



A LONG TERM PLAN FOR THE  
INTEGRATION OF RESEARCH  
INFRASTRUCTURES FOR  
SOLID EARTH SCIENCE  
IN EUROPE



## RESEARCH INFRASTRUCTURES AND e-SCIENCE FOR DATA AND OBSERVATORIES ON EARTHQUAKES, VOLCANOES, TSUNAMIS, SURFACE DYNAMICS AND TECTONICS

EPOS is a long-term integration plan that aims to create a single sustainable, permanent and distributed infrastructure that includes:

- Geophysical monitoring networks
- Local observatories (including permanent in-situ and volcano observatories)
- Experimental & analogue laboratories in Europe
- Integrated Satellite data information

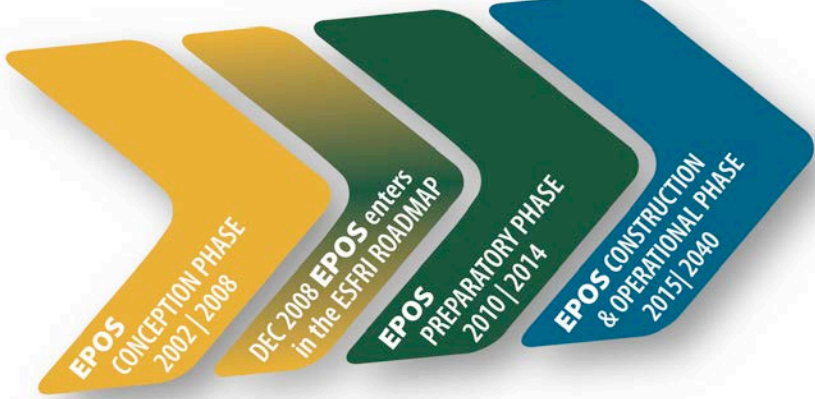
EPOS is going to promote open access to geophysical and geological data and modelling tools, enabling a step change in multidisciplinary scientific research into different areas.

### **EPOS Mission**

EPOS is integrating the diverse, but advanced European Research Infrastructures for solid Earth Science, and will build on new e-science opportunities to monitor and understand the dynamic and complex solid-Earth System.

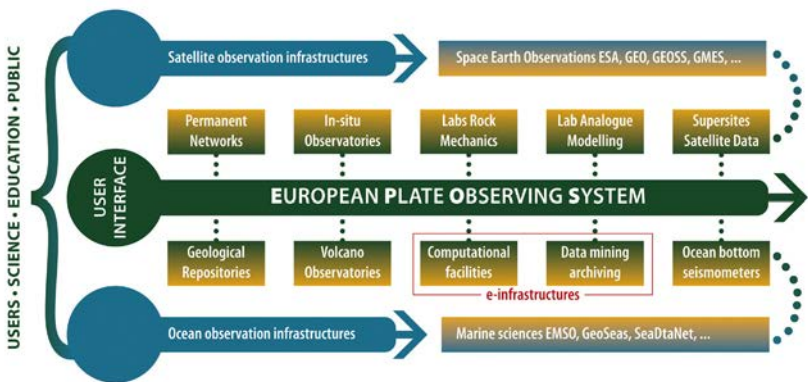
EPOS will identify existing gaps and promote implementation plans with environmental, marine and space science to help solve the grand challenges facing the Earth and its people.





## Why EPOS?

Integration of the existing national and trans-national research infrastructures will increase access and use of the multidisciplinary data recorded by the solid Earth monitoring networks, acquired in laboratory experiments and/or produced by computational simulations. Establishment of EPOS will foster worldwide interoperability in the Earth Sciences and services to a broad community of users.





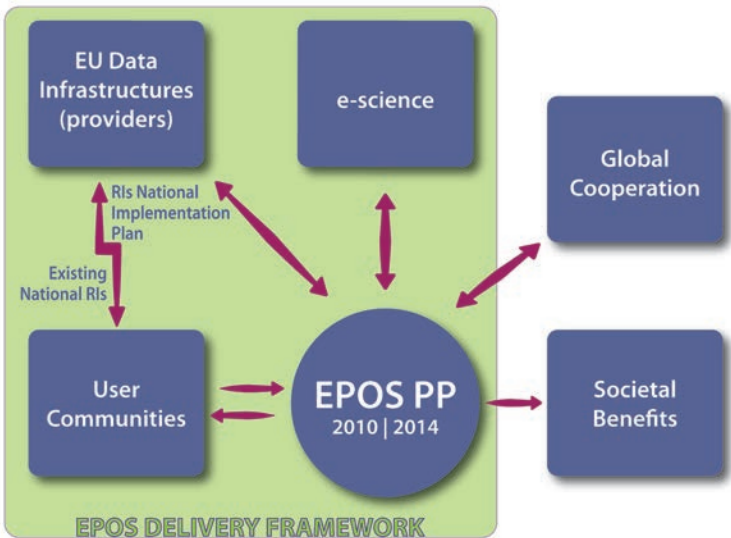
## To Whom EPOS is dedicated?

EPOS is aimed at a broad stakeholders community including European and Mediterranean countries.

We have identified the following stakeholder categories:

- Geoscience data providers
- Scientific user community (including Academia)
- National Research Organisations & funding agencies,
- Data and services providers and users outside the research community (including industry).

Several thousands of researchers in Earth sciences will benefit from the services provided by EPOS, fostering major advances in the understanding of dynamic processes occurring in the Earth.





## Who makes EPOS?



The EPOS Preparatory Phase community today consists of 20 partners for 18 countries (Italy, France, Germany, The Netherlands, Romania, Iceland, Switzerland, United Kingdom, Norway, Turkey, Ireland, Portugal, Spain, Greece, Sweden, Poland, Denmark, Czech Republic and 1 non-governmental organization ORFEUS (managed by KNMI, The Netherlands)) and 6 associated partners (Slovak Republic, Finland, Slovenia, Austria, Israel) and 1 international organization (EMSC) for a total of 23 countries.

National implementation plans have already been launched to support the national research infrastructures participating to the EPOS integration plan as well as to implement the coordination and the facilities at national level.





## **The EPOS impact on Science and Society**

involves:

- Open access to a multidisciplinary Research Infrastructure, which will support scientific advances by providing prompt and continuous availability of high quality data and the means to process and interpret them.
- Data infrastructures and novel Core Services, which will contribute to information, dissemination, education and training.
- Implementation plans, which require strategic investment in research infrastructures at national, European and international levels.
- Contributions to geo-hazard assessment and mitigation activities.







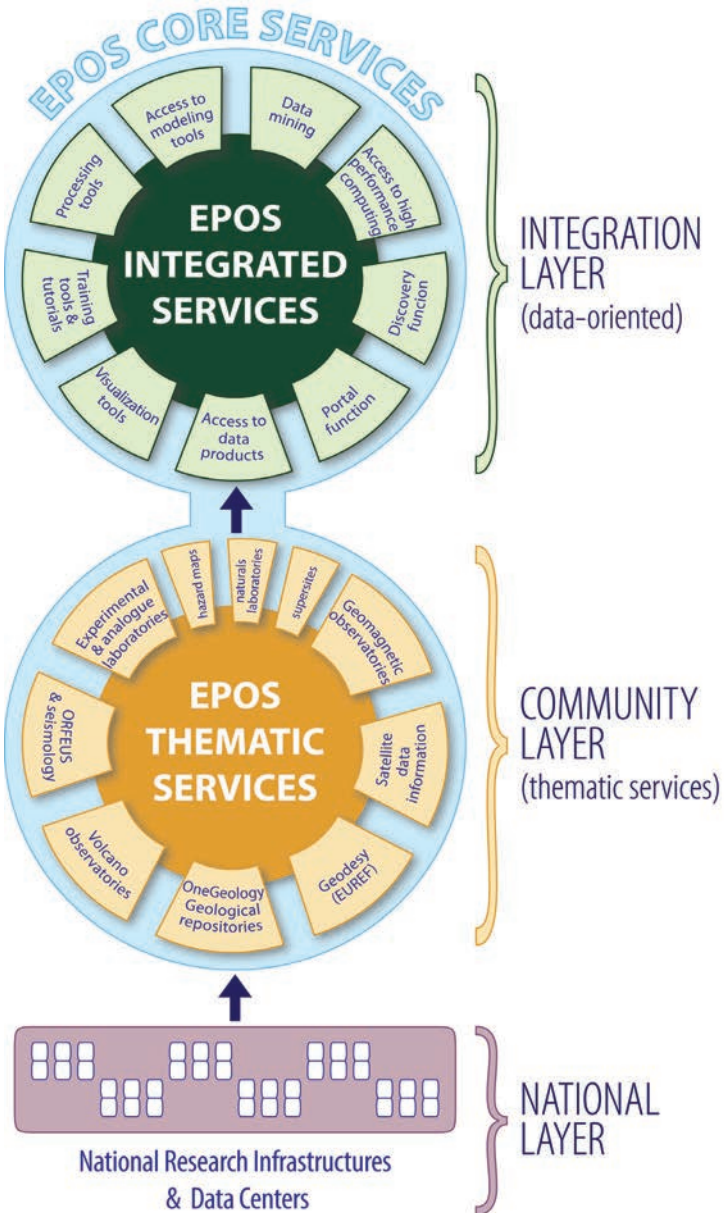
## **The EPOS Core Services**

The existing national Research Infrastructures (RIs) for solid Earth science in Europe generate data and information and are responsible for the operation of instrumentation in each country. These RIs are integrated into the EPOS Thematic Services, which represent dedicated services for each specific community.

The distinct Thematic Services are further joined up to create the EPOS Integrated Services consisting of a variety of multidisciplinary services that will allow the access to data, data products, processing and visualization tools and computational codes and resources for different stakeholders, not limited to the scientific community.



## Overview of the EPOS Core Services.





## **Expected socio-economic impact**

Due to the multidisciplinary nature of EPOS, its socio-economic impact includes several aspects. Taking into account both the construction and the operational phase, EPOS will contribute to:

- build excellent science opportunities for a better society;
- foster IT innovation for a better risk management of environmental hazards;
- open new business opportunities for the local and global economy;
- strengthen capacity building for new generations.



Moreover, not building EPOS will deepen the existing shortcomings that affect the European Environmental research due to the fragmentation of funding sources, management and legal structures, leaving to uneven developments of the national Research Infrastructures for solid Earth science that will benefit global competitors.





## **Legal and governance model**

The need to set up a separate legal entity for the future EPOS Research Infrastructure is fully recognized. After comparison between several possible legal vehicles, EPOS is heading towards a European Research Infrastructure Consortium (ERIC).

The EPOS multidimensional integration outcomes can be summarized as follows:

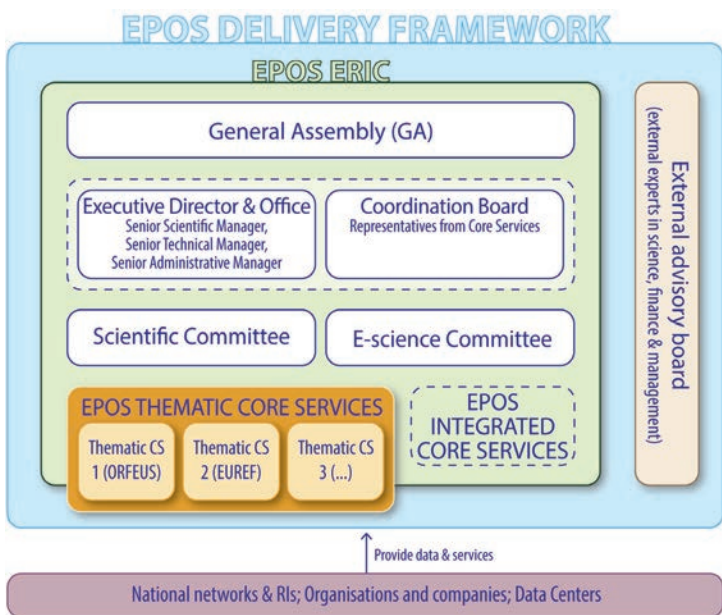
**the EPOS ERIC.** It comprises everything that is part of the EPOS ERIC legal entity as described in the ERIC Statutes;

**the EPOS RI.** It refers not only to the EPOS ERIC but also to the whole EPOS Integrated and Thematic Core Services, including components that may not be part of the ERIC;

**the national Research Infrastructures and networks.**

While these infrastructures provide the input data and are as such part of EPOS, they are not part of EPOS delivery framework unless they are a component of a Core Service. National Research Infrastructures (RIs) and networks will undertake the activities that have been agreed for building the Thematic Core Services (community-oriented action).





## Relations between EPOS-ERIC and the components of EPOS-RI

A major issue will be to decide which Integrated and Thematic Core Services will be incorporated into the ERIC and which ones will be managed at national level remaining thus outside the ERIC but providing Core Services compliant with the EPOS-ERIC annual plan. While it is understood that Core Services managed at national level by countries being member of the EPOS-ERIC should be compliant with the EPOS-ERIC strategy and annual plan, the case of Core Services provided by organizations from countries not being part of the ERIC has to be discussed. Specific agreements have to be signed between EPOS-ERIC and these organizations.



## **EPOS key challenges**

The present challenges of the EPOS PP can be summarized as follows:

- integrate the existing national research infrastructures to build the EPOS Thematic Core Services;
- design the Integrated Core Services and establish their prototype for the EPOS construction;
- implement and build the EPOS Data Base of Research Infrastructures;
- design and identify the optimal Legal and Governance model for the EPOS construction;
- assess the socio-economic impact of the EPOS Research Infrastructures;
- provide a detailed analysis of the infrastructure construction expenditures and elaborate a sustainable funding model.



## **How to join EPOS?**

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