

# **European Plate Observing System Implementation Phase (EPOS-IP): Services for Solid Earth Science**

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The *European Plate Observing System* (EPOS) aims to create a pan-European infrastructure for solid Earth science to support a safe and sustainable society. The main vision of the European Plate Observing System (EPOS) is to address the three basic challenges in Earth Sciences: (i) unravelling the Earth's deformational processes which are part of the Earth system evolution in time, (ii) understanding the geo-hazards and their implications to society, and (iii) contributing to the safe and sustainable use of geo-resources. The mission of EPOS is to monitor and understand the dynamic and complex Earth system by relying on new e-science opportunities and integrating diverse and advanced Research Infrastructures in Europe for solid Earth Science. Through integration of data, models and facilities EPOS will allow the Earth Science community to develop 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.

One of the main challenges during the implementation phase (started in October 2015) is the integration of multidisciplinary data into a single e-infrastructure. Multidisciplinary data are organized and governed by the Thematic Core Services (TCS) and are driven by various scientific communities encompassing a wide spectrum of Earth science disciplines. These include Data, Data-products, Services and Software (DDSS), from seismology, near fault observatories, geodetic observations, volcano observations, satellite observations, geomagnetic observations, as well as data from various anthropogenic hazard episodes, geological information and modelling. In addition, transnational access to multi-scale laboratories and geo-energy test-beds for low-carbon energy will be provided. In total more than 450 DDSS elements will be integrated into Integrated Core Services (ICS), a platform that will ensure their interoperability and access to these services by the scientific community as well as other users within the society. This requires dedicated tasks for interactions with the various TCS-WPs, as well as the various distributed ICS (ICS-Ds), such as High Performance Computing (HPC) facilities, large scale data storage facilities, complex processing and visualization tools etc. Computational Earth Science (CES) services are identified as a transversal activity and is planned to be harmonized and provided within the ICS.

EPOS-IP project aims to develop the first implementation of the ICS by October 2017. In the first implementation priority will be given to those DDSS elements that are mature (i.e. existing or partially existing). The system will then be tested and validated before the relevant service contracts are prepared for the various service providers. TCS roadmaps are being prepared for further implementation of DDSS elements that are not yet mature.