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The QUEST Project: Research and Training in Computational Seismology

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The Marie-Curie Initial Training Network QUEST joins scientists from 15 European partner institutions in the fields of exploration seismics, seismology, applied mathematics, high-performance computing, earthquake physics, physical inverse problems, geodynamics, from Departments of Mathematics, Physics, Earth and Computational Sciences, Oceanography and Exploration Geophysics. The main goal of QUEST is research and training in the development of strategies for seismic imaging using the increasing power of 3-D simulation technology. Existing methodologies are currently subject to a revolutionary change: While so far the observed information was severely reduced and approximate methods (e.g., ray theory) were used to determine Earth's structure, the massive increase in available computational resources allows us now to make use of the complete information contained in the observations. The QUEST objective is to integrate the various elements (wave propagation, high-performance computing, inverse problems) exploiting the synergies of the network expertise and develop the next generation of imaging tools for use on all spatial scales. We will discuss the training concepts of QUEST, the interfaces with other European projects like EPOS and VERCE. We will also describe the www-facilities QUEST offers concerning access to open-source software (e.g., ObsPy, simulation codes, analyitcal solutions) and interactive benchmarking facilities for wave propagation tools.