



Marine Strategy Framework Directive (MSFD)

Common Implementation Strategy

10th meeting of the

Working Group on Data, Information and Knowledge Exchange (WG DIKE)

1400-1800: 29 September 2014

0900-1800: 30 September 2014

Conference Centre Albert Borschette, Rue Froissart 36, B-1040 Brussels

Agenda item:	7
Document:	DIKE_10-2014-06
Title:	INSPIRE marine pilot
Prepared by:	DG Joint Research Centre
Date prepared:	15/09/2014
Background:	<p>The Marine Strategy Framework Directive makes explicit reference to the INSPIRE Directive (2007/2/EC) in Article 19(3), where data and information resulting from the initial assessment and from the monitoring programmes need to be made available to the Commission and the EEA in accordance with the provisions of the INSPIRE Directive.</p> <p>In order to facilitate this obligation, it is necessary to understand the technical requirements of both Directives and to develop processes which accommodate their respective needs. A Marine Pilot project is being initiated, supported by the Interoperability Solutions for European Public Administrations (ISA) programme and led by the JRC with the initial involvement of several interested Member States (DE, DK, NL), in order to progress the implementation of INSPIRE requirements of the MSFD. The practical experiences gained from this Pilot should inform the further uptake of INSPIRE within the MSFD implementation process. WG DIKE will be informed about the progress with this pilot, and will be consulted on draft guidance resulting from the pilot.</p> <p>The specification of the Marine Pilot project is attached.</p>

WG DIKE is invited to:

- a. Take note of the project and advise of any relevant issues that should be taken into account in its implementation.



DG JRC
Unit H.06 Digital Earth and Reference Data Unit

Project Charter

Marine pilot

Date: 16/09/2014
Doc. Version: 1.4



PM² Template v2.1.0 (Oct.2013)

Document Control Information

Settings	Value
Document Title:	Project Charter
Project Title:	Marine pilot
Document Author:	Paul SMITS, Vanda NUNES DE LIMA, Andrej ABRAMIC
Project Owner:	DIGIT
Project Manager:	JRC
Doc. Version:	1.4
Sensitivity:	Limited
Date:	16/09/2014

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Document history:

Revision	Date	Created by	Short Description of Changes
0.1	2014-04-11	Paul SMITS	Draft in PM template
0.2	2014-04-20	Vanda Nunes de Lima	Review
0.3	2014-05-14	Vanda Nunes de Lima	Add Work Packages, executive summary; general review
0.4	2014-05-23	Paul Smiths	
0.5	2014-05-26	Andrej Abramić	Document update
1.0	2014-05-26	Paul Smits	V1.0
1.1	2014-07-01	Andrej Abramić	Update of Document and Work Packages
1.2	2014-07-24	Andrej Abramić, Paul Smits	Update of Document and Work Packages
1.3	2014-08-18	David Connor, Paul Smits	Review and resolving comments
1.4	2014-09-16	Paul Smits	Resolving comments from J. Melles and L.E. Storgaard

Configuration Management: Document Location

The latest version of this controlled document is stored in CIRCABC.

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EXECUTIVE SUMMARY

Directive 2007/2 for the establishment of a infrastructure for spatial information in Europe (INSPIRE) obliges Member States (MS) to make available any spatial data related to environmental policies, or policies that affect the environment. The scope of INSPIRE is determined by the three Annexes to the Directive, which include Environmental Monitoring Facilities and many other themes relevant to the marine environment.

The INSPIRE Directive itself does not require the creation of spatial data, which is left to environmental policies such as the Marine Strategic Framework Directive 2008/56/EC (MSFD). However, if Member States have data available that is within the scope of INSPIRE, they need to be made interoperable. The MSFD requires the collection of a number of data sets via monitoring programmes (Art. 11) and to support assessments (Art. 8) and for these to be made available to the European Commission and EEA in accordance with INSPIRE (Art. 19.3).

In order to facilitate this obligation, it is necessary to understand the technical requirements of both Directives and to develop processes which accommodate their respective needs. A Marine Pilot project is being initiated in order to progress the implementation of INSPIRE requirements of the MSFD. The practical experiences gained from this Pilot, which will focus on a small selection of MSFD-related data, should inform the further uptake of INSPIRE within the MSFD implementation process. The pilot will also look into the relationships between MSFD, EMODnet, and INSPIRE.

In this project with JRC, DG Environment, DG MARE, EEA, initially a few neighbouring Member States from the same (sub) region should be involved. The aim is to gradually extend the pilot activity to include two or more neighbouring MS from each marine region (Baltic, North-east Atlantic, Mediterranean and Black Sea).

The outcomes of the Pilot will be guidance documents and example implementations that can serve as a starting point to further inspire the MSFD.

LIST OF ACRONYMS

CDDR	Cost and Delivery Data Report.
DG ENV	Environment Directorate-General
DG MARE	Directorate-General for Maritime Affairs and Fisheries
DG	Directorate General
DIKE	Data, Information and Knowledge Exchange
EEA	European Environmental Agency
EIONET	European Environment Information and Observation Network
EMODnet	European Marine Observation and Data Network
EULF	European Union Location Framework
GENS	Good Environmental Status
INSPIRE	Infrastructure for Spatial Information in the European Community (Directive 2007/2)
IR	Implementing rules – Commission regulation documents regarding INSPIRE
ISA	Interoperability Solutions for European Public Administrations
JRC	Joint Research Centre
MDI	Marine Data Infrastructure
MIG	INSPIRE Maintenance and Implementation Group
MSFD	Marine Strategy Framework Directive 2008/56/EC
NSDI	National Spatial Data Infrastructures
RSC	Regional Sea Convention
SDI	Spatial Data Infrastructure
TG	Technical Guidance documents related to the data specification of INSPIRE data model
TG	Technical Guidance
WFD	Water Framework Directive 2000/60/EC
WG	Working Group
WISE	Water Information System for Europe

1 INTRODUCTION

Directive 2007/2 for the establishment of a infrastructure for spatial information in Europe (INSPIRE) obliges Member States (MS) to make available any spatial data related to environmental policies, or policies that affect the environment. The scope of INSPIRE is determined by the three Annexes to the Directive, which include Environmental Monitoring Facilities and other themes relevant to the marine environment. The INSPIRE Directive itself does not require the creation of spatial data, which is left to environmental policies such as the Marine Strategic Framework Directive 2008/56/EC (MSFD). However, if Member States have data available that is within the scope of INSPIRE, they need to be made interoperable according to the INSPIRE roadmap (Fig. 1). The MSFD requires the collection of a number of data sets via monitoring programmes (Art. 11) and to support assessments (Art. 8) and for these to be made available to the European Commission and EEA in accordance with INSPIRE (Art. 19.3).

The Marine Pilot is a 16 months Project, funded by the ISA Programme of DG DIGIT, which aims to initiate MSFD data management needs in relation to INSPIRE requirements. The MSFD has strong links with many other policies and legal obligations, all under the scope of the INSPIRE Directive as the European Spatial Data Infrastructure providing the legal and technical frame for the interoperability of spatial data in EU. The Project is starting from the spatial data sets required regarding MSFD reporting and monitoring including all the INSPIRE components for the development of required data flows from Member States (MS) to EC/EEA, and between MS. The role of EMODnet will be explored in relation to requirements from the MSFD implementation, Marine Knowledge 2020, and INSPIRE. The Project will also test the European Union Location Framework (EULF) Blue Print, which consists of recommendations, guidelines, methodologies, and best practices to foster interoperable cross-sector and cross-border sharing and use of location information based on INSPIRE.

The Project is set up under the responsibility of DG JRC, with the collaboration of DG ENV, DG MARE, the European Environmental Agency and the Member States. A Call for participation inviting Member States to volunteer participating will allow establishing a significant part of the Marine Pilot Team, addressing cross-border interoperability.

The Project Steering Board is constituted by DG JRC, DG ENV, DG MARE, DG DIGIT and EEA. Member States representatives sitting in Expert Groups like INSPIRE MIG and MSFD WG DIKE and TG Data, or any other relevant technical group in support to policy implementation regarding the Pilot are kept informed through the liaison of the Steering Board or by the direct participation in the pilot.

The Steering Board is following all phases of the Pilot, from its starting up, planning, execution and delivering, being attentive that the developments are in line with the policy requirements and the content of reporting and data requirements for MSFD (through WG DIKE and TG Data, sustainable and reusable by related policies following the principle of do once, re-use many).

The Project developed under a cross-border and regional context by including if possible countries that share the border and/ or from different regions, with its organisational set up that give particular importance to the capacity building within the public authorities and with its deliveries, contributes to increase the interoperability between different domains and harmonisation across policies.

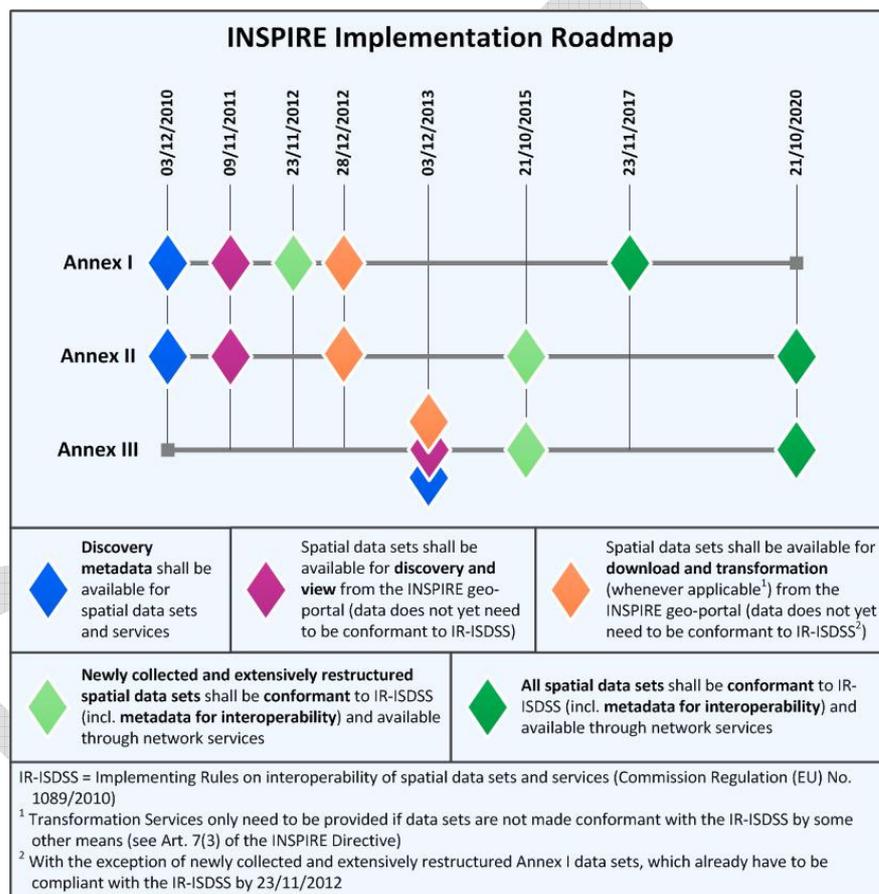


Figure 1. INSPIRE roadmap for implementation.

2 CONSIDERATIONS ON THE USE CASE

The aim of the Pilot project is to promote the use of INSPIRE in the marine domain by identifying, developing and applying best practices for the sharing and re-use of marine spatial data. The use case will focus on the spatial data requirements related to the implementation of MSFD and required data flows from MS to EC/EEA in accordance with INSPIRE and MSFD Art. 19(3). The data flows will be implemented through INSPIRE network services (discovery, view, download and if necessary transformation) for sharing the spatial data in an agreed common spatial data model. Recommendations will be put forward on how make the marine data model in line with INSPIRE. By doing this, the data can be shared not only with EEA and the European Commission (EC) but with other stakeholders that need to consult and use this information, particularly the Regional Sea Conventions. The use case will focus first and foremost on making selected, quality-assured data and model results available. The project will

not provide solutions to all MSFD spatial data requirements, but will provide and document necessary methodology as best practices to implement these.

The use case will explore practical links of MSFD implementation and EMODnet & Marine Knowledge 2020, what the possible data flows are (e.g. MS to EMODnet, but also other way around), and clarify what INSPIRE compliance would mean for EMODnet.

The Pilot will take guidance and lessons learned from existing activities and initiatives, including, the German Marine Spatial Data Infrastructure [<http://www.mdi-de.org/>], the Danish and Dutch MSDIs, the INSPIRE Air Quality reporting pilot, the European Union Location Framework (EULF) Action¹, and re-apply these in a cross-border and regional context, in support of the MSFD implementation.

For the pilot project two groups of MS (organizations) participants will be considered: MS with advanced level of INSPIRE implementation and developed marine SDI; and MS that can adopt best practices and experience in MSFD/INSPIRE implementation from the first group during the project.

The project will also provide technical guidance for sharing and exchange of data sets related to the assessment areas. In doing so, guidelines, common data models, and required software tools will be fine-tuned and tested in participating organizations, helping them to expose INSPIRE-compliant interfaces to data and services. The pilot will address the technical aspects, as well as legal and organizational issues related to INSPIRE, cost/benefit and efficiency aspects, and training and capacity building. The necessary steps to adopt and extend the Project results will be pointed out as a follow up action plan.

3 PROJECT DESCRIPTION

3.1. Scope

3.1.1 Includes ("IN" Scope)

- Use of INSPIRE legal acts, technical guidance documents, and framework documents;
- Overview of MSFD implementing measures related to the spatial data requirements and INSPIRE obligations;
- Overview and quality assessment of already reported MSFD spatial data on Geographical areas to looking at the technical aspects of the datasets and advise on any modifications needed to be compatible with INSPIRE;
- MS/EEA/EC data flow development regarding the MSFD requirements;
- Technical support to advise on INSPIRE compatibility regarding the related developments like the information model for the marine environment;
- Overview of the best practices, experiences and issues of MSDI development, related to the MSFD/INSPIRE application and implementation provided by developers German Marine Spatial Data Infrastructure [<http://www.mdi-de.org/>];
- Initial use-case - development of the data flow MS to EC/EEA, using already developed MSDI;
- Developed demonstrator in cooperation with the EEA that uses the MSFD-related data and services in line with INSPIRE;
- Main use-case, applying the good practices from initial use-case and development of the required data flow MS/EEA;
- Overview and identification of reusable results of the project *“Development of a shared data and information system between the EU and the Regional Sea Conventions”* (first results expected in September 2014);
- Link to INSPIRE compliant services provided by EMODnet and contribution to Marine Knowledge 2020;

¹ http://ec.europa.eu/isa/actions/02-interoperability-architecture/2-13action_en.htm

- Analysis if data and information included in pilot project are reusable for the implementation of other environmental legislation that relates to marine waters;
- Sub-national data flows and services;
- Fine-tuning and configuration of re-usable components (e.g. software) to implement the use cases;
- Training and capacity building;
- Cost and benefit considerations and Validation of EULF Blueprint focus areas Requirements that will enable Reportnet to use INSPIRE.

3.1.2 Excludes ("OUT" Scope)

- Data and information management within the Regional Sea Conventions;
- Operational solutions to all MSFD requirements;
- Development of new software or big adaptations to existing software.

3.1.3 Scope Statement

The scope of the Pilot is to assist public administrations in selected Member States, or organizations acting on their behalf, in bringing marine spatial data management related to the MSFD implementation in line with INSPIRE requirements for selected data flows.

The Pilot will take INSPIRE-related guidance and lessons learned from existing activities (development of national MSDIs, EULF Action, Air Pilot project), and re-apply these in a cross-border context in support of required data flows development (MS to EEA) that are fundamental for some of the MSFD spatial data requirements, possibly reusable for other environmental legislation that refers on the marine areas. The Pilot will be based on existing resources related to INSPIRE Implementing Rules, technical guidance as framework documents, INSPIRE common data model, INSPIRE register, but also documents and methodologies developed by established MSFD working groups (WG DIKE , WG GES).

In doing so, guidelines, common data models, and required software tools will be fine-tuned and tested in participating organizations, helping them to expose INSPIRE-compliant interfaces to data and services.

The pilot will addresses the technical aspects, as well as legal and organizational issues, cost/benefit and efficiency aspects, training and capacity building.

3.2 Success Criteria

The Pilot will be successful if:

- Eutrofication data from at least two MS could be provided by using the developed INSPIRE compliant methods to fulfill the reporting obligations within the framework of MSFD Art. 19(3).
- Established required data flow from organizations in at least two MS to EC/EEA and developed guidance documents for sharing the marine data in the scope of the MSFD using INSPIRE;
- The proposed common INSPIRE-based schemas for the providing interoperable data related to the reporting, monitoring and assessment are accepted and used as part of the common data model;
- INSPIRE-based guidelines for metadata, the common schemas, and network services are used by the participating organizations;
- Data from at least two participating organizations are shared, re-used, and can be accessed through the INSPIRE geoportal;
- The link between EMODnet/MSFD/INSPIRE is clarified.

3.3 Stakeholder and User Needs

ID	Need Description	Priority
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ID	Need Description	Priority
1	ENV/EEA: develop INSPIRE-compliant solutions for the management of MSFD (art. 19)-related data	High
2	ENV: demonstrate how INSPIRE specifications are used and implemented in the marine context	High
3	Member States, EC/EEA: To reduce the administrative burden related to the MSFD reporting; the detailed information still available via decentralized data infrastructure.	High
4	Participating Member States' organizations: fulfil the obligations of multiple directives by the INSPIRE-compliant sharing and the re-use of selected data, respecting the deadlines for making the data available: do once, re-use many.	High
5	Participating Member States' organizations: build-up know-how on the implementation of INSPIRE Directive in the marine domain.	High
6	MARE/EEA: provide recommendations on further work needed to allow interoperability between the EMODnet infrastructure and other communities, using INSPIRE specifications and principles.	Medium
7	DIGIT: promote the outcomes of the ISA programme in general, and test the interim results of the EULF Action in particular (EULF Blueprint)	Medium
8	ENV/DIGIT: collect evidence on the cost and benefit of the use of an INSPIRE-based approach	Medium
9	EEA: develop recommendations for the further development of WISE Marine.	Medium

3.4 Deliverables

ID	Title	Description
D0.1	<i>Final Report of the Marine Pilot</i>	<i>Experiences, recommendations and future work for INSPIRE-compliant marine-related spatial data management. Includes recommendations on the next steps in the process, based on experiences to date, e.g. expanding to other MS and expanding range of topics covered, as well as on maintenance of solutions.</i>
D1.1	<i>Meeting minutes on MSFD and INSPIRE spatial data requirements</i>	<i>Minutes of the workshop that include first overview of MSFD spatial data requirements in relation to INSPIRE</i>
D1.2	<i>Matching table of MSFD and INSPIRE requirements</i>	<i>This report will describe the requirements of INSPIRE in relation to MSFD data management. This will include an indicative roadmap for further actions to be taken outside this Pilot.</i>

<i>ID</i>	<i>Title</i>	<i>Description</i>
<i>D2.0</i>	<i>Mapped MSFD spatial data requirements to INSPIRE data model</i>	<i>Report with matching table of MSFD spatial data requirements that are included in the project to INSPIRE application schemas</i>
<i>D2.1</i>	<i>Draft UML models, XML schemas, and transformation tables (available for participating MS organizations)</i>	<i>Set of INSPIRE solutions for developing MSFD spatial data. It includes UML models, XML schemas, and transformation tables. This solutions will be based on consensus among experts from the participating organizations and INSPIRE experts.</i>
<i>D2.2</i>	<i>Guidelines and testing results</i>	<i>Technical document on the transformation of existing data sets. Based on the testing results, if necessary, the INSPIRE model will be extended.</i>
<i>M2.3</i>	<i>Endorsement by MSFD DIKE & INSPIRE MIG</i>	<i>Confirmation by the DIKE and the INSPIRE MIG that the results from the previous steps fulfil the requirements from the MSFD and INSPIRE.</i>
<i>D2.4</i>	<i>Final version of INSPIRE compliant UML models and XML schemas and guidelines (publicly available on INSPIRE web page)</i>	<i>Final (if necessary updated) version of INSPIRE-compliant UML models, XML schemas, guidelines documents for developing MSFD spatial data. Updated D2.1 if and for application schemas where extension is required.</i>
<i>D2.5</i>	<i>Report on lessons learned for MSFD spatial data modelling</i>	<i>Report that contains analysis, if modelling solutions, used in the project are applicable for the MSFD spatial data requirements not included in the project</i>
<i>D3.1</i>	<i>Guidelines for sharing marine spatial data</i>	<i>Guidelines how to develop and set up the required solutions (with both open source or commercial tools) for the sharing MSFD data. Guidelines include experience and identified best practices from development of German MDI.</i>
<i>D3.2</i>	<i>Report on the development of data flows MS to EEA in relation to INSPIRE requirements</i>	<i>Detail report on development of data flow from MS to EEA, including Initial use case and Main use case in relation to INSPIRE.</i>
<i>D3.3</i>	<i>Feedback on the EULF blueprint</i>	<i>Document that will evaluate if and to what extent the EUFL Blueprint can contribute to the implementation of the pilot.</i>
<i>D3.4</i>	<i>Overview of re-usable software tools and their configuration</i>	<i>Inventory of software tools that can be reused for MSFD data management and data sharing in line with INSPIRE.</i>

<i>ID</i>	<i>Title</i>	<i>Description</i>
<i>M3.4</i>	<i>Demonstrator online</i>	<i>Client software (viewer) up and running that is able to consume MSFD data shared by MS</i>
<i>M4.1</i>	<i>Workshop on implications of INSPIRE for EMODNet projects</i>	
<i>D4.2</i>	<i>Report on recommendations for aligning EMODnet to INSPIRE in relation to MSFD</i>	<i>Technical report on recommendations for aligning EMODnet to INSPIRE in relation to MSFD. Report will be done based on conclusions and solutions provided by workshop.</i>
<i>D5.1</i>	<i>Guidelines for collection of cost and benefit information</i>	
<i>D5.2</i>	<i>Cost-benefit considerations</i>	<i>Elements for the costs and benefits considerations when implementing and using INSPIRE for other policies.</i> <i>Guidelines for collection of cost and benefit information (from EULF)</i>
<i>D6.1</i>	<i>Training package on INSPIRE and MSFD</i>	<i>Training sessions for staff from participating organizations, that will include:</i> <i>Training package on INSPIRE and MSFD;</i> <i>Workshop for training of the pilot participants (Sept 2014);</i> <i>Workshop for training on re-use of marine pilot results (March 2015).</i>
<i>M6.2</i>	<i>Training of the pilot participants (Sept 2014);</i>	<i>Workshop</i>
<i>M6.3</i>	<i>Training on re-use of marine pilot results (March 2015).</i>	<i>Workshop</i>

3.5 Features

Related Need	Features	Deliverable(s)
1	Good understanding of work already done at EU and MS levels, and within projects; document the detailed requirements and gaps; develop proposals for common INSPIRE-based schemas and portrayal rules; tested and well-documented example installation and configuration of software for data sharing in selected participating organizations; inclusion of data in national INSPIRE discovery service; example implementation of software re-using the data made accessible; requirements for future work	D1.x, D2.x, D3.x, D4.x
2	Documented experiences in participating organizations.	D3.x, D4.x
3	Data served through INSPIRE network services;	D2.x, D3.x, D4.x

	demonstration of re-use of published data.	
4	Staff from participating organizations trained on all aspects of INSPIRE-compliant data sharing.	D6.x
5	Staff from EMODnet projects invited to be involved in collection of reference material and in the development of common schemas and guidelines; trained staff from EMODnet projects.	D2.x, D3.x, D4.x, D6.x
6	Re-use of outcomes of selected ISA projects (e.g., CISE, EULF, ARE3NA).	D1.x, D2.x, D3.x, D4.x, D5.x
7	Collected evidence on cost and benefits	D5.2

3.6 Constraints

This Pilot is financed under the Commission-driven EU programme *Interoperability Solutions for European Public Administrations*, through the ISA Action 2.13 European Union Location Framework. There are administrative constraints on the use of the resources.

The success of this Pilot depends on the active participation of staff from organizations in the member states. Whilst there will be resources available to cover some experts, there will be a need for some in-kind contributions of participating organizations.

The development of the common schemas and the guidelines will be done through a working group, involving both fee-paid thematic experts, experts from the participating organizations, and a contracted editor and facilitator. While aiming at consensus within the working group, it is necessary that the solutions that come out of this process are aligned with activities already on-going (e.g., the development of the common marine information model) and agreed and used by all MSFD implementers and Member States that didn't participate at the pilot. For this purpose, a regular interaction with the DIKE is foreseen.

During the project, the Steering Board will propose proper procedures for the governance and decision making concerning the outcome of the pilot.

3.7 Assumptions

It is assumed that this Pilot project is not providing a solution for operational MSFD reporting. The outcomes of this Pilot form the requirements for operational systems, but the developed tools will not in themselves be considered operational at full scale (all Member States), considering the short time available for the first delivery version.

Any thematic aspects like harmonization of thematic content, agreement how to map data requirements for indicators and reporting and INSPIRE data specifications need to be agreed within DIKE and/ or any other relevant community or group. This pilot will not be the place for reaching agreement on specific thematic issues under the responsibility of other Groups. If no agreement can be reached in WG DIKE within the timeline of this pilot, the outcomes of the pilot will be clearly marked as "not endorsed by WG DIKE".

4 COST, TIMING AND RESOURCES

4.1 Cost

The cost of the pilot for the Commission is estimated to be 200K Euro.

This amount will be covered by the ISA budget line associated to the ISA Action 2.13 European Union Location Framework.

These resources will be used to cover thematic experts and INSPIRE experts for work on solutions for making MSFD data available in line with INSPIRE. Type of contracts include the Horizon 2020 contracts for fee-paid experts, study contracts, and Commission Framework Contracts.

4.2 Timing and Milestones

(Please note that the actual timing may vary based dependencies with processes outside the control of the pilot.)

ID	Milestone Description	Target Delivery Date
D0.1	Final report on the Marine Pilot	2016-06
D1.2	Matching table of MSFD and INSPIRE requirements	2014-10
D2.1	UML models, XML schemas, and transformation tables	2014-10
D2.1	First proposal for common INSPIRE compliant schemas for selected MSFD quality descriptors	2014-10
D2.2	Guidelines and testing results	2014-11
M2.3	Endorsement of solutions by MSFD DIKE and INSPIRE MIG	2015-01
D2.4	Final version of INSPIRE-compliant UML models and XML schema	2015-02
D3.1	Guidelines for sharing marine spatial data in line with INSPIRE	2014-10
D3.2	Feedback on EULF blueprint	2014-11
D3.3	Overview of re-usable software tools and their configuration	2015-01
M3.4	Demonstrator	2014-12
M4.1	Workshop on implications of INSPIRE for EMODNet projects	2015-02
D4.2	Report on recommendations for aligning EMODNet to INSPIRE in relation to MSFD	2014-11
D5.1	Guidelines for collection of cost and benefit information	2014-09
D5.2	Elements for the costs and benefits considerations when implementing and using INSPIRE	2015-01
D6.1	Training package on INSPIRE and MSFD	tbd
M6.2/ M2.1	Training for pilot participants	tbd
M6.3	Training on re-use of marine pilot results	2015-03

4.3 Planned Resources

ID	Resource Requirement	Description
	Approximate 7 fee-paid thematic experts for maximum 30 days for agreement on common schemas and guidelines	Paid from ISA budget.
	Editor and facilitator	Use of Framework Contracts; paid from ISA budget
	Staff of participating organizations for contributing to development of common schemas, testing and guidelines	In-kind contributions
	Staff of participating organizations for receiving training	Time of staff to be provided in-kind. Training will be provided by the Pilot.
	Reference material	In-kind contributions

Thematic experts may be from participant organizations, related Commission Expert Groups or sub-groups, MIG pool of experts or other recognised domain expert.

5 APPROACH

5.1 Methodology

- Invite member states' organizations to participate in the pilot;
- Mapping requirements of MSFD and INSPIRE (legal, organizational, semantic and technical);
- Map the required spatial objects related to the monitoring, assessment and reporting included in the project to the INSPIRE common data model, based on existing documentation (e.g., from MDI-DE);
- Analysis of already reported spatial data to EEA, if the provided data can be used as a reference for the marine region or sub-region;
- Propose a common INSPIRE compliant schemas for the requested data;
- Assist participating organizations to transform their data models to the common schemata;
- Document the experience and best practices of MS that build or are in current development of national MSDI;
- Develop initial use case data flow, using the already national MSDI to provide data to EEA, for assessment of national marine geographical areas, taking into account existing documentation (e.g., from MDI-DE);
- Provide training and capacity building to the participating organizations, including development of training material and guidance documents;
- Identify and configure re-usable components (software, etc.), and identify needs for further software development (to be developed outside the context of this pilot);
- Assist participating organizations to develop or update data flows to EEA based on a service-oriented architecture;
- Agree on portrayal rules to view the descriptors in a cartographic way, according to INSPIRE network services, based on the MDI-DE solutions;
- Analyse EMODnet network services (if INSPIRE compliant) and possible data flows from/to MS and EEA;
- Document and analyse the cost and benefit;
- Validate and contribute to the EULF Blueprint focus areas;
- Final report with recommendations.

5.2 Change Management

5.2.1 Project Change

No changes in the project scope and management are foreseen. Any eventual adaptation to new requirements will be previously agreed with DG ENV and EEA.

5.2.2 Configuration Management

The Project set-up a Steering Board constituted by DG JRC, DG ENV, DG DIGIT, DG MARE and EEA. Member States representatives sitting in Expert Groups like MIG, DIKE, Technical Group on Data, or any other relevant technical group in support to policy implementation regarding the Pilot are kept informed through the Steering Board members.

The Steering Board is following the all phases of the Pilot, from its starting up, planning, execution and delivering, being attentive that the developments are in line with the policy requirements, sustainable, streamlining and reusable by related policies reporting.

The Project starts preparing a detailed Project Work Plan which is agreed by DG ENV, EEA and JRC first and presented for agreement within the Steering Board. Milestones are mutually revised and agreed, as well as any eventual adjustment revealed necessary.

DG DIGIT will be kept informed at regular basis according to the normal ISA rules.

5.2.3 Organisational Change

Organisational changes, if necessary, may only occur after common agreement between the partners, based on well documented requirements.

6 GOVERNANCE AND STAKEHOLDERS

6.1 Structure

The marine pilot Steering Board is overseeing the planning and execution of the pilot. It will consist of staff of the Commission (DG Environment, DG Informatics, DG MARE and DG Joint Research Centre) and of the EEA. The Steering Board will also liaise with DIKE and INSPIRE MIG concerning progress with and formal acceptance of pilot deliverables. The Steering Board is chaired by the Commission.

The pilot team will do the work described in chapter 7 and will consist of:

- the experts under contract with the Commission
- representatives from organizations linked to MSFD data management;
- the National Contact Points of INSPIRE or their representatives;
- staff of the EEA, JRC, and DG Environment.

The Pilot Team is led by JRC.

6.2 Roles and Responsibilities

Actor	Role	
DIGIT	Financial contributor, approval of EULF & ARE3NA project WPs. To be kept informed.	
ISA WG Spatial Information and Services	Endorse the work plan for the Marine Pilot	
ENV	Member of project team. Decision making. Endorse the work plan for the Marine Pilot, partake in the steering committee	
DIKE WG	Endorse the work plan for the Marine Pilot, actively participate in the pilot activities	Individual members of DIKE could be part of the project team.
EEA	Member of project team. Decision making. Endorse the work plan for the Marine Pilot, actively participate, sustainability of the pilot/migration of solutions to Reportnet	
EIONET/National Reference Centres for Marine, coastal and maritime	Be kept informed. To provide reference material.	Main interaction between pilot and Member States will be through MSFD / DIKE
EIONET/Topic Centre ICM	Provide reference material/	

(Inland, Coastal and Marine waters)	requirements through the EEA. Possible INSPIRE training. All interactions with the TC need to go through the EEA.	
Regional sea conventions (HELCOM, OSPAR, Barcelona, Bucharest)	To provide reference material. (through work of contractor of DG ENV or by direct interaction with project team).	Clarify if an active participation in the pilot (i.e., be part of the project team).
WISE	To be kept informed.	
JRC Water Resources Unit	Promote INSPIRE in water-related data management.	Eventually members of project team
JRC Digital Earth and Reference Data Unit	Member of project team. Project lead.	
DELTA RES consortium. Contractor DG ENV	Outcome of their work is important for pilot, whereas the pilot will advise them regarding INSPIRE.	
INSPIRE Maintenance and Implementation Group (Policy) and the INSPIRE Thematic Cluster Hydrography, Oceanographic Features, Sea Regions, Atmospheric Conditions and Meteorological Geographical Features	To be kept informed. Promote coordination at national level between the marine and INSPIRE communities, and participate in the pilot if a national organization decides to participate in the marine pilot.	MIWG 21
EMODNET Secretariat	Be kept informed. Engage EMODNET projects through the secretariat	
EMODNET projects	Selected EMODNET pilot to be member of the project team.	
MARE	To invite EMODNET to participate in pilot. Promote INSPIRE in Marine Knowledge 2020.	
Member States organizations tasked with the marine reporting	Member of the project team, influence and shape the project, participate in the pilot by providing data and services, installing and operating INSPIRE components. Participate in training	

7 WORK PACKAGE BREAKDOWN

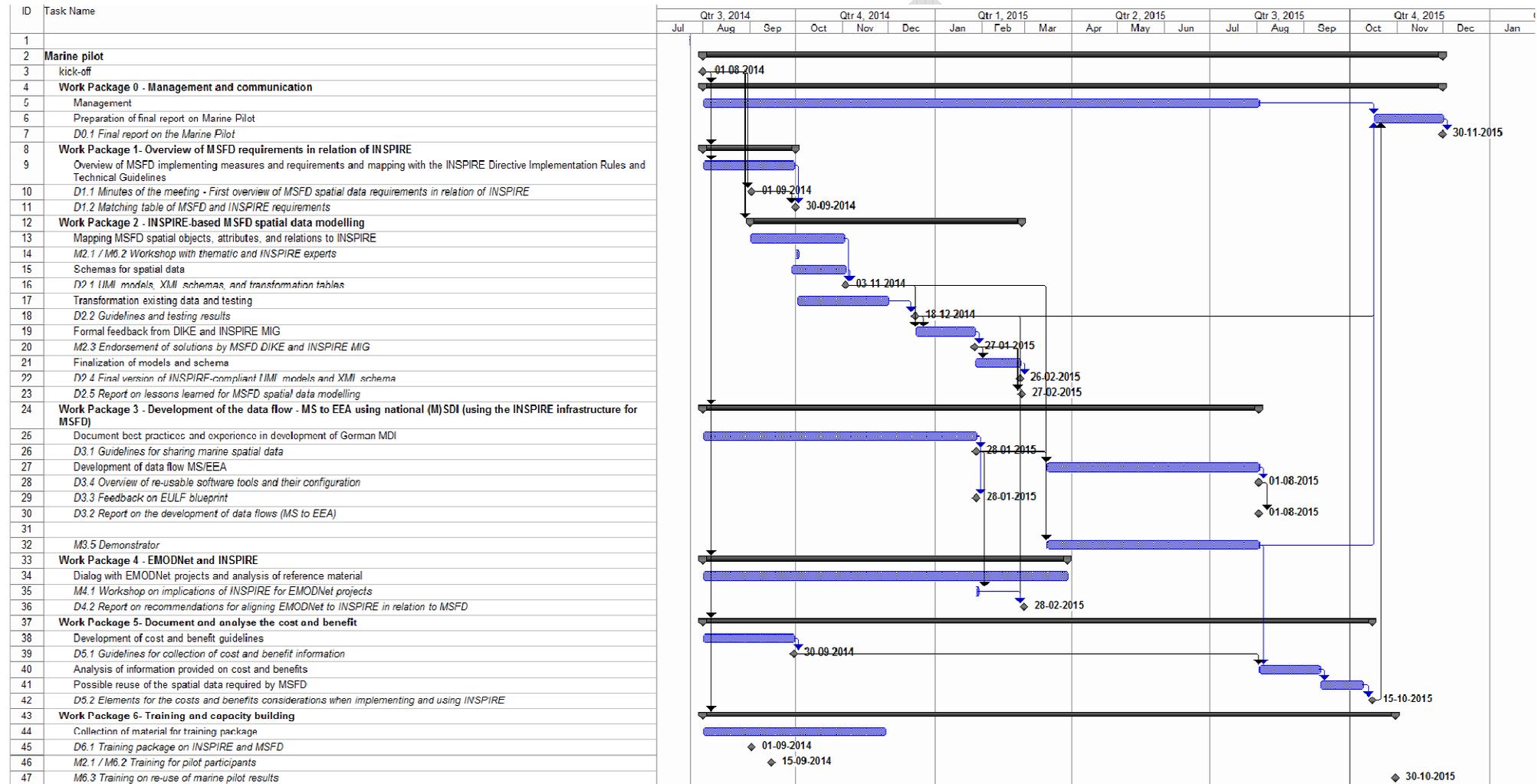
During the preparatory phase of the Pilot, the Marine Pilot Charter will be refined, based on previous agreements between the stakeholders and in particular the Commission Services and EEA. The Marine Pilot Charter is presented to Member States within the INSPIRE MIG, the MSFD community and the ISA SIS WG.

Organizations participating in the MSFD WG DIKE are invited to participate and a [Call for participation](#) is being launched by JRC and DG ENV, to the MSFD DIKE and TG and the INSPIRE MIG Pool of experts. The cross-border and regional contexts are the most desirable ones to work with.

The pilot is organized in Work Packages, linked but also modular to permit adjustments along the development or at the end of its time frame to extend or to complete any of the work packages according to evolving needs, to include other Member State teams, or to extend the work to other component.

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7.1 Gantt Chart



7.2 Work package description

Work Package 0- Management and communication

This work package concentrates on the actual execution of the pilot. It deals with administrative matters, as well as the compilation of the Final Report on the Marine Pilot, which will integrate and refer to the main results of the pilot.

The results of the Work Packages, after agreement by the Marine Pilot Steering Group will be reported to the participating DGs and EEA. WP1 result will be steps forward for implementing the MSFD data requirements in line with INSPIRE. The elements to consider for an operational approach for the eReport will be included.

The results of testing EULF Blue Print will be included, with further recommendations when it is the case.

Start, duration: August 2014, 16 months.

Reference material: Results and deliverables from all WPs

Involved: DG JRC, Steering Group, Contractor

Delivery:

D0.1 Final Report of the Marine Pilot

Work Package 1- Overview of MSFD requirements in relation of INSPIRE

The outcome of this WP1 is an overview of how INSPIRE implementation and MSFD data requirements are related, which technical measures are necessary to implement both directives according to their roadmaps, and a refined roadmap for the necessary actions to make MSFD implementing measures compliant with INSPIRE in a step-wise approach.

The work maps the legal, organizational, semantic and technical requirements of the both Directives. The mapping including the inter-relations with other legal obligations as Natura2000, Habitats and other water-related directives, in view of the streamlining of reporting obligations. All the components of INSPIRE are considered and from that, not only the interoperability of spatial data and services, but also the decentralized services and metadata considered from National, to the reporting delivery. The Regional Sea Conventions may be considered as part of the data flow. The results from ongoing projects in that field will be incorporated.

This work package will determine the next steps to be taken outside this Pilot and drives the other work packages.

This work package will start with a meeting with experts, in which JRC will provide results of the analysis and findings related to the MSFD spatial data requirements in relation to INSPIRE. Results obtained by JRC will be used as a starting point for the work that should be done for development of the D1.2 Matching table of MSFD and INSPIRE requirements. This meeting will secure that all requirements are covered as in development will participate experts involved in INSPIRE and MSFD implementation.

Start and duration: August 2014, 2 month

Reference material: MSFD, all related reference documents, INSPIRE IR and TG, Member States implementing experiences, initial analysis JRC.

Involved: DG JRC (lead), ENV, EEA, MS, Contractor

Deliverables:

D1.1 Minutes of the meeting with experts that include first overview of MSFD spatial data requirements in relation of INSPIRE

D1.2 Matching table of MSFD and INSPIRE requirements

Work Package 2- INSPIRE-based MSFD spatial data modelling

This work will be based on the high-level requirements determined in WP1. This will include the spatial data requirements for the MSFD data (e.g. D5 Eutrophication as defined in the context of DIKE), but it may include as well the spatial aspects of reporting, e.g. related to marine protected areas. The mapping will be done against the INSPIRE Core data models and data specifications Technical guidelines.

This work package includes analysis of spatial data on the Geographical areas, already provided by MS to EEA due the reporting requirement from 2012. These spatial data sets, should be tested, if can be reused for this pilot as a reference/cross border/marine (sub)region data sets.

1- After having the data requirements defined by the dedicated Expert Groups in support of MSFD, following its processes, the INSPIRE spatial objects types, features, attributes, relations (data specifications) will be mapped against the MSFD data requirements. It involves all relevant INSPIRE themes and common requirements. JRC based on the Commission Decision Document 2010/477/EU on criteria and methodological standards on good environmental status of marine waters, made first analysis which INSPIRE application schemas should be used for the Monitoring programmes and related time series and biodiversity data (e.g. D5Eutrophication). Technical solution provided by JRC, on INSPIRE data models that should be applied for modelling results of monitoring programmes regarding the MSFD Article 19, should be presented to the Expert Groups in support of MSFD - dedicated to the development of quality descriptors.

If quality descriptors included in the pilot project requirements are still in development, working group should consider INSPIRE data model, to avoid unnecessary data model extensions. If quality descriptor requirements are developed, it should be analyzed if INSPIRE data model and solution provided by JRC cover all quality descriptor requirements and if extension is necessary.

In case that the reporting requirements that include spatial data are not yet agreed by WG DIKE (quite possible for the reporting on the Programme of Measures and Marine Protected Areas – December 2015), working group should consider proposed INSPIRE application schema for required spatial data, to avoid repeating in the reporting (reporting sheet and spatial data) and to avoid unnecessary data model extensions.

2- The schemas for the spatial data will be identified and only if necessary extended, and the link with the reporting schemas will be developed or provided existing one.

When doing this exercise, the INSPIRE core data models are in many cases enough to accommodate the MSFD reporting obligations in terms of spatial data. But it may also be necessary in some cases to extend them, using the rules defined by INSPIRE data specifications to obtain the extended INSPIRE compliant schemas. This step will involve the creation of the UML models as well as the XML schemas.

MSFD and INSPIRE experts shall be involved in this step.

3- The transformation of the existing data sets to the INSPIRE compliant schemas will be implemented and tested by the Member States that volunteered after the Call for participation. Based on the testing results, the schema will be updated. The related portrayal definitions will be developed as well.

4- Confirmation by the DIKE and the INSPIRE MIG that the results from the previous steps fulfil the requirements from the MSFD and INSPIRE.

5-Analysis if modelling solutions used in the pilot are applicable for the MSFD spatial data requirements not included in the project (as quality descriptors on marine litter, monitoring sub-programmes on invasive species, etc...).

Start and duration: September 2014, 6 months

Reference material: MSFD related reference documents (and report sheets), INSPIRE IR and TG, Member States data sets, results from the Contractor of DG ENV, results from activities on the CDDR at the EEA.

Involved: DG JRC, ENV, EEA, volunteer MS, Contractor

Deliverables:

D2.0 Mapped MSFD spatial data requirements to INSPIRE data model

D2.1 Draft UML models, XML schemas, and transformation tables

D2.2 Guidelines and testing results

M2.3 Minutes of meeting DIKE and MIG

D2.4 Final version of INSPIRE-compliant UML models and XML schemas (only if and for application schemas where extension is required)

D2.5 Report on lessons learned for MSFD spatial data modelling

Work Package 3- Development of the data flow - MS to EEA using national (M)SDI

1. Document best practices and experience in development of German MDI
On the experience of development German Marine Spatial Data Infrastructure, German Federal Maritime and Hydrographic Agency in collaboration with JRC will document best practices and guidelines will be developed for setting up the required technical solutions for the sharing of MSFD data and development Marine SDI – that can be applied as well for the other thematic communities. The focus will be on the organization, technology –network services architecture, common principles, licensing, user requirements as experience on the use of data.
As part of this, a workshop is foreseen to share best practices between Member States as there are other current national MSDI in development.
2. Development of data flow MS/EEA using a pull-process

Initial use case

Include development of data flow from MS to EEA within already established and INSPIRE compliant SDI that integrate MSFD data. EEA will set-up an application that consumes data from INSPIRE compliant network services operated by the participating organizations, in order to view the data with the agreed portrayal rules. The Demonstrator will consume quality-assured observation data (related to the one quality descriptor, e.g. eutrophication) and the modelling results.

Main use case – development of data flow MS/EEA

Based on the guidelines and best practices, and if necessary, open source software and commercial tools will be identified and configured to support the sharing of MSFD-related data for organizations participating in the pilot. The results from the air quality pilot on services for download Sensor Observation Service (SOS) will be taken and reused when applicable.

To develop data flow from MS to EEA is necessary spatial data infrastructure. MS can develop MSDI as a part of the National SDI, using the guidelines developed in the step 1 Work Package 3.

Other option is that MSFD implementers use already developed national SDI. Until now, 24 MS (information from INSPIRE Geoportal) developed their National Spatial Data Infrastructures (NSDI) where they share data and provide discover, view and download services. Most of these NSDI follow the INSPIRE roadmap and share the data and metadata in line with required standards. These NSDI's, should be a core of the piloting system in order to enable data flow from MS's to EEA and open public access

3. The EULF Blueprint will provide recommendations on a number of focus areas, notably 'policy and strategy alignment', 'e-government integration', 'standardisation and interoperability', 'return on investment' and 'effective governance and partnerships'. This work package will evaluate if and to what extent the EULF Blueprint can contribute to the implementation of the pilot.

Start date and duration: August 2014, 12 months.

Reference material: MSFD related reference documents, INSPIRE IR and TG, Member States' Spatial Data Infrastructure and implementing experiences (e.g., MDI-DE documents will be made available and will be translated if necessary). EULF Blueprint documents.

Involved: DG JRC, ENV, EEA, volunteer MS, Contractor

Deliverables:

- D3.1 Guidelines for sharing marine spatial data
- D3.2 Report on the development of data flows (MS to EEA)
- D3.3 Feedback on the EULF blueprint.
- D3.4 Overview of re-usable software tools and their configuration
- M3.4 Demonstrator online

Work Package 4- EMODnet and INSPIRE

The relationship between INSPIRE, EMODnet, MSFD must be clarified. Member States want to report only once if possible. The Pilot will discuss with the relevant actors the aspects of INSPIRE compliance,

consistent with the previous working packages.

A technical workshop will be organized with EMODnet projects participants; on what implications INSPIRE has for EMODnet and for EMODnet data providers.

As well, it will be explored possibilities as MS data flow to EMODnet, contributing to Marine Knowledge 2020, but also data flow EMODnet to MS contributing to MSFD implementation.

Start and duration: August 2014, duration 8 months.

Reference material: EMODnet related reference documents, INSPIRE IR and TG, Member States implementing experiences, preliminary outputs of other work packages.

Involved: DG JRC, DG MARE, EMODnet secretariat, Projects, DG ENV, EEA, volunteer MS, Contractor (TBD)

Deliverable:

M4.1 Workshop on implications of INSPIRE for EMODNet projects

D4.2 Report on recommendations for aligning EMODnet to INSPIRE in relation to MSFD.

Work Package 5- Document and analyse the cost and benefit

1 - At the beginning of the pilot, guidelines for collecting cost and benefit information are defined and distributed to the participating organizations.

2 - During all steps of the Work Packages (excluding WP 1), the elements for the costs and benefits considerations will be collected, following the approach used for the Testing phase of the INSPIRE data specifications (v2.0). Those elements are used for a better understanding of costs and benefits when implementing INSPIRE as well as when using it to implement other legal obligations under its scope, according to SEIS implementation.

3 - Possible reuse of the spatial data required by MSFD included in the data flow MS/EEA and shared by INSPIRE network services in scope of implementation other environmental policies that refers on Marine environment

The results are relevant for all policies involved, including ISA Programme.

Start and duration: September, 13 months.

Reference material: INSPIRE ToR for Costs and benefits considerations used for the Testing phase of Data Specifications; results from other Work Packages.

Involved: DG JRC, EEA, Marine Pilot team, volunteer MS, Contractor

Delivery:

D5.1 Guidelines for collection of cost and benefit information

D5.2 Costs and benefits considerations

Work Package 6- Training and capacity building

The important steps carried out in the Pilot will be subject of training material to make available for the participant MS but also for the entire community. Dedicated workshop will be organized. Training sessions may be scheduled for public authorities that manifest interest.

The training has two aspects: the training of the participants in the pilot in an early stage of the pilot, and a second training package that focus on the re-use of the results of the pilot itself.

Start and duration: September 2014, duration until the end of the Pilot.

Reference material: Existing training material on INSPIRE; results from other WPs

Involved: DG JRC, EEA, Marine Pilot team, Contractor

Delivery:

D6.1 Training package on INSPIRE and MSFD;

M6.2 (Workshop) Training of the pilot participants (Sept 2014 - tbd);

M6.3 (Workshop) Training on re-use of marine pilot results (March 2015 - tbd).

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