# marine knowledge 2020

## status September 2013

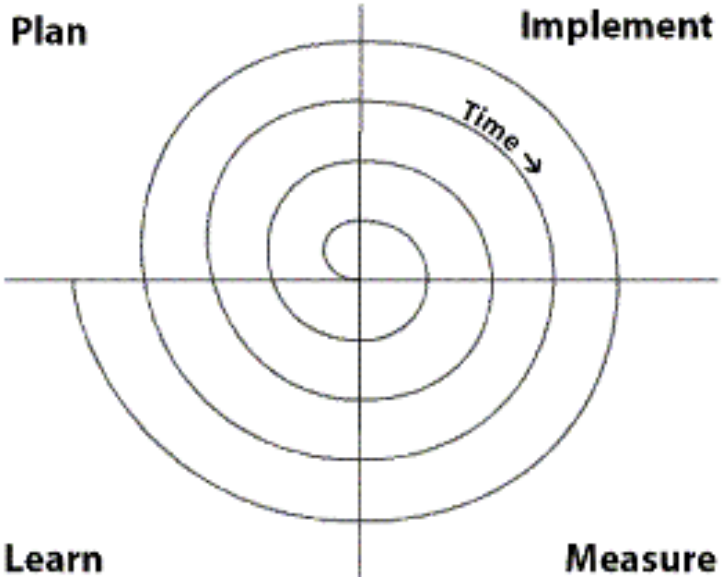
By Iain Shepherd – EU DG MARE

Maritime Affairs

EMODnet European Marine Observation and Data Network

# prototype method

| 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase 1 – limited sea basins | | | | | | | | | | | |
| | | | | Phase 2 - low resolution | | | | | | | |
| | | | | | | Phase 3 - multi-resolution | | | | | |




allows users to assess and improve product by trying it out

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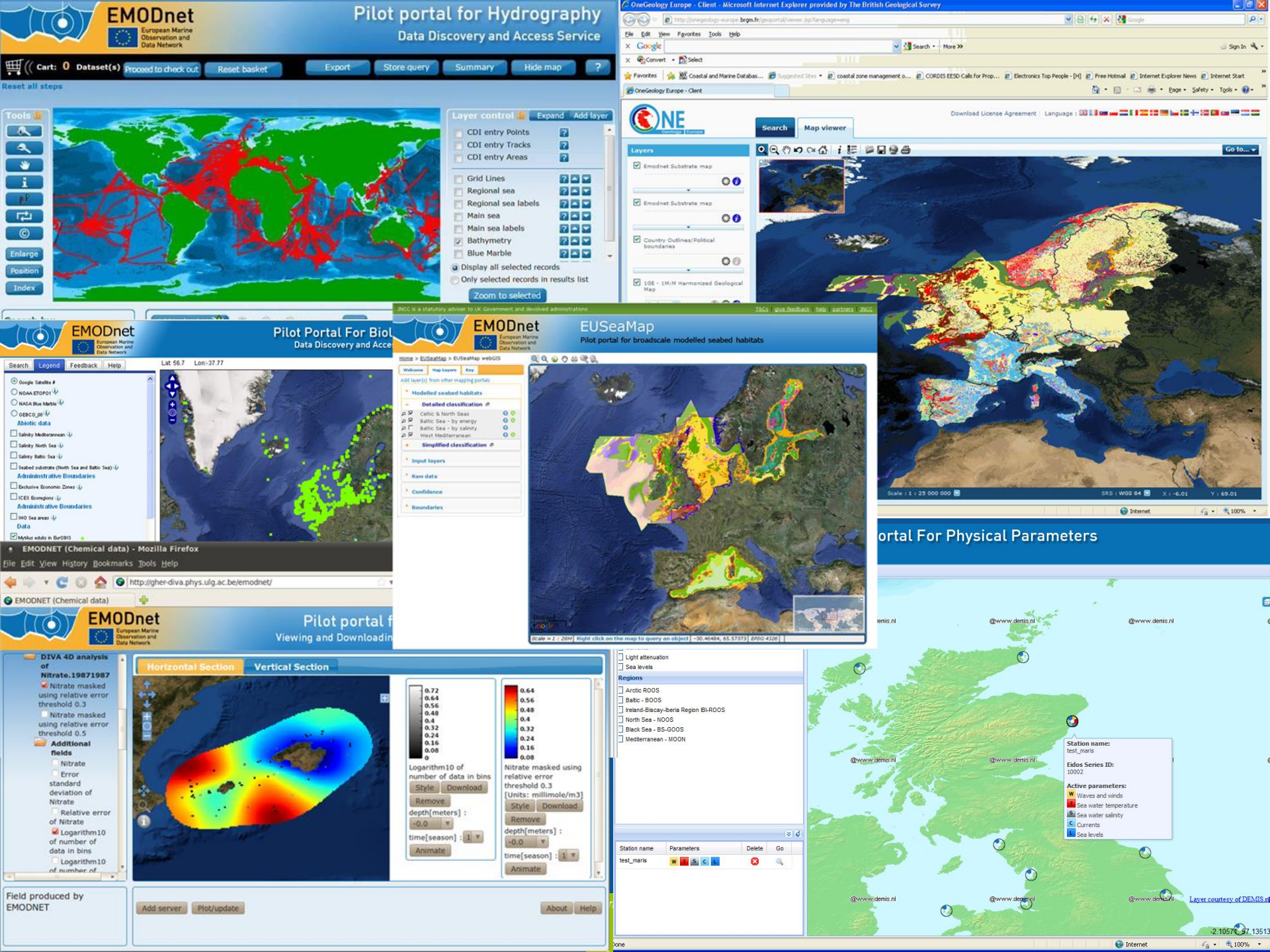
# what is delivered??

- access to data
  - maintained on Member States' databases
  - interoperable, common standards
  - metadata describing time, date of measurement, quality, etc.
- data products
  - maintained by consortium
  - map layers
  - quality indicators


EMODnet
European Marine Observation and Data Network
Pilot portal for Hydrography
Data Discovery and Access Service
Cart: 0 Dataset(s)
Proceed to check out
Reset basket
Export
Store query
Summary
Hide map
Reset all steps
Tools
Enlarge
Position
Index
Layer control
Expand
Add layer
CDI entry Points
CDI entry Tracks
CDI entry Areas
Grid Lines
Regional sea
Regional sea labels
Main sea
Main sea labels
Bathymetry
Blue Marble
Display all selected records
Only selected records in results list
Zoom to selected
OneGeology Europe - Client - Microsoft Internet Explorer provided by The British Geological Survey
Search
Map viewer
Layers
Emodnet Substrate map
Country Outlines/Political boundaries
1GE - 1M:M Harmonized Geological Map
Pilot Portal For Biol
Data Discovery and Acce
Search
Legend
Feedback
Help
Abiotic data
Administrative Boundaries
Data
EMODNET (Chemical data) - Mozilla Firefox
http://gher-diva.phys.ulg.ac.be/emodnet/
EMODnet
EUSeaMap
Pilot portal for broadscale modelled seabed habitats
Modelled seabed habitats
Detailed classification
Simplified classification
Input layers
Raw data
Confidence
Boundaries
Pilot portal f
Viewing and Downloadin
ortal For Physical Parameters
DIVA 4D analysis of Nitrate.19871987
Nitrate masked using relative error threshold 0.3
Nitrate masked using relative error threshold 0.5
Additional fields
Nitrate
Error standard deviation of Nitrate
Relative error of Nitrate
Logarithm10 of number of data in bins
Horizontal Section
Vertical Section
Logarithm10 of number of data in bins
Style
Download
Remove
depth[meters] :
time[season] :
Animate
Nitrate masked using relative error threshold 0.3 [Units: millimole/m3]
Field produced by EMODNET
Add server
Plot/update
About
Help
Light attenuation
Sea levels
Regions
Arctic ROOS
Baltic - BOOS
Ireland-Biscay-Iberia Region IBI-ROOS
North Sea - NOOS
Black Sea - BS-GOOS
Mediterranean - MOON
Station name
Parameters
Delete
Go
test_maris
Station name:
test_maris
Eidos Series ID:
10002
Active parameters:
Waves and winds
Sea water temperature
Sea water salinity
Currents
Sea levels
Layer courtesy of DEMIS.nl

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# budget

| | phase 1 | phase 2 |
|---|---|---|
| bathymetry | € 2,175,000 | € 2,000,000 |
| geology | € 925,000 | € 4,200,000 |
| physics | € 1,000,000 | € 1,000,000 |
| chemistry | € 700,000 | € 4,000,000 |
| biology | € 750,000 | € 1,700,000 |
| physical habitats | € 800,000 | € 1,390,000 |
| human activity | | € 2,060,000 |
| | **€ 6,350,000** | **€ 16,350,000** |

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# Phase 2

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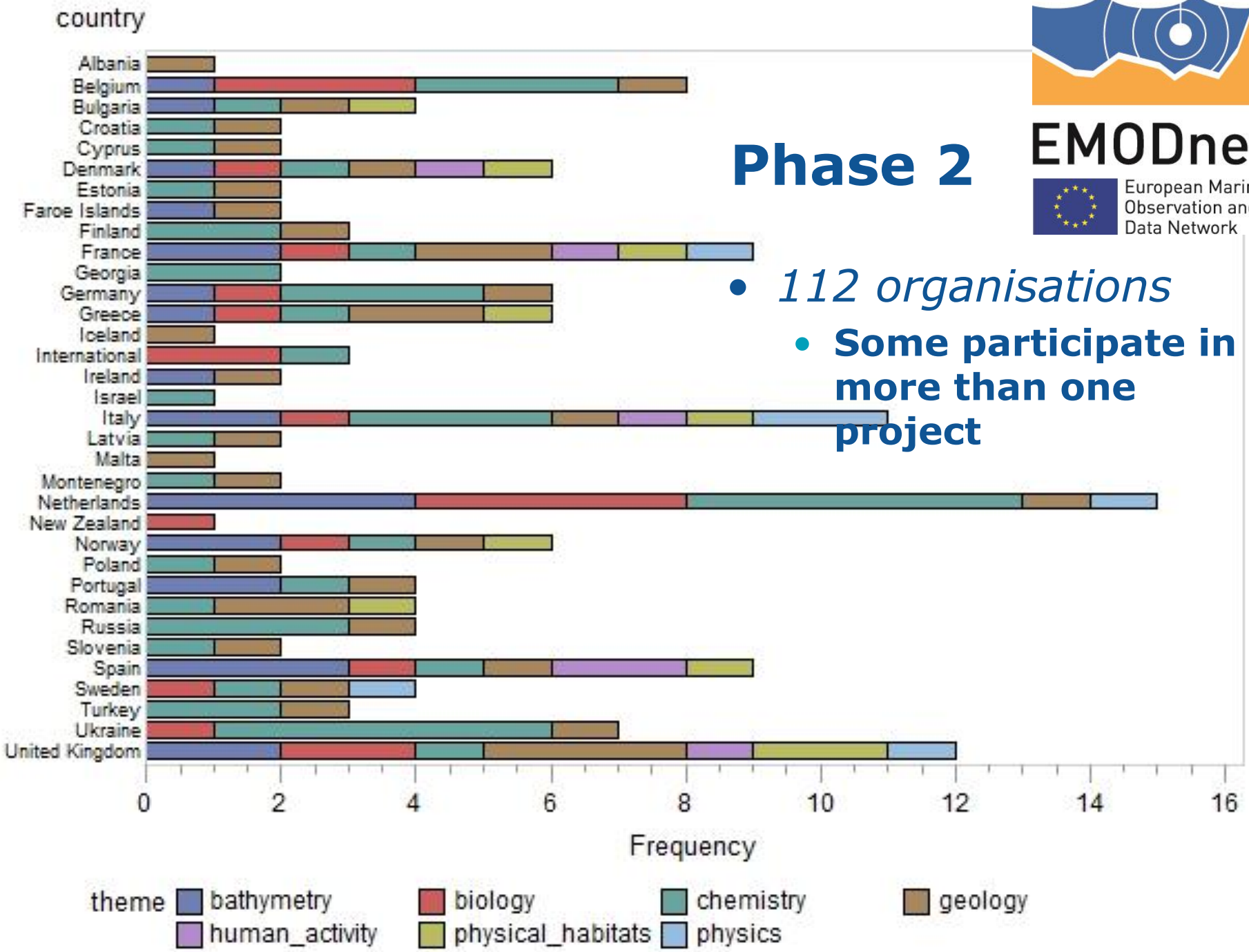
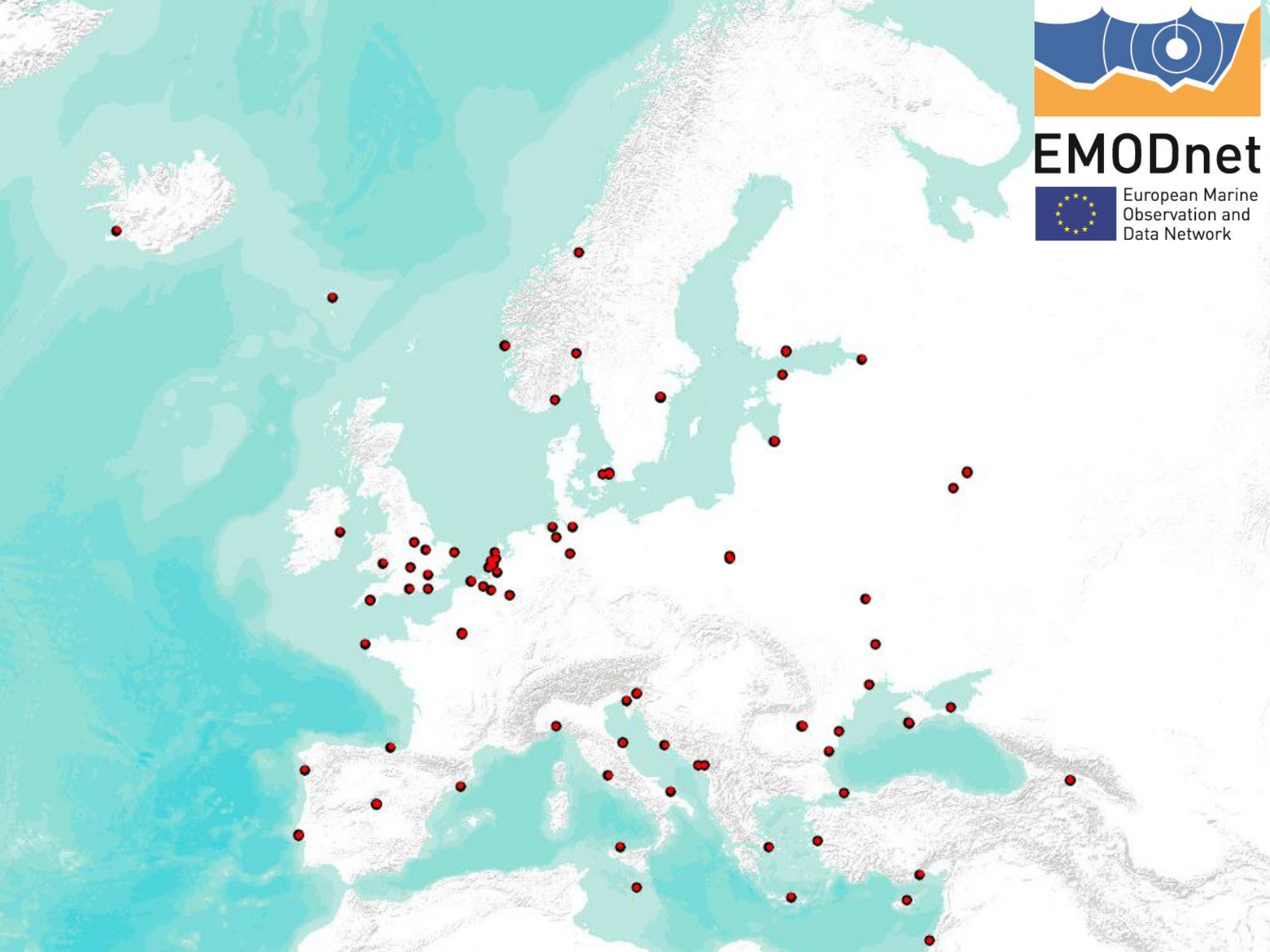
- *112 organisations*
  - **Some participate in more than one project**

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EMODnet European Marine Observation and Data Network

# how they spend the money

| objective | biology | chemistry | bathymetry | average |
|---|---|---|---|---|
| data and metadata | 54 | 39 | 29 | 41 |
| data products | 18 | 35 | 50 | 34 |
| evaluation and dissemination | 8 | 5 | 4 | 6 |
| portal development | 11 | 12 | 14 | 12 |
| project management | 9 | 10 | 4 | 8 |
| Total | 100 | 100 | 100 | 100 |

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# sea basin checkpoints

## How can observation infrastructure be optimised?

North Sea

Mediterranean

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# secretariat hosting


- Flemish Marine Institute
  - meeting rooms, offices, IT
  - building main internet portal

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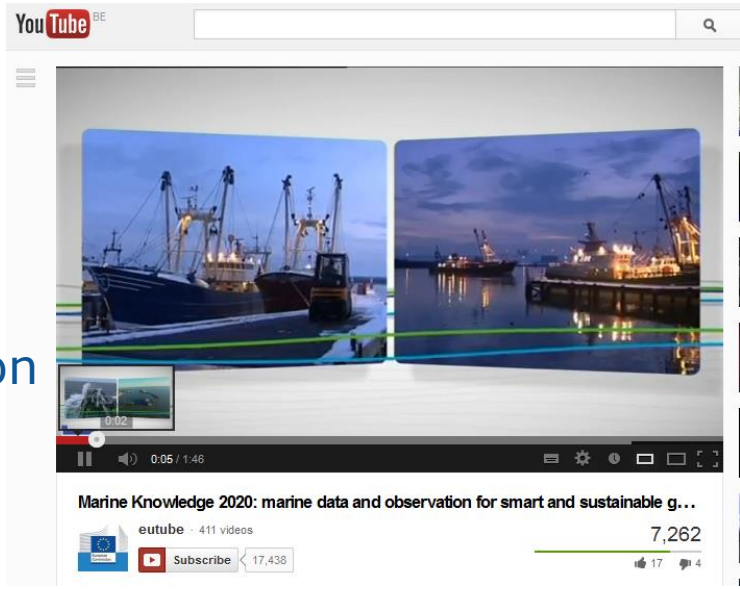
# secretariat tasks

- monitoring
  - organise steering committee
  - summarise meetings of Marine Observation and Data Expert Group
  - test the EMODnet thematic portals
  - develop and publish progress indicators
  - publish bi-monthly progress reports
  - report lessons learned
- dissemination
  - prepare a half-hour on-line demonstration
  - and make 20 demonstrations
  - shoot two 10 minute videos of EMODnet
  - prepare an EMODnet brochure
  - publish annual progress reports
  - maintain web-site

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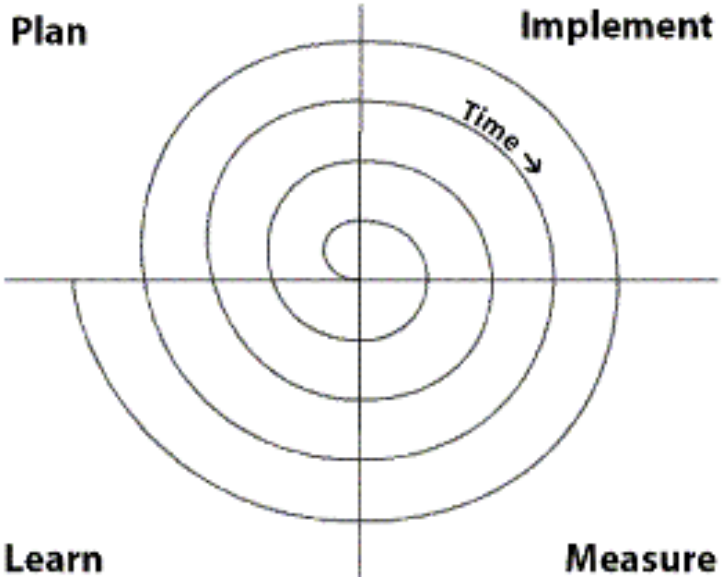


allows users to assess and improve product by trying it out

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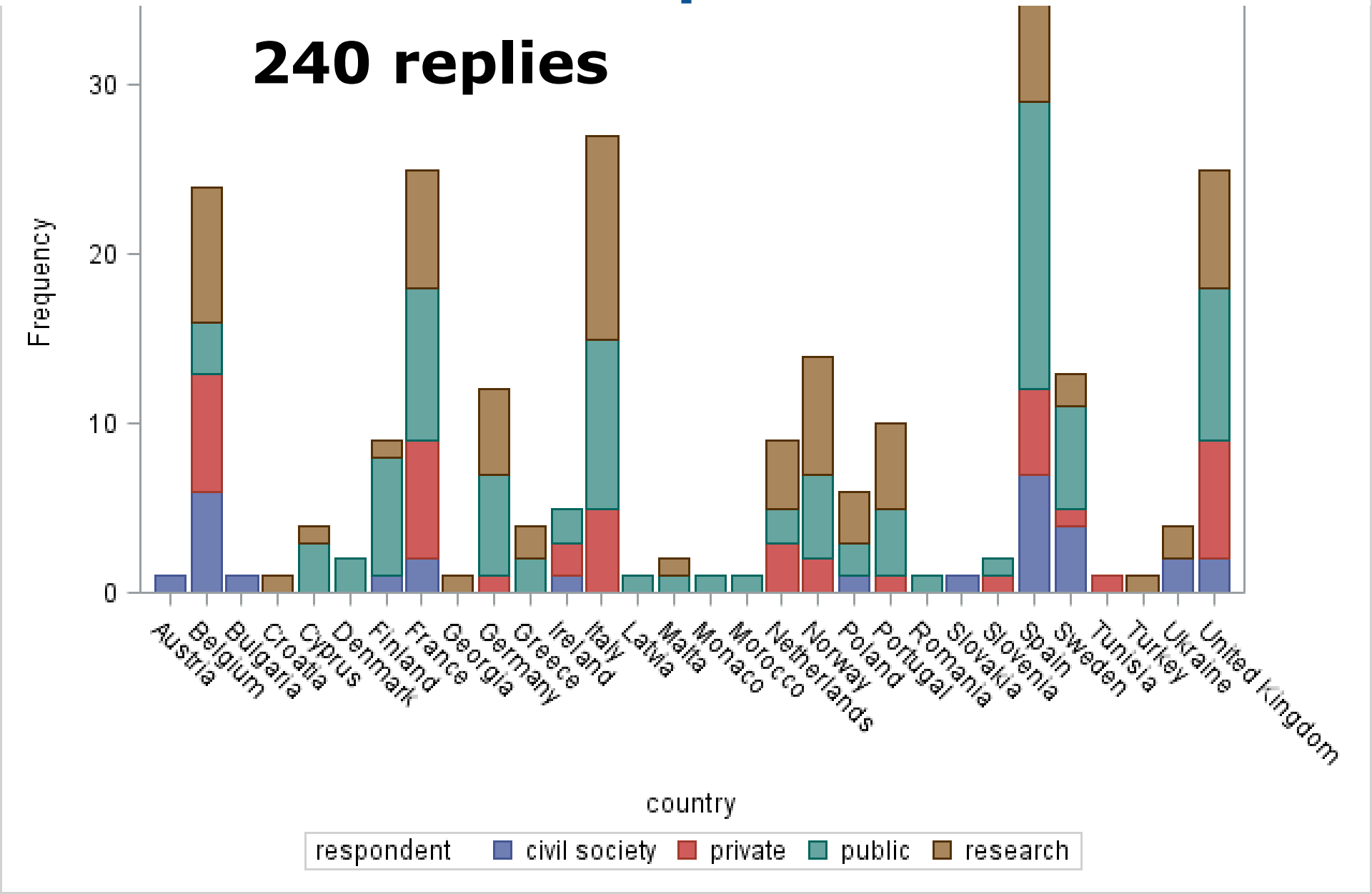
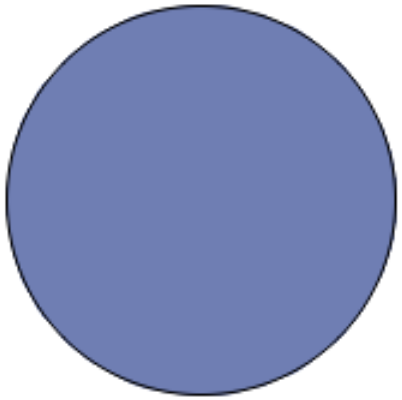
# public consultation to gather ideas for third phase

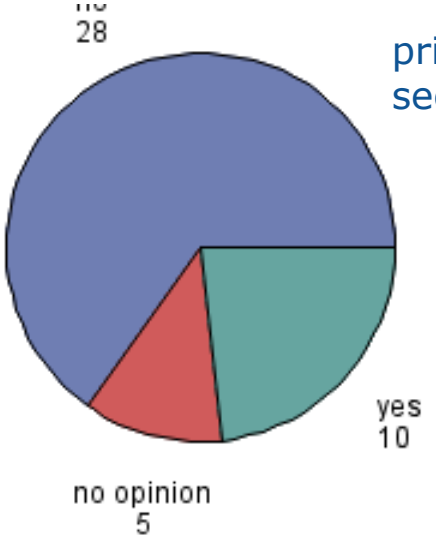


# Are there any reasons why there should be exceptions, to the Commission's policy of making marine data freely available and interoperable?

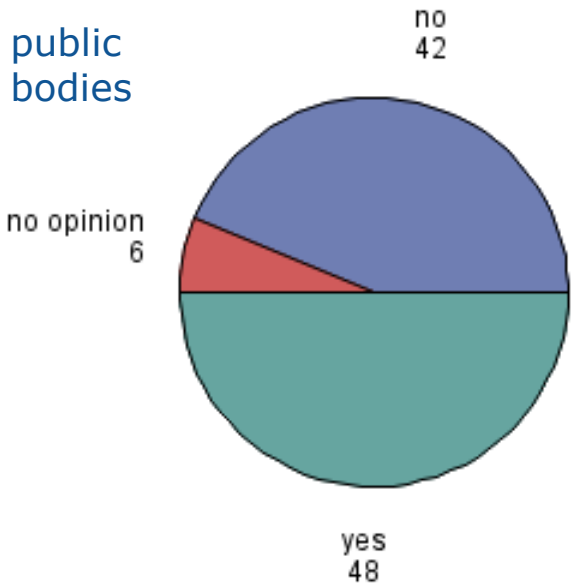
civil society



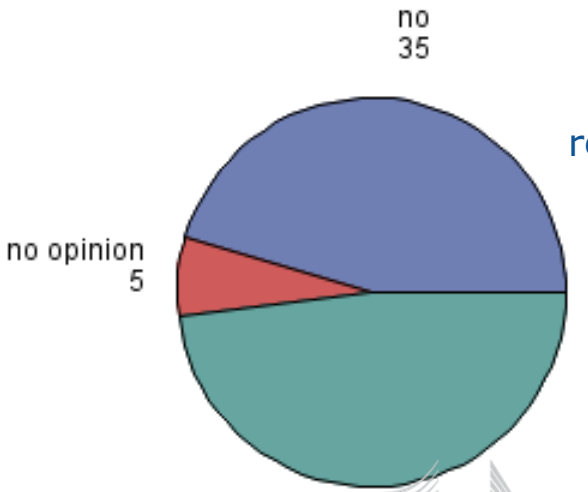

private sector




public bodies




researchers

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# outcome of consultation

- endorsed basic principles
- confirmed that we are on the right track
- identified new needs

# endorsed basic principles

- need for open access to marine data, in both raw and aggregated forms;
- few exceptions:
  - national security;
  - damage to heritage sites and endangered ecosystems;
  - commercial sensitivity;
  - the need to allow scientists time to publish;
  - safety and liability issues due to data misinterpretation.

# confirmed we are on the right track

- the architecture of the current EMODnet is sound
  - geology, bathymetry, physics, chemistry, biology, physical habitats and human activity
- EMODnet can assist with environmental or fisheries reporting
  - replace "push" with "pull"

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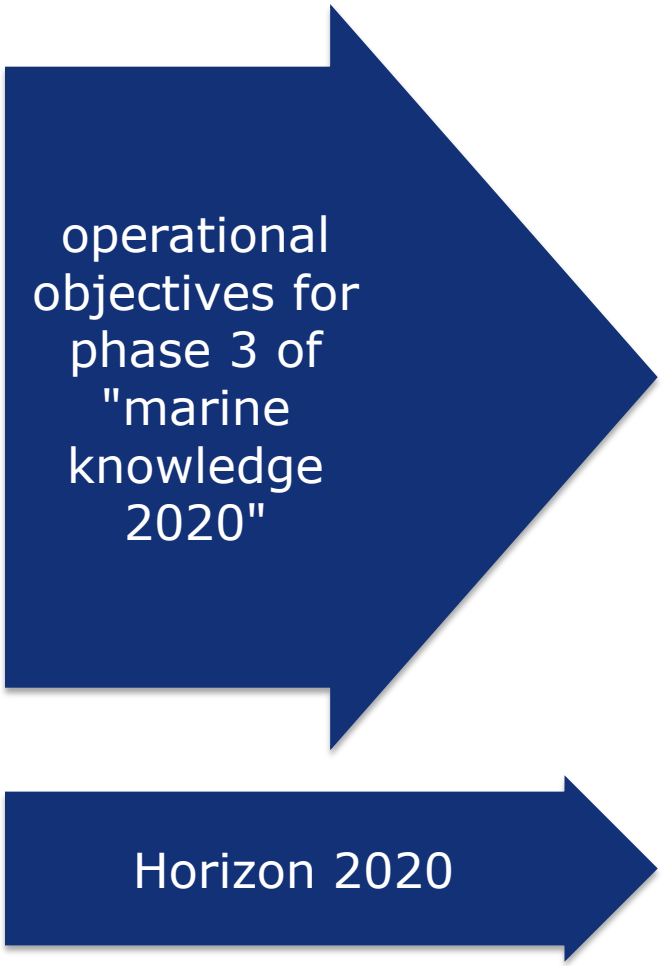
# identified new needs

- more involvement of private sector
- mechanism to advise Member States and the EU on the most cost-effective sampling, surveying and observation programme for each sea-basin
- convergence of EMODnet, data collection in fisheries and Copernicus marine service
- novel sensors that can measure parameters automatically without the need to bring samples back to the laboratory

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# economic benefits of "marine knowledge 2020"

1. reduced costs for offshore activities
2. stimulation of innovation
3. reduced uncertainty in knowledge of the behaviour of the sea

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# cost savings

**Having an integrated rather than a fragmented data infrastructure can save money for users of marine data in two ways:**

1. **they would not need to re-survey areas that had already been surveyed but for which the data have up to now been inaccessible.**
2. **it would cost them less to process existing data.**

**So the total saving $S^s$ to stakeholder group $s$ can be expressed as**

$$S^s = \sum_{i=1,N} \left(\propto_i^s \beta_i^s + (1 - \alpha_i^s)\gamma_i\right)\emptyset_i^s C^s$$

# discovered 6000 surveys

| | basin area | surveyed | to be surveyed | to be surveyed |
|---|---|---|---|---|
| | $km^2$ | $km^2$ | $km^2$ | percent |
| **North Sea and English Channel** | 678,250 | 400,700 | 277,550 | 41% |
| **Celtic** | 894,460 | 542,733 | 351,727 | 39% |
| **Bay of Biscay and Iberian** | 818,646 | 772,606 | 46,040 | 6% |
| **Western Med** | 844,828 | 722,220 | 122,608 | 15% |
| **Ionian and Central Med** | 717,683 | 389,232 | 328,451 | 46% |
| **Aegian-Levantine** | 815,870 | 461,577 | 354,293 | 43% |
| **Adriatic** | 133,943 | 109,865 | 24,078 | 18% |

# innovation – new cage design

Irish deep sea farm project will generate 350 direct and 150 indirect jobs

- bathymetric data – water depth
- geological data – sediments for foundations
- chemical data – water quality
- physical data – tides, waves, currents
- biological data – not endanger local wildlife

# innovation – protection of cables

- 48 cable failures occur in Europe each year
- €6.9 billion losses

- sediment properties for burial techniques
- local human activity (fishing etc)
- temperature, salinity

# uncertainty reduction – better routing

- improved charts will allow faster transit for deeper draughts
- NOAA estimate that one additional foot of draught may account for between $36,000 and $288,000 additional profit per transit

# Next steps

- impact assessment ready November 2013
- Roadmap/Action Plan spring 2014
  - more involvement of private sector
  - mechanism to advise Member States and the EU on the most cost-effective sampling, surveying and observation programme for each sea-basin
  - convergence of EMODnet, data collection in fisheries and Copernicus marine service