



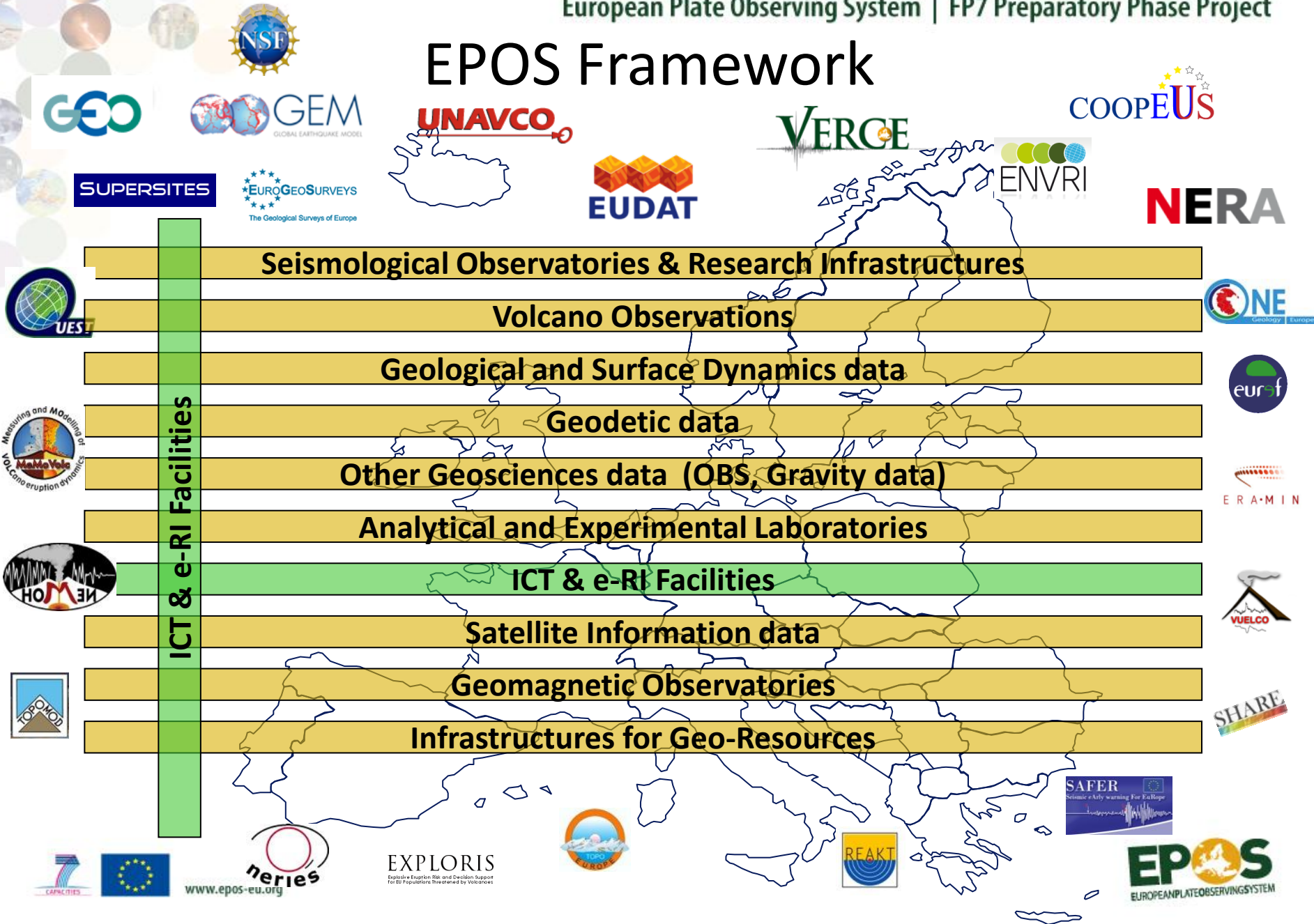
EPOS

European Plate Observing System

*Daniele Bailo, Keith Jeffery
and the WG7 team*

EUDAT – September 2014 - Amsterdam

EPOS Framework



EPOS Contents

<http://www.epos-eu.org/ride/>



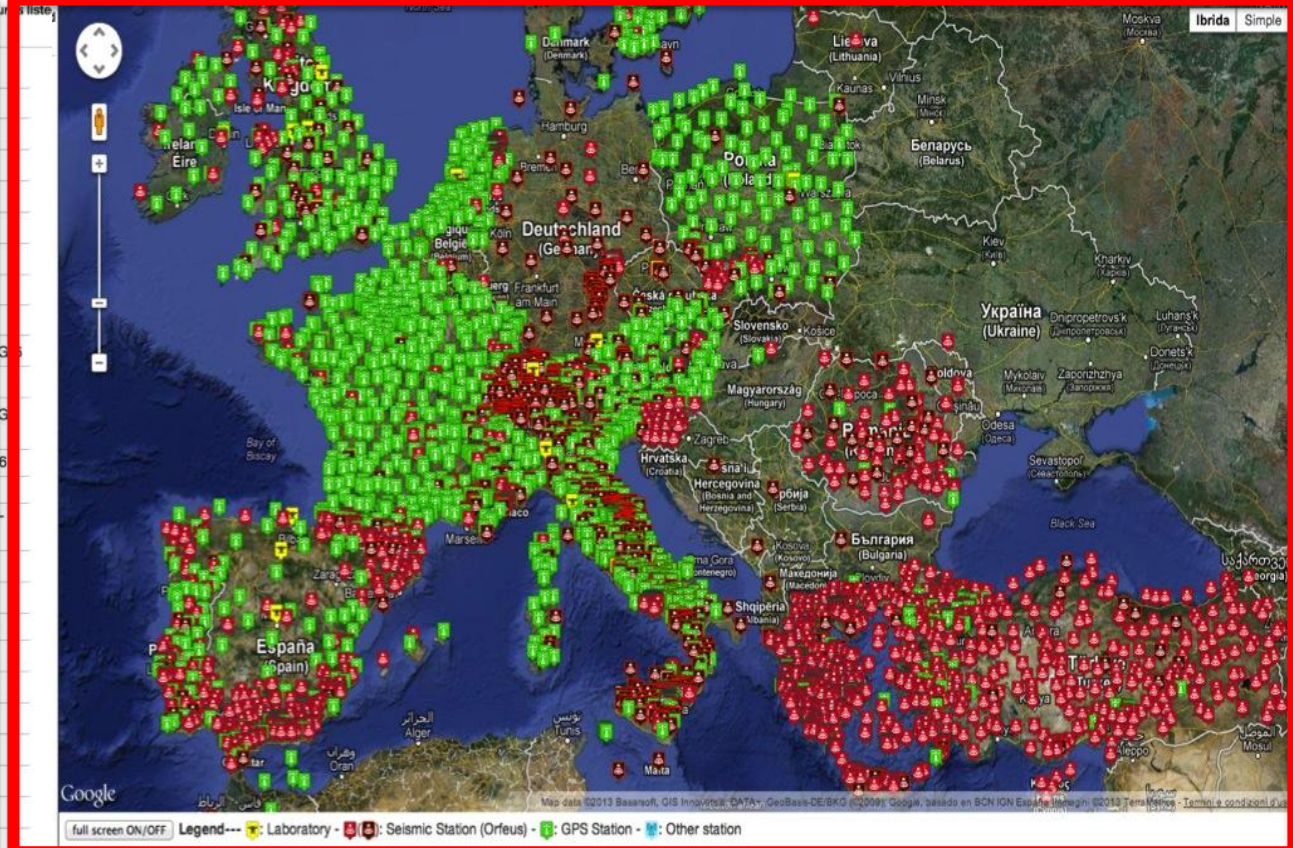
Filter RIs List

Order by: name
 232 Research Infrastructures
Research Infrastructure List
 1. ZAMG-ASN - WG 1
 2. Wire line diamond core drilling - WG 3
 3. W99 fake RI to test - WG 9

- 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

22. University of Barcelona - WG 5
 23. University of Almeria - portable network - WG 1
 24. University of Alicante - Spatial Geodesy Laboratory - WG 4,8
 25. University Complutense of Madrid - Seismic Network - WG 1

MAP OF:
 - GPS stations
 - Laboratories



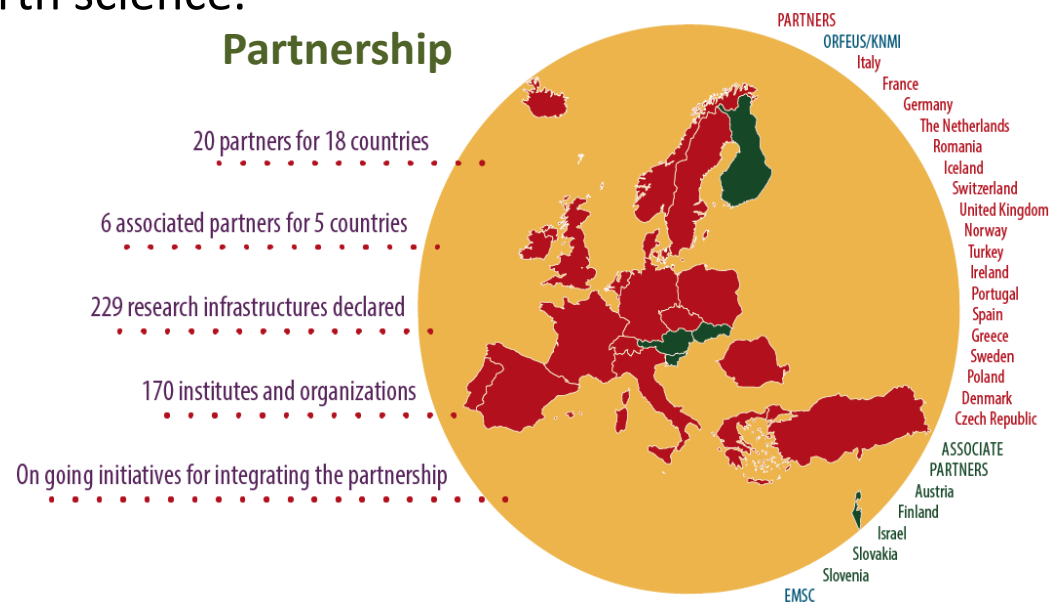
EPOS Vision



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.

Partnership



Timeline



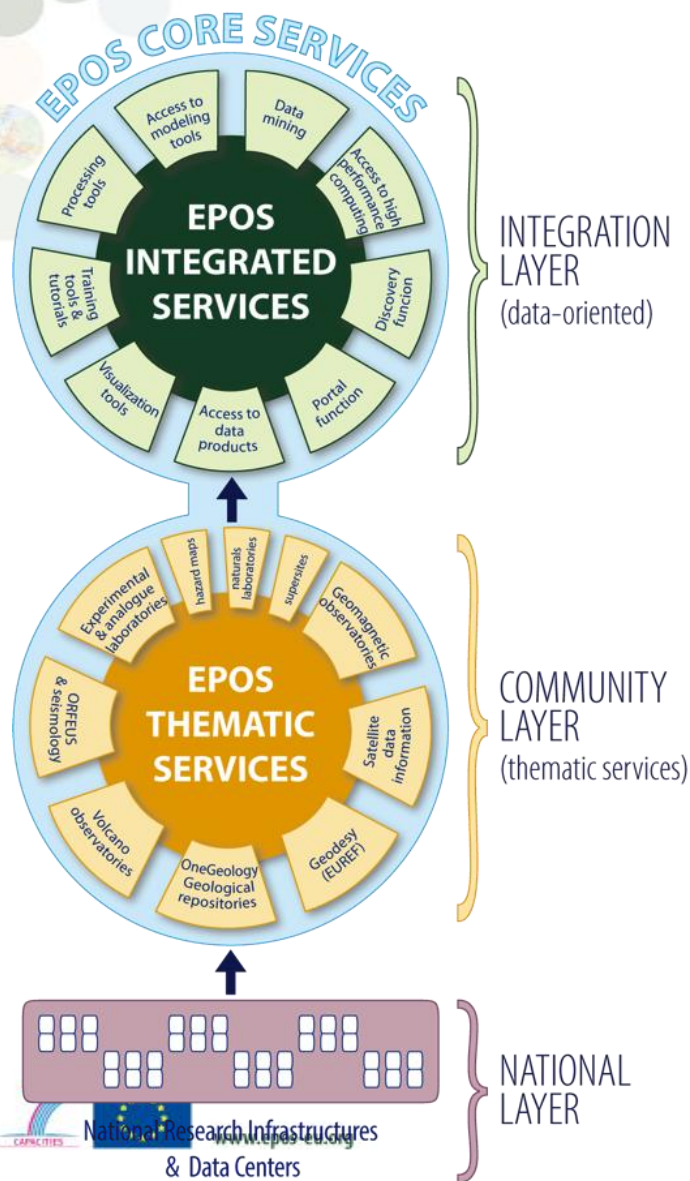
1. PreparatoryPhase (31 OCT) →
→ Implementation Phase
 1. Operative within 5 years
2. DATA POLICY (open access)
3. ERIC,
4. Executive Coordination Off.(ECO)
5. Integrated Core Services (ICS)

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)

EPOS services

European Plate Observing System | FP7 Preparation



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



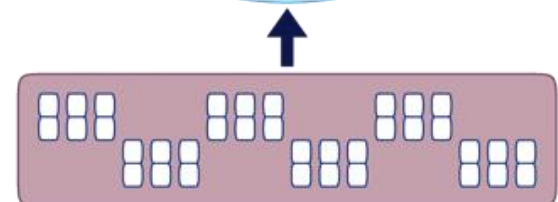
INTEGRATION
LAYER
(data-oriented)

COMPATIBILITY LAYER

- ICS/TCS communication
- Metadata catalogue+APIs
- Web Services

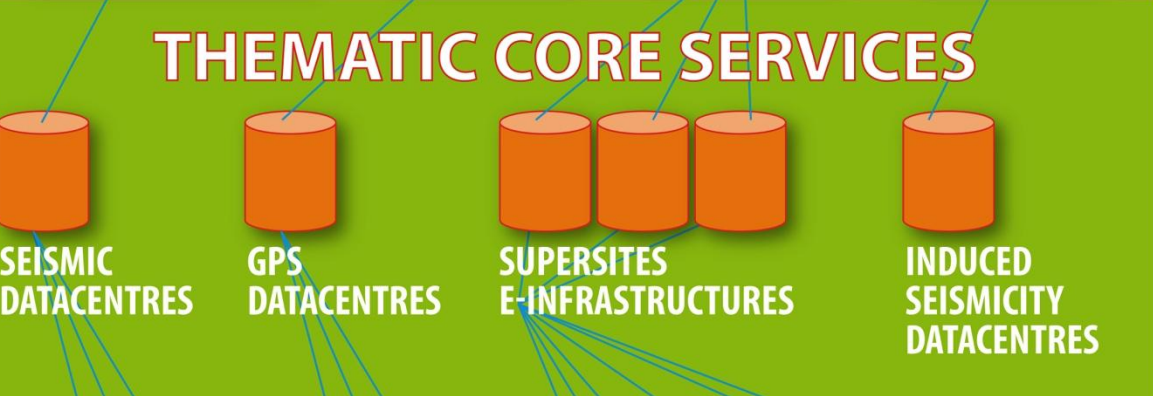


COMMUNITY
LAYER
(thematic services)



NATIONAL
LAYER

INTEGRATED CORE SERVICES

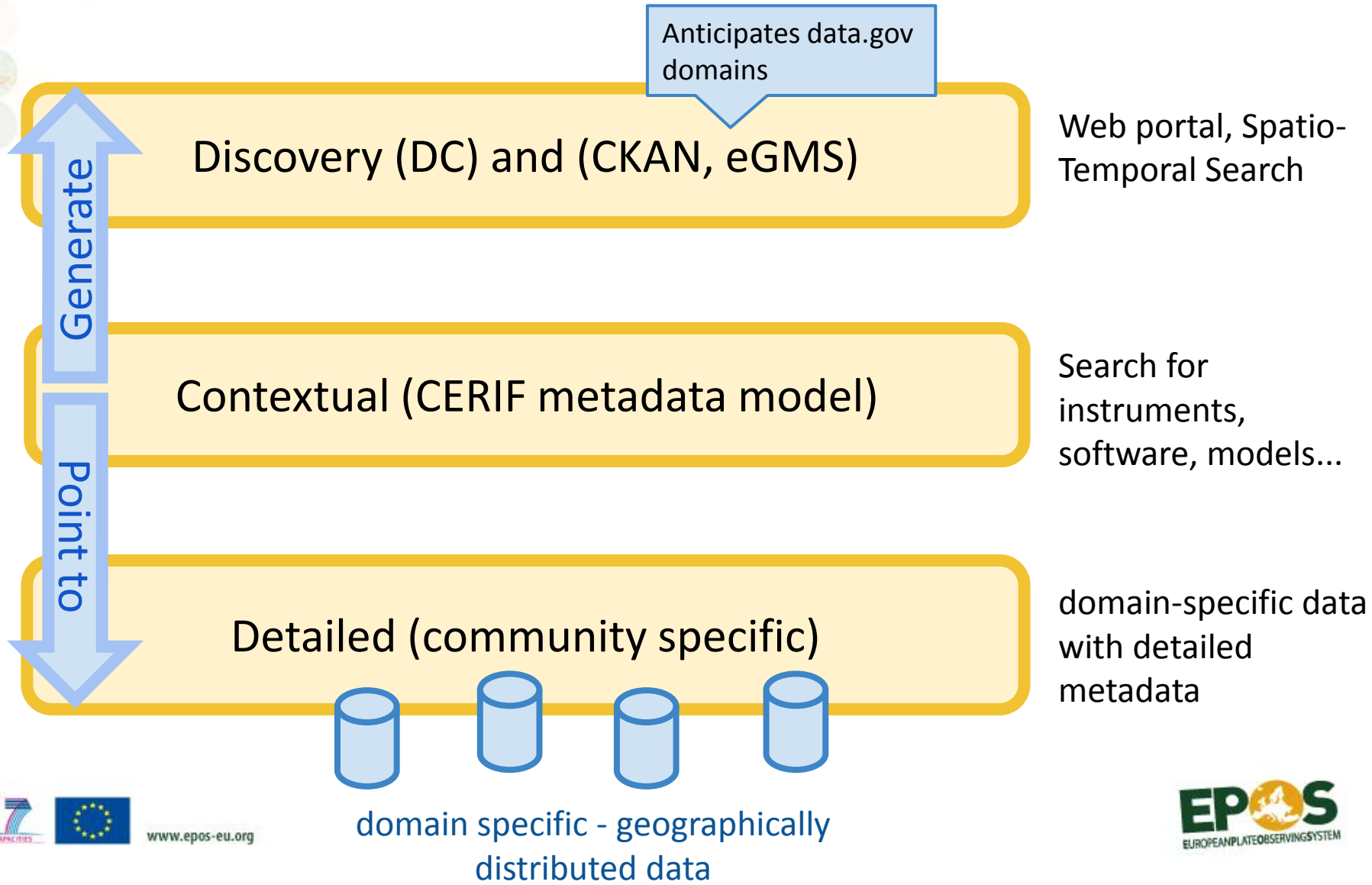


National Research Infrastructures



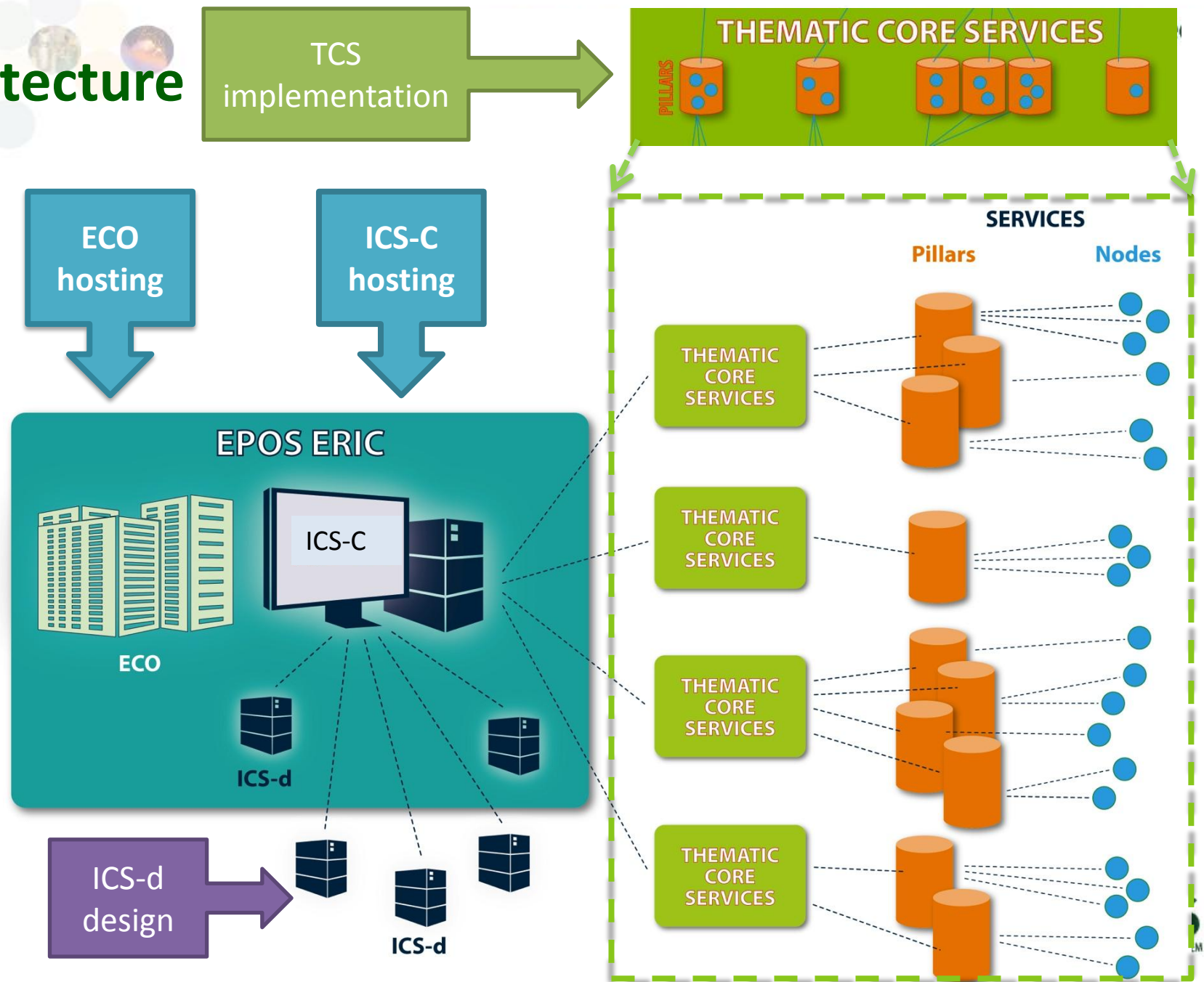
METADATA

3-layer metadata model



Functional Architecture

EPOS Architecture



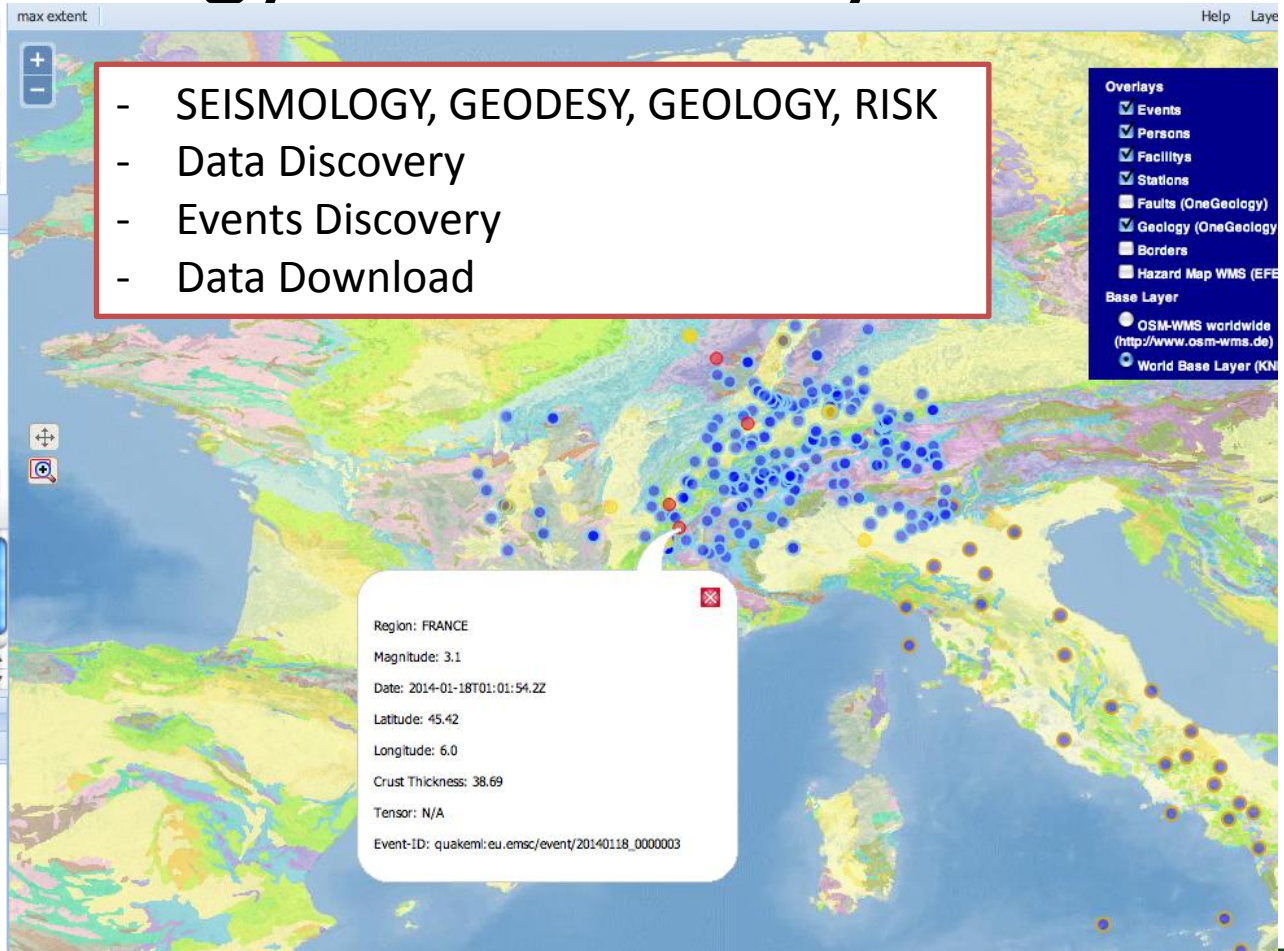
Demonstrator

EPOS Demonstrator Seismology & Geology and Geodesy



Search interface for seismic events. Fields include Date (2014-01-01 to 2014-04-30), Lat (44.9204101 to 50.0180664), and Lon (2.49414062 to 10.5800781). A search button is present. Below the search fields, there are tabs for Facility, People, and Seismic Events. The Seismic Events tab is active, showing a list of events with columns for Date, Time, and Magnitude. The list includes events from France and Italy.

Date	Time	Magnitude
2014-01-18	01:54.2Z	3.1
2014-03-30	15:57:59.2Z	3.2
2014-03-02	13:19:09.7Z	3.1
2014-04-18	18:12:43.2Z	3.1



<http://epos.cineca.it>



www.epos-eu.org



Issue 2: data heterogeneity

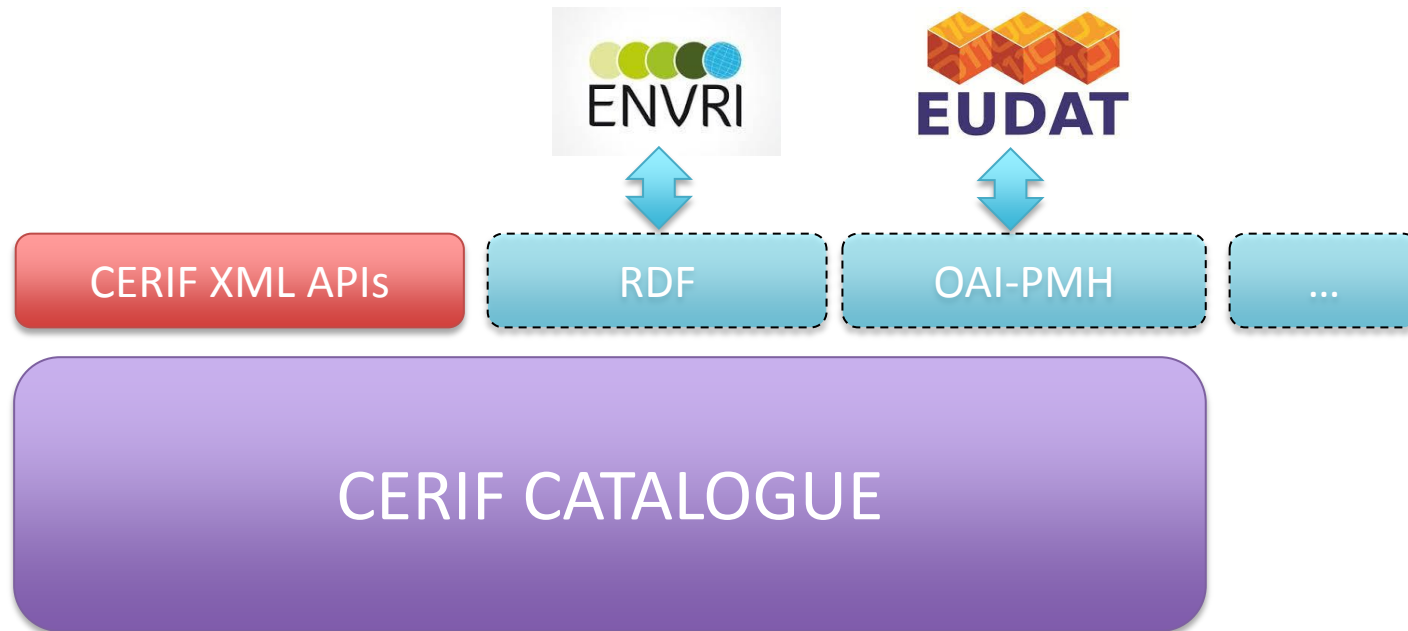
- EPOS has “almost-big data” (2PB, increasing)
- Data heterogeneity, different processing-level, different communities
- 1 RI for all solid earth science is an added value → strategic choice for community building
- E-IR + RI advantages (data providers+scientists+ITs)

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 EPOS
EUROPEAN PLATE OBSERVING SYSTEM

Research Infrastructure and E-Science for Data and Observatories on Earthquakes, Volcanoes, Surface Dynamics and Tectonics

Why EPOS | Our Community | Preparatory Phase | Data & Services | e-ICT Architecture

European Research Infrastructure on Earthquakes, Volcanoes, Surface Dynamics and Tectonics

EPOS: European Plate Observing System

WHAT
The European Plate Observing System (EPOS) is the integrated solid Earth Sciences research infrastructure approved by the European Strategy Forum on Research Infrastructures (ESFRI) and included in the ESFRI Roadmap in December 2008. EPOS is a long-term integration plan of national existing RIs.

Why
The goal of EPOS is to promote and make possible innovative approaches for a

www.epos-eu.org

R.I.D.E. & Demonstrator

RIDE
RESEARCH INFRASTRUCTURE DEMONSTRATOR FOR EPOS

What's RIDE? | What's EPOS? | Contacts | Help | Login

EPOS is: 2 e i s a t a o r

Filter by: Country: [] | Status: [] | Type: []

Order by: Name: [] | Date: [] | Status: []

View of a the 10 (show all)

- ZWZ (ZAGZ) - TET 77 astrometer monitoring - WG 3
- 2040-020 - WG 1
- live the diamond core drilling rig - WG 3
- VLA - Mineral separation laboratory - WG 3
- VLA - Isotope Geochemistry Laboratory - WG 3
- USA - Experimental and Analytical Laboratories - WG 3
- University - Experimental and Analytical Laboratories - WG 3
- USP - Technological Laboratory - WG 1
- Uppsala University - Experimental and Analytical Laboratories - WG 3
- UPM - Laboratory of Electromagnetic Emission by Fractured Rocks - WG 3
- University Twente - WG 3
- University of Caen - Applied Geophysics and Analytical Laboratories - WG 3.5
- University of Cambridge - Experimental and Analytical Laboratories - WG 3
- University of Liverpool - Experimental and Analytical Laboratories - WG 3
- University of Leicester - Volcano Observations and Experimental Facilities - WG 3

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

Newsletter

EPOS newsletter
www.epos-eu.org

Integrating European Research Infrastructures for solid Earth Science

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NEWS

- EPOS Council meeting 17-18 June @ G2 Penzance. The next EPOS Inter Activity Preparatory Council meeting will be held in Potsdam (Germany) on 12-18 June 2013. Main details are available in the EPOS website.
- EPOS ICT Board meeting. A face-to-face meeting of the EPOS ICT Board was held on 2 May 2013 in Rome discussing the finalisation of the EPOS desktop for IT services.
- Advisory Board meeting. A face-to-face meeting of the EPOS PP Advisory Board will be held in Rome on 3 June 2013.
- MEMOIR Scheme "Volcano Monitoring and Surveillance" at Stromboli. 18 - 20 May 2013. The MEMOIR school dealt with field activities and experimental volcanology, and is aimed at Early Career Researchers and PhD students. More information can be found on the MEMOIR website: www.stromboli.it.
- NEP Workshop: Building active tectonics and

EPOS at the EGU: addressing integration of multidisciplinary solid earth data

EarthForum (to be held).

In the poster session on Friday morning EPOS thematic groups presented their vision and implementations, i.e. WG1 (seismology), WG2 (GNSS and other geodetic data), WG3 (geomechanics), the strong motion networks in Europe, currently coordinated within ORFEUS-WG3, further the EPOS integrated service model, the EPOS observation database RIDE, the EPOS initiative MAGOS (www.magos.eu) was presented. The three newly funded separate projects, closely associated with EPOS, were presented: MED-200 (Mediterranean and Campagna Vesuviana), FUTUREVOLC (France), MARGITE (Marratana Sui) and a number of tools for monitoring using Python (Italy) and implementations, like the regional seismometer network RISE (Italy), Climate Impact portal, distributed archives in Europe (EGU), Inland volcano database, the EPOS initiatives within EPOS, and the 10 seismology EPOS-WG1 and OIGS (ONAMI) organizations.

This session provided an excellent overview of past efforts of geo-scientists and IT experts as well as of the

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Epos Social

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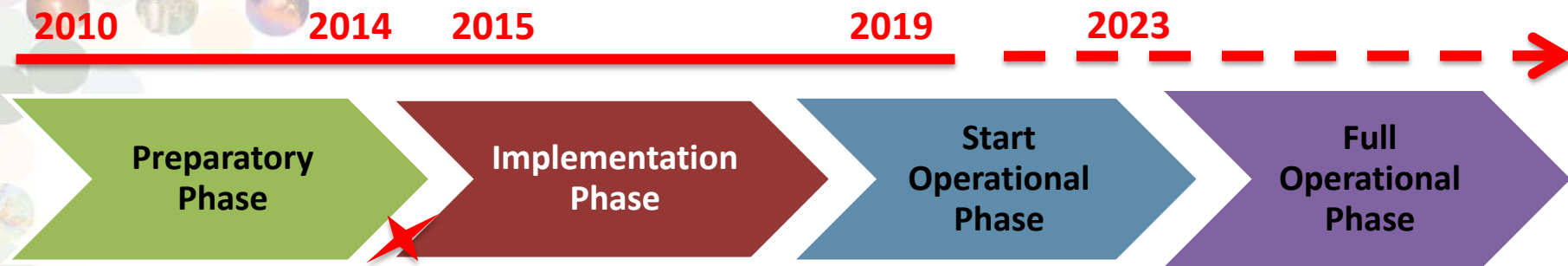
youtube

twitter

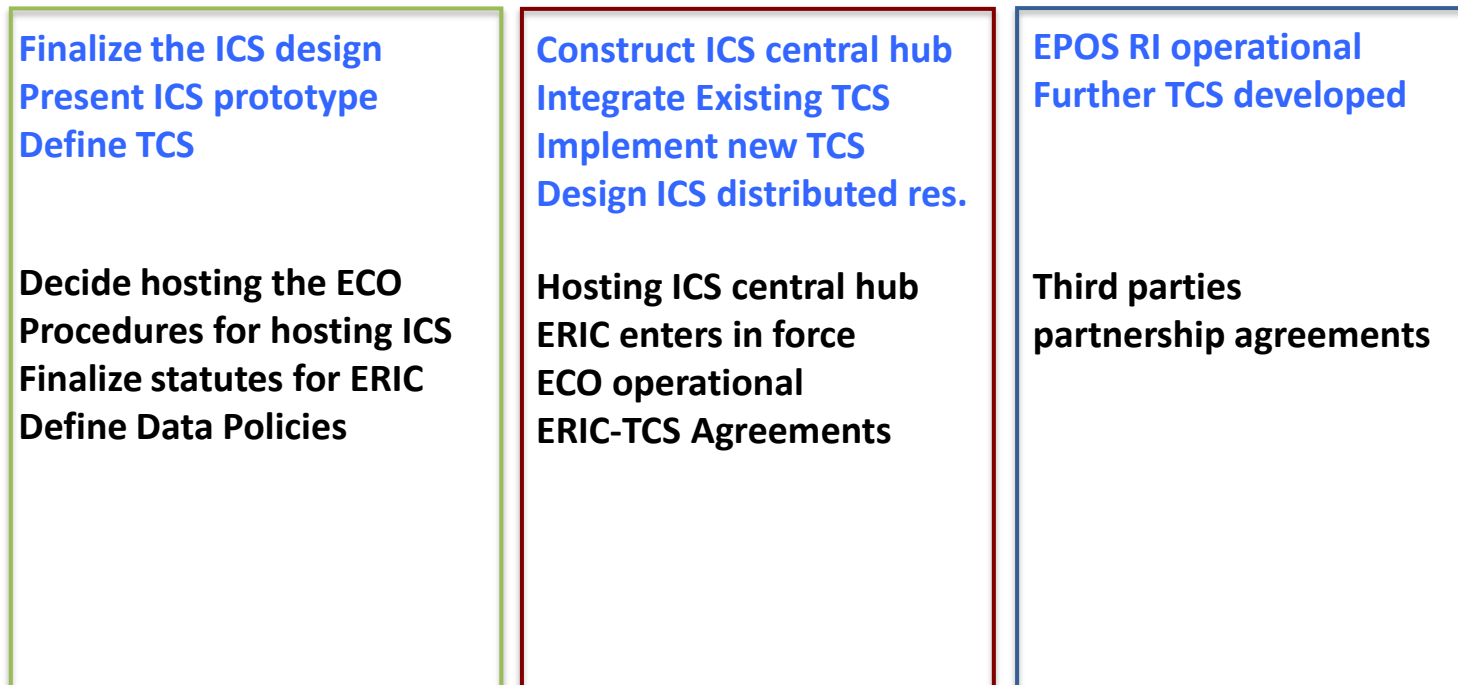
facebook **YouTube** **Twitter**

EPOS
EUROPEAN PLATE OBSERVING SYSTEM

EPOS Timeline



EPOS-ERIC



Legend:
 Technical (Blue)
 Legal (Black)

Concept screening & feasibility study

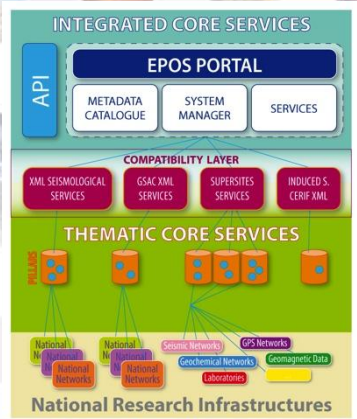
Business case review & delivery strategy

Conditions are in place to construct and operate the RI



- 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



European Plate

