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Citizen earthquake alert using near real time PGA estimation from a local array combining a variety of accelerometric instruments

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It is of a great importance to assess rapidly the intensity of a felt event in a highly populated environment. Rapid and reliable information plays a key role to decision making responses, by performing correctly the first steps after a felt ground shaking. Thus, it is important to accurately respond to urgent societal demand using reliable information.
A strong motion array is under deployment and trial operation in the area of Patras, Greece. It combines: (a) standard accelerometric stations operated by the National Observatory of Athens, Institute of Geodynamics (NOA), (b) QCN-type USB MEMS acceleration sensors deployed in schools and (c) P-alert MEMS acceleration devices deployed in public sector buildings as well as in private dwellings. The array intends to cover the whole city of Patras and the populated suburbs. All instruments are operating in near real time and they are linked to a combined Earthworm – SeisComP3 server at NOA, Athens. Rapid intensity estimation can be also performed by the P-alert accelerometers locally, but the performance of a near real time intensity estimation system is under operation at NOA. The procedure is based on observing the maximum PGA value at each instrument and empirically estimate the corresponding intensity. The values are also fed to a SeisComP3 based ShakeMap procedure that is served at NOA and uses the scwfparam module of SeisComP3.
Earthquake activity has been recorded so far from the western Corinth Gulf, the Ionian Islands and Achaia-Elia area, western Peloponnesus. The first phase involves correlation tests of collocated instruments and assessment of their performance to low intensity as well as to strongly felt events in the Patras city area. Steps of expanding the array are also under consideration, in order to cover the wider area of northwestern Peloponnesus and Ionian islands.