

DANUBIUS-RI
making River-Sea Systems work

International Centre for Advanced Studies on River-Sea Systems

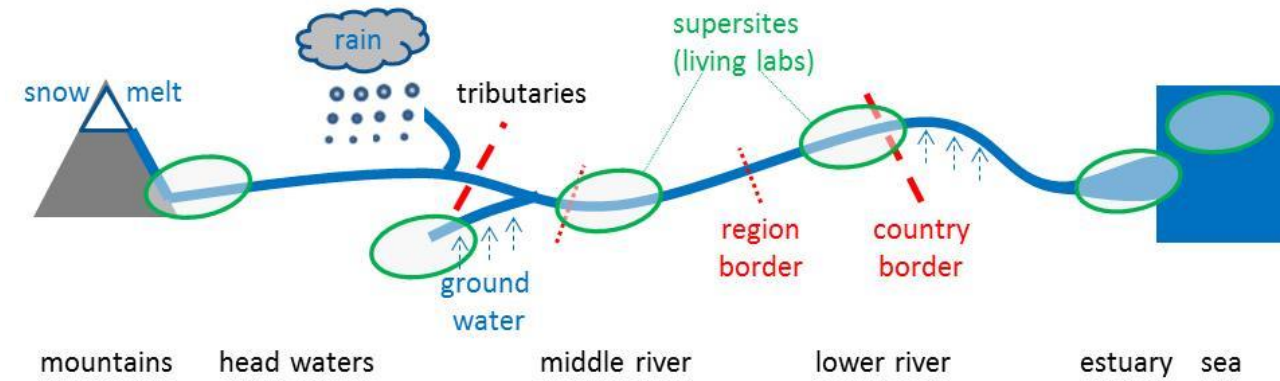
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And the DANUBIUS-RI Consortium



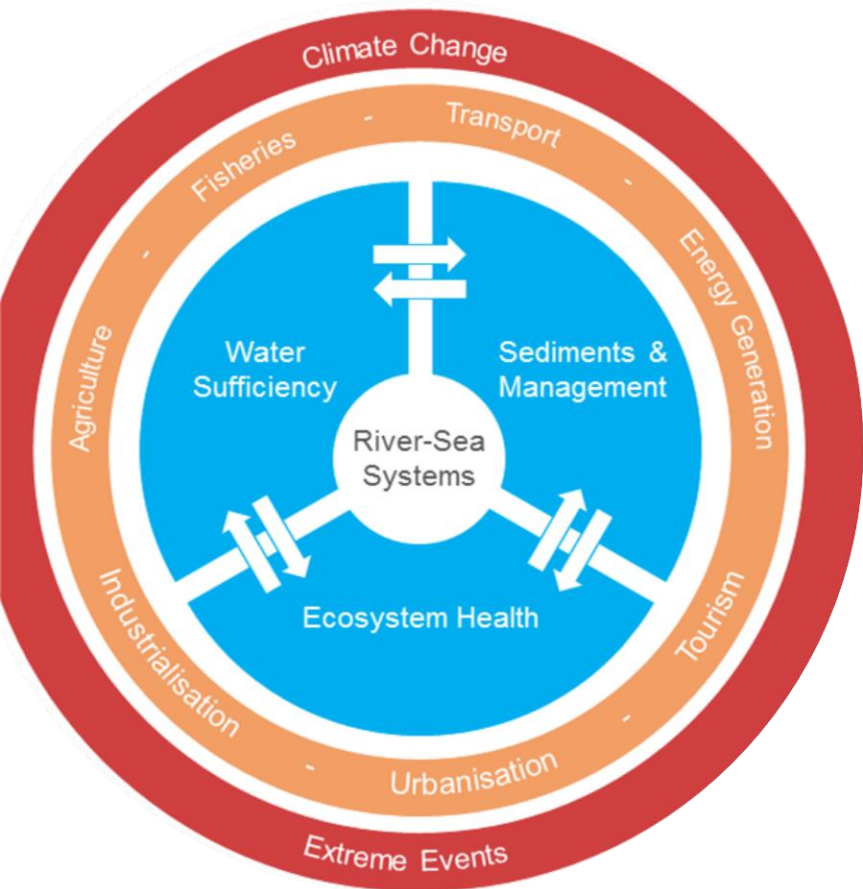


Many societal challenges related to River-Sea Systems are multi-faceted and require new approaches to research, spanning traditional disciplines, with a RI that:

- spans the catchment from source to coastal sea
- provides innovative opportunities for boundary spanning
- facilitates knowledge exchange
- attracts young people to science
- maximises the impact of investments in environmental research, driving innovation



Global change and global megatrends affect River-Sea Systems at scales ranging from local to global



Guiding Questions for DANUBIUS-RI

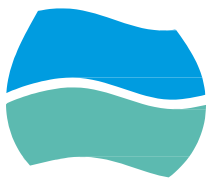
What constitutes a healthy River-Sea System in the Anthropocene?
How are River-Sea Systems changing due to multiple and interacting pressures?

How do processes and changes in parts of the River-Sea System propagate within the River-Sea continuum, both up and downstream?

How are these changes affecting ecosystem health, its functioning and services?

How can we sustainably balance use, protection and development of River-Sea Systems?

How can we define and implement a management regime that can sustain the ecosystem services of a River-Sea System?



Our Motivation and Challenge: Healthy River-Sea Systems

DANUBIUS-RI research areas to be addressed for achieving healthy River-Sea Systems:

Global Change and Megatrends

- Climate Change and Extreme Events

Water and Sediment

- Hydromorphology and Quantity: From Source to Sea
- Quality: Nutrients and Pollutants

Biodiversity and Ecosystems

- Ecosystem Functioning
- Ecosystem Services

Multiple impacts on River- Sea Systems, taking into account the need to respond to complexity

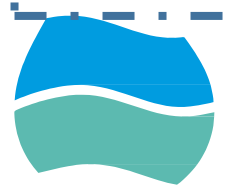
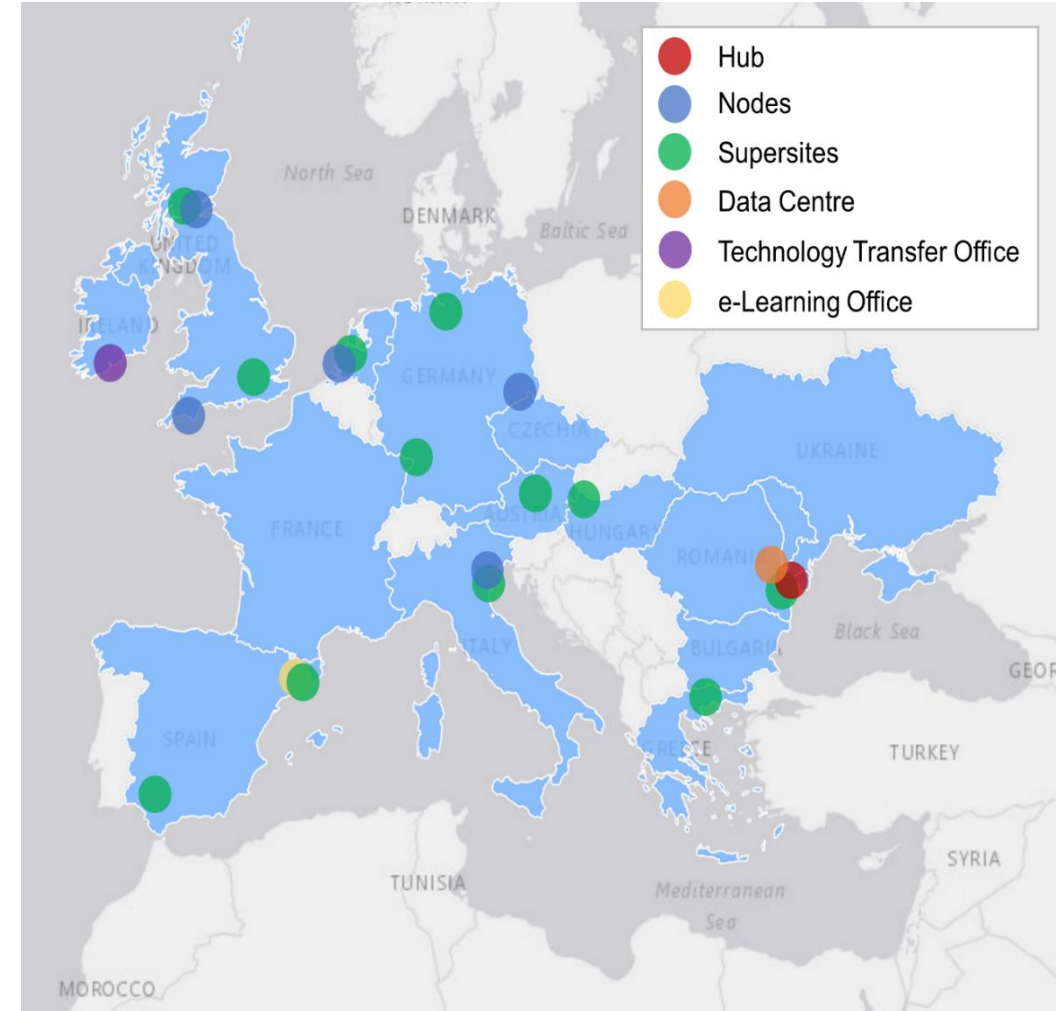
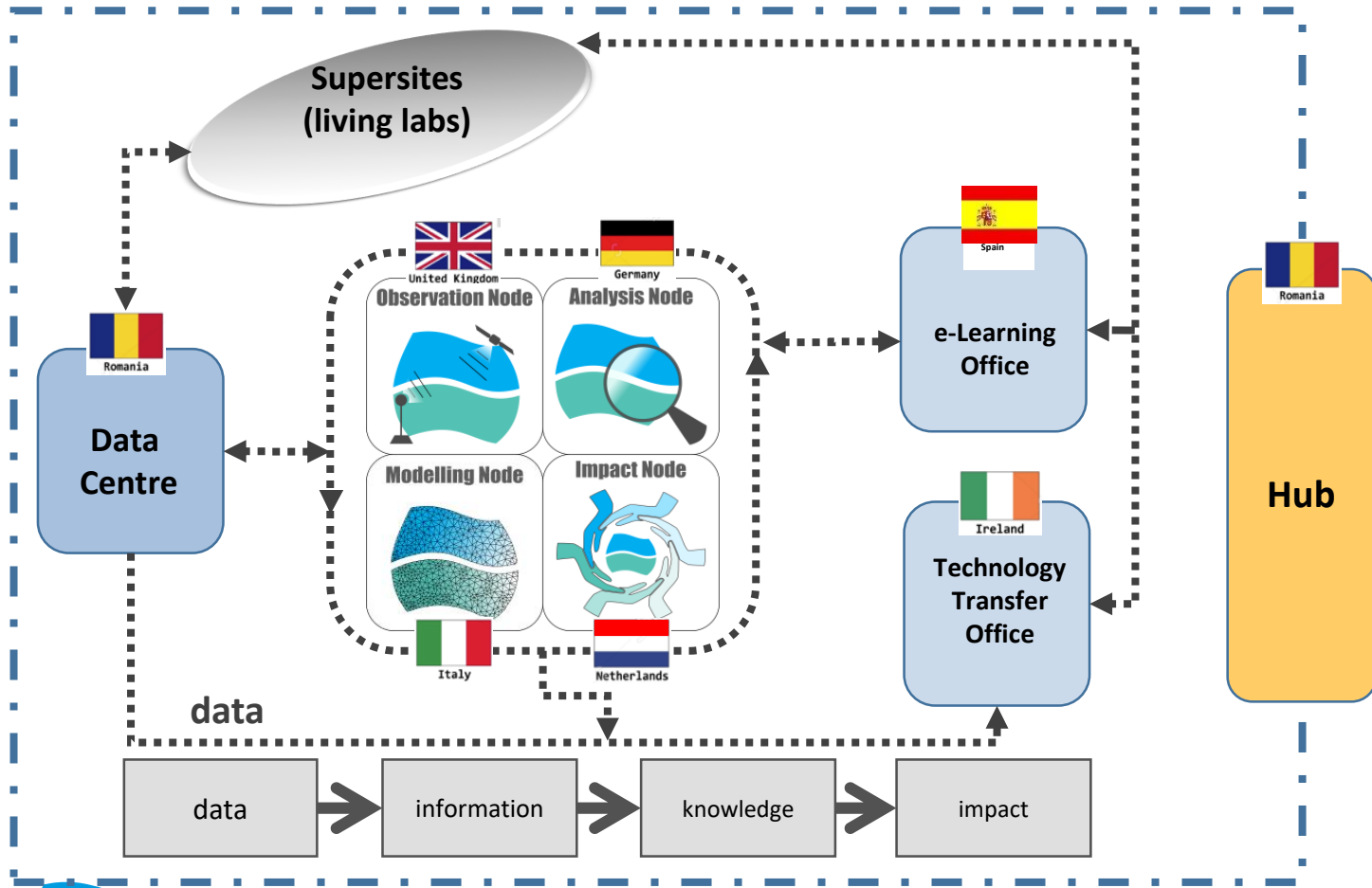


DANUBIUS-RI will:

- gather scientists from different disciplines instead of focussing on a single discipline
- address cross-disciplinary topics and issues related to sustainability of the River-Sea System, as a single, connected and highly dynamic system of high social and economic importance
- take interdisciplinarity and the socio-economic relevance and impact as important criteria for evaluating applications for access
- be a platform for collecting, analysing, modelling and retrieving River-Sea System data useful to all scientific disciplines
- create new knowledge through consistent state-of-the-art observation, analysis and modelling, across the science, social and economic disciplines
- enable stakeholder access to data, knowledge and concepts for more informed decision-making



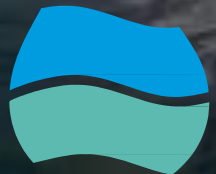
DANUBIUS-RI – a distributed pan-European Research Infrastructure





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
- 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



Supersites of DANUBIUS-RI

Elbe Estuary and North
Sea (Germany)

Rhine/Meuse Delta
(Netherlands)

Middle Rhine (Germany)

Nestos (Greece)

Danube Delta (Romania)

Ebro-Llobregat Deltaic
System (Spain)

Guadalquivir Estuary
(Spain)

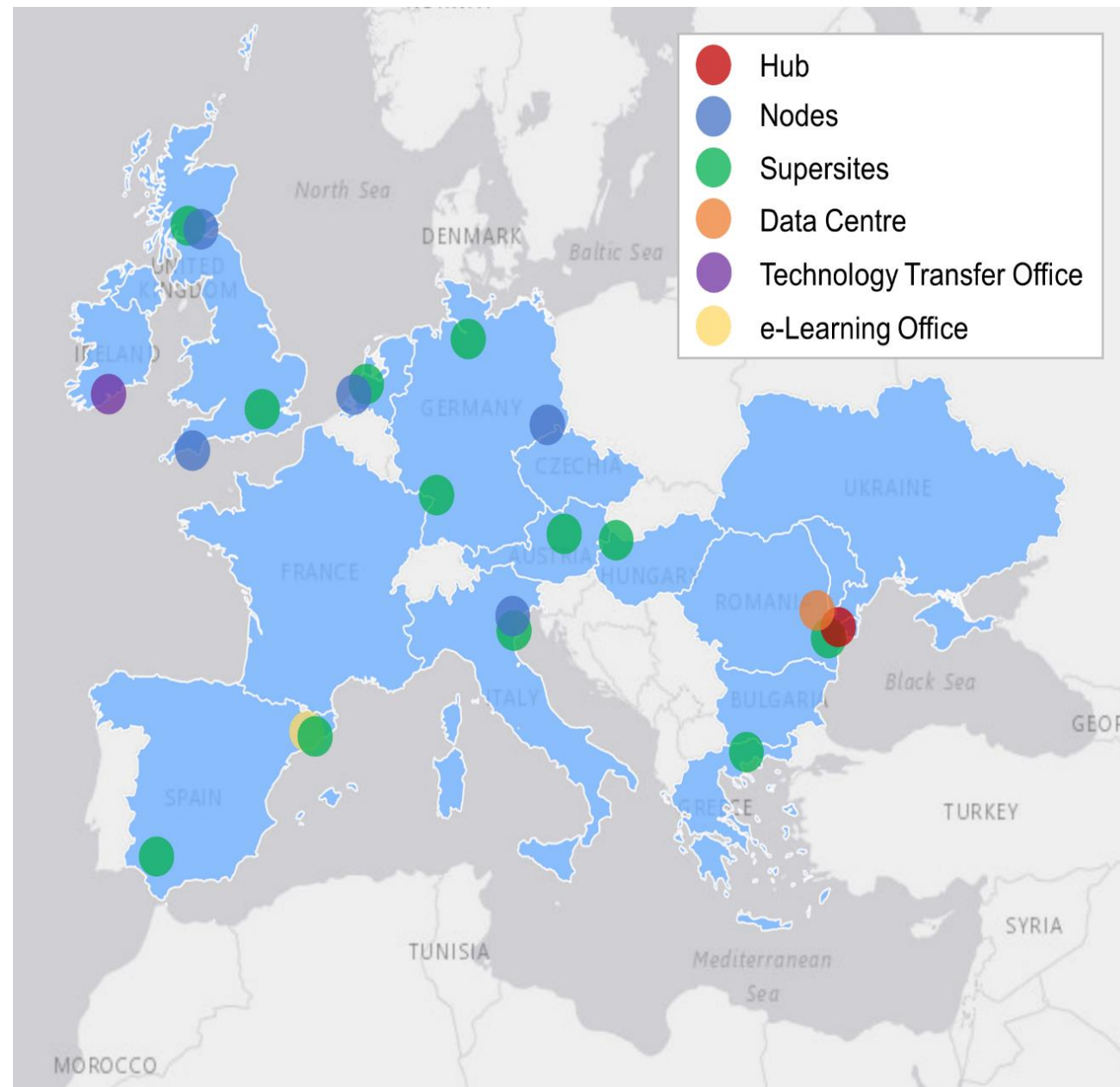
Po Delta-North Adriatic
Lagoons (Italy)

Middle Danube (Hungary)

Thames Estuary (UK)

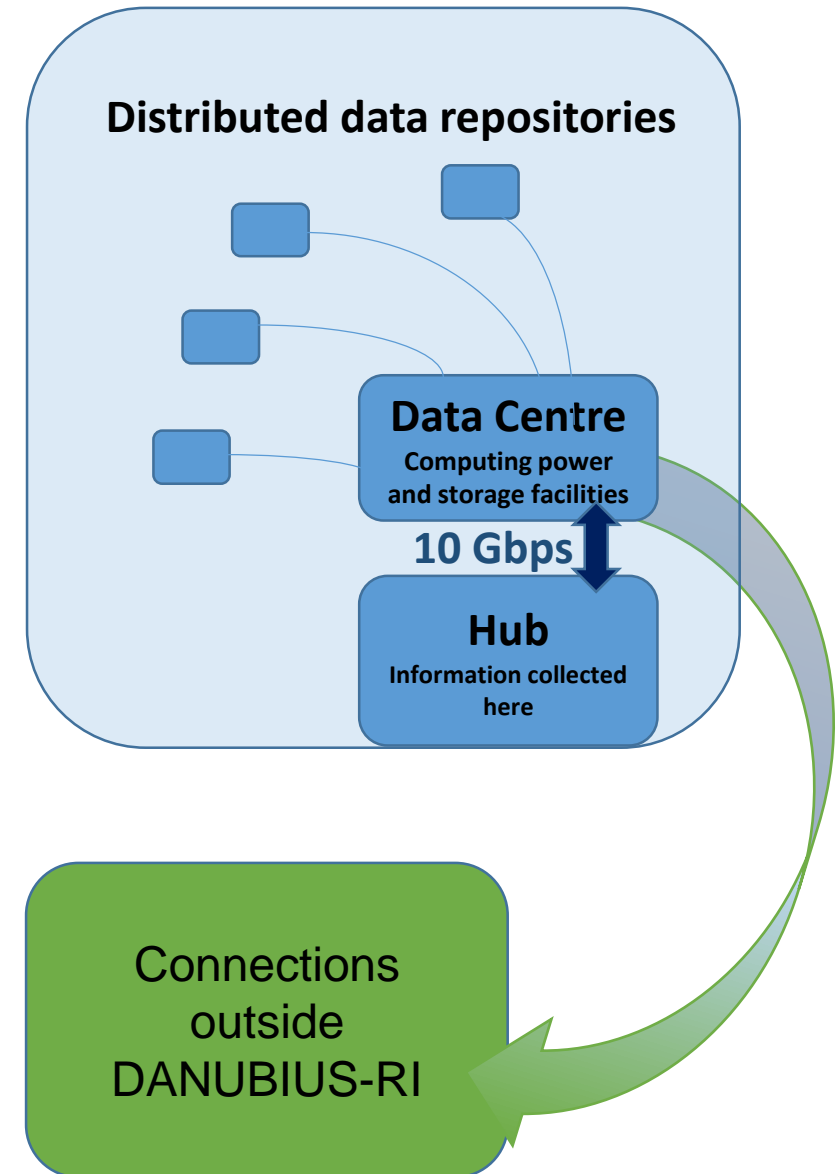
Tay Catchment (UK)

Upper Danube (Austria)



Data sources

- Digital data from:
 - remote sensing
 - automatic stations (real time and periodic downloading)
 - cruises
 - computer models
 - physical, sedimentological, chemical, biological and ecotoxicological analyses
- Non digital data (e.g. biota samples, sediments, DNA)
- Research data stored, processed and made available (open access) to participants and public
- Digital and non-digital data at distributed data repositories but data information collected by Data Centre



Access and data use

- DANUBIUS-RI will apply an '**open access**' policy based on competition and selection of proposals evaluated on their scientific excellence and social and economic relevance
- Aim to develop *common standards* and *open access* to data and the *harmonisation of data requirements* in particular related to European Strategies
- Data for research purposes will be free, while organisations using data for commercial uses will be charged
- Measures of the success of DANUBIUS-RI will be its impact and the extent to which the data and information developed are both accessible and used by society (at social, economic and policy level)
- Abide by FAIR Principles



Consortium



- Consortium for Preparatory Phase comprised partners from 17 countries, including three international organisations/programmes
- coordinated by GeoEcoMar (Romanian National Institute of Marine Geology and Geoecology)
- ERIC Step 1 proposal submitted to the EC
- Implementation Phase gathers partners from countries involved in the ERIC creation