
- Stakeholder group (choices: fisher, fishery industry, umbrella association, government/policy, NGO, research/science, public/consumer, press, other)
- Particular interest/message to PANDORA
- Tick box consenting to Data Protection Policy.

The contact data entered via this online form will be stored on the web space of PANDORA, as protected client data bases (access is password protected). The complete data base will be stored on the PANDORA project repository on the fileserver of UHAM (partner responsible for the stakeholder database). None of this information will be made accessible to third parties. Consent to be on PANDORA’s stakeholder database can be withdrawn at any time via email or the website contact form. If any person withdraws consent or requests the deletion of their data, the database administrator will delete the respective information and confirm the deletion within 15 working days. All personal data will be deleted 6 months after the end of the project. People not providing consent will be excluded from joining the stakeholder database. There will be no commercial exploitation of these data sets.

### 3.4 PANDORA Stakeholder Engagement Timeline

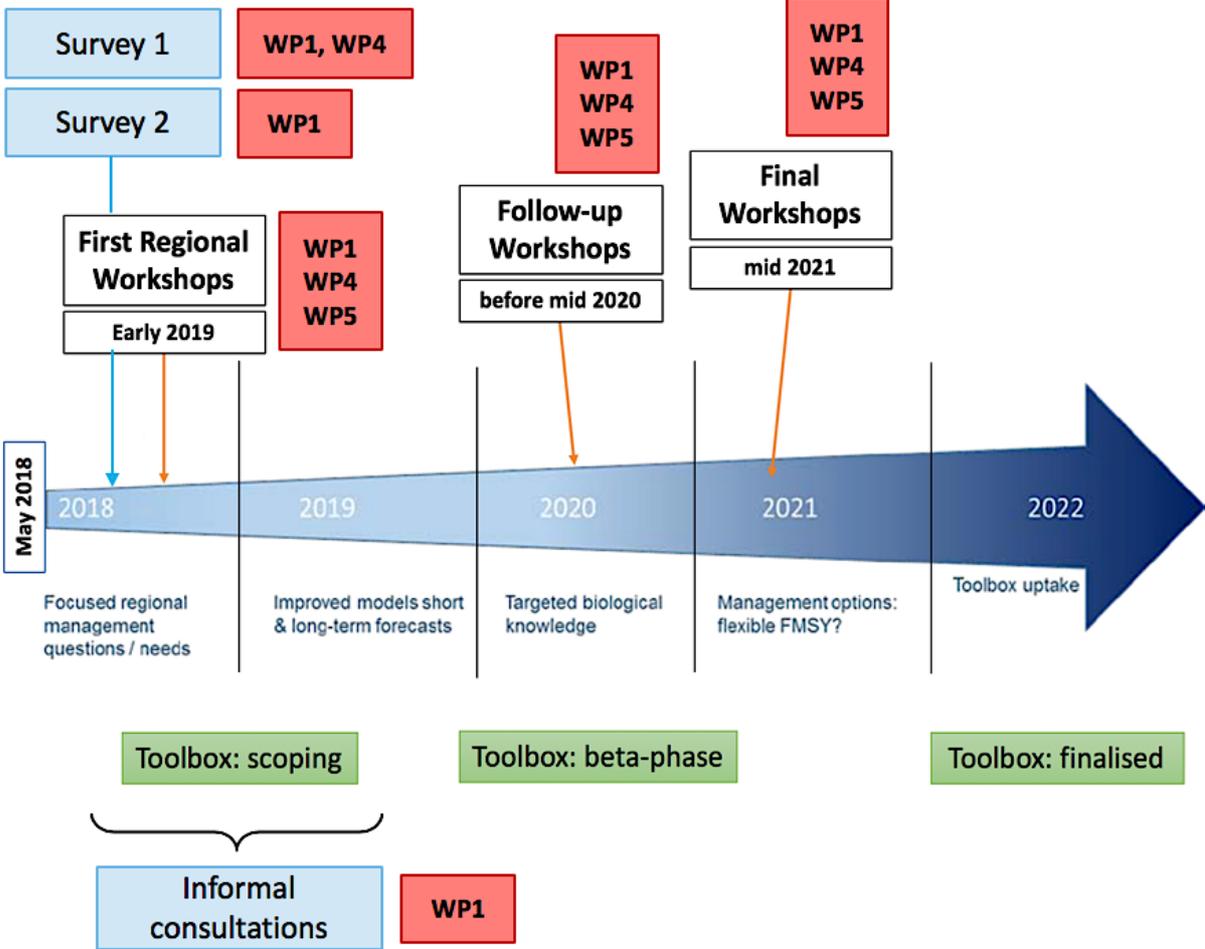


Figure 18: PANDORA Stakeholder Engagement Timeline

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## 5 Appendices

### Appendix 1: Planned Outreach, Communication and Stakeholder Engagement Activities by PANDORA Partners (status: Oct 2018)

PARTNER	CASE STUDY	WP	ACTIVITY (+ project months)
<b>GENERAL PUBLIC</b>			
<b>1. DTU Aqua</b>		All	<ul style="list-style-type: none"> <li>- speaker and panel member in "Forage fish, marine mammals and optimal fisheries yields" (M6)</li> <li>- give talk at ICES ASC 2019 and Society of Experimental Biology annual conference 2019 (M16, 18)</li> <li>- organisation of meetings with local fisheries organisations (M 8, 9)</li> <li>- publications in peer-reviewed scientific journals (M 8, ongoing)</li> </ul>
<b>3. CNR</b>			<ul style="list-style-type: none"> <li>- Presentation at Society for experimental Biology July 2019 (Seville, Spain)</li> </ul>
<b>4. University of Hamburg</b>	all	5	<ul style="list-style-type: none"> <li>- creation and maintenance of project website (dissemination) (online ca. month 4, then updates ongoing)</li> <li>- maintenance of social media channels: Twitter, ResearchGate (ongoing, from month 1)</li> <li>- creation of project flyer (month 3), fact sheets and brochures for download (months 5, 6)</li> <li>- press releases and news on third party websites, e.g. UHAM CEN website (starting before month 1)</li> <li>- potentially: dissemination of newsletter to stakeholders (through database) (ongoing)</li> </ul>
<b>5. Cefas</b>	North Sea	1,2,4,5	<ul style="list-style-type: none"> <li>- Publications in peer-review journal (M12 onwards)</li> </ul>
<b>6. IEO</b>	Western Med	All	<ul style="list-style-type: none"> <li>- Press releases, schools and radio, web and social media channels</li> </ul>
<b>8. Ifremer</b>	Bay of Biscay	5	<ul style="list-style-type: none"> <li>- potentially: dissemination of newsletter to stakeholders (M6-24)</li> </ul>
<b>9. University of Kiel</b>	Baltic	3	<ul style="list-style-type: none"> <li>- Radio interview WDR5 "Quarks" at 10.08.18 on Sustainable Fisheries in the Baltic and North Sea</li> <li>- presentations the wider public on local science nights or open events</li> </ul>
<b>11. HCMR</b>	Aegean Sea	5	<ul style="list-style-type: none"> <li>- press releases on industry related media (M6-24)</li> <li>- potentially: dissemination of newsletter to stakeholders (M6-24)</li> </ul>
<b>12. University of Portsmouth</b>	all	4	<ul style="list-style-type: none"> <li>- potentially: dissemination of newsletter to stakeholders (M6-24)</li> <li>- Publications in peer-review journals (M12 onwards)</li> </ul>
<b>14. TI Sea Fisheries</b>	North Sea	5	<ul style="list-style-type: none"> <li>- Dissemination of newsletter to stakeholders (M6-48)</li> <li>- Publishing highlights as well as explanations for a better understanding of ICES advice on the website of the Thünen institute (M3-48)</li> <li>- Potentially publish articles in media of the Thünen institute for the wider public (M18-48)</li> <li>- publications in peer reviewed journals (M12, ongoing)</li> </ul>

<b>15. University of Amsterdam</b>			- Whenever possible, publication in general media about the consequences of species interactions for the future of marine fisheries
<b>17. ICES</b>	all	5	- Facebook and Twitter postings @ advice release events
<b>18. SOCIB</b>	Western Med	1,2,4,5	- Web news; news papers; social networks; scientific outreach events
<b>19. UHI</b>	North Western Shelf	1	- press releases in local + industry relevant media (M6-36) - use of social media to promote project and industry self sampling: e.g. webpage, Twitter, facebook (M6-36)
<b>22. DPPO</b>	North Sea	1,2	- Participation in Pelagic AC meetings (from m1) - Public awareness of the attempted to collected data onboard commercial vessels to improve the data foundation for management (m6 onwards)
<b>23. SPFA</b>	North Western Shelf	1	- Newspaper 'Scotsman' article and associated press release - videos and images of self sampling on social media
<b>SCIENTIFIC COMMUNITY (RESEARCH AND EDUCATION)</b>			
<b>3. CNR</b>			- Publications in peer-reviewed scientific journals (ongoing)
<b>4. University of Hamburg</b>	all	5	- Peer-reviewed publications about stakeholder engagement in fisheries sector with a social-scientific focus (starting probably month 12)- Awareness-raising at AC meetings and conferences (e.g. ICES 2018) (starting month 3) - Co-creation of training courses through workshop activities in case studies (starting month 10) - Maintenance of the project website through updates of publishes papers, scientific results, reports, etc. (ongoing)
<b>5. Cefas</b>	North Sea	1,2,4,5	- peer-reviewed publications - presentations at conferences
<b>6. IEO</b>			- Peer-reviewed publications - Presentations at conferences and organization of workshop and sessions (e.g. FishForum organized by FAO, December 2018; International Larval Fish Conference, 2019)
<b>7. University of Bergen</b>		2	- Peer-reviewed publications - presentations at conferences, training course
<b>8. Ifremer</b>	Bay of Biscay		- Peer-reviewed publications on new biological knowledge and biomass estimates for blackspot seabream and rays (starting month 3) - Annual engagement with ICES stock assessors for thornback ray and blackspot seabream at relevant ICES working group (starting month 12)
<b>9. University of Kiel</b>		3,5	- ICES ASC 2018 Poster Game: Design of the game, incl. raising awareness for the PANDORA project - Peer-reviewed publications - Presentations at conferences
<b>10. SNF Centre for applied research</b>	North Sea, Baltic Sea	3,4	- Peer-reviewed publications - Presentation at the EAFE Conference 2019 (2-4 April), in Santiago (de Compostella; Galicia; Spain)
<b>13. CSIC</b>		5	- peer-reviewed publications - presentations at conferences

<b>14. TI Sea Fisheries</b>	North Sea	5	<ul style="list-style-type: none"> <li>- Publication on factors influencing recruitment as well as a publication on multi species mixed fisheries management strategies (month 12-48)</li> <li>- awareness raising at AC meetings (month 3 ongoing)</li> <li>- presentations/working papers at working groups meetings and conferences (ongoing)</li> </ul>
<b>15. University of Amsterdam</b>			<ul style="list-style-type: none"> <li>- Publications in peer-reviewed, international journals</li> <li>- Presentations at national and international scientific conferences</li> </ul>
<b>17. ICES</b>	all	5	<ul style="list-style-type: none"> <li>- ICES will provide facilities for training courses, accessible to industry and fisheries scientists. Courses will be implemented across workpackages, to provide a range of topics. The main instruction mode will be physical courses, but some topics may also be offered online. Identification of training topics and instructors will be carried out following a scoping meeting in 2018.</li> </ul>
<b>18. SOCIB</b>	Western Med	1,2,4,5	<ul style="list-style-type: none"> <li>- peer-reviewed publications</li> <li>- organization of specific workshops</li> <li>- communication in congresses; dissemination in specific forums (OOSTOP)</li> </ul>
<b>19. UHI</b>	NW shelf	1	<ul style="list-style-type: none"> <li>- conference and working group papers/ presentations, scientific report / paper on progress</li> </ul>
<b>22. DPPO</b>			<ul style="list-style-type: none"> <li>- conference and working group papers/ presentations, scientific report / paper on progress</li> </ul>
<b>KEY END-USER: POLICY MAKERS &amp; FISHERIES MANAGERS</b>			
<b>4. University of Hamburg</b>	all	5	<ul style="list-style-type: none"> <li>- Creation of report cards and fact sheets (for download from the website) (starting month 3)</li> <li>- Publication of case study results on the website (starting mid-project)</li> <li>- Presentation of and link to PANDORAs Box of Tools on website (starting approx month 30)</li> <li>- Provision of manuals and training materials for fishers and other stakeholders through the website (starting approx month 20)</li> </ul>
<b>5. Cefas</b>	North Sea	1,2,4,5	<ul style="list-style-type: none"> <li>- Description of case study results (M36)</li> <li>- Demonstration of new model results (M36)</li> </ul>
<b>6. IEO</b>			<ul style="list-style-type: none"> <li>- Direct communication with assessment models at GFCM and ICCAT</li> <li>- Attending yearly the Species Groups, Ecosystem group and Methods group in ICCAT</li> <li>- Invited speakers at GBYP workshop on maturity of tuna in November 2018</li> </ul>
<b>7. University of Bergen</b>		2	<ul style="list-style-type: none"> <li>- Scientific report (M18)</li> </ul>
<b>8. Ifremer</b>	Bay of Biscay	5	<ul style="list-style-type: none"> <li>- Description of case study results (M36)</li> <li>- Demonstration of new model results (M36)</li> </ul>
<b>9. University of Kiel</b>		3	<ul style="list-style-type: none"> <li>- Description of case study results</li> <li>- Demonstration of new model results</li> </ul>
<b>11. HCMR</b>	Aegean Sea	5	<ul style="list-style-type: none"> <li>- Description of case study results (M36)</li> <li>- Demonstration of improved assessment models (M36)</li> </ul>
<b>13. CSIC</b>		5	<ul style="list-style-type: none"> <li>- Description of case study results (M36)</li> <li>- Provide relevant results to GFCM and STECF working groups</li> <li>- Get feedback on key end users needs</li> </ul>

<b>14. TI Sea Fisheries</b>	North Sea	5	<ul style="list-style-type: none"> <li>- Description of case study results (M36)</li> <li>- Help with DSTs</li> <li>- Provide relevant input to ICES and STECF working groups, where TI-SF people are present (ongoing)</li> <li>- Get feedback from relevant working groups where TI-SF is present (ongoing)</li> </ul>
<b>15. University of Amsterdam</b>			<ul style="list-style-type: none"> <li>- Meetings with fisheries managers to inform them about the consequences of density dependent fish growth for management strategies</li> </ul>
<b>17. ICES</b>	All	1,5	<ul style="list-style-type: none"> <li>- Discussion with DGMARE of key issues for provision of advice in 2019 (M5)</li> </ul>
<b>18. SOCIB</b>			
<b>19. UHI</b>	North Western Shelf	1	<ul style="list-style-type: none"> <li>- Policy discussion documents on industry self-sampling (M36)</li> </ul>
<b>22. DPPO</b>			<ul style="list-style-type: none"> <li>- Pelagic AC participation</li> </ul>
<b>23. SPFA</b>	North Western shelf	1	<ul style="list-style-type: none"> <li>- Policy discussion documents on industry self-sampling</li> </ul>
<b>KEY END-USER: EUROPEAN FISHERIES</b>			
<b>3. CNR</b>			<ul style="list-style-type: none"> <li>- Organisation of meetings with local stake holder and fisheries organisations (M 10)</li> </ul>
<b>4. University of Hamburg</b>	all	5	<ul style="list-style-type: none"> <li>- Production of short films/videos about developments in case studies; made available via the website (starting month 10)</li> <li>- Articles on the website about proceedings and results of research in PANDORA (starting approx month 10)</li> <li>- Co-organisation of regional series of 3 regional stakeholder workshops (see D5.2) in each case study area / contents: 1st workshop = scoping management needs and biological changes in regions + development of possible management scenarios + gathering input for toolbox and training courses; 2nd workshops = refining management scenarios; feedback on tool box; 3rd workshops = presentation of final management options + tool box (starting month 10)</li> <li>- One-to-one interviews about stakeholder engagement in PANDORA and the fisheries sector with various stakeholders; interviews to be conducted during workshop or stakeholder events (starting month 10, then ongoing)</li> <li>- Design and development of information material for each region/fishery highlighting management options and opportunities for feedback (starting approx month 30)"</li> </ul>
<b>5. Cefas</b>	North Sea	1,2,4,5	<ul style="list-style-type: none"> <li>- - visualisation of economic projections for fleets, etc. (M40)</li> </ul>
<b>6. IEO</b>			<ul style="list-style-type: none"> <li>- Discussion with stakeholders about results in Pandora. Showing the tooland results in the annual ICCAT meetings giving oral talks and documents</li> </ul>
<b>8. Ifremer</b>	Bay of Biscay	5	<ul style="list-style-type: none"> <li>- Guidelines and video for carrying out industry-led survey for blackspot seabream (M36)</li> <li>- Meetings with producer organisations (M6-36)</li> </ul>

<b>11. HCMR</b>	Aegean Sea	5	<ul style="list-style-type: none"> <li>- visualisation of economic projections for fleets, etc. (M40)</li> <li>- articles in industry magazines (M6-24)</li> <li>- One-on-one interviews for fact finding (M6-12)</li> </ul>
<b>13. CSIC</b>		5	<ul style="list-style-type: none"> <li>- get feedback on key end users (seafood marketing)</li> <li>- one to one interviews to get feedback on key end users</li> </ul>
<b>14. TI Sea Fisheries</b>	North Sea	5	<ul style="list-style-type: none"> <li>- Visualising economic projections for fleets (M40)</li> <li>- Co-organisation of the 3rd regional workshops</li> <li>- Presentations at North Sea AC meetings (M3 ongoing)</li> </ul>
<b>15. University of Amsterdam</b>			<ul style="list-style-type: none"> <li>- Meetings with fisheries organisations to inform them about the consequences of density dependent fish growth on yield and stock dynamics</li> </ul>
<b>17. ICES</b>	All	1,5	<ul style="list-style-type: none"> <li>- Presentation of annual advice at BSAC, PELAC and NSAC</li> </ul>
<b>18. SOCIB</b>			<ul style="list-style-type: none"> <li>- Interviews with key end users</li> <li>- demonstration workshops; on-line data sets</li> </ul>
<b>19. UHI</b>	North Western Shelf	1	<ul style="list-style-type: none"> <li>- videos and images of self sampling to support training workshops and reports</li> <li>- articles in industry magazines (M12-36)</li> </ul>
<b>22. DPPO</b>			<ul style="list-style-type: none"> <li>- Articles in Danish fishery magazine and meetings face-to-face with fishermen</li> </ul>
<b>23. SPFA</b>	North Western shelf	1	<ul style="list-style-type: none"> <li>- Videos and images of self sampling to support training workshops and reports</li> </ul>

## Appendix 2: Survey questionnaire S1 for input from Case Study leaders and fishers/fisheries managers/policy- and decision-makers/NGOs



**PANDORA -**  
Paradigm for New Dynamic  
Oceanic Resource Assessments

### Survey on Biological Developments and Management Needs

The Blue Growth of European fisheries is at risk. Risks in European fisheries emerge due to over-exploitation, unforeseen changes in stock productivity, loss of markets for capture fisheries due to aquaculture, future trade agreements opening European markets to external fleets, and fluctuations in the price of oil and other business costs. All of these risks need to be considered when providing advice needed to sustainably maximize profits for the diverse array of fisheries operating in European waters and to help safeguard the benefits this sector provides to the social coherence of local, coastal communities.

**To address the abovementioned risks in the fisheries sector, improve stock assessments, and contribute to the short- and long-term sustainability of Europe's fisheries, PANDORA (Paradigm for New Dynamic Oceanic Resource Assessments) aims to:**

1. Create more realistic **assessments and projections** of changes in fisheries resources by utilizing new biological knowledge including, for the first time, proprietary data sampled by pelagic fishers.
2. Advice on how to secure long-term sustainability of EU fish stocks and elucidate tradeoffs between profitability and number of jobs in their fisheries fleets. **Provide recommendations** on how to stabilize the long-term profitability of European fisheries.
3. Develop a public, **internet-based resource tool box** (PANDORAs Box of Tools), including assessment modelling and stock projections code, economic models, and region- and species-specific decision support tools; increase ownership and contribution opportunities of the industry to the fish stock assessment process through involvement in data sampling and training in data collection, processing and ecosystem-based fisheries management.

Combining the efforts of 25 partners from universities, national laboratories, industry and advisory bodies, this project will create new biological knowledge, new collaborative networks and new mechanisms to ensure relevance, utility and impact.

#### The PANDORA Survey

In the frame of our project Pandora, we kindly would like to ask you to fill in a survey questionnaire. The aim of this survey is to check if the developments in fish biology and fisheries management that we are working on are relevant to your region. Furthermore, we would like to see if there are additional issues related to stock assessment that we should consider in the Pandora project.

The questionnaire is attached to this email. We would appreciate if you would take the time to fill in your answers. Instructions for the return of the questionnaire can be found in the attached document. In case you have any questions, please do not hesitate to contact us.



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## Background Information

Organization/institution/company:

Stakeholder group (please choose):

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Fisher         | <input type="checkbox"/> Processing industry | <input type="checkbox"/> Producer organization |
| <input type="checkbox"/> NGO            | <input type="checkbox"/> Government/policy   | <input type="checkbox"/> Research/science      |
| <input type="checkbox"/> Stock assessor | <input type="checkbox"/> Other               |  |

Region (please choose):

- |   |                                     |   |
|---|-------------------------------------|---|
| <input type="checkbox"/> Baltic Sea       | <input type="checkbox"/> North Sea  | <input type="checkbox"/> Northwestern European Shelf    |
| <input type="checkbox"/> Bay of Biscay    | <input type="checkbox"/> Aegean Sea | <input type="checkbox"/> Northwestern Mediterranean Sea |
| <input type="checkbox"/> Strait of Sicily |                                     |   |

## Topic 1: FISH STOCK AND FISHERIES MANAGEMENT

1. What species and stocks are of greatest interest to you?

2. What is your perception of the effectiveness and quality of current stock assessments?

3. Is there anything that you would like to change in current stock assessments?



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**4. From your perspective, what are the most pressing management issues**

**a) currently?**



**b) potentially in the future?**



**5. Is there anything that you would like to change in current management practices?**



## Topic 2: CHANGING ECOSYSTEMS

**6. Are any new fisheries developing in your region? If yes, for which target species?**

**7. Have you seen changes in the spatial distribution of certain fish stocks? If yes, which ones?**

**8. Have you observed any changes in fish biology (size, weight, feeding, behaviour etc.)? If yes, please give examples.**

**9. In your opinion, what are the reasons for the changes in fish biology that you observed?**



**Topic 3: COLLABORATION BETWEEN  
FISHERIES SCIENTISTS, INDUSTRY + MANAGERS**

**10. Are you currently collaborating with fisheries scientists or did you in the past? If yes, please state how.**

**11. Do you know any examples of how data/information from fishers are used by fisheries scientists?**

**12. In your view, what data/information from fishers would be particularly valuable to fisheries scientists?**

**13. What challenges do you perceive in cooperation with fisheries scientists? Please give brief examples from your experience.**

**14. Are you aware of any initiatives to increase collaboration?**

**15. Additional to existing initiatives, which measures would increase cooperation between fishers and fisheries scientists?**

**16. May we contact you during the lifetime of PANDORA regarding an interview about your perspective on science-policy or science-industry cooperation?**

Yes

No

**Thank you very much for your time and effort.**

Please email the completed survey and the attached consent form to:

**Vera Köpsel**

PANDORA Project

Communication & Stakeholder Engagement

Institute for Marine Ecosystems and Fisheries Science,  
University of Hamburg

[vera.koepsel@uni-hamburg.de](mailto:vera.koepsel@uni-hamburg.de)



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## Appendix 3: Survey questionnaire S2 for input from stock assessors

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### PANDORA – Input for D1.1 – Short Questionnaire

Please consider the following questions. The answers will be used to help the EU Pandora project develop stock assessment tools that are relevant to regional management challenges.

**Thank you very much for your time and effort!**

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#### Topic 1: FISH STOCK AND FISHERIES MANAGEMENT

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1. What species and stocks are you responsible for assessing?
2. What is your perception of the effectiveness and quality of current stock assessments?
3. Is there anything that you would like to change in current stock assessments?
4. From your perspective, what are the most pressing assessment issues
  - a) currently?
  - b) potentially in the future?

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#### Topic 2: CHANGING ECOSYSTEMS

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5. Are you aware of any new fisheries developing in your region? If yes, for which target species?
6. Have you seen changes in the spatial distribution of certain fish stocks? If yes, which ones?
7. Have you observed or have you discussed (e.g. at ICES Expert Group meetings) any changes in fish biology (size, weight, feeding, behaviour etc.)? If yes, please give examples.
8. In your opinion, what are the reasons for the changes in fish biology?

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### Topic 3: Improving existing stock assessment models

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9. Regarding your specific stock(s), what parameters are most uncertain and what data are most needed to reduce these uncertainties?
10. If considerable, new knowledge was available on one or more of the four processes (below), which one(s) (if any) might be most relevant to improving assessments made on the stocks you study?
- a) Density dependence      b) Food web interactions  
c) Spatial distribution      d) Environmental (abiotic) drivers?

Please comment on your answer.

11. What improvements in stock assessment models could be most easily implemented within the next two to three years?
12. Do you think it is a useful idea to develop an online tool box to improve the processes of stock assessment and fisheries management? Have you ever used an online toolbox before or would you use one in the future?

**Thank you very much for your time and effort!**

**Please return the completed questionnaire to:**

Vera Köpsel

PANDORA Project  
Communication & Stakeholder Engagement

Institute for Marine Ecosystems and Fisheries Science, UHAM  
[vera.koepsel@uni-hamburg.de](mailto:vera.koepsel@uni-hamburg.de)

## Appendix 4: PANDORA Consent Form for digital surveys in PANDORA



**PANDORA** -  
Paradigm for New Dynamic  
Oceanic Resource Assessments

### Consent Form for Digital Surveys

You are invited to participate in a digital survey on biological developments and gaps in fisheries management in your region. This is a research project being led by DTU Aqua (Copenhagen, Denmark) and in cooperation with 24 other project partners from across Europe. This questionnaire should take approximately 15 minutes to complete.

#### Participation

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason.

#### Benefits

You will receive no direct financial benefits from participating in this research study. However, your responses will help us to tailor-fit the PANDORA project to the needs of decision- and policy-makers as well as the European fisheries industry in our different case study regions. In particular, your input will be valuable for furthering our understanding of regional biological and ecological developments in fish stocks as well as current management practices and gaps in the fisheries sector.

#### Risks

There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

#### Confidentiality

You are kindly asked to email your survey answers to Vera Köpsel (University of Hamburg, vera.koepsel@uni-hamburg.de). Data will be stored in a password protected electronic format. The PANDORA project does not collect identifying information such as your name, email address, or IP address. Therefore, your responses will remain anonymous. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study.



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## Interview Consent

At the end of the survey you will be asked if you are willing to participate in an additional interview by phone, in person, or per email. If you choose to provide contact information such as your phone number or email address, your survey responses may no longer be anonymous to the researcher. However, no names or identifying information would be included in any publications or presentations based on these data, and your responses to this survey will remain confidential.

## Contact

If you have questions at any time about the study or the procedures, feel free to contact PANDORA's stakeholder engagement coordinator, Vera Köpsel, via phone at +49 40 42838 6677 or via email at vera.koepsel@uni-hamburg.de.

If you feel you have not been treated according to the descriptions in this form, or that your rights as a participant in research have not been honored during the course of this project, or you have any questions, concerns, or complaints that you wish to address to someone other than the investigator, you may contact the coordinator of this project, Stefan Neuenfeldt, via email at stn@aqua.dtu.dk.

## Electronic consent

Please select your choice below. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that

- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older

Agree

Disagree

First name, last name, date

Electronic signature



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## Appendix 5: PANDORA Consent Form for workshops and stakeholder events

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### Check list for engaging external stakeholders in PANDORA

#### 1) Ethics

- a. Provide to a stakeholder an information sheet (e.g. a letter printed on your organisation letter paper) see an example attached. This is a draft letter that you please edit for the particular consultation. For the convenience of the stakeholders, consider translating it into their mother tongue.
- b. Provide a consent form if any personnel data (as name, e-mail address etc.) will be collected and recorded– see attached (last page). It should be translated in stakeholder's mother tongue if they do not speak English fluently.

#### 2) EC Requirements for dissemination

- a. Use the [project logo](#) in each document or presentation
- b. Use the [EU Emblem \(European Flag\)](#)
- c. Don't forget to include a mandatory funding statement:  
*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 773713.*
- d. Use the [Project template for your presentations](#) (it already contains the required funding statement, EU emblem and project logo)

#### 3) Documentation

- a. Make a note for every meeting. Do not forget to record next actions and outcomes of the event.
- b. Sign a list of participants.
- c. In case of interviews/surveys please document them carefully (either by recording [with consent of the interviewee!] or taking notes) and you do not need to create an additional meeting protocol.
- d. Enter every stakeholder engagement activity into the PANDORA stakeholder activity register: <https://ceres.teamwork.com/#messages/871853> or directly here:  
[https://docs.google.com/spreadsheets/d/12Ser17rTPe\\_HGgMfohl2NIm6MnnfNrjyChAB1HiKdJU/edit?usp=sharing](https://docs.google.com/spreadsheets/d/12Ser17rTPe_HGgMfohl2NIm6MnnfNrjyChAB1HiKdJU/edit?usp=sharing)

#### 4) PANDORA Stakeholder Database

- a. At every stakeholder event, please make people aware of our website and the PANDORA stakeholder database that they can sign up to. The website will likely go online in mid-September. [www.pandora-fisheries-project.eu](http://www.pandora-fisheries-project.eu)
- b. This is the direct link to the stakeholder database: *link will be added*
- c. Privacy statement is available here: *link will be added*



# PANDORA – Paradigm for New Dynamic Oceanic Resource Assessments

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## Horizon2020 PANDORA

### Information Sheet about PANDORA Stakeholder Engagement, Communication and Outreach

PANDORA is a Horizon 2020 EU project with research partners from 11 different European countries. PANDORA seeks to improve existing fish stock assessments and develop management recommendations for regional fisheries according to sustainable yielding practices.

PANDORA, in close cooperation with industry and policy stakeholders in its seven Case Study areas, will collect new biological data and develop PANDORA's Box of Tools, an interactive website including a variety of resources ranging from links to pre-existing tools to front-end platforms for displaying outputs from improved assessment and economic models. For more information on the project, please visit our website: <http://pandora-fisheries-project.eu/>

We would like to invite you to contribute to PANDORA. You have been identified as an important stakeholder which whom we would like to co-frame the research taking place within PANDORA and from whom the participants of the project may learn. Moreover, we would like to share information with you and discuss the insights developed by PANDORA.

Example 1: For this purpose we would like to ask if you would like to participate in a workshop that will be held.....(date, place) .....

Example 2: For this purpose we would like to ask if you would like to participate in an online survey/face to face interview. ....(date, place) .....

We look forward to hearing from you. Please do not hesitate to contact us if something is unclear. We very much appreciate your cooperation.

Your Sincerely,

.....

*Name/ address  
Institute etc.*

# PANDORA Information Consent Form

## Horizon2020 PANDORA Project

### Information Consent Form for PANDORA Stakeholder Engagement, Communication & Outreach

Your involvement as a participant is entirely voluntary and may be withdrawn at any given time.

PANDORA research includes the involvement of natural persons through participatory events such as that being held today. With respect to the nature of the activities to be conducted, these will involve group discussions of different sorts. The PANDORA research is anticipated to provide both immediate and long-term benefits for the involved participants and their associated networks. PANDORA discussions will not involve sensitive topics which might induce psychological stress, anxiety or humiliation, deception, or any potential increased danger to participants. PANDORA will not involve the collection or processing of any sensitive personal data such as health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction, the collection of genetic information or the tracking or observation of participants.

To organise our engagement programme, PANDORA partners may have collected some **personal data** - which might include, for example, your name, your professional/personal email address or your professional/personal telephone number (most often from publicly available sources). Furthermore PANDORA research activities may indirectly result in collecting other personal data information as part of the wider consultation process, e.g. through interviews.

It should be noted that the collection of personal data *per se* is not the main purpose of PANDORA, but personal data may represent information that is pertinent to the research (e.g. the Member State/region in which you are located) or may be required to enable us to carry out mandatory communication activities (e.g. publication of an attendance list). As part of the research project, we will need to be able to attribute your position/view to the organisation you are representing, or to you as an independent expert - depending on what capacity you have been invited to contribute to this event.

**If you do not wish your contact details to be made available to other participants, please let the event organiser know in advance.**

During this event, **photos and/or videos** may be taken to contribute to the communication and outreach objectives of this Horizon 2020 research project. During the performance of these activities, care will be taken to minimise the potential collection of personal data such as name tags.

The collection and processing (e.g. creating a list of invitees for future events) of any personal data will otherwise remain strictly confidential - unless it is relevant for this study, in which case it will be as anonymised, unless specifically discussed and agreed with you in advance.

As a general rule, the PANDORA team will ensure that all presentations and PANDORA reports are made available to all of those attending workshop s and participating in the research.

#### Date and place

#### Signatures:

.....

*Interviewee/Participant*

.....

*PANDORA partner representative*