

Blue Economy, the role of Geodetic Surveyors

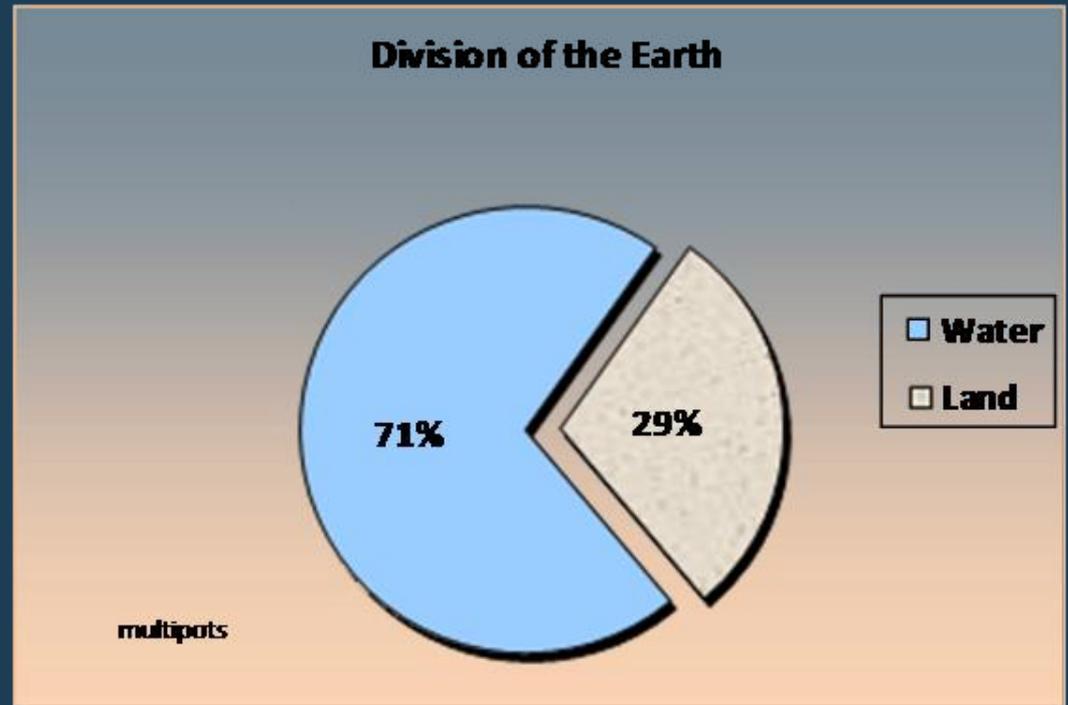
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Earth, Water and Land

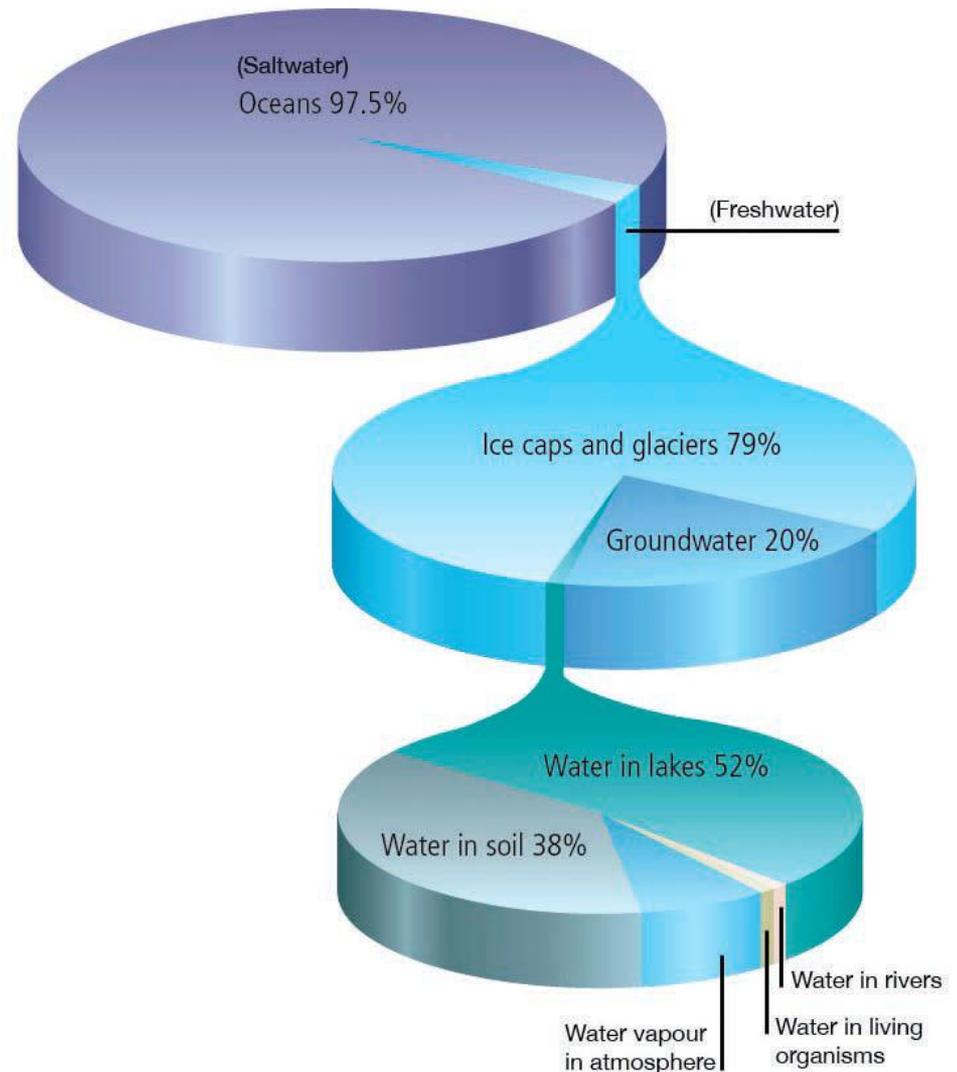
Earth consists of land and water:

- 71% of the Earth is covered by water
- 29% of the Earth is covered by land



Earth, Water

- 97.5% Saltwater (Oceans and seas)
- 2.5% Freshwater (Ice caps and glaciers, groundwater, rivers, lakes, water in soil etc.)



Earth Economy

Numbers:

- 44% of the Earth **population** lives in the coastal zones
- the worldwide **ocean economy** is valued at around US\$1.5 trillion per year.
- 80% of global **trade** by volume is carried by sea!
- World-wide 350 million **jobs** are linked to fisheries.



Role of Surveyors

Where are the Surveyors?

Croatian example:

approx. 1-3% of surveyors on water, 97-99% on land

What is our task:

- to improve and develop our profession,
- to find new fields of impact,
- to find new ways of growth.

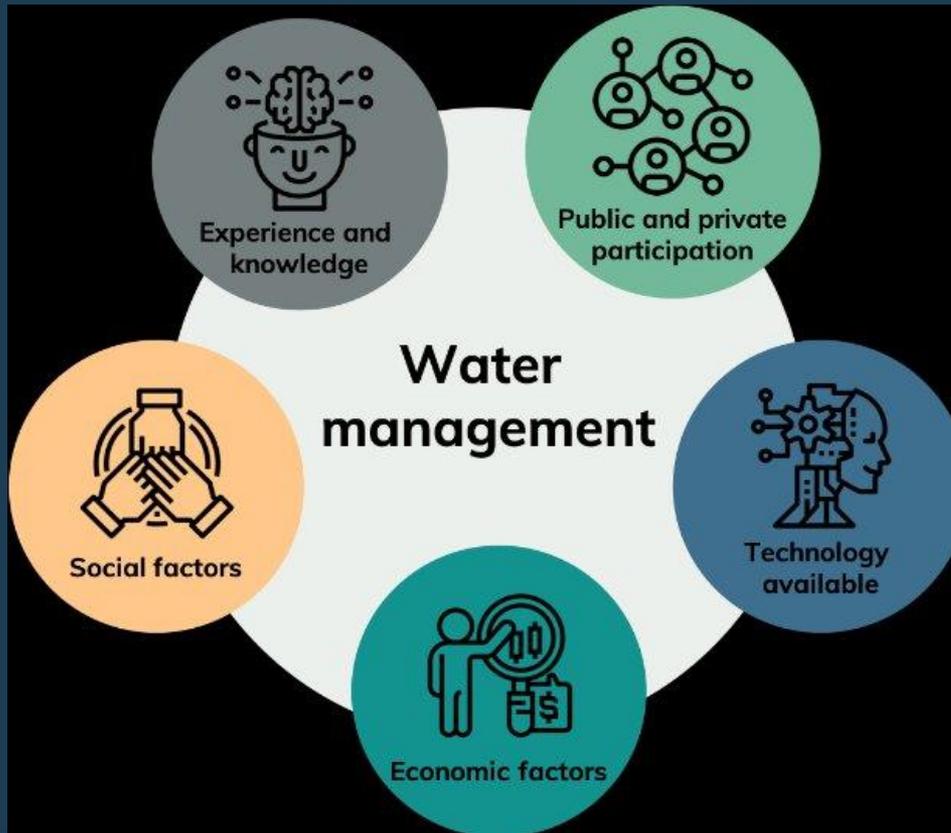


Some areas of possible impact and growth

- Land Use
- Tourism
- Oil & Gas Usage
- Mariculture
- Archeology
- Ports & Navigation
- Military Activities
- Culture
- Conservation
- Dredging & Disposal
- Submarine Cables
- Fishing
- Renewable Energy
- Water Recreation
- Mineral Extraction
- ... etc. (Johnston, 2013)



Water Management



Elements of the water management process (Cabrera-Flores et al, 2020)



River Information Systems (RIS)

- Europe - over 30.000 km of canals and rivers that link together hundreds of key industrial towns and areas.
- The core network of around 10.000 km connects Austria, Belgium, Bulgaria, Croatia France, Germany, Hungary, Luxembourg, Netherlands, Poland, Romania, Slovakia, Ukraine within the EU and Montenegro and Serbia outside the Union.
- European Commission recognized the great potential of inland navigation as an alternative transport mode for freight transport.



River Information Systems (RIS)

- RIS is a concept of harmonised information services to support traffic and transport management in inland navigation, including interfaces to other modes of transport.
- Concept is based on using the information about ships and about traffic roads (river, lake or canal) (European Commission, 2005).
- RIS consists of information technology and telecommunication infrastructure.



Blue Growth and Blue Economy

- **Blue growth** - the long-term strategy to support sustainable growth in the marine and maritime sectors as a whole.
- **Blue economy** - all economic activities related to oceans, seas and coasts. It covers a wide range of interlinked established and emerging sectors.

Seas and oceans are drivers for the European / World economy and have great potential for innovation and growth.



Blue Growth and Blue Economy

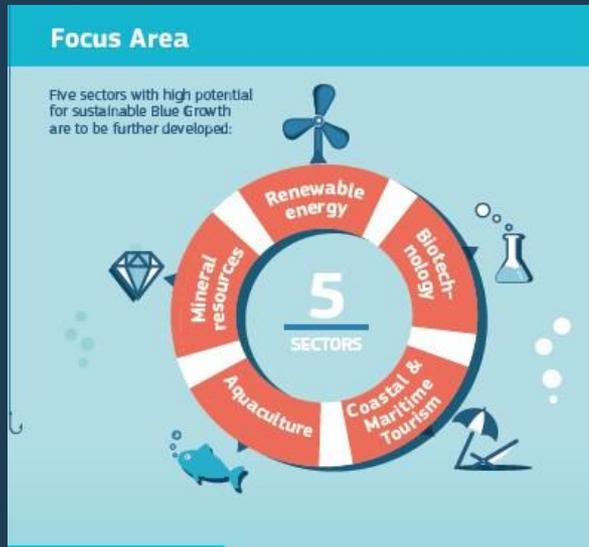
- In Europe the Blue Economy represents roughly 5.4 million jobs and generates a gross added value of almost €500 billion a year.

Ecology:

- Healthy oceans and seas can greatly contribute to poverty reduction.
- The impact of the negative or no approach to the better future of the seas and the oceans can have an impact on all countries of the world.



Blue Growth and Blue Economy



Developing sectors that have a high potential for sustainable jobs and growth:

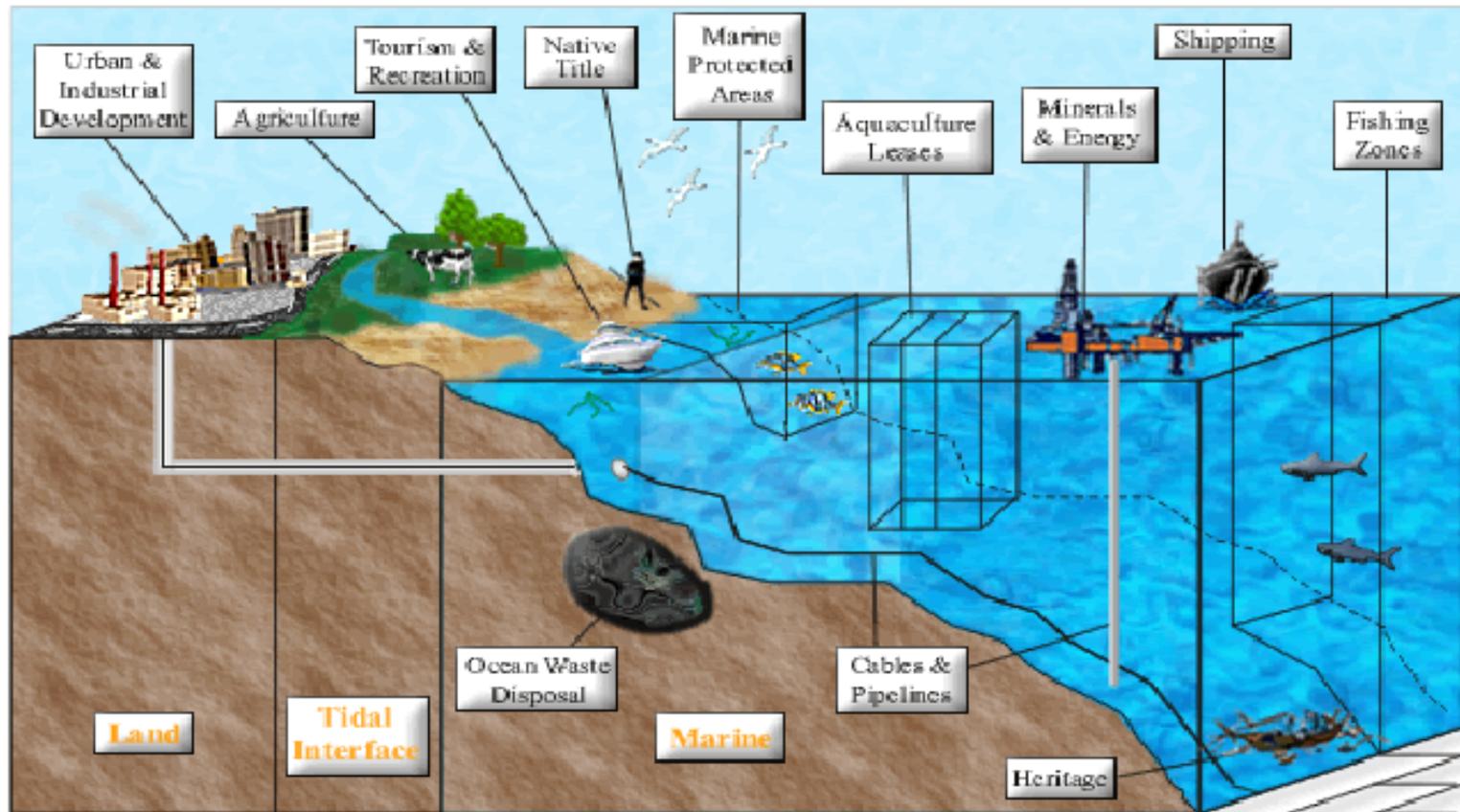
- aquaculture (Fisheries)
- coastal tourism
- marine biotechnology
- ocean energy
- seabed mining etc.



Land Activities

Coastal Activities

Marine Activities



Sustainable Management



DESCRIBE



VISUALISE



REALISE

INSPIRE

- **Infrastructure for SPatial Information - INSPIRE** supports establishment of national spatial data infrastructures of EU Member States, whose part is also a MSDI.
- INSPIRE is a very important EU Directive which includes water areas. It encompasses bathymetry, coastal line, hydrography, surface water bodies, water catchments, oceans and seas, oceanographic spatial features, sea regions, aquaculture facilities, polluted areas and more.



MSDI and Marine Cadastre

Marine Spatial Data Infrastructure (MSDI) is the component of a Spatial Data Infrastructure that encompasses marine geographic and business information in its widest sense. This would typically include seabed topography, geology, marine infrastructure, resources utilization, administrative and legal boundaries, areas of conservation, marine habitats and oceanography.

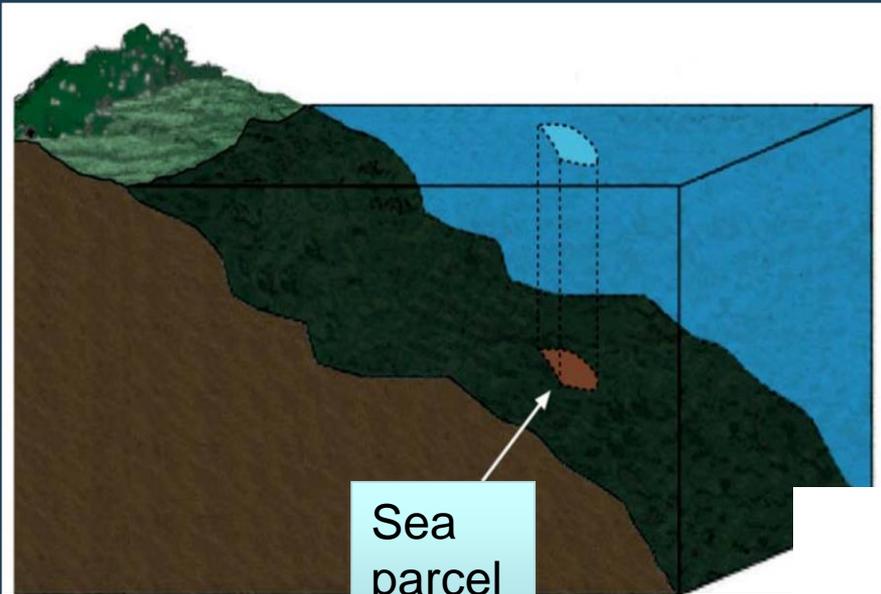
Marine Cadastre (MC) is considered as a base layer of a MSDI with fundamental information relating to maritime boundaries and associated rights and responsibilities, regularly updated and maintained.

Marine Geoinformation is a geoinformation at seas and in oceans. It is a basic element of MSDI and MC.



Sea Parcel

4D



Sea parcel



Conclusion - where to go next?

- Concepts like sustainability, health and pollution, climate changes, human wellbeing, social equity, poverty reduction, environmental protection, ecology etc. are very modern "green" terms.
- If we put them in a sea or ocean or river and lake context they are also very "blue" terms.
- The "blue" and "green" topics coming together are a precondition to sustainable world, but they are also an opportunity for surveyors.

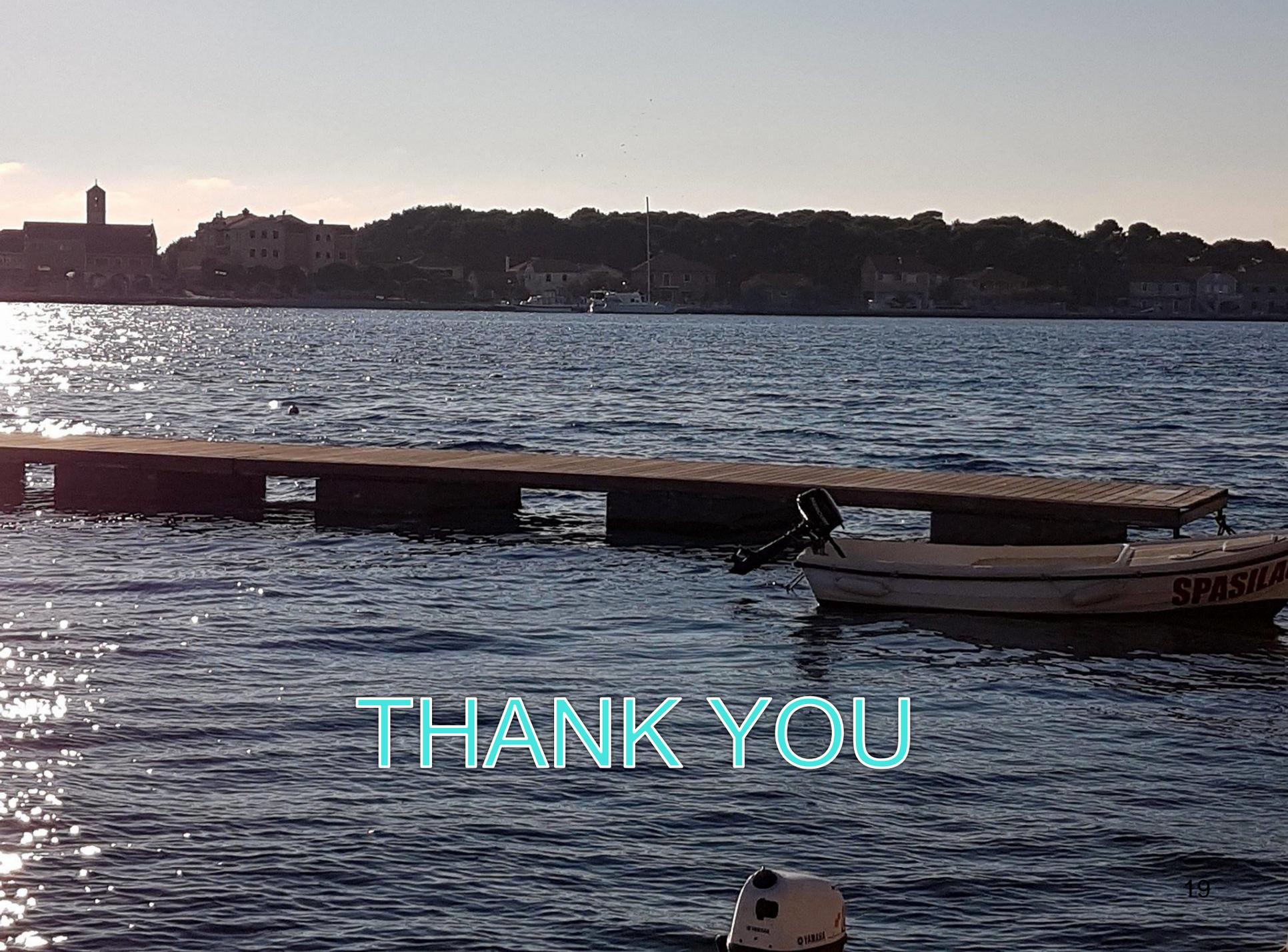


Conclusion - where to go next?

What is a role of a Surveyor in a sustainable, contemporary Europe and the sustainable modern world?

- Marine and coastal decision-making on a daily basis are of the utmost importance. River and lake information systems and water management could have much more fields of usage.
- Our goal should be an enlargement of number of specialists in the "blue-green" surveying field.
- All the goals should be implemented through education, better dissemination, larger publicity impact and by founding the ways to offer the world new products made by surveyors.





THANK YOU