



## **Web-based technology for storage, processing, and simulation of multi-component data in seismology - First steps towards a new design**

**R. Barsch** (1), H. Igel (1), J. Wassermann (1)

(1) Geophysics, Department of Earth and Environmental Sciences, LMU Munich

The data volumes in observational and computational seismology are rapidly expanding. This is due in part to ever increasing continuous data of global, regional, and local permanent station density, large scale experiments, and last not least, the increasingly important options to generate highly valuable simulation data that should be stored with the same priority than observations. Furthermore, seismology is going beyond data reduction (e.g., by extracting travel times or surface wave phase velocities) towards complete waveform processing and simulation. It is commonly accepted in the seismological community that the suite of database and processing tools that was developed in the past decade is now outdated and requires novel approaches. In this pilot project we intend to develop a new paradigm with the intention to closely link data archiving, waveform processing, and simulation infrastructure with strong emphasis on the field of seismology. These developments shall be carried out in close collaboration with major ongoing international projects in seismology (NERIES, SPICE, CIG, SCEC) as well as national initiatives (e.g., webDC, GFZ Potsdam) and data centers (BGR/SZGRF, ORFEUS, IRIS). While the focus of those projects lies in the handling of real-time observations, automatic processing of large data sets and/or the provision of computational wave propagation algorithms, the main complementary developments envisaged in this project are (1) an open source, modular, multi-component data base with access to observational infrastructure (partly provided by NERIES); (2) a link between data base, multi-component processing tools and executable simulation algorithms (provided by SPICE); and (3) the development of formats and standards to combine the joint storage and processing of observations and simulations (partly provided by FDNS and IRIS). All developments will be developed in close collaboration with and be freely available to the relevant user communities.