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- **Title: Citizen science a give and take? A lifecycle view on data collection and sharing**

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- **Keywords**

Big data, citizen science, crowdsourcing, long-term use, smart computing.

- **Abstract**

Research projects and initiatives, in which citizens participate in data collection, generating content, or other tasks, are gaining momentum. May it be in medicine, where volunteers help scientists to align multiple sequences of DNA or in ecology, where community-based environmental monitoring is used for determining the distribution and abundance of native and invasive species, “citizen science” seems to become a powerful method for researchers to conduct studies and engage with society.

However, scientists walk a fine line between creating interest and exploiting citizens “for the sake of scientific progress”. For instance, studies relying on sensors seamlessly integrated into clothing, shoes, bracelets, phones, or watches allow researchers to keep track of extremely detailed physiological, behavioural, or otherwise parameters and may later be used for a multitude of purposes, such as training data for machine learning algorithms or data points for visual analyses. In many cases, citizens volunteering in such crowdsourcing sensing data projects seldom get anything back in return. In lucky cases the data so collected ends up in open data repositories or in an appendix of a scientific publication.

In times where people get instant feedback and acknowledgement (e.g. Likes, re-tweets, shares, mentions), is it enough to simply appeal to a (possible yet not always realized) greater public good from a scientific project? Will this really motivate citizens to collect and share data in the long-run? Given that scientists are frequently in the treadmill of a “publish or perish” culture, thinking about ways how to give citizens something back for their effort is not a top priority nor done with malice aforethought. Yet, it is important to change perception and not seeing it as a “waste of time”.

A good example of a balanced “give and take” approach can be found in the detection of traffic congestion by navigation systems. While algorithms repurpose geo-location data that is grabbed from our phones or GPS devices for identifying traffic jams, we also receive rerouting options in return. Having a lifecycle view, as illustrated in Fig.1, is key in order that citizens remain motivated to participate and willing to share their data. We are aware that this is not always equally easy to implement. However, we would like to bring into attention that it is, nevertheless, crucial to give it a try.

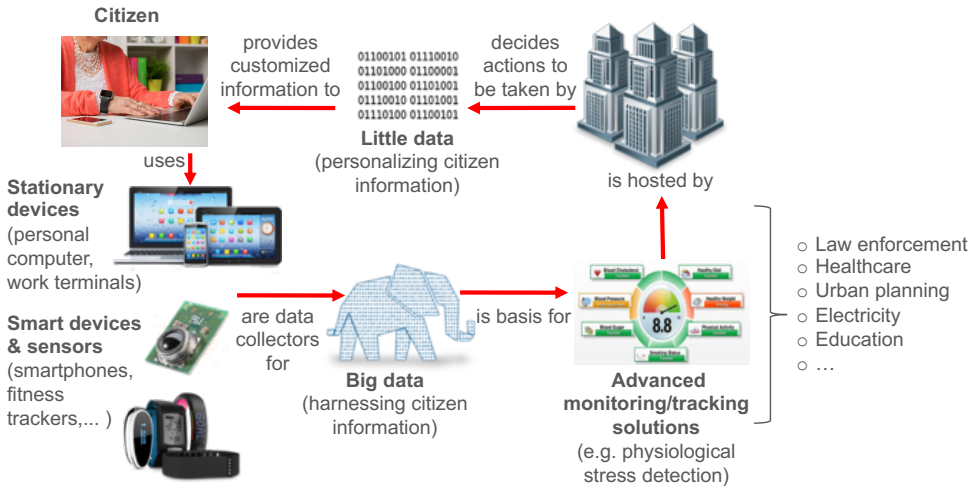

Fig. 1 Lifecycle view on data collection and sharing in «ideal» citizen science projects

- **Key readings**

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