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A smartphone application for earthquakes that matter!

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Smartphone applications have swiftly become one of the most popular tools for rapid reception of earthquake information for the public, some of them having been downloaded more than 1 million times! The advantages are obvious: wherever someone's own location is, they can be automatically informed when an earthquake has struck. Just by setting a magnitude threshold and an area of interest, there is no longer the need to browse the internet as the information reaches you automatically and instantaneously!

One question remains: are the provided earthquake notifications always relevant for the public? What are the earthquakes that really matters to laypeople? One clue may be derived from some newspaper reports that show that a while after damaging earthquakes many eyewitnesses scrap the application they installed just after the mainshock. Why? Because either the magnitude threshold is set too high and many felt earthquakes are missed, or it is set too low and the majority of the notifications are related to unfelt earthquakes thereby only increasing anxiety among the population at each new update. Felt and damaging earthquakes are the ones that matter the most for the public (and authorities). They are the ones of societal importance even when of small magnitude.

A smartphone application developed by EMSC (Euro-Med Seismological Centre) with the financial support of the Fondation MAIF aims at providing suitable notifications for earthquakes by collating different information threads covering tsunamigenic, potentially damaging and felt earthquakes.

Tsunamigenic earthquakes are considered here to be those ones that are the subject of alert or information messages from the PTWC (Pacific Tsunami Warning Centre). While potentially damaging earthquakes are identified through an automated system called EQIA (Earthquake Qualitative Impact Assessment) developed and operated at EMSC. This rapidly assesses earthquake impact by comparing the population exposed to each expected level of shaking intensity with empirical models of fatality losses calibrated on past earthquakes in each country.
Non-seismic detections and macroseismic questionnaires collected online are combined to identify as many as possible of the felt earthquakes regardless their magnitude. Non seismic detections include Twitter earthquake detections, developed by the US Geological Survey, where the number of tweets containing the keyword "earthquake" is monitored in real time and flashsourcing, developed by the EMSC, which detect traffic surges on its rapid earthquake information website caused by the natural convergence of eyewitnesses who rush to the Internet to investigate the cause of the shaking that they have just felt. All together, we estimate that the number of detected felt earthquakes is around 1 000 per year, compared with the 35 000 earthquakes annually reported by the EMSC! Felt events are already the subject of the web page "Latest significant earthquakes" on EMSC website (http://www.emsc-csem.org/Earthquake/significant_earthquakes.php) and of a dedicated Twitter service @LastQuake.

We will present the identification process of the earthquakes that matter, the smartphone application itself (to be released in May) and its future evolutions.