



Network of Research Infrastructures for European Seismology (NERIES)—Web Portal Developments for Interactive Access to Earthquake Data on a European Scale

A. Spinuso (1), L. Trani (1), S. Rives (2), P. Thomy (2), F. Euchner (3), D. Schorlemmer (4), J. Saul (5), A. Heinloo (5), R. Bossu (2), and T. van Eck (1)

(1) ORFEUS-KNMI, R&D Information and Observation Technology, de Bilt, Netherlands (spinuso@knmi.nl), (2) European-Mediterranean Seismological Center (EMSC), Bruyères-le-Châtel, France., (3) Swiss Seismological Service, Swiss Federal Institute of Technology, Zurich, Switzerland., (4) Southern California Earthquake Center, University of Southern California, Los Angeles, Calif., (5) German Research Center for Geosciences, Potsdam, Germany.

The Network of Research Infrastructures for European Seismology (NERIES) is European Commission (EC) project whose focus is networking together seismological observatories and research institutes into one integrated European infrastructure that provides access to data and data products for research. Seismological institutes and organizations in European and Mediterranean countries maintain large, geographically distributed data archives, therefore this scenario suggested a design approach based on the concept of an internet service oriented architecture (SOA) to establish a cyberinfrastructure for distributed and heterogeneous data streams and services. Moreover, one of the goals of NERIES is to design and develop a Web portal that acts as the uppermost layer of the infrastructure and provides rendering capabilities for the underlying sets of data

The Web services that are currently being designed and implemented will deliver data that has been adopted to appropriate formats. The parametric information about a seismic event is delivered using a seismology-specific Extensible mark-up Language(XML) format called QuakeML (<https://quake.ethz.ch/quakeml>), which has been formalized and implemented in coordination with global earthquake-information agencies. Uniform Resource Identifiers (URIs) are used to assign identifiers to (1) seismic-event parameters described by QuakeML, and (2) generic resources, for example, authorities, locations providers, location methods, software adopted, and so on, described by use of a data model constructed with the resource description framework (RDF) and accessible as a service. The European-Mediterranean Seismological Center (EMSC) has implemented a unique event identifier (UNID) that will create the seismic event URI used by the QuakeML data model.

Access to data such as broadband waveform, accelerometric data and stations inventories will be also provided through a set of Web services that will wrap the middleware used by the seismological observatory or institute that is supplying the data.

Each single application of the portal consists of a Java-based JSR-168-standard portlet (often provided with interactive maps for data discovery). In specific cases, it will be possible to distribute the deployment of the portlets among the data providers, such as seismological agencies, because of the adoption, within the distributed architecture of the NERIES portal of the Web Services for Remote Portlets (WSRP) standard for presentation-oriented web services

The purpose of the portal is to provide to the user his own environment where he can surf and retrieve the data of interest, offering a set of shopping carts with storage and management facilities. This approach involves having the user interact with dedicated tools in order to compose personalized datasets that can be downloaded or

combined with other information available either through the NERIES network of Web services or through the user's own carts. Administrative applications also are provided to perform monitoring tasks such as retrieving service statistics or scheduling submitted data requests. An administrative tool is included that allows the RDF model to be extended, within certain constraints, with new classes and properties.