



EPOS Thematic Core Service ANTHROPOGENIC HAZARDS (TCS AH) – development of e-research platform

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TCS AH is based on IS-EPOS Platform. The Platform facilitates research on anthropogenic hazards and is available online, free of charge <https://tcs.ah-epos.eu/>. The Platform is a final product of the IS-EPOS project, founded by the national programme - POIG – which was implemented in 2013-2015 (POIG.02.03.00-14-090/13-00). The platform is a result of a joint work of scientific community and industrial partners. Currently, the development of TCS AH is carried under EPOS IP project (H2020-INFRADEV-1-2015-1, INFRADEV-3-2015). Platform is an open virtual access point for researchers and Ph. D. students interested in anthropogenic seismicity and related hazards. This environment is designed to ensure a researcher the maximum possible liberty for experimentation by providing a virtual laboratory, in which the researcher can design own processing streams and process the data integrated on the platform. TCS AH integrates: data and specific high-level services. Data gathered in the so-called “episodes”, comprehensively describing a geophysical process, induced or triggered by human technological activity, which, under certain circumstances can become hazardous for people, infrastructure and the environment. 7 sets of seismic, geological and technological data were made available on the Platform. The data come from Poland, Germany, UK and Vietnam, and refer to underground mining, reservoir impoundment, shale gas exploitation and geothermal energy production. The next at least 19 new episodes related to conventional hydrocarbon extraction, reservoir treatment, underground mining and geothermal energy production are being integrated within the framework of EPOS IP project. The heterogeneous multi-disciplinary data (seismic, displacement, geomechanical data, production data etc.) are transformed to unified structures to form integrated and validated datasets. To deal with this various data the problem-oriented services were designed and implemented. The particular attention devoted to methods analyzing correlations between technology, geophysical response and resulting hazard was stressed out in service preparation. TCS AH contains a number of computing and data visualization services, which give opportunity to make graphical presentations of the available data. Further development of the Platform, except integration of at least new episodes of all types of anthropogenic hazards, will be covering gradually implementation of new services. TCS AH platform is open for the whole research community. The platform is also designated to be used in research projects, eg. it serves “Shale gas exploration and exploitation induced risks (SHEER)” project (Horizon 2020, call LCE 16-2014). In addition, it is also meant to serve the public sector expert knowledge and background information. In order to fulfill this aim the services for outreach, dissemination & communication will be implemented. TCS AH was used as a teaching tool in Ph. D. students education within IG PAS seismology course for Ph. D. candidates, Interdisciplinary Polar Studies as well as in several workshops for Polish and international students. Additionally, the platform is also used within educational project ERIS (Exploitation of Research results In School practice) aimed for junior high and high schools, funded with support from the European Commission within ERASMUS+ Programme.