



Seismic Station Functionality Improvements of Seismic Network of Slovenia

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The Environmental Agency of the Republic of Slovenia, the Office of Seismology and Geology is responsible for the fast and reliable information about earthquakes, originating in the area of Slovenia and nearby. The Seismic Network of Slovenia, which covers the entire Slovenian territory, involving an area of 20,256 km², consists of 26 seismic stations equipped with broadband seismometers (CMG-40T, CMG-3ESPC, CMG-3T and STS2) and Quanterra Q730 data loggers. The seismic data is transmitted in real-time to the Data Center in Ljubljana (DCL). Leased lines, xDSL and satellite communication are used for data transfer from stations to DCL.

When an event occurs main earthquake parameters (magnitude and the location of the epicenter) can be evaluated at sufficient accuracy only if data from several seismic stations is available. In case of temporary communication failure loss of important seismic data can occur. The duration of communication failure, which exceeds 2 hours can cause data loss. This is due to low memory storage of Quanterra Q730 acquisition unit.

In this paper our solution for extending storage capabilities of particular seismic station to several months is presented (momentarily the storage capabilities of particular seismic station lies between 1 and 2 hours). To extend storage capabilities we used a special Industrial Computer (JetBox 8100), which runs on Linux. To collect seismic data from the Q730 unit the acquisition software SeiComP is used. The combination of Q730 and JetBox 8100 assures that in case of temporary communication failure there will be no data loss. Seismic data is simply retrieved from JetBox 8100 (from ring buffer that is generated by SeiComP acquisition software) after communication is once again established. Moreover, an advanced state of health system was build and installed on JetBox 8100, that makes identifying, predicting and solving of different problems quick and effective. With combining Q730 data logger and JetBox 8100 we did not only significantly improved the local storage capabilities but also made the whole seismic system more flexible and reliable.