

Gender-Sensitive Use and Development of (Digital) Participation and Analysis Tools for Equal Access to Open Spaces

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1 ABSTRACT

In view of the growing threat posed by the effects of climate change on cities and regions, politicians and the public administration are increasingly called upon to create environmentally and climate-friendly as well as just framework conditions in urban spaces (IPCC 2022). The Covid-19 pandemic has underlined that urban green infrastructures not only benefit biodiversity, but are also socially significant. In addition to providing a range of ecosystem services (MEA 2005), they equally support the diverse usability of urban landscapes, thus affirming the right to the (climate-just) city for all (Heindl 2022). Especially in denser settlement areas, where green and open spaces with important social and recreational functions are only available to a limited extent, different, sometimes contradictory needs of diverse social groups can lead to conflicts of use. Thereby, “vulnerable” persons or groups¹, who on average already have less access to high-quality green and open spaces anyway (Honey-Rosés et al. 2020), often give way to the more dominant user groups. In this context, approaches such as gender-sensitive planning and design (Terraza et al. 2020, Tummers et al. 2019) as well as attempts to design and manage public spaces sensitively according to diverse everyday needs of the heterogeneous urban population are becoming increasingly important.

The research project "DraussenDaheim"²(DDH) [German for: “At Home Outside”] is therefore developing a methodology and toolbox from a gender- and group-specific perspective, which serves not only the participatory evaluation of urban public spaces, but also the simulation-based development of different planning scenarios, which can, for example, be incorporated into space-time management concepts. Digital participation and simulation tools as well as tailor-made workshop designs are applied in the context of two Austrian use cases (Vienna, Zell am See) to identify spatio-temporal use patterns and group-specific requirements for the multifunctional use of space. In addition, the usability of the compiled tools (on the part of users and process facilitators) is tested. The methodology to be developed also builds on knowledge from a well-tested target group segmentation approach with a special focus on active mobility (Markvica et al. 2020) to more accurately capture the mobility and information needs of the (vulnerable) groups involved.

This contribution gives a comprehensive insight into the project, its conceptual and methodological approach, and provides first results of use case specific surveys and tool-tests. From this, key findings are derived that address the potential of the gender-sensitive use and development of (digital) participation and analysis tools to support equal and environmentally friendly access to open spaces in residential environments.

Keywords: gender groups, open space, participation, digital tools, urban planning

2 INTRODUCTION

In the ever louder demand for more ecological and social justice, public space in cities plays a central role. It is considered the space of action of public life and as such is constantly re-produced through diverse social practices and relationships. It is social, political and material space at the same time, the importance of which became clear in the course of the Covid-19 pandemic (Reinwald et al. 2021).

Social justice in this context of spatial planning and development is influenced by three different aspects: distributive, procedural, and recognition-based conceptions of justice (Schlosberg 2007). Distributive justice

¹ Vulnerability refers to one or more aspects of people's everyday lives and draws attention to the needs of those groups of people who are often forgotten in planning decisions, and/or who are particularly locally bound and dependent on planning for everyday life due to low time or financial resources and low mobility. “Vulnerable” groups thus include persons with care responsibilities (more likely to be female), as well as younger and older or mobility-impaired persons who are care-dependent.

² Project website (in German): DraussenDaheim | ProjektWebseite (ait.ac.at), or DraussenDaheim Promoting climate-neutral mobility - AIT Austrian Institute Of Technology (for english readers)

follows the principle of equity and refers to the fair distribution and access of urban amenities (Rawls 2005). Procedural justice refers to the planning processes and fair opportunities to engage in these processes. The third aspect of social justice is that of recognitional justice. This is the recognition and appreciation of different interests and needs and thus inclusion of different social groups (Nussbaum 2013).

The focus of this article is procedural justice, i.e. the possibilities to participate - with the support of digital tools - in specific phases of the planning processes (see Chapter 4). Similarly, the use of different tools and methods also supports the needs of different groups of people in a better and more differentiated way and thus also promotes the aspect of recognitional justice.

The accessibility and usability of public spaces such as green and open spaces in the residential environment not only determine the quality of life of different social groups, but also have significant influence on mobility habits. This is due to the possibly limited right to green and open space. If public spaces are designed in such a way that they are more accessible to all social groups, encourage more active mobility and reduce the need for longer recreational traffic, they can make a significant contribution to environmental and climate protection. Furthermore, public space reflects the social coexistence and culture of a city, which in the case of the City of Vienna leads to commitments such as increasing the quality of stay for all and contributing to unrestricted use for children, older persons and persons providing care (Fachkonzept Öffentlicher Raum 2018). As a constant space of negotiation and appropriation, public space is also a potentially conflictual space that must accommodate contradictory needs. Urban gender equality policy (e.g. Vienna City Administration 2014) addresses this by striving to create equal living conditions for women and men and by using gender-sensitive planning methods to specifically take into account different interests.

The use of innovative digital approaches in urban planning opens up new possibilities for evaluating open spaces, developing them in a participatory manner and achieving a gender-responsive design in the planning process and use of public space. Since digital analysis tools, as already emphasised in the previous project SMTG+³, usually lack the integration of gender and group-specific aspects, a special focus is placed on this in the two use cases, starting with the gender-, age- and care-specific disaggregated survey up to the differentiated evaluation of the investigated space-time use patterns. Finally, the concepts of gender (mainstreaming) and gender planning from a care-perspective (Tummers/Wankiewicz 2021) are also applied in the actual process design and tool development.

3 DRAUSSENDAHEIM PROJECT AND RELATED CASE STUDIES

In view of the democratic relevance of open spaces as well as their recreational factor (as an important health aspect), a right to a good living environment can be stated in the urban planning context (Heindl 2022). It is derived from the human right to housing, which includes public space. According to this, all groups should be able to feel "at home outside" [German: "draussen daheim"].

This is the starting point and at the same time the objective of the project "DraussenDaheim". Based on the analysis of cycles of use of urban spaces and the identification of specific spatio-temporal patterns of use and requirements of different social groups, a methodology is developed that supports the design of gender-responsive open spaces. This methodology, which is applied and further developed in exemplary use cases, is intended to support the spatio-temporal organisation of open spaces (see corp paper Wankiewicz et al. 2023) and to help making them accessible to groups in vulnerable situations without displacing others at the same time. The development of this new methodology as a result of the gender-sensitive use of digital participation and analysis tools draws on tailored toolsets consisting of survey tools (using analogue questionnaires as well as an online survey tool), a digital participation platform using the tool "Smarticipate"⁴ (see Khan et al. 2017) and simulation and visualisation tools using the tool "Simulate"⁵, "SUMO"⁶ (see Lopez

³ Project website (in German): SmartThroughGender+ (ait.ac.at)

⁴ "Smarticipate" is an interoperable and expandable platform for interactive urban planning for a more transparent, democratic and inclusive implementation of urban transformation processes. Using the online smarticipate service platform, different stakeholders including citizens can interact with the system to initiate new proposals using inputs on a map and obtain automated feedback on any proposed changes based on Open Government Data (OGD) layers. The platform provides a carefully selected list of features, which enhance the ability of citizens to co-create, collaborate and participate in city decision making: <https://www.smarticipate.eu/>

⁵ "Simulation, analysis and optimisation of customer and pedestrian flows": <https://www.ait.ac.at/en/solutions/analysis-and-optimization-of-pedestrian-flows/simulate>

et al. 2018) and a parametric design tool called Rhinoceros3D/Grasshopper⁷. Within the framework of online surveys and co-creative workshop formats used in the use cases Aumannplatz (Vienna) and Sonnengarten Limberg (Zell am See), group-specific spatio-temporal use patterns are collected and analysed in a first step. In a second step, further analyses (e.g. by means of WebGIS applications and simulation tools) will be carried out and user-friendly visualisation possibilities tested (e.g. heat maps on the group-specific use of open space during the day and week) in order to be able to feed the results back to the participants and thus stimulate further discussions on equal access to . Providing such possibilities can not only contribute to a more just balance in the use of open space, but also increase the acceptance of the respective needs of the different groups. As the project will continue until February 2024, we will focus in this paper on the already developed methodology based on the digitally supported analysis of spatio-temporal use patterns of different groups (rather than on the simulation and visualisation of results) as well as on first results and findings from the tool applications in the respective use cases. Finally, the learnings mainly refer to the (further) development of the tools, especially to the improved usability of the compiled tools from the perspective of the users and process facilitators, as well as to the design of participatory processes that enable a gender-sensitive use of (digital) participation and analysis tools.

3.1 Use case: Aumannplatz (Vienna)

The Aumannplatz, a central square in Vienna's 18th district, which represents one of the research project's use cases, no longer meets the multidimensional demands of its users due to its problematic traffic situation and poor design. Based on a functional and socio-spatial analysis carried out by the District Service of the City of Vienna [Gebietsbetreuung Stadterneuerung], which roughly outlines the main user groups (e.g. schoolchildren and older people), a large-scale participation process was therefore initiated with the aim of redesigning the square. The project "DraussenDaheim" was involved in the extensive process of collecting ideas and supported the identification of the spatial qualities of the square and the actual as well as future target group-specific possibilities of use. The participatory evaluation of the public square and its usability (e.g. crossing possibilities and quality of stay), and the simulation-based development of different planning scenarios (square with different spatial boundaries and elements) relied in particular on the successful interplay of the tools "Smarticipate" and "Simulate".



Fig. 1: Participation phases: use case Aumannplatz, Vienna, Austria, © Photo credits (from left to right): GB* – Gebietsbetreuung Stadterneuerung, Bezirksmuseum Währing, Bezirksvorstehung Währing, Markus Hiebleitner, AIT

⁶ "Simulation of Urban Mobility": <https://eclipse.dev/sumo/>

⁷ <https://www.rhino3d.com/>

3.2 Use case: Sonnengarten Limberg (Zell am See)

Compared to the use case Aumannplatz, the starting point of the use case Sonnengarten Limberg is different in some fundamental factors: Sonnengarten Limberg, known as the "settlement of short distances", is not so much embedded in the urban fabric but is rather located on the outer municipal area and is therefore also less intrastructurally interwoven with the town of Zell am See. Even though basic infrastructure is provided within the settlement area most people living there (about 70% younger than 47 years) are using cars as their dominant means of transport. Furthermore, since the housing project has already been developed and implemented, monitoring and evaluation is carried out within the framework of the research project by using the digital participation tool "Smarticipate" to investigate the use of open spaces close to or further away from the settlement and thus draw a first conclusion about the spatio-temporal use patterns of the residents. This was achieved with the combined use of an online survey and the creation of an open space use diary using "Smarticipate".

4 DIGITAL METHODS AND TOOLS FOR PARTICIPATORY PLANNING PROCESSES

Forms of participation can be categorised according to different criteria (Schoßböck et. al. 2018). We follow the classification according to the form of communication or type of information flow of Rowe and Frewer (2000).

We listed digital tools for information, consultation and collaboration that can be used in each of these phases (see Figure 2). The result is that digital tools are used for different purposes in several phases of participation Processes, and they are usually combined by none-digital methods and tools.

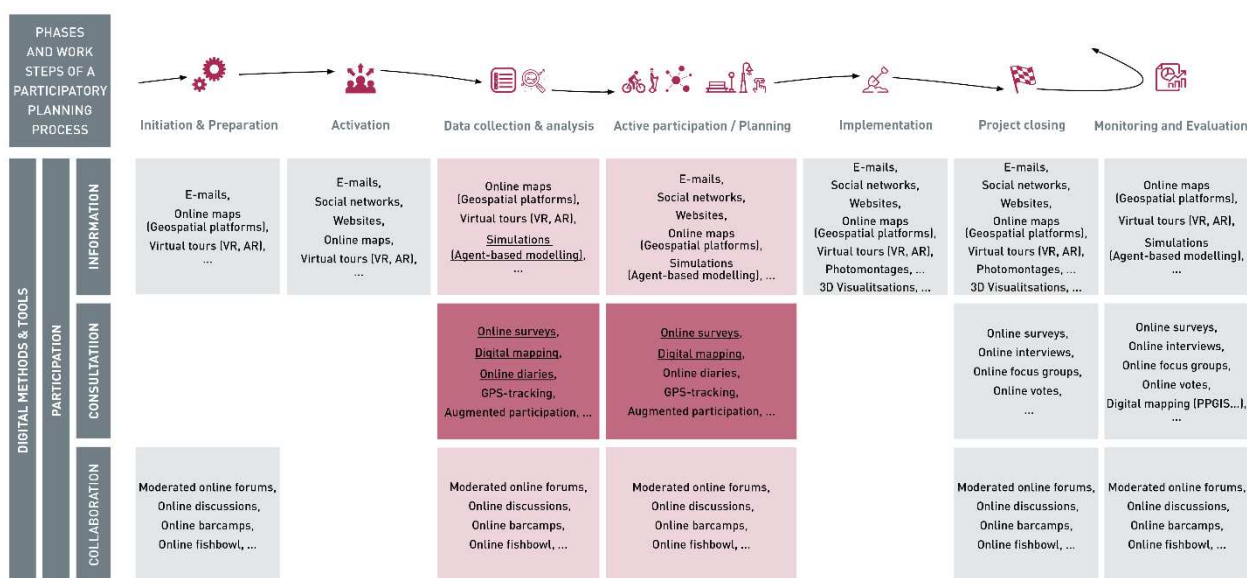


Fig. 2: Digital methods and tools for the different phases of participatory planning processes, © BOKU & AIT

Since the use case Aumannplatz was in the phase of data collection and analysis accompanied by active participation, the focus was set on tools which support gathering information from the residents (consultation tools). For the co-creation processes, we chose an online survey tool (LimeSurvey) and a digital participation tool ("Smarticipate") and combined it with a simulation tool ("Simulate") to show the impact of workshop participants' suggestions and ideas on pedestrian flows. In the Sonnengarten Limberg use case, the same online survey tool as well as digital participation platform (this time over a longer period of time) were used, and later more detailed analyses will be carried out using a mobility simulation tool ("SUMO").

4.1 Combined assessment using the toolchain

An important step within the project is the thorough development of interfaces (APIs) to combine the different participatory tools. For example, the results of the online survey for the use case Sonnengarten Limberg were subjected to a detailed analysis before the actual tool workshop in order to be able to segment the surveyed target groups. With the help of a person ID ensuring the anonymity of users, the respondents could be clustered in the further use of the digital participation platform according to their mobility

behaviour (allocation to groups via pro:motion types, see chapter 5) and their use of open spaces could thus be better analysed. Likewise, conclusions could be drawn about the group-specific use of the tools themselves. Furthermore, in combination with other factors, such as care obligations, preferences of the different groups reached (DDH profiles) can be derived and qualified for the gender-sensitive use and development of the tools.

4.2 Toolchain evaluation

As part of the DDH project a toolchain evaluation by users and process facilitators is performed to understand the needs of the different groups regarding tool usability and visualisation of results. This ultimately helps to find out how they can be used most efficiently during the different participatory phases. Within the first half of the project tool tests with focus groups have already been performed and will be further extended till the end of the project (February 2024). The results of the first tool evaluation process already enabled to improve the tool usability during first and second use case application.

5 DDH PROFILES: TARGET GROUP IDENTIFICATION BASED ON SPATIO-TEMPORAL USE TYPES

To, first by means of use case -specific questionnaires, collect gender+⁸ differentiated data in the selected case studies Aumannplatz (n=46) and Sonnengarten Limberg (n=59), specially developed spatio-temporal use types (DDH profiles) are identified. Their design is based on theoretical and practical considerations on different dimensions of spatio-temporal constraint as well as on the pro:motion typology (Markvica et al. 2020), which comprises a total of six mobility and information types: *Spontaneous – On the Go, High Informed Sustainability, Efficiency-oriented Information Pickers, Interested Conservatives, Low Demand and Digital Illiterates*. We also draw on the knowledge from the previous project Smart through Gender+ (Damyanovic et al. 2021, Tummers/Wankiewicz 2021) and the gender+ groups⁹ defined therein.

The following dimensions of spatio-temporal constraint are considered:

- dependence on care
- obligation to care
- mobility restriction
- employment

The spatio-temporal use types were surveyed in that the question sets contained in the surveys for both use cases included demographic and care- or gender-related questions on the one hand, and mobility-specific and open space use-related questions as well as spatio-temporal questions which draw on practical experiential knowledge on the other. In the use case of Sonnengarten Limberg, the indicator statements from the pro:motion study¹⁰ (Brauner et. al. 2016) were additionally asked in order to be able to cluster the respondents according to their pro:motion type. As a result of the survey with 46 participants, the following Figure shows the pro:motion types represented according to their care obligations. Only the pro:motion type *High Informed Sustainability* shows a significant lower rate of care obligation.

While the cross-sectional evaluation of the survey allows each pro:motion type to be considered from the perspective of a specific care focus, there is already general knowledge about their type-specific mobility behaviour (including willingness to switch to cycling or walking) as well as underlying motivations, values and attitudes (regarding efficiency, environmental protection and sustainability, costs, time factor, etc.). In addition, type-specific information needs and communication demands (e.g. on style or medium of communication - analogue, digital, personal) are known, which subsequently makes it easier to select and target suitable communication and participation methods (e.g. classic analogue vs. playful digital campaigns). The major advantage of this approach is that with the existing knowledge about the groups

⁸ “The term “Gender+” describes an expanded concept of gender. It signals that gender is always overlaid with other characteristics on which structural inequality is based, such as age, origin, skin color, education, profession, disability, sexual orientation or religion (intersectionality)” (Verloo 2009)

⁹ These groups are not only determined by sex, but also by further factors which are considered to shape a person’s urban routines, such as age, household size, employment and country of origin.

¹⁰ <https://www.ait.ac.at/themen/integrated-mobility-systems/projects/promotion>

reached, the requirements for the methods and tools used in the project can be specified. With the help of this target group segmentation based on mobility and information behaviour, people with similar needs and values were finally divided into focus groups for the tool workshop. Moreover, for the future derivation of action scenarios, it is possible, for example, to work in the same way with the assumptions on group-specific attitudes such as the willingness to switch to a climate-friendly means of transport.

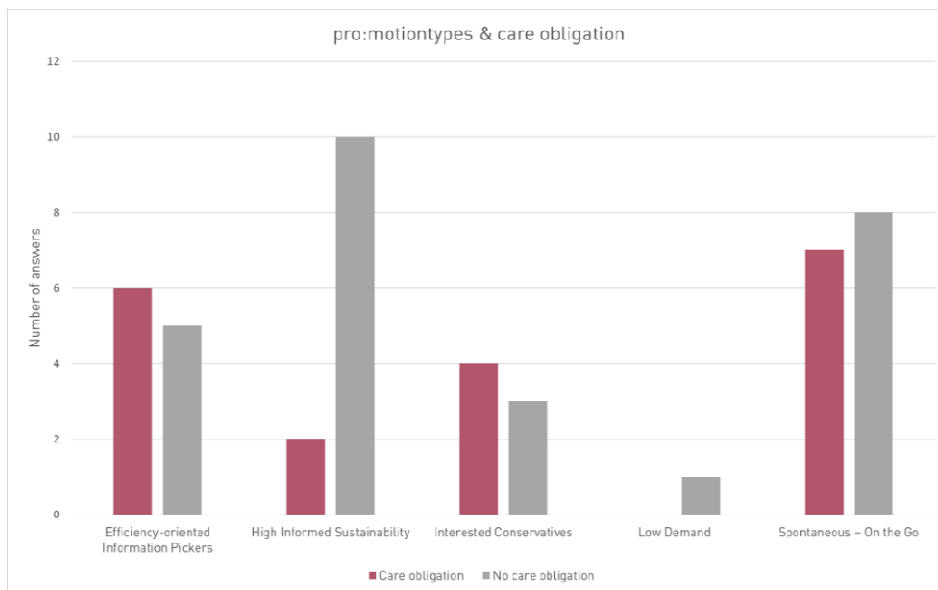


Fig. 3: Survey result use case Sonnengarten Limberg: pro:motion types by care obligation (n=46).

While the tool test in the Aumannplatz use case was conducted with mixed groups, not clustered by pro:motion types, thus enforcing an exchange beyond their own interests, the intention of the homogeneous group formation according to pro:motion types in the Limberg use case was a mutual reinforcement of the participants as well as the promotion of motivation and collective engagement potential. Finally, the evaluation according to pro:motion types and care obligation also allowed conclusions to be drawn about the open space use of the surveyed groups (see Figure 4).

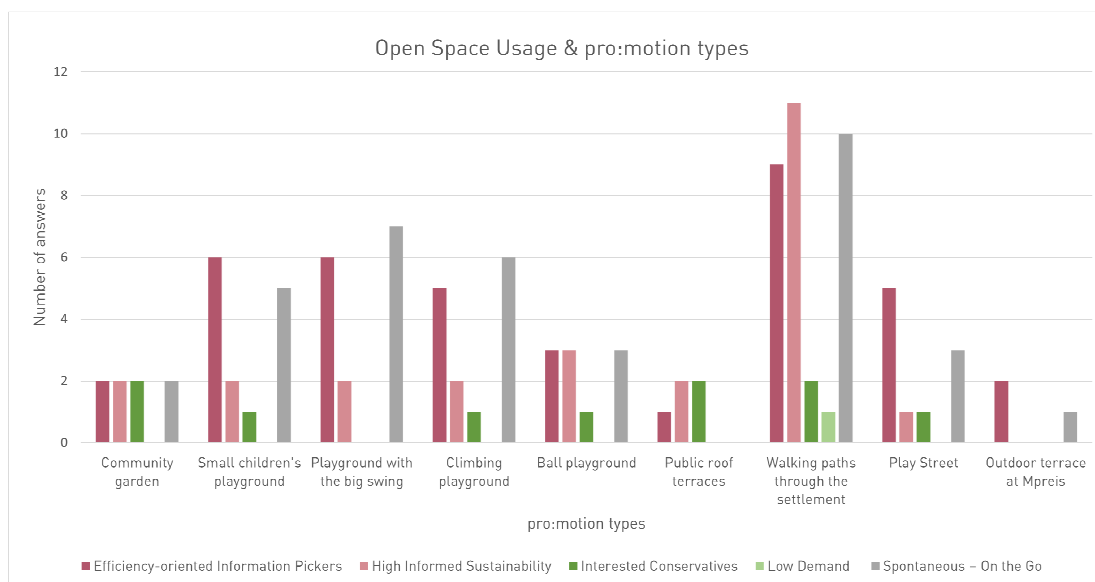


Fig. 4: Survey result use case Sonnengarten Limberg: open space use according to pro:motion types (n=46)

Moreover, as can be seen in Figure 5, which compares the rate of use of open spaces inside the settlement or outside, participants with care responsibilities use open spaces inside the area almost as often as outside.

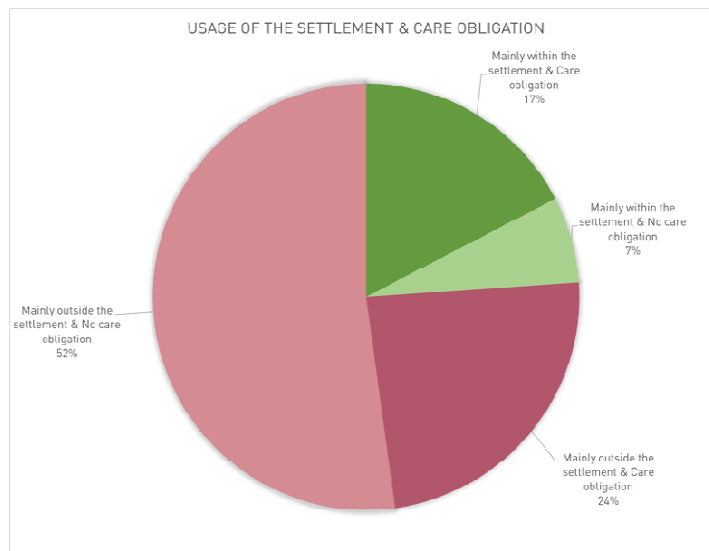


Fig. 5: Survey result use case Sonnengarten Limberg: open space use inside and outside the settlement according to care obligation (n=46)

Through the gender perspective, which takes into account group-specific needs and demands, it can be seen that “vulnerable” groups due to their age, mobility, income or everyday situation related to care are precisely those who have a small radius of movement, are locally oriented or bound and thus depend on a high-quality living environment. This includes, for example: children, senior citizens, people with limited mobility and disabilities, and precisely people with care obligations (Zibell et. al. 2019).

Also a very significant difference is seen between full-time and part-time employed as the full-time mainly use open-spaces outside of the area. One reason for this might be that during the week this people often use their private gardens due to time restrictions and on the weekend they use the private car to visit locations outside.

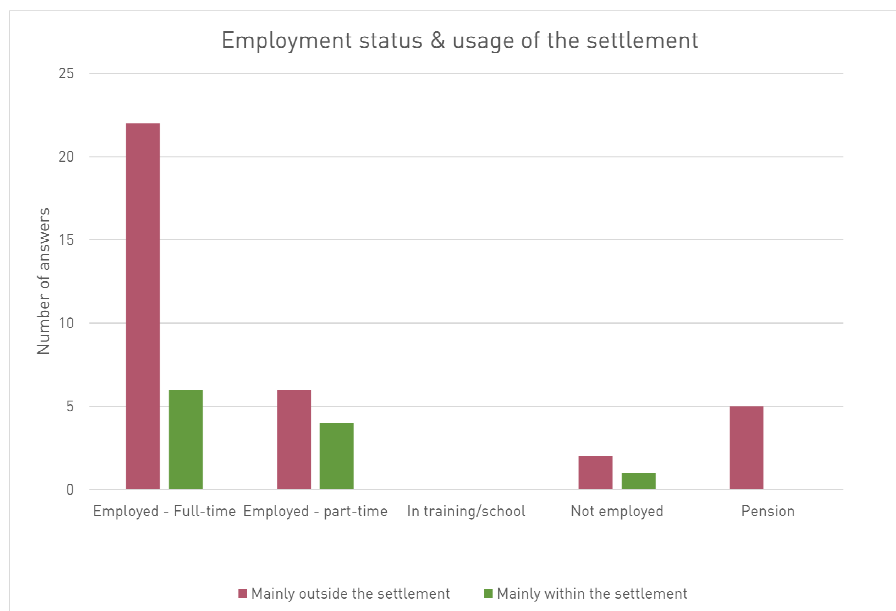


Fig. 6: Survey result use case Sonnengarten Limberg: open space use inside and outside the settlement according to employment status (n=46)

In order to be able to develop a digitally supported methodology in the long term that supports the research and design of gender-responsive open spaces, the pro:motion types identified in the initial survey need to be further embedded in different gender contexts. By combining them with the above mentioned dimensions of spatio-temporal constraints in the cross-sectional evaluation of the survey and evaluating them in a differentiated group-specific manner (according to gender, age etc.), a further refinement of the DDH profiles is made possible. The spatio-temporal use types will thus be enriched with the latest findings on

gender- and life-stage-specific spatio-temporal use patterns as well as type-specific disadvantages/vulnerabilities.

6 PARTICIPATORY IDENTIFICATION AND ANALYSIS OF SPATIO-TEMPORAL USE PATTERNS

Although the selected use cases considered here have different starting points and objectives in their participation processes, similar overall goals are pursued in the research. This concerns both the methodological approach for the participatory identification and analysis of spatio-temporal use patterns as well as the process design for the toolset applications in a co-creative workshop setting.

In a first step, the initial involvement and activation of different target groups for each use case was carried out with special attention to gender relevance and dimensions of spatio-temporal constraints (see DDH profiles). Accordingly, the target groups range from people with care dependencies (children or adults who are dependent on support in everyday life) and care responsibilities (care givers who support children or adults in coping with everyday life) to people with mobility impairments (physical, sensory or cognitive impairments) and people with limited spatial, temporal and financial resources (due to e.g. available living space, extent of employment, income). All these groups face different constraints and vulnerabilities due to their specific everyday situations and more or less flexible or rigid daily routines. With the basic aim of reaching as many different people as possible by means of various communication strategies, different ways of approaching them have been used. In both use cases, Aumannplatz (Vienna) and Sonnengarten Limberg (Zell am See), already established analogue and digital communication structures and channels (newsletters, mail shots, flyers, WhatsApp groups, etc.) have proven effective in promoting the research project and increase its reach. By approaching people personally (with great support from local partners and multipliers such as the District Service or Housing Coordination) and conducting on-site surveys in addition to the online survey, it was possible to question various (even less digitally affine) groups of people and recruit them for subsequent tool workshops. Nevertheless, the digital pre-surveys are at the heart of the preparatory process (before the actual tool applications), as they provide information on the socio-demographics as well as the mobility and leisure behaviour of the local population. Since the surveys also included questions on care obligations or dependencies, a more accurate picture of the current need and the people reached could be given.

As the first broad online survey conducted at Aumannplatz shows, the results not only provide insights into complex spatio-temporal use patterns (e.g., the use of space over the course of the day during the week and at weekends) as well as mobility behaviour (e.g., preferred mode of transport), but they also give information on the socio-demographic background and care obligations of respondents. For example, with the help of an interactive analysis of complex correlations from a gender perspective, it was possible to show that although almost 70 % of the respondents have care responsibilities, they hardly use the open space (Aumannplatz) with children or senior citizens in need of care.

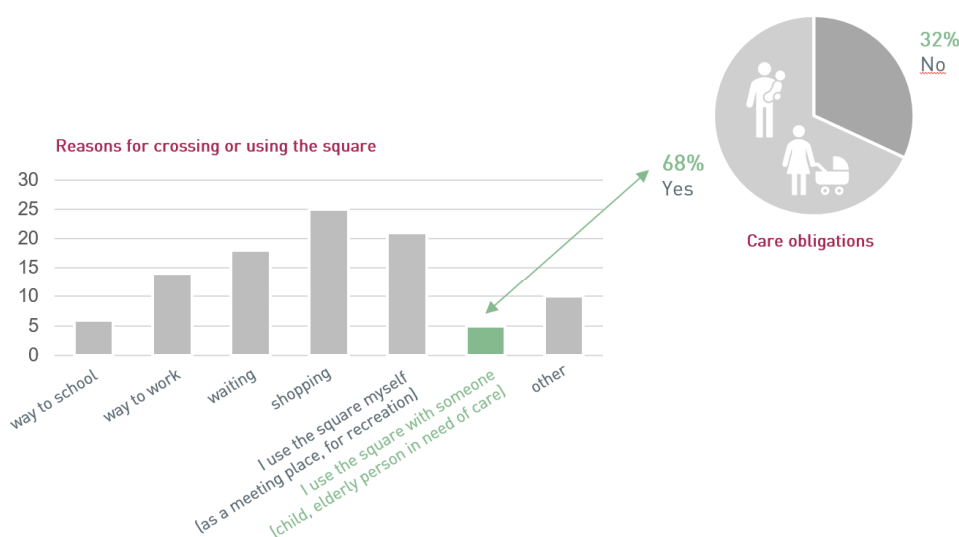


Fig. 7: Survey results use case Aumannplatz, reasons for crossing or using the square and care obligations (n=47)

In Sonnengarten Limberg, an online survey was conducted on their leisure and mobility behaviour of the residents of the settlement, which was promoted via the e-mail distribution list and the private WhatsApp group of the housing coordination as well as in personal conversations. By also asking for information on the social background (gender, age group, employment status, care obligations towards children and elderly persons) and the housing situation (household and flat size) as well as information behaviour, it was possible to gain a first insight into the composition of the group, who committed to participate in the workshop with the digital participation tool “Smarticipate” and the following playful creation of the open space use diary. As expected, the playgrounds within the settlement are used a lot by people with care obligations (see Figure 8) and are thus extremely important for this group due to their spatiodiary-temporal constraints.

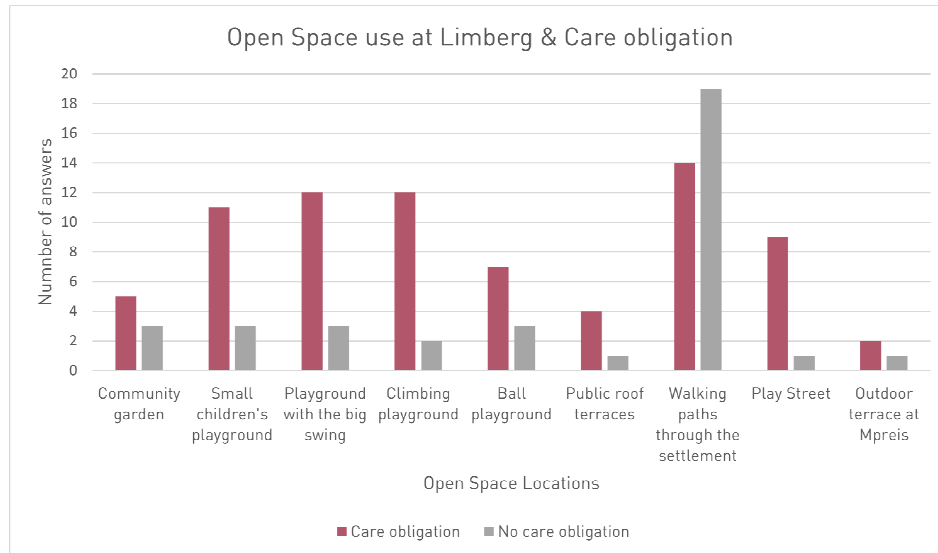


Fig. 8: Survey results use case Limberg, open space use in view of care obligations (n=46)

In a second step during the active participation phase using digital tools, the main focus of the Aumannplatz tool test was on the crossing possibilities and the function of the square as a place to stay and play. By discussing and mapping current footpaths in small groups of mixed age and gender (partly also with visual impairment), complex temporalities and rhythms emerged as can be seen in Figure 9. A dozen interested persons participated in the tool-supported identification of spatio-temporal use patterns and group-specific needs. In the process, different combinations of tool applications were used, the core of which was always the digital participation platform “Smarticipate”.

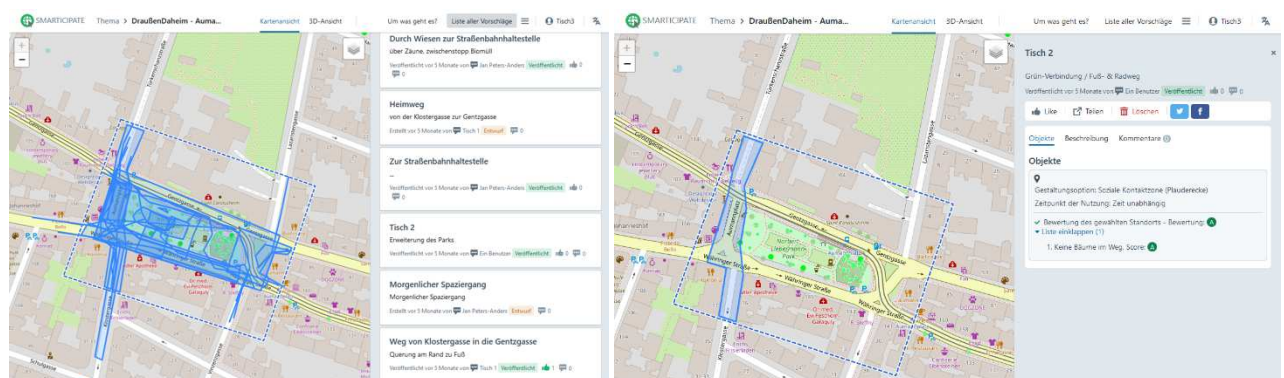


Fig. 9: Mapping spatio-temporal use patterns with the help of the participation platform “Smarticipate”, © AIT

In the second half of the co-creative tool workshop, the participants had the opportunity to draw desired paths and make new design proposals for the square in a joint negotiation process. For this, a square without spatial boundaries was assumed. However, existing green spaces were always included in the considerations. Afterwards, a pedestrian simulation was shown using the tool “Simulate” to see how these new design objects would affect movement flows in real time (morning, midday and evening)(see Figure 10). This considered the status quo of movements of people getting off the tram (at the nearby station), going to work or school, etc., which gave the participants an idea of the current dynamics of the square at different times. The result was various scenarios for the square with newly implemented design objects (e.g., a new water

playground) that take on new spatial boundaries and thus simultaneously change path-time relations, patterns of use and behaviour on the square.



Fig. 10: Simulation-based design of different planning scenarios with the help of “Simulate”

While the tool workshop at Aumannplatz took place in a local shop bordering the square, the on-site participation in Sonnengarten Limberg was organised directly in the premises of the Housing Coordination. This communal space provided the ideal setting to introduce the participants to the “Smarticipate” tool, which they were to use during two weeks to create an online diary on the use of open spaces. The target group-specific evaluation of the survey and allocation of the participants according to specific information behaviour types enabled the formation of heterogeneous focus groups (see chapter 5). Thus, for example, in addition to a young mother with a digital affinity, a childless couple interested in sustainability issues and an older lady with little technical expertise took part in the tool workshop. In preparation for working independently with the diary, the daily routines of a classic weekday and weekend day (use of open spaces and destinations inside and outside the settlement as well as additional information such as time, duration, purpose of use and the means of transport used) were reconstructed and entered into the “Smarticipate” tool (see Figure 11).

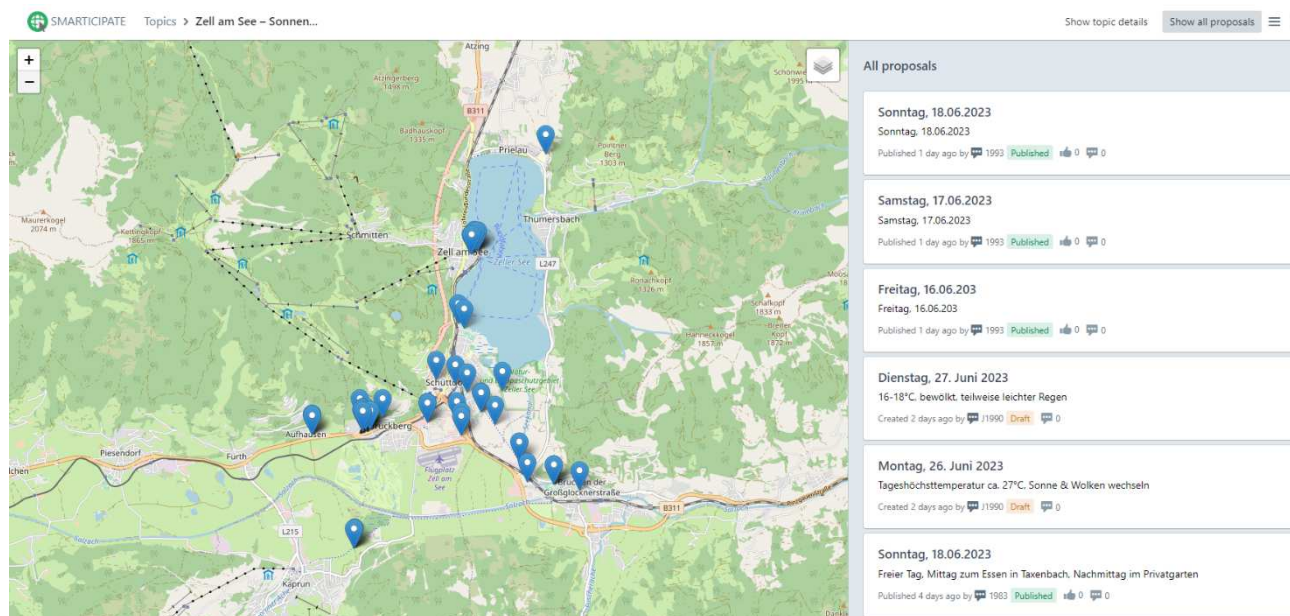


Fig. 11: Recording spatio-temporal uses of open spaces in the form of a diary with the help of “Smarticipate”

The group-specific differentiation will allow the presentation of different rhythms and possible overlaps of use patterns in specific open spaces. The result can therefore provide assumptions on the optimisation of the (semi-)public open spaces within the settlement and thereby shows potential to contribute to an inclusive (as e.g., conflicts of use are avoided) and gender-equitable as well as CO₂-avoiding (as e.g., longer recreational traffic is avoided) urban transition.

7 LEARNINGS AND OUTLOOK ON THE GENDER-SENSITIVE USE AND DEVELOPMENT OF AN INTEGRATED DIGITAL TOOL CHAIN

The extensive process documentation as well as the evaluation by means of a test and evaluation framework to check the gender-sensitive use of digital tools resulted in several learnings for (further) gender-sensitive tool use and development. In order to assess the possibilities and limitations of developing an integrated digital tool chain, the tool applications were meticulously observed and documented by the process facilitators. In addition, the participants were asked about the usability of the tools. In the course of reflection workshops, the results were then reflected on together with the tool developers in order to further improve them.

As a follow-up survey and analysis on the comprehensibility and usability of the tools showed, the “Smarticipate” tool increased the understanding of how the space works for most participants. This advantage of visualisation tools has already been confirmed in various research projects (e.g. Reinwald et al. 2014). The extension of this approach- the combination with the pedestrian simulation tool (“Simulate”) - reinforced this effect, as in addition the impact of potential planning proposals by the participants is presented to them. Furthermore, a better understanding of the (sometimes competing) demands of different groups on the space could be achieved. The use of the toolchain consisting of several instruments (e.g. survey, “Smarticipate” and “Simulate”), especially the direct coupling (via technical interface development and target group segmentation), supports gender- and group-specific data collection and analysis and at the same time helps laypersons in participatory processes to reflect and classify their own proposals.

The evaluation by the process facilitators confirmed the importance of participatory negotiation processes in terms of awareness raising and strengthening the “Design for All” concept for the planning and design of urban infrastructures. It also provided valuable input for the further development of the tools and toolchain (especially regarding usability and target group-specific handling).

Summarising these learnings concerning the tool development, it can be said that the participants were very interested in the application and open to try new things, but also pointed out the weaknesses in the handling of the tool “Smarticipate”. Especially the (mostly older) digitally inexperienced participants had to be taken by the hand, which is an argument for simplified applications to increase their inclusion. Moreover, recommendations were made regarding simple design, the preferred scale and layout of the used basic maps.

Looking at the learnings related to the specific design of participation process, it can be concluded that the case-specific application of tools must not only be very well linked to specific planning and design questions, but also be low-threshold (in terms of spatial and temporal accessibility). It also became apparent that the careful embedding of the tools in participatory formats is crucial, as it influences both the group dynamics and the results. For example, the direct pedestrian simulation feedback using “Simulate” connected to “Smarticipate” supported consensus-oriented discussions and negotiation processes within the workshop group, but also had to be explained in an understandable way. Finally, the thoughtful composition and representation of the different target groups also plays a key role in the successful promotion of the different views.

In summary, it can be deduced that through the use of different communication strategies and the use of a mix of (analogue and) different digital tools more groups can be reached in participation processes. Especially young people (who are usually not very involved in “normal” participation processes) and digital affine groups could be reached by the use of these tools. The use of digital tools can also help to involve groups that cannot come to “usual” participation events due to lack of time - e.g. people with care obligations. For this, however, the usability and low-threshold nature of the tools must be further improved so that they can be used independently (e.g., user-guides or webinars should assist this). The advantage for people with (mobility or visual) impairments still needs to be analysed in more detail. However, the possibilities of differentiating the specific requirements of these groups in participation processes as well as for the opening up of new perspectives on their use of time and space became clear. With these approaches and the gender-sensitive use of digital tools, procedural justice - as a part of social justice - can be promoted.

This approach also leads to an improvement in the downstream planning processes, as the different requirements are recorded in a differentiated manner. By incorporating and reflect different life worlds and space-time patterns, it can also contribute to recognitional justice. In the context of the research project, it is recognised that there are gender-specific differences in the use of space (and time) and in dependence on care

obligations, which is why great importance is attributed to the representation of caregivers (in many cases women), their achievements and activities in public space.

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Heidrun Wankiewicz, Lidewij Tummers and Flora Fessler will present another project paper: “Time-based solutions for gender just low carbon, sustainable urban transformation” at REAL CORP 2023 in Ljubljana.

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