



DANUBIUS-RI
making River-Sea Systems work

International Centre for Advanced Studies on River-Sea Systems

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Interdisciplinary Science is needed:

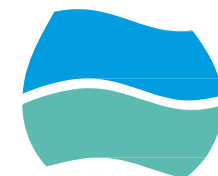
- Climate Change – felt through water
 - Extreme Events: Storms, floods and droughts
 - Climate change scenarios - worsening
- Multiple pressures
- Unfulfilled opportunity that require whole system understanding (Source- to-sink approach)
 - Net Zero & Green Recovery
 - Sediment Management and Biodiversity

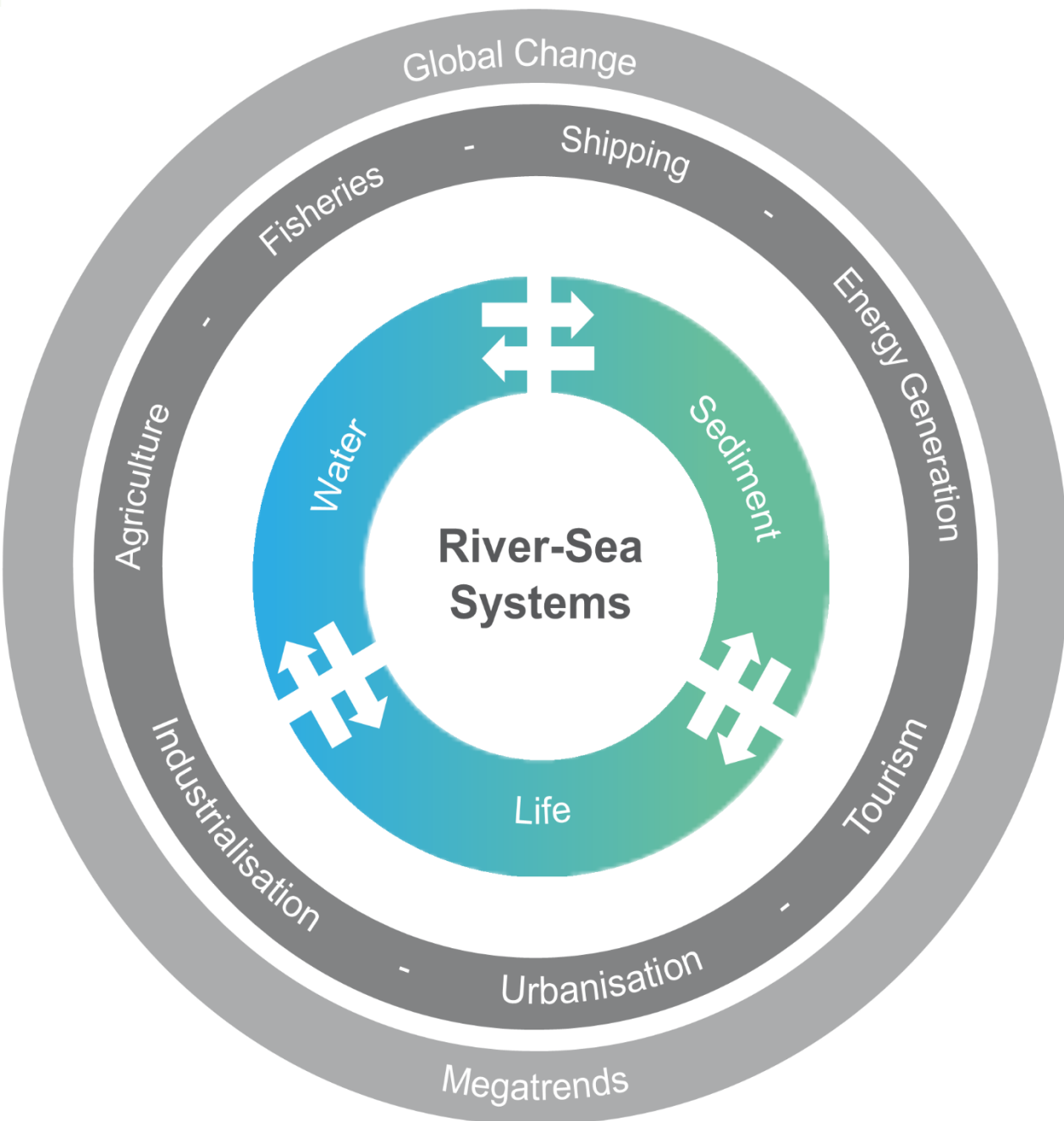


DANUBIUS-RI

*making River-
Sea Systems
work*

- Interdisciplinary, distributed Research Infrastructure (RI)
- Supporting research addressing the conflicts between society's demands, environmental change and environmental protection in River–Sea Systems worldwide
- Hub/Headquarters in Romania
- Components across Europe



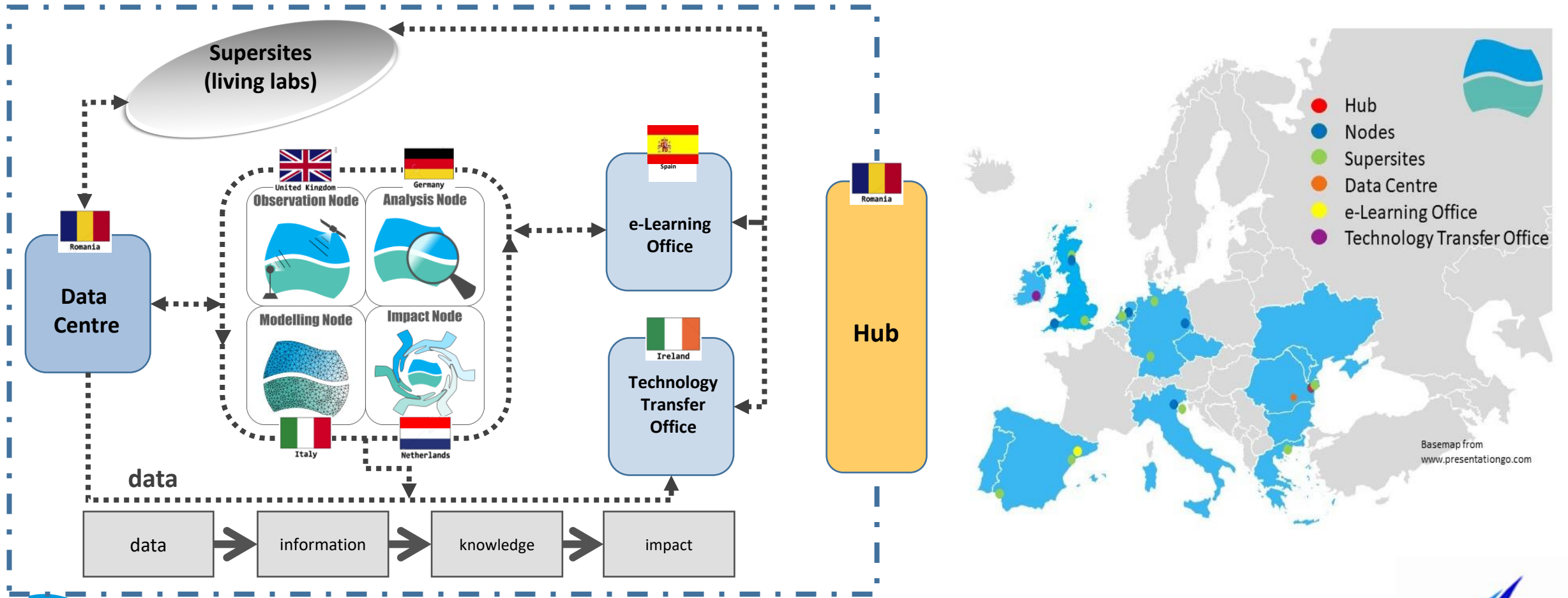


Overarching challenges

- External (Climate Change and Extreme Events) and internal drivers (e.g. Fisheries, Transport) resulting from basic human needs cause cumulative effects on River-Sea Systems.
- Overarching challenges for DANUBIUS-RI relate to:
 - Water Sufficiency
 - Sediments and their Management
 - Ecosystem Health.



DANUBIUS-RI – a distributed pan-European Research Infrastructure





Supersites

- Natural laboratories for observation, research, modelling and innovation at locations of high scientific importance and opportunity
- Covering River-Sea Systems from river source to transitional waters and coastal seas
- Majority of current suite of Supersites are at coastal or land/sea transitional sites
- Ranging from the near pristine (e.g. Danube Delta) to the heavily impacted (e.g. Thames Estuary)
- Identifying, modelling and defining system states and conditions for naturally and anthropogenically triggered transitions in the physical, biogeochemical and biological states
- DANUBIUS-RI will also support research at other locations





DANUBIUS-RI development (1)

- Originated as Danube River-Delta-Black Sea project – Romanian Initiative (current effort from 2010, idea going back in early 1990s)
- Unique – did not start as a Network of RIs – but from the Scientific Case Study (Interdisciplinary sciences in River-Sea Systems)
- Accepted on the ESFRI Roadmap – 2016
- Preparatory Phase funded by H2020 grant (December 2016 - November 2019)
- Developed into pan-European distributed RI concerned with all European River-Sea Systems
- ERIC Step 1 – submitted in 2020
- Now in Implementation Phase with Step 2 ERIC application to be submitted to the EC in 2023 (May?), Project H Eur DANUBIUS-IP
- Consortium includes institutions from **13** European countries (December 2022)





- Coordinated by GeoEcoMar (Romanian National Institute of Marine Geology and Geoecology)
- Preparatory Phase included partners from 17 countries, including three international organisations/ programmes
- Implementation Phase gathers partners from countries involved in the ERIC creation
- All decisions – taken by the DANUBIUS BGR (Board of Government Representatives) – the governing body
- Still needs to test its services with the community of users (Life and Earth scientists in freshwater, transitional and coastal-marine environments)
- Testing – under Horizon Europe DANUBIUS-IP
- Services - from in situ & EO measurements (from water parameters, sediments, chemistry, biology, ecology) to specialized analysis – to numerical modelling and DSS for management scenario development
- Most services – already available under certain components (Nodes, Supersites)



DANUBIUS-RI

- Apply an '*open access*' policy based on competition and selection of proposals evaluated on their scientific excellence and social and economic relevance
- Develop *common standards* and *open access* to data and the *harmonisation of data requirements* in particular related to European strategies
- Abide by FAIR principles
- Working closely with other environmental RIs within the ENVRI community
- DANUBIUS-RI community is growing in discussion with other European countries and globally
- Future aspirations beyond Europe

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