Research Article

Franzisca Maas*, Sara Wolf, Anna Hohm, and Jörn Hurtienne Citizen Needs – To Be Considered

Requirements for Local Civic Participation Tools

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Abstract: In this paper, we argue for and present an empirical study of putting citizens into focus during the early stages of designing tools for civic participation in a midsized German town. Drawing on Contextual and Participatory Design, we involved 105 participants by conducting interviews, using Photovoice and participating in a local neighbourhood meeting. Together with citizens, we built an Affinity Diagram, consolidated the data and identified key insights. As a result, we present and discuss different participation identities such as Motivated Activists, Convenience Participants or Companions and a collection of citizen needs for local civic participation, e.g., personal contact is irreplaceable for motivation, trust and mutual understanding, and some citizens preferred to "stumble across" information rather than actively searching for it. We use existing participation tools to demonstrate how individual needs could be addressed. Finally, we apply our insights to an example in our local context. We conclude that if we want to build digital tools that go beyond tokenistic, top-down ways of civic participation and that treat citizens as one homogeneous group, citizens need to be part of the design process right from the start. Supplemental material can be retrieved from https://osf.io/ rxd7h/.

Keywords: User-centered design, contextual design, participatory design, political participation, local politics, civic engagement, democratic innovation, e-participation

1 Introduction

Citizens rarely take part in the design of tools for civic participation, although they appear to be the most obvi-

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vances present opportunities to support citizens' participation in democratic processes, for example by targeting specific groups, increasing accessibility and inclusiveness, interweaving participation with daily life or allowing for better cooperation between citizens and administrations [26, 52, 59]. However, technology can also facilitate more substantial change by enabling bottom-up participation [27, 35, 55]. Nelimarkka [33] highlights that, unfortunately, most systems fall short of these hopes by supporting organization-led agenda-setting and reinforcing existing power structures [53]. Thus, citizens remain in the role of consultants [3], who are not really "invited in" fuelling the notion of pseudo-participation [38]. Ultimately, this will be counterproductive and can lead citizens to abandon (otherwise well intended) tools for civic participation [4, 11, 17, 49]. While there is a growing consensus among the human-computer interaction (HCI) community that citizen participation during design is necessary (see "civic turn" [27, 35, 55]), the failure of participation tools often resides in "a failure to analyse stakeholders' motivations to engage" [52] during the early stages of the design process. Therefore, a thorough examination of the context of use and citizen participation during the definition of requirements is indispensable for building "good" civic participation tools that match citizens' needs, account for the diversity among citizens and support higher levels of citizen participation [3]. In this paper, we argue for and present an empirical study of gathering citizen requirements when designing tools for civic participation together with the citizens who will be affected by the tool. We do so by drawing on Contextual and Participatory Design [19, 44].

ous stakeholders [14, 17, 28, 49]. New technological ad-

1.1 Related Work

Designing tools for civic participation without a focus on citizens' needs has severe consequences on several levels. First, by not satisfying citizens' needs these tools have a high risk of facing resistance to use the tool or being abandoned altogether [49]. One example is the failed implementation of "Osale", an e-participation platform in Estonia [49]. Despite Osale's goals to "(1) engage citizens in

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e-consultations on draft legislations and policies and (2) crowdsourcing new policy proposals from citizens" [49], the Government Office, civil society organizations, and the citizen engagement coordinators of ministries were the main consultants during the platform's development, leaving citizens out of the loop. Osale consequently faced resistance by citizens, but also by ministry staff that feared the system would not "fulfil their needs" [49]. The initiators tried to prevent the project from failing by trying to "convince" and "encourage" citizens and officials to use the system, but officials mostly stuck to using email and offline services, which apparently better met their needs, and Osale eventually faded away after promotion stopped. In cases like this, in which only a (non-representative) fraction of the population uses a participation tool, the resulting lack of legitimacy also poses a democratic threat. A second consequence of a missing focus on citizen needs is that tools, which are designed "organization-led" rather than "bottom-up", are prone to restrict participation to one-way "tokenistic" communication [3] that requires citizens to donate their time without benefitting themselves and reducing citizens to passive customers [31, 57]. A third consequence of skipping context and requirement analysis is that "citizens" are lumped together in one homogeneous group ignoring well-established findings from the political and social sciences that describe how factors such as gender, age, religion or socio-economic status influence civic participation [23, 29]. Thus, different citizens will have different needs in regard to civic participation. Tools that support only some citizen groups (e.g., those who are most easily reached or those who are already politically engaged) will not be able to put technology's full potential into practice.

To achieve a better fit of digital participation tools and citizens' needs, we support the call for a more situated, contextual view on civic participation in politics (e.g., [6, 17, 49]). Here, "politics" refers to a "broad range of information and activities around civic engagement, where civic engagement includes all the ways in which individuals deal with concerns of the public that are beyond being purely private or personal" [43]. This means democratic participation does not start with voting: meeting up with neighbours or inciting others to join can already be considered acts of civic participation. By describing participation (and therefore tools to support participation) as "contextual" or "situated", we acknowledge that participation will differ depending on the localization (e.g., national vs transnational vs local efforts), the stakeholders involved (e.g., different groups of citizens, politicians, city planners, city staff, and NGOs) as well as the type of participation activities (e.g., referendum, citizen workshops) and

the level of participation (e.g., informing, consulting or citizen control [3]). Consequently, civic participation tools that were developed for one context might not be easily applicable in another context [8].

This raises the question of how civic participation tools can be designed in a context-sensitive way respecting the heterogeneity of citizens and their needs. HCI provides methodologies such as Contextual Design (CD) [19] and Participatory Design (PD) [44] to assess contexts, needs, and involve users from early on in the design of digital tools. CD is a user-centred design practice that spans from user requirement analysis to developing a market-ready product along five stages: (1) gathering user data, (2) revealing the world, (3) reinventing life, (4) defining the product, and (5) making it real [19]. The first step includes so called "Contextual Inquiries" that aim at understanding how users currently do what they do by observing and talking to users in the style of an apprentice (the designer) talking to their master (the user). During the next step, the design team meets in "interpretation sessions" to get a shared understanding of the data and creates Affinity Notes and Design Models. After all data have been gathered, the affinity notes are used to build an Affinity Diagram to organize the field data into common issues and themes. The resulting hierarchical Affinity Diagram and models are then used to "Walk the Data" to generate design ideas in the next stage. After such a wall walk, the team compiles key insights in a list of user needs or issues aimed at answering the question "if this is the world of the user what must we address, support, or solve to add value and improve their world" [16] and that can later be used to evaluate first design ideas. CD offers clear and welldocumented methods that were developed to be efficiently applicable in business contexts [19], but it is criticized for merely "consulting" users rather than having them actively participate during the design process [22]. Viewing users as experts is also central in Participatory Design, but PD is about a shift of the users' role from being viewed as informants being legitimate participants of the technology they will use [44]. PD questions "whose interests are at stake, who initiates action and for what reason, who defines the problem (or decides that there is one)" [42]. Consequently, PD aims to enable more bottom-up engagement to "move away from a world in which a small number of people [e.g., only designers] define rules, create artefacts, and make decisions for many consumers toward a world in which everyone has interests and opportunities to actively participate" [12]. It is important to note that PD is not one specific method but a broad family of approaches and design practices [44], which centre around three basic principles of having a say, co-realisation and mutual learning

[44]. While PD puts involvement of users first, it comes on the expense of being very time-consuming to implement. Hence, we think that combining the efficiency of CD with expanded participant power and involvement of PD is a helpful approach in the context of designing tools for civic participation.

In the HCI literature, there are a number of projects describing various design and evaluation processes of participation tools. For example, Tscharn et al. [50] made an initial attempt at identifying citizen needs as a basis for the design of civic participation tools. Since they used CD, citizens did not actively participate during the requirements analysis. Other projects focussed on citizens, but did so only during evaluation, e.g. Connect 2 Congress [25], a tool to visualise legislative behaviour. Others have demonstrated how focussing on the local context of use in the design of tools for civic participation led to new interactive systems that met the citizens' needs. Examples include PosterVote [54], a situated voting tool using technically enhanced, low-cost posters placed at lampposts within the citizens' environment or Vote With Your Feet [47], a "hyperlocal", tangible voting tool using foot interaction that was deployed at a bus stop. As can be seen from the examples above, papers on civic participation in HCI focus on how tools were (participatory) designed or evaluated (i.e. "doing things right"), but there is a lack of research that explicitly describes (1) citizen requirements and context analysis in real-world scenarios, (2) doing this step together with citizens, and (3) how it was decided what kind of tool to build in the first place (i. e. "doing the right thing").

There are a number of possible reasons for this lack and they vary from project to project. One major drawback of involving citizens in the (early) design process is that it takes a lot of time and resources to establish meaningful relationships with the local community. In addition, gathering requirements and designing together with users requires some form of training in ethnography, HCI or similar fields. As a consequence, capturing citizen needs and the local context is (often too) expensive and fails due to a lack of personnel [15]. Manuel and Crivellaro [27] point out that digital tools are often primarily implemented to increase efficiency and reduce cost rather than to satisfy the needs of citizens. A "technology first" mind-set can also be observed in some smart city initiatives that focus on how to fit available technology into a new context risking the deployment of tools that are not really needed [2, 18, 34]. Moreover, implementing existing technology might seem cheaper than designing solutions from scratch and together with citizens, but this view is flawed when taking the long-term costs (in terms of money and trust) of eventually failed projects into account [49].

1.2 Research Question and Contribution

This paper contributes to the existing HCI literature on civic participation by presenting an empirical study of analysing citizen requirements together with local residents using a combination of Contextual and Participatory Design. We investigate the following research question: *What do citizens need when it comes to local civic participation in Würzburg (Germany) and how can citizens participate in gathering these insights*?

The findings from this study will serve as a basis to design tools for local civic participation in Würzburg in the future. The design process and evaluation of these tools as well as a more in depth discussion of the combination of CD and PD will be discussed in a separate paper.

2 Method: Identifying Citizen Needs

This section describes how we identified citizen needs using Contextual and Participatory Design methods in the city of Würzburg (Germany) from 2018 to 2019 (see Figure 1). Over the course of our data collection, we continuously added information into our Affinity Diagram, which finally incorporated the perspectives of 105 participants: citizens, city employees, initiators of petitions, local politicians, participants of a local neighbourhood meeting, the head of the local library, and ourselves as members of the local community. Using interviews, Photovoice and participatory observation, we were able to triangulate our data. We started out using interviews to get a first overview of how citizens participate in Würzburg and to identify relevant topics and stakeholders (2.2). Through our interviews, we were able to inspect needs of specific groups like politicians and politically more passive citizens. Observing and participating in neighbourhood meetings (2.3) allowed us to collect first-hand data from engaged citizens and it facilitated our subsequent participatory design process. We complemented our data collection by using Photovoice (2.4). This participatory method allowed participants to gather first-hand impressions themselves by taking photos of their district with a single-use camera over the course of several weeks.



Figure 1: Overview of the central steps of our data collection process (the icon tags steps that were conducted with special focus on PD).

2.1 Positioning & Role of Researchers

The authors of this paper have an interdisciplinary background including psychology, media communication and HCI. We came to this work applying a situated perspective on our data (see "third wave" of HCI [16]). During data collection and interpretation (2.2), we assumed varying roles: during our initial interviews, it was made clear that being the researchers, we acted as outsiders. During the sessions of a local neighbourhood meeting (2.3), we held two roles: in our role as researchers, we observed the meeting, the group's dynamic, the topics discussed, the problems concerning current forms of participation, and watched out where potentials for future designs emerged. In this role, we acted rather passively, but we always explained our role as researchers and our aim to gather insights to ultimately build tools for civic participation. PD projects are often characterised by a more active involvement of researchers as they immerse themselves into the context [51]. Since the university is located in the district, we therefore also assumed a more active role as participants of the neighbourhood meeting. In this role, we helped to organize the meetings and actively joined discussions. For example, we offered our personal views on topics like public traffic and engaged in activities like organizing a Christmas party. While these two roles were not always easy to separate, assuming both of them allowed us to build trust and sincere relations with many participants. Throughout our process, research assistants and two groups of HCI students supported us.

2.2 Interviews with Citizens, City Employees and Initiators

To identify relevant topics, questions, sites and stakeholders, we first conducted 28 short exploratory interviews in November 2018. These included 22 citizens (recruited in the city's pedestrian zone; between 20 and 80 years old), the mayor of the city, two members of the county council (recruited at a city council meeting; members of the Green Party), two city administration employees, and the city's head of sports and clubs (all recruited at a city council meeting). The exploratory interviews brought to the fore



Figure 2: Setup in the local library (left), board used for collecting traffic issues (right).

that in the context of local politics, many decisions directly affect citizens' lives and citizens are interested in these beyond voting in elections every few years. However, communication and exchange between citizens and decision-makers is a topic of great concern and therefore, it was vital to include not only individual perspectives (e.g., citizens) but also the perspective of, for example, city employees. Accordingly, we developed a loose interview guide and conducted semi-structured interviews in December 2018. We interviewed a convenience sample of 26 persons including 14 citizens (between 17 and 63 years old; five female; of these six "passive" citizens, one "disappointed" citizen, and seven "interested" citizens; the categories were created by us following the interviews), three initiators of a citizens' petition (40 to 65 years old; all male) and nine city employees who frequently dealt with questions of civic participation (e.g., department of gardening, city hall, and social services department; between 31 and 60 years old; five female). All interviews were preceded by giving informed consent and varied in length taking a maximum of one hour. We recruited citizens via posters and passers-by in the city. The interviews were conducted on-site or in a room at the university. Initiators and city employees were recruited through email and were interviewed in their offices. Participants did not receive a compensation. Four of these interviews were conducted as group interviews with two or three interviewees present.

We recorded all interviews and generated pseudonymized Affinity Notes [19] in a subsequent Interpretation Session [19]. Finally, the notes were consolidated into an initial Affinity Diagram [19]. In the next step, we "walked the data" together with eight students (five female) and eight city employees (three female) and collected an initial set of key insights concerning civic participation in Würzburg.

2.3 Participatory Observation in a Local Neighbourhood Meeting

As we were trying to gain a deeper understanding of the local structures and community, we were lucky to join a freshly formed neighbourhood meeting in Hubland, which, at the time, was a newly emerging district based on conversion of former US army ground. Starting in 2017, the district was developed to accommodate 4500 people of all ages and social backgrounds by 2025 and to be a place where people work, study, recuperate, get their supplies and enjoy cultural events. Because there hadn't been any established forms of participation yet when we engaged with the neighbourhood in 2019, residents started to explore how to get involved in local issues. We were thus presented with a perfect opportunity to observe what the neighbours needed and where they ran into problems of (missing) civic participation.

The HublandTreff meeting is a bi-weekly open gathering in the district's library in which issues relevant for the district are discussed (see Figure 2). Attendance varies from about five to twenty people ranging from younger (about 20 years) to older (about 70 years) residents. They are joined by an employee of the city's social services department, the head of the district library and occasionally further stakeholders like members of a local urban gardening group and members of the senior citizens' association. Over the course of six months, we participated in seven meetings. A typical meeting included (1) a round of intro-

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ductions of everyone due to the meeting's ever changing participants, (2) current developments about the district as provided by the city employee such as a resolution about the district's promised public kindergarten, (3) news from the library like the introduction of a "library of things" or planned events, (4) discussions on current issues that concern the neighbourhood such as the need for a pedestrian crossing at the district's centre or the planning of neighbourhood activities like a Christmas party, and (5) around 20 minutes of collectively carrying out CD steps such as integrating Affinity Notes resulting into the overall Affinity Diagram.

Consent was obtained either in written form or orally depending on the meetings' dynamics, but participants were always informed that our research objective was to acquire an understanding of how citizens participate in local matters and about our goal to build technologies to support citizen participation together with the group in the future. We made it clear that participants were always able to retract consent should they not feel comfortable being part of our data collection. We actively engaged in discussions and took some notes during the meetings, but refrained from recording everything that was being said in order to remain as unobtrusive as possible. In separate Interpretation Sessions between the HublandTreff meetings, we gathered our notes and observations and transformed them into Affinity Notes that were later added into the initial Affinity Diagram (see 2.5). Furthermore, we created two different kinds of Experience Models [19] in Interpretation Sessions between the neighbourhood meetings to capture our insights concerning the collaboration within and outside of the HublandTreff (Collaboration Model) as well as participation identities (Identity Model).

2.4 Photovoice

Besides interviews and participatory observation, we collected data using Photovoice [56] as a participatory method to gather first-hand impressions about the district. Photovoice is a data collection strategy, which "uses the immediacy of the visual image to furnish evidence and to promote effective, participatory means of sharing expertise and knowledge". We decided to use Photovoice, because (1) it opened up our data collection to participants giving them the chance to contribute beyond being "informants" [22] (e. g., choosing to photograph whatever they felt was relevant), (2) as we used it early on in the design process, it helped us conveying to participants that their views mattered, (3) the collected data gave insight into the



Figure 3: Disposable camera with instruction used for Photovoice.

district beyond the neighbourhood meetings, and (4) it enabled participants, who would normally stay in the background, to contribute.

We handed out disposable cameras with instructions printed on their back to probe reflections on opportunities to participate in the local neighbourhood [13]. Instructions included, for example, prompts to photograph things they want to see change in their street (Figure 3). As we aimed at understanding the particularities of the Hubland district, we tried to recruit various citizens using notices in the local public library and in a local student residence, talking to people on the street and to people from the local neighbourhood meeting (see 2.3). Despite our effort, we were only able to recruit three participants (two female members of the neighbourhood meeting and one male student from the district). Most citizens who declined to take part referred to the great time investment that they were not able or willing to take. Despite the small sample size, we think that the Photovoice data was valuable to illustrate problems and engage in deeper conversations with participants about their district. Participants kept the cameras over the course of two to four weeks. When they indicated having finished taking photos, we collected the camera and had the photos developed. In a follow-up session, we sat down with each participant and asked them to explain why they had taken each photo and what it meant to them (exemplary photos can be retrieved from https://osf.io/rxd7h/). We turned the notes taken during the interviews into Affinity Notes. These notes and some photos selected by the citizens themselves were subsequently added into the Affinity Diagram during the following neighbourhood meetings (see 2.5).

2.5 Data Consolidation and Wall Walk

Even though data collection in complex contexts such as ours might never fully reach saturation, we decided to move on to consolidating the gathered data after six months of participatory observation. Our decision was based on our aim to keep the data collection within our project's scope and to prevent participants from losing interest as a result of remaining too long at each step of the design process.

We used the initial Affinity Diagram from our interviews (see 2.2) as a basis and continuously enriched it with the notes created from the Photovoice (see 2.4) and participatory observation (see 2.3). We created the Collaboration and Identity Models in Interpretation Sessions between the neighbourhood meetings. To involve participants during this data consolidation, participants added notes that were created from Photovoice pictures and some of the notes from our participatory observation into the Affinity Diagram during the neighbourhood meetings. To do so, we put the Affinity Diagram on partition walls in the library room, equipped participants with small piles of Affinity Notes and instructed them to move around the Affinity Diagram and to find positions where their notes might fit or start new categories otherwise. Moreover, participants were told to make changes to the diagram if they felt it was necessary. Notes that were left over after the meeting were added by us in a separate session.

To open up the gathering of key insights and issues, we involved citizens in the Wall Walk sessions. To do so, the first three authors of this paper and a group of six HCI students, conducted several Wall Walks on the Affinity Diagram: one together with a city employee and four wall walks together with participants of the HublandTreff (three participants; two female) and library visitors (three visitors; one female). For these Wall Walk sessions, the Affinity Diagram was put up on partition walls in the library (see Figure 4). First, participants were introduced to the method and the Affinity Diagram and subsequently went through the notes by themselves adding their design ideas for as long as they wanted. Following each participant's Wall Walk, we gathered their key insights and merged them into one set in a separate session after the last Wall Walk. The resulting final Affinity Diagram (see https://osf.io/rxd7h/) contains the perspectives of 105 different participants including citizens, city employees from different departments, petition initiators, politicians, the head of the local library and ourselves as well as HCI students.

To give participants an opportunity to have a say in the formation of the set of key insights, we presented the gathered key insights to the group in the following HublandTreff meeting. Due to the limited time during the session, we were only able to discuss a subset. While most discussed key insights received positive feedback from the



Figure 4: Wall Walk session in the local library with Affinity Diagram on partition walls.

group, some had to be revised. For example, we had originally noted that "there are differently committed people (lots of vs little time/interest)", but participants felt that this sounded too judgmental and suggested to rephrase it more simply as "citizens get involved to varying degrees". Ultimately, the gathered insights were merged with our initial set of key insights gathered from our interviews (2.2) resulting in a final set, which will be presented and discussed in the following section of this paper.

3 Results: Citizen Needs and Civic Participation in Würzburg

We clustered the insights from our analyses into the following categories: (1) *participation identities* and citizens' commitment, (2) basic democratic values, (3) relation between the city and its citizens, (4) information and transparency and (5) insights specific to the Hubland neighbourhood meeting. Below, we will describe the insights of



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Figure 5: Participation identities.

each category (italicised) and illustrate them with participants' quotes (participant code in brackets) based on our notes from the Affinity Diagram. Additionally, we provide examples of existing civic participation tools that touched on constituent citizen requirements in other contexts to see whether they could be applied in our context during later stages of the design process and as an inspiration for other projects.

3.1 Citizens' Commitment and Participation Identities

One fundamental insight during our analysis of civic participation in Würzburg was that citizens are not one homogeneous group, but *get involved to varying degrees*. For example, some *do not have enough time to get involved and to keep themselves informed*, while others *are not interested in (local) politics or cannot motivate themselves to get involved* or are simply content with the current political situation and see no point in getting involved. Nonetheless, *if a topic affects citizens personally, they will be more likely* *to engage*. One citizen told us that "I will stand up for [a topic], if I am excited about it" (P17). Generally, citizens in Würzburg *want to be heard and to voice their opinions* and it is important to recognize that *organizing petitions or other civic participation is a lot of work and needs solid planning*.

In addition to the more abstract commitments described above, we also identified various participation identities by means of an Identity Model [19] that aggregates identity elements to help uncover "sources of pride, self-expression, and core values" [19]. It is a helpful instrument to develop tools, which will be valued by users and the design team come back to it to evaluate ideas and prototypes later in the design process. Our Identity Model enables a more detailed look into different types of participation displayed by different citizens in Würzburg. Identity Models do not represent specific persons. This means that participants can contribute to more than one Identity. We introduced five (coloured) clusters to clarify differences and similarities among the participation identities (see Figure 5). A more detailed description of each cluster can be found in the supplements.

3.1.1 Cluster 1: We Want to and do Participate in Local Politics

Within this group, we identified the *Motivated Activists*, who engage in local matters, spend their time to advance their city and try to convince others to commit themselves, too. Then, there are *Social Volunteers*, who draw pride from investing their personal time to foster the community. Finally, there are *Attention Seekers*, who actively connect with others to make a reputation for themselves through their political actions and stand by their opinion. An ideal tool that supports Motivated Activists, Social Volunteers and Attention Seekers would allow citizens to take on tasks, make achievements visible, provide a possibility to connect with other citizens and allow for social commitment.

Existing participation tools that could address the needs of this cluster include collaborative online projects like Wikipedia [58] and the OpenStreetMap [37] that build upon the input of committed citizens to provide open knowledge for all citizens. Another example is the initiative "Smart Citizen" [45], that provides tool kits and knowledge to engaged citizens e.g., to create local maps of noise and air quality. Citizens can use these to raise awareness and find solutions for issues that matter to their community.

3.1.2 Cluster 2: We Want to Participate, but We Encounter Barriers

The second cluster characterises citizens, who want to participate in local politics, but face barriers in the process of doing so. The Very Busy, knowing that they do not have enough time to attend many political events, keep themselves updated only in passing and are happy to contribute through quicker means such as taking part in online petitions. Efficient Information Obtainers want to be up-todate without having to invest too much time and thus only participate in political events, if they want to ask specific questions. Accessible Information Seekers demand that the city provides information that is easy to understand and prefer visualisations. Finally, Anonymous Activists cherish anonymity because it enables open and honest conversations especially on difficult topics and like to stay in the background to avoid attention. Tools that promote this cluster will need to find a way to overcome barriers e.g., by keeping information short, but comprehensible or intertwining participation tools with everyday activities.

Existing participation tools that could address the needs of this cluster include tools that do not require users

to sign up. A positive example for how to support this cluster is "PosterVote" [54] because it places an opportunity to participate right into people's everyday lives and allows citizens to vote anonymously by pressing a button on a digitally enhanced paper poster. Likewise, "If I were Istanbul's Mayor" demonstrated how civic participation can be integrated into people's everyday life by letting them tap their public transport cards on posters equipped with RFID sensors to express their choice on two-option scenarios concerning their city [20].

3.1.3 Cluster 3: We do not Actively Search for Opportunities to Participate

Convenience Participants do not actively search for opportunities to participate, think that political conversations are too exhausting and feel like they know too little about politics. A tool designed for this group should not demand too much attention and effort and provide easy-tounderstand information about political processes or local issues.

Existing participation tools that could address the needs of this cluster include using data that is already available and that they are willing to share, for example when donating fitness data gathered through wearables to the app "Corona Datenspende" [10] (English: "corona data donation") which supports the Robert Koch Institute in the early detection of corona virus outbreaks. This way people have to put little effort into participation, while still being able to contribute. Nevertheless, implementing such systems still requires transparency and consent from users in order to protect their right to privacy.

3.1.4 Cluster 4: We Are Not Interested in Political Participation (Anymore)

The *Politically Disenchanted* are not interested in politics and participation (anymore). They feel like their previous actions had no impact leaving them with a feeling of powerlessness and resignation. A tool to get them "back into the loop" would need to make their political achievements visible and focus on long-term interaction acknowledging that rebuilding trust might take a lot of time.

Existing participation tools that could address the needs of this cluster include "Viewpoint" [48], a tool for community engagement and polls. It is a positive example for how to establish a direct connection between the citizens' action (e. g. voting) to its consequence by requiring question authors to post a response indicating actions to be taken. This way, citizens' feeling of self-efficacy is improved and trust can be re-established.

3.1.5 Cluster 5: We Are Looking for Human Connection

Cluster five includes citizens whose primary aim is not so much to engage in political participation, but who rather care about human connection. The *Companions* like informal and relaxed get-togethers within the community. On a similar note, *Face-To-Face Communicators* enjoy direct conversations with other citizens and city employees to resolve problems and feel valued through such meetings. It is important to recognise that potential participation tools should not overrule the desire for personal contact and technology might never be the primary "solution" to support social gathering, but it might facilitate organising social meetings.

Existing participation tools that could address the needs of this cluster include "nebenan.de", a tool that is already used by many neighbours in Hubland. The website allows to announce the neighbourhood meeting and other activities that bring together citizens in "real life". Another tool, which supports community collaboration without replacing the actual personal contact is the app "Move" [21]. It aids communities in establishing routines for healthy living by providing a digital tool to organise meetings among neighbours, who then get together to workout in their neighbourhood.

3.2 Basic Democratic Values

An overarching topic during many HublandTreff meetings was the notion that everybody needs to have the opportunity to engage in civic participation. This became important in light of the insight that there is a digital divide between citizens: some citizens made regular use of digital technologies such as smartphones and email, while others did not own smartphones or computers. Some issues that arose in the specific context of the neighbourhood meeting are connected to the meetings' openness since there is no set group of people. This leads to a lack of legitimation: the group is open to all neighbours, but only some are frequently involved. Still, this group acts as "representatives" in meetings with city employees and in doing so, is given power to influence decisions concerning the district. A similar issue was frequently voiced by city employees who are concerned about the *credibility* of collected data: without demographic data on the participating citizens, it

is difficult to assess whether demands are interests representative of the citizenry or lobbied by a small, but powerful group.

Existing participation tools that could address these needs include tools, which focus on accessibility and inclusivity. This means that relying on a smartphone app will not meet citizens' needs in a neighbourhood with a digital divide like ours. Instead, tools like "PosterVote" [54], a simple, digitally enhanced paper poster for voting, are usable by old and young citizens alike as it draws on easyto-understand interaction, is embedded into people's everyday life and does not require to bring one's own digital device. This tool also touches on the notion of legitimation as it enables citizen groups like the HublandTreff meeting to post polls to their community in order to gather opinions from a broader group. Still, it is important to note that full legitimation might ultimately only be established through democratic processes or random drawing.

3.3 Relation Between the City and Its Citizens

3.3.1 Citizens' Attitudes Towards Their City

The city was perceived to be distant and impersonal by its citizens, fuelled for example by the bureaucratic language used in resolutions. However, citizens wanted their municipal administration to be approachable. One citizen explained that "politics seem [..] unrelated to [them]" (P20) and another one stated, "I feel like politicians decide without considering the citizens" (P09). Citizens felt it is the administration's job to keep them informed and to decide but did not entirely trust the city to do a good job at it. This was often based on former personal encounters, which lead citizens to be sceptical whether the city will realize citizens' demands. The experience of many was that the city would only report on results if they were "successful" thus leaving citizens in the dark about other developments. One participant also said, "What bothers me is that [they] do not respond to our arguments" (P26). Then again, other citizens also trusted their city and its employees and expressed compassion for their constraints: "I recognize that the city has to prioritize and thus puts some topics off" (P23).

Existing participation tools that could address these needs include the civic participation tool "Viewpoint" by Taylor et al. [48]. It requires authors to communicate subsequent actions when posing questions to community members through the tool. Thus, participants can hold authors accountable if promised actions would not be taken.

3.3.2 City's Attitudes Towards Its Citizens

Throughout our analyses, employees of the city were *eager to include citizens in their decision processes from early on*, as one city employee put it "citizens are the experts on the ground, we are experts in our domains [...] through involving citizens we obtain unique information" (P14). However, they also emphasized that they *are confronted with destructive citizen feedback* and often feel like their "work is not valued" (P04) and as one city employee put it: "Citizens often complain about trivialities" (P05) leading some employees to think that involving citizens would not necessarily be beneficial or even possible (P13 & P16).

Existing participation tools that could address these needs include projects that worked on creating tools to help city planners gather public opinions using augmented and mixed reality (AR and MR) [1, 7, 41]. For example Sareika and Schmalstieg [40] developed a smartphone application called "Urban Sketcher" that let citizens alter a real scene depicting a planned project by sketching 2D images, which are then applied to an augmented scene. By visualising how planned changes are going to look and fit into the surroundings, city planners can invite citizens into the process, allowing for early feedback.

3.3.3 Communication Between Citizens and the City

Concerning the communication between the city and its residents, *personal contact is irreplaceable when it comes to motivation, trust and mutual understanding* and both sides (city and citizens) *desire better communication*. For example, one citizen said that they "prefer meeting in person, because I can get to know them [city staff] better" (P51). City employees feel that *reaching affected citizens is difficult* despite the many ways to communicate, and citizens, on the other end, think that "gathering opinions and presenting them as a group" (P36) helps communicating their wishes to city authorities. Still, citizens often struggle with the city staff's *complicated, bureaucratic language* saying that "resolutions are way too long and complicated for citizens to understand" (P14).

Existing participation tools that could address these needs include "ask me anything" sessions in a (local) online forum hosted by city employees to support communication between the city and its citizens. In these sessions, citizens can ask questions and officials are able to directly respond. Another possibility to communicate proposals and resolutions in a more personal manner is to start a regular podcast featuring city employees or even the mayor [30]. Nevertheless, it is important to acknowledge that digital tools might never replace communication and meeting in real-life and should thus be considered as an addition or as facilitators for established democratic processes.

3.4 Information and Transparency

3.4.1 Being Informed About Local Matters

Overall, citizens want to be up-to-date on political and local matters. While they expressed the wish for discussions and decisions to take place in an informed setting, the information is scattered among different outlets, is difficult to find and confusingly presented. One participant put it this way: "The [city's] website is a catastrophe, because information there is outdated and it's confusingly designed" (P13) and another one added that "there are always many aspects to consider and it takes a lot of time to gather them" (P08). Another central insight was that citizens do not know about their opportunities to participate and which resolutions are being adopted, for example one citizen acknowledged that they "had hoped that things would go faster, but it's more complex than I anticipated" (P25). Drawing on our participation identities (e.g. the Very Busy One and Convenience Participant) and the aspiration that everybody should be able to participate, another central insight was that citizens preferred to stumble upon information and have the opportunity to get into details if they wanted to and that information should be objective and easily accessible. For example, one citizen mourned the fact that "there is no neutral, objective platform to exchange information" (P09).

Existing participation tools that could address these needs include "Factful" [24], a tool that supports factsbased discussion around local matters is. It helps citizens to fact-check and discuss budgetary articles thus providing them with the means to engage in complex discussions around budgeting in their community. IBM presented "Project Debater" [39] an AI system that is able to debate with humans on complex topics such as whether wealth should be redistributed. Wilson et al. [59] provided an example of how participation tools could be integrated into people's lives to stumble upon. They developed a smart watch app called "ChangeExplorer" to involve citizens in a local planning process by sending notifications whenever citizens passed a site relevant to the project, thus providing a quick way to give feedback.

3.4.2 Transparency

At many occasions throughout our analyses citizens complained that *decision-making and administrative processes are not transparent enough*. Moreover, many *citizens lack knowledge, insight into, and understanding of administrative processes*. One citizen told us that they "don't receive information about resolutions, but I would be interested in these" (P16). Nonetheless, *if citizens know the reasons why their wishes cannot be implemented immediately, they show sympathy*. One citizen explained that they "understand the city's decision, now that [they] heard the city's arguments for certain situations" (P29). When it comes to digital communication, citizens thought that it was *important to know with whom one is interacting*.

Existing participation tools that could address these needs include citizen or council information systems like "OParl" [36] that give citizens access to information like the council's agenda or meeting protocols to increase transparency. While such tools potentially open up political decision-making and administrative processes to the general public by making documents accessible, they do not necessarily ensure that citizens will be able to understand their content. Therefore, in order to reach their full potential, citizen information systems need to provide context and explanation along with plain documentation.

3.5 Insights Specific to the HublandTreff Neighbourhood Meeting

Drawing on our Collaboration Models (see https://osf.io/ rxd7h/) depicting (1) the collaboration between the city, the HublandTreff and other citizens and (2) the collaboration among attendees of the HublandTreff as well as the Identity Model and Affinity Diagram, it became clear that our context has some distinct characteristics. The HublandTreff acts as intermediary between the district's citizens and the city by providing a space to discuss current issues and sharing their points of view to representatives of the city. Participants come to the meetings to help shape their district and to meet other residents. They emphasise that respecting each other and giving constructive feedback is important. Several participants expressed the desire to keep the HublandTreff meetings rather informal to avoid a strictly work-related atmosphere since they value companionship and personal interaction. In order to fulfil this need, some neighbours even organised an additional bi-weekly, citizens-only, "social meeting" in-between the ordinary HublandTreff meetings. Overall, it became clear that, while many attendees are rather motivated and outgoing (see 3.1: Motivated Activists and Social Volunteers), some participants do not wish to get involved too much, but rather like to *act from the background* (see 3.1: Anonymous Activists).

When being together, *HublandTreff attendees collaborate on tasks*, for example, to prepare a presentation of issues concerning the district's public traffic. When working on bigger tasks, *participants split up responsibilities* among the group so that individual people can work on a topic in between HublandTreff meetings. While being apart, *participants* communicate *via messenger apps or e-mail and talk to each other when meeting in the streets*.

Existing participation tools that could address these needs include tools, which support citizens in organising themselves when being apart. Many participants already do so, by talking about and promoting the neighbourhood meeting through "nebenan.de" [32], a platform that allows neighbours to post about district relevant issues, schedule events and form groups. When thinking about tools that might support the HublandTreff, it is important to recognise that the meeting itself should not be replaced by technology in order to value the participants' need for personal, face-to-face interaction. Furthermore, making the HublandTreff meeting accessible to a wide audience, e. g., through publishing protocols on the district's website and trough nebenan.de, could help to keep neighbours in the loop even if they can't participate.

4 Discussion

In this paper, we demonstrated how citizens can be put into focus when defining requirements for civic participation tools. We used a combination of Contextual and Participatory Design to identify citizen needs for the design of digital civic participation tools in a mid-sized German town. Using interviews, Photovoice, participatory observation and collaborative data consolidation, we identified different participation identities and key insights concerning basic democratic values, the relation between the city and its citizens, information and transparency and contextual insights related to the local neighbourhood meeting. We described tools by other authors as examples of how constituent needs and participation identities could be supported. Yet, when we look at our insights, none of the portrayed tools is able to satisfy all (or even most) citizen needs and participation identities in Würzburg. Even though some of the presented tools are already available

Figure 6: Overview of the identified key insights.

E	ZEN COMMITMENT	INFORMATION AND TRANSPARENCY
	Citizens are not one homogeneous group, but get involved to varying degrees	Being informed about local matters
stitbi	Some citizens do not have enough time to get involved and to keep themselves informed, while others are not interested in (local) politics or cannot motivate themselves to get involved	Citizens want to be up-to-date on political and local matters
sul /	If a topic affects citizens personally, they will be more likely to engage	Citizens want discussions and decisions to take place in an informed setting
ƙəχ	Citizens in BFR want to be heard and to voice their opinions	b Information is scattered among different outlets, is difficult to find and confusingly presented
	Organizing petitions or other civic participation is a lot of work and needs solid planning	Citizens do not know about their opportunities to participate and which resolutions are being adopted
slooT	Wikipedia [58], OpenStreetMap [37], initiative "Smart Citizen" [45], Postervole [54], If I were Istanbul's Mayor [20], Corona- Datenspende [10], Viewpoint [48], Move [21]	Citizens prefer to stumble upon information and have an opportunity to get into details if they wanted to Information should be objective and easily accessible
BA	IC DEMOCRATIC VALUES	Factful [24], Project Debater [39], ChangeExplorer [59]
	Everybody needs to have the opportunity to engage in civic participation	Transparency
styb	There is a digital divide between citizens	Citizens feel like decision-making and administrative processes are not transparent enough
isul V	There is a lack of legitimation of the BFR meeting because it is open to all neighbours, but only some are frequently involved	Many citizens lack knowledge, insight into and understanding of administrative processes
ſәЖ	Credibility of collected data: without demographic data on the participating citizens, it is difficult to assess whether demands are legitimate or lobbied by a small, but powerful group	If clitzens know the reasons why their wishes cannot be implemented immediately, they show sympathy When it comes to diated communication, clitzens think that it is immediately to the with when not is interaction
sį		
00T	Postervote [54]	70013
RE	ATION BETWEEN THE CITY AND ITS CITIZENS	INSIGHTS SPECIFIC TO THE NEIGHBOURHOOD MEETING
Cit	cens' attitude towards their city	The BFR meeting acts as intermediary between the district's citizens and the city
s	Citizens perceive their city as distant and impersonal	Respecting each other and giving constructive feedback is important
, upis	Citizens feel it is the administration's job to keep them informed and to decide but do not entirely trust the city to do a good job at it	BFR meeting attendees value companionship and personal interaction
ul Və	Citizens are sceptical whether the city will realize their demands	ight Some BFR meeting attendees do not wish to get involved too much, but rather like to act from the background
ж	Citizens generally trust the city and its employees and expressed compassion for their constraints	During the neighbourhood meetings attendees collaborate on tasks
slooT	Viewpoint [48]	Attendees split up responsibilities among the group to follow up tasks when being apart
Cit	's attitudes towards its citizens	Attendees communicate via messenger apps or e-mail and talk to each other when meeting in the streets between m
7	City employees are eager to include citizens in their decision processes from early on	rools hebenan.de [32]
K.	City employees emphasise that they are confronted with destructive citizen feedback and feel like their work is not valued	
slooT	Urban Sketcher [40], 3D Outdoor Augmented Reality for Architecture and Urban Planning [7], Tangible Mixed Reality On-Site: Interactive Augmented Visualisations [41]	
S	nmunication between citizens and the city	
-	Personal contact is irreplaceable when it comes to motivation, trust and mutual understanding	

gs

Both sides (city and citizens) desire better communication stubisul yeX

City employees feel that reaching affected citizens is difficult

Citizens often struggle with the city staff's complicated, bureaucratic language

Postcast by city employees or mayor [30], Ask Me Anything sessions slooT (e. g., [9, 32, 37]), many are still proof-of-concepts or prototypes (e. g., [8, 20, 47, 54]). Thus, for our own project, we will need to develop new tools that fit our context, but we can draw inspiration from those previous efforts.

4.1 Application of Our Insights

We presented citizen needs for civic participation tools. But how can these be applied? We think that our insights are useful in several ways: (1) they will serve as a basis to build and improve tools in our own context, (2) they provide possible reasons for the failure of previous tools for civic participation, and (3) they could be an inspiration or starting point for others looking to build tools that fit citizens' needs.

When we think about using our insights as a basis designing tools in Würzburg, we recognise that many of the requirements and participation identities presented above are not exclusive to our context as illustrated by the existing design examples presented above. However, each of them only supports a fraction of citizen needs and participation identities identified in our context. That is why we cannot rely on existing tools in the upcoming design of solutions that support our citizen needs. By applying our insights to a local example in Würzburg, we demonstrate why it is important to consider the individual combination of citizen needs and characters that are relevant in a specific context. Furthermore, we illustrate possible reasons for the failure of tools for civic participation in other context based on our insights.

The city of Würzburg recently launched a local version of CONSUL [9], an open-source online platform for citizen participation that enables citizens to participate in debates, participatory budgeting and legislation, drafting proposals and voting. It is already used in 35 countries and the local version was launched in 2020 in Würzburg. Drawing on our insights, CONSUL supports the administration's need to involve citizens (see 3.3.2) and it meets several citizen needs. First, it could give citizens a voice (see 3.1) and extend their scope of action by enabling democratic innovations [46] such as participatory budgeting as well as supporting agenda-setting through online-debates proposed by citizens. Second, CONSUL supports the citizens' requirement that their administration should keep them informed and it can help the city to be perceived as less distant and impersonal by providing rich background information (see 3.3.1). Third, it holds great potential of making legislation and decision-making more transparent (see 3.4.2) and it can support citizens in keeping themselves upto-date on local matters using information that is verified

by city employees (see 3.4.1). At first glance, CONSUL might also broaden participation by giving "everybody" the opportunity to engage (see 3.2). However, when examined more closely, it remains questionable whether CONSUL can live up to this claim, as it stands in contrast to several citizen requirements. Our requirements analysis revealed that citizens are not one homogenous group and they get involved to varying degrees (see 3.1). While CONSUL supports participation identities like the Motivated Activists, citizens who are not as easily reached and motivated (e.g., the Very Busy or the Politically Disenchanted), who prefer personal face-to-face contact (see 3.1 and 3.3.3) or who do not own a smartphone or computer or do not know how to navigate one (see 3.2) are not likely to participate. Moreover, as the tool is restrained to its web interface, citizens still need to (1) know about and actively remember to use the tool and (2) make an effort to participate in their free time. Our insights however, show that people do not constantly seek ways to engage and "do democracy" and many prefer to "stumble across" information in their daily life (see 3.1 and 3.4.1), which is rather unlikely in the case of a website that people need to actively seek out. Furthermore, citizens in Würzburg do not know about their options to participate (see 3.4.1), which means CONSUL will need to find a way to make people aware of its existence.

The example of CONSUL highlights, why a thorough contextual analysis is paramount and that deploying the tool will not guarantee "more participation" per se, but it will only benefit the local community if its drawbacks are recognised and citizen needs are considered. For example, together with the local developers of CONSUL, we are discussing whether the platform could be extended by tangible interfaces (such as implemented in PosterVote [54], Vote With Your Feet [47] or the Bicycle Barometer [8]) set up in the neighbourhood. The physical component could act as a reminder of the possibility to participate and it could lower participation barriers e. g., for older residents. Moreover, it might also support the need for (real-life) social contact as such a tool might turn out to be a place where people meet and discuss current topics.

When examining the failure of previous civic participation tools through the lens of our results, it becomes clear why some systems were not successful. Looking back at the example of Osale, it is not surprising that people were reluctant to use it. For instance, citizens were ignored when they repeatedly suggested legal texts in Osale should be simplified, a demand that we found in our context too (see 3.4.1). Moreover, much like CONSUL, Osale aimed at broadening participation, but relied on high engagement of citizens. Thus, it might have overlooked the needs of citizens who have opinions about local matters, but lack time, resources or knowledge to share their views through these tools. Consequentially, it upholds existing privileges and power structures among societies, in which mainly welleducated citizens with higher incomes participate [5]. Still, we recognize that Osale did not solely fail due to lacking citizen involvement, but due to a combination of factors including a lack of political support and ambiguity of objectives [49].

4.2 Reflecting Our Method of Inquiry

Looking back, we feel like we were able to involve citizens in many more steps during the collection of requirements than is typical. Triangulation of different kinds of data through the combination of CD and PD was helpful as information from our initial interviews (e.g. about rather passive citizens) could be complemented with insights gathered through Photovoice and our participatory observation (e.g. of rather engaged citizens). This resulted in a broader understanding of citizen needs and their context and enabled us to unravel "the citizens" into various participation identities that otherwise could have been overlooked. It also made us realise that a presupposition to build a *digital* tool might not always be useful and that some needs might be better met using non-digital solutions such as the intermediate "social" gatherings that the HublandTreff participants initiated to fulfil their need for more informal conversations (see 3.5). We succeeded in involving citizens in all steps of our requirements analysis albeit achieving varying degrees of participation. Our flexible approach and the combination of CD and PD allowed us to keep the project going when time was limited, but enabled a substantial increase in citizen participation (e.g., during the Wall Walk sessions or when discussing the resulting key insights, see 2.5). A more thorough methodological discussion of how we combined CD and PD as well as resulting tools will be presented in a separate publication.

It is important to note that the design of tools for civic participation is very complex and having the time and resources to plan a thorough citizen-centred or Participatory Design process in advance is a privilege that might not be achievable in every context. Outside of research projects, even establishing an overview of relevant stakeholders requires somebody who is responsible. This person needs to be payed, in many cases by the city. Overall, investing in the participation of the local community is costly, both in time and resources. However, building participation tools, which eventually are abandoned, is way costlier as it also bears the risk of frustrating citizens, eroding trust in politics, and diminishing the administrations' will to further encourage citizens to participate.

4.3 Limitations

Despite our efforts to broad citizen participation during the early stages of design, at some points it was simply not feasible to involve citizens as much as we had wished. We were unable to present our identity and collaboration model to the group and had to keep the discussion about the collected key insights short due to time constraints during our meetings. As a consequence of the COVID-19 pandemic, we were unable to discuss the final revision of the key insights with the group (after the list gathered during the meetings had been merged with the initial list, see 2.2). Also, while trying to involve as many stakeholders' views as possible, we included politicians only during our exploratory interviews. This helped us to de-emphasise existing power structures [51], but validating our results with politicians would be valuable in future steps. Likewise, we acknowledge that we relied on a (non-representative) fraction of the citizenship that was open to our recruitment strategies. Together with attendees of the HublandTreff meetings, we made an effort to broaden the group's diversity. For instance, we promoted the meetings at a Christmas party to attract older residents or families with younger children, who had difficulties joining the neighbourhood meeting due to its timing. Still, attendance of families remained limited. Being aware that only a distinct group of citizens will join and actively debate in a public neighbourhood meeting, we used Photovoice as an alternative way fostering more "quiet" ways of contribution. As designers, being in a position to choose who will be invited into the design process, means being in a position of power that comes with the responsibility to constantly (re-)consider who is given a voice and who might be overlooked. We take this responsibility seriously, and including a diverse group of residents will remain a central focus moving forward with our project.

5 Future Directions

We will use the insights presented in this paper as a basis to design digital tools that support local political participation in Würzburg and the Hubland district in a participatory manner. Together with citizens from the district, we will use our collected requirements and participation identities to evaluate whether (and in which ways) the developed tools really improve civic participation in Würzburg

to make sure that they meet the citizens' needs and will be used. We hope that other researchers will be inspired by our approach when trying to identify needs that are specific to their communities. We have also observed that our insights can be useful to city administrations to get a first impression of what citizen needs might entail. For instance, the city's Department of Economics, Science and Location Marketing inquired to use our insights to inform decisions while it was nearly impossible to gather opinions from citizens directly during the COVID-19 outbreak in spring 2020. We feel that building on previous work in this way can help projects to move to a more citizen-focused perspective, but should not remain the only effort. We emphasise that our insights should not be mindlessly applied to other contexts, because these might differ substantially. Moving forward, citizen requirements provide a way for designers (and possibly involved citizens) to evaluate civic participation tools beyond existing frameworks such as Smith's framework for democratic innovations [46]. Finally, other disciplines like Gender Studies or Feminist HCI might be helpful when trying to go beyond considering "citizens" as a homogeneous group and being aware that not every citizen will be considered equally by default.

6 Conclusion

This paper provides an empirical example of how citizens can be considered and even directly involved in the process of collecting requirements for civic participation tools by drawing on Contextual and Participatory Design. We conducted interviews, used Photovoice [56], and participated in a local neighbourhood meeting over the course of six months involving a total of 105 participants from various stakeholder groups such as citizens, city employees and local politicians. Together with participants of a neighbourhood meeting, we built an Affinity Diagram, consolidated the data and identified key insights. As a result, we present and discuss a collection of citizen needs and different participation identities that we found to be relevant in our context. By linking examples from the HCI literature to our insights, we illustrated how individual participation identities and citizen needs could be supported. Using one example from our own context, we demonstrate how our insights can (and cannot) be applied. Even though there might never be the "one perfect solution", we suggest that tools should aim to support as many citizen needs as possible. Our insights serve as a basis to build and improve tools in Würzburg and provide possible explanations for the failure of previous tools for

civic participation in other contexts. Finally, we hope that our insights will be an inspiration or starting point for others looking to build tools that fit citizen needs. When taken seriously, efforts aiming at increasing participation in democratic processes should themselves be open to citizen participation. At the very least, citizens should be heard and given a say during the analysis of requirements.

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