



## **EPOS-Seismology: building the Thematic Core Service for Seismology during the EPOS Implementation Phase**

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After the successful completion of the EPOS Preparatory Phase, the community of European Research Infrastructures in Seismology is now moving ahead with the build-up of the Thematic Core Service (TCS) for Seismology in EPOS, EPOS-Seismology. Seismology is a domain where European-level infrastructures have been developed since decades, often supported by large-scale EU projects. Today these infrastructures provide services to access earthquake waveforms (ORFEUS), parameters (EMSC) and hazard data and products (EFEHR). The existing organizations constitute the backbone of infrastructures that also in future will continue to manage and host the services of the TCS EPOS-Seismology. While the governance and internal structure of these organizations will remain active, and continue to provide direct interaction with the community, EPOS-Seismology will provide the integration of these within EPOS.

The main challenge in the build-up of the TCS EPOS-Seismology is to improve and extend these existing services, producing a single framework which is technically, organizationally and financially integrated with the EPOS architecture, and to further engage various kinds of end users (e.g. scientists, engineers, public managers, citizen scientists).

On the technical side the focus lies on four major tasks:

- the construction of the next generation software architecture for the European Integrated (waveform) Data Archive EIDA, developing advanced metadata and station information services, fully integrate strong motion waveforms and derived parametric engineering-domain data, and advancing the integration of mobile (temporary) networks and OBS deployments in EIDA;
- the further development and expansion of services to access seismological products of scientific interest as provided by the community by implementing a common collection and development (IT) platform, improvements in the earthquake information services e.g. by introducing more robust quality indicators and diversifying collection and dissemination mechanisms, as well as improving historical earthquake data services;
- the development of a comprehensive suite of earthquake hazard products, tools, and services harmonized on the European level and available through a common access platform, encompassing information on seismic sources, seismogenic faults, ground-motion prediction equations, geotechnical information, and strong-motion recordings in buildings, together with an interface to earthquake risk;
- a portal implementation of computational seismology tools and services, specifically for seismic waveform propagation in complex 3D media following the results of the VERCE project, and initiating the inclusion of further suitable codes on that portal in discussion with the community, forming the basis of EPOS computational earth science infrastructure.

Important features common to all tasks are the development of EPOS-wide integrated and interoperable metadata structures, the introduction and utilization of adequate and referencable persistent identifiers for data and products, and the implementation of appropriate user access and authorization mechanisms.

Here we present further details on the technical work plan for Seismology during the EPOS Implementation Phase and its integration into the overall EPOS build-up, together with the current view and state of the discussion on the development of adequate governance structures, and discuss how we envision the interaction with and involvement of the wider community outside the consortium in these activities.