



## **The EPOS Implementation Phase: building thematic and integrated services for solid Earth sciences**

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The European Plate Observing System (EPOS) has a scientific vision and approach aimed at creating a pan-European infrastructure for Earth sciences to support a safe and sustainable society. To follow this vision, the EPOS mission is integrating a suite of diverse and advanced Research Infrastructures (RIs) in Europe relying on new e-science opportunities to monitor and understand the dynamic and complex Earth system. To this goal, the EPOS Preparatory Phase has designed a long-term plan to facilitate integrated use of data and products as well as access to facilities from mainly distributed existing and new research infrastructures for solid Earth Science. EPOS will enable innovative multidisciplinary research for a better understanding of the Earth's physical processes that control earthquakes, volcanic eruptions, ground instability and tsunami as well as the processes driving tectonics and Earth surface dynamics. Through integration of data, models and facilities EPOS will allow the Earth Science community to make a step change in developing new concepts and tools for key answers to scientific and socio-economic questions concerning geo-hazards and geo-resources as well as Earth sciences applications to the environment and to human welfare.

Since its conception EPOS has been built as “a single, Pan-European, sustainable and distributed infrastructure”. EPOS is, indeed, the sole infrastructure for solid Earth Science in ESFRI and its pan-European dimension is demonstrated by the participation of 23 countries in its preparatory phase. EPOS is presently moving into its implementation phase further extending its pan-European dimension. The EPOS Implementation Phase project (EPOS IP) builds on the achievements of the successful EPOS preparatory phase project. The EPOS IP objectives are synergistic and coherent with the establishment of the new legal subject (the EPOS-ERIC in Italy). EPOS coordinates the existing and new solid Earth RIs within Europe and builds the integrating RI elements. This integration requires a significant coordination between, among others, disciplinary (thematic) communities, national RIs policies and initiatives, as well as geo- and IT-scientists. The RIs that EPOS is coordinating include: i) regionally-distributed geophysical observing systems (seismological and geodetic networks); ii) local observatories (including geomagnetic, near-fault and volcano observatories); iii) analytical and experimental laboratories; iv) integrated satellite data and geological information services v) new services for natural and anthropogenic hazards.

Here we present the successful story of the EPOS Preparatory Phase and the progress towards the implementation of both integrated core services (ICS) and thematic core services (TCS) for the different communities participating to the integration plan. We aim to discuss the achieved results and the approach followed to design the implementation phase. The goal is to present and discuss the strategies adopted to foster the implementation of TCS, clarifying their crucial role as domain-specific service hubs for coordinating and harmonizing national resources/plans with the European dimension of EPOS, and their integration to develop the new ICS. We will present the prototype of the ICS central hub as a key contribution for providing multidisciplinary services for solid Earth sciences as well as the glue to keep ICT aspects integrated and rationalized across EPOS. Finally, we will discuss the well-defined role of the EPOS-ERIC Headquarter to coordinate and harmonize national RIs and EPOS services (through ICS and TCS) looking for an effective commitment by national governments. It will be an important and timely opportunity to discuss the EPOS roadmap toward the operation of the novel multidisciplinary platform for discoveries to foster scientific excellence in solid Earth sciences.