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An example of active collaboration between citizens, local governments and researchers for vulnerability assessment in urban environment: the Sentinelle del Territorio Project

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The “Sentinelle del Territorio” (Sentinels of territory) project is part of the local Plan for the reduction of geo-hydrological risk in the La Spezia Municipality (Liguria region, northern Italy) and aims at (i) increasing the knowledge of the geo-hydrological hazards and (ii) monitoring, in detail, the building characteristics and vulnerability through the active participation of different actors. The project arises from the awareness that monitoring the built environment and increasing knowledge of its critical aspects are preliminary to any following action, structural or not, aimed at risk mitigation. The activities are based on an ongoing collaboration of citizens, municipal technicians, civil protection volunteers, professional associations and IRPI researchers. For the purpose, tools for the collection and management of multiple data regarding the city buildings were designed and different forms, based on the type of geo-hydrological process to which buildings are subject, were structured. To support surveyors, volunteers and municipal technicians the forms were designed to be compiled on paper or through Apps specifically developed for Android and IOS based smartphones. For buildings placed in flood prone areas, different information on the ground and basement floors and on the water drainage system are prioritised. In the landslide susceptible areas, forms contain further fields dedicated to the presence, type and dimension of cracks and on the presence and maintenance of any existing landslide mitigation works.
The forms were designed using Open Data Kit (ODK) and GISCloud client-server approach for Android and IOS platforms .This approach allows the geo-localization, depending to the smartphone GPS receiver system, and media file association to the records. After the form filling, data were automatically sent to a dedicated server. Despite the initial efforts spent for the conceptualization of the forms, the use of these technologies resulted very effective and allowed the rapid collection and the quick update of a huge amount of data.
Analysis of the collected data provides a general overview of the characteristics of the buildings and of their vulnerability to geo-hydrological processes. The project results reached two main goals: an up-to-date comprehensive knowledge of the buildings condition and an increase of citizens’ awareness on geo-hydrological hazards, involving people in the land management process.