Co-creation in Practice I: Co-creating a Digital Neighbourhood Guide (Bremen Osterholz)

Summary of Co-creation Project

Problem Focus
The broad problem focus of this case study is on social inclusion of older adults as indicated in the previous chapter. For this, neighbourhoods play a very important role. Social connections, cultural participation, support, infrastructure (i.e. shopping opportunities, doctors) as well as opportunities for outdoor activities are crucial for the well-being not only of older adults but all citizens. However, even if these resources exist in a neighbourhood they need to be findable and accessible. In this co-creation project, we identified a gap between existing resources that can facilitate older adults’ social inclusion in the neighbourhood on the one hand and the knowledge and awareness about these resources on the other hand.

Value Proposition
Enabling older adults to remain in their communities and neighbourhoods allows them the opportunity to connect and interact with other locals and to be part of a network of people looking after each other. The value proposed in this co-creation project is to better inform older adults about resources that facilitate their everyday lives and thereby help them to stay independent, socially included, active and healthy. An easy to find and usable digital district guide can support this because it is comprehensive and up-to-date. In addition, such a service can also support the work of intermediaries working with older adults in that their services are easier to find. Through the co-creation process, we identified that a comprehensive informa-

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1 This introduction is derived from the case study of our Interactive co-creation guide: https://co-creation.mobile-age.eu/guidebook/case-studies/bremenosterholz.

This chapter is based on the Mobile Age project deliverable D3.2 Senior Citizen Engagement Report Bremen: https://mobile-age.eu/images/pdf/deliverables/WP3/D3.2.pdf.
tion service of all institutions as well as nice outdoor places will facilitate outdoor activities and represent the district in a positive and welcoming way.

Limitations of Existing Services
There are several services that support community building and location-based neighbourhood information. In any district office, one can find dozens of flyers of a broad range of services for older adults provided by government units, welfare organisations and other NGOs. Departments of elderly care issue catalogues with information about relevant institutions and services, and there exist different kinds of district or neighbourhood guides, some with more commercial background (where to shop and spend money); others with a focus on social support. However, the advantages of e.g. searchability and findability at the same time proof disadvantageous as they require particular mental skills and digital literacy compared to using print media. And of course there is a need for technical devices and infrastructure which require additional technical skills and investment.

Field Site
The co-creation project was conducted in the city district Bremen Osterholz. The district is located in a suburban area and consists of six neighbourhoods, some of which were separate villages in the middle ages. The neighbourhoods differ very much with respect to the social status of their residents as well as infrastructure and architecture. Whereas some neighbourhods are known as socially deprived and have high unemployment rates and a high share of people with migration background, others can be characterised as well-off middle-class neighbourhoods. The image of the district in the rest of the city however is characterised through its reputation as socially problematic. It is the wish of many residents that this bad image is improved.

Co-created Service
The result was a digital district guide for older adults that provides information on all points of interest in the district relevant for senior inhabitants. It includes 17 nice places and 75 organisations relevant for senior citizens. It is integrated in the official online portal of the city of Bremen\(^2\) and is maintained there after the project terminated. The content of the digital district guide, has also been printed in a brochure featuring the textual and visual descriptions of the 17 nice places in the district. The booklet is distributed via the local government, local social care service providers and reaches out to older adults who do not use digital devices.

\(^2\)www.bremen.de/osterholz/senioren.
Introduction to Field Site

We conducted our pilot co-creation project in Bremen’s district Osterholz. Following our strategy to collaborate with relevant local stakeholders, we selected Osterholz as our field site because it was the only district with a voluntary but officially acknowledged online service provided through older residents and volunteers (BORIS).³

Osterholz is a district in the East of the Free Hanseatic City of Bremen with 37,554 inhabitants.⁴ In 2015, 22% of the population (8590) were 65 years or older. This is similar to overall Bremen. By 2020, the number of older adults is expected to increase from 8389 to 9048. While a decline is projected amongst the 65 to 80 year olds, the number of persons over 80 is expected to increase. Of the current 8590 residents who are 65 years or older living in Osterholz, almost 3000 live alone, the biggest share being women (2124). Most older citizens (4330) live in two-person households. Almost 50% of the people living in Osterholz (18,702) have a migration background while Bremen overall has only 15%. Amongst the older citizens in Osterholz (65 and above), the share of people with migration background is 23%. The unemployment rate is 14.9%, which is slightly higher than the Bremen average.

The district has its own local government (Ortsamt) and elected district council (Ortsbeirat) and consists of six neighbourhoods (Ortsteile), some of which were separate villages in the middle ages (Table 1).

Osterholz is characterised by six very diverse neighbourhoods that give the district its multifaceted character. Tenever is mainly known for its high percentage of inhabitants with migration background and was for a long time presented as socially troubled area with big apartment building complexes. While social problems are still concentrated in Tenever, social and constructional investments have changed its image to a showcase for social urban development and peaceful multicultural co-existence. Neighbourhoods such as Ellener Feld or Osterholz feature a very different scenery with detached houses and different socioeconomic structures. Due to its comprehensive provision of care residences, Ellener Feld is the neighbourhood with the highest proportion of pensioners. The neighbourhoods are important points of reference for the identity (Fig. 1).

| The neighbourhoods          | Size   | Number of inhabitants |
|-----------------------------|--------|-----------------------|
| Ellener feld                | 161,4 ha | 3,280            |
| Ellenerbrok/Schevemoor      | 219,5 ha | 11,927           |
| Tenever                     | 254,8 ha | 10,247           |
| Osterholz                   | 537,8 ha | 5,246            |
| Blockdiek                   | 116,0 ha | 6,888            |
| The total district of Osterholz | 1,289,4 ha | 37,588  |

³http://www.bremen.de/stadtteilredaktion-boris-osterholz-1896518  BORIS stands for Citizen Online Editorial Office in the District.
⁴Source: http://www.statistik-bremen.de.
Three of the district’s neighbourhoods of are officially recognised as deprived areas with a neighbourhood manager employed by the office of social affairs and paid from federal funds.

**Co-creation Process**

*Governing and Managing Co-creation*

The initial and broad problem focus of our first co-creation project was on social inclusion of older adults for which neighbourhood play a very important role. Social connections, cultural participation, support, infrastructure (i.e. shopping opportunities, doctors) as well as opportunities for outdoor activities are crucial for the well-being of older citizens. However, even if these resources exist in a neighbourhood they need to be findable and accessible to a broad range of older adults. Through the co-creation process, we identified a gap between existing resources that can support older adults’ social inclusion in the neighbourhood on the one hand and the knowledge and awareness about these resources on the other hand. A gap that is partly caused by the different ways of classifying information.

At the beginning of our process, it was not obvious which information about resources in a neighbourhood are most relevant to older adults, which information are available and how it should be depicted. For our planning, we referred to the eight dimensions of age-friendly cities and communities as proposed by the WHO. For each dimension, the report defines several action areas and objectives. With respect to social inclusion, a number may be relevant such as places to be and stay outdoors, infrastructures for active mobility and walkability.
As shown in Fig. 4 of chapter “Mobile Age: Co-creating Digital Public Services with and for Older Citizens” there exists already a variety of printed material about resources for Third Agers in this district. They each provide information in different formats and different degrees of detail. Most of them have been compiled and designed for senior adults but not with them. The way information is assembled usually represents a categorisation that makes most sense for those publishing the information (as part of their information infrastructure).

The benchmark in our view was a printed district guide for senior citizens, co-produced with service providers and senior citizens by a small design and media agency from Bremen. Since 2011, they develop map-based district guides in a pocket format. Until the start of our project, district guides for nine of the 16 districts of Bremen were produced. The map design is optimised for older adults and the collection of points of interest conducted in a participatory process. The media company secured funds from district boards and neighbourhood development funds and established project groups of intermediaries that worked with different groups of older adults in each of the districts. The members of the project group conducted focus groups with a structured interview guide in order to identify relevant services and nice places, including comments on what was nice about them.

However, the small pocket guide for each service and place could present only minimal information. For Osterholz such a map did not exist. At the start of our project, we contacted the editor of the media company to explore whether she would be interested in collaborating: She supported the collection of information about points of interest in Osterholz and we used this information as input for a multimedia digital guide that would include additional information according to the needs of our own co-creator group.

To summarise: There were different district guides and readers covering different kinds of resources of the district in different formats and taking the particular needs of senior citizens into account to different degrees. The co-created pocket guides ranked high on comprehensiveness and relevance but low on information richness. The digital city portal bremen.online provided a high degree of information richness but was not particular well-organised for a district and not optimised for the target audiences of Third Agers and intermediaries.

**Project Organisation/Governance**

While in Zaragoza, a government unit initiated and coordinated a co-creation process for a government service, in the case of Bremen a team of researcher of the Institute for Information Management Bremen (ifib) at the University of Bremen acted as initiator, coordinator and facilitator. The governance model chosen was not a two layer model with a project group of intermediaries and groups of older adults as information suppliers. Rather we wanted to have older adults as the main contributors and decision makers of the process. Therefore, we decided to establish a permanent group of eight to twelve Third Agers who would contribute to the whole

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5 http://editionaxent.de/Stadtteilplaene/plaene fur altere.html.
process, including idea generation and developing of the service concept to software and data design to the implementation and maintenance of the service.

In our co-creation project, the role of software developers was assumed by the Mobile Age project partner FTB, responsible for developing a demonstrator; the final service provider was bremen.online, the city’s information provider.

**Engaging Stakeholder: Establishing Older Adults as Expert Co-creators**

The initial tasks for the activities relating to the engagement of stakeholders were the setting-up of a core project group, and to recruit *older citizens*. Recruiting people for a co-creation process, lasting about half a year, with open objectives and tasks unfamiliar to most was a great challenge. We had to provide a notion of the project’s objective and what people would commit themselves to, what kind of input, in particular what kind of knowledge and lived experience, we would like them to contribute. As these issues are difficult to communicate clearly, for the information event and the kick-off meeting we were looking for a venue which was easy to reach for people in the district and a host that was trustworthy. We asked the head of the local district council and he agreed to open the assembly room and welcomed participants at both meetings.

All participants received a participant information sheet. Recruitment activities must consider the context in which they address older citizens as potential co-creators. “Cold recruiting”, e.g. on fairs, markets etc. did not work well, as one intervention showed. Recruitment may be effective when starting from already existing groups and aligning with their interests (e.g. older citizens’ computer clubs, local history clubs). Nevertheless, there is a tension between recruiting for well-targeted and well-framed activities, and simultaneously keeping the co-creation process open.

A number of *local/regional government* partners participated in the co-creation process. They were mainly involved in order to identify local stakeholders, support our recruitment and provide data about the district (Table 2).

In addition, we collaborated with social welfare organisations and other *social service providers* to older adults in order to gain support for the recruitment of older adults and to acquire information about the district. Some service providers supported our data collection process by conducting focus groups with older adults.

- Representatives from two different Christian congregations and one social service centre supported our recruitment process and also conducted focus groups with older adults in the district in order to collect data. We also conducted interviews with them on the role such a digital district guide may play for older adults.
- Further support for recruitment and insights into the district came from a representative from the centre for migrants and intercultural studies as well as representatives from two social welfare organisations.
A team of people running a senior citizen online web blog (BORIS) supported us in the recruitment and also with editorial work (data verification, text writing). We held regular meetings and some members also participated in our workshops.

The editor of printed district maps for older citizens supported the data collection by providing us a template for collecting information on points of interest. We collaborated on data collection in 13 focus groups.

The Council on Elderly People provided us the opportunity to present the project to all relevant stakeholders/intermediaries in the district and instigate cooperations.

Engaging stakeholders in the process and recruiting co-creators proved to be a continuous activity throughout the process. While ideas developed, the service concept became more refined and the required data were defined and collected, complementary focus groups and engagement with additional local stakeholders (such as service providers or data owners) were required. However, the recruitment of a core group of older adults was mainly conducted via newspaper articles, were we

| Local actors                                      | Role and tasks during co-creation process                                                                 | Type and frequency of interaction                                                                 |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Head of local district council                    | Supported our recruitment of older adults, provided us insights about the district and its people, allowed us to use his facilities as meeting venue | Initially and at the end of our co-creation activities we conducted interviews with him, he participated in a number of workshops and he also reviewed the collected data |
| Neighbourhood managers                            | Employed by the city who are responsible for the three most vulnerable parts of the district, served as a link to the district about which they are very knowledgeable, supported our recruitment and provided a set of data about institutions etc. | Initially and at the end of our co/creation activities, we conducted interviews with them. We collaborated on a printed version of their neighbourhood reader (which also served as a data source for us). The neighbourhood managers all performed quality checks on the co-created data. Furthermore, the neighbourhood managers support a printed version of the district guide financially |
| Department for Elderly Care in the State Ministry of Social Affairs | Provided data on public services (e.g. service centres, different forms of living) and further relevant data on the district | We held a number of coordination meetings and communicated via email |
| City information provider                         | Editorial staff helped us to identify local stakeholders. They also provided us with existing data about the district and committed to take-over the developed online district guide at the end of the project | We held regular meetings and were in continuous correspondence about the validation and creation of data (to be integrated into their system) |
addressed older adults in the district that were knowledgeable and/or interested in their district. Although we explicitly addressed people with and without experience with digital technologies, most of the participants were already using smartphones, PCs, tablets and/or the internet. All of them shared an interest in these new media technologies.

For the main part of the co-creation process (June 2016 until March 2017), a core-group of 11 older adults participated in Bremen Osterholz. The group consisted of seven females and five males aged 55–80. They were comparably well educated, physically and psychologically healthy and all lived independently. Most of the Bremen participants (5) lived in partnerships. Two lived with a family (including teenage children) and four participants lived on their own. None lived in an institutional setting. Overall, the participants were familiar with digital technologies. Only one participant had never used a computer. Two participants were still employed. Almost half of participants engaged actively in political and volunteering work in the district. With regard to social inclusion they can be considered as quite well included. Most participants were quite mobile.

In addition, through our collaboration with the design team around the printed district map and their engagement with different existing senior citizen groups (e.g. men’s breakfast, pottery groups) to collect information about relevant places and institutions, twelve groups with a total of more than 80 female and male participants were interviewed. The design team included two social workers working within two church congregations, one neighbourhood manager and one member of the Mobile Age research team.

Overall, the strong involvement of the local government has been fruitful for recruitment in the district because it is a small and intimate district, where people know and trust the local administration and certain local champions. One aspect to be considered though is who had not been attracted by this strategy, which might influence their positive attitude towards the (local) government authorities.

To start the co-creation process, we wanted to provide a notion of the project’s objective and what kind of input, in particular local knowledge, we would like participants to contribute. As these expectations are difficult to communicate verbally, we decided to begin the process with something tangible: An activity that would be fun and attract interest in the project. We choose to develop a card game in order to (1) learn about the district, (2) facilitate the communication between participants and (3) provide low-tech engagement. At an information event, participants were asked to fill out questions on the cards which related to their district. In doing so, they not only shared their knowledge about the district (e.g. what is beautiful in Bremen Osterholz) but also considered questions that could be relevant to other residents. For the kick-off workshop we prepared a proper card game (with pictures)

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6 One of the five male participants left the project early on (after the cultural probes) whereas one of the female participants joined later (in September). In between, we had another male and female participant that attended a few workshops. We have not considered them in our overview, as we did not interview them separately. Overall, we had a stable group number of about 11 participants throughout the process.
based on the participants’ input. Their task at this workshop was to evaluate each other’s input via blue and green points (for relevance) and leave remarks. The two steps of this card game are depicted in Figs. 2 and 3.

The participants appreciated the refined version of the card game, as they could see that their work had been valuable and were actively engaged with the card game. To see pictures of their district and discuss them was motivating as the focus was on the district, not on technology.

As stated in our co-creation framework, it was important to establish the participants as experts (of the process of ageing in the neighbourhood) and to appreciate
their local knowledge. It was important to establish this role as early on in the process as possible. The card game offered a first interaction to establish this relationship early on.

**Co-creating a Service Concept: Probes as Tool for Sharing Tacit Knowing and Co-creating Scenarios**

The initial tasks for the co-creation of a service concept included a preliminary survey and analysis of existing services as well as the development of first ideas. The service to be developed was defined in the co-creation process, but we had to have a concrete idea about

- What the thematic space of the service was;
- What service domain we developed a service for;
- Who the target user group was and what other stakeholders were relevant.

The service to be developed in our co-creation process needs to be better than the existing ones in several respects:

*Comprehensive and relevant information supporting the planning of activities* (accessibility of buildings and routes, information about toilets and benches): The points of interests had been proposed by members of the target audience and included nice places, outdoor and indoor offers for recreation, where older adults can meet others in their district as well as information about local organisations, offering advice on different matters of everyday life. For different kinds of points of interest (objects) different sets of qualifying information (attributes) according to the information needs of older adults are provided.

*Usable and accessible technical design for older adults; Relevant and up-to-date information facilitating social participation of older people in the district of Bremen Osterholz.* Information may be searched via a map that is optimised for older people and via listings. All information is provided by a responsive application, which can be accessed from desktop PCs, tablets and Smartphones, with particular emphasis on accessibility.

In addition, the service needs to be based on open data (up to date, accessible via API, machine readable) and co-created data, relevant to the citizens’ needs. If the service is linked to open data, the respective data providers are responsible for updates and the service provider is relieved from this job. Looking for and linking to available open data therefore is another part of the co-creation process. Where no open data is available to meet the information needs, data has to be collected and edited within the co-creation process.

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7This section is part of a paper published by Jarke and Gerhard (2018) as part of a special issue on Probes as Participatory Design Practice (Jarke & Maaß, 2018).
Adopting Probes for Co-creation  In order to address these kinds of questions, we had to understand the everyday practices of older people in the district better: To understand what it means to age in this particular place. While the card game offered a first interaction with the participants, there was a need to explore and jointly learn about their everyday lives in a more structured way. For this reason, we developed a set of ‘cultural probes’ (Boehner, Gaver, & Boucher, 2012; Gaver, Dunne, & Pacenti, 1999; Jarke & Maass, 2018) which are self-documentation materials.

In contrast to more traditional approaches to probes which are used in user-centred design (Sanders & Stappers, 2008), probes in our project were used as a method and tool for co-creation. Hence, in addition to their inspirational function and tool for the requirements elicitation, we also used the probes as a communication and engagement tool for the subsequent co-creation process. In a follow-up workshop, the participants jointly reflected on the activity and their experience. The aim was (1) to jointly reflect on the probes activity and experience, and (2) to identify some key characteristics that defined their everyday practices in the district.

For the participants the probes raised their awareness of everyday practices and practices related to ageing in the district. The probes sensitised participants about certain aspects of their everyday practices and were hence tremendously helpful in identifying needs as well as resources. For the researchers they allowed to develop a better and more profound understanding of these practices. This demonstrated that probes were superior to interviews in which participants could, for most parts, only report on their everyday live without prior reflection.

In the following, I present the way in which we used probes in Bremen. I will demonstrate how they allowed us to explore and learn about the everyday lives of older adults in Osterholz in a structured and reflective way, but also to establish participants as experts of their district and ageing in this place. In particular, I analyse to what extent the probes served as “boundary objects” (e.g. Björgvinsson, Ehn, & Hillgren, 2012; Ehn, 2008) among users and between users and researchers, and how they facilitated individual and communal perspective making and perspective taking.

The set of probes we developed for Bremen Osterholz included maps, a diary, postcards and a disposable camera (Fig. 4). The participants kept the cultural probes for 10 days. They collected data on themselves, their lives and their socio-spatial and media use practices. Follow-up interviews were conducted individually to prepare and accompany the process and a de-briefing session (workshop) to supplement, validate and explore the material.

In a subsequent workshop, the participants jointly reflected on the activity and their experience (Fig. 5). The aim was to define some key characteristics that would serve to develop personas. In the Appendix to this book, I provide an overview table of the probes that were developed for the field site in Bremen Osterholz.

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8 For a detailed description of the probes used in Bremen Osterholz, please see the appendix of this book.
When participants compared the individual maps, they discussed what they believed to be differences that would eventually allow for the development of different personas. Some of the key differences were: biographical (on whether somebody just recently moved to Osterholz), related to retirement/employment, living circumstances (alone vs. partnership vs. caring for partner) related to mobility and health, related to the financial situation and how active people were in terms of charity work and hobbies. All these considerations were documented and informed the subsequent development of personas.
Mapping Socio-Spatial Networks: Explicating Perspectives and Demarcating Areas

One probe we gave to participants was a map of the district (Fig. 6). The main aim of this probe was to understand social inclusion with respect to primary networks and space. Participants were asked to mark where they live (red dot), where friends and family live (blue dots), where important places for their everyday are (yellow dots). In addition, participants were asked to highlight areas they particularly like in green, and areas they dislike in pink.

What we were interested in learning from this map concerned for example how connected our participants felt to people/places and the spatial dimension of their primary networks (neighbourhood, quarter, district, and clubs). We were also interested in learning which social networks the participants were part of and where they meet.

Fig. 6 Probe—district map
The returned maps differed greatly with respect to the extent of their networks and the mobility patterns. The maps were supplemented with diaries and a set of seven maps in which participants documented their mobility patterns for a week. Not surprisingly, we found in the analysis of the district map that the participants’ social networks were very much centred around their respective neighbourhoods. Since the participants lived in very different neighbourhoods their social interactions took place in different areas of the district. Preferences for certain areas as well as aversion regarding others also differed with regard to their primary networks.

Below are cut-outs from the maps of two participants (Fig. 7). They both comprise of the same area. Yet, whereas participant 5 has highlighted an area in pink (signaling that this is an area she does not like), participant 10 marked the area with a blue and yellow dot (important places) and highlighted an area close-by in green (areas participants like). In the interview, participant 10 explained that this is where she walks her dog. Again, the participants lived in different neighbourhoods and hence had very different mobility patterns and social relations in and to the area.

Later on, such conflicting perspectives became a rich resource for discussion, when determining which places would be included as “nice places” in our district guide.

Another difference in marking locations on the map was based on the different practices of people and what associations they had with particular places. For example, while a number of participants (e.g. participants 3 and 7) marked the big cemetery as an area in which they liked to spend time, participant 5 only marked it as place she routinely visits because of the graves she has to attend to (Fig. 8).
places were hence associated with the practices in which people engage and through these practices became part of the socio-spatial network.

Finally, many participants marked similar places in the district as reference to where they routinely go. Yet even here, we found differences with respect to whether these were also considered or known as recreational places (Fig. 9).

These initial findings were further explored in individual interviews with the participants. Talking about the maps and the mappings in the interviews encouraged almost all participants to reflect on the district as a whole, its multifaceted character and its image. Here we found that the spatial separation depicted in the maps corresponded with a stereotypical and often negative attitude towards other neighbourhoods. In particular two neighbourhoods, one characterised by tower blocks and widely known as socially diverse and troubled area (Tenever), the other one with a rural character and detached houses (Alt-Osterholz), were important points of identification and demarcation for the residents. As participant 1 who lives in Alt-Osterholz explains:

My own neighbourhood, I like that one. […] I wouldn’t like to live in Tenever for example. […] I’d rather be in the area where I live now or I prefer this. It’s kind of like that, a little bit closed off and you know a lot of people and there’s a lot of greenery and gardens. Whereas in this tower block neighbourhood, that doesn’t suit me at all, I don’t like that. I don’t want to say that it is terrible, but for me personally, if I had an apartment there, I think I would be truly unhappy. Those tall houses, that overwhelms me. At least to live there. And I never actually go there. If we go on excursions, all right, then we go here to the dike [points to dike on the map] or, if we say “come let’s go for a little walk in the evening”, then we move around the clinic park, which is also very nice, because it’s a lot of greenery and some nice old buildings and if you walk around there for an hour, then you have a little bit of time off your mind.

Participant 7 who also lives in Alt-Osterholz, had a more nuanced view on Tenever. He praised the success of social urban development actions and said that he had “learned to appreciate” the area since there had been renovations that “have made Tenever somehow attractive”. However, he mentioned the neighbourhood only when asked why he had not marked any areas that he did not like in the map. Seemingly, his assumption was that we have had this specific neighbourhood in
mind when asking for disliked areas. Further, he confirmed that there are prejudices amongst his neighbours:

Nevertheless, it is the case that as resident of Alt-Osterholz you actually avoid Tenever. Because there were also incidents that young gangs somehow attacked people in the early evening hours or something like that.

The map was hence not a mere representation of the participants’ place-making practices and tacit knowing of the district but also a performance of what they considered to be socially acceptable, e.g. to mark Tenever negatively or not.

In contrast, participant 9 who lived in Tenever produced a very different image of her neighbourhood. She had lived there for a very long time and had “always found it exciting, always interesting”. She told us that

… acquaintances of ours had said that you can’t move to Tenever […] but I was still unbi- ased, I thought I’d take a look and now I’m living there and the apartments are really nice and we have a great view from the seventh floor.
She explained that in her opinion the bad image of the neighbourhood was no longer justified today. She had a strong attachment with the neighbourhood and the residents that was rooted in the togetherness of the people living there. She appreciated the ways the residents interact and treat each other, and recounted her negative experiences with neighbours when living in a different neighbourhood for a short while:

The others who owned the condominiums, they were upset that some families had a barbecue. So that was ONE situation, no, that’s how it went. And then you really don’t feel well. And then other things like that, like bullying and harassment. [...] Something I don’t know from here [Tenever] at all. Because here its really such a peaceful togetherness and doesn’t matter whether one is running around in pyjamas or not. Maybe we smile about it (laughing), but there is no one to blame for such things. That was a little bit there, as I said, it was a little bit different.

Despite these divergent perspectives on the different parts of the district, the participants realised some commonalities regarding preferred and avoided spaces: They differed with respect to the specific areas that they like or dislike, but the reasons for these preferences are the same. All participants like to visit calm, green recreational places and they avoid places where young people often meet. Participant 9 explains:

[…] and that’s the big parking lot and there are a lot of young people meeting with the car and so on and sometimes it’s a bit uncomfortable. I don’t really know any really unpleasant places like this. But these are such meeting places for young people, where you just feel insecure and you think they’re talking to accost me and stuff like that, yeah.

Participant 5 who differs quite a lot from participant 9 with regard to her socio-spatial networks perceived the same sense of discomfort at places with many young people:

I don’t like to go to the lake anymore, because of things that you don’t like as an old person anymore, yelling youths and barbecue sessions, where the rubbish is just left and so on and so on. […] I don’t want to get upset about it. When I was younger, I was able to ignore these things but with increasing age it is strangely more difficult and since I don’t want to become a militant old one I choose the avoidance tactic.

Hence, what could be derived from the individual probes and interviews was an appreciation of the participants for green and recreational spaces. Despite differences on where these areas could be found in the district, all participants emphasised the importance of green areas. Similarly, we noticed an agreement to avoid places where young people hang out and may intimidate older citizens. These were all individual perspectives that participants made through their engagement with the probes and while reflecting on this exercise during the interviews.

However, it was only during a workshop in which the participants jointly interpreted the differences in the maps (which were displayed on a pin board as depicted in Fig. 10) that we started to understand some of the reasons for these differences. These interpretations were based on taking their respective perspectives and through interpretation of the assembled maps the participants created a joint, communal perspective.

One of the biggest differences—according to the participants—was whether somebody grew up in the district and still had friends, acquaintances and family from that time or if most members of the social network live somewhere else.
Participants pointed out that this could be seen in particular in the number of blue marks on the map (representing family and friends). A second difference was considered whether somebody still works and also where somebody has worked (as these could have included long commutes with little chance of colleagues living in the district). The financial situation was considered another defining difference (e.g. with respect to buying organic food or owning a house and garden). Participants argued that this made a difference in terms of shopping behaviour or whether somebody goes to public parks more often for recreational purposes. Furthermore, the functional health was considered to be important with respect to people’s mobility in the neighbourhood and beyond. Lastly, it made a difference whether people are engaged in charity work and if so, where (some people work within in the district, others across the city).

Relating these accounts of our field work back to theoretical framework (see Chapter 3: Co-creating Digital Public Services), we can see that working with the neighbourhood map facilitated the perspective making and perspective taking of participants in three ways: The neighbourhood maps served (1) as a standardised form and method, (2) as a coincident boundary and (3) as an ideal type.

Standardised forms, methods and procedures enable a shared view by enforcing particular work practices across participants and provide a shared format for providing input. The neighbourhood map acted as a standardised form by asking people to identify where they live, where family and friends live and where important places are. By asking participants to follow this particular procedure when working with the map, it became a standardised form (or method). In so doing, it allowed for the translation of different contexts into the same pattern (colour-coded dots).

The map served also as a coincident boundary in that it outlined the demarcation of the district. Through this framing only those activities became visible (and relevant) that took place inside this boundary. Many of our participants reflected on this. For example, participant 5 reflected about how she perceived of the district differently when she was still working and commuting to another district in comparison to her reduced mobility patterns within the district since retirement. Participant 7 reflected in the final focus group about how many of his activities took place outside

Fig. 10 Participants discussing their maps during a workshop
of the district and how much he used the car to get to places. This coincident boundary later became inscribed into the app we co-created with the participants.

Finally, the neighbourhood map facilitated the creation of ideal types such as “nice places and walks” as we asked the participants to mark places/areas they like and dislike in the map. These were later turned into key categories of our information service. There was an initial broad understanding of what a nice area would qualify as. This “ideal type” became more and more refined as the design process progressed. Initially our participants had different ideas and understandings of what qualified as a nice place and also where they might be found in the district. These differences were important for negotiating the future design and categories of the information system. For example, the conversation about the nice places informed the definition of attributes to describe nice places later on (e.g. how to get there, whether there are benches and toilets, whether there are possibilities to get refreshments). This was hence, an important activity for negotiating classifications for the information service to be developed.

The probes pack consisted of other materials as well. They are all summarised in the appendix of this book and include a disposable camera to capture how participants “see” their district; postcards to imagine an emblem of the district and identify its unique characteristic as well as envisage the future of the district.

The postcard relating to future-making facilitated participants’ joint perspective taking and making on how they envisioned the future of the district. The taking of the individual perspectives allowed to develop a joint perspective with respect to thinking about how to tackle challenges rather than being trapped in a diffuse fear. Figure 11 depicts some of the participants during the workshop while reading each others responses. In addition, participants reflected upon what they were missing in the district (e.g. young people). Some said that this was also reflected in the fact that there are only few places for going out (e.g. for a coffee in the afternoon or a drink in the evening). Some believed this was also an infrastructural problem (e.g. with respect to the tramline).

A further part of the conversation circled around charity work in the district and how this may support the development of the district. One idea was an app to support this, e.g. a platform for people that need help in their neighbourhood. Some participants reported on how they were already helping older neighbours with their weekly shopping. Another discussion was around the idea to build student houses and make the district more attractive for younger people and in this way “raise” people who are willing to take over charity work.

Hence, when displaying the postcards in our workshop they served again as a repository that allowed to be queried as various ideas, concepts, objects were collected and allowed for a creative process. It also served to envision an ideal future.

**Proceeding to Develop Personas and Scenarios**

Based on the insights gained through the probes, we co-created personas with our participants. Usually, personas are defined as “hypothetical archetypes” of real users (Cooper, 1999). Very often personas are created by the research and design team from insights gained through other research methods (e.g. interviews, ethnographic observations/participations in activities with older adults, focus groups, demographic data on older adults). Hence, personas are a representation of
a fictitious user that include a concise summary of characteristics of the user, their experience, goals and tasks, pain points, and environmental conditions. Personas allow the developers to consider the needs, wants, expectations etc. of wider user groups, without involving them directly in the design process. Very rarely are persons developed in collaboration with users (Neate, Bourazeri, Roper, Stumpf, & Wilson, 2019 is an exception). By drawing attention to potential users, the creation of a common understanding of the users is supported and developers are engaged to implement this understanding in their decisions.

In Bremen Osterholz, personas were jointly developed with older adults. We developed three personas based on the probes and individual interviews with our participants as well as statistical data on older adults. We used personas to examine communication- and information needs as well as resources of older citizens in Osterholz. The personas played an important role throughout the co-creation activities as they allowed to investigate and discuss the information needs of older citizens further. They were helpful in order to encourage participants to think beyond their own wishes and needs and to relate to others who might be different from them. Furthermore, they allowed participants to address sensitive issues by referring to a third person. Importantly, the personas were not developed through stereotypical ideas about older adults but rather in collaboration with them.

The personas still differed according to a number of important dimensions (Table 3).

The participants worked in three groups, each on one persona in order to identify their information needs and interests.

- What needs and resources do they have?
- What functions and objects should the map/application contain regarding this needs and resources?
- And how should these objects be structured/filtered?

The results were noted on cards (colour-coded according the points above) and pinned on a wall (Fig. 12).
Based on the personas we developed two use case scenarios. Overall, the result was a set of relevant classifications in terms of object categories and attributes to be visualised on the map, which later turned out to be too numerous for the scope of the project. Further, the personas helped to develop different viewpoints on the types of classifications that are sensible and generate ideas for the service definition. The main point here was that the participants felt that it was important to focus on the resources of older adults: They told us how they were helping friends, relatives and neighbours for example support in housekeeping or getting somewhere. Here it became eminent how the participants experienced and represented themselves as efficacious with respect to themselves and to others. One idea for a service was to support the exchange of time, goods, or abilities. These considerations were in stark

| Factors influencing access and social inclusion | How factors were considered in our personas |
|-------------------------------------------------|---------------------------------------------|
| Demographic/personal | Age, gender, living arrangements, household type, mobility, relationship, health & well-being |
| Socio-economic | Income, employment/retirement, urban |
| Social and political | Social networks, social capital, charity work and political participation |
| Use | Needs for access/motivations, relevance, existing practices |
| Device and content | Media repertoire (type of devices owned) |
| Infrastructure | – |
| Attitudes/feelings | Trust in technology, confidence, self-attitude |
| Skills and support | Family members, time used, knowledge of options |

Fig. 12 Collecting results from group work
contrast to most of the services developed for older adults that centre around their deficits and aim to support for example, health-related support service.

As part of the service and data definition, we held two further workshops: one on the informational content and one on interactive elements of the Mobile Age app. The aim of these workshops was to select the categories of objects to be shown on the map, to determine attributes for each category of objects and further to define relevant information about these objects. During the workshop, we divided the participants in groups of 2–3 to work on different categories of objects. We had prepared lists of objects per category. As we were interested in considering what kind of information would be interesting about the objects, we had also provided supplementary information in form of leaflets and Websites print-outs to the groups. The workshop concluded with presentations and discussions of the results.

In a subsequent workshop, we decided with the participants to develop a map-based service. We agreed that only a limited number of categories of objects could be included in the neighbourhood guide as only very limited data was available and hence an intensive data creation process was ahead of us. The decision was supported by the argument to focus on those categories of objects that were not yet systematically captured elsewhere (e.g. nice places, informal meeting places). This would constitute a benefit, particularly with regard to the content (as making available informal local knowledge). Finally, we defined the value proposition and target audience of the service:

The target audience consists firstly of older adults living in the district, in their Third Age, and with an interest in digital technologies, and secondly, of intermediaries that are providing information about the resources in the neighbourhood. Beyond these two groups, the service may be interesting for other audiences such as local politicians or relatives of members of the first group. However, their needs were not of primary concern during the development process itself.

The desired impact was to improve social inclusion of Third Agers in the district by providing such a service and measured by an increase in social participation as defined by the British ELSA report. However, as shown in Fig. 4 of chapter “Mobile Age: Co-creating Digital Public Services with and for Older Citizens” this depends on the availability of resources in the neighbourhood and the resources of the older adults themselves:

The service shall provide all relevant information about resources in the district in order to support mobility and social connectedness of older adults in the district and improve access to different types of services. Compared to existing guides and services, it shall be more relevant and comprehensive, exploit the full potential of digital media technology, optimise usability for older adults and be easily accessible.
Working with Data Through Data Tables

One of the first steps in our co-creation project was to generate a report about the data that were available for our topic and determine how appropriate these were. Subsequently the stream of activity led to the collection and validation of data that were identified as relevant but were not yet open or needed to be collected across various data owners. In a number of workshops dedicated to the development of ideas and defining a service, we had selected categories of objects to be displayed on a map as well as relevant attributes for each of these categories. According to the selection of categories and attributes, we decided to differentiate between two main kinds of objects, with differing attributes:

- **Nice places and walks**, with descriptions about what was considered to be particularly nice, and information about the availability of benches and toilets nearby as well as supplementary information on possibilities for e.g. exercising or BBQs.
- **Informal meeting facilities, institutions and services in the field of culture, consultancy and advice as well as sports** with data on the individual services and facilities, events, contact person etc.

We created a matrix table with a line for each object and several columns for the different attributes. These two data tables (one for nice places, one for services) became the central working tool for the data collection and co-creation process with two objectives: (1) **Completeness**: identify all the relevant objects in Bremen Osterholz for each category; (2) **Richness of relevant details**: collect data on as many aspects as possible for each object. All the interventions mentioned above served these two purposes and gradually completed the tables. While information on attributes such as address, contact, website was evident and easy to collect, the description was the most difficult one. The purpose of the description was to communicate why a place is nice or a facility of interest to older people. For the description, our core group participants mainly had contributed keywords. In order to acquire this information, participants assumed responsibility for particular objects (e.g. places), validated the information (e.g. through going there) and creating data (e.g. photographs).

Through a number of iterations we gradually completed the tables. In addition, a main task for the researchers was to standardise the data, e.g. to find the right format to describe different kinds of objects. This format also had to comply with the data structure of the city information provider (Bremen.Online) as they were envisaged to sustainably maintain the final product.

Below are three Figs. 13, 14, and 15 that illustrate the progress of completing the data tables throughout the co-creation process. There is a line for each object (place or facility) and the columns contain relevant attributes, e.g. name, address, description, offerings, transport, contact, and website etc. Altogether, 19 nice places and walks and more than 70 institutions and services were identified, but there was little precision on attributes. All in all, the project team conducted 12 focus groups (e.g. men’s
breakfast club, pottery groups) with more than 80 older residents, where the participants named places they considered to be nice and places where they meet other people as well as institutions offering different kinds of services relevant to them.

Most of the focus groups were conducted with people that had lived in Osterholz for a long time. People were deeply rooted in the district and had a vast knowledge about the history of the district, interesting places and events. Some participants were very active themselves in organising meetings, gatherings and other informal
social events. The discussions were usually very fruitful as groups were very engaged and had many stories to tell about the district as well as lots of practical information on places and events.

Information on attributes largely came from a printed neighbourhood guide. But this guide did not cover all the objects proposed by our core group of participants and not all desired attributes. Therefore, the first tables contained several blank fields due to participants contributing limited information, in some instances (Figs. 13 and 14).

Because of these gaps, it was also important to recruit knowledgeable people (beyond our core group) for data collection and for supporting the drafting and editing of the data collected on nice places and walks. In our “collaboration meetings” with local stakeholders we presented our “data tables” and discussed either possible collaborations or received input on specific categories/objects. We met with three members of the “men’s breakfast club” (a group of mostly older men meeting for breakfast and discussing issues in the district on a monthly basis); a member of the BORIS editorial team, a member of a group concerned with the district’s history, one representative of a church congregation and the neighbourhood manager of “Schweizer Viertel”. They provided useful information on differing aspects on nice places and walks which were noted by researchers.

This complementary task was important as it was relatively easy to get people to name nice places and give a few keywords to describe it. It was however, harder to get information on a pre-defined set of attributes, and even more difficult to complete this for all the points of interest. A major challenge was to identify people who could take over editorial tasks and write clear and relevant texts based on the initial sets of keywords collected through the focus group (as described above). Yet this was important for future users of our Mobile Age neighbourhood guide.
Figure 14 shows the progress as we proceeded with the data validation. Throughout it was important to provide informants and co-creators with printed tables as they were not always prepared to work in a digital file.

While information on attributes such as address, contact, and website was evident and easy to collect, the description was the most difficult one. The purpose of the description was to communicate why a place is nice or a facility of interest to older residents. For the description our participants had contributed keywords. The ifib team wrote complete sentences and a coherent structure of the description. For a few nice places, a member of the BORIS team, prepared texts based on the keywords from our participants. Another member of the BORIS team, also engaged in a history workshop for the district, checked and amended the texts edited by the ifib team.

Finally, the largely completed tables were transformed into digital data tables by FTB and used as input for the data base, which was made accessible to our participants who added further information, e.g. keywords, and uploaded photos. In order to acquire this information, participants assumed responsibility for particular objects (e.g. places), validated the information (e.g. through going there) and creating data (e.g. photographs) (Fig. 15).

Some basic information was provided with permission of different data providers. The data sets were supplemented by our core group. Information about public toilets and benches/seats were uploaded by the German OpenStreetMap community9 for which one of the co-creation participants checked all public toilets and added information (e.g. opening hours). The integration of data regarding public transport was realised by linking to the public transport association.

Overall, we had to realise that very little open government data was available on the content identified as most relevant by our participants (social, cultural, leisure activities). Some participants engaged extensively in collecting data, while others were happy to name objects of interest but not to collect or validate detailed data on attributes.

**Co-creating Software**10

The visual design and functionality of the app were co-created through a number of paper-prototyping exercises and subsequently transformed into digital prototypes. A first step for the co-creation of software was to identify concepts and app ideas, then gather requirements from each stakeholder group. These ideas became more

9[https://www.openstreetmap.de/](https://www.openstreetmap.de/).

10The software development and design work in this co-creation stream was led by our Mobile Age partner FTB.
refined as the service co-creation activities proceeded and relevant data sets were identified (and created). The stream of activities concluded with the testing and reviewing of the app’s functionality.

**Map Design Workshop**

In order to discuss the design of the digital map to be used for the Mobile Age neighbourhood guide, we conducted a workshop dedicated to map design. This included a presentation of different kinds of maps as well as an individual task for participants to navigate three different map applications (Google, Bing, OSM) and search for a point of interest. This was an ideal way for participants to experience a variety of existing services. Below is a screenshot of the three different maps (Fig. 16).

After the hands-on exercise, we discussed the different aspects of the maps like contrasts, content density and content presentation. The participants were told not to argue just from their perspective but also from the co-created personas’ perspective.

It was important to draw the participants’ attention to aspects of usability, accessibility and user experience. The personas helped the participants to focus on practical decisions. The participants found the following aspects positive, in particular with respect to orientation:

- Outlines of all buildings like on OpenStreetMap (Google maps does not show all buildings and uses a very low contrast (1.1,1); Bing maps does not show any buildings).
- House numbers of the buildings like on OpenStreetMap (Google maps and Bing maps do not show house numbers.)
- Landmarks such as bus stops, pharmacies or other well-known locations that support orientation.

![Fig. 16 Visualisations/maps of the same part of Osterholz with different map designs and different objects visible (Bing, OpenStreetMap and Google Maps)](image-url)
Subsequently Mobile Age developers presented a demonstration of the map they had developed and which was based on the experiences of their former work with older citizens and visually impaired people. The map uses high contrast for textual information such as street names, names of districts as well as street- and building outlines. Figure 17 below provides an overview of some of the features that are improved in the Mobile Age map.

One of the ifib researchers suggested the option of filters: In order to provide more information, that could be shown or hidden depending on specific filters. The participants considered this aspect very helpful. In the following, FTB researchers demonstrated how objects could be visualised in the map using benches and toilets as examples. Below we show the final result (Figs. 18 and 19).

Subsequently, we conducted four digital design workshops along with activities related to editorial data work. In the workshops we aimed to (1) demonstrate and discuss the welcome page, (2) discuss the experiences with tables and prototype, and (3) validate information. This was accomplished through a mix of presentations, group work and group discussions.

Welcome Page
As for example, for the welcome page, participants favoured tiles. FTB developers demonstrated a number of visualisation options and all came to an agreement (Figs. 20 and 21).

The agreement was reached on basis of the following criteria:

- The design was based on the official Bremen.Online page for the district
- Single tiles for each category of attributes in the map (nice places, meeting places, cultural offers, sport offers, counselling)
- Further tiles for project description, telephone numbers and links to other district related websites (“Voices from Osterholz”)
- Because of accessibility and usability no additional text for the different tiles, only headline

![Fig. 17 Mobile-Age map for older citizens with improved features as developed by Mobile Age partner FTB](image-url)
In the discussion on how much information each tile should contain the participants agreed, that they did not want too much text. One group worked on a welcome text/note. One important point of discussion was the question which term they wanted to use to describe the target audience (older citizens) of the web page. Some participants did not want to name the target group at all, but then agreed with the researchers that it should be clear who is addressed. One participant proposed the German term “Menschen im fortgeschrittenen Alter” (people in advanced age), but another participant preferred the term “seniors” and another one said, that he does not care at all, what term we choose. It was a very lively discussion and at the end we decided to use the term “older adults”.

List or/and Map?
We had a long conversation over several workshops as to whether the app’s content should be visualised on a map or in a list as a first output. Below are the two examples from the paper prototype session. Finally, we agreed to list all five object categories on the start page and provide the users with the possibility to select either a list or map representation (picture on the right hand side).

The list view was implemented according to the ideas of the senior participants (Figs. 22 and 23).
Fig. 19  Final map visualisation featuring toilets and benches

Fig. 20  Collection of ideas about start page of Mobile Age app
**Fig. 21** Digital translation of start page discussion

**Fig. 22** Paper prototype list
In contrast to the paper prototype, participants decided on the necessity to visualise the boundaries of “places to go” or walks. This has been implemented in the digital prototype map view as shown below (Fig. 24).

Toilets and Benches
Toilets and benches were not only considered as attributes of places but also as standalone categories. All of them should be visible on the map in relation to the location of the user, in order for the user to find the nearest one (Fig. 25).

Test Tablets
In order to enable members of our core group to test the application prototype and to validate and complete the information, we provided the participants with tablets. The participants kept the tablets for eight weeks. They received a short introduction on how to use the devices and how to test the first prototype.

In the observations of their use practices and a focus group around the use of these tablet, we developed a better understanding of the participants’ motivations to use certain “new” media technologies. Our participants’ overall curious attitude towards new media technologies was not primarily rooted in an enthusiasm for these technologies themselves. Rather they shared a self-perception of socially engaged and politically interested citizens and they were aware of the growing
importance of the internet and digital devices for society at large and social relations, in particular. In order to be able to fully participate in today’s society they felt the need (and to some extent social pressure) to keep up with these technological developments. In this regard our participants perceived themselves as pioneers/trailblazers in their generation and felt a sense of responsibility to convince “off liners” to start using mobile devices and the internet (i.e. by showing funny YouTube videos on the smartphone).

Fig. 24  Preview on map—prototype
In particular, those participants who only had a desktop computer and no mobile device appreciated the opportunity to test a tablet. The introduction of tablets and the opportunity to test the co-created service was an important step in the process. In addition to experience the use of a tablet, participants could experience how their efforts and input had been integrated and valued.

Regarding the technical solution, it was necessary to consider the technological infrastructure available in the district. This included internet coverage as well as the supply of devices. Furthermore, the engagement with technology among the concerned older population had to be taken into account. This was partly done by reviewing statistics/studies on infrastructure and access for the Bremen Osterholz.

The city district guide for older citizens had to meet several requirements with regard to content and technical functions. With respect to content, the relevant objects had to be covered as comprehensively as possible, e.g. all existing places and meeting points with all the relevant attributes. With regard to functionality, it had to be easy to find these objects. To meet these two requirements, different competences in the project team were required (e.g. for content, functionality, design). While for some design questions it was appropriate to present different existing websites, for other aspects paper prototyping was more adequate. It turned out that the exercise with an open screen and several paper elements for possible menus, left room for discussion of many associated issues. While some participants enjoyed the paper prototyping others were hesitant to “glue” their proposition on paper. For those who were not too acquainted with digital media, the design task appeared to be too tedious. For those that regularly used digital media the ideas about design were mainly derived from their own experience with existing websites and applications.
Exploiting the Service

For the initial planning of co-creation activities, a first definition of targets, outputs and value propositions was defined and throughout the project continuously refined. This also included initial considerations about the sustainable deployment of the service and its required data and technical infrastructure as well as key neighbourhood resources. Subsequently we developed ideas on how the service might be maintained beyond the end of the project. We agreed that the city information portal would maintain the app and technical aspects (cost structure & revenue stream), whereas a group of local actors (key partners) would be responsible in maintaining the content (key activities). To communicate the service, it was provided through a multi-channel approach: in digital form and in a printed version. The following figure summarises the canvas for Bremen Osterholz (Fig. 26).

Summary of Co-creation Process and Output

Overall, there was an emphasis of activities in the engagement with stakeholders, the working with data and the co-creation of software which allowed participants to share control and knowledge throughout the co-creation process. The table below provides a summary about the types of activities/methods we used during our co-creation process and the stakeholders involved (Table 4).
There are three kinds of output of the co-creation process of an interactive digital district guide for Bremen-Osterholz:

- data collected and presented in the guide,
- an app providing access to these data,
- an online service in which data and app are embedded and that is offered by a service provider that maintains it.

As it has been described above the guide contains all points of interest in the district relevant for senior residents. The list has been checked with several experts and nobody mentioned something missing. It includes 17 nice places and 75 organisations relevant for senior citizens.

In order to assess to which extent the service provides relevant information to older adults and other stakeholders, we collected feedback in interviews with participants, service providers, intermediaries and government.

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**Table 4** Overview of activities/methods deployed in Bremen Osterholz from May 2016 to January 2017

| Activities                                           | Number | Attendees                                                                 |
|------------------------------------------------------|--------|---------------------------------------------------------------------------|
| Expert interviews with intermediaries                | 8      | Ifib, neighbourhood manager, head of local district government, representatives from two different Christian congregations and one social service centre, representative from Centre for Migrants and Intercultural Studies (ZIS), representatives from social welfare organisations (Mutterzentrum, AWO) |
| Meetings with local stakeholders                     | 10     | Ifib, neighbourhood manager, head of local district government, BORIS senior citizen group, local older citizens groups |
| Recruitment and information workshops                | 2      | Ifib, older citizens, head of local district government, editor senior online web portal, editor printed neighbourhood map |
| Cultural probes and interviews                       | 11     | Ifib, our workshop participants                                           |
| Co-Design workshops and observations (idea forming, service and data definition, co-design, tablet use and testing) | 14     | Ifib, FTB, our workshop participants, head of local administration, journalist, intermediaries, stakeholder |
| Questionnaires regarding technology use              | 9      | Ifib, our workshop participants                                           |
| Focus groups for content/data creation               | 12     | Ifib, project group for printed neighbourhood map, 12 existing groups of 3 to 20 older citizens |
| Evaluation focus group (1 about tablet use and 1 about process) | 2      | Ifib, our workshop participants                                           |
Value for Older Adults

Through a formative evaluation, participants confirmed that they were satisfied with the content of the service. They considered the 17 nice places and 75 service providing organisations as complete and the information as correct, comprehensive and appealing. However, the target group of older adults is larger than our group of co-creators. In a focus group with three neighbourhood managers, working in less privileged neighbourhoods in the district, they confirmed that *information provision* in general is a relevant factor for social inclusion. However, they saw limitations with regard to the general issue of accessibility of digital technologies (technical equipment, skills, interests, fear). That is why they produced the printed neighbourhood guide.

They recommended public access terminals and a *printed short version* of the most important content. As their printed district guide included the service providers but not nice places and walks, we decided to print a booklet with the 17 nice places. This was published on the day of the launch of the online service at bremen online and was distributed via their offices as well as via the district office.

In addition, the intermediaries were critical about the accessibility of the service in terms of its sustainability and up-to-dateness. One of the neighbourhood managers stated:

> Well, I’m not so sure if it’s really going to reach the seniors. …If you are looking for something, when you search purposefully, for example, I want to go to the swimming pool in the OTE hall in Osterholz for example and when are the opening hours, then I would google it. Then I wouldn’t find it. And then whether I bump into this site, I don’t know. […] Well, I think that as supplementary information such a thing is good, but as I said before, it has to be kept up to date and if I am looking for it, I have to find it.

With the migration of the content to the city portal and its feature of self-administered updating by data owners on the one side and the commitment of the providers of the city portal to maintain the data of the 17 nice places for a duration of 2 years, sustainability is ensured.

An open question is the relevance of the information provided for different groups of older adults, in particular with regard to issues around social inclusion, connectivity and participation. The relevance of the objects and attributes selected reflects the needs of a particular subgroup, which is mobile, comparatively well-educated, and engaged. One of the neighbourhood managers suggested that for older people with health issues or financial constraints this kind of information provision might not be as relevant: “Well, I think that’s going to do well for those who are better off.” The other neighbourhood manager explains:

> And very few have a large iPad or a PC with a large screen. I saw that also in this PC course for older people. Some people said: “Oh, that’s interesting, now I dare to buy one of those things, now I know how to do it. That’s what the residents are like, but I’ll tell you, those from the blocks that don’t live in condominiums or in single-family houses, they’re really into it, they like it. However, most of these residents are poorer people who don’t have these financial possibilities, they miss it.
Value for Intermediaries and Service Providers
The interviews with the neighbourhood managers also demonstrated, that the service is not only relevant to older adults but also to intermediaries and local service providers as it may support them in fulfilling their tasks:

It would be more important to have all these multipliers. And I think that’s good for them, because for many of those who work in Blockdiek [area with low socio-economic status], they don’t know what the neighbouring facility does and can do. It is so… The managers might know about it, but the normal employees, if they work part-time even, they don’t know what the institution around the corner is doing, what they have to offer, or that there is one at all. In this regard, the service is totally valuable, because they could say I have a web page here, take a look at it. That would be important.

In this regard, the digital district guide can support the networking of local service providers and consequently facilitate better service provision. The intermediaries also assessed the content as being oriented towards older adults as target audience (addressing their needs and interests). Categories that were defined in the process were confirmed by the neighbourhood managers as being relevant to older adults when moving outside.

Value for Government
At the launch event of the service in February 2018, a director of the State Ministry of Social Affairs, Women and Senior Citizens confirmed that the content of the services is highly relevant and compliant with the objectives of the recent political priorities and four central issues with regard to seniors (Table 5):

The service supports all four policy objectives and hence the ministry can support similar processes in other districts of Bremen. The director outlined some of these correspondences and explained why such as service could be a “good practice case” for other districts. He welcomed the offer by bremen.online to provide the templates of the Osterholz-Guide to other districts.

Table 5 Value for government

| Political objectives                                                                 | Corresponding part of the guide                                      |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| The district as home: Districts are central for integration and social participation  | The guide provides information, where people can get advice          |
| and politics should support people to stay in the district as long as possible         |                                                                     |
| (ageing in place)                                                                     |                                                                     |
| “Stadt in Bewegung” [City/Citizens in motion]: Physical exercises (indoor and outdoor | The guide lists all sporting clubs in the district and information on |
| e.g. in sporting clubs) shall be supported                                            | nice places to walk to                                              |
| Living together in a growing city: Opportunities for social participation will be     | The guide includes all the indoor meeting places of the district,     |
| improved in order to develop the city and improve tolerance for differences           | inviting people to get together there                                |
| Good services for the city and its people                                            | The guide itself is a good service for the district                  |
Lessons Learned

The following section summarises our lessons learned. These have been taken-up and evaluated in the second co-creation project, which is presented in the next chapter.\footnote{Please note that the lessons learned were also used for the interim good practice guidebook.}

**Governing and Managing Co-creation**

To select a district where already a group existed that provide a information for senior adults and to start recruiting co-creators from and with this group turned out to be a good choice and should be repeated with regard to subsequent co-creation processes.

Lesson O-1.1: Start with an existing group of stakeholders that provides information of the desired kind for the target audience.

Given the broad range of contributions that are necessary for developing an interactive district guide that is relevant, up-to-date and accessible, we found that each of our participants had only some of the necessary skill set. Therefore, we challenged our initial view whether the recruitment of one single core group over the whole co-creation process is indeed the best model. Our partner in the data collection phase that had developed several printed district guides for older adults in other districts of Bremen followed a two stage model. She established a project team of intermediaries working with older adults to plan and coordinate the process and asked them to recruit focus groups to identify relevant objects and provide information. This model may be extended to other tasks such as specifying requirements for software design or editing of texts as well in order to engage older adults as representatives or advisors.

Lesson O-1.2: Establish a project group that helps coordinating different co-creation contributions by different co-creation partners.

In an action research project there is a time conflict between research-related activities and the practical co-creation activities required from the participating older adults: In order to get a better understanding of the members of our core co-creation groups, their personal background, relation to the district, digital literacy, we spent some time to develop cultural probes that demanded a lot of time from the
participants as well. On the other hand, more support in introducing the tablet PCs was desired.

**Lesson O-1.3:** Consider *activities that are feasible* for other co-creation processes, in particular if the co-creation facilitators are not researchers but public authorities or service providers.

**Lesson O-1.4:** Consider *activities that are supporting the use of technology* in order to ensure a higher motivation and satisfaction and more effective contribution by older adults.

There is a need to be transparent about the decisions to be made during the co-creation process and to reach agreement on the appropriate decision-making method, i.e. open idea generation and discussion, choice between a few alternative options or discussion of and consent on a preferred solution by the co-creation team. It is also important that such decisions are documented in a transparent and accessible way in order to keep participants up-to-date.

**Lesson O-1.5:** Establish transparent decision-making procedures.

**Engaging Stakeholders**

In general, it can be said that engaging stakeholders worked best through the collaboration with local stakeholders and existing groups. Promoting the project on two district fairs did not work well.

**Role of Intermediaries** Intermediaries were equally important and helpful as the co-creating older adults with regard to field exploration, recruitment of participants, idea forming up to the service development and sustainability considerations. Depending on the topic area their role in the co-creation process differs (from information providers and/or supervisors, topic experts to future users).

**Lesson O-2.1:** Identify the different roles which intermediaries may assume throughout the co-creation process (data providers, maintenance, recruitment support, future users) and establish corresponding collaboration relationships.
“Cold recruiting”, e.g. on fairs, markets etc. did not work well, as one intervention showed. Recruitment may be effective when starting from already existing groups and aligning with their interests (e.g. older citizens’ computer group). Nevertheless, there is a dilemma of recruiting for well-targeted and well-framed activities, and simultaneously keeping the co-creation process open. Recruiting people for a co-creation process, lasting about half a year, with only vague objectives and tasks unfamiliar to most older people is a great challenge. We had to provide a notion of the project’s objective and what people would commit themselves to for about half a year, what kind of input, in particular what local knowledge, we would like them to contribute. As these issues are difficult to communicate clearly, for the information event and the kick-off meeting we were looking for a venue which is easy to reach for people in the district and a host that is trustworthy. We asked the head of the local district government of Osterholz and he agreed to open the assembly room of the district council and welcomed participants at both meetings. All participants received a participant information sheet.

Lesson O-2.2: Recruitment activities must consider the context in which they address older citizens as potential co-creators.

Lesson O-2.3: Engage intermediaries who are ready to support recruiting older adults.

For our process, it was important to establish the co-creators as experts and to appreciate their local knowledge. This established an engagement of mutual respect between the project team and participants, as both parties wanted to learn from the other. Establishing the participants as experts was facilitated through methods such as the card game or the probes. In particular the probes and related individual interviews were one of the interventions that resonated with participants most. They further helped to establish a trusting relationship with the participants. They also manifested the expert status of the participants with respect to knowledge about the district and their experience of becoming older. What was particularly helpful with probes throughout the process (idea forming as well as evaluation), was their ability to prompt participants to reflect about their everyday life. In subsequent interviews and focus groups, participants were much better prepared to give an account about for example their mobility and socio-spatial inclusion within the district. Cultural probes sensitised participants about certain aspects of their everyday practices and were hence tremendously helpful in identifying needs and resources.

Lesson O-2.4: Establish older adults as experts.
During a co-creation process, participants need to “find” their role from a customer/user of a service to service designer. The co-creation facilitators hence need to think about ways to facilitate role shifts and consider the following questions:

- What is the role/contribution from administrations, software developers, facilitators?
- What does this role entail and what are necessary skills and knowledge?
- How are older citizens enabled to assume such a role?
- What may be barriers for role-shifting?

In the different phases of a co-creation process different capabilities are required. In a permanent core group there will always be some participants with limited ability to contribute to particular aspects and activities. Therefore, it is worth investigating to assemble different participants for each of the phases rather than one core co-creator group. This allows for defining expectations more clearly and may be more satisfactory for the participant. Overall, there are several areas in which co-creators may engage:

- Identify information needs
- Identify gaps between information needs and existing services/data
- Perform editorial work
- Collect, create, and validate data
- Define technical specification/systems requirements
- Plan and perform usability testing and system evaluation

Lesson O-2.5: Establish procedures to facilitate role shift of participating older adults.

**Co-creating a Service Concept**

*Personas* and scenario-based design were an important co-creation method for our project in Osterholz. On the one hand they *helped to anticipate future users*, on the other they *helped to tease out the relevant characteristics* (socio-economic, social relations, general health & mobility, attitude towards technology) of older adults. Personas were developed based on the participants and complemented with statistical information. They enabled participants to discuss matters of concern not only from their perspectives but also by taking other people’s perspective into account. In particular, with respect to sensitive aspects such as financial constraints or limited mobility, personas helped participants to articulate needs without feeling intimidated to speak about themselves. The personas were subsequently used to develop use case scenarios and facilitated communication for the concept developing, co-design and evaluation stages. Personas and scenarios also served as a thread
throughout the co-creation process, connecting different activities (such as identifying information needs to map design).

Lesson O-3.1: Make use of methods that help to tease out defining characteristics and that allow establishing a thread throughout the process.

Given the low internet use among older adults they may not become the main users of a digital service such as a local district guide. If the topic is nice places and walks, intermediaries that organise and advertise walks for older adults in their district may be the direct users and the guide should be designed in a way that supports their work.

Lesson O-3.2: Intermediaries should be considered and integrated as main users of a service.

We learned that there is a dilemma that most people who are socially excluded or at least not well included (e.g. because of poor social status, being unemployed or having language problems) will not volunteer for co-creating a district guide on nice places. Therefore, the value proposition and the announced impact of our co-created service needed to be more modest and restrictive. Addressing intermediaries could be effective in this respect as well. The focus should not only be on future users, but also on (complementary) existing services these intermediaries provide. They can facilitate contact with different experts for e.g. identifying needs, services, or relevant content.

Lesson O-3.3: Information is a necessary but not sufficient condition for social inclusion. Consider more activating services.

**Working with (Open) Data**

Overall, we had to realise that very little data is available on the content identified as most relevant by our participants (social, cultural, leisure activities). Some participants engaged heavily in collecting data, while others were ready to name objects of interest but not to collect or validate detailed data on attributes. During the process, we decided to focus on fewer categories and less content than foreseen, and instead to focus on those objects that currently are not found online and that are rather difficult to describe. It is hence not advisable to keep the process open for too long but rather to focus on fewer aspects and work on them more intensively.
As the content creation on nice places was seen as most valuable by the participants and also local stakeholders, we decided to focus on nice places in our next phase and investigate further the specific, additional information needs of older adults and intermediaries (e.g. also with respect to features that are not based in data but for example on videos of walks).

Lesson O-4.1: Open data should not be considered to be easily available for the information needs of the co-creating older adults and other stakeholders as there is a gap between the data available and the data required for a service that improves social inclusion by activating people.

To develop a comprehensive district guide that contains detailed and relevant information on many different kinds of relevant resources, turned out to be too much work for such a group of older volunteers. Even though we reduced the categories of objects to be represented in the digital neighbourhood guide, we concluded to reduce objects and instead focus on nice places and walks for the next district.

In our first co-creation process, a team of local service providers supported our process by conducting structured focus groups with different groups of seniors in order to identify places and institutions of interest to them and the most interesting aspects in each case. As described above, overall 12 focus groups were conducted which led to almost 20 nice places and about 80 institutions of interest. The snowball data collection process about nice places and walks, informal meeting points and points of interests was a necessary supplement to the small core-co-creation group, putting the content generation on a much broader and more representative set of sources, needs and views. However, among the first eight groups four were in a church environment, leading to a bias, which needed to be compensated by finding other groups e.g. the men’s breakfast club.

Lesson O-4.2: Less is more. Concentrate on a few categories of objects and dedicate more time on their presentation, making use of a range of media formats.

Lesson O-4.3: Consider methods that allow the inclusion of a broader range of older adults for the data collection (e.g. focus groups).

Co-creating Software

For involving end users into co-design activities, open questions regarding the design and functionality were at times misleading, because the participants often answer intuitive and spontaneous. It is more effective to propose a selection of dif-
different existing examples and discuss the advantages and disadvantages. Personas helped participants to reflect on other users and anticipate their requirements (e.g. non-native speakers, new residents).

Lesson O-5.1: Consider the reduction of open prototyping tasks.

Overall, the design of an application is more than the design of a user interface and also includes the design of the data base and other back-office functions, e.g. user administration. For example, the data tables that were used for data collection were also the blueprint for the database model of our service. The decision to develop two different tables for nice places and facilities was taken by the ifib team and discussed with the technology partners FTB. It was based on considerations of different data models (objects and attributes). The result was communicated to the participants but not discussed. They did not feel competent nor interested in how we would translate their needs into technical requirements.

Lesson O-5.2: Consider the co-creation of an application beyond the design of the user interface.

Exploiting and Disseminating the Service

Even when intermediaries participate in the co-creation process and conceive themselves as users they may not automatically take responsibility to maintain the resulting service. In the case of Osterholz, we could start with an already existing online editing group. However, they were the only one of this kind in Bremen. In a second district, we are challenged to find someone else who would take responsibility for taking care of the content.

Lesson O-6.1: Sustainability remains a big challenge.

The next chapter describes our co-creation activities in Bremen Hemelingen, how the lessons learned in Osterholz have been taken into account and what we learned in the process of doing so.
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