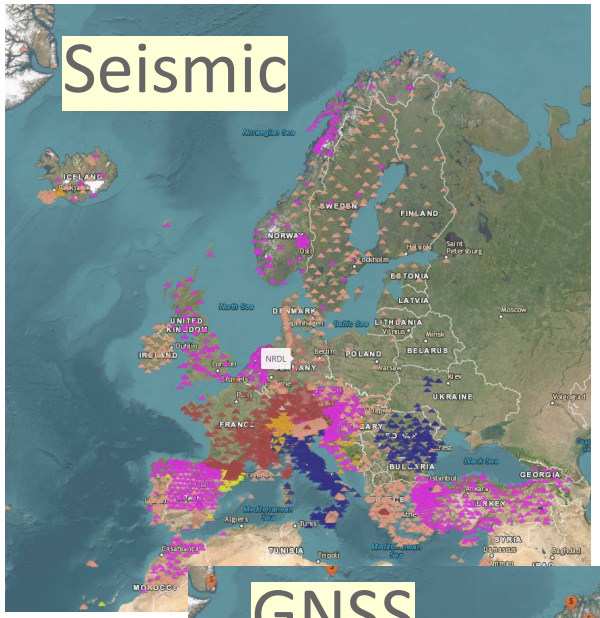
An introduction to the
The European Plate Observing System (EPOS)

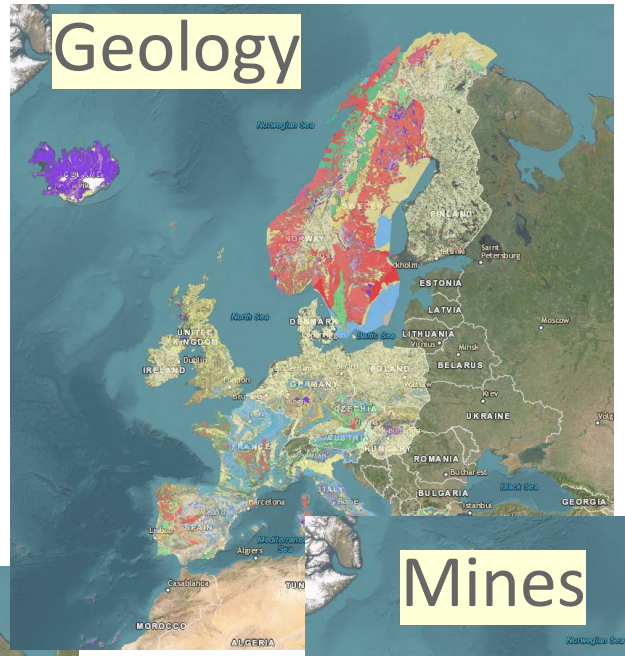
EPOS Sweden Kick-Off

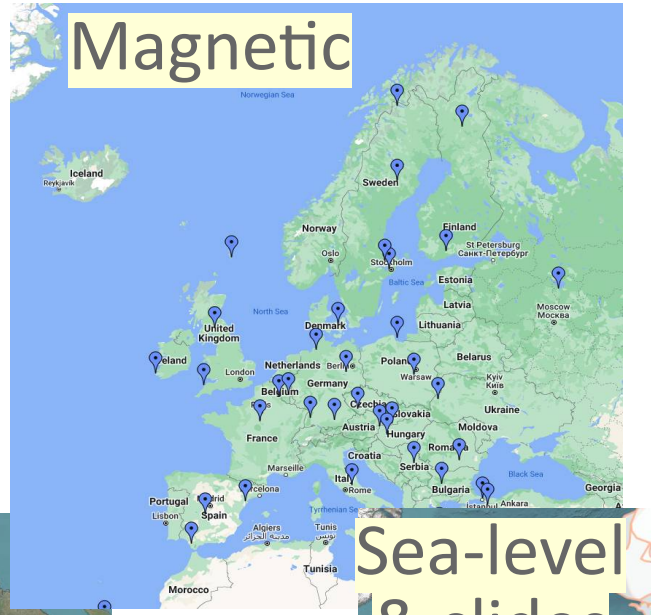
2023-09-13

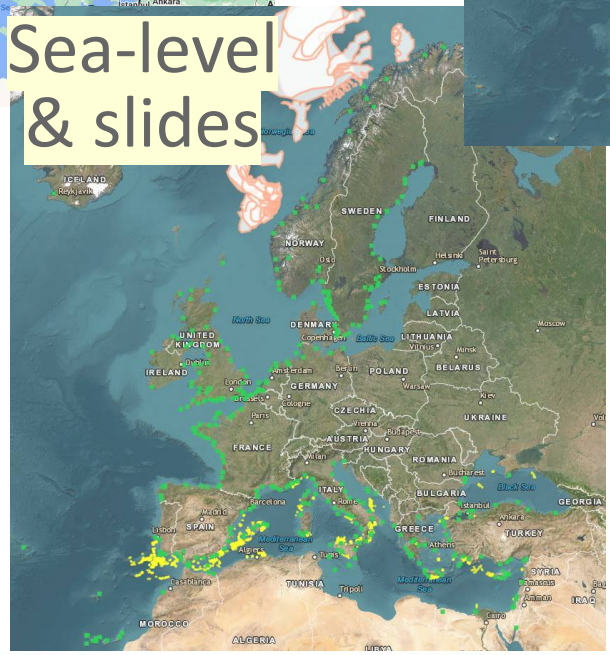
EUROPEANPLATEOBSERVINGSYSTEM www.epos-eu.org

There are a lot of geo data around!









How do we best share all this data,
in order to achieve the best possible research
and the best possible utilisation?

EPOS!

What is the European Plate Observing System (EPOS)?

”Executive summary”

The vision:

EPOS, the sole research infrastructure in Europe for solid Earth science, is designed to boost and modernize research on the Earth’s solid surface and its interior

Bottom-up approach

by domain-specific research communities

(transnational across Europe, to promote coordinated strategies, e.g.EPOS Seismology, GNSS Data, Volcanology)

EPOS Data Portal (launched April 2023)

multi-domain platform

(grants open access to harmonized and interoperable scientific data and products applying FAIR data principles)

www.epos-eu.org

What is EPOS?

”the only pan-European research infrastructure for solid Earth Science”

(in own words)

a distributed e-infrastructure

(involving multiple hosts and many member countries and contributing organisations, cf. EPOS Sweden)

a European Research Infrastructure Consortium (ERIC)

(a legal body designed to accommodate the needs of major international RIs)

What is EPOS?

a data portal that provides data services

(of homogeneous, trans-national data according to documented standards, and not individual data sets)

a community-driven effort:

bottom-up thematic communities

(these Thematic Core Services (TCS) develop and define the thematic contributions to EPOS)

a user community that provides value to the RI

(primarily researchers, including data providers, but also decision makers and the general public)

What is EPOS?

FAIR:
Findable,
Accessible,
Interoperable,
Reusable

RDM:
Reasearch
Data
Management

an ambassador and facilitator for FAIR data, Open Access and RDM

(basic principles for the conception and implementation of EPOS)

IT innovator for multidimensional data integration

(metadata, semantics, services, standards, open source architecture)

the solid Earth science partner in the European Open Science Cloud (EOSC)

(infrastructure integration on the European level)

Why do we need EPOS?

Why EPOS?

I am a vulcanologist. I realise that I would need satellite and earthquake data, where can I find them?

SUCCESS

Time

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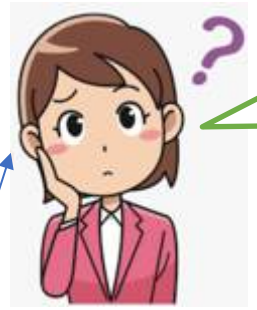

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Yes, I have the data you need. It is available in our portal, let's schedule a call so I can explain to you how to access and download them.

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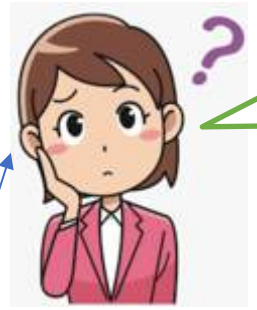

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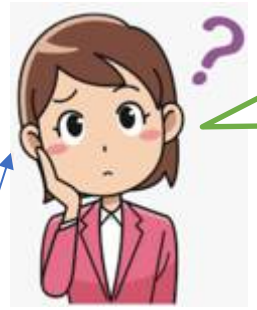

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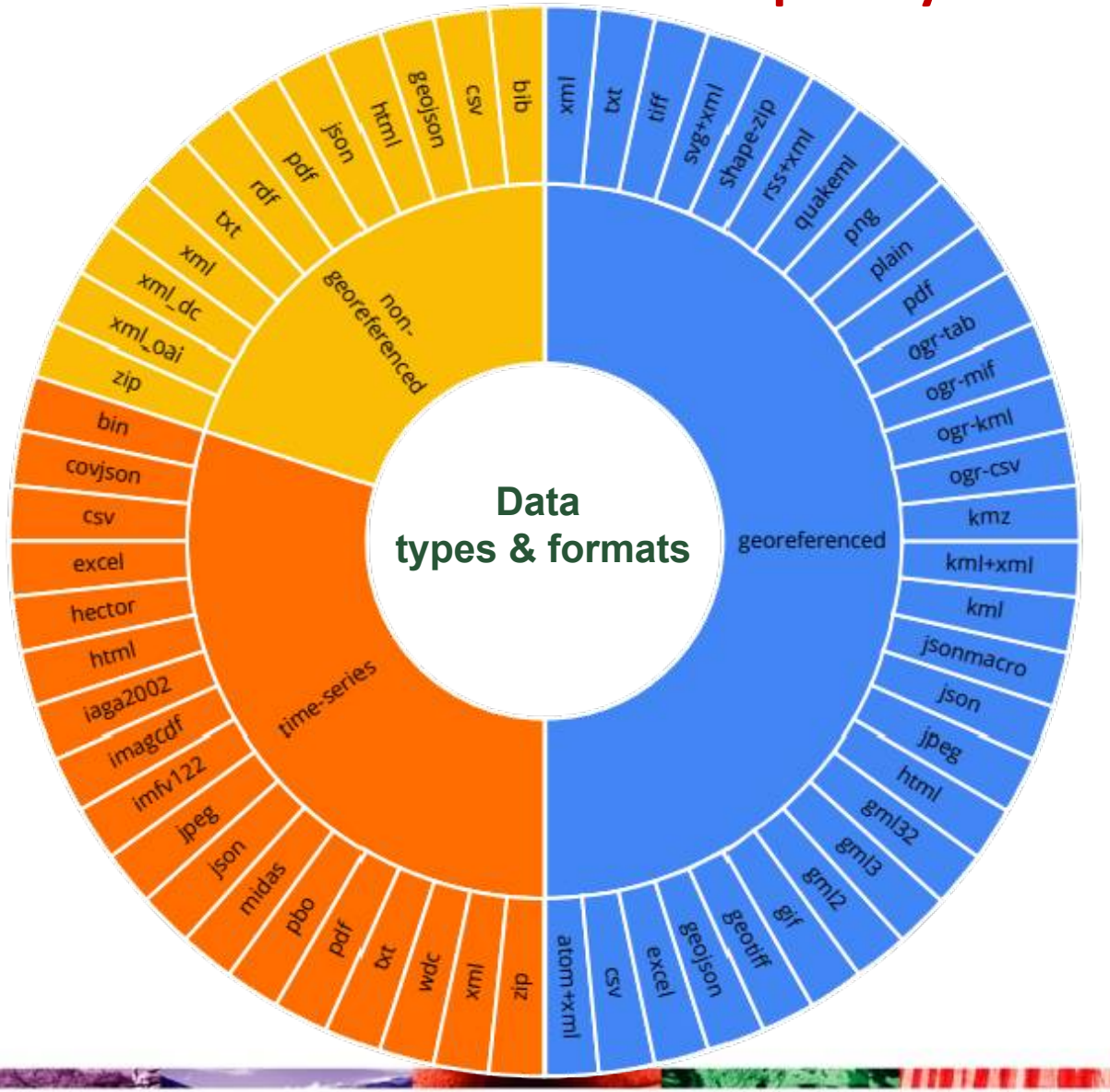
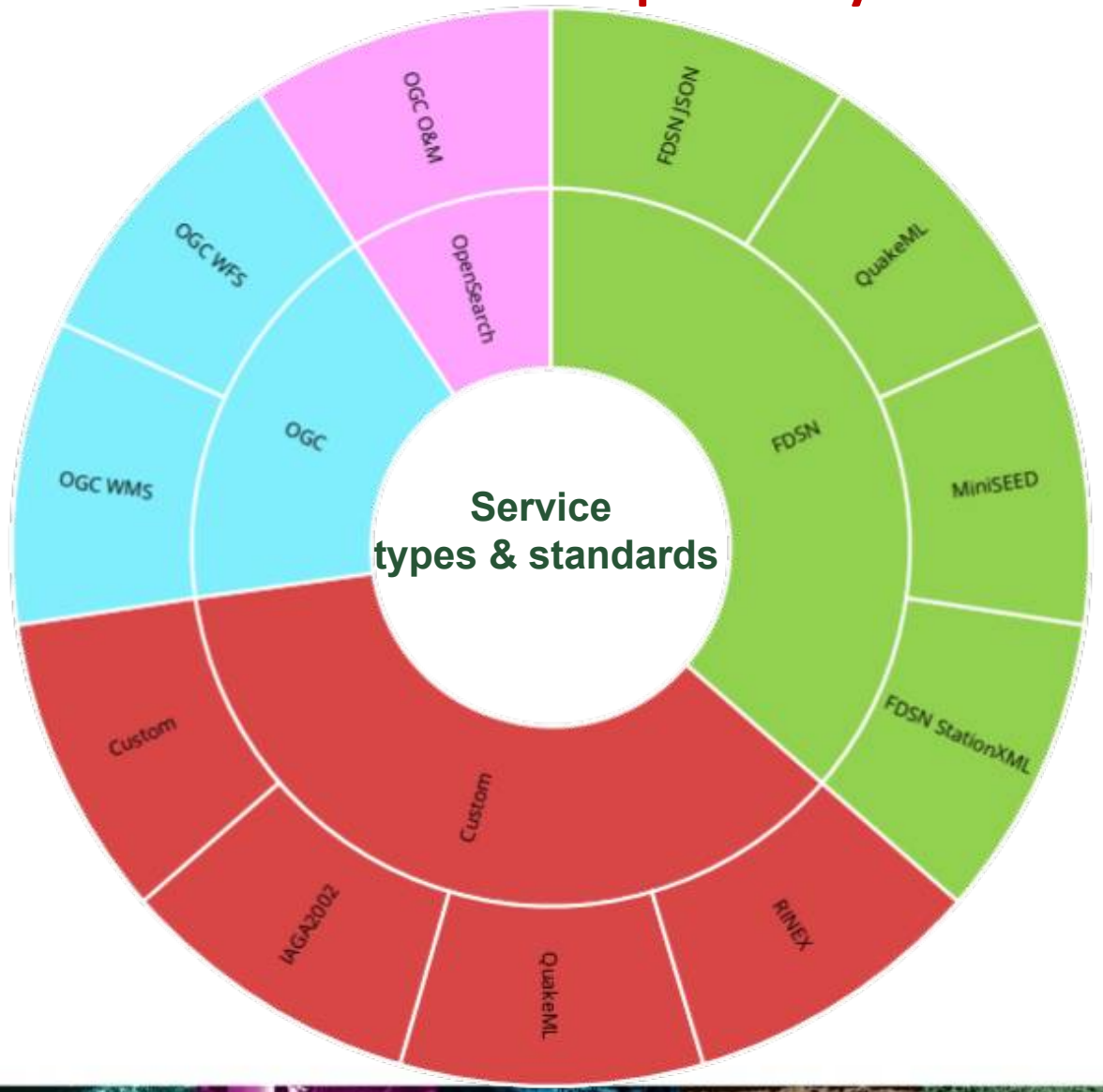
The heterogenous EPOS landscape (I): data

To facilitate multidisciplinary research, EPOS ensures data interoperability





The heterogenous EPOS landscape (II): scientific domains

The governance of the individual thematic communities is harmonized across EPOS


Seismology


Near Faults Observatories


GNSS Data and Products


Volcano Observations


Satellite Data


Geomagnetic Observations


Anthropogenic Hazards


Geological Information and Modelling


Multi-scale Laboratories


Tsunami (candidate phase)


future expansion of the thematic communities

The heterogenous EPOS landscape (III): vast number and kind of players

Large amount of technical, legal, governance and financial interfaces

- 26 countries (17 are members)
- 14 national consortia
- 143 organisations are formally involved, 256 organisations provide data
- 5 international research organisations
- 10 thematic communities (TCSs)

And the numbers are increas

What are the benefits of EPOS?

What are the benefits?

Benefits for researchers and research communities:

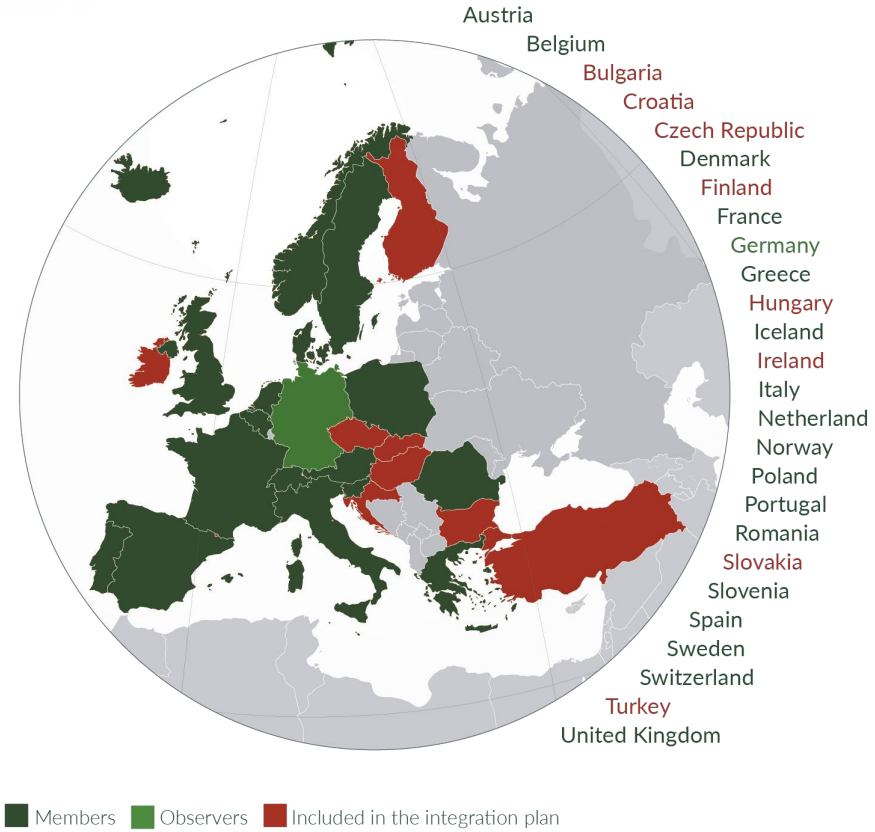
- true **data integration**: across domains, data types and borders
- data discovery and **access** of services **through a single point**
- **better exposure** of own data and research
- **data services can be queried directly**, opening for integration into wider workflows and for automatisation
- a **flourishing environment to research communities**, including community portals and development environments
- adoption of **open science and shared standards**

What are the benefits?

Benefits for member countries and funding bodies:

- adoption of **open science and shared standards**
- triggers **excellent science and innovation**
- increases the **value of data**
- optimises the **use of public funding**
- increases the **use and value of national research infrastructures**
- increases **digital literacy** and skills such as **research data management**
- leverages the **harmonisation of national strategies**

Good to know about EPOS:



In green, countries members of the ERIC:
17 countries represented in the General Assembly
(the governing body of EPOS ERIC that meets twice a year)

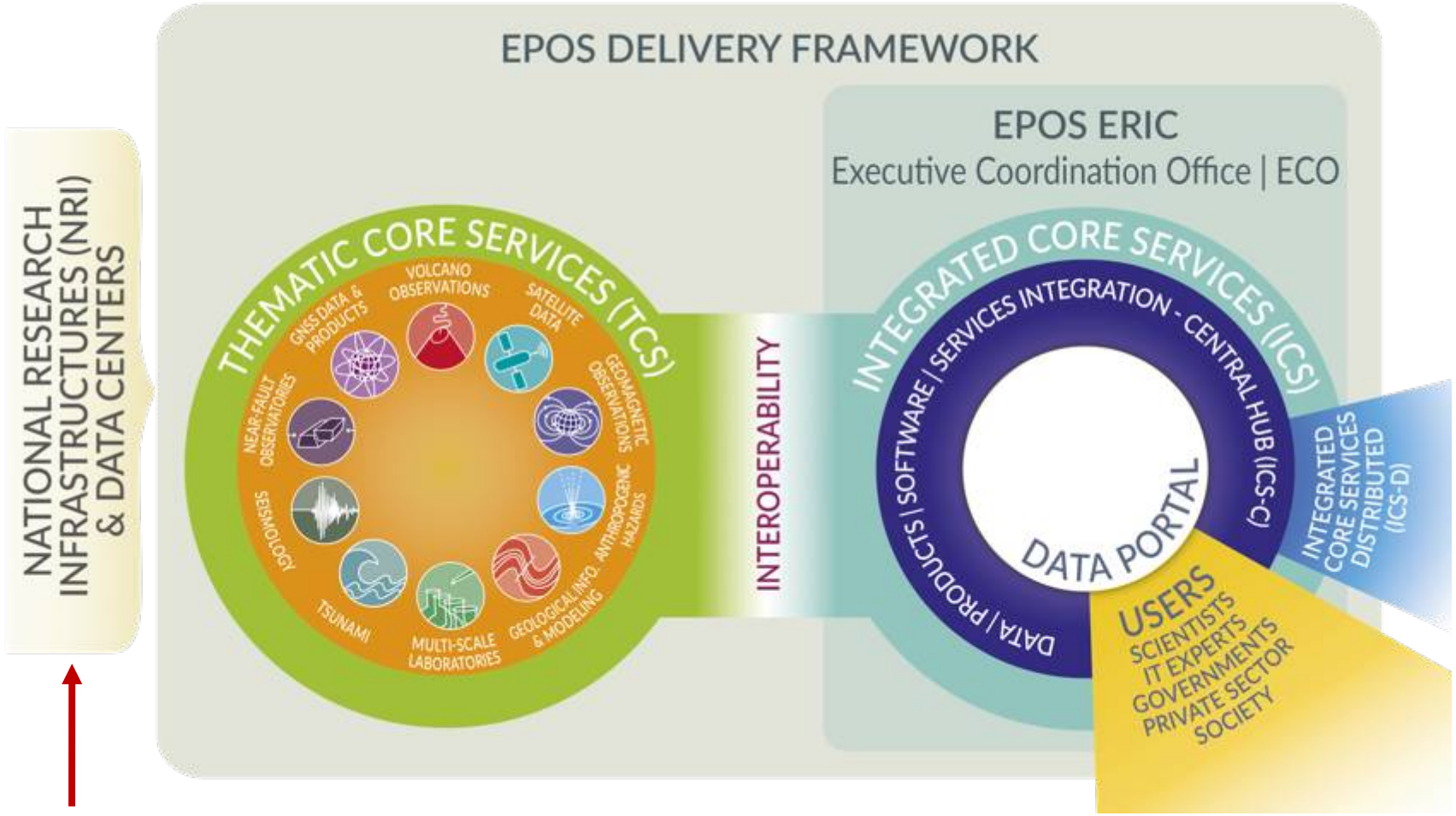
In red, countries participating to the
EPOS Delivery Framework (9 countries)

Since October the 30th 2018, EPOS is an ERIC

European Research Infrastructure Consortium
is a legal entity recognized in all EU Member States
without requiring transposition
into national law or any national legal instrument.

The principal task of an ERIC is
to establish and operate a research infrastructure.

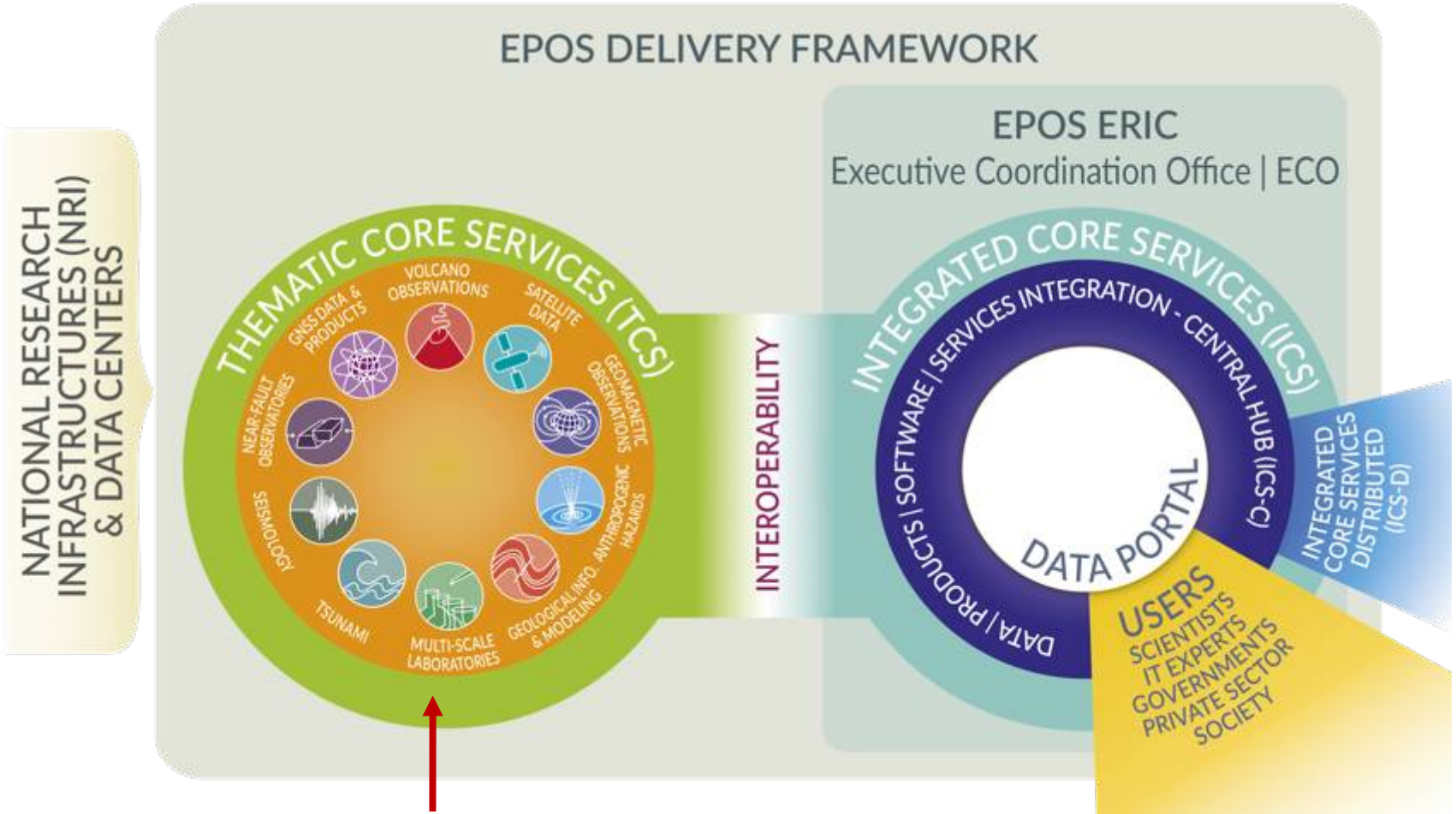
The EPOS architecture



National RIs

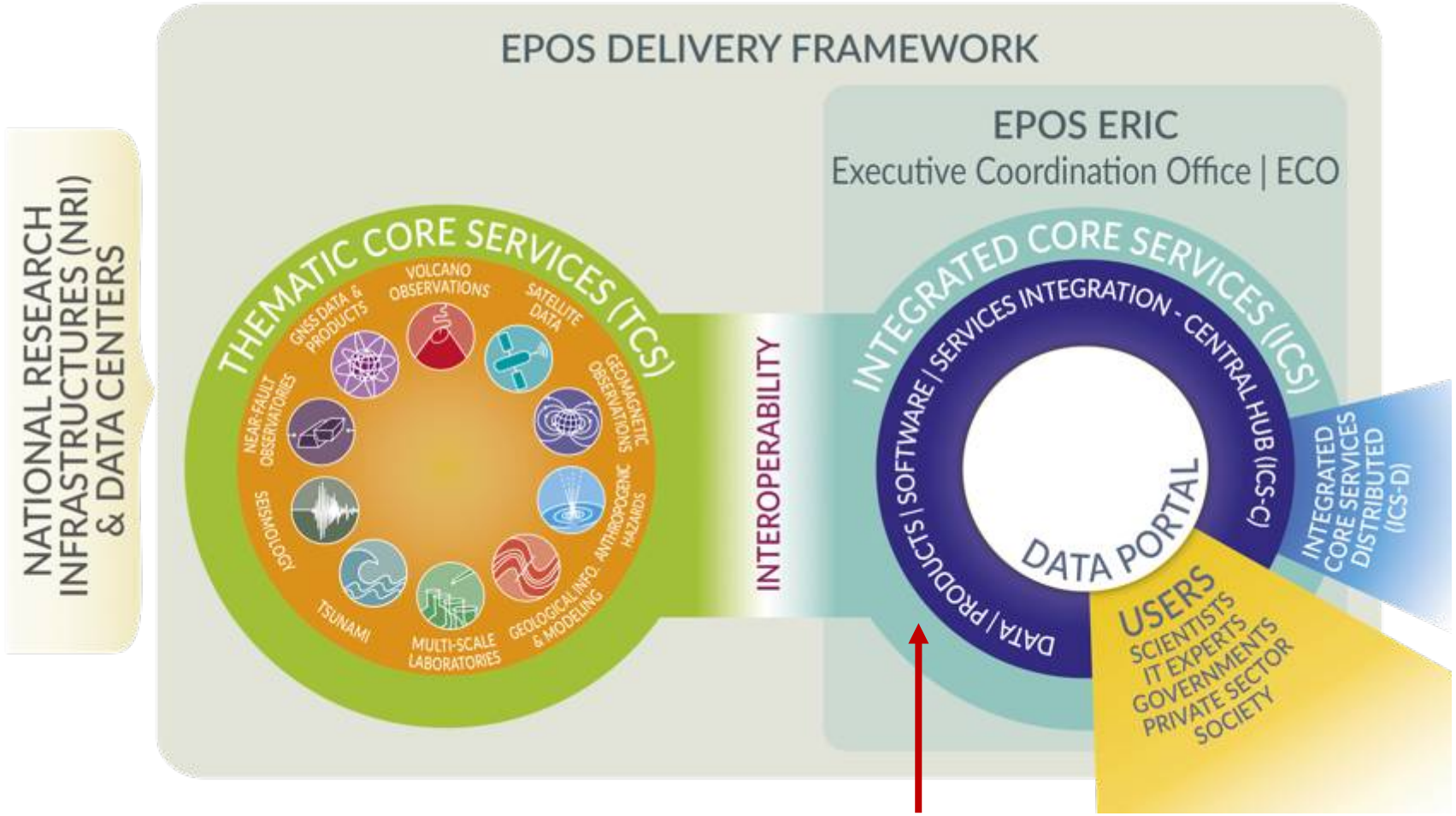
generate data for their own purposes

The EPOS architecture



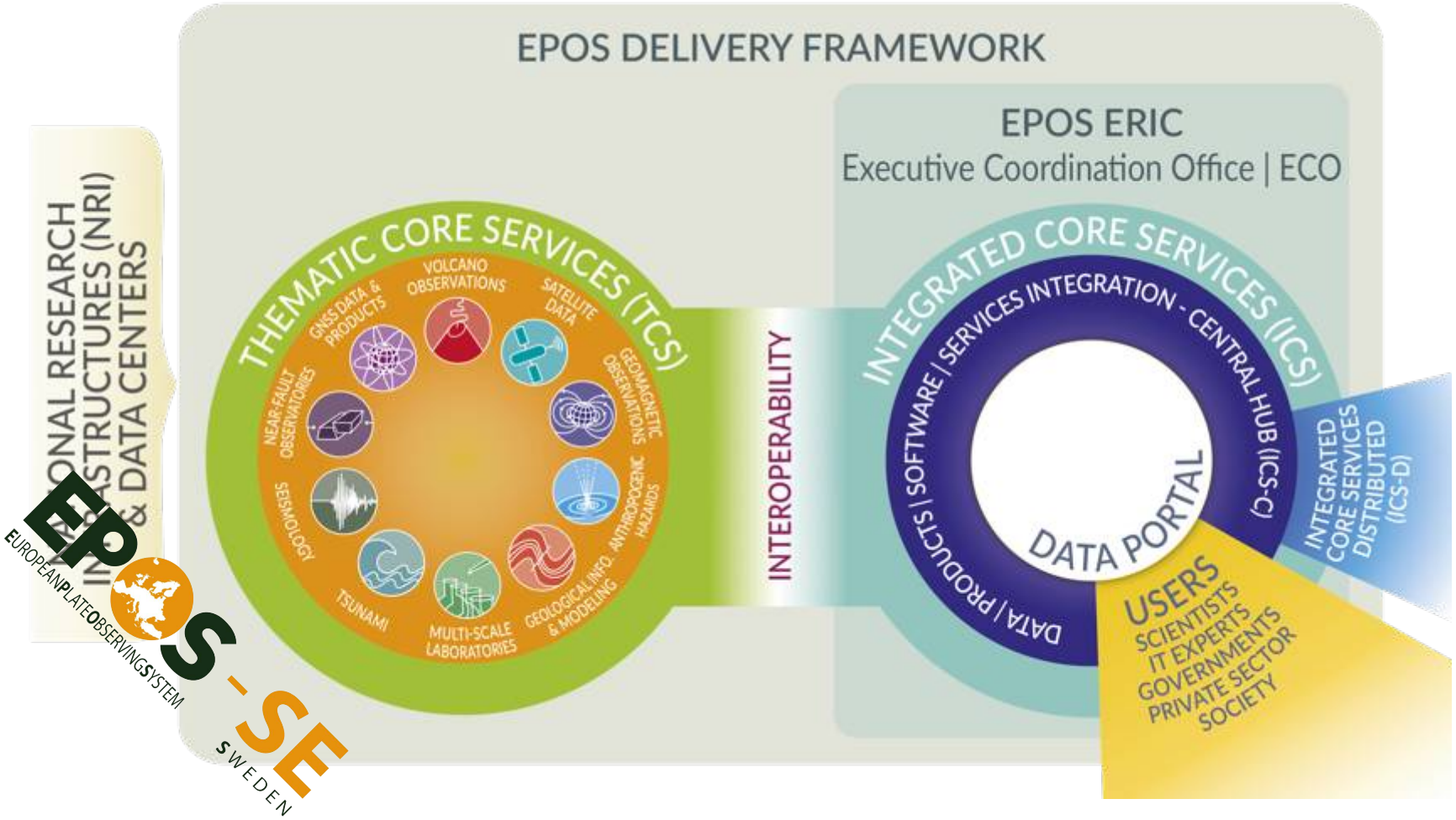
The **Thematic Core Service (TCS)** **integrate** quality-controlled data, metadata and services from various infrastructures under a common governance framework to make them **interoperable** through the ICS-C

The EPOS architecture



Integrated Core Services (ICS) represent the IT solution that by adopting data access policies aligned with Open Science, provides FAIR data and products through the **EPOS Data Portal**

The EPOS architecture



EPOS -SE SWEDEN

EPOS-ERIC/EPOS Delivery Framework

- ERIC management (hosting country Italy; head quarters at INGV)
  - Diverse boards and GA
  - Outreach, community interaction, new projects
  - ...
- Integrated Core Services (ICS)
  - Portal
  - Data integration and interoperability
  - Interaction with distributed IT resources
- Thematic Core Services (TCS)
  - Community consortia that develop standards and services for their thematic community

ICS are hosted by:
Hardware:
BRGM (French Geological Survey)
Software:
BGS (British Geological Survey)
Support:
GEUS (Geological Survey of Denmark and Greenland)

EPOS-SE
EUROPEANPLATEOBSERVINGSYSTEM SWEDEN

EPOS-ERIC Key Actors

ECO

search and exploit European opportunities (funding and e-infrastructure components)

Hosting Countries

ensure sustainable operation and hosting of ECO and ICS-C

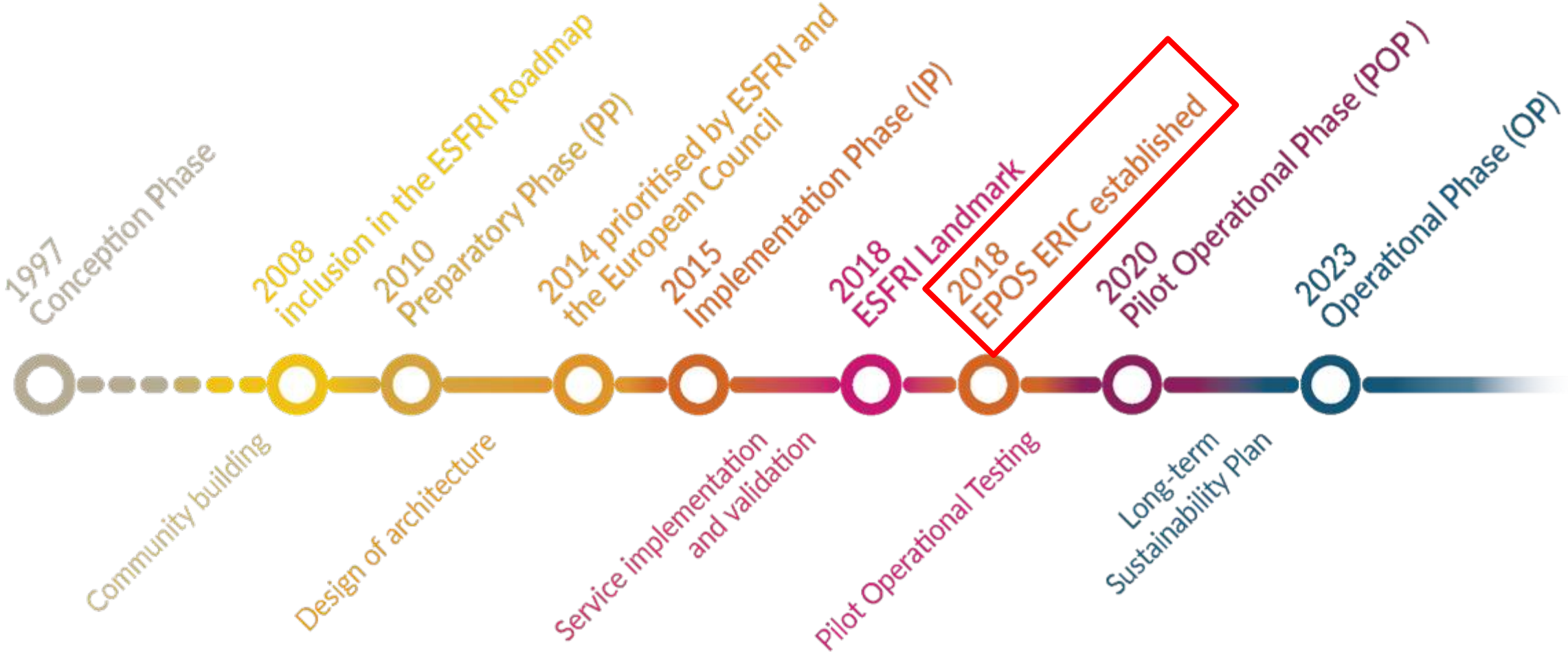
General Assembly

- *provides nominal membership fees*
- *support streamlining of national funding*

Service Coordination Committee

- *ensure connection with service providers supported by national funds*
- *exploit project funding opportunities at national and European level*

Timeline from design to operations



EPOS Sweden

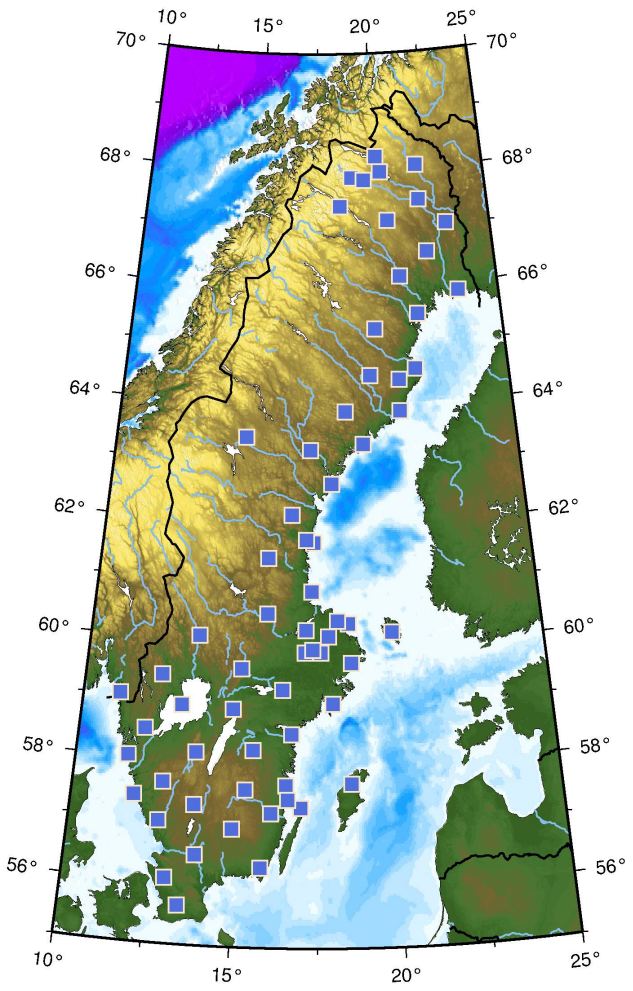
(The Swedish contribution to EPOS-ERIC)

- Swedish research data and services
- Outreach to and interaction with the Swedish community

National consortium and steering committee

supported by Vetenskapsrådet

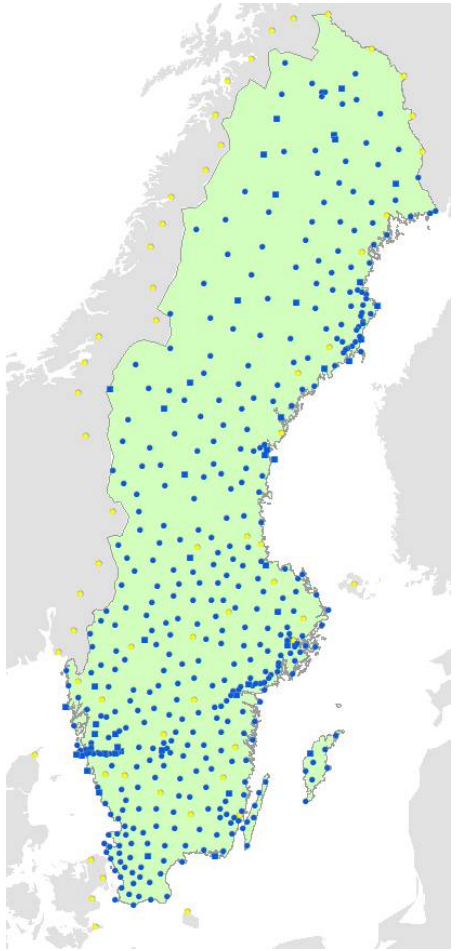
EPOS Sweden



Seismic stations

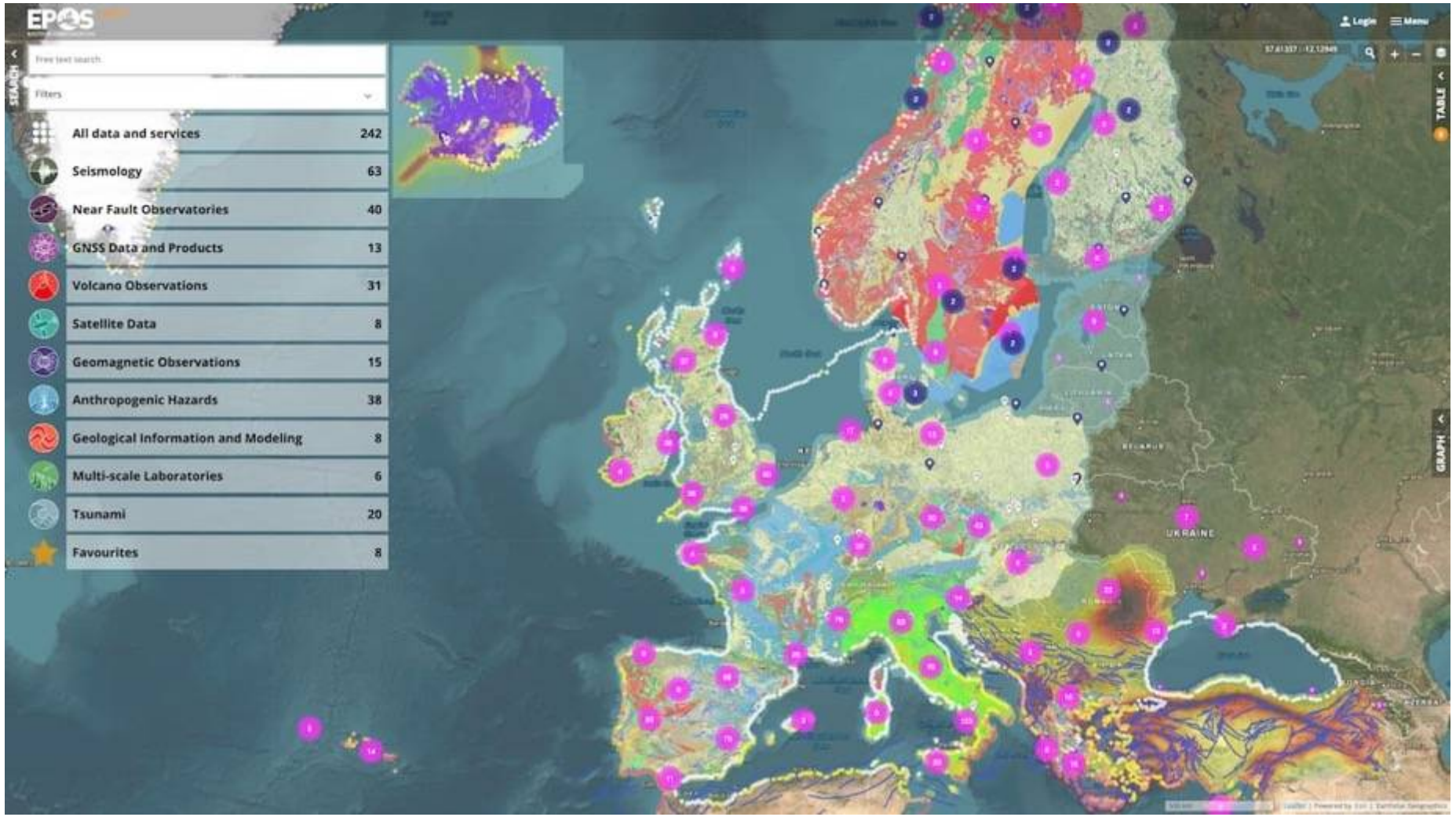
Active Swedish TCS participation:

- Seismology
- Global Navigation Satellite Systems
- Geomagnetic Observations
- Anthropogenic Hazards
- Geological Information and Modeling



GNSS stations

The EPOS Data Portal is now operational with 242 services from 10 TCS



Try it out!