EPOS
European Plate Observing System

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www.epos-eu.org
Research Infrastructure List

- 226 Research Infrastructures
- 1658 GPS receivers (out of 2500)
- 2517 seismic stations
- 585 TB Seismic data
- 1,09 PB Storage (seism).
- 1,23 PB Storage (GPS).
- 109 storage data centers
- 512 instruments in laboratories

MAP OF:
- GPS stations
- Laboratories

http://www.epos-eu.org/ride/
The European Plate Observing System (EPOS):

- represents a **scientific vision and approach** in which innovative **multidisciplinary research** is made possible for a better understanding of the physical processes controlling earthquakes, volcanic eruptions, unrest episodes and tsunamis as well as those driving tectonics and Earth surface dynamics.

- has a long-term plan to facilitate **integrated use** of data, models and facilities from mainly distributed existing, but also new research infrastructures, for solid Earth science.

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**Partnership**

- 20 partners for 18 countries
- 6 associated partners for 5 countries
- 229 research infrastructures declared
- 170 institutes and organizations

On going initiatives for integrating the partnership
Timeline

1. Preparatory Phase (31 OCT) → Implementation Phase
   1. Operative within 5 years
2. DATA POLICY (open access)
3. ERIC,
4. Executive Coordination Off. (ECO)
5. Integrated Core Services (ICS)
Issue 1: communities

• Communities have an internal viscosity
• Some time is requested for
  – Community building
  – Converge towards common solutions
  – “ICT education” (learn & discover ICT tools they can take advantage of)
• → we adopted a co-design approach (no IT driven/top-down)
The EPOS Integrated Core Services will provide access to multidisciplinary data, data products, synthetic data from simulations, processing and visualization tools, .... Not just data access but EPOS means to integrate, analyze, compare, interpret and present data and information about Solid Earth.

Thematic Core Services are infrastructures to provide data services to specific communities (they can be international organizations, such as ORFEUS for seismology).

National Research Infrastructures and facilities provide services at national level and send data to the European thematic data infrastructures.
Compatibility layer

- ICS/TCS comunication
- Metadata catalogue+APIs
- Web Services
METADATA
3-layer metadata model

- **Discovery (DC) and (CKAN, eGMS)**
  - Web portal, Spatio-Temporal Search
  - Anticipates data.gov domains

- **Contextual (CERIF metadata model)**
  - Search for instruments, software, models...

- **Detailed (community specific)**
  - domain-specific data with detailed metadata
  - Domain specific - geographically distributed data
Functional Architecture
EPOS Architecture

ECO hosting

ICS-C hosting

ICS-d design

ICS-C

ECO

ICS-d

TCS implementation

THEMATIC CORE SERVICES

SERVICES

Pillars

Nodes

THEMATIC CORE SERVICES

THEMATIC CORE SERVICES

THEMATIC CORE SERVICES

THEMATIC CORE SERVICES
Demonstrator
EPOS Demonstrator Seismology & Geology and Geodesy

- SEISMOLOGY, GEODESY, GEOLOGY, RISK
- Data Discovery
- Events Discovery
- Data Download

http://epos.cineca.it
Issue 2: data etherogeneity

- EPOS has “almost-big data” (2PB, increasing)
- Data heterogeneity, different processing-level, different communities
- 1 RI for all solid earth science is an added value → strategic choice for community building
- E-IR + RI advantages (data providers+scientists+ITs)
Future work
EPOS as a Service

EPOS APIs:
- CERIF XML
- RDF export (ENVRI interoperability)
- OAI-PMH, CKAN, opensearch...
  and other standards
Processing

- Computational seismology & workflows. Interactions with:
  - EGI resources
  - VERCE
  - EUDAT
  - VLDATA (proposal)
  - Co-design approach enabled us to be partners and not only a use case into IT project
Issue 3: priorities & resources

Priorities for the future:

1. Visualization
2. Processing
3. Data management

   1. Need to know costs in order to better present available perspectives to communities

4. at national level, each country receive funding from the ministry

5. communities still need time to get integrated
Take home message

- Co-design approach
- Communities interaction impose a long term timeline
- Need to know resource availability and cost in order to steer communities
QUESTION TIME

WebSite

www.epos-eu.org

R.I.D.E. & Demonstrator

www.epos-eu.org/ride
epos.cineca.it

Newsletter

www.epos-eu.org/newsletter

Epos Social

facebook
youtube	twitter
Preparatory Phase

Finalize the ICS design
Present ICS prototype
Define TCS

Decide hosting the ECO
Procedures for hosting ICS
Finalize statutes for ERIC
Define Data Policies

Implementation Phase

Construct ICS central hub
Integrate Existing TCS
Implement new TCS
Design ICS distributed res.

Hosting ICS central hub
ERIC enters in force
ECO operational
ERIC-TCS Agreements

Start Operational Phase

EPOS RI operational
Further TCS developed

Third parties
partnership agreements

Full Operational Phase

Conditions are in place
to construct and operate the RI

Legend:
Technical
Legal

Concept screening & feasibility study
Business case review & delivery strategy

EPOS Timeline

2010 2014 2015 2019 2023
• Design to implementation → our priorities
  – Priority is DMP
• We developed a financial plan, but in the next year we must activate procurement strategies for hpc services (tech, legal, financial)
  – We need to know tech, legal, financial details
EPOS Architecture