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Location-based Information Sharing for Neighbourhood Participation

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ABSTRACT

Policy makers, designers, and researchers are currently investigating different types of citizen initiatives to support information sharing. Contemporary information sharing initiatives are often not sustained because they are not open for all citizens to participate and do not provide relevant information. This paper explores how citizens can share information about their own neighbourhoods that is relevant for them and easy to access. Four participatory design workshops were organised to explore tacit knowledge and latent needs of citizens in a specific neighbourhood in The Hague. Results show that location-based information sharing support citizens to explore new things about the neighbourhood. Future research will focus on how this can be sustained over a longer period of time.

CCS CONCEPTS

• **Human-centered computing** → *Interaction design process and methods*;

KEYWORDS

Neighbourhood communities, Design interventions, Information sharing, Participatory design

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1 INTRODUCTION

Cities are confronted with major transitions such as digitalisation, migration, and climate change [27]. Urban resilience enables cities to deal with these changes. Prior research suggests that neighbourhood communities in which citizens know each other and talk, are more resilient [12, 15, 23] and accordingly, can solve local issues together [6, 24]. Unfortunately, communities are fragmented in many big cities: citizens do not communicate with each other and do not know what is happening in their neighbourhood [14].

One reason for this is that citizens have no obvious way of sharing information with each other [2, 16]. Policy makers, designers,

and researchers are currently investigating different types of citizen initiatives to support information sharing [3]. For example, by creating shared community spaces where citizens can meet each other and interact [10, 20], or providing urban living labs [18, 22] for citizens to work together on improving the city. Such initiatives provide the opportunity for citizens to get to know each other and acquire information about their own neighbourhoods.

Another way that citizens can share information with each other is through social media platforms. Some platforms have been specifically designed for information sharing on neighbourhood level [4, 5]. Hampton and Wellman [16] conclude that online discussion groups have the potential to facilitate mobilisation around local issues. Neighbours who are connected to the online group, know and interact more with other neighbours than residents who are not connected. Social media, and especially online platforms designed for neighbourhoods, can make the social network of a neighbourhood more accessible [21].

Nevertheless, two problems have been found to occur within such information sharing platforms. Current studies focus on digitally literate participants and as a result fail to consider other citizens. Consequently, the influence of the technologies they are studying on the urban digital divide is not taken into account [17]. A significant group of citizens do not own or use a smartphone with a mobile internet connection. Especially in marginalised neighbourhoods, this can result in social inequalities between citizens who are able to use such platforms and benefit from their experience, and the ones who cannot [7]. The second problem is related to the amount and the type of information that is contributed to the platform. Citizens are reluctant to share their own information [11, 17] and they consider the information that is shared on the platform to be irrelevant to them [1, 11]. This limits the dynamics of the platform and can lead to a decline in use [11]. Current information sharing platforms are often not sustained as they are not open for all citizens to participate and do not provide information that is relevant to the participants.

This paper therefore explores how citizens can share information about their own neighbourhoods that is relevant for them and easy to access. It specifically focuses on identifying which motivations can be used to trigger citizens to contribute to the platform, and the type of interaction mode that is most appropriate. Second, the research focuses on connecting information sharing activities to the physical environment, to increase the relevance and accessibility of the information to be shared.

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2 RESEARCH CONTEXT

For this research, a specific neighbourhood in the city of The Hague, The Netherlands, has been selected: Bouwlust. Bouwlust is considered to be challenging due to fragmentation, high crime rates and livability issues. The neighbourhood, once started as an upper-class area for civil servants [8], has gradually transformed into an area with many people with a minimum income: about 70% of the residences is social housing [9]. Almost half of the citizens in this neighbourhood are originally from outside The Netherlands, creating a very diverse neighbourhood [8]. Nonetheless, much citizen activity can be observed. The community centre hosts events for the whole community, and activities for specific ethnic groups (organised by the groups themselves). Representatives of these ethnic groups hold monthly meetings, to find ways to connect the various cultures to each other, aiming for a more cohesive community [8].

3 METHOD

The research methodology used is research through design (RtD) [19, 28]. RtD uses methods and processes from design practice to generate new knowledge [29]. In this case, design interventions, probes, and prototypes are exploited for citizens to reflect on: what they mean to them, and in what way they might stimulate information sharing and interaction amongst neighbours.

To explore tacit knowledge and latent needs of citizens, participatory methods are used as well [25, 26]. In workshop settings, citizens are invited to experience and reflect on interventions and prototypes designed by the researchers, and to together co-create their own designs. Participants' creations, discussions, and behaviour are documented and analysed to identify what citizens' preferences are for sharing information with each other.

The following sections describe four workshops that were organised as part of this research project. The first two were published in [27], but are reported here briefly to provide the context for the other two workshops that were designed as a follow-up.

Workshop 1 & 2: Requirement analysis. In Spring 2018, two workshops were held in Bouwlust, with 28 citizens in total. The first workshop, attended by 6 citizens, focused on understanding which places in the neighbourhood were considered to be of interest for others and why. Two prototypes (Figure 1 and 2) were used to prompt discussion between participants and support depiction of the locations. The first was based on a map of the neighbourhood with some potentially relevant locations. The second was based on stories about the neighbourhood printed on wooden markers. Both prototypes prompted discussion on the type of information in which citizens would be interested and where they would prefer to share this information.

The second workshop, attended by 22 citizens, focused on the relation between context and type of information citizens are willing to share. For example, in a situation in which direct help is needed citizens are most often willing to help their neighbours by providing relevant information. In other situations, in which interests diverge, citizens may be less willing to share information with each other. A prototype digital interactive website was used to facilitate explication of citizen requirements (Figure 3): various questions, problems, or stories of citizens related to the themes of safety, healthcare, and social engagement were displayed, and



Figure 1: The probe contains several stories about the neighbourhood for participants to consider.



Figure 2: Participants look at a map of their neighbourhood, to think about what locations would be relevant for them to share information.



Figure 3: Participants are reading and responding to the stories in the digital prototype.

participants were asked to indicate their interests. The interaction provided insights into their preferences.

Workshop 3 & 4: Explore location-based interaction. In January 2019, two more workshops were held to evaluate the effect of location-based information on participant interaction. The information shared is directly connected to the location, for example explaining the history of a specific object or location, or indicating the schedule of activities currently organised in a centre. Five locations and activities which participants in the first 2 workshops identified



Figure 4: One team of participants discussing their daily rhythms to solve one of the challenges.

were included as challenges in a location-based mobile application named *Secrets of the South* [13]. These challenges required interaction between citizens at specific locations in the neighbourhood to perform given activities. After selecting a challenge and arriving at the location, the challenges required citizens to find specific information about the challenge location. In some cases this was done by observing and discussing options with other participants, in other cases it required interacting with other people on the street at the location, to solve the challenge (e.g. see Figure 4). During the first session, 7 citizens tested *Secrets of the South* [13]. Each citizen received a smartphone with the game installed, and teams of 2-3 participants were formed. They had one hour to play the game and were free to choose which challenges to execute. The workshop ended with a plenary debriefing session, to discuss participants' experiences.

The second workshop was held one week later and was attended by 4 citizens (who also participated in the previous workshop). In this workshop, participants were asked to design their own challenges for *Secrets of the South* [13] as shown in Figure 5. Participants were asked to think about the different types of elements included in challenges: the locations, interactions, and activities, and to write down which specific elements they considered to be of interest to others in their neighbourhood. Next, participants formed two teams and worked together to create challenges using these elements. They presented these challenges to each other, explaining why they believed these challenges were of interest. The results of both workshops were analysed, focusing on the way participants interacted with each other and others while playing the game, the type of challenge activities participants prefer, and the physical elements that they considered to be fruitful for information sharing and social interaction.

4 RESULTS

The analysis of the first two workshops revealed three requirements for a design intervention to support information sharing in the neighbourhood. The first requirement is that the choice of location for an intervention should be determined by its purpose that can either be: (1) *Gathering locations*, where residents currently meet for activities, or (2) *Discovering locations*, where an interesting story can be told. The second requirement states that the intervention should be inviting for citizens to share, create, and add information on topics such as: activities, local people, and history. Finally, the third requirement articulates that local issues or concerns, in particular



Figure 5: Two participants are designing their own challenges for a location-based mobile app.

related to safety and social engagement, have to be included in the design to evoke interaction between neighbours.

During the last two workshops, participants came up with four challenges for the location-based application. One challenge concerned various landmarks and other remarkable places that should be brought under the attention of citizens, according to the participants. For this challenge, citizens need to find QR codes around the landmarks. Upon scanning them, information is displayed about the place and citizens need to answer a question about the location. The goal of the challenge is that citizens would search for and find all landmarks and are then asked to think about which landmarks in the neighbourhood are still missing. So, this challenge designs entails multiple activities and has as a main purpose to make citizens think about what could be improved in the neighbourhood and how they might contribute to such an improvement.

Another idea was to create a quiz challenge on street names, especially for a neighbourhood that has street names about old trades. According to the participants, many people are not aware of the meaning of these street names making such a discovery fun. Yet another challenge would involve asking citizens to find QR codes and upon scanning the codes, information or pictures of the location would be shown. For example, the information displayed could be a picture of the location in the past. The participants created this challenge so that citizens can become more aware of the neighbourhood's history. The final challenge that was designed was created for a particular location, De Uithof, an activity centre in the neighbourhood. Participants stated that a challenge at this location would stimulate citizens to explore De Uithof more, and as a result, citizens get to know the different activities that are organised.

5 DISCUSSION

All challenges created by the participants aimed to increase awareness around something: the meaning of street names, improving the neighbourhood, or the activities organised at a certain place. Presumably, participants perceive a lack of information sharing in the neighbourhood. This became especially apparent when they started to discuss how local news and other relevant information used to be distributed through a local newspaper that no longer exists. When playing challenges themselves, it became clear that citizens highly appreciated the opportunity to discover new things

about their neighbourhood. The challenges they designed themselves, show they also would like other neighbours to discover new things.

This research has shown that information sharing is currently lacking in the neighbourhoods of the participants. They see challenges, with for example QR codes, as an option to stimulate information sharing and interaction between citizens. Participants consider information about activities, people, and history of the neighbourhood to be of interest to others to share. A follow-up question is how citizens can keep on sharing information about these topics, and what triggers them to add their own local information to the discussion.

Future work will focus on the citizen initiative *Tegelweetjes* (Dutch for knowledge tiles). This initiative has created 50 QR codes on tiles that people who pass by can scan. Upon scanning, some information on the specific location of the tile is displayed. For example, a short story on what you can do at this location, or a picture of what the location looked like before. With the current infrastructure already in place, this initiative provides a good opportunity to explore how discovery can be addressed in the long run, for example by allowing citizens to interact through the information available through the QR codes. In addition, further elaboration can be made on which information and at which locations citizens prefer to share information, by analysing the scanning behaviour around different tiles.

6 CONCLUSION

This paper explores ways in which citizens can share information with each other about their own neighbourhood and considers location-based information specifically. To address this need, citizens have worked together to create activities to increase awareness about local topics such as history, activities, or people. They are interested in the option to use QR codes to share location-specific information in the neighbourhood. The citizen initiative *Tegelweetjes*, that supports this type of interaction in another neighbourhood, is currently being explored to study the impact of design choices on information sharing on livability and the feeling of safety in the neighbourhood.

REFERENCES

- [1] Mike Ananny, Kathleen Biddick, and Carol Strohecker. 2011. Constructing Public Discourse with Ethnographic/SMS. In *International Conference on Mobile Human-Computer Interaction*. 368–373. https://doi.org/10.1007/978-3-540-45233-1_30
- [2] Rowland Atkinson and Keith Kintrea. 2000. Owner-occupation, Social Mix and Neighbourhood Impacts. *Policy and Politics* 28, 1 (2000), 93–108. <https://doi.org/10.1332/0305573002500857>
- [3] Glenda Amayo Caldwell and Marcus Foth. 2014. DIY Media Architecture: Open and Participatory Approaches to Community Engagement. In *Proceedings of the 2nd Media Architecture Biennale Conference: World Cities*. 1–10. <https://doi.org/10.1145/2682884.2682893>
- [4] J. Chen. 2017. Can Online Social Networks Foster Young Adults' Civic Engagement? *Telematics and Informatics* 34, 5 (2017), 487–497. <https://doi.org/10.1016/j.tele.2016.09.013>
- [5] N.-T.N. Chen, F. Dong, S.J. Ball-Rokeach, M. Parks, and J. Huang. 2012. Building a New Media Platform for Local Storytelling and Civic Engagement in Ethnically Diverse Neighborhoods. *New Media and Society* 14, 6 (2012), 931–950. <https://doi.org/10.1177/1461444811435640>
- [6] Tina Comes. 2016. Designing for networked community resilience. *Procedia Engineering* 159 (2016), 6–11. <https://doi.org/10.1016/j.proeng.2016.08.057>
- [7] Michael Crang, Tracey Crosbie, and Stephen Graham. 2006. Variable geometries of connection? Urban digital divides and the uses of information technology. *Urban Studies* 43, 13 (2006), 2551–2570. <https://doi.org/10.1080/00420980600970664>
- [8] Den Haag. 2015. *Wijkprogramma 2016-2019: Stadsdeel Escamp*. Technical Report. Gemeente Den Haag. <https://www.denhaag.nl/fr/article/wijkprogramma-escamp-bouwlust-2016-2019.htm>
- [9] Mariëlle den Hengst, Afaina de Jong, and Caroline Nevejan. 2014. *Eindrapport BART! fase 2*. Technical Report.
- [10] Michael Dezuanni and Cherie Allan. 2017. Pittsworth Stories: Developing a Social Living Lab for Digital Participation in a Rural Australian Community. In *Digital Participation through Social Living Labs*, Michael Dezuanni, Marcus Foth, Kerry Mallan, and Hilary Hughes (Eds.). Elsevier Ltd, Chapter Chapter 10, 191–205. <https://doi.org/10.1016/B978-0-08-102059-3.00010-1>
- [11] Sheena Lewis Erete. 2013. Community, Group and Individual: A Framework for Designing Community Technologies. *The Journal of Community Informatics* 10, 1 (2013), 1–13.
- [12] Sheena Lewis Erete. 2013. Protecting the home: exploring the roles of technology and citizen activism from a burglar's perspective. In *Proceedings of the sigchi conference on Human Factors in Computing Systems*. ACM, 2507–2516. <https://doi.org/10.1145/2470654.2481347>
- [13] Xavier Fonseca, Stephan Lukosch, and Frances Brazier. 2019. Fostering Social Interaction in Playful Cities. In *Interactivity, Game Creation, Design, Learning, and Innovation*, Anthony L. Brooks, Eva Brooks, and Cristina Sylla (Eds.). Springer International Publishing, 286–295.
- [14] John Gaventa. 2004. *Representation, Community Leadership and Participation: Citizen Involvement in Neighbourhood Renewal and Local Governance*. Technical Report July. Office of Deputy Prime Minister.
- [15] Karllyn J. Geis and Catherine E. Ross. 1998. A New Look at Urban Alienation: The Effect of Neighborhood Disorder on Perceived Powerlessness. *Social Psychology Quarterly* 61, 3 (1998), 232–246. <https://www.jstor.org/stable/pdf/2787110.pdf>
- [16] Keith Hampton and Barry Wellman. 2003. Neighboring in Netville: How the Internet Supports Community and Social Capital in a Wired Suburb. *City & Community* 2, 4 (2003), 277–311. <https://doi.org/10.1046/j.1535-6841.2003.00057.x>
- [17] Kyungsik Han, Patrick C. Shih, Mary Beth Rosson, and John M. Carroll. 2016. Understanding Local Community Attachment, Engagement and Social Support Networks Mediated by Mobile Technology. *Interacting with Computers* 28, 3 (2016), 220–237. <https://doi.org/10.1093/iwc/iwu040>
- [18] Soile Juujärvi and Kaija Pessa. 2013. Actor Roles in an Urban Living Lab: What Can We Learn from Suurpelto, Finland? *Technology Innovation Management Review* 3, 11 (2013), 22–27.
- [19] I. Koskinen, J. Zimmerman, T. Binder, J. Redstrom, and S. Wensveen. 2011. *Design Research Through Practice: From the Lab, Field and Showroom*. Elsevier.
- [20] Jennifer Manuel, Geoff Vigar, Tom Bartindale, and Rob Comber. 2017. Participatory Media: Creating Spaces for Storytelling in Neighbourhood Planning. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 1688–1701. https://eprint.ncl.ac.uk/file/_jstore/production/237163/A7210F31-C0ED-45EC-8D61-7414031862F4.pdf
- [21] Christina Masden, Catherine Grevet, Rebecca Grinter, Eric Gilbert, and Keith W. Edwards. 2014. Tensions in Scaling-up Community Social Media: A Multi-Neighborhood Study of Nextdoor. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 3239–3248. <https://doi.org/10.1145/2556288.2557319>
- [22] Ingrid Mulder. 2012. Living Labbing the Rotterdam Way: Co-Creation as an Enabler for Urban Innovation Co-Creation as an Enabler for Urban Innovation. *Technology Innovation Management Review* 2, 9 (2012), 39–43.
- [23] Robert J. Sampson. 1988. Local Friendship Ties and Community Attachment in Mass Society: A Multilevel Systemic Model. *American Sociological Review* 53, 5 (1988), 766–779. https://scholar.harvard.edu/files/sampson/files/1988_{jast}_{j0}.pdf
- [24] Robert J. Sampson. 2012. *Great American City: Chicago and the Enduring Neighborhood Effect*. The University of Chicago Press, Chicago.
- [25] Elizabeth B N Sanders and Pieter Jan Stappers. 2012. *Convivial Toolbox: Generative Research for the Front End of Design* (second ed.). BIS Publishes, Amsterdam. 310 pages.
- [26] Douglas Schuler and Aki Namioka. 1993. *Participatory design: Principles and Practices*. Erlbaum, Hillsdale NJ.
- [27] Geertje Slingerland, Stephan G Lukosch, Tina Comes, and Frances M.T. Brazier. 2019. Exploring Requirements for Joint Information Sharing in Neighbourhoods: Local Playgrounds in The Hague. In *Interactivity, Game Creation, Design, Learning and Innovation - 7th EAI International Conference, ArtsIT 2018, and 3rd EAI International Conference, DLI 2018, ICTCC2018, Proceedings*, A.L. Brooks, E. Brooks, and C. Sylla (Eds.). Springer, 306–315.
- [28] Pieter Jan Stappers and Elisa Giaccardi. 2011. Research through design. In *The Encyclopedia of Human-Computer Interaction* (2nd ed.), George Thomas Kurian and I N Chief (Eds.). Chapter Chapter 43.
- [29] John Zimmerman and Jodi Forlizzi. 2014. Research Through Design in HCI. In *Ways of Knowing in HCI*, J.S. Olson and W.A. Kellogg (Eds.). Springer Science+Business Media, New York, 167–189. https://doi.org/10.1007/978-1-4939-0378-8_8