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SeisComP3 - automatic and interactive real time data processing

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SeisComP is likely the most widely distributed software package for seismological data acquisition and real-time data exchange over Internet. Its data transmission protocol SeedLink became a defacto world standard. Seiscomp provides tools for automatic real-time event processing and dissemination of event alerts. In the context of the GITEWS (German Indian Ocean Tsunami Early Warning System) project additional functionality for 24/7 early warning control centers will be developed. In this presentation we describe the concept of SeisComP3 which has been designed to perform this task. SeisComP3 fully supports fast automatic and manual data processing and interactive review of processing results. The acquisition of raw data is based on SeedLink ensuring the compatibility to already existing hard- and software infrastructures. The new architecture of SeisComP3, based on a modular design of thin clients communicating over a messaging system using a TCP/IP infrastructure, allows distributed computing and easy implementation of custom clients. For seismological metadata exchange a XML schema called QuakeML has been developed in cooperation with the ETH Zuerich. It has been implemented in SeisComP3 for internal client communication and as database storage schema. For developing new clients SeisComP3 provides an API supporting several programming languages. Due to these features SeisComP3 will be used in many current scientific projects (e.g. the European NERIES project) dealing with seismological data mining and real time seismology as infrastructure for data acquisition and processing.