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Diving into the last six project months, the SERA members are continuing to complete tasks to contribute to conferences and symposiums as well as to collaborate internationally. The preparations for the SERA final meeting in April have already started and many tasks have entered their final stages. But before all of that, the SERA team would like to wish you peaceful holidays and a happy New Year!



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## Highlights



### SERA at the SEISMIX 2020 Symposium

The International Symposium on Deep Seismic Profiling of the Continents and their Margins (SEISMIX) is a biennial scientific meeting. Its next edition will take place in March 2020 in Perth, Australia. This symposium is the largest in its field and is focusing on control source and natural source imaging of the subsurface, from an exploration to a continental scale. It also addresses the latest technological and scientific developments in the application of seismic methods.

Researchers from the Institute of Earth Sciences Jaume Almera (ICTJA-CSIC) in Barcelona are presenting their latest and ongoing work related to SERA at the SEISMIX Symposium. The main aim is to disseminate the effort among the community and to stimulate discussions related to seismic data sharing and receiving input on new or desired services based on FAIR (findable, accessible, interoperable, and reusable) DSS (deep seismic sounding) data. Special focus will be devoted to the necessity of desired data products and services related to DSS, which could contribute to EPOS. In addition, the seismic database of ICTJA, in coordination with DIGITAL.CSIC (the digital repository of CSIC), will be presented as a paradigmatic example of data management following the FAIR data principles.

The SEISMIX Symposium will be an outstanding opportunity to make the work carried out within the framework of SERA and EPOS more visible, to discuss cutting edge developments in seismic data management outside Europe, and to reinforce and promote new network collaborations.

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## SlabSTRESS TA project at JRC ELSA Reaction Wall

The [SlabSTRESS](#) Transnational Access project was successfully completed at the [ELSA Reaction Wall](#). The team was comprised of 14 researchers from Politecnico di Milano (Italy), École polytechnique fédérale de Lausanne (Switzerland), Universitatea Tehnica de Constructii Bucuresti (Romania) and Universidade NOVA de Lisboa (Portugal).

The test specimen was a full-scale two-storey reinforced concrete flat-slab structure with plan dimensions 9 x 14 m. The testing programme included pseudodynamic tests (hybrid simulation of the physical specimen and numerical shear walls) with input corresponding to the Serviceability and Ultimate Limit States and quasi-static tests under imposed cyclic displacement with increasing amplitude (three slab-column joints were strengthened after the first cyclic test).

The experiment provided new knowledge on the response of flat-slab structures that could not be captured in previous tests on column-slab sub-assemblies. The results will help to calibrate models, verify the Eurocode and Model Code models for punching shear, develop new rules for the deformation-based design and for detailing flat-slab structures subjected to earthquake and gravity loads, and improve the design of flat-slab frames as primary seismic structures.

In the ongoing blind prediction competition, 19 research groups from 13 countries are participating. Visit [www.slabbstress.org](http://www.slabbstress.org) and follow them on [ResearchGate](#) for updates.



## Integration of data banks and access services from the earthquake engineering and seismology research infrastructures

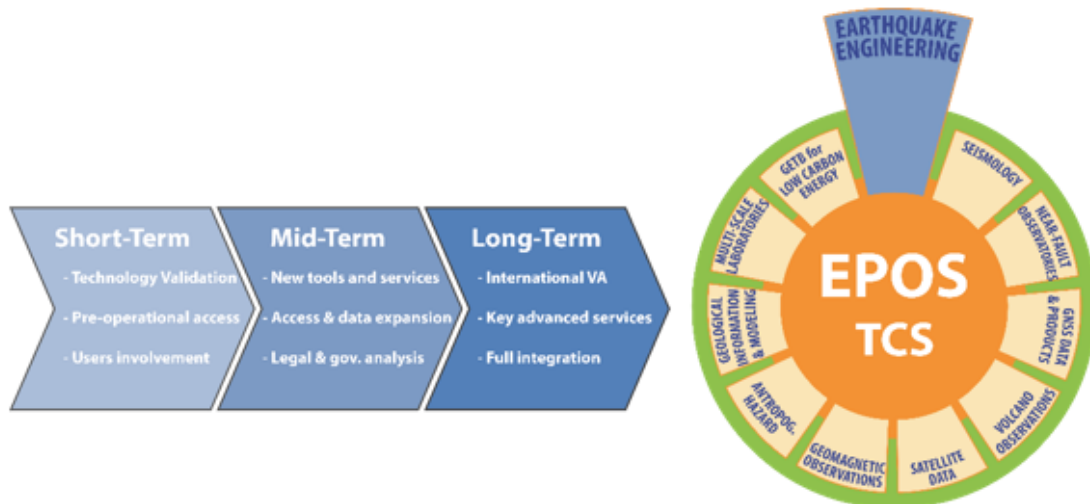
A number of European research projects in the fields of seismology and earthquake engineering have produced large amounts of data and related services with the goal of developing new approaches for seismic risk reduction. Nevertheless, the two adjacent scientific disciplines of earthquake engineering and seismology have not yet interfaced their data, lacking an interoperable data-sharing structure. A strategy for the integration of data banks and access services from the earthquake engineering (SERIES) and seismology (EPOS) research infrastructures was developed as part of the "Networking experimental seismic engineering databases (SERIES)" work package (WP6). The Joint Research Centre, University of Patras and University of Bergen are contributing to WP6.

The SERIES project represents the most significant effort in Europe towards the interoperability of earthquake engineering experimental data. The work conducted in SERIES enabled the automated integration of experimental results within a number of European laboratories and brought a source for experimental data so that the earthquake engineering community can access data from any SERIES partner by using a single, unified web interface. Complementary, EPOS integrates the key research infrastructures in seismology, volcanology, geodesy, geology, geomagnetism, anthropogenic hazards, and geoenery applications. Each thematic community develops specific services that are validated and introduced in EPOS for sustainable operation.

The deliverable "D6.5 Roadmap for the integration of data banks and access services from the earthquake engineering (SERIES) and seismology (EPOS) research infrastructures" proposes the integration of the SERIES databases in the existing EPOS service as a new Thematic Core Service (TCS) and exploring possible interoperability with other TCSs (e.g. Seismology) and with international partners. The first step is to consider the SERIES database as the first service of a new Earthquake Engineering Thematic Core Service (E/ENG TCS) within the EPOS architecture. SERIES will initially provide, through EPOS, integrated access to key data and experimental measures produced at some of the best facilities for earthquake engineering worldwide. In its mature phase, the integration process will provide an advanced interoperability within the earthquake engineering community itself, with the sibling TCS seismology and other TCSs, and with international partners. This objective will be guaranteed by means of the implementation of new services and tools for improving user accessibility and experience.

The roadmap identified the cross-discipline needs in earthquake engineering and seismology data assessed through a questionnaire directed to users and stakeholders operating in both fields. The questionnaire collected information on requirements and use cases for earthquake engineering and seismological data. These findings serve as the basis for the roadmap developed. The metadata structures in EPOS and SERIES were compared, followed by a gap analysis. Hence, this lead to the requirements needed to develop the metadata catalogues for the proposed new E/ENG TCS. The final version of the roadmap was discussed with SERA and international partners during a dedicated workshop. The roadmap puts forward a strategy with different tasks envisaged to be performed in three steps (short-, mid- and long-term). In the short-term, by the end of the SERA project, a pre-operational access service will be provided to selected SERIES datasets in order to allow validation of identified access technologies and the collaboration with the user community for further

implementation in EPOS. The activities performed in the mid-term will include a review of how the newly developed services and products will become fully compatible with the requirements of EPOS, at a technical, legal, governmental, and financial level. Full integration of the earthquake engineering TCS in EPOS will be achieved in the long-term by providing also access to research infrastructures, laboratories, and data centres established outside Europe, thus improving the international dimension of EPOS.



## SERA workshop on InSight mission in February 2020

From 4 to 6 February 2020, SERA education participants will meet at the François Xavier Bagnoud Observatory in St. Luc to lead a series of seminars on the InSight mission and its seismic recordings.

Observations of the sky, the sun, the planet path, and the interaction with the digital planetarium will allow children and their teachers to immerse themselves in the solar system and to experience the adventures of Mars@School together with Marsty. Find the programme [here](#).



## EPOS-SP

The EC has granted EPOS-ERIC with the EPOS-Sustainability Phase (SP) project, a three-year project to ensure the long-term sustainability of EPOS-ERIC. The expectation is that the project will help to consolidate the operation of Virtual Access services developed during the EPOS-Implementation Phase and SERA through EPOS-ERIC. About 11 partners taking part in SERA will

participate as well in EPOS-SP.

## A glimpse into...

### ...a harmonized seismic hazard and risk assessment for Europe

On 2 October 2019, the EFEHR consortium was officially established. [EFEHR](#) stands for "European Facilities for Earthquake Hazard and Risk" and is a network connecting professionals to advance earthquake hazard and risk assessment in the European-Mediterranean area. EFEHR aims at strengthening the collaboration of the community, facilitating scientific advance and innovation, and exchanging best practices in seismic hazard and risk assessment. Via its web portal it facilitates access to relevant software, databases, and models. EFEHR is not replacing national or local efforts, but is supporting and enriching them. EFEHR is closely integrated in the framework of the European Plate Observatory System ([EPOS](#)) allowing the EFEHR consortium to establish itself as an advanced community and to connect with relevant peers. At the latest meeting with almost 30 participants from all over Europe, first results of the next generation hazard and risk models for Europe were discussed. Therewith, the newly established EFEHR consortium will meaningfully contribute to one of the main achievements SERA envisions. To learn more about EFEHR, check out [this fact sheet](#) and have a look at [www.efehr.org](http://www.efehr.org).



## Outlook and events

### SERA Activities

**4 - 6 February 2020, St. Luc  
(Switzerland)**  
Workshop on InSight

### Congress

**3 - 8 May 2020, Vienna (Austria)**  
EGU General Assembly  
[More information](#)

The final external newsheet will be released in April 2020.

We welcome always feedback and suggestions - send them to the SERA communication team ([janine.aeberhard@sed.ethz.ch](mailto:janine.aeberhard@sed.ethz.ch) or [michele.marti@sed.ethz.ch](mailto:michele.marti@sed.ethz.ch)).

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