



## The EPOS Architecture: Integrated Services for solid Earth Science

Massimo Cocco (1) and Epos Consortium (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Seismology and Tectonophysics, Rome, Italy (massimo.cocco@ingv.it, 00390651860401), (2) EPOS Preparatory Phase project, [www.epos-eu.org](http://www.epos-eu.org)

The European Plate Observing System (EPOS) represents a scientific vision and an IT 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. EPOS has a long-term plan to facilitate integrated use of data, models and facilities from existing (but also new) distributed research infrastructures, for solid Earth science. One primary purpose of EPOS is to take full advantage of the new e-science opportunities coming available. The aim is to obtain an efficient and comprehensive multidisciplinary research platform for the Earth sciences in Europe. The EPOS preparatory phase (EPOS PP), funded by the European Commission within the Capacities program, started on November 1st 2010 and it has completed its first two years of activity. EPOS is presently mid-way through its preparatory phase and to date it has achieved all the objectives, milestones and deliverables planned in its roadmap towards construction. The EPOS mission is to integrate the existing research infrastructures (RIs) in solid Earth science warranting increased accessibility and usability of multidisciplinary data from monitoring networks, laboratory experiments and computational simulations. This is expected to enhance worldwide interoperability in the Earth Sciences and establish a leading, integrated European infrastructure offering services to researchers and other stakeholders. The Preparatory Phase aims at leveraging the project to the level of maturity required to implement the EPOS construction phase, with a defined legal structure, detailed technical planning and financial plan. We will present the EPOS architecture, which relies on the integration of the main outcomes from legal, governance and financial work following the strategic EPOS roadmap and according to the technical work done during the first two years in order to establish an effective implementation plan guaranteeing long term sustainability for the infrastructure and the associated services.

We plan to describe the RIs to be integrated in EPOS and to illustrate the initial suite of integrated and thematic core services to be offered to the users. We will present examples of combined data analyses and we will address the importance of opening our research infrastructures to users from different communities. We will describe the use-cases identified so far in order to allow stakeholders and potential future users to understand and interact with the EPOS infrastructure. In this framework, we also discuss the global perspectives for data infrastructures in order to verify the coherency of the EPOS plans and present the EPOS contributions. We also discuss the international cooperation initiatives in which EPOS is involved emphasizing the implications for solid Earth data infrastructures. In particular, EPOS and the satellite Earth Observation communities are collaborating in order to promote the integration of data from in-situ monitoring networks and satellite observing systems.

Finally, we will also discuss the priorities for the third year of activity and the key actions planned to better involve users in EPOS. In particular, we will discuss the work done to finalize the design phase as well as the activities to start the validation and testing phase of the EPOS infrastructure.