



Pre-operational use of Social Media analysis and Crowdsourcing for improving rapid mapping

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The E2mC project has succeeded in implementing the prototype Witness service that implements the necessary modules to demonstrate under pre-operational conditions the added value of social media and crowdsourcing in a Rapid Mapping context. In particular, the Witness service specific characteristics are: a) a multi-source social media and news crawling engine, b) a customized geocoding engine based on semantic analysis coupled with open source data, c) a deep learning engine to automatically tag media contents and filter out irrelevant contents, d) a multi-purpose crowdsourcing platform to manage simple micro-tasks to be assigned to the crowd such as keywords translation, media relevance assessment, content geolocation improvement, simple mapping tasks, etc. e) a web interface to interact with the platform, trigger ad hoc activations of the service, inspect, download the results and further integrate them into other generic GIS environments using OGC standards. In this way, the Witness service demonstrates how crowdsourcing, data mining and Artificial Intelligence can be combined to deliver higher quality data driven services (e.g. crowdsourcing data are used for feeding AI algorithm for image recognition, while AI is used for removing duplicated images automatically or for detecting false positive from images coming from previous disasters). The E2mC project has also made significant progresses in the crowdsourcing component and it is now actively managing a hybrid crowdsourcing community composed by heterogeneous groups such as general purpose ones (e.g. BOINC, through CERN) and emergency specific ones (e.g. HOT, SBTF).

We presents the technological achievements and the limitations of the approach as well as the results of the testing and demonstration of the Witness service during both past events (cold cases) and during real and time critical Copernicus EMS Rapid Mapping activations. In particular, the results of the demonstrations have been used for a qualitative and quantitative assessment of the benefits and added value brought by the E2mC project to satellite-based mapping activities, alone or in combination with complementary data analysis techniques such as, for example, hydraulic modelling of large floods where the data generated by the service are integrated as ground truth for model calibration in time critical operational conditions.