The Self-Organising Seismic Early Warning Information Network, a new concept

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A Self-Organizing Seismic Early Warning Information Network (SOSEWIN) is being developed as part of the SAFER (Seismic eArly warning For EuRope) and EDIM (Earthquake Disaster Information systems for the Marmara Sea region, Turkey) projects.

Self-organizing low-cost sensor networks represent a new class of systems in earth monitoring, with particular use in urban areas. They will help to overcome uncertainties arising from current, widely used standard types of analysis for ground shaking estimation. In contrast to highly precise single station systems, low-cost seismic networks can be installed densely. Therefore, fewer assumptions or interpolations are necessary for assessing the strong ground shaking and earthquake intensities.

The network performs rapid but robust seismological analysis for the purpose of early warning and rapid mapping and allows for information distribution during and after a strong earthquake. Self-organisation of the network will maintain the information flow even if some damage to mesh points occurs as a result of a major earthquake or other event.

The "self-organizing" capability will allow the system to adapt to a broad range of users and unforeseen network developments, which may be caused by continuous changes in the user community. The system is intended to provide real-time information for use in seismic early warning as well as detailed data of ground shaking for disaster mitigation. Beside high-resolution information needed for improving the

understanding of wave propagation and attenuation, the network will be designed: (1) to provide engineers with information about building and site response to strong shaking, (2) provide disaster management with the status of the infrastructure (lifelines, bridges, industry), and (3) serve as an independent and fail-proof IT and communications network for use by disaster management and the general public.