Gathering Insights on Citizen Participation
Towards Building an Instrument to Study Citizen-Centric Communities

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Abstract—Smart cities are not only about technological developments but also about committed citizens (which can be described as smart citizens) and projects that have been started by them. The opening up of administration and the idea of transparency will gradually lead to more data being published for free use. To generate added value from these raw data, however, they must be processed creatively. This paper addresses the development of an instrument to study communities concerned with open data and the development of tools, visualisations and projects of all kinds for their cities and their fellow citizens. The focus is on citizens, their backgrounds and their motivations for participation.

Keywords–Citizen Participation; Community; Smart Citizen; Open Data; Smart City.

I. INTRODUCTION

When one thinks of smart cities [1], the focus is often on technical aspects, such as sensors or digitisation aspects in general. Administrations are also opening up, offering more transparency and new opportunities for citizens to participate. However, do smart cities also take their citizens on the way to become inhabitants of a smart city, maybe so-called smart citizens [2] and define their role? Moreover, what kind of people are these citizens who are already actively involved in this transition phase, want to participate and shape something with and for their city and fellow citizens.

Studies in the field of Smart Cities often refer to concrete projects within cities, to the transformation within the framework of digitisation as well as to fields such as sharing services or the opening of administrative activity (open government [3]). The area of Smart Cities is not limited to these factors and offers a wide range of aspects worth considering. An overview of the different elements is given in [4]. All these aspects are important, and some of them lead to more free and open data being available. This is particularly the case when you look at E-government and primarily Open Government and thus the right of citizens to inspect documents and processes. This right involves the publication of open government data, which should be available in machine-readable form as raw data. The data sets are often made available by cities and municipalities on open data portals and can be easily obtained. However, someone has to work with this data, develop something from it, create added value. Since these are data from specific cities, the citizens of these cities, in particular, can gain insight into what is happening in their city. These citizens, who have further knowledge of the city in which they live, are therefore particularly suitable for further processing. Depending on the type of further processing, various skills are required. In this article,

the focus is therefore on the interested and committed citizens who join forces to do something for their city, their fellow citizens and thus also themselves. Therefore, the first steps on to a research tool are described to develop an understanding of who these committed citizens are and what motivation drives them to get involved. The Open Knowledge Labs, initiated by the Open Knowledge Foundation, are used as a starting point, as interested people develop tools or visualisations for their city without too particular reference to specific topics. Initially, the Open Knowledge Labs in Germany will be included, but the tool to be developed should not be explicitly limited to this, but can also be used for other countries and similar communities.

The structure of this paper is as follows. In Section 2, the Open Knowledge Labs in Germany will be introduced. The related work is mentioned in Section 3. In Section 4, the methodology towards creating the instrument is described. Finally, in Section 5, conclusions are drawn, and future work is mentioned.

II. OPEN KNOWLEDGE LABS IN GERMANY

It is difficult to identify why individual citizens take part in participatory processes and how (e.g., using a digital service provided by the city via the web or an app). Sometimes an app is only tested or used sporadically, or a single request to a specific service is made. On the other hand, groups that meet regularly to develop their city or develop something for their city often have established a long-term interest and motivation for this topic. These communities can then be examined regarding their composition, how the individual members find their way into the community and what motivates them to deal with such topics in their free time. However, these are only a few aspects that affect the participants. Examples of such groups are the Open Knowledge Labs (OK Labs), which were initiated by the Open Knowledge Foundation. The focus is initially on Germany, where the Code for Germany project was started. The project aims to network developers, designers and people interested in open data, who meet regularly to exchange ideas and work together. The aim is to develop and promote projects and applications around open data concerning the own city. All people are welcome, regardless of their professional or personal background. The term *Code* is not meant to be restrictive: it is not only about programming, but it is also a desired ability. Currently, there are 25 Open Knowledge Labs in different parts of Germany. In the context of a future study, the instrument will be used at all 25 labs in Germany to obtain an overview of the composition, topics, motivations

and organisation. In the following, the instrument is to be made adaptable and standardised concerning the aspects of the investigation so that it can also be used in other countries. The consideration of local peculiarities is explicitly provided for. The study concerns the participants, the organisers and the environment of the labs. The focus is on the people, their backgrounds and motivations in this citizen-centred approach. The individual dimensions of the investigations are explained in more detail in the section *Methodology*.

III. RELATED WORK

The study of communities dedicated to a topic is not fundamentally new and has already been carried out for different types of communities and taking into account various aspects. For example, an empirical study on the participation in free and open source (online) communities shows that "70% of the surveyed members, stated that meeting and talking to people with similar interests was one of their main reasons for their participation." [5] The basic motivation has been described in this paper as to perform some function and to do something. Whereas *social exchange* seems to be important, *problem solving* was the reason with the most votes. As the instrument will use a citizen-centric approach, one central aspect is the motivations why and how citizens engage in such communities and projects. As open source communities seem to have a similar approach (despite they often exist in the form of an online community instead of local groups that meet regularly), research on these communities can be helpful to build a research instrument for Open Knowledge Labs. The motivation for participation in open source software communities has been investigated by Ke & Zhang [6]. They relied on different motivational theories and referred to different types of motivations in the context of open source software communities regarding the participational aspect. From that, they composed their research model which focuses "... the interaction effects of external motivation and personality traits, and of identification motivation and personality traits." [6] This research model can be a basis for the studying the motivational aspects in our instrument. Their results based on a study carried out in specific open source communities, collected using an online survey.

In contrast to these and other such studies, the Open Knowledge Labs have a distinctive characteristic: the meeting does not take place because of a fixed, tangible goal, but because of the interest and motivation to do something for one's environment. It is not clear what kind of results are obtained, what tools are used or how the results are communicated and disseminated. There are presumably very heterogeneous groups here, which are dedicated to different projects and which are connected only by the common motivation for the improvement of the city. Regarding improving the city, however, many aspects, such as the environment, transport, communication, are possible. The intended instrument should, therefore, be as general and broad as possible, so that many factors can be included in the inventory and a multi-perspective overview emerges as a result, which can be used for further investigations. Through such a common interest, a parallel can be drawn with other types of communities: Communities of Interest [7] or Communities of Practice [8]. In a study on the classification of communities, Herranz et al. [9] highlighted the differences between Communities of Interest and Communities
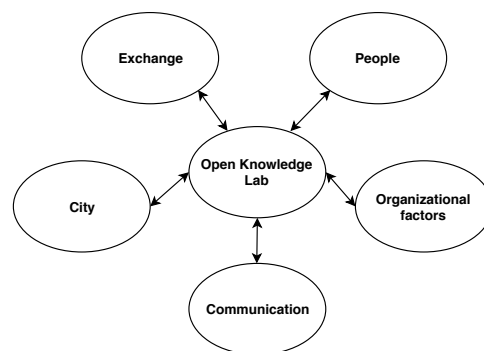

Figure 1. Core Dimensions of the Research Instrument

of Practice. Based on this study, a categorisation of Open Knowledge Labs as Communities of Interest seems more appropriate, as they have a complex character, can change in personnel at any time and pursue common goals that are not tied to specific methods or tools. The further development of the instrument can build on this classification. From the research results obtained, an evidence-based decision can subsequently be made regarding categorisation of the individual Open Knowledge Labs.

IV. METHODOLOGY

To get a complete picture of these communities and their members, a research tool is being developed to investigate these and other aspects. The dimensions of this instrument are shown in Figure 1.

The five core dimensions (*People*, *Organisational factors*, *Communication*, *City*, and *Exchange*) build up the basis for the investigation instrument. Every dimension carries further aspects with it, which need to be further developed and refined. The aspects of the individual dimensions are described in more detail below.

A. People

Since the approach of the investigation instrument is aimed in particular at the participating citizens and their motivation as well as their professional and personal characteristics, this aspect comes first. In addition to general demographic data such as age, gender and the number of participants, the professional background (training and current employment) and in particular the motivational factors for participating in such a community are collected. The evaluation also distinguishes between lab leads, regular participants and sporadic participants. Also, the wishes and expectations of participants and potentially interested parties are asked. If possible, the reasons why people have left an Open Knowledge Lab should also be collected.

B. Organizational factors

The organisational factors include aspects that deal with the organisation of an Open Knowledge Lab. This consists of the organisational and management structure, as well as local and temporal factors. Is there a fixed location for the meetings and a fixed time frame? How often do meetings take place and is there the possibility of spontaneous changes regarding space and the extension of meetings? Besides, the financing

of projects and the legal status of Open Knowledge Labs are examined.

C. Communication

The fact that a community exists like an Open Knowledge Lab must first get around. This dimension deals with various aspects of communication. How are meetings announced and where can I find out more about the idea, the current projects and in general get more information on the Open Knowledge Lab? It is examined whether a website exists, which social media channels and community tools are used for what purpose and in what frequency, and generally how the public relations work of the individual labs is carried out. Among other things, it is essential to know how new members can find their way to an Open Knowledge Lab and how completed projects can be prominently presented, which in turn can arouse the interest of other interested citizens and representatives of the city.

D. City

The involvement of the city or people from the administration in the activities of the Open Knowledge Lab is an important aspect when it comes to implementing projects to improve the city. Here, it is examined whether the city or municipality operates an Open data portal or there are persons in the administration who are responsible for this area. Also, the connection to the administration is considered concerning whether an exchange and, if applicable, participation in Open Knowledge Lab meetings have been realised and what experiences have been made with them. Furthermore, the involvement in urban decision-making processes, the transparency of the administration as well as the general state of the city on the way to a smart city is considered. This makes it possible to assess the Community's activities with the development phase of the city. It is also of interest what experience the citizens have already had with contact with the administration, what paths they prefer and what possibilities can be created here in joint projects. Studies like this from Reddick & Anthopoulus [10] can be consulted to investigate interaction with administrations further. Another aspect is to investigate whether institutions (such as universities) or associations (such as digital innovation hubs or business incubators) exist in the respective city that promote the presence and development of smart citizens.

E. Exchange

Open Knowledge Labs are usually not the only one of communities working on digital projects. For projects from the Open Source environment, as well as other community projects (e.g., Linux, OpenStreetMap, etc.) there are often local user groups that come together for similar reasons, but often with more concrete projects and ideas. This dimension investigates whether there is cooperation or contact with other communities in the city or the surrounding area and to what extent this can influence the work. Besides, there is a link to the organisational factors, for example, the question of whether several communities share a meeting point.

F. Realization

The instrument will be used in surveys and interviews. These methods are used to collect data during personal visits to all Open Knowledge Labs. Alternatively, the data can also be obtained online and gathered again on a regular basis.

V. Conclusion and Future Work

The presented instrument should enable an inventory of data on people and their motivation to participate in topic-specific groups in participatory activities to improve the city. Before a first concrete application, the individual dimensions and the aspects contained therein are rechecked and supplemented or revised. Also, tests are carried out in which the aspects are processed within the framework of specific surveys or interview guidelines. The contacts to some labs already exist, and the membership of the authors creates direct access to the persons. The results will provide a first insight into the structures, composition and working methods of Open Knowledge Labs, which are not yet available and have not yet been examined in their entirety. From this data collection, measures to optimise the work and possible positive and negative influences can be discovered. In further steps, the data can be used for analytical purposes and international comparisons, for example, if corresponding data collections also take place in other countries. Similarly, this can lead to further dialogue between citizens and the city administration and strengthen mutual understanding if both sides approach and work together transparently.

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