Baltic Sea region MSP Data Expert Sub-Group 7<sup>th</sup> meeting Helsinki, Finland, 13-14 September 2017

### **Towards European Marine Cadastral system**

**Rik Wouters (WPLA/EULIS)** 

Evangelia Balla (PCC/NCMA)

Acknowledgement to the members of the Marine Cadastre project team













### **Presentation outline**

Introduction – Definitions – International context

European context – State of Play in Europe







### <u>AN</u>A



- <u>http://www.clge.eu/documents/events/204/Marine\_Cadastre\_in\_Europe</u>
   Brief Edition Final September%202016.pdf
- <u>http://eulis.eu/news-and-events/story/lets-talk-about-marine-cadastre/</u>

#### **Introduction: Drivers**



GIS, SDI

#### **Definitions: Marine Cadastre**

"A marine cadastre is a system to enable the boundaries of maritime rights and interests to be recorded, spatially managed and physically defined in relationship to the boundaries of other neighboring or underlying rights and interests." (attributed to Robertson, 1999)

**Source**: <u>http://coinatlantic.ca/index.php/indicators-and-icom/marine-spatial-planning</u>



"Marine Cadastre describes the **location** and **spatial extent** of <u>rights</u>, <u>restrictions</u> and <u>responsibilities</u> in the marine environment"

### **Definitions: Marine Cadastre**



### **Definitions: Marine Spatial Data Infrastructure**



#### **Marine Administration System**



- "Marine Spatial Data Infrastructure (MSDI) is the component of an SDI that encompasses marine geographic and business information in its widest sense.
- This would typically include seabed topography, geology, marine infrastructure, resources utilisation, administrative and legal boundaries, areas of conservation, marine habitats and oceanography" (IHO, 2011).
- Marine Cadastre is considered as a base layer of a MSDI with fundamental information relating to maritime boundaries and associated rights, responsibilities and restrictions
- Marine Administration System" for the "administration of rights, restrictions and responsibilities in the marine environment with the spatial dimension facilitated by the Marine SDI.
- **seamless SDI** that includes data from land, coast and marine environments to enable the access and sharing of data to avoid management gaps in the coastal zone <sup>7</sup>

### **Definitions: Marine Spatial Planning**

 Maritime Spatial Planning is about planning when and where human activities take place at sea – to ensure these activities are as efficient and sustainable as possible.



Maritime Spatial Planning is a process by which the MS's authorities analyse, plan and organise human activities in marine areas to achieve ecological, economic and social objectives



### **Definitions: MC, MSDI, MSP**





### The international context: facts & figures

#### 

- Over 3 billion people depend on marine and coastal resources for their livelihoods
- The global oceans-based economy is estimated at between USD 3-6 trillion/year (WWF, 2015)
- Ocean's value more than 24trillion USD (WWF, 2015)
- The annual Gross marine product, the equivalent of a country's GDP would make the oceans the world's 7th largest economy
- At least 90% of the volume of global trade is seaborne.









Conserve and sustainably use the oceans, seas and marine resources for sustainable development



\*-

### International context: UNCLOS

Territorial   Sea   Baseline	Contiguous Zone Limited enforcement	0 M	1 nautical mile (M) = 1852m	
Sovereignby extends	Exclusive Economic Zone Sovereign rights for exploring, exploiting, conserving and managing living and non-living resources of the water column and underlying continental shelf	The High Seas Water column beyond national jurisdiction To outer edge of continental margin up to a maximum of 350 M from the TSB or 100 M beyond the 2,500 m isobath, whichever is the greatest		
to the air space, water column, seabed and subsoil allowing for the right of innocent passage	Continental Shelf To 200 M inherent sovereign rights for exploring and exploiting non-living resources of seabed and subsoil, plus sedentary species	Beyond 200 M submission required to the Commission on the Limits of Continental Shelf to confirm rights	The Area Seabed and subsoil non-living resources administered by the International Seabed Authority	
Sovereign Territory	Sovereign rights to the water column and continental shelf	Sovereign rights to the continental shelf	No national rights 09-3603-1	
he United Nations onvention on the aw of the Sea UNCLOS)		<ul> <li>«The Constitution of the Sea»</li> <li>1982 (Voting) /1994 (Came into force)</li> <li>320 Articles/ 9 Annexes</li> <li>25 Articles related to Geoinformatics</li> <li>167 parties (166 states and the EU)</li> </ul>		





### The European context: Facts & Figures

#### **European Union**

- ✓ Geography (≈70.000km coastline, 5 seas and 2 oceans, 2/3 of European borders are seafront)
- ✓ Economy (5,4 million jobs, EU's Blue Economy GVA≈500 billion Euros/year, 75% of the EU's external trade & 37% of EU's internal trade is seaborne
- ✓ EU ratified the UNCLOS in 1998. EU's EEZ area is almost 25% larger than the terrestrial area.

#### Europe sea and Land surface areas (Km2)

Europe	5.259.416
EEZ	7.044.342
Continental Shelf	1.923.935



#### European Union [edit]



European and EU EEZs



#### http://www.eurocean.org/np4/80.html



#### The European context: The path from IMP to Blue Growth





### The European context: EU's initiatives on Marine Data



#### http://emodnet.eu/ 8 portals



2020 objective to provide a seamless multi-resolution digital map of the entire seabed of European waters (Phase III 2015-2020)

#### Represents 160 organisations<sup>15</sup>



# 4. The European context: EMODnet Human Activities portal







#### The European context: EU's initiatives on Marine Data

COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE

OBSERVATION	ANALYSE AND FORECAST	END-USER		
	OCEAN MONITORING AD FORECASTING Data & Model	<ul> <li>Marine safety</li> <li>Marine resources</li> </ul>		
		<ul> <li>Climate and seasonal forecasting</li> </ul>		

provides regular and systematic reference information on the state of the physical oceans and regional

seas.





Sentinel-1: all-weather, day and night radar imagery for land and ocean services. The first satellite (Sentinel-1A/2014), (Sentinel-1B/2016)
Sentinel-3: high-accuracy optical, radar and altimetry data for marine and land services; variables such as sea-surface topography, sea- and land-surface temperature, ocean colour and land colour with high-end accuracy and reliability. The first Sentinel-3 satellite was planned for launch in 2015.

•Sentinel-6 : high accuracy altimetry for measuring global sea-surface height, primarily for operational oceanography and for climate studies.

•Sentinel-6A is planned for launch in 2020.



### The European context: EU's initiatives on Marine Data



- Several INSPIRE data themes relevant to the marine community
- ✓ Differences between INSPIRE and EMODnet in terms of scope, policy frameworks and technologies
- «Topographic and Cadastral Reference» and «Facilities, utilities and public services» of INSPIRE are relevant to Human Activities Portal of EMODnet



INSPIRE



#### EMODnet

E.Balla 2016

- · Sea depth and underwater features
- Coastal regions geography and statistics
- Blue energies and maritime resources
- Tide amplitude and coastal erosion
- Fishing stocks, quotas and catches
- European fishing fleet
- Aquaculture
- Maritime transport and traffic
- Ports' statistics
- Maritime protected areas
- Tourism
- Maritime policies and initiatives
- Outermost regions

The atlas exists in English, French and German.



# State of Play in Europe

Is there any "Marine Information System" in your country?



#### <u>Questionnaire</u>

- 19 out of 28 EU Member States participated in the survey
- 13 MS out of 19 have developed a kind of MIS (either in stage of operation or on pilot basis/project)

#### State of Play of Marine Cadastre in Europe

#### GERMANY



✓ Navigation

logged in as: Guest

- ✓ Spatial✓ Planning
- ✓ Bathymetry
- ✓ Shipping
- ✓ Oceanography
- ✓ Water Pollution

- ✓ Geology
- ✓ Biology
- ✓ Marine
  - Environment
- ✓ Model Forecast

#### https://www.mdi-de.org/mdi-portal/ui

 $\checkmark$ 

 $\checkmark$ 

 $\checkmark$ 

- ✓ WFD Assesment
- ✓ Reserves
- ✓ Wind Parks
- ✓ Lines
- Federal waterways
- ✓ Bathymetry
- Pollutants

- Waterlevel
- ✓ Geology
  - Eutrophication
  - Human Activities

## FRANCE



- French Hydrographic Organization
- <u>www.shom.fr</u>



#### https://www.sogefi-sig.com/portfolioitem/portail-du-littoral-et-de-la-mer/

#### Pilot project - 2 test areas

- ✓ (a 40km area near Marseille, between Carry-le-Rouet and la Ciotat) focused on the marine public area and the marine uses
- ✓ 4km area near the city of Sete
   >focus on coasts and lagoons





#### 5. State of Play of Marine Cadastre in Europe

#### **Estonia**



- Estonia>No Marine Cadastre but "Marine Areas Application" within the Geoportal of the Estonian Land Board
- INSPIRE compliant and encompasses data for the whole Estonian Marine Area in the Baltic Sea
- Datasets : sea depths, buoys, beacons, cables, wrecks etc.
- Estonian Maritime Administration



#### Denmark

- Denmark>rapid pace towards the development of an MSDI
- Expansion of the land cadastre to the sea territory: registration of buildings at the sea territory in the Danish Cadastre!!

#### 5. State of Play of Marine Cadastre in Europe

#### **SWEDEN**



Oversiktlig skiss över avgränsningslinjer för sjöterritorier och maritima zoner längs Sveriges kust



#### State of play – Prerequisites

- Report on Maritime Zones and Boundaries, 2015
- Proposal 2016/17:215 as to legislation on Sea territory and maritime zones of Sweden, right now with the Parliament
- Memo prepared by Lantmäteriet on request to the Ministry of Justice on private/ public water, determination of reference levels in the four big lakes of Sweden

#### On-going activities – some examples

- Legislation on Sea territory and maritime zones of Sweden right now with Parliament; Lantmäteriet looking into a possible joint activity with the Swedish Maritime Administration for presentation of boundaries

- Memo on Marine Cadastre in the Swedish Context
- Memo on public/ private water including determination of reference levels in the four big lakes



### **Main conclusions I**

- Several countries outside of the European continent, with strong ocean and sea interests, have shown a rapid pace towards the development of the Marine Cadastre since 1994, when the UNCLOS came into effect.
- Sophisticated Web GIS/Mapping Services based on open and re-use data policies and the concept of the Multipurpose cadastre in the international initiatives.
   However evidence shows focus on "recording" than "registering".
- ✓ Land cadastre is partially a good analogy to the Marine Cadastre
- ✓ The Marine Cadastre is a base layer of the Marine SDI, offering fundamental information relating to maritime boundaries and associated rights, responsibilities, and restrictions regularly updated and maintained.
- Marine Cadastre is not MSP but it's the most important underpinning data sources to enable its implementation. However the concept of MSP has been broadened gradually encompassing some of the features and effects that a traditional land registry & cadastre usually has.



### Main conclusions II

- ✓ No reference to the notion of Marine Cadastre in the EU regulatory framework. Emphasis on the MSP tool to achieve "legal certainty" in the marine environment, to boost the Blue Economy sector and to reduce transactions costs.
- ✓ Some data to a Marine Cadastre are recorded under the theme "Human Activities" in the EMODNET portal.
- ✓ However the information provided through EMODNET portal is of a static nature, more suitable for other purposes (e.g. statistics, planning, research) rather than secure of rights. Therefore "EMODnet Human Activities" ≠ MC.
- ✓ A wide array of actors and stakeholders are involved in the management of the marine environment and production of marine data, though the competent national Land Registry and Cadastre organizations have been scarcely so far engaged.
- ✓ Existing Marine Information Systems (either operative or on pilot basis) are developed either on the concept of EMODNET or to serve other needs (ICZM strategy, MSP, marine areas' delimitation) but not a Marine Cadastre.





### **Next Steps I**

#### **Current state of play**

- Limited priority CV-partner organizations for follow up project
- Dissemination of results at several fora/authorities and organizations
- ✓ Interest is present but so far no solid "pull" to discuss a follow up
- Nordic & Baltic countries have demonstrated specific interest
- MSP communities and related
   WG started to show interest on
   MC

### Way forward

- Follow up publication covering:
  - recent developments in MC
  - Formulation of concrete reasons why a MC
- Perform Need analysis based on stakeholder interview
  - Develop questionnaire
  - Analyse the outcome of the Q's
  - Decide for any further action
- Research on funding possibilities (Horizon2020, COST, Interreg)



### **Next Steps II**

#### What would be the goals

- ✓ Integration of available information
  - Now many data sets on "human activity" at sea
  - Checking and enforcing Marine Spatial Plans
- ✓ Improve accessibility of data (ref EMODnet)
  - Ref land registry and cadastre portal at land
  - Search for specific owner of a property at sea is impossible

#### How to organize the follow up?

- Follow up by CV-partners
- Team up with already running initiatives
- Continued dialogue with the EU Commission

Diversity of rights, restrictions and activities (often conflicting and overlapping) in the marine environment









....desperately need to be managed by sound spatial planning and <u>guaranteed by legal</u> <u>certainty of property rights and leases!</u>



"How inappropriate to call this planet Earth when it is quite clearly Ocean"? attributed to Arthur C. Clarke

# Thank you for your attention!



Evangelia Balla eballa@ktimatologio.gr





