



EMODnet



European Marine
Observation and
Data Network

EMODnet Coastal Mapping

Tender n° MARE/2014/10

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Maintenance Report

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1. Introduction

The project's strategic objective is to develop an innovative analysis of the needs and means in Europe for the acquisition of marine data in coastal areas, as well as concrete propositions for the development of European strategy for marine data acquisition. This analysis is focused on the characterization of the coastal area, including bathymetry and topography, cover typology information, vegetation and sediment properties, considering also other kinds of data which may be assessed jointly (depending on the operating sensors). To address these objectives, the project's Work Plan has been drawn up around 3 work packages (WP).

In the framework of WP1 (Digital Mapping), the project develops propositions concerning an infrastructure enabling partners to prepare, update, aggregate and disseminate data produced by themselves, as well as tools to prepare and optimize data, provide high performance services disseminating the prepared layers with respect to INSPIRE recommendations, propose an ergonomic web portal and provide training to potential users. This work package proposes an infrastructure enabling partners to autonomously prepare, update, aggregate and disseminate the data they produce through aggregative layers based upon data from several partners resulting in a European layer and specific complementary layers on detailed areas. The work package also aims to provide operating tools to prepare and optimize data with the aim to efficiently disseminate them in order to offer a good user experience and high performance services disseminating the prepared layers with respect to INSPIRE recommendations. These services are available via an ergonomic web portal providing visualization tools and co-visualization with internal and external data (i.e. base layer maps, coastlines, external map co-visualization, etc ...). The solution is maintained and supervised and a training for potential users of the implemented tools as well as support to data creation and manipulation, are included in the project.

In the framework of WP2 (Share experience, standards and best practice), the project is assessing consistency of the existing vertical datum, listing and summarizing past experiences and best practices, developing and testing an algorithm for choosing the most appropriate surveying method, and building a technical and economical strategy. This work package develops systems approaches and methodologies for geographic and spatial observations of environmental parameters in coastal areas, producing a heuristic help to assess economic impacts, such as the submersion risks, and socio-economic benefits of successive coastal survey acquisitions. The considered systems and methodologies to assess the geographical coastal information range from the use of classical ship based survey methods like multi beam echo sounder (MBES) to airborne techniques (Lidar) and satellite images at different levels. These are combined

with field studies and statistics in geographic information systems. WP2 makes an inventory of the ongoing studies dealing with fusion methodologies for heterogeneous, multi-scale data, simulation models of geographical structures and development of formalization based on the concept of fuzzy object localization that leads to define to what extent other surveys have appropriate quality assessment, and could be considered. WP2 focuses on the construction of an algorithm based on past experience and on the development of space-time analysis models of different acquisitions. Moreover, the WP2 works manage heterogeneous data and identify all the existing gaps that need to be filled in order to perform consistent characterisation of the coastal zone. The main task aims to set up the foundation of a set of protocols, organized knowledge and algorithm that helps EU data acquisition plan and to eliminate discontinuities between the national systems for a consistent and homogeneous survey method and strategy.

Finally, in WP3 (Future programme), the project develops a method to draw a Joint European Coastal Mapping Programme (JECMaP) in shallow waters for bathymetric data. The project's partnership directly involves a large number of European Hydrographic Organizations, ISPRA (Institute for Environmental Protection and Research, Italy) having strong experience in coastal mapping from imagery and survey processing for coastal environments, CPMR (Conference of Peripheral Maritime Regions), and the Worldline company, which has an internationally recognized expertise in the field of operational digital mapping and portal design. There is a need to support the data acquisition programme by proposing a governance model between Regions, States and the European Commission over the long term. The main goal is to propose a method to draw a Joint European Coastal Mapping Programme in the shallow waters for bathymetric data, taking into account:

- WP2 outcomes, giving a review of the technical inputs, the possibilities of interoperability and the strategic algorithm;
- The existing data, at European, State and regional levels;
- Organizations like European Environment Agency and programmes like EMODnet and Copernicus;
- The needs of bathymetric data for management of the coastal zones and the connection to be established with the land side;
- The governance of these data in the coastal zone and the economic models in place;
- The financial opportunities offered by the European financial period 2014-2020, for a Joint European Programme.

Since december 2016, the project is in its maintenance period : the main objectives are to promote the results of the first 18th month and to ensure that the portal stays on line.

2. Highlights in this reporting period

- ✓ The portal was opened to the public on 23rd December 2015 with some datasets. Making data available to the portal was a permanent task during the project and it has been continued during the period. So the portal gives access to several datasets grouped in five categories (Topography & Bathymetry, Coastline – Baseline, Imagery, EMODnet, Additional Layers).
- ✓ The presentation of the results from the first 18th month of the project (European Regions, Parliament).
- ✓ Prepare the end of the project and turn off the portal: data available in other EMODnet portals and save the project results (in particular the Coastal Mapping Planner algorithm).

3. Usage of portal

3.1 Attendance

3.1.1 General users

The portal received 3696 visits since it was launched on the 23rd of december 2015 until the 31th of may 2018, including 1616 during the “maintenance period”.



Figure 1: Attendance of portal per week – portal lifetime

In the two years and half, 9795 pages (3537 during the “maintenance period”) have been seen in 5272 sessions. The users’ flow confirms that the major part of the users stops to the homepage of the website and therefore visit only this page.

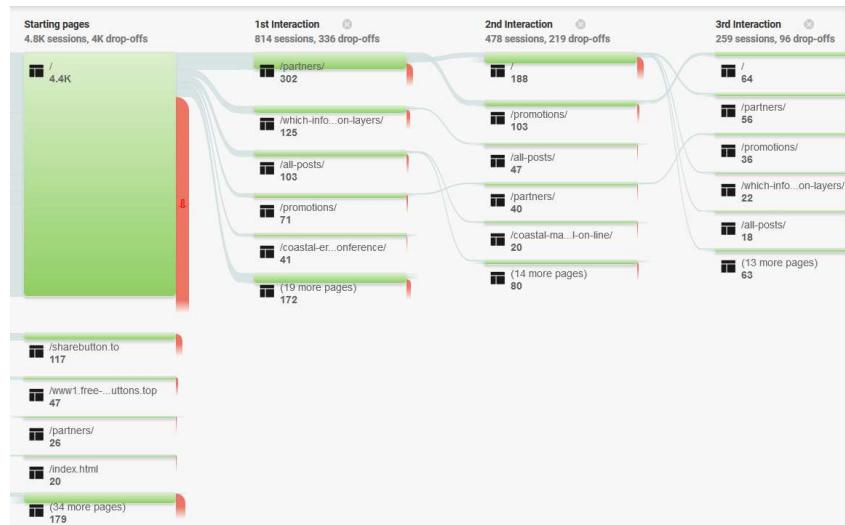


Figure 2: Users flow – portal lifetime

This can be explain by the fact that the portal is located on this homepage and therefore there is no operational need or interest to browse further through the entire website.

3.1.2 By country

The portal has been visited throughout 77 different countries located on all the continents :

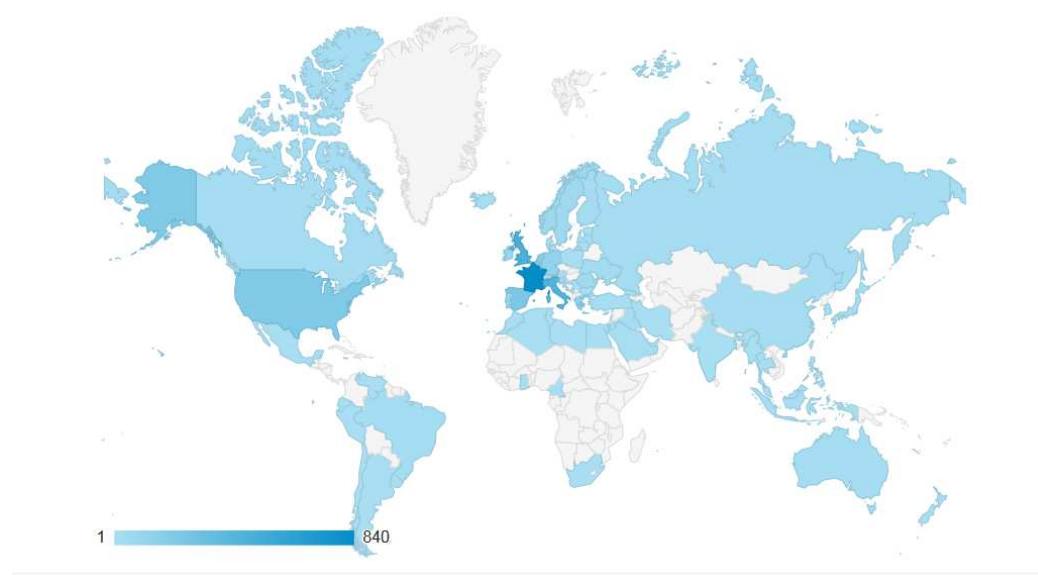


Figure 3: Attendance of portal (by country) – portal lifetime

Most of the frequent users originate from the 13 partnership countries of the project: 60% of the users and 66% of the sessions during the portal lifetime (same ratio during the “maintenance period”).

Country	Users	Sessions
France	840 (22.72%)	1374 (26.06%)
United Kingdom	473 (12.79%)	510 (9.67%)
Italy	437 (11.82%)	684 (12.97%)
Spain	236 (6.38%)	280 (5.31%)
Belgium	207 (5.60%)	316 (5.99%)
United States	206 (5.57%)	217 (4.12%)
Greece	133 (3.60%)	161 (3.05%)
Netherlands	132 (3.57%)	213 (4.04%)
Germany	120 (3.25%)	152 (2.88%)
Portugal	96 (2.60%)	151 (2.86%)

Table 1: Top 10 Users' visits of the website (by country) – portal lifetime

It is interesting to note that amongst the “non-partner” countries, the main users originate from countries like the USA, the UK and Spain.

3.1.3 By providers

The traffic by providers allows to highlight which agencies have visited the portal. In particular, 10% of the sessions came from the Shom and 6% from Worldline (the portal's provider).

Language	Users	Sessions
service hydrographique et oceanographique de la marine	371 (10.04%)	516 (9.79%)
(not set)	180 (4.87%)	201 (3.81%)
ovh hosting inc.	68 (1.84%)	68 (1.29%)
worldline france hosting	59 (1.60%)	325 (6.16%)
voxility.net	54 (1.46%)	54 (1.02%)
istituto superiore per la protezione e la ricerca ambientale	46 (1.24%)	117 (2.22%)
wind telecomunicazioni s.p.a	46 (1.24%)	65 (1.23%)
commission europeenne	44 (1.19%)	71 (1.35%)
flanders marine institute	37 (1.00%)	59 (1.12%)
national maritime administration	33 (0.89%)	88 (1.67%)

Table 2: Top 10 Users' visits of the website (by providers) – portal lifetime

3.1.4 By language

The users languages are mainly European languages with approximately similar numbers for French and English.

Language	Users	Sessions
English (US and GB)	1174 (31.76%)	1456 (27.62%)
French	858 (23.21%)	1410 (26.75%)
(not set)	511 (13.82%)	511 (9.69%)
Italian	311 (8.41%)	528 (10.01%)
Dutch	122 (3.30%)	251 (4.76%)
Portuguese	100 (2.70%)	149 (2.83%)
Spanish	93 (2.52%)	106 (2.01%)
German	80 (2.16%)	124 (2.35%)
Greek	78 (2.11%)	93 (1.76%)
Norwegian	23 (0.62%)	41 (0.78%)
Swedish	22 (0.60%)	32 (0.61%)

Table 3: Top 10 Users' visits of the website (by language) – portal lifetime

3.2 Duration

3.2.1 Time on portal

The overall time spent on the website is about 151 hours, with the following geographic distribution:

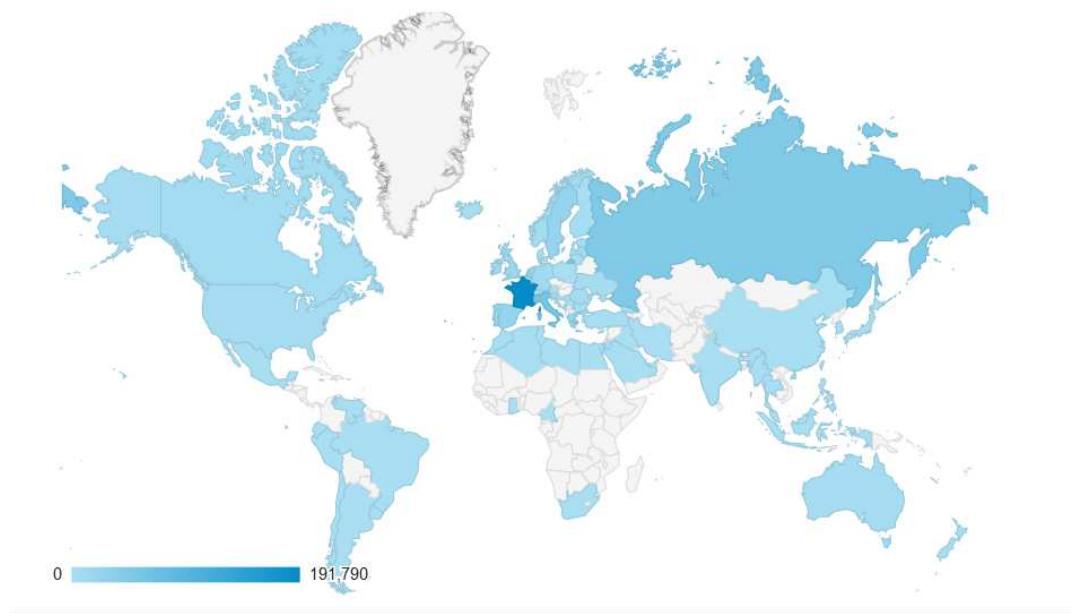


Figure 4: Time on page of portal (by country) - portal lifetime

Russia reached the third place regarding this feature with almost 13 hours spent on the portal. In the twenty first contries, we only find european countries, except Russia, the USA (19th with 1h12) and Australia (20th with almost 59min).

3.2.2 Session duration

The average session time is less than 2 minutes. The time spent on the website is very short.



Figure 5: average session duration of portal per week - portal lifetime

Nevertheless, the session time distribution is as follow:

Session duration	Sessions
0-10 seconds	3680 (69.80%)
11-30 seconds	210 (3.98%)
31-60 seconds	230 (4.36%)
61-180 seconds	392 (7.44%)
181-600 seconds	454 (8.61%)
601- 1800 seconds	264 (5.00%)
1801+ seconds	42 (0.80%)

Table 4: Session duration – portal lifetime

Thereby, when removing the sessions less than 10 seconds, about 20% of the sessions time is more than 5min and about 48% are higher than 3min. These time slots allow the user to discover and interact with the portal. This highlights the fact that for a targeted audience, the portal presents interesting informations.

3.3 Analysis

The low attendance of the portal, previously detailed in the graphs, might trigger the question of its use. When comparing with the EMODnet Bathymetry portal (numbers in 2017), we can see that about 9000 visitors on average per month were measured which is about 2.4 more than the overall audience of the Coastal Mapping portal since it's opening.

3.3.1 Promoting

The portal's promotion has been provided from it's opening up to the end of the first period of the project, before the transition to the "maintenance period". It included promotion at meeting, flyers, workshops,... concerning the portal but also the project progress developed by the WP2.

Afterwards, during the "maintenance period", the promotion decreased significantly (see §6 and §7 : very few meetings identified since february 2017). Consequently, this lack of communication didn't increase the visits on the portal.

3.3.2 Visibility within EMODnet projects

The increase of the number of portals linked with EMODnet during its lifetime has certainly shaded the Coastal Mapping portal for the EMODnet website visitors. In addition, the name "COASTAL MAPPING" is not obvious regarding the contents of the portal: "Bathymetry", "Geology", "Seabed habitats", "Chemistry" and "Biology" are much more meaningful.

3.3.3 Products on the portal

The Coastal Mapping portal's content mainly consists of data already available elsewhere, among other EMODnet portals. Moreover, those "raw data" don't represent a significant interest for the visitors. They prefer products directly usable for there needs.

Of course, the Coastal Mapping Planner tool is useful for expert. However, the traffic distribution between the partners (2/3) and the other users (1/3) proves that the experts are mainly in the project partners.

Further more, does the visitor, visiting the portal, really expect these data ? The few visitor who stayed less than 3 minutes shows that the portal's content didn't reach their interest.

3.3.4 Conclusion

Whereas the project has made significant progress, presented in the "Final Report", about technical subjects ("Assess consistency of the existing vertical datum", "Listing and summarising past experience", "Coastal Mapping Planner", "Technical and economical strategy") or the proposal of an "EU strategy for acquisition of High Resolution Coastal Bathymetric Data", the portal does not reach the level of interest that was initially expected.

4. Additions to data

The portal hosts raw data, provided by partners or users, and a tool : the CMP.

4.1 Raw data on portal

The portal provides a significant number of data from the partners (see Annex 1). These have been uploaded quite early in the project and stayed until the end. Unfortunately, no new data has been uploaded since the beginning of the “maintenance period”, despite the “Crowdsourcing” tool existing on the portal which invites users to share new data.

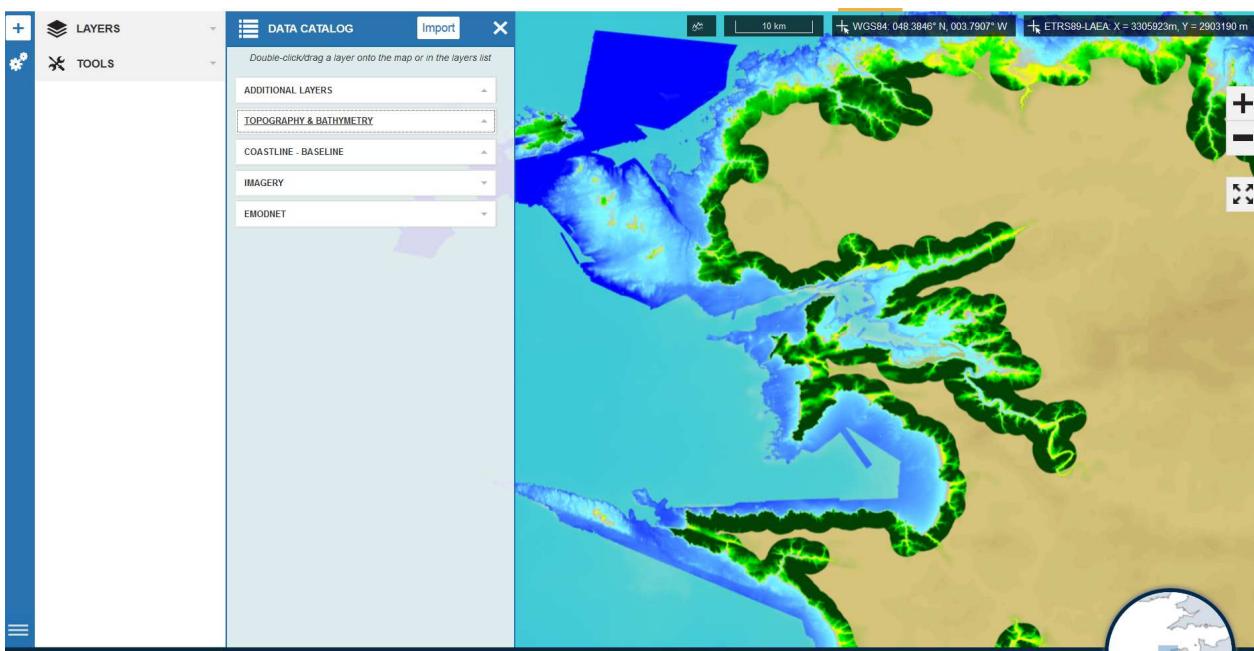


Figure 6: portal – Data layers

This absence of evolution can be easily explained:

- The portal exposure and the number of collecting means for data within EMODnet – in particular the project EMODnet Data Ingestion (see §2.3.1 and §2.3.2) ;
- The lack of attraction to share data for the potential contributors :
 - Absence of enhancement of the uploaded data to the portal via composite products ;
 - No financial support from the project to help the new contributors (whereas data integration and sharing have necessarily a cost).

4.2 Tools « Coastal Mapping Planner »

4.2.1 Presentation

The algorithm developed in WP 2 has been called Coastal Mapping Planner (CMP). It is designed to provide a decision tool about the optimal survey techniques to use to obtain coastal mapping products. The aim of the CMP is to help define European and transnational coastal mapping management plans.

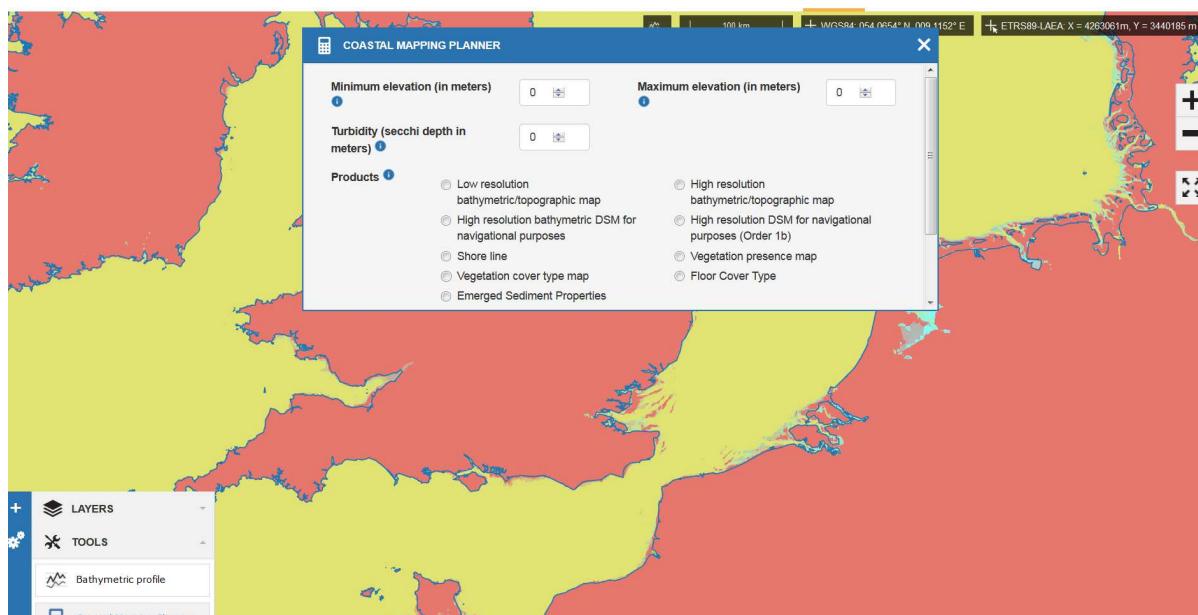


Figure 7: portal – Tool CMP

It is presented on the Coastal Mapping Portal under the tools' section in two versions: geographic and interactive.

4.2.2 Usage

If the user prefers to use his own data of elevation and water clarity, he can use the interactive version of the CMP and obtain a table with the suitability of the different technologies to acquire the selected product.

Otherwise, in the geographic CMP the user can use the elevation data from the General Bathymetric Chart of the Oceans (GEBCO) dataset and the water clarity data from an elaboration of the Copernicus Marine Environment Monitoring Service (CMEMS) maps of secchi disk depth. In this case, the output will be a geographical representation that shows which technologies can acquire the selected product and where such instruments can be used.

5. Toward a European strategy for HR bathymetric data

Connecting all the results, a proposition of EU Strategy was produced. It was approved by all the partners and presented to the DG MARE. This Strategy is based on three axes and should be implemented by three pillar actions.

Three axis :

- Axis 1 : Set up coordinated programmes for data acquisition at maritime basin scale ;
- Axis 2 : Seize opportunities for bathymetric data acquisition in the framework of the EU operational programmes and funds; and ensure that those data are standardized and capitalized ;
- Axis 3 : Promote good practices for the production of bathymetric data from multiple sources, standardized for re-use by all coastal stakeholders for maritime policies.

Three pillar actions in support of the strategy :

- Design a European organization for steering the Strategy ;
- Design digests of standards and hydrographic practices for all potential contributors to acquisition of these data ;
- Design a better partnership with the coastal stakeholders for the use of high resolution bathymetric data in Europe.

Recommendations from the “Coastal Mapping Partnership” which represents 13 countries, 160 Maritime Regions, on all the EU maritime basins:

- By stakeholders experiences in coastal zone, all the maritime policies, their integrated management and ecosystemic approach need, standardized and validated, high resolution bathymetric data. Each maritime planification begins with the acquisition of HR bathymetric data and it should be considered as a public service.
- The coastal area is a key zone for blue growth, ecosystems and habitats, high-risk climate change area, but due to different conditions, it is necessary to take into account the specificities of the maritime basins in the future acquisition strategy for coastal data.

- Standardized, safe, authoritative, and high resolution data is the condition of re-usability of data by all the stakeholders for the maritime policies. The IHO rules must be used, no data should be gathered without an assessment about their uncertainty, the final certification must remain, to the responsible organization for the considered country.
- It is strongly recommended that the use of standards should be mandatory when bathymetric data is acquired with EU funds in the context of maritime policies and research. It seems mandatory that specialists of the bathymetry be involved in the preparation of EU programmes with maritime objectives. This would facilitate the use of standards, the IENWG can be associated.
- The partnership promotes the pooling of these data in the EMODnet products, to permit the implementation of all EU maritime Directives particularly for the transnational cooperation needed for the ecosystemic approach.
- Coastal mapping project has produced different tools that it recommends to use and develop further; the coastal mapping portal, the algorithm for choosing the technology of acquisition of data and a tool for better fund the acquisition of data using European programmes in relevant areas.
- A cost-benefit study could demonstrate the interest for Europe of a secured mechanism of acquisition and sharing of coastal bathymetric data, and the "coast benefit" of the Strategy proposed.

In conclusion, for the partnership, since an integrated maritime policy needs an integrated vision, and since coastal areas are a major stake for blue growth but also highly sensitive from an environmental point of view, a strong action must be taken to progress significantly on the knowledge of these areas.

For that reason, the coastal mapping project strongly recommends that a **European Strategy with the above 3 axis and 3 pillars actions** be implemented. For the sake of efficiency the project team also recommends platform sharing and/or organizing common campaigns for data acquisition, systematic requirement that any EU funded project including data acquisition must respect standards and ensure data capitalization and promotion of good practice to maximize the benefits of community/crowd sourced data.

6. Reflections on the Coastal Mapping project

After having designed a high level proposition presented to the European Parliamentaries, it is a shame to have launched a dynamic without follow up. To defend these results and ideas, the mention of bathymetry and of the interest of coastal area has been included in the process of development of the future European Ocean Observation System (EOOS) : It would be important to be supported by the DG MARE on this subject.

The obligation to open a new portal used an important part of the budget and the energy of the partnership and we will close it at the end of the project. The data will be integrated in the EMODnet bathy portal but the tools developed will be lost: It would be more efficient to use the EMODnet bathy portal as a platform to aggregate the new tools proposed and spend the budget to develop examples for the strategy designed.

7. Allocation of project resources

The following table gives an indication of the efforts in % of the total project efforts for the various work packages during the project :

- WP1 : Digital mapping
- WP2 : Share experience, standards and best practice
- WP3 : Future programme
- WP4 : Management

Country	Partner	WP1	WP2	WP3	WP4
Belgium	Afdeling Kust, Division Coast, Vlaamse Hydrografie, Flemish Hyd. Adm Centrum	21.43	42.86	28.57	7.14
Germany	BSH - Bundesamt für Seeschifffahrt und Hydrographie	21.43	42.86	28.57	7.14
France	SHOM - Service hydrographique et océanographique de la marine	46.30	31.60	16.70	5.40
France	Worldline Company	97.14	1.56	1.04	0.26
France	CRPM - Conférence des Régions Périmétriques Maritimes	0.00	9.84	88.52	1.64
Greece	HNHS - Hellenic Navy Hydrographic Service	21.43	42.86	28.57	7.14
Ireland	GSI - Geological Survey of Ireland	6.82	13.64	77.27	2.27
Italy	Istituto Idrografico Della Marina	21.43	42.86	28.57	7.14
Italy	ISPRA - Istituto Superiore per la Protezione e Ricerca Ambientale	4.00	92.00	3.00	1.00
Italy	Lazio	8.51	16.40	72.29	2.80
Latvia	Maritime Administration of Latvia	8.19	16.35	72.04	3.42
Netherlands	Rijkswaterstaat - Dutch Ministry of	6.82	81.82	9.09	2.27

	Infrastructure and the Environment				
Norway	Norwegian Mapping Authority - Hydrographic Service	8.82	76.47	11.76	2.94
Portugal	Instituto Hidrográfico	23.50	43.00	26.50	7.00
Romania	GeoEcomar	22.40	44.00	25.80	7.80
Romania	Danube Delta National Institute	21.43	42.86	28.57	7.14
Sweden	Sjöfartsverket - Swedish Maritime Administration	10.00	78.00	10.00	2.00
Slovenia	GIS - Geodetic Institute of Slovenia	22.00	38.00	33.00	7.00
Totals per WP (%)		99.92	99.15	101.23	103.94

Table 5: Efforts in % of the total project efforts

8. Meetings held since last report

Date	Location	Topic	Short description
21- 22/06/2016	Brussels (BE)	Steering Committee meeting	[external] 7 th EMODnet Steering Committee meeting
07/02/2017	Brussels (BE)	Stakeholder meeting (Regions)	[external] Presentation and discussion with the Member Regions
07/02/2017	Brussels (BE)	Stakeholder meeting (Searica Intergroup)	[external] Presentation and discussion with the Searica Intergroup
15- 16/06/2017	St Julian's (MAL)	Addressing Land-Sea Interactions	[external] MSP Conference
14- 15/09/2017	Roma (ITA)	Steering Committee meeting	[external] 8 th EMODnet Steering Committee meeting
27- 28/02/2018	Brussels (BE)	Stakeholder meeting (Regions, IHO EU WG)	[external] management of coastal data for the protection of the coastal areas
21- 23/03/2018	Mallorca (ES)	Steering Committee meeting	[external] 9 th EMODnet Steering Committee meeting

Table 6: Meetings held since last report

9. Outreach and communication activities

Date	Media	Title	Short description and/or link to the activity
07/02/2017	Flyer Poster	Coastal Mapping project results	Presentation of the project results to the European Regions and Parliament
07/02/2017	Several presentations	Several Titles	Presentations performed at the Parliament (on Searica webpage).
Spring 2017	Scientific journal	3 articles in the Journal of Coastal Research, Special Issue 77	Papers linked to the Coastal Resilience

Table 7: Outreach and communication activities

Annex 1 : Datasets available through the portal

These datasets are grouped in five categories: Coastline-Baseline, Topography&Bathymetry, Imagery, EMODnet and Additional Layers.

COASTLINE – BASELINE (11 datasets):

Name/Type of data	Area of interest	Provider
EEA coastline		
EEA Coastline	EU	EEA
Highest astronomical tide level		
France coastline	France	SHOM
Intertidal area		
Belgium Coastline	Belgium	MDK
Ireland Coastline	Ireland	GSI
Romania Coastline 1970	Romania	DDNI
Legal baseline		
Belgium Legal Baseline	Belgium	MDK
Greece Coastline	Greece	HNHS
Portugal Coastline	Portugal	IHPT
Romania Coastaline	Romania	DDNI
Mean sea level		
Coastline Crowdsourcing Results	Europe	Crowd
Sweden Coastline	Sweden	Lantmäteriet ¹

¹ : Swedish mapping, cadastral and land registration authority

TOPOGRAPHY & BATHYMETRY (27 datasets):

Name/Type of data	Area of interest	Provider
EMODnet bathymetry DTM		
Greece DTM	Greece	HNHS
High resolution DTM		
Belgium Single Beam	Belgium	MDK
France 10m DTM – Boulogne-sur-Mer	France	SHOM
France 20m DTM - Morbihan	France	SHOM
France 20m DTM – Pertuis Charentais	France	SHOM
Germany 1m DTM	Germany	BSH
Greece DTM 90K	Greece	HNHS
Italy 1m DTM Ligurian Sea	Italy	IIM
Italy 1m DTM Sardinia	Italy	IIM
Netherlands 5m DTM LIDAR	Netherlands	RWS
Norway 10m DTM	Norway	NMA

Romania 5m DTM	Romania	DDNI
Land-sea seamless DTM		
Belgium Lidar	Belgium	MDK
France Coastal DTM – Finistère 2014	France	SHOM
France Coastal DTM – Languedoc-Roussillon 2009	France	SHOM
France Coastal DTM – PACA 2015	France	SHOM
Germany 50m DTM	Germany	BSH
Ireland 5m Coastal DTM Bantry & Dunmanus	Bantry/Dunmanus (IRL)	GSI
Ireland 8m Shaded Relief Image Bantry & Dunmanus	Bantry/Dunmanus (IRL)	GSI
Netherlands 20m DTM	Netherlands	RWS
Portugal DTM	Portugal	IHPT
Romania 500M DTM 1970	Romania	DDNI
Low resolution bathymetry DTM		
Baltic Sea 500m Shaded elevations	Baltic Sea	BSHC
Baltic Sea 500m Bathymetry watercolour	Baltic Sea	BSHC
Medium resolution DTM		
France 100m DTM – Atlantic coast	France	SHOM
France 100m DTM - Corse	France	SHOM
France 100m DTM – Lion Gulf / Côte d'Azur	France	SHOM

EMODNET (2 datasets):

Name/Type of data	Area of interest	Provider
EMODnet bathymetry		
EMODnet Bathymetry	Europe	EMODnet
EMODnet habitats		
EMODnet Seabed Habitats	Europe	EMODnet

ADDITIONAL LAYERS (17 datasets):

Name/Type of data	Area of interest	Provider
Basemaps		
EMODnet Bathymetry with GEBCO 2014 (merged)	Europe	EMODnet Bathymetry/GEBCO
Secchi Disk Depth statistics	Europe	COPERNICUS
Data quality and survey plans		
Sweden surveys before 1940	Sweden	SMA

Sweden surveys after 1940	Sweden	SMA
Opportunities for data funding		
EU Strategies	Europe	CPMR
Interreg VA	Europe	CPMR
Interreg VB	Europe	CPMR
Habitats mapping		
Italy Dune Cover 3m 2009 Sabaudia	Italy	ISPRA
Seabed cover		
Italy Bottom Type 3m 2009 Montalto	Italy	ISPRA
Italy Seabed Cover 3m 2009 Montalto	Italy	ISPRA
Sediments mapping		
Ireland Bantry 10m Seabed Classification	Bantry/Dunmanus (IRL)	GSI
Ireland Samples	Ireland	GSI
Ireland Samples PSA	Ireland	GSI
Ireland Samples PSA Non INFOMAR	Ireland	GSI
Suitability of the survey technologies		
CMP.Geo – Airborn Hyperspectral	Europe	ISPRA
CMP.Geo - Lidar	Europe	ISPRA
CMP.Geo - Multibeam	Europe	ISPRA

IMAGERY (3 datasets):

Name/Type of data	Area of interest	Provider
Aerial photography		
France Coastal Imagery	France	SHOM
Ireland Coastal Imagery 2006 Bantry & Dunmanus (merged)	Bantry/Dunmanus (IRL)	GSI
Romania 1m Orthophotos	Romania	DDNI

Annex 2 : Global website statistics

Period	Users	Sessions	Pageviews	Pages / session	Avg session duration
23/12/15- 31/05/18 (total)	3696	5272	9795	1.86	00:01:56
25/12/16- 31/05/18 (maintenance period)	1616	2092	3537	1.69	00:01:30

The following statistics concern only the maintenance period (25/12/16-31/05/18):

Country	Users	Pageviews	Pages / session	Avg session duration
France	491	812	1.65	00:01:38
Italy	293	528	1.80	00:01:44
United Kingdom	185	279	1.51	00:00:55
Netherlands	138	214	1.55	00:01:16
Belgium	122	202	1.66	00:01:26
United States	117	175	1.50	00:00:19
Spain	114	202	1.77	00:01:06
Greece	86	160	1.86	00:03:04
Portugal	86	156	1.81	00:02:16
Germany	56	106	1.89	00:01:51
Ireland	43	74	1.72	00:01:06
Sweden	28	44	1.57	00:00:59

Norway	27	37	1.37	00:00:14
Ukraine	26	28	1.08	00:00:08
Denmark	20	29	1.45	00:01:11
Brazil	17	18	1.06	00:00:20
Canada	16	41	2.56	00:03:30
Romania	16	29	1.81	00:02:16
Finland	15	25	1.67	00:01:51
Malta	14	22	1.57	00:01:26
Slovenia	14	20	1.43	00:00:54
(not set)	14	30	2.14	00:00:00
China	13	20	1.54	00:01:07
Israel	11	14	1.27	00:00:55
Russia	9	23	2.56	00:05:39
Croatia	8	12	1.50	00:01:58
Estonia	7	39	5.57	00:12:51
Morocco	7	8	1.14	00:00:50
Austria	5	8	1.60	00:03:14
Australia	5	8	1.60	00:05:47
Bulgaria	5	7	1.40	00:00:12
Cyprus	5	23	4.60	00:01:24
Iceland	5	8	1.60	00:00:33
Turkey	5	9	1.80	00:00:51
Algeria	4	6	1.50	00:00:44
India	4	9	2.25	00:04:27

South Korea	4	10	2.50	00:00:48
Latvia	4	15	3.75	00:02:15
Monaco	4	5	1.25	00:00:07
New Zealand	4	6	1.50	00:00:23
Tunisia	4	20	5.00	00:05:30
Egypt	3	4	1.33	00:01:25
Georgia	3	4	1.33	00:00:57
Thailand	3	6	2.00	00:01:42
United Arab Emirates	2	3	1.50	00:00:47
Argentina	2	2	1.00	00:00:00
Jamaica	2	2	1.00	00:00:00
Lithuania	2	2	1.00	00:00:00
Montenegro	2	2	1.00	00:00:00
Malaysia	2	3	1.50	00:00:10
Peru	2	2	1.00	00:00:00
Philippines	2	3	1.50	00:03:04
Poland	2	4	2.00	00:00:18
Switzerland	1	2	2.00	00:02:34
Chile	1	1	1.00	00:00:00
Cameroon	1	1	1.00	00:00:00
Faroe Islands	1	3	3.00	00:00:00
Ghana	1	1	1.00	00:00:00
Iran	1	1	1.00	00:00:00
Japan	1	3	3.00	00:00:00

Libya	1	1	1.00	00:00:00
Myanmar (Burma)	1	1	1.00	00:00:00
Mexico	1	1	1.00	00:00:00
Réunion	1	1	1.00	00:00:00
Serbia	1	1	1.00	00:00:00
Taiwan	1	1	1.00	00:00:00
Venezuela	1	1	1.00	00:00:00

Service provider	Users	Pageviews	Pages / session	Avg session duration
service hydrographique et oceanographique de la marine	156	225	1.44	00:01:08
worldline france hosting	122	231	1.89	00:03:24
(not set)	84	147	1.75	00:02:09
ovh hosting inc.	68	68	1.00	00:00:00
ministerie van verkeer en waterstaat/rijkswaterstaat	44	48	1.09	00:00:17
universita degli studi di trieste	27	41	1.52	00:00:14
amazon technologies inc.	23	24	1.04	00:00:00
istituto superiore per la protezione e la ricerca ambientale	23	36	1.57	00:01:43
nos comunicacoes s.a.	21	29	1.38	00:00:41
vlaamse overheid	21	27	1.29	00:02:38

online sas	20	20	1.00	00:00:00
flanders marine institute	18	34	1.89	00:01:30
infrastructure for fastwebs main location	18	21	1.17	00:00:13
wind telecomunicazioni s.p.a	17	33	1.94	00:01:18
celeste sas	16	20	1.25	00:01:02
telecom italia s.p.a. tin easy lite	15	25	1.67	00:01:50
fastwb staff public subnet	14	27	1.93	00:00:19
national maritime administration	14	23	1.64	00:01:00
commission europeenne	13	22	1.69	00:00:58
multiprotocol service provider to other isp s and end users	13	18	1.38	00:03:38
telefonica de espana sau	13	22	1.69	00:01:27
consiglio nazionale delle ricerche	12	27	2.25	00:01:44
messagelabs limited	12	29	2.42	00:01:20
universita degli studi di napoli federico ii	11	22	2.00	00:06:29
destiny n.v	10	19	1.90	00:00:47
dynamic pools	10	19	1.90	00:02:21
hellas on line s.a.	10	20	2.00	00:05:20
innotec-001 public subnet	10	13	1.30	00:00:07

instituto politecnico de setubal	10	10	1.00	00:00:00
proxad / free sas	10	26	2.60	00:02:27
stichting deltares	10	19	1.90	00:05:17
mobile county commission	9	26	2.89	00:00:00
new mexico state university - main campus	9	27	3.00	00:00:00
synergy microsystems inc.	9	25	2.78	00:00:00
universita iuav di venezia	9	10	1.11	00:01:48
vodafone portugal - communicacoes pessoais s.a.	9	23	2.56	00:06:59
direction interministerielle des systemes d information et de co	8	15	1.88	00:00:21
ftip003376287 heriot watt university	8	10	1.25	00:00:06
geodetski institut slovenije	8	13	1.63	00:00:59
hellenic centre for marine research - athens	8	13	1.63	00:02:25
institut francais de recherche pour l exploitation de la mer - i	8	21	2.63	00:01:33
timico limited	8	9	1.13	00:00:04
alma mater studiorum	7	8	1.14	00:00:03

universita di bologna				
baltic sea research institute	7	10	1.43	00:01:28
brgm	7	19	2.71	00:00:42
chinanet sichuan province network	7	14	2.00	00:02:05
ip pools	7	9	1.29	00:00:45
orange mobile	7	14	2.00	00:01:02
red de servicios ip	7	12	1.71	00:00:21
the university of plymouth	7	7	1.00	00:00:00
university of ulster	7	12	1.71	00:00:49
bundesamt fuer seeschiffahrt und hydrographie	6	27	4.50	00:06:20
cpe customers nl	6	16	2.67	00:00:30
jsc er-telecom holding samara branch	6	12	2.00	00:07:38
scottish common services agency	6	6	1.00	00:00:00
tel aviv university	6	7	1.17	00:01:36
university college galway	6	13	2.17	00:00:53
bundesverwaltung fuer verkehr- bau und wohnungswesen	5	8	1.60	00:00:35
nos madeira comunicacoes s.a	5	15	3.00	00:05:05
orange spain network	5	6	1.20	00:00:17

scansafe services llc	5	5	1.00	00:00:00
skov og naturstyrelsen	5	11	2.20	00:03:27
universita degli studi di roma tor vergata	5	5	1.00	00:00:00
university of malta	5	9	1.80	00:03:33
xarxa informatica de la	5	10	2.00	00:04:11
zeelandnet bv	5	9	1.80	00:02:03
ziggo consumers	5	15	3.00	00:03:24
zscaler inc.	5	11	2.20	00:00:18
1&1 versatel deutschland gmbh	4	8	2.00	00:06:20
adsl-go-plus	4	9	2.25	00:00:15
adsl-pro	4	6	1.50	00:06:03
cableuropa - ono	4	4	1.00	00:00:00
centre tecnologic de telecomunicacions de catalunya	4	14	3.50	00:04:04
conseil regional de haute normandie	4	13	3.25	00:01:32
dutch organization for applied scientific research	4	8	2.00	00:03:10
eircom limited	4	5	1.25	00:01:45
ftip003194010 hydrographics department	4	11	2.75	00:03:22
fundacion tecnalia	4	8	2.00	00:00:22
ihe delft	4	4	1.00	00:00:00

infrastructure for fastweb s main location	4	27	6.75	00:02:19
instituto hidrografico	4	4	1.00	00:00:00
instituto tecnologico geominero de espan~a	4	5	1.25	00:00:17
internet service provider	4	6	1.50	00:00:11
ip range assigned to vf-it customers	4	6	1.50	00:00:34
ivent ministry of defence	4	8	2.00	00:04:59
lait public subnet	4	16	4.00	00:00:57
latvian environment geology and meteorology agency	4	15	3.75	00:02:15
metronet telekomunikacije d.d.	4	5	1.25	00:00:14
monaco-telecom	4	5	1.25	00:00:07
natural environment research council (nerc)	4	6	1.50	00:00:13
organisation	4	20	5.00	00:05:30
pat/nat ip addresses pop 2302 for	4	9	2.25	00:05:23
pat/nat ip addresses pop 3904 for	4	8	2.00	00:14:08
rabat_3g_maroctelecom	4	5	1.25	00:01:27
rcs & rds residential	4	6	1.50	00:00:07
regione marche	4	6	1.50	00:10:48
sarenet s.a.	4	5	1.25	00:00:26

strato ag	4	4	1.00	00:00:00
suomen ymparistokeskus	4	7	1.75	00:00:51
technische universiteit delft	4	5	1.25	00:00:04
tele2 consumer is one of the largest isp\ s in the netherlands	4	4	1.00	00:00:00
telecom italia s.p.a.	4	18	4.50	00:04:16
telef nica brasil s.a	4	4	1.00	00:00:00
the university of st. andrews	4	4	1.00	00:00:00
ubo - universite de brest	4	11	2.75	00:00:27
university of hull	4	4	1.00	00:00:00
valtiokonttori/vip	4	9	2.25	00:02:40
xs4all internet bv	4	11	2.75	00:00:22
adsl_maroc_telecom	3	3	1.00	00:00:00
advania hf.	3	5	1.67	00:00:45
asonet tallinn city2	3	22	7.33	00:25:32
auckland college of education	3	3	1.00	00:00:00
bluet di robotti diego public subnet	3	5	1.67	00:00:32
bouygues telecom division mobile	3	5	1.67	00:00:11
bsren652 rennes bloc 2	3	3	1.00	00:00:00
chinanet beijing province network	3	3	1.00	00:00:00

cnr - ismar sez. di ancona	3	6	2.00	00:01:18
coditel brabant sprl/bvba	3	5	1.67	00:00:32
conservatoire du littoral	3	3	1.00	00:00:00
customer nets	3	4	1.33	00:00:03
customers ie	3	4	1.33	00:00:49
deutsche telekom ag	3	4	1.33	00:01:13
eastlink hsi	3	7	2.33	00:09:27
edp - energias de portugal s.a.	3	6	2.00	00:06:55
eircom	3	4	1.33	00:00:08
europen environment agency	3	3	1.00	00:00:00
exxon mobil corporation	3	5	1.67	00:00:09
free sas	3	3	1.00	00:00:00
haifa university	3	5	1.67	00:00:09
hartley anderson limited	3	4	1.33	00:06:07
infra	3	3	1.00	00:00:00
institute for hygiene and epidemiology	3	4	1.33	00:00:04
instituto espanol de oceanografia	3	6	2.00	00:00:29
instituto superior tecnico	3	3	1.00	00:00:00
Inaub656 aubervilliers bloc 1	3	8	2.67	00:01:05

Innly656 neuilly bloc 2	3	11	3.67	00:02:16
ministerio de defensa	3	4	1.33	00:00:30
normhost internet services	3	3	1.00	00:00:00
nos wi-fi powered by fon	3	5	1.67	00:00:26
psi line srl	3	10	3.33	00:02:04
pt comunicacoes s.a.	3	6	2.00	00:00:29
rcs & rds business	3	5	1.67	00:00:18
red de supercomputacion de galicia	3	3	1.00	00:00:00
scarlet belgium nv	3	11	3.67	00:01:02
sky uk limited	3	4	1.33	00:01:28
statens kartverk	3	10	3.33	00:00:56
stockholm university	3	3	1.00	00:00:00
te data	3	4	1.33	00:01:25
telenet operaties n.v.	3	3	1.00	00:00:00
universidade de aveiro	3	6	2.00	00:05:18
universidade do algarve	3	6	2.00	00:00:44
university of athens	3	7	2.33	00:02:33
university of las palmas de gran canaria	3	4	1.33	00:00:53
university of piraeus	3	4	1.33	00:05:22
university of southampton	3	5	1.67	00:00:14
university of turku	3	5	1.67	00:04:34

a3137-00004-001	2	4	2.00	00:01:10
adsl llu pools	2	2	1.00	00:00:00
amazon.com inc.	2	2	1.00	00:00:00
belnet	2	3	1.50	00:00:05
bouygues telecom res division for	2	3	1.50	00:09:32
brussels regent centre	2	6	3.00	00:01:11
bsren655 rennes bloc 2	2	3	1.50	00:00:05
cbizz b.v.	2	3	1.50	00:00:10
celcom internet service provider	2	3	1.50	00:00:10
central + migration to 21cn	2	2	1.00	00:00:00
centrum voor landbouwkundig onderzoek	2	2	1.00	00:00:00
commission of the european communities	2	2	1.00	00:00:00
compelsove (hamilton rentals)	2	2	1.00	00:00:00
completel sas	2	3	1.50	00:00:09
cosmote mobile telecommunications s.a.	2	2	1.00	00:00:00
cox communications inc.	2	2	1.00	00:00:00
crawley	2	3	1.50	00:00:14
customer allocation - internet service	2	3	1.50	00:00:30
customers asker	2	2	1.00	00:00:00

cypus telecommuncations authority	2	16	8.00	00:02:36
dcenr public facing services	2	15	7.50	00:07:39
de persgroep publishing nv	2	3	1.50	00:04:46
delta-net infrastructure network	2	3	1.50	00:01:26
digital ocean inc.	2	2	1.00	00:00:00
digitalocean llc	2	2	1.00	00:00:00
direcciones ip clientes abi	2	18	9.00	00:06:38
dummy organisation object	2	3	1.50	00:03:42
dynamic dsl - london	2	3	1.50	00:00:39
edinburgh university local area network	2	2	1.00	00:00:00
emirates telecommunications corporation	2	3	1.50	00:00:47
end-user interco	2	2	1.00	00:00:00
erm italia srl	2	2	1.00	00:00:00
établissement public	2	4	2.00	00:05:12
european parliament	2	6	3.00	00:00:45
exponential-e ltd.	2	2	1.00	00:00:00
free mobile sas	2	5	2.50	00:00:29
ftip003107027 rps group plc	2	2	1.00	00:00:00

ftip003445440 maritime and coastguard agency	2	2	1.00	00:00:00
funbo-lovsta	2	2	1.00	00:00:00
fundacio de gestio sanitaria de l hospital sant pau	2	4	2.00	00:01:54
fundacion integra	2	3	1.50	00:00:17
fundacion oceana s.l.	2	2	1.00	00:00:00
fusion media networks ltd	2	2	1.00	00:00:00
gamma telecom dsl services	2	5	2.50	00:11:54
global hosting	2	3	1.50	00:00:36
go p.l.c.	2	4	2.00	00:00:48
gobierno de canarias	2	4	2.00	00:00:23
government of newfoundland and labrador office of the chief inf	2	9	4.50	00:03:54
griffin internet leased line range	2	6	3.00	00:01:11
h tel de r gion des pays de la loire	2	3	1.50	00:00:08
hrvatski hidrigrafski institut	2	3	1.50	00:05:43
hrvatski telekom d.d.	2	4	2.00	00:01:38
idaviru county government	2	10	5.00	00:02:26
iminds vzw	2	2	1.00	00:00:00
incubateur-ntic	2	2	1.00	00:00:00

information society s.a.	2	2	1.00	00:00:00
infraestructura red y servicios ip	2	2	1.00	00:00:00
international seabed authority	2	2	1.00	00:00:00
ip addresses allocated to dsl subscribers	2	4	2.00	00:15:37
jazztel mobile services	2	2	1.00	00:00:00
kcom group plc	2	2	1.00	00:00:00
kongsberg maritime as	2	2	1.00	00:00:00
leeson telecom holdings ltd	2	2	1.00	00:00:00
london customer ag service 10	2	3	1.50	00:00:07
malta information technology agency (mita)	2	2	1.00	00:00:00
marine institute offices	2	2	1.00	00:00:00
nas dhcp pool verona	2	4	2.00	00:01:13
newton abbot	2	7	3.50	00:01:01
nexg	2	3	1.50	00:00:11
norsk institutt for vannforskning	2	2	1.00	00:00:00
orange	2	3	1.50	00:01:18
pat/nat ip addresses pop 3901 for	2	3	1.50	00:00:27
pop lyon	2	2	1.00	00:00:00
private customer	2	2	1.00	00:00:00

provider	2	2	1.00	00:00:00
provider local registry	2	2	1.00	00:00:00
r cable y telecomunicaciones galicia s.a.	2	3	1.50	00:03:09
regione veneto	2	5	2.50	00:00:22
rina spa	2	4	2.00	00:02:00
roombot recreatie beheer	2	3	1.50	00:00:21
services du premier ministre	2	6	3.00	00:00:59
shaw communications inc.	2	2	1.00	00:00:00
signalhorn ag	2	2	1.00	00:00:00
societe francaise du radiotelephone s.a.	2	2	1.00	00:00:00
sonic markets inc	2	4	2.00	00:00:22
statically ip addresses assigned to vf dsl customers	2	8	4.00	00:16:49
statoil asa	2	2	1.00	00:00:00
stella-telecom - static pool - dial-up	2	3	1.50	00:07:21
swansea university	2	2	1.00	00:00:00
sympatico hse	2	5	2.50	00:01:30
t-2 access network	2	2	1.00	00:00:00
telemar norte leste s.a.	2	2	1.00	00:00:00
telenet group bvba/sprl	2	3	1.50	00:00:10

telia stofa a/s	2	2	1.00	00:00:00
the norwegian meteorological institute	2	2	1.00	00:00:00
the united nations educational scientific and cultural organiza	2	4	2.00	00:00:16
universidad de cadiz	2	6	3.00	00:00:47
universidad de cantabria	2	2	1.00	00:00:00
universidad de m laga	2	5	2.50	00:01:39
universidade de coimbra	2	5	2.50	00:00:28
universidade nova de lisboa	2	2	1.00	00:00:00
universita ca foscari - venezia	2	2	1.00	00:00:00
universita degli studi di bari	2	5	2.50	00:04:00
universita degli studi di genova	2	3	1.50	00:00:07
universita degli studi di palermo	2	2	1.00	00:00:00
universita degli studi di roma la sapienza	2	2	1.00	00:00:00
universita di trento	2	9	4.50	00:04:16
universite de la rochelle	2	2	1.00	00:00:00
universite pierre et marie curie	2	2	1.00	00:00:00
university college cork	2	2	1.00	00:00:00
university of leeds	2	2	1.00	00:00:00

university of the aegean	2	3	1.50	00:00:04
university of the highlands and islands	2	2	1.00	00:00:00
university of ulster at coleraine	2	3	1.50	00:00:08
van den herik	2	3	1.50	00:07:17
velopa	2	6	3.00	00:01:00
ventelo dhcp oslo	2	3	1.50	00:00:56
virgin media limited	2	2	1.00	00:00:00
vocus pty ltd	2	5	2.50	00:14:27
vodafone wireless internet services	2	2	1.00	00:00:00
witteveen + bos	2	2	1.00	00:00:00
xtra telecom s.a.	2	2	1.00	00:00:00
zscaler amsterdam ams2	2	2	1.00	00:00:00
2 rue francois verny	1	1	1.00	00:00:00
acv veranstaltungsnetz	1	4	4.00	00:16:09
adapt services limited	1	8	8.00	00:01:27
adsl dynamic ip address pool	1	1	1.00	00:00:00
adsl ull pool for south cluster	1	7	7.00	00:01:53
adsl users internet crna gora	1	1	1.00	00:00:00
adsl1	1	4	4.00	00:00:40
adsl40	1	1	1.00	00:00:00

aecom limited	1	1	1.00	00:00:00
aix-marseille universite - amu	1	1	1.00	00:00:00
alessio & longhi Itda	1	1	1.00	00:00:00
alibaba.com llc	1	1	1.00	00:00:00
aljeel aljadeed for technology	1	1	1.00	00:00:00
alligence	1	1	1.00	00:00:00
america movil peru s.a.c.	1	1	1.00	00:00:00
apolo -gold-telecom-per	1	1	1.00	00:00:00
arteria networks corporation	1	3	3.00	00:01:23
asignacion de /22 para el gobierno del principado de asturias	1	1	1.00	00:00:00
assigned to vodafone malta	1	1	1.00	00:00:00
assignments for always-on services	1	4	4.00	00:03:19
athens	1	1	1.00	00:00:00
atkins limited	1	1	1.00	00:00:00
atos it solutions and services gmbh	1	1	1.00	00:00:00
auna	1	1	1.00	00:00:00
b2b customers ie	1	5	5.00	00:03:45
b2b de meern	1	1	1.00	00:00:00
bell aliант / customer assignments	1	7	7.00	00:01:08

bell aliant / fibreop	1	2	2.00	00:02:39
bergen loddefjord norway	1	1	1.00	00:00:00
blue coat systems inc	1	6	6.00	00:05:42
boix_tecnic	1	1	1.00	00:00:00
bras pools - banjara hills	1	1	1.00	00:00:00
bras pools - secunderabad	1	1	1.00	00:00:00
brasil telecom s/a - filial distrito federal	1	1	1.00	00:00:00
british telecommunications plc	1	1	1.00	00:00:00
broadnet as	1	1	1.00	00:00:00
bsann653 annecy bloc 2	1	1	1.00	00:00:00
bsdij655 dijon bloc 1	1	1	1.00	00:00:00
bskyb broadband ireland	1	2	2.00	00:09:10
bsmar657 marseille bloc 1	1	1	1.00	00:00:00
bsren653 rennes bloc 1	1	1	1.00	00:00:00
bsren658 rennes bloc 2	1	1	1.00	00:00:00
bsrou651 rouen bloc 2	1	3	3.00	00:02:33
bstsl681 saint lambert bloc 1	1	1	1.00	00:00:00
bstsl681 saint lambert bloc 2	1	1	1.00	00:00:00
bt-adsl	1	1	1.00	00:00:00
bti qxn rm	1	9	9.00	00:03:51

buchholz digital gmbh	1	2	2.00	00:00:44
bulgarian academy of sciences network	1	1	1.00	00:00:00
bulgarian telecommunications company plc	1	1	1.00	00:00:00
bullers wood school	1	1	1.00	00:00:00
bundesanstalt fuer geowissenschaften und rohstoffe	1	1	1.00	00:00:00
c.n.r.s siege	1	1	1.00	00:00:00
cablenet communication systems ltd	1	5	5.00	00:01:49
cambridgeshire nats	1	2	2.00	00:03:05
cantv servicios venezuela	1	1	1.00	00:00:00
cardiff university	1	1	1.00	00:00:00
cellucar subscribers for ggsn yv	1	1	1.00	00:00:00
centre de ressources informatique	1	1	1.00	00:00:00
centre de ressources informatiques universite de caen	1	3	3.00	00:02:06
charter communications	1	1	1.00	00:00:00
china unicom beijing province network	1	1	1.00	00:00:00
chinanet jiangsu province network	1	1	1.00	00:00:00

cilnet comunicacao e informatica ltda.	1	1	1.00	00:00:00
claro s.a.	1	1	1.00	00:00:00
cmagu01-mc1-cpe-stb	1	1	1.00	00:00:00
cnr - adr bologna	1	1	1.00	00:00:00
collecte localisation satellites sa	1	1	1.00	00:00:00
colocrossing	1	1	1.00	00:00:00
colruyt group services nv	1	1	1.00	00:00:00
colt-it-mil-111-wan-001	1	1	1.00	00:00:00
comcast business communications llc	1	1	1.00	00:00:00
comcast cable communications inc.	1	1	1.00	00:00:00
commissione delle comunita europee	1	1	1.00	00:00:00
communaute francaise wallonie-bruxelles	1	2	2.00	00:00:23
communication et developpement	1	1	1.00	00:00:00
companhia itabirana telecomunica es ltda	1	1	1.00	00:00:00
computer devision	1	1	1.00	00:00:00
comunitel global s.a.	1	1	1.00	00:00:00
consejo superior de investigaciones	1	1	1.00	00:00:00
consortium garr	1	1	1.00	00:00:00
construction navale	1	1	1.00	00:00:00

consulting in double realtime	1	1	1.00	00:00:00
converged communication solutions limited	1	1	1.00	00:00:00
cowi a/s	1	2	2.00	00:05:47
cranfield university	1	1	1.00	00:00:00
crimeacom south llc	1	3	3.00	00:03:30
customer pppoe dynamic delivery block1	1	2	2.00	00:00:15
customer static address space	1	1	1.00	00:00:00
delft university of technology network	1	1	1.00	00:00:00
deloitte touche tohmatsu services inc.	1	1	1.00	00:00:00
deutsches zentrum fuer luft- und raumfahrt e.v.	1	2	2.00	00:01:48
dhcp customers nl	1	1	1.00	00:00:00
dial-up and adsl pool	1	2	2.00	00:00:29
digital systems ltd	1	1	1.00	00:00:00
dod network information center	1	1	1.00	00:00:00
dokuz eylul university	1	1	1.00	00:00:00
dsl	1	2	2.00	00:00:42
dsme	1	2	2.00	00:00:17
dvz meckl vorpommern	1	3	3.00	00:01:13
dynamic ip addresses	1	1	1.00	00:00:00

dynamic ip pool gprs customers	1	1	1.00	00:00:00
early registrations surfnet bv	1	1	1.00	00:00:00
ecole navale	1	1	1.00	00:00:00
edpnet_adsl_fixed	1	4	4.00	00:02:37
ellijay telephone company	1	1	1.00	00:00:00
enel s.p.a	1	1	1.00	00:00:00
enpc	1	1	1.00	00:00:00
entanet customer	1	1	1.00	00:00:00
eretebat gostaran bina	1	1	1.00	00:00:00
estonian national maritime board	1	3	3.00	00:01:03
europeischen organisation fuer die nutzung meteorologischen sate	1	1	1.00	00:00:00
european commission joint research centre - ispra (va)	1	2	2.00	00:00:30
europäische agentur für raumfahrtesa (esa)	1	9	9.00	00:05:09
evergy s.a.	1	1	1.00	00:00:00
excel exhibition centre	1	1	1.00	00:00:00
fairfield university	1	1	1.00	00:00:00
fastweb	1	2	2.00	00:01:29
fixed-ip	1	1	1.00	00:00:00
fonden videnparken a/s	1	1	1.00	00:00:00

food and agriculture organization of the united nations	1	1	00:0000:00:00	00:00:00
forcepoint cloud netherlands	1	1	1.00	00:00:00
forskningsnettet - danish network for research and education	1	1	1.00	00:00:00
frontier communications of america inc.	1	1	1.00	00:00:00
ftip003263938 atlas elektronik uk ltd	1	1	1.00	00:00:00
ftip003440049 crown estate scotland (interim management)	1	1	1.00	00:00:00
fundacao para a ciencia e a tecnologia i.p.	1	2	2.00	00:01:43
gamma telecom holdings ltd	1	2	2.00	00:00:05
gardline marine sciences ltd	1	2	2.00	00:02:09
garr-b backbone and pops	1	1	1.00	00:00:00
gartel subnet-1 512 ipv4 address	1	7	7.00	00:02:06
gazi universitesi	1	1	1.00	00:00:00
gesti n de direccionamiento uninet	1	1	1.00	00:00:00
gfis gmbh	1	1	1.00	00:00:00
glaxosmithkline	1	1	1.00	00:00:00

global mobile operator	1	1	1.00	00:00:00
globe telecom (gmcr inc)	1	1	1.00	00:00:00
gprs pools	1	6	6.00	00:04:33
h3g s.p.a.	1	1	1.00	00:00:00
h3guk subscribe block3	1	1	1.00	00:00:00
halfdan wilhelmsens alle 22 as	1	2	2.00	00:01:16
hellas on line sa - dsl	1	1	1.00	00:00:00
hellenic army schools	1	2	2.00	00:02:33
hellenic centre for marine research	1	3	3.00	00:02:32
helmholtz-zentrum geesthacht zentrum fuer material- und kuestenf	1	4	4.00	00:02:44
hol static dialup	1	1	1.00	00:00:00
home adsl static	1	1	1.00	00:00:00
hotsplots gmbh	1	3	3.00	00:05:45
houari boumediene s university of science & technology network	1	1	1.00	00:00:00
https/ssl hosting service	1	1	1.00	00:00:00
hutchison 3g ireland	1	2	2.00	00:02:49
hutchison 3g ireland.	1	1	1.00	00:00:00
hydra communications ltd	1	1	1.00	00:00:00
ifiber pa range	1	2	2.00	00:00:23
imported inetnum	1	1	1.00	00:00:00

object for bureau				
indian institute of technology kharagpur india	1	5	5.00	00:16:50
indrasistemas_net	1	4	4.00	00:04:09
infrastructure	1	1	1.00	00:00:00
ingenieursbureau orangewoud bv independent consulting	1	2	2.00	00:00:22
ingv - sezione di bologna	1	1	1.00	00:00:00
ingv - sezione di napoli - ovv	1	1	1.00	00:00:00
institut de physique du globe de paris network	1	4	4.00	00:07:09
institut za vode republike slovenije	1	2	2.00	00:04:40
institute of cybernetics	1	4	4.00	00:07:25
institute of marine biology of crete	1	1	1.00	00:00:00
instituto portugues do mar e atmosfera	1	1	1.00	00:00:00
instituto portugues do mar e atmosfera - delegacao de alges	1	2	2.00	00:01:59
internet subnet for mercator company	1	1	1.00	00:00:00
ip addresses allocated to dsl customers	1	3	3.00	00:00:25
ip addresses assigned for dsl customers	1	2	2.00	00:00:58
ip addresses assigned to	1	1	1.00	00:00:00

vf customers				
ip addresses assigned to vf dsl customers	1	2	2.00	00:03:22
ip addresses reserved to dsl subscribers	1	1	1.00	00:00:00
ip range for wholesale customers	1	1	1.00	00:00:00
ip-only networks ab	1	3	3.00	00:08:21
ips for broadband customers	1	2	2.00	00:00:35
ipv4 address block not managed by the ripe ncc	1	1	1.00	00:00:00
irstea	1	1	1.00	00:00:00
islenskar orkurannsoknir isor	1	1	1.00	00:00:00
istituto nazionale di geofisica e vulcanolog public subnet	1	1	1.00	00:00:00
it7 networks inc	1	4	4.00	00:00:55
javne adrese za adsl korisnike	1	1	1.00	00:00:00
jazztel triple play services	1	2	2.00	00:00:11
jeremy benn associates	1	1	1.00	00:00:00
kabel deutschland breitband customer 16	1	1	1.00	00:00:00
katholieke universiteit leuven	1	1	1.00	00:00:00
klaipeda university	1	1	1.00	00:00:00
koebenhavns kommune	1	3	3.00	00:00:45

leverancecenter it infrastruktur				
koninklijk belgisch instituut voor natuurwetenschappen	1	2	2.00	00:00:21
korea telecom	1	5	5.00	00:02:35
kpn mobile the netherlands b.v	1	1	1.00	00:00:00
kpn zm on2013	1	1	1.00	00:00:00
laboratorio nacional de energia e geologia	1	2	2.00	00:00:26
lanestel sarl	1	1	1.00	00:00:00
lansstyrelsen i vastra gotalands lan	1	5	5.00	00:00:52
laore sardegna	1	1	1.00	00:00:00
lasotel sarl	1	1	1.00	00:00:00
leaseweb deutschland gmbh cloudstack premium	1	1	1.00	00:00:00
leiden university	1	1	1.00	00:00:00
leidos inc.	1	1	1.00	00:00:00
linkem ir wimax network	1	1	1.00	00:00:00
lirex net	1	2	2.00	00:00:03
lkf	1	1	1.00	00:00:00
Inmso656 montsouris bloc 1	1	1	1.00	00:00:00
Input656 puteaux bloc 1	1	2	2.00	00:02:34
Input657 poitiers bloc 2	1	1	1.00	00:00:00

Input657 puteaux bloc 1	1	5	5.00	00:00:50
london grid for learning trust	1	1	1.00	00:00:00
m247 ltd copenhagen infrastructure	1	1	1.00	00:00:00
m6 web s.a.s.	1	1	1.00	00:00:00
maersk olie og gas	1	1	1.00	00:00:00
magnet networks limited	1	1	1.00	00:00:00
magneticom ltd.	1	1	1.00	00:00:00
man005-ll001	1	1	1.00	00:00:00
managed.com	1	1	1.00	00:00:00
marine research institute	1	2	2.00	00:00:32
meo mobile customers nat	1	1	1.00	00:00:00
meritaito oy	1	1	1.00	00:00:00
min.interno-dip.vigili del fuoco- socc.pubbl. e difesa civile	1	2	2.00	00:01:08
ministere des transports du quebec	1	3	3.00	00:02:41
ministerie van defensie - huis ter heide	1	1	1.00	00:00:00
ministry of interior	1	1	1.00	00:00:00
mobifon s.a.	1	1	1.00	00:00:00
mobile broadband isp	1	1	1.00	00:00:00
mobistar sa	1	1	1.00	00:00:00

montclair state university	1	2	2.00	00:04:35
multi - multimedia e informatica lida	1	1	1.00	00:00:00
nacionalni institut za biologijo	1	1	1.00	00:00:00
nas dhcp pool bari	1	1	1.00	00:00:00
nas dhcp pool como	1	1	1.00	00:00:00
nas dhcp pool genova	1	1	1.00	00:00:00
nas dhcp pool modena	1	4	4.00	00:02:29
nas dhcp pool pescara	1	1	1.00	00:00:00
nas dhcp pool pisa	1	5	5.00	00:01:29
nas dhcp pool rimini	1	1	1.00	00:00:00
national geographic institute	1	1	1.00	00:00:00
national health service	1	1	1.00	00:00:00
national research university higher school of economics	1	1	1.00	00:00:00
national technical university of athens	1	2	2.00	00:05:15
nato sto-cmre	1	1	1.00	00:00:00
ncc#2006071591	1	1	1.00	00:00:00
ncnet broadband customers	1	1	1.00	00:00:00
nederlands instituut voor onderzoek der zee	1	1	1.00	00:00:00
nederlandse defensie academie (nlda)	1	1	1.00	00:00:00

nederlandse spoorwegen pi block	1	1	1.00	00:00:00
nerc computer services	1	1	1.00	00:00:00
nerim sas	1	1	1.00	00:00:00
netsource	1	1	1.00	00:00:00
network of arcadis nv	1	1	1.00	00:00:00
newcastle	1	1	1.00	00:00:00
nhtv internationale hogeschool breda	1	3	3.00	00:00:42
nice	1	3	3.00	00:01:11
noaa-boulder	1	1	1.00	00:00:00
nordsee nassbagger	1	1	1.00	00:00:00
nte bredband ftth	1	1	1.00	00:00:00
numeria srl	1	1	1.00	00:00:00
o t tecnologia em informatica ltda	1	1	1.00	00:00:00
o2 germany gmbh & co. ohg	1	1	1.00	00:00:00
obs customer	1	1	1.00	00:00:00
observatoire midi pyrenees	1	1	1.00	00:00:00
ojsc rostelecom macroregional branch north-west	1	9	9.00	00:05:02
ono_ngtv	1	1	1.00	00:00:00
open business systems	1	1	1.00	00:00:00
optanet ltd	1	1	1.00	00:00:00

orange espagne sa	1	1	1.00	00:00:00
orange france - wfp	1	3	3.00	00:04:01
orange wbc broadband	1	1	1.00	00:00:00
ouk broadband ip stream	1	4	4.00	00:03:11
ovivo uk limited	1	1	1.00	00:00:00
palo alto networks techops	1	1	1.00	00:00:00
panservice	1	3	3.00	00:02:30
parco regionale dei castelli romani	1	1	1.00	00:00:00
pat/nat ip addresses pop 3101 for	1	1	1.00	00:00:00
pe-tdp-grs	1	1	1.00	00:00:00
pepephone - cg-nat	1	1	1.00	00:00:00
pioneer broadband	1	1	1.00	00:00:00
planetek italia public subnet	1	1	1.00	00:00:00
pldt_jnehubs003_dhcp	1	2	2.00	00:06:08
pool for broadband dsl customers	1	1	1.00	00:00:00
pop mar	1	2	2.00	00:03:04
pop nc idf2	1	1	1.00	00:00:00
pop poitiers	1	1	1.00	00:00:00
port utilities	1	1	1.00	00:00:00
post office broadband	1	1	1.00	00:00:00
previder b.v.	1	1	1.00	00:00:00

proximus mobile internet	1	1	1.00	00:00:00
proximus nv	1	1	1.00	00:00:00
pt prime - solucoes empresariais	1	6	6.00	00:37:41
pure pages inc.	1	1	1.00	00:00:00
qwest communications company llc	1	1	1.00	00:00:00
r sidentiel	1	1	1.00	00:00:00
range assigned to comune di followica end-user	1	2	2.00	00:01:22
reading	1	1	1.00	00:00:00
reassign to animated storyboards(thailand) co. ltd.)	1	1	1.00	00:00:00
rectorat de l academie de nantes	1	1	1.00	00:00:00
red publica de creapolis	1	6	6.00	00:00:20
region provence alpes cote d azur	1	1	1.00	00:00:00
regione autonoma friuli venezia giulia	1	1	1.00	00:00:00
regione emilia-romagna	1	1	1.00	00:00:00
relaix networks gmbh	1	1	1.00	00:00:00
republika slovenija ministrstvo za javno upravo	1	1	1.00	00:00:00
reseau adsl residentiel alger	1	3	3.00	00:02:56

residential customers	1	1	1.00	00:00:00
residentiel	1	1	1.00	00:00:00
romtelecom data customers	1	2	2.00	00:04:45
salem information services ltd	1	1	1.00	00:00:00
santiago de compostela	1	1	1.00	00:00:00
sc media sat srl	1	1	1.00	00:00:00
schuberg philis b.v.	1	1	1.00	00:00:00
senergy	1	1	1.00	00:00:00
sida group	1	4	4.00	00:02:27
sim soft bilgisayar teknolojileri ltd sti.	1	1	1.00	00:00:00
sl-cgn	1	1	1.00	00:00:00
spectrum internet client	1	1	1.00	00:00:00
stafford	1	1	1.00	00:00:00
statens it	1	1	1.00	00:00:00
static ip	1	1	1.00	00:00:00
steria ltd	1	1	1.00	00:00:00
stetnet informatica ltda.	1	1	1.00	00:00:00
supermedia sp. z o.o.	1	3	3.00	00:00:36
sveriges geologiska undersökning (sgu)	1	1	1.00	00:00:00
swedish meteorological and hydrological institute	1	2	2.00	00:04:21
swire blue ocean a-s	1	1	1.00	00:00:00

swire seabed shipping as	1	1	1.00	00:00:00
taipei taiwan	1	1	1.00	00:00:00
talktalk communications limited	1	3	3.00	00:12:40
tdc bb-adsl users	1	1	1.00	00:00:00
tdc song as	1	1	1.00	00:00:00
teamnet international sa	1	1	1.00	00:00:00
technical research center	1	1	1.00	00:00:00
technische universitaet carolo-wilhelmina zu braunschweig	1	1	1.00	00:00:00
technological educational institute (t.e.i.) of athens	1	1	1.00	00:00:00
tecteo	1	1	1.00	00:00:00
telecable	1	1	1.00	00:00:00
telecom italia mobile	1	1	1.00	00:00:00
telecom italia s.p.a	1	1	1.00	00:00:00
teledyne brown engineering	1	1	1.00	00:00:00
telefonica de espana sau red de servicios ip spain nat	1	1	1.00	00:00:00
telefonica o2 germany gmbh & co. ohg	1	1	1.00	00:00:00
telekom srbija adsl users	1	1	1.00	00:00:00
telenet customer	1	1	1.00	00:00:00

jandenul				
telenor myanmar	1	1	1.00	00:00:00
telenor norge customers link net	1	1	1.00	00:00:00
telfort b.v.	1	3	3.00	00:03:12
telgo telecomunica es goi s ltda.	1	1	1.00	00:00:00
telia network services	1	1	1.00	00:00:00
telstra	1	1	1.00	00:00:00
tennet tso b.v.	1	2	2.00	00:05:01
terna s.p.a.	1	1	1.00	00:00:00
texas a&m university at galveston	1	2	2.00	00:13:19
the cloud networks germany gmbh	1	1	1.00	00:00:00
the dublin institute for advanced studies	1	3	3.00	00:01:14
the empire district electric company	1	1	1.00	00:00:00
the ocean cleanup operations bv	1	1	1.00	00:00:00
the university of edinburgh	1	1	1.00	00:00:00
this network is used for customer allocation.	1	11	11.00	00:34:13
three ireland - mns	1	1	1.00	00:00:00
tim	1	2	2.00	00:08:59
tiscali italia spa	1	1	1.00	00:00:00

tiscali uk limited	1	1	1.00	00:00:00
tiscalinet	1	1	1.00	00:00:00
traffic broadband communications ltd.	1	2	2.00	00:00:55
true internet co. ltd.	1	4	4.00	00:05:05
truehispeed	1	1	1.00	00:00:00
tt adsl-static_gay	1	5	5.00	00:04:16
u.s. geological survey	1	5	5.00	00:05:53
universidad de granada	1	1	1.00	00:00:00
universidad de murcia	1	1	1.00	00:00:00
universidad del pais vasco - euskal herriko unibertsitatea	1	4	4.00	00:19:56
universidade do estado do rio de janeiro	1	1	1.00	00:00:00
universidade do minho	1	1	1.00	00:00:00
universidade do porto	1	1	1.00	00:00:00
universidade dos acores	1	1	1.00	00:00:00
universit degli studi di ferrara	1	1	1.00	00:00:00
universita degli studi di firenze	1	1	1.00	00:00:00
universita degli studi di milano	1	1	1.00	00:00:00
universita degli studi di milano-bicocca	1	1	1.00	00:00:00
universita degli studi di pavia	1	1	1.00	00:00:00

universita degli studi di pisa	1	1	1.00	00:00:00
universita degli studi di siena	1	2	2.00	00:01:40
universita della calabria	1	4	4.00	00:00:46
universita di roma tre	1	2	2.00	00:04:54
universita di siena	1	1	1.00	00:00:00
universitaet bremen	1	1	1.00	00:00:00
universitat de les illes balears	1	1	1.00	00:00:00
universite de bordeaux - dsi	1	1	1.00	00:00:00
universite de brest	1	1	1.00	00:00:00
university college london	1	1	1.00	00:00:00
university of aberdeen	1	1	1.00	00:00:00
university of bath	1	1	1.00	00:00:00
university of helsinki	1	1	1.00	00:00:00
university of houston	1	1	1.00	00:00:00
university of newcastle upon tyne	1	1	1.00	00:00:00
university of plymouth	1	5	5.00	00:05:27
upc polska sp. z o.o.	1	1	1.00	00:00:00
utrecht university	1	1	1.00	00:00:00
van oord dredging and marine contractors bv	1	1	1.00	00:00:00
vandalina - ipv4 network	1	1	1.00	00:00:00

vastra gotalandsregionen	1	1	1.00	00:00:00
vattenfall europe information services gmbh	1	1	1.00	00:00:00
vattenfall mpls	1	1	1.00	00:00:00
versatel deutschland	1	1	1.00	00:00:00
vianet	1	2	2.00	00:04:57
videotron ltee	1	2	2.00	00:05:32
viettel cameroun sarl	1	1	1.00	00:00:00
vikmar p/f	1	3	3.00	00:01:58
vodafone d2 gmbh	1	8	8.00	00:09:32
vodafone espana s.a.u.	1	1	1.00	00:00:00
vodafone ghana adsl dynamic address expanded pool2	1	1	1.00	00:00:00
vodafone isp	1	1	1.00	00:00:00
vodafone msm xan network	1	2	2.00	00:01:43
vodafone portugal	1	1	1.00	00:00:00
vodafone spain	1	1	1.00	00:00:00
voice	1	2	2.00	00:00:54
voip-operator access infrastructure	1	1	1.00	00:00:00
voyager internet ltd.	1	3	3.00	00:01:31
vtr banda ancha s.a.	1	1	1.00	00:00:00
wageningen universiteit	1	1	1.00	00:00:00

wanadoo adsl customers with static addresses	1	1	1.00	00:00:00
wcmc 2000	1	1	1.00	00:00:00
websurf online	1	2	2.00	00:00:56
welcome italia s.p.a	1	1	1.00	00:00:00
wereld natuur fonds	1	1	1.00	00:00:00
wholesale customers	1	1	1.00	00:00:00
wind hellas telecommunications sa	1	1	1.00	00:00:00
windtre s.p.a	1	2	2.00	00:00:39
wirelessbelgie	1	2	2.00	00:28:34
x2 communications limited	1	1	1.00	00:00:00
xdsl access and service provider in norway	1	1	1.00	00:00:00
zemes ukio ministerija	1	1	1.00	00:00:00

List of abbreviations and acronyms

Acronyms as used in this report are defined in the following list:

CMP: Coastal Mapping Planner

DG MARE: Directorate-General for Maritime Affairs and Fisheries

DTM: Digital Terrain Model

EMODnet: European Marine Observation and Data Network

EU: European Union

GEBCO: General Bathymetric Chart of the Oceans

IENWG: IHO-EC Network Working Group

IHO: International Hydrographic Organization

LiDAR: Light Detection And Ranging

WP: Work Package

Glossary

Technical terms as used in this report and its annexes are defined in the following list:

Lidar: An instrument that measures distance to a reflecting object by emitting timed pulses of laser light and measuring the time between emission and reception of reflected pulses. The measured time interval is converted to distance. In survey use, the lidar system usually scans the light pulses across the track of the survey platform (usually an aircraft) so that successive pulses cover a swath either side of the platform's track. Infra-red lasers will reflect off land and water, and are normally used for topographic lidar surveys. Blue-green lasers will penetrate water and are used in hydrographic lidar surveys.

Multi beam echo sounder: A type of swath sounding system in which the equipment emits a timed pulse of sound that is narrow in the fore-aft direction and wide in the across track direction. The reflected sound is received by several receivers arranged as an array. By use of signal processing of the signal received at combinations of the receivers a much larger number, potentially many hundreds, of acoustic receive beam angles are formed. For each receive beam the time interval between emission and reception of the reflected sound is converted into a range. Geometry is then used to convert each range and receive beam angle to depths and also to position these depths within the swath on the seafloor. MBES systems may also be referred to as beam-formers.