The EMSC crowdsource earthquakes detector

The EMSC (Euro-Mediterranean Seismological Centre) has developed a system to detect earthquakes thanks to crowdsourcing. The EMSC engagement strategy is based on meeting earthquake witnesses' immediate information needs after a felt earthquake. The EMSC information system, which involves websites, social media and a smartphone app, functions along a positive feedback loop. EMSC offers rapid information to engage with earthquake eyewitnesses, who are then invited to share their testimonies; testimonies are automatically processed and the resulting map of earthquake effects is automatically published, which in turn attract more eyewitnesses and improve testimony collection. In practice, EMSC's engagement strategy is based on three main principles: it focuses on felt and damaging earthquakes, the only earthquakes which matter to the public (Bossu, R., Laurin, M. et al. 2015) it provides very rapid information, typically within few tens of seconds of earthquake occurrence to meet eyewitnesses' information needs and finally, in order to be readily identifiable by new comers, beyond the websites and smartphone app, a presence is maintained on the main social networks Facebook and Twitter; as soon as an eyewitness gets information from one of the information tools he is invited to share his testimony and observations. As soon as people experience shaking from earthquakes, they begin a rapid search for information in order to establish what is happening/has happened, and many turn to the Internet (Bossu, R. & Earle, P. S. 2012). Flash-sourcing, or real-time monitoring of website traffic, can be used to provide rapid information on the local effects of earthquakes due to this natural convergence of eyewitness looking for earthquake information on the EMSC website, mobile site, and/or app, LastQuake. Citizens can be considered as real time sensors. People often start arriving on the EMSC website less than 90 seconds after shaking, as was the case for a recent Virginia earthquake. Not only do eyewitnesses search for information, but they also provide information quickly and in mass. They turn to social media, generating, in a very similar way, a surge in published tweets related to shaking experiences (Earle, P. S. et al. 2010; 2011). EMSC uses Twitter earthquake Detection (TED), an approach that applies place, time, and key word filtering to detect felt earthquakes through the surge in published tweets (Earle, P. S. et al. 2010; 2011). Using TED, EMSC found a magnitude 5. 1 earthquake that struck Japan on 16 May 2016 in just 32 seconds. EMSC uses both flash-sourcing and TED to provide rapid felt earthquake information as these methods prove to be complementary with only 10% of felt earthquakes being detected by both (Bossu, R., Laurin, M. et al. 2015). These detections allow for EMSC to state simply that shaking has been reported in a given region and do not include any information about the earthquake itself, such as magnitude for example.

Note: See source document for full reference.

Applicable to:

Stakeholders: Local knowledge, Social networks
Disaster Phases: Response
Types of Actors Concerned: Non-active citizens, National civil protection body
Hazards: Natural hazards

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653748.

Recommendations:

- The use of new technologies (e.g. Bluetooth) can improve communication strategies in disaster management situations
- Use new technologies, such as crowdsourcing to collect information from citizens, as a means to foster community engagement

Source

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