



Preparatory Phase for the pan-European  
Research Infrastructure DANUBIUS-RI  
“The International Centre for advanced  
studies on river-sea systems”

# DANUBIUS - PP

The System of Data Collection, Data Processing  
and Interoperability of Data Sources in the  
DANUBIUS-RI”



European  
Commission

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# Agenda

- Summary of DANUBIUS-PP project
- DANUBIUS-RI components
- DANUBIUS-RI e-services

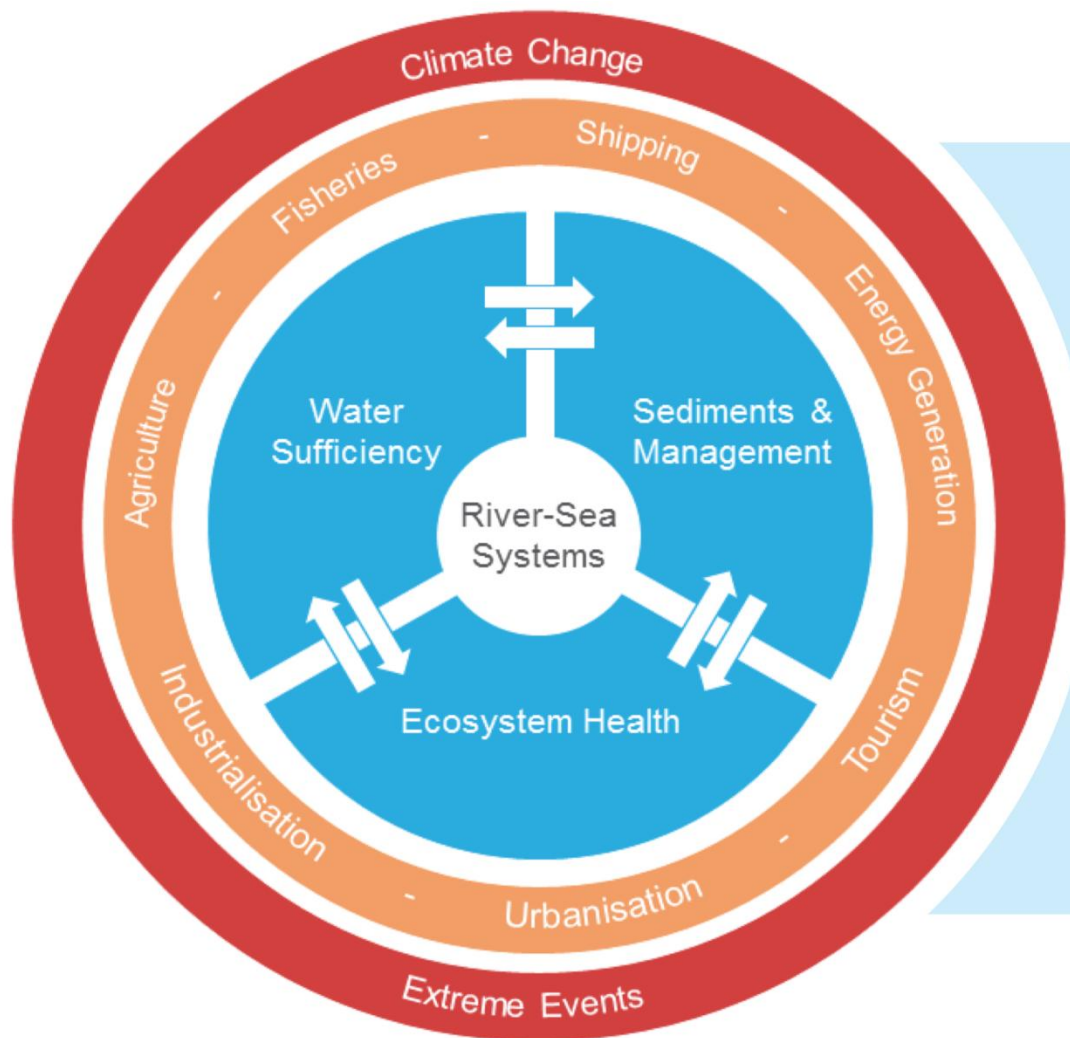


# Preparatory Phase for DANUBIUS-RI

- A fundamentally new approach to research on River-Sea Systems (RSS) , particularly at the freshwater-marine interface, spanning traditional disciplinary and geographic boundaries
- Building on existing expertise across Europe to support interdisciplinary research spanning the environmental, social and economic sciences
- Providing access to a range of sites, facilities and expertise, a ‘one-stop shop’ for knowledge exchange, access to harmonised data, and a platform for interdisciplinary research, education and training
- Supporting research on the interactions and transitional zones between coastal marine and freshwater areas
- Being developed by partners in 16 countries in Europe under the lead of Romania, with expressions of interest and support from the scientific community in many others in Europe and worldwide
- Aiming to attain ERIC status (European Research Infrastructure Consortium) and to become operational by 2023
- The challenge of RSS requires world-leading science with immediate societal relevance and impact, and implemented in a consistent and quality assured framework.



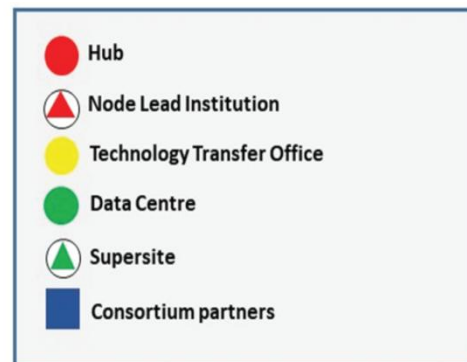
# DANUBIUS-RI – the science



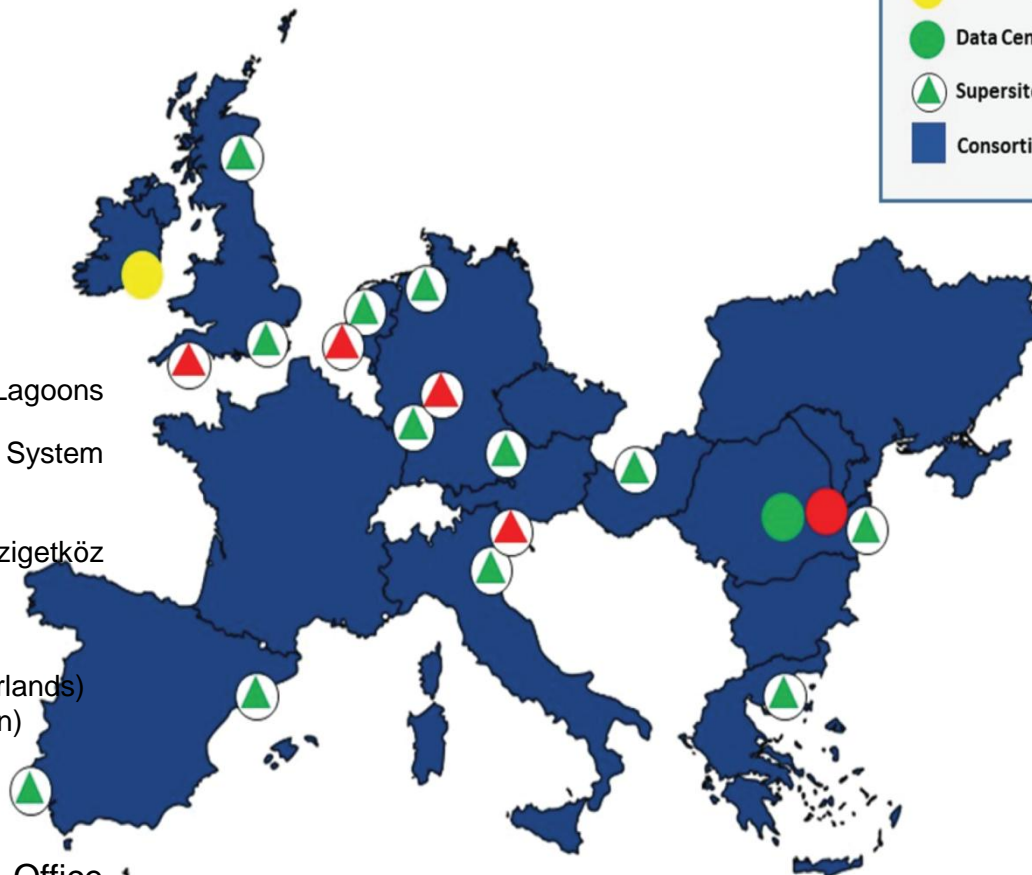
External forces are climate change, climate variability and extreme events, and internal forces resulting from human use have cumulative effects on the river-sea continuum.



# DANUBIUS-RI Components



- Hub (Romania)
- Nodes:
  - Observation (UK)
  - Analysis (Germany)
  - Modelling (Italy)
  - Impact (Netherlands)
- Supersites:
  - Elbe Estuary (Germany)
  - Thames Estuary (UK)
  - Nestos (Greece)
  - Po Delta-North Adriatic Lagoons (Italy)
  - Ebro-Llobregat Deltaic System (Spain)
  - Upper Danube (Austria)
  - Middle Danube – Szigetköz (Hungary)
  - Danube Delta (Romania)
  - Middle Rhine (Germany)
  - Rhine-Meuse Delta (Netherlands)
  - Guadalquivir Estuary (Spain)
  - Tay Catchment (UK)
- Data Centre (Romania)
- Technology Transfer Office (Ireland)





# DANUBIUS-RI:: e-Services

- Preservation and access to stored data for all users:
  - long-term preservation of all data
  - access to open data to the general public
  - quality control for all data on ingest flows
  - thematic data access, analysis and subscription services
  - aggregation of metadata and data as distributed storage
- Provide software tools for data processing:
  - data analysis tools
  - data mining tools services
  - integrate data from multiple sources
  - running modelling software provided by the DANUBIUS-RI members in Data Centre



# DANUBIUS-RI:: e-Services

- HPC and cloud services
- Services for education and knowledge exchange
- Other services involving software engineering and e-Infrastructure on demand:
  - Software engineering for web appliances, specific tools for process automation, custom database creation, etc.
  - Data analysis tools for data assembly, metadata registry operation (upgrade, new schema etc.), generate data collections on demand
  - e-Infrastructure services: computing cluster on demand, management of the HPC software, including software development where possible, storage on demand, user authorization and accounting, security services and data centre operation.



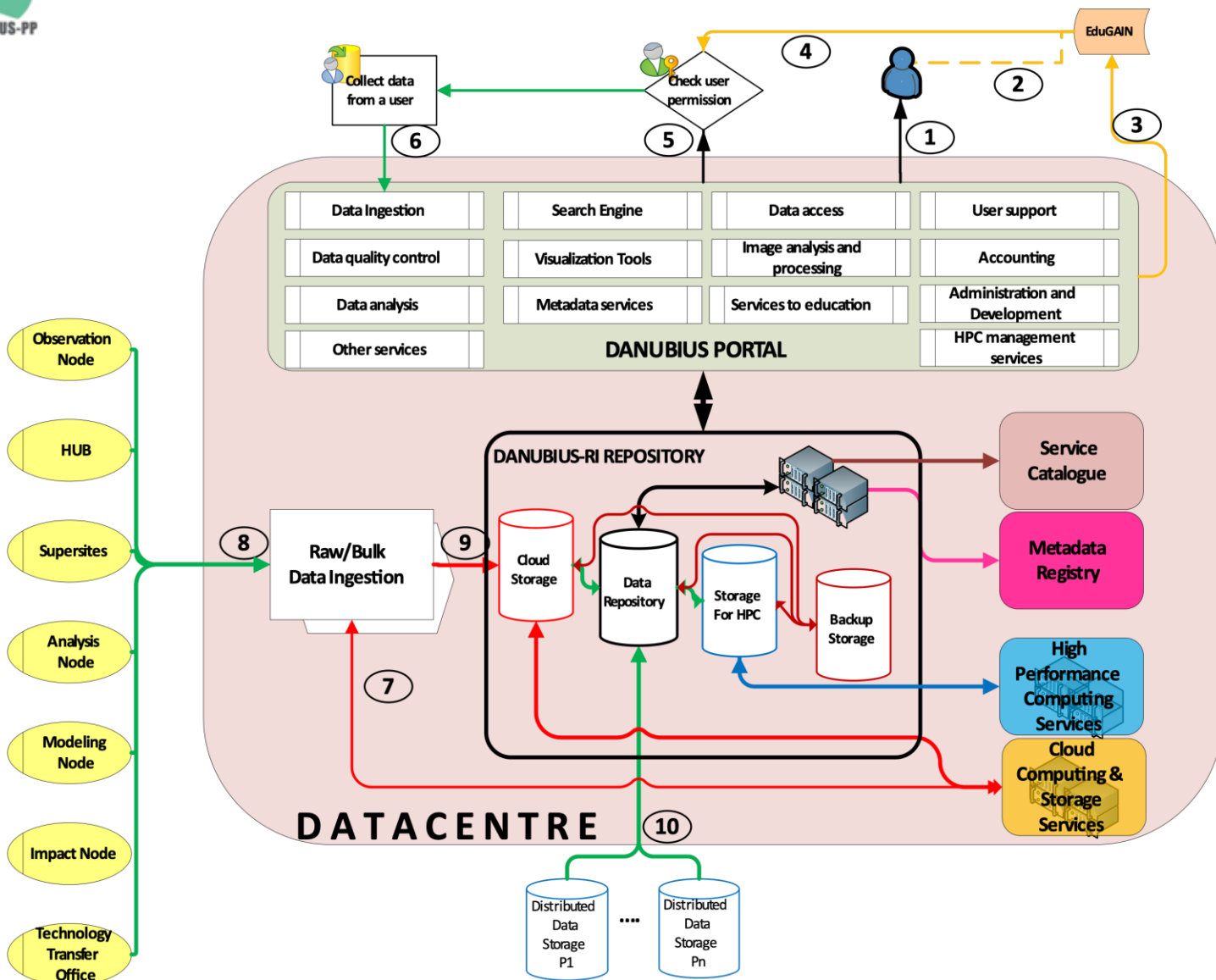
# DANUBIUS-RI:: FAIR principles

- **FINDABLE** – data and metadata will be assigned a globally unique identifier (GUI), comprehensive metadata will describe the DANUBIUS-RI data. Additionally the metadata will be indexed and registered in DANUBIUS-RI Data Centre portal. The goal of this principle is to provide tools to easily find the data. Metadata should be easily available to the user.
- **ACCESSIBLE** – Metadata, as well as data, can be retrieved using their GUI and metadata is accessible even for data that is no longer available or is restricted. The goal of this principle is to facilitate access to the user, once the user finds the data, the user needs to have available the information regarding access, including authentication, authorization or registration.
- **INTEROPERABLE** – the DANUBIUS-RI metadata will use language and descriptors that follow the FAIR principles and when appropriate will use qualified references to other metadata. The goal of this principle is to make DANUBIUS-RI data ready to be integrated with other data or with applications, for analysis, storage or processing.
- **RE-USABLE** – the DANUBIUS-RI data and metadata will have relevant attributes, will be released with DANUBIUS-RI licensing and will follow the relevant domain and community standards. The goal of this principle is to enhance the reuse of the data. In order to be archived, the data/metadata needs to be well described and to facilitate its replication, whenever possible.



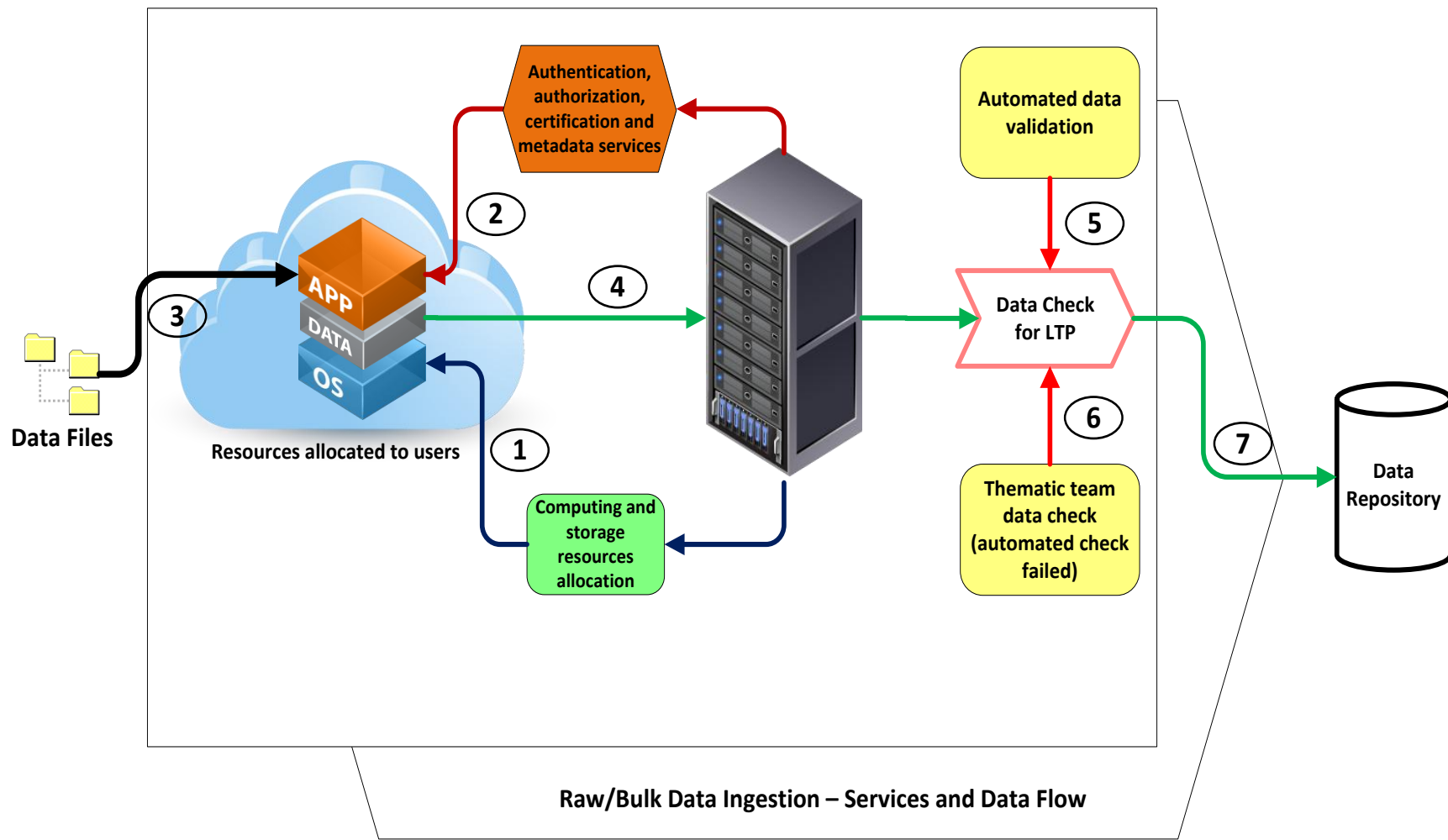


# Services and Portal



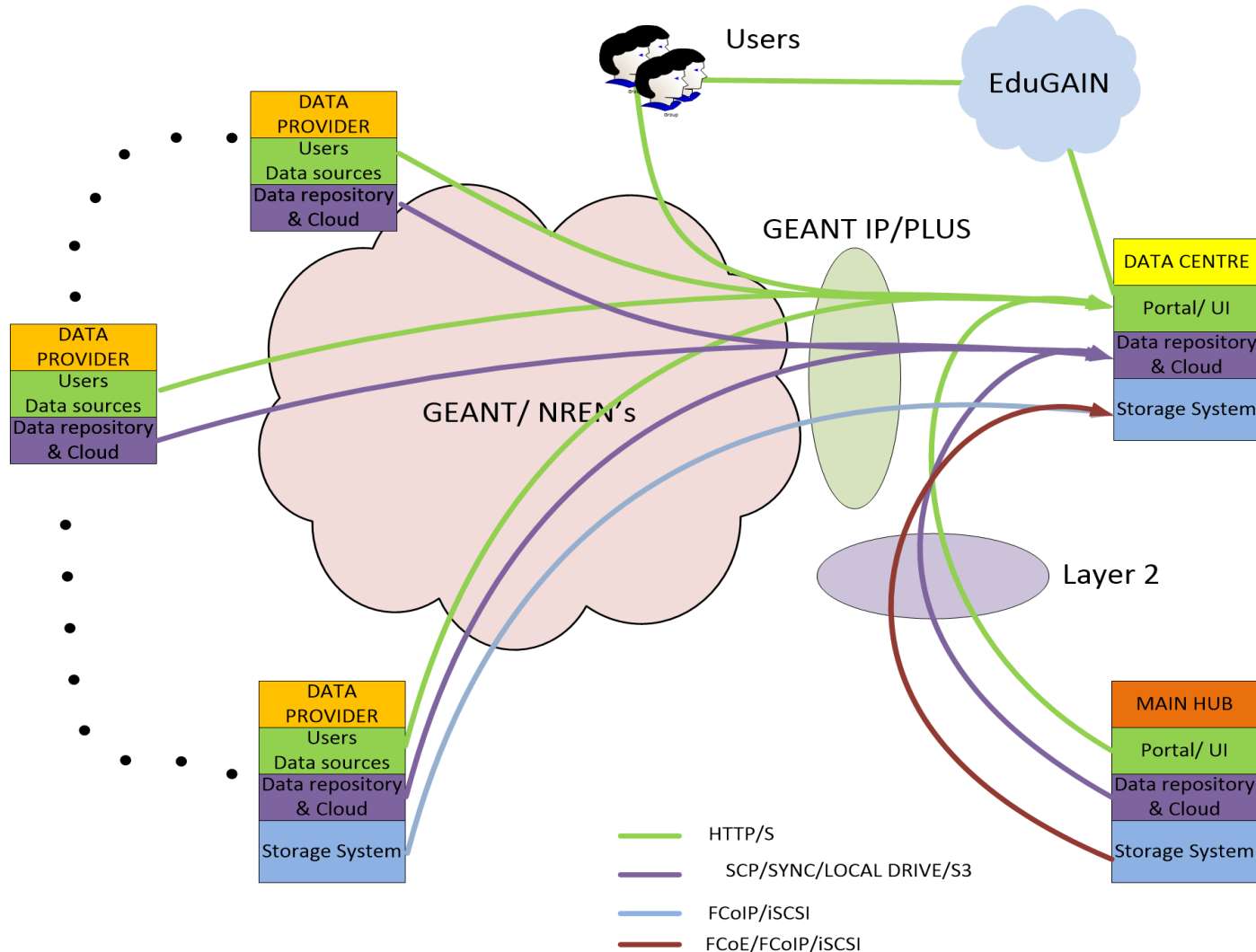


# DANUBIUS-RI Data Ingestion





# Distributed repository and the access





# Thank you

All efforts are focused to achieve DANUBIUS-RI operational as ERIC in 2023!