GROWTH AND INNOVATION IN OCEAN ECONOMY GAPS AND PRIORITIES IN SEA BASIN OBSERVATION AND DATA

THE MEDITERRANEAN SEA

D12.2.2 Six-monthly Progress Report
(04/06/2014– 03/12/2014)

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Table of Contents

Glossary

CMCC - Centro Euro-Mediterraneo per i Cambiamenti Climatici S.c.a r.l. (IT)
CLS - Collecte Localisation Satellites (FR)
CLU - CLU s.r.l. (IT)
EDF EN (FR)
HCMR - Hellenic Centre for Marine Research (GR)
IFREMER - Institut Français de Recherche pour l'Exploitation de la Mer (FR)
INGV - Istituto Nazionale di Geofisica e Vulcanologia (IT)
NKUA - Institut Français de Recherche pour l'Exploitation de la Mer (FR)
OCEANS-CAT - OCEANS Catalonia International SL (ES)
SOCIB - Balearic Islands Coastal Observing and Forecasting System (ES)
UCY - University of Cyprus (CY)
FEM - Association de Préfiguration de l'IEED France Energies Marines (FR)
IH Cantabria - Fundación Instituto de Hidráulica Ambiental de Cantabria (ES)

	Growth and innovation in ocean economy	D12.2.2
EMODnet	Gaps and priorities in sea basin observation and data	Version: V2
European Marine Observation and Data Network		Date: 20 12 2014

Executive Summary

The present report has been generated in order to provide an overview of the activities carried out by the Project "Growth and innovation in ocean economy - Gaps and priorities in sea basin observation and data. LOT No.2 The Mediterranean", in the period ranging from the 4th June 2014 till the 3rd December 2014.

The document has been subdivided into 13 sections: the first one concerns the WP1 Literature Review activities illustrating the main outcomes of the Literature Survey; sections 2 to 8 are related to the activities carried out by the 7 Challenges (WP2-8); section 9 describes the Web portal achievements; sections 10 to 12 are related to progress of WP10 (Organizations of Panels), WP11 (Data Adequacy Report) and WP12 (Project Management) activities respectively; the last section lists the deliverables that have been produced in the reporting period.

In synthesis, the work is well underway and internal deadlines are appropriately considered by the project partners.

During the reporting period 2 projects outputs have been produced:
1) Oil Platform Leak Bulletin (WP4) has been delivered within 24 hours from the DG-MARE request
2) The Literature Survey (WP1) has been produced and disseminated before the end of September

Both outputs have been published on the Maritime Forum.

1. WP1: Literature Review (IFREMER)

This Literature Survey tried to answer the following questions: is there an overview of the data availability and how complete is the data? Is there any statement for 'fitness for purpose' that can be made?

A MedSea Checkpoint methodology has been defined in order to answer these questions. It consists of 4 steps (Section 1.2): 1) establish a framework for information collection that is documenting the input data needed for the 7 Challenges; 2) access, catalog and elaborate input data to be used for the Challenge products; 3) document the availability and appropriateness of the input data sets during the production of the Challenge outputs; 4) analyse the fitness for purpose of the input data for the Challenge products.

An important result of the survey is the identification of the main characteristics required by the Challenges, the main data sources and datasets needed by the Challenge for each characteristic category. A detailed list (greater than 500 entries) was given in the Annex 3.

The methodology to assess 'appropriateness', 'availability' and 'fitness for purpose' has been applied to 18 'Use Cases' as substitute of the future Challenge outputs.

Use case ID	Long name	Environmental Matrix of interest	Related EMODNET challenges
AM1	**SCREAM (Spatially Continuous Resource Economic Analysis Model)**	Air and human activities	CH-1
AM2	**The MARINA-Platform project**	Air, Marine Waters	CH-1
AM3	**Oil spill forecasting for the Lebanon accident case**	Air, Seabed, Marine waters and human activities	CH-3
AM4	**Storm surge and wave modelling for coastal extreme events**	Air, Marine waters and seabed	CH-4
AM5	**Coastal upwelling indicators**	Air	CH-6, CH-5
AM6	**Oil Spill Decision Support System; Don Pedro vessel spill on Ibiza beaches, July 2007**	Air Marine waters Seabed Biology/biota	CH2, CH3, CH5,CH6
MW01	**EEA Climate Change Report Assessment**	Marine Waters	CH2, CH4, CH6
MW02	**Use of global datasets for hydrological predictions**	Fresh Water	CH7
MW03	**Near-real time in situ data for calibration/validation**	Marine waters	CH4, CH3, CH6
BB01	**Assessment of Mediterranean Sea stocks**	Biology/biota and Human activities	CH5
BB02	**Alien species and stocks**	Biology/biota	CH5
BB03	**Fishery impact on the sea floor in the MFSD**	Human activities	CH5
BB04	**Fishery impact on sea turtles in the**	Biology/biota	CH5

	Mediterranean Sea		
SBD01	**RESPONSE Project – LIFE Environment program**	Seabed and Human activities	CH3, CH4
SBD02	**Assessment of Coastal Protection in Europe**	Seabed, Human activities and Marine Water	CH2, CH3, CH4, CH6
SBD03	**Mediterranean Beach Erosion Study Cases**	Seabed	CH4
SBD04	**Tsunami travel time maps**	Seabed	CH4
SBD05	**Relevant bathymetry for biological assemblages of conservation interest in the submarine canyons and numerical modelling**	Seabed Marine waters, Biota, Human activities	CH1, CH2, CH3, CH4, CH5

Results from these study cases indicate that for characteristics similar to the one listed by the Challenges, the 'appropriateness' is most of the times related to:
1) 'Time extent and resolution'
2) 'Spatial resolution and extent'
of the characteristics. For 'availability' instead we found that there is a large difference between environmental matrices. In particular:
1) for marine water availability is high, normally data are free of charge and available;
2) for seabed data availability is high for low resolution data while high resolution is difficult and data are proprietary;
3) for fresh waters and biota/biology the situation is mixed and data availability is medium to low and data have restricted access.
4) for the air matrix characteristics the availability is highly mixed, going from fully open and accessible to closed and difficult. This is related to the difference among real time data and long term reconstructed time series.

If fitness for purpose can be defined simply as the sum of appropriateness and availability for our Use Cases, it seems that the fitness for purpose is:
1) Medium to low for Air Matrix Characteristics since space-time resolution is medium to low and availability could be low.
2) High for Marine and Fresh Waters because data space-time resolution is adequate and availability if high, with discovery and downloading with 'a click'.
3) Medium to low for Biology/Biota Matrix characteristics since space-time resolution is still inadequate and visibility if medium to low.
4) Low to high for Seabed Matrix characteristics because resolution is insufficient and coverage poor and access restricted and not visible.

2. WP2 Challenge 1: Windfarm siting (NKUA)

During the reporting period the work carried out by WP2 focused on two main directions:

1. The collection and classification of high resolution environmental data and associated information that can optimally support wind farm siting.

2. The development of a corresponding data base covering the sea areas between Spanish-French and French-Italian borders.

Towards the first direction, a detailed categorization for available, or potentially available, data suitable for the wind farm siting challenge from various sources was organized. The main aim is to provide basic information regarding the corresponding specific characteristics such as accessibility, originating program/organisation, quality, spatial/temporal coverage, description etc. Within this framework a variety of environmental or other associated parameters have been considered: The zonal and meridional wind components, air pressure, air density, specific humidity of the atmosphere and air temperature at different vertical levels (10, 40, 80, 120 and 180m) are the main atmospheric parameters that will be analysed; Sea level, water temperature (several depths), water salinity (several depths), water zonal velocity component (several depths), water meridional velocity component as well as the full 2 dimensional wave spectra over frequencies and directions, wave height (significant), mean wave direction, mean (energy) and peak wave period, swell wave height, maximum expected wave height and bathymetry form the wave parameters data sets. Moreover biology information as well as seabed characteristics are included for birds (species, abundance, migratory patterns), marine mammals (species, size, migratory routes), fishes (species, abundance, reproduction area) and sediments (nature, thickness and spatial distribution) while human related activities are also taken into account: navigation (routes, traffic density and season/concurrency, aerial navigation), underwater objects (presence of cables, wrecks), military activities (exercise area, amarrage), radars restriction area, fishing (reserved areas, routes, traffic), mariculture areas, recreational activities, reglementory (protected areas, historic/archaeology sites), coastal infrastructures: port, distance, access, etc.

The methodologies for classifying this data include a variety of criteria on the Sea Data Network (SDN) discovery group code for variables, the geographic feature characteristic for GIS data sets, the processing level of characteristics (observations, high level analyzed observational product, Forecasts/Hindcasts, Publications, etc.), the production mode (delayed or real-time), the hierarchy data level (dataset, collection of datasets, etc.), the Program/Project name from which the data has been obtained along with the corresponding SDN identifier, the data provider, the data collection/set name, the purpose of the characteristics production, the production and quality assessment specifications references, the intended use title and description (objective, process description, output data), the spatial coverage of the available data/characteristics based on the geographical area SDN code or the exact coordinates and the corresponding spatial resolution, the time coverage in terms of the start data, the end date and the time resolution and the accessibility of characteristics .

All this information has been compiled with the partners working in WP2 in relevant templates and has been described in the deliverables D2.1: Methodology to classify the existing upstream data according to Challenge 1 'Wind Farm siting' and D2.2 List of challenges outputs and the way to reference/ingest and access/share these information.

On the other hand, and towards the goals of Task 1: Database building of the WP, the National and Kapodistrian University of Athens (NKUA) is developing a database in which high resolution modeled data over the areas of interest has been stored. The atmospheric, wave and tidal parameters refered above will be covered utilizing the outputs of the FP7 MARINA project for a 10-year

(2001-2010) of high resolution numerical model simulations. The numerical systems employed for these hindcast simulations are the state-of-the-art regional atmospheric model SKIRON, the ocean wave model WAM, the tidal analysis global model Tidal Model Driver – TMD and the ocean circulation HYCOM (Hybrid Coordinate Ocean Model.

The geographic area covered is extended over the North-Western Mediterranean and especially over the sea borders between Spanish-French and French-Italian waters: Lon 2 – 10,5 E, Lat: 41 – 44,5 N

Figure 2.1: The geographic area covered by Challenge 1.

These data are being stored in a Structured Query Language (SQL) database. Such databases provided a number of advantages in comparison with direct model outputs: data engines, indexes, structure query languages are available among other features that lead to the optimal compression supported by a Graphical User interface system that provides access to specific locations or sub-areas and over predefined time periods.

3. WP3 Challenge 2: Marine Protected Areas (HCMR)

During the second six months of the project this challenge has been collecting information and characterizing upstream data related to Marine Protected Areas (MPAs).

The main efforts have been devoted to the identification and description of use cases related to the MPAs characteristics, and assessment of MPAs networks, inputs needed for the D1.5 Literature Survey Report. As a result, this challenge has proposed 4 case studies associated with Marine Protected Areas in the Mediterranean (ie. Assessment of the connectivity of MPas) .

Since October 2014, we started to define the methodology and workflow for each thematic group. Additionally, we have defined the needs and the challenge products characteristics in order to produce the GIS datasets and the GIS products and incorporate them in the GIS portal (Required Deliverable 3.4 and Required Deliverable 3.5) and the Medesea-ck-pt project web.

One of the results of the Literature Review is that there is a lack of appropriate data to answer tender's questions related to the assessment of the Mediterranean Network of MPAs (Fig. 3.1). An attempt to assess the adequacy of the network will be developed. Moreover other criteria for the network assessment such as replication of the conservation features will be tested.

Complementarily we are also compiling information on scientific publications and reviews indexed at SCOPUS and WEB OF SCIENCE databases related to Mediterranean MPAs and their conservation features along the Mediterranean.
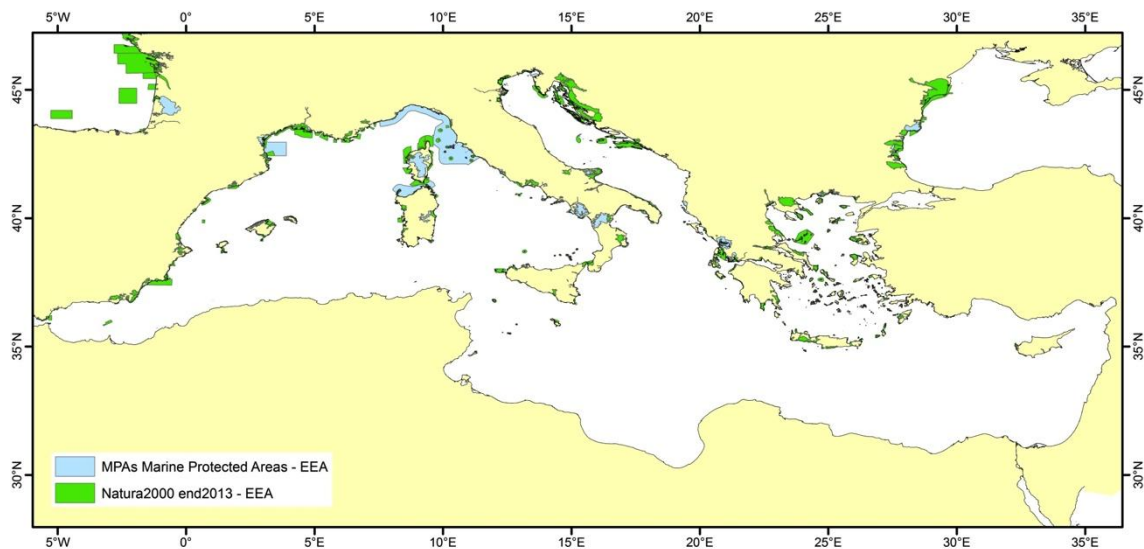

Fig. 3.1 Marine Protected Areas in the Mediterranean

4. WP4 Challenge 3: Oil platform leak (INGV)

The production on request of the Oil Platform Leak (OPL) Bulletin is operational since June 4, 2014. The OPL Bulletin structure template and the working protocol, that must be followed by INGV and UCY, have been established. The Bulletin production is linked to the oil spill predictions coming from the Mediterranean decision support system for marine safety developed by the MEDESS4MS (Mediterranean Decision Support System per la Marine Safety; www.medess4ms.eu) project. Indeed, INGV and OC-UCY after the Bulletin request from EC will run the MEDSLIK and MEDSLIK-II model by using the MEDESS4MS infrastructure.

The results of different forecasting input data sets (i.e. different oil spill model simulations using different forcings -currents, wave and winds-) will be presented side by side in one unique bulletin in order to enable a better comparison among the scenarios. The characteristics of the models used (spatial and temporal resolution, temporal horizon) will be clearly specified in the Bulletin.

Work is ongoing on the integration of the oil spill models simulations with the human activities and environmental habitats that may be disturbed by the pollution events.

A first Bulletin request has been received on the 28/07/2014. The bulletins were produced using different oil spill models (MEDSLIK-II and MEDSLIK) and different meteo-oceanographic data.

The request:

The drillship "Magna Belgica" in the wider area of 'Caliph prospect' off the coast of Libya encountered a technical failure. A fire and crude oil leak began immediately. The spill was contained within a duration of 5 hours with total of 50 tons crude oil loss at sea surface.

After initial repairs the vessel set sail for inspection in Naples. Reaching the strait of Messina around 06:15 CET this morning, the drillship experienced engine and rudder failure leading to a collision with a cargo ship. The drillship was heavily damaged and lost a total load of 2000 tons of diesel fuel oil by 10:20 CET.

The method:

Currents, sea surface temperature, waves and wind forecasts are updated every day. They come from different models and have different time resolution, spatial resolution and forecast temporal horizon (days of prediction in the future).

The bulletins were produced using different oil spill models (MEDSLIK-II and MEDSLIK) and different meteo-oceanographic data (forecasting packages, as reported in the following table).

EMODnet
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Gaps and priorities in sea basin observation and data

D12.2.2
Version: V2
Date: 20 12 2014

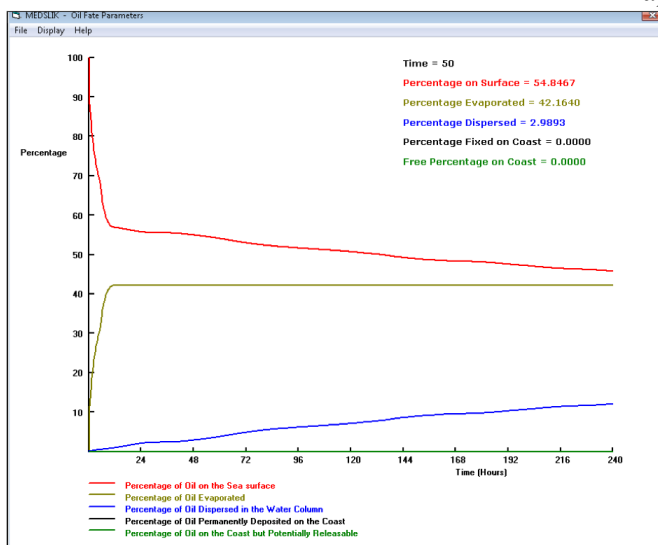| forecasting package	1	2	3	4
oil spill model	MEDSLIK-II	MEDSLIK	MEDSLIK	MEDSLIK
Currents	Copernicus	Copernicus	Copernicus	Copernicus
temporal resolution	1	24	24	1
spatial resolution (km)	6.5	6.5	6.5	6.5
days of forecast	5	10	10	5
update frequency	1	1	1	1
Waves	-	CYCOFOS		CYCOFOS
temporal resolution	-	3	-	3
spatial resolution	-	10	-	10
days of forecast		5	-	5
update frequency		1	-	1
Wind	ECMWF	SKIRON	ECMWF	POSEIDON
temporal resolution	6	1	24	1
spatial resolution (km)	25	5	25	5
days of forecast	5	5	10	5
update frequency	1	1	1	1
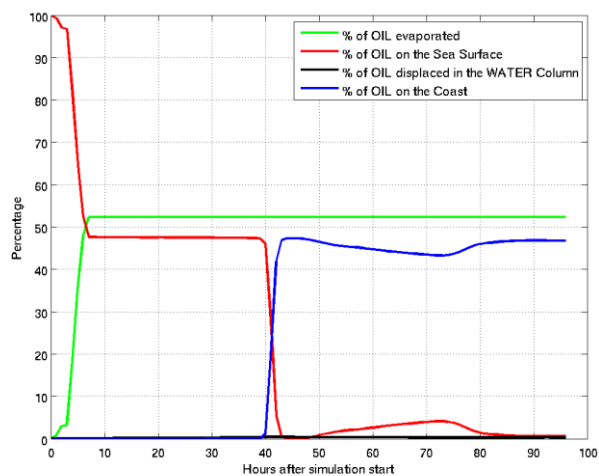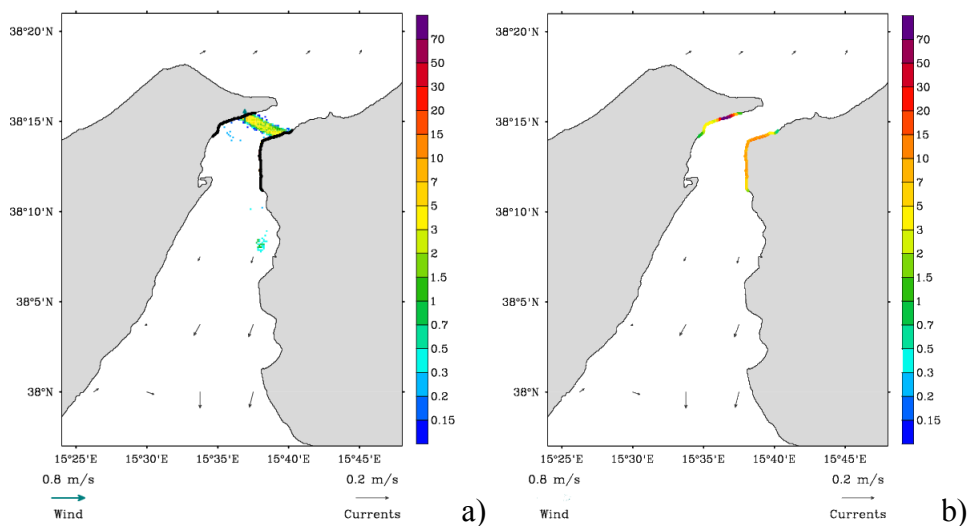
Forecasting Package 1. Messina Strait simulations.
   a) Oil concentration at the surface, at 06:00 CET for 1/08/2014, is visualized with colours from blue to purple in ton/km2. Oil on the coasts is highlighted in black. Surface currents -black

arrows- and wind -green arrow-, at 06:00 CET for 1/08/2014, are displayed in the background.

b) Oil concentration on the coast, at 06:00 CET for 1/08/2014, is visualized with colours from blue to purple in ton/km2. Surface currents -black arrows- and wind -green arrow-, at 06:00 CET for 1/08/2014, are displayed in the background.

c) Evolution in time (during the 96 hours of simulation) of the oil in four compartments: at the surface, dispersed in the water column, evaporated and on the coast.
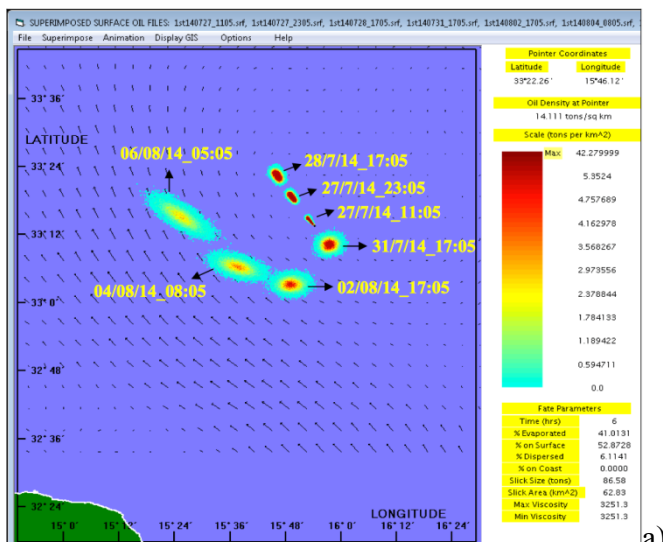
a)

b)

Forecasting Package 3. Caliph Prospect simulations.

a) Superimposed oil spill predictions for 240 hrs (10 days), starting from 27/07/2014 at 5:05 UTC.

b) Evolution in time (during the 240 hours of simulation) of the oil in four compartments: at the surface, dispersed in the water column, evaporated and on the coast.

	Growth and innovation in ocean economy	D12.2.2
EMODnet European Marine Observation and Data Network	**Gaps and priorities in sea basin observation and data**	Version: V2
		Date: 20 12 2014

5. WP5 Challenge 4: Climate and Coastal Protection (SOCIB)

During the second six months of the project this challenge has been collecting information and characterizing upstream data related to sea surface temperature at the surface and at different levels, sea level changes and coastal protection.

The main efforts have been devoted to the identification and description of use cases related to the seabed and marine water characteristics, inputs needed for the D1.5 Literature Survey Report. As a result, this challenge has proposed 4 case studies associated with Marine Water characteristics (ie. EEA Climate Change Report Assessment, Sea level change Studies or Oil Spill Decision Support System) and 4 case studies associated with Seabed characteristics (i.e. Life project RESPONSE, Assessment of Coastal Protection in Europe or Tsunami travel time maps).

Since October 2014, we started to define the methodology and workflow for each thematic group (sea temperature, sea level and coastal protection). Additionally, we have defined the needs and the challenge products characteristics in order to incorporate them in a GIS portal (Internal Deliverable 5.2) and the Medesea-ck-pt project web. This will give rise to an internal deliverable in December 2014 (Internal Deliverable 5.4).

One of the results of the Literature Review is that there is a lack of appropriate data to answer tender's questions related to Coastal Protection (Fig. 5.1). In order to justify this issue we have developed a survey that has been sent to different National Coastal Management Agencies asking about the available information on sediment mass balance at the coast and also information on coastal erosion. Additionally we have contacted with some of the researchers (Spanish and French coastal geomorphologists) who collaborated in EUROSION project in order to unravel the workflow and the way to obtain the data coastal erosion. Complementarily we are also compiling information on scientific publications indexed at SCOPUS and WEB OF SCIENCE databases related to coastal erosion along the Mediterranean.

6. WP6 Challenge 5: Fishery Management (CNR)

During the second six months of the project this challenge has been collecting information and characterizing upstream data related to fishery catches (Task 1) and fishery (trawling) impact on the sea floor (Task 2).

The main efforts have been devoted to the identification of the available information related to the two tasks and description of use cases related to fishery catches and fishery impact characteristics, inputs needed for the D1.5 Literature Survey Report. As a result, this challenge has proposed 4 use case studies associated with the assessment of Mediterranean Sea stocks, the stock assessment of alien species of Mediterranean Sea, the fishery impact on the sea floor in the MFSD and the fishery impact on sea turtles in the Mediterranean Sea.

In the framework of Task 1 synoptic tables with FishStat FAO data and DCF data available from the dissemination website (datacollection.jrc.ec.) have been produced.

In the framework of Task 2 we started to define the methodology to assess the available data coming from different sources (VMS, AIS, etc.).

Additionally, we have defined the needs and the challenge products' characteristics in order to produce the datasets and the GIS products and incorporate them in the GIS portal and the Medsea-check-point.

7. WP7 Challenge 6: Marine Environment (OCEANS-CAT)

During the second six months of the project this challenge has been collecting information and characterizing upstream data related to chemical parameters around the Mediterranean, particularly from the UNEP Med Pol data base. One of the problems facing these data is the lack of public availability. However, talks are being carried out to make them available through EMODNET.

Complementarily we are looking for more data through the PERSEUS data base and the NOAA World Data Center.

Meanwhile an updated version of the European Chlorophyll trend index has been developed within MyOcean, which is based on regional OC datasets, that product is public available (since today) at: http://www.myocean.eu/web/105-specific-scientific-developments.php

However, we are furthermore improving such a product for the specific case of the Mediterranean Sea, dealing with input datasets and different methodologies.

As soon as we finalize this indicator, there will be no problem to make it available to the EMODNET portal.

8. WP8 Challenge 7: River Inputs (HCMR)

The aim of the present document is to contribute to the overview of the activities carried out by the project in the period from the 4th June 2014 till the 3rd December 2014.

During these six months, challenge 7 has been collecting information and investigating upstream data related to freshwater discharge and temperature, nutrient and sediment loads and eels abundance.

A major task of the challenge during this period of time was the identification and description of use cases related to the fresh water characteristics, inputs needed as a contribution of the challenge to the Literature Survey Report. As a result, challenge 7 has proposed 8 case studies associated with Fresh Water characteristics. Namely, "Long-term freshwater input variation and trends", as well as the "Impact of dams in freshwater losses" are related to freshwater discharge, while the "Impact of climate change/variability on water temperature fluctuation" deals with freshwater temperature characteristic. In addition, the use cases "Long-term sediment transport variation and trends" and "Impact of dams in sediment retention and river delta evolution" examine the sediment loads. Finally, "Long-term nutrient concentration and fluxes variation and trends in river outflows", "Evaluation of river basin nutrient mitigation measures" and "Impact of nutrient mitigation measures and dams in riverine nutrient concentration and fluxes – Effects on eutrophication trends in marine waters" are related to nutrient loads characteristics.

The last couple of months we have started to investigate the relevant databases more thoroughly in order to facilitate our next internal deliverable. This deliverable (D8.4) is due to December 2014 and requires the preparation of a water and material fluxes catalogue from the Mediterranean rivers. Due to the vast amount of information, emphasis will be given to the major rivers and key data sets and our effort will be focusing on the description of the status of the data sets regarding accessibility. During this process, a number of difficulties were encountered. For example, in order to view a number of datasets a registration was required according to data policy of the specific data source and in many cases, although registered as requested there was still no access to the specific data sets. In addition, in several data sources i.e. EMODNET-chemistry, EMODNET-physics, EMODNET-biology, no fresh water characteristics data set could be found since these data sources include data sets referring to coastal/transitional waters. This has to be taken under consideration during the process of meeting the D8.3.2 deliverable which is also due to December 2014 and deals with the revision/ update of Template 2 just before it is inserted into Sextant.

Finally, we have identified the needs and the challenge products in order to input them into the GIS portal and Data Adequacy Report. This will be further enhanced by the conduct and submission of D8.2 deliverable which deals with challenge outputs and the way to reference/ingest and access/share this information.

9. WP9: Web site development (CLS)

This section reports on the progress of WP9 achieved during the last six months.

Three kind of core activities were carried out:
1. Technical expertise
2. Development and set up
3. The web portal service

Note: all deliverables and presentations are made available on internet, in the internal project repository tool.

Technical developments

The technical expertise has covered:
- The high level requirements for the 3 web portal releases (july-august 2014)
- The feasibility study from literature survey outcomes (september - december 2014)
- The final design of the web portal architecture (november 2014)

The high level requirements for the 3 web portal releases

The capabilities deployed for each version will be as follows:

Capacity / release	Alpha (february 2015)	Final
Project information	• Updated and articulated with other web portals (central, forum, GIS)	• Updated information
Dissemination of LS outcomes (first checkpoint activity)	• Inventory of literature • Pdf report • Interactive access & search functionality to a few raw information & synthesis indicators	• Updated information
Upstream data & data search *(different way to look for, with new search criteria: presentation of variables, geographical coverage, vertical coverage, temporal resolution and coverage, nature of coverage ...and access to checkpoint information related to this upstream monitoring)*	• Based on ISO checkpoint information *(quality metadata, template 2)* and state indicators (TBD)	• Updated information (new data, better metadata, challenge assessment revised) • More indicators
Challenge data products	• Web page giving access *(ie referenced and short description)*	• Standard discovery & access

Dissemination of DAR outcomes	• Pdf report	• More indicators
		• Interactive access
		  & search functionality
		  to DAR elements

In February 2015, a new version of the website will be released offering two major functionalities to:

✓ Ingest, update and look after the checkpoint information defined during the literature survey task ,

✓ Navigate within all this information, showing either synthetic or detailed information as reported in the literature survey document.

Independently of web portal releases, the web site content can be <u>continuously updated,</u> taking onboard any new checkpoint information produced by challenges or DAR activities
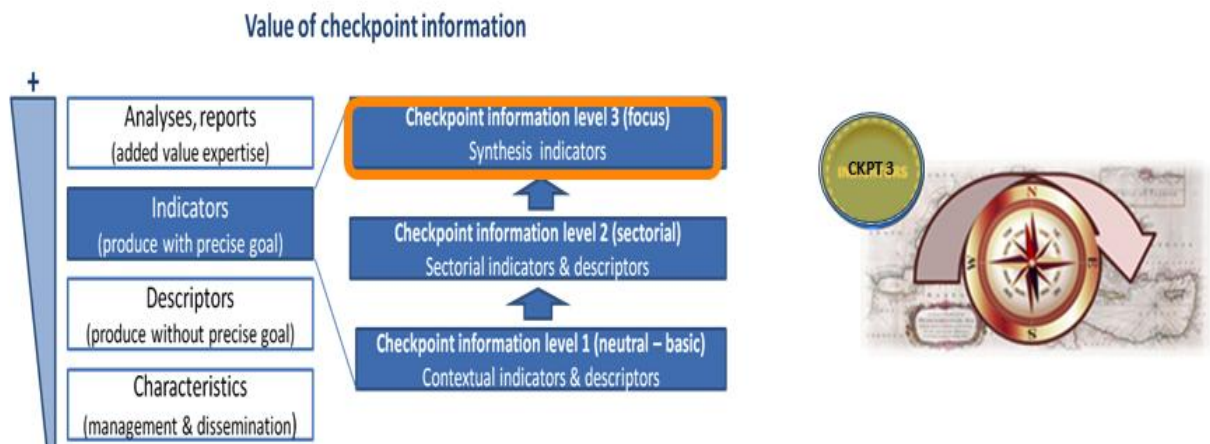
- Literature Survey

- DAR1

- DAR2

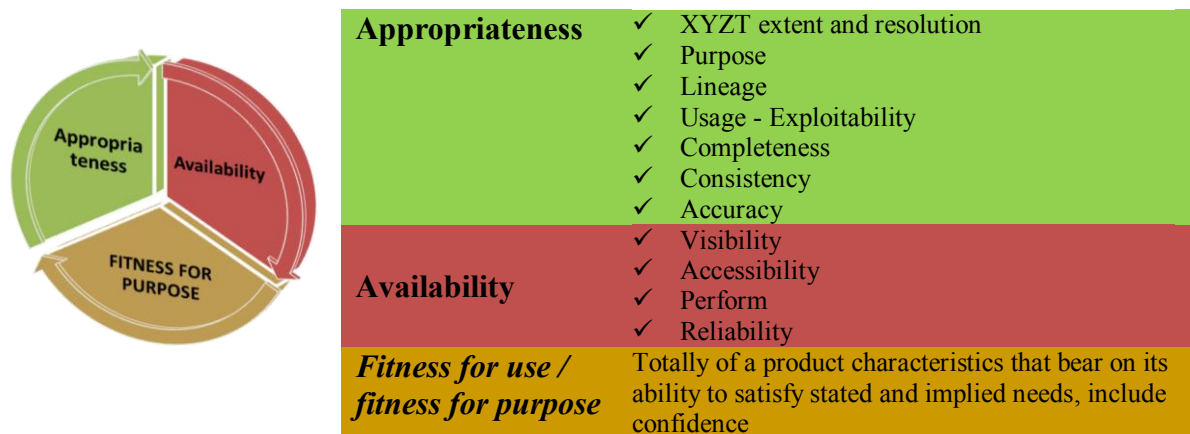- Challenges outputs (both products and checkpoint information)

The feasibility study from the literature survey outcomes

<u>The Checkpoint evaluation mechanism</u> relies on Checkpoint information (Template 2).

✓ The level 1 checkpoint information is defined as an ISO XML schema embedding:

■ ISO 19115/139 for contextual metadata – classical reference, for catalogue

■ ISO 19157 for checkpoint indicators – like fitness for purpose and "used by" any application (use cases), and later on for quality assessment and initiate the process of filling in metadata

Value of checkpoint information

The assessment is organized according to three evaluation criteria:

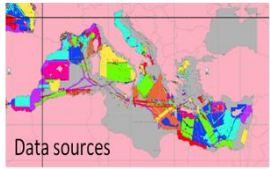| Appropriateness	✓ XYZT extent and resolution ✓ Purpose ✓ Lineage ✓ Usage - Exploitability ✓ Completeness ✓ Consistency ✓ Accuracy
Availability	✓ Visibility ✓ Accessibility ✓ Perform ✓ Reliability
Fitness for use / fitness for purpose	Totally of a product characteristics that bear on its ability to satisfy stated and implied needs, include confidence

Indicators will be defined for the first two critera following the SMART method

S	Significance / Specific
M	Measurable (including Readable –Understandable)
A	Assessment - Acquaintance (+ attachment if needed)
R	Reproducible – Reliable (including meaningful, useful)
T	Time-Bound – Temporal aspects defined to manage change and adjust view

and the indicator will be illustrated as follows (for instance for the Visibility status indicator):

Definition	Indicator Value	Reason for scale value ✓ Scale to be adopted ✓ Motivation to be described	Associated map layer

Ability to identify and to get quickly on the appropriate site delivering the desired datasets from existing catalogues	inadequate partly adequate totally adequate Not relevant	0= not needed; 1=not applicable; 2= no info available; Document only Upon request Social network Google request Ref catalogue	Data sources

Because monitoring characteristics are changing, improving every day, it is important to envisage automatic computing of checkpoint indicators from checkpoint information (metadata). Some checkpoint indicators computation will be integrated or connected with the Web-GIS tool.

The final design of the web portal architecture

The web portal is dedicated to the needs of the following <u>users</u>:

Use Cases [versus solution] Single regional access Consolidated information Each user requiring dedicated interfaces.	Institutional for decision support on observations & monitoring	Upstream data producers or providers	Intermediate users as defined by Copernicus Marine service (downstream, use cases)	End users interested in a regional status on monitoring available and their "quality" to envisage application oriented actions	General audience for showcases on checkpoint fitness for purpose
• Get project information	x	x	x	x	Use case
• Get checkpoint information to identify gaps and priorities	Use Case	x	x	x	x
• Use checkpoint information to search /discover differently upstream data	x	x	x	Use Case	
• Discover/get targeted products (challenges outputs)	x	x	Use Case	x	
• Update checkpoint assessments according to upstream and challenges evolutions	x	Use Case	x	x	
• Show cases of upstream uses	x	x	x	Use Case	x
• Show cases of innovation	x	x	x	x	Use Case

Depending on categories, users drive different web portal scenarios.

The <u>web portal architecture</u> (blue box), supporting as well the Med Sea checkpoint service and Med Sea checkpoint project, has been designed as follows:
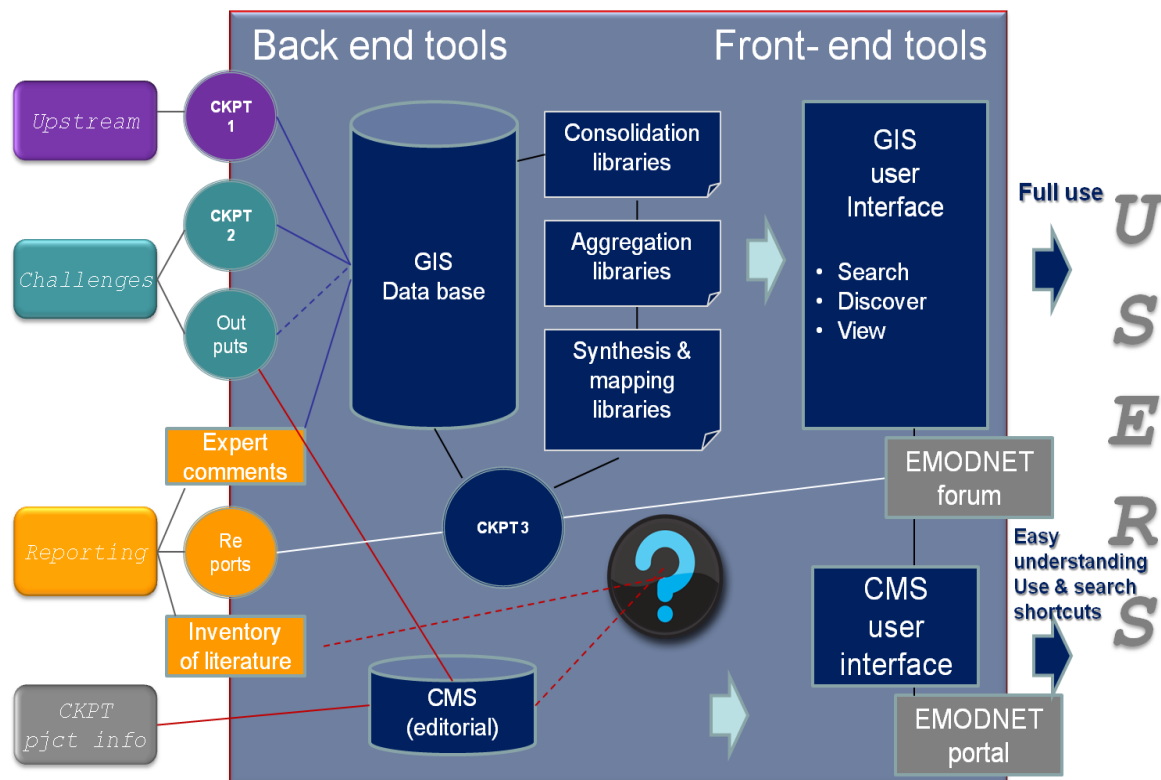
WP9 Meetings and events

Several webex meetings have been organized in order to discuss:
- On 2-3 july 2014, strategy for next upgrades with WP9 partners
  Agenda
  - ✓ Presentation of each partner expertise relevant to WP9 activities (all)
  - ✓ Presentation of Sextant tools (Ifremer)
  - ✓ Review of main project objectives to share the vision and planning (CLS)
  - ✓ Comments from project management (INGV)
  - ✓ Large vision of what is expected for each release and what is not really clear yet, focus on LS outcomes for alpha release (February 2015) (CLS)
  - ✓ What can be done with Sextant and what cannot (Ifremer)
  - ✓ Interfaces between Sextant and CMS (CLU)
  - ✓ What WP9 is expected from others WPs after LS (Challenges and DARs) (CLS)

- On 3 september 2014, coordination with Secretariat- Central portal (Jan Bart and Liesbeth)
  <u>Agenda</u>
  - ✓ Major updates of Portal (CLS)
  - ✓ Answer to questions raised in the document entitled "Regional checkpoint approaches" (CLS)
  - ✓ Plan for dedicated review with secretariat at one stage of MedSea website (all)

- On 5-7 november 2014, participation to annual meeting
  <u>Agenda</u>
  - ✓ Why a GIS portal framework (CLS)
  - ✓ Front-end project portal (CLU)
  - ✓ Current status on GIS developments (Ifremer)
  - ✓ How GIS portal is taking on board template 2 (Ifremer)
  - ✓ How GIS portal could present indicators (Ifremer)
  - ✓ Urgent needs for working groups to set up alpha release (CLS)
  - ✓ Challenge outputs as inputs for web portal or understanding how to produce checkpoint products (CLS)

10. WP10: Organization of Panels (INGV)

The objectives of WP10 are to: (i) organise two meetings of the Panel and external stakeholders where the Data Adequacy Reports are presented by the consortium and (ii) produce two evaluation reports of the Data Adequacy Reports. Five scientific experts have been identified by the consortium as specified in the technical tender proposal, three more experts must be identified by DG-MARE.

During the reporting period the six-monthly report and the first newsletter have been sent by email to the Panel, moreover a copy of the MedSea Literature Survey has been sent to each expert.

The Panel experts have been invited to take part to the first Annual Meeting (see section 12) and one of them, Prof. A. Lamberti participated to the first day meeting. During the meeting a tentative date for the first Panel meeting has been identified (21-22 April 2015) in order to advertise in due time the experts. A list of stakeholders to be invited to the Panel meeting has been identified by the consortium and includes:

1) Environmental Protection Agencies around the Mediterranean Sea

2) Maritime Safety Agencies around the Medditerranean Sea (Cedre, REMPEC?) and EMSA

3) UNEP/MAP (MedPOL) and Croatian PAP/RACs

4) Private companies in consulting

WP10 activities also include the delivery of a six-monthly e-newsletter. At the beginning of June the first MedSea newsletter has been delivered, it is available on the "Publications" section of the project website (http://www.emodnet-mediterranean.eu/publications/). It includes information and news related to the MedSea checkpoint, in particular the following subjects have been briefly reported:

- **Why a Mediterranean Sea basin Checkpoint?** - Informing on the concepts and objectives of the MedSea checkpoint and its challenges.
- **Kickoff meeting** – Informing on the main results of the kickoff meeting.
- **News from the challenges** – Giving a brief overview of the first six months achievements of the challenges.
- **News from the "Literature review"** – Informing on the objectives of the Literature review and its content.
- **The first EMODnet MedSea project output** - advertising the availability of the Oil Platform Leak Bulletin and describing its contents.

The second newsletter has been prepared and will be published by the 3rd of December 2014, it will include the following news:

- **MedSea Literature Survey -** Presentation of the MedSea Literature Survey and brief description of the main conclusions, linking to the Maritime Forum page: https://webgate.ec.europa.eu/maritimeforum/node/3646
- **1st Oil Platform Leak Bulletin delivered -** Brief description of the bulletins delivered upon DG-MARE request in August 2014 linking to the Maritime Forum page: https://webgate.ec.europa.eu/maritimeforum/node/3669/
- **News from Web Portal -** The Web Portal ameliorations and upgrades are briefly illustrated
- **1st MedSea Annual Meeting -** The 1st Annual Meeting is briefly described and the main goals are presented.

11. WP11: Data adequacy reports (INGV)

The activities of WP11 started at month 10 (October 2014). In the first phase (Tier 1) WP11 will synthesise the reports available from the work done in the WP1 'Final Literature Survey' - Deliverable 1.3, as well as from the outcome of the challenges WP2-8 and in particular from the following documents:

- Deliverables #.2 (with # from 2 to 8) "List of challenges outputs and the way to reference/ingest and access/share these information"
- Template 2 - Upstream Data Classification Elements

The first on-going activity is related to the assessment of the coherence of the terminologies among the challenges. This action is driven by the project coordinator during ad hoc web meetings.

During the first 2 months of activity it has been proposed a scheme for the synthesis of the 'Final Literature Survey'. The following actions are underway:

- continuation of the ISO definition of terms
- application of the concepts ISO 19113:2002 Quality principles, ISO 19114:2003 Quality evaluation procedures, ISO 19115:2003 Metadata and the technical specification ISO/TS 19138 Data quality measures
- application of the ISO/TS 19138:2006(E) and ISO 19113:2002 abstract model to assess 'how' and 'how much' data meets applicable regulatory requirements and aims to enhance user satisfaction.

All these concepts are schematised in the figure 11.1, where each challenge is thought to be a 'Universe of Discourse' defined as 'view of the real or hypothetical world that includes everything of interest' (ISO 19101). In each 'universe' the challenges have selected some data/studies that satisfy pre-defined requirements and that have the quality specified in the 'Final Literature Survey'.
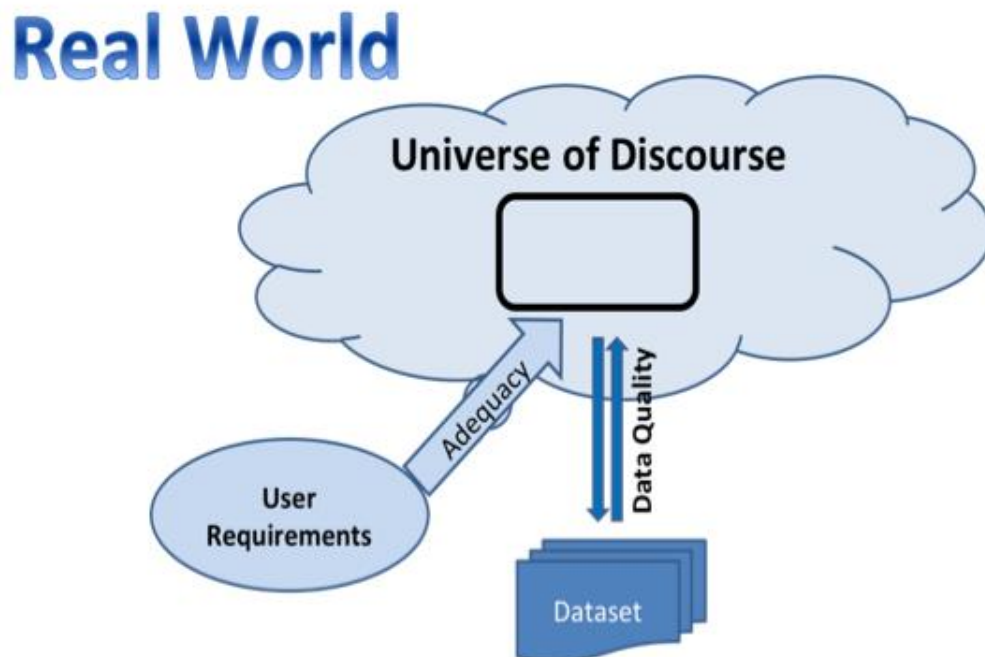

Figure 11.1

The standard on quality principles does not only provide the concept of data quality it also standardizes the names and a scheme under which all differences of a dataset and the corresponding

universe of discourse can be categorized. The use of SeaDataNet vocabularies allows the required standardisation.

The Final Literature Survey is being proposed to be summarised with the use of the scheme in figure 11.2
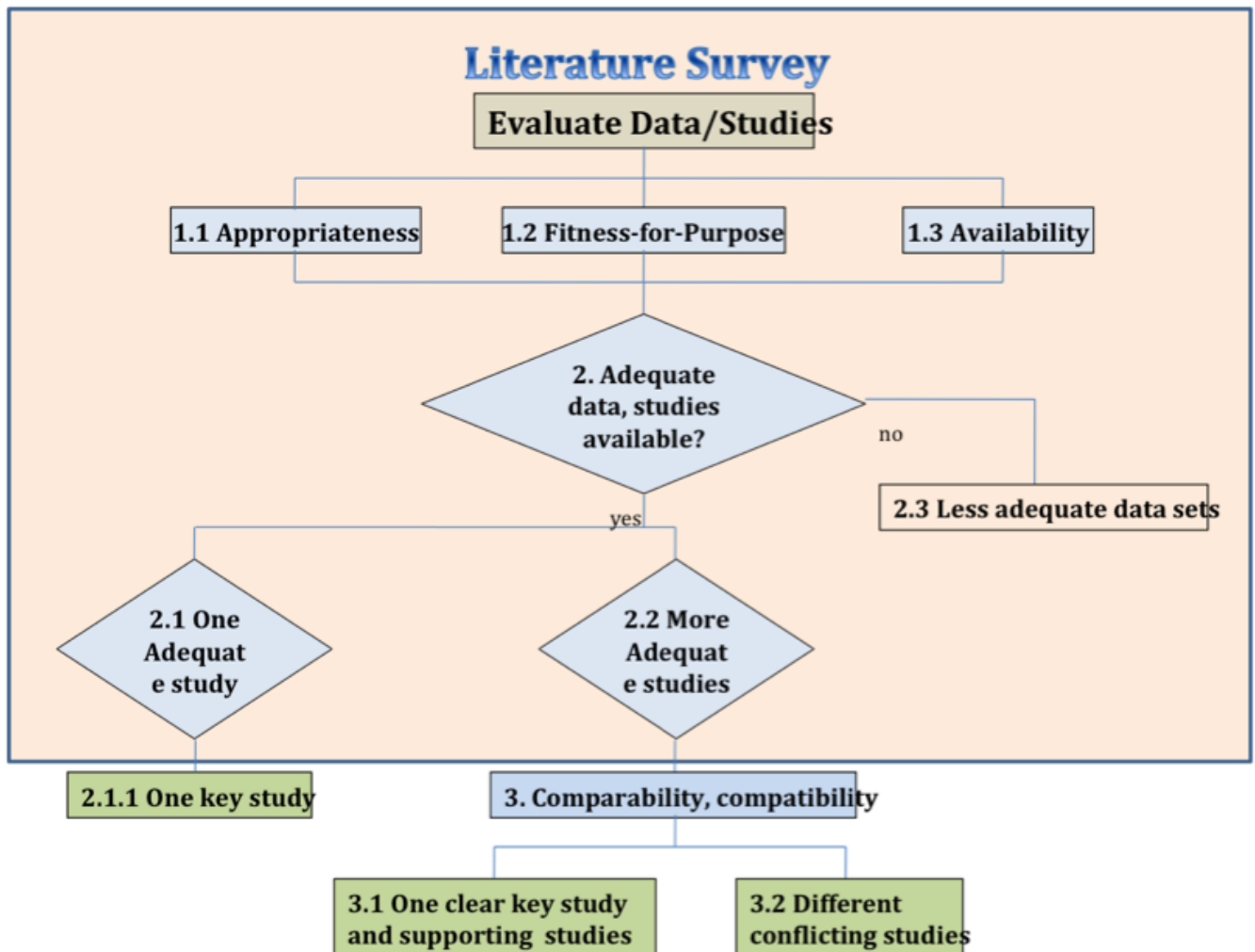

Figure 11.2

It is underlined that the first Data Adequacy Report will not cover the problems related to harmonisation. However, this is regularly done by the existing 'EMODnet Thematic Portals' (e.g. Bathymetry is providing a clear evidence of such harmonisation).

In WP11 an assessment of the data sources and fitness-for-purposes characteristics are proposed, as well as some indicators to assess the 'availability'.

12. WP12: Project management (INGV)

Project repository

The project repository has been continuously updated during the reporting period with documentations and deliverables.

	Growth and innovation in ocean economy	D12.2.2
EMODnet European Marine Observation and Data Network	**Gaps and priorities in sea basin observation and data**	Version: V2
		Date: 20 12 2014

The repository web address is: http://gnoo.bo.ingv.it/repository/medsea-ck-pt/
Username: medsea-ck-pt
Password: checkpoint

Consortium Agreement

The Consortium Agreement has been signed by all the Contractors by the 16th September 2014. The final signed Agreement has been sent to each Contractor and is available on the project repository following the path:
/Administration
/Service Contract, Amendment, Consor Agreement
/MAREConsortium Agreement final signed sept.14.pdf

Project Meetings

During the reporting period the 1st Annual Meeting has been carried out, moreover several web-meetings have been organized.

1st Annual Meeting: 5-6-7 November 2014
The 1st Annual Meeting took place in Bologna from 5th to 7th November 2014. All the partners and some subcontractors participated to the meeting. Moreover a member of the expert Panel, Prof. Alberto Lamberti, a representative of EMODnet Chemistry thematic lot, Matteo Vinci, and the coordinator of the EMODnet Physics thematic lot, Antonio Novellino, joined the meeting and presented activities of the two lots pointing out the data access and availability.

Main objectives of the meeting can be summarized as follows:

1. Agree on the Checkpoint GIS developments, structure and activity protocols

2. Define the structure of the first DAR

3. Define Indicators for Level 1, working groups and reference people from Challenges for the Checkpoint GIS

4. Understand access and availability of data from EMODnet Thematic Portals

5. Point out 'difficult data sets': action already in place for AIS (difficult), in the process for fishery data

6. Understand how to start produce Checkpoint products

The first part of the annual meeting has been devoted to the MedSea Portals with presentations on Checkpoint GIS Portal framework and review of all interfaces; MedSea Portal and links with other EMODnet tools; Current status on GIS Portal developments; Demonstration of the editing tolls to insert Template2 metadata into Sextant; Dynamic indicators and statistics from metadata content. In order to define and produce indicators and reach all the objectives by the 3rd of February 2015 (deadline of the D9.4: "Alpha version of Portal with Challenges"), the organization of the activities has been further discussed during the 3 days meeting and 3 Working Groups devoted to different aspects and actions have been identified as well as a series of web-meetings and deadlines:

•WG1- Specifications of Indicators

•WG2- Web site Acceptance Review Panel

•WG3- Checkpoint Information Consolidation and Upgrade

During the meeting the following points have been presented:

- The checkpoint 'vision', stressing the importance of the assessments of the monitoring systems through the development of products for the blue growth economy

- The overall project progress and scheduling in order to share among the project partners the plan and the milestones scheduled in the technical tender proposal and to clarify all the deliverables (internal and compulsory)

- WP1: Literature Survey presentation and main outcomes with respect to data base and report

- WP2-8 (corresponding to Challenges1-7) status of deliverables, work planned to input GIS Portal and Data Adequacy Report. Contributions from several subcontractors to the challenges have also been presented

- WP11: DAR, outline of the Report contents and discussion on WPs contribution to DAR.

- WP10: Panel and stakeholder meeting has been discussed identifying possible dates for the 1st Panel meeting.

The MedSea checkpoint coordinator (or a representative) also took part in the following meetings:

- 2nd EMODnet SC meeting (Rome, June 2014) presenting an overview of the activities carried out by the MedSea checkpoint and starting a discussion on the Regional EMODnet approaches and online presence of the sea-basin checkpoints

- 1st MODEG Chemistry Experts Workshop (Split, June 2014) presenting an overview of the activities carried out by the MedSea checkpoint, in particular the chemistry input data needed to produce Challenge outputs have been discussed

- 22nd MODEG meeting held in Bruxelles in September where the MedSea checkpoint has been presented and the Literature Survey main objectives and outcomes have been illustrated

- EUROCEANS EMODnet Pre-event (Rome, October 2014) where the EMODnet sea basin checkpoints have been illustrated and the MedSea Literature Survey has been presented

- JCOMM Management Group, October 22-23, WMO, Geneva (CH) presentation of Pinardi of the EMODnet basic principles for basin-scale monitoring assessment