



## **FotoQuest Go: A citizen science tool for in-situ land use and land cover monitoring**

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Every three years, dating back to 2006, Eurostat conducts an exhaustive Land Use/Cover Area frame Survey (LUCAS), where professional surveyors visit approximately 270,000 locations across EU countries to acquire photos and record detailed in-situ information on land use/cover. This conventional approach to ground-based calibration/validation data acquisition is rather costly and is limited to detecting changes on a fixed 3-year cycle. As such, within the EU's Earth Observation (EO) monitoring framework, there is a need for low-cost solutions for acquiring high quality ground-based data to support the delivery of timely, accurate and well-validated environmental monitoring products. By leveraging the proliferation of mobile devices the FotoQuest Go mobile application offers a citizen-centric tool to mapping land use and land cover dynamics. FotoQuest Go engages citizens and crowdsources the needed information in a more participatory approach while directly complementing the LUCAS survey findings. This paper describes the recent results of a 2017 FotoQuest Go crowdsourcing campaign conducted in Austria, where 100+ participants recorded land use and land cover observations from over 895 LUCAS locations. When visiting a location, the application guides the participants through a series of tasks (i.e. photo acquisition, questionnaire) that follows a subset of the standard LUCAS surveyor data collection protocol. Once the protocol is completed, participants upload their observations for quality check. Experts would then review each submission and provide feedback directly to the participants within 24hrs. Combined with the feedback was a monetary incentive of 1 EUR for each successfully completed location or quest. It was discovered that the quality control and assurance process was very effective in not only ensuring useful and high-quality citizen science data, but also providing a means to facilitate learning among the participants. In other words, within the 2017 FotoQuest Go campaign, we learned that timely and detailed feedback helped to improve the data collected by participants when they visited subsequent locations. This paper will elaborate the added value of quality-assured citizen science data to the domain of traditionally-collected data for land use and land cover monitoring. FotoQuest Go has considerable potential to lower expenditure costs on in-situ data collection and greatly extend the current sources of such data for earth system science research, thereby realizing citizen-powered innovations in the processing chain of land use/cover monitoring activities both within and beyond Europe.