

Jul@ - A web app to support the political participation of adolescents and young adults in rural areas

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Abstract—This paper presents the concept, a prototype and the initial test of a web app that supports the political participation of young people in rural areas in Germany. Rural adolescents and young adults are often not adequately represented in the political dialogue. With the proposed web app, the authors want to address this issue and create new forms of participation. Within this paper, the requirements engineering and design process in cooperation with the target group is described. Based upon the users' input from requirements engineering workshops and a design thinking workshop, a user interface of the planned application was designed and optimized. Subsequently, a first version of the web app was developed and tested in an event with young people. Our research shows that requirements of young people in rural areas for the app deviate from those of professional youth care organizations, thus creating challenges for the rollout of the proposed application.

Keywords— youth participation, social informatics, rural areas.

I. INTRODUCTION

In recent years, young people in rural areas have been identified as a target group to be included in regional development and participation processes in Germany [1]. In these activities, the focus of youth care workers mainly lies on formal ways of participation [1]. However, existing concepts and strategies for increasing youth participation in rural areas have rarely been successful in Germany so far [2]. Therefore, new approaches are needed to enhance youth participation. It is the goal of this work – which is part of the „Jul@“ project funded by the German Ministry for Education and Research - to address this issue by (a) focusing on less formal ways of youth participation with „unorganized“ young people as a specific target group, and by (b) using mobile applications to bridge some of the existing impediments and gaps for youth participation in rural areas. Within this paper, a design process for such an app involving young people from rural areas as co-creators will be presented. Based upon identified requirements, a prototype of the app will be designed, evaluated, and a first implementation and its use in a youth event will be discussed and presented. The implementation is based on open source components in order to minimize the costs for youth associations

This work was funded by the German Federal Ministry of Education and Research (BMBF) through the Jul@ project grant, FKZ 13FH059SB8

and institutions when hosting the developed software at a later stage.

II. CURRENT STATE OF RESEARCH

The use of mobile applications to enhance the participation of young people has been proposed for quite some time. In 2013, van Belle and Cupido [3] identified mobile applications as suitable tools to enhance the participation of young people in South Africa. Young people showed a high degree of acceptance for a wide range of use cases from the reporting of corruption, and complaints about public services to facilitating interactions within the community or with local councilors. The possibility to participate in m-voting / quick polls was also very positively evaluated. More recently, youth participation apps have also been developed for youth-related institutions in German-speaking countries (for an example, see [4]). However, all these applications have in common that they were designed for organisations working with young people rather than by young people in rural areas themselves. More recently, Omer et al. [5] highlighted the benefits of directly involving youth „in designing a mobile application for facilitating community organizing and engagement“, but their study was conducted in the USA without any relation to young people in German rural areas. Other studies focused on the use of participation apps by young people in different settings. Ertiö et al. [6] found that the use of a participation app in urban planning processes in Finland by „young adults“ was mainly driven „by the opportunity to bring their own ideas and issues to the city authorities' attention“. Pang [7] highlighted the impact of mobile phones on the political expression among young people in China. While these studies underline the relevance of mobile applications for the political participation of young people, they do not address design issues for such applications, nor were they conducted in a German cultural and political context. Within the Jul@ project, a preparatory study by Düwel et al. [8] took a first step to close this gap by conducting focus groups in three German counties to identify the requirements that young people (aged 12-25) in rural areas have for a participation app. They found that a key impediment for participation is the fear to be affronted or discriminated against when using digital participation tools. This fear does not only relate to some of their „peers“ but also to public opinion which may not accept them and their views, intentionally

„misunderstand“ them or reject them as undesirable or unwanted. This is particularly relevant in rural areas, where peer pressure / social pressure can be strong. As a result, young people require a participation app to be a safe place for respectful communication. The application has to be moderated, and should allow some degree of anonymity while at the same time providing protection against bullying. Young people also highlighted the importance of usability / ease of use. Using the application should not be perceived as an additional barrier that makes the already complicated participation process even more difficult. Focus group interviews with young people and youth-related stakeholders also revealed that young people wished to be able to discuss their opinions in closed groups with dedicated peers before making them known to the public or even to youth care workers. However, the preparatory study did not include young people that are difficult to reach due to their non-participation in activities of existing youth facilities, which is a key target group for the new application.

III. THE DESIGN PROCESS

As stated before, a goal of the Jul@ project was to actively involve young people as co-creators in the design process of the application for mobile participation. This was achieved in two ways: firstly, by conducting a design thinking workshop with members of the target group, and secondly, by involving young people in usability testing of prototypes of the front-end. This process was conducted in addition to the initial requirements analysis published in [8].

A. The design thinking workshop.

The design thinking workshop (for relevant concepts, see [9]) was a prerequisite for the conceptual design of the high-fidelity prototype. For the workshop, ten young people from the target group could be recruited. The age range of participants was between 13 and 17 years, and during the recruitment, it was assured that several of the participants have never been active before in any formal way of political participation, thus representing a target group of particular interest to the project. During the initial phase of the workshop, the young people discussed what important requirements for a participation app were from their personal perspective. Requirements were collected using metaplan cards so that the results could quickly be visualized and requirements could be grouped into different topics of interest. The following requirements were identified (in decreasing order of relevance):

- Surveys, e.g. to analyze young people's opinions on political topics, but also to vote on proposed measures of improvements (e.g. for meeting places of young people, such as skate parks).
- It was important to be able to make proposals anonymously, and to discuss proposals at first in private within a selected group of peers.
- Location-based group chats for places of interest, so that young people could document their ideas, complaints, and proposals for a specific place (preferably „in-situ“ and in a map-based view, so that other young people, but also persons responsible for a

certain place can find and react to the contributions easily).

- A crowdfunding component which enables young people to finance activities and improvements without having to address „politicians“.
- Use the map-based view to post links to proposals and related chats.
- A calendar with events of relevance for young people in the region.
- A newsfeed about interesting projects and activities.
- Being able to subscribe to news from specific places.
- A complaint form to report grievances.
- Online games for participation.
- Protection from hate speech through moderators or filters. Here, it was more specifically proposed to use artificial intelligence as a tool to identify and filter or flag hate speech contributions.

The requirements analysis during the design thinking workshop confirmed several of Düwel et al.'s [8] previous findings from the focus groups with young people and other stakeholders. One interesting aspect was that some items that were highly rated by youth centers, such as calendar functions and newsfeeds were not so highly rated by the young people themselves. In the second phase of the design thinking workshop, the participating young people were grouped into three „design teams“ and were asked to sketch storyboards of how they would implement the user interface and the „customer journey“ of a participation app. Later on in the process, the tool „Marvel“ was used to turn the story boards into clickable prototypes of the front-end. In the final phase, all three groups presented and discussed their ideas and findings. It turned out that a map-based visualization approach was of very high relevance for the participating young people.

B. Designing the user interface.

Based upon the user requirements and the results of the design thinking workshop, a prototype of the front-end was created. Highly prioritized requirements were included as items in the tab bar, namely „news“, „exchange / communication“, a „map“ and the „calendar“ (Fig. 1).



Fig. 1. Symbols for news, exchange / communication, map and calendar

As usual, the symbols in the tab bar can be used to navigate to relevant pages. Of these pages, only the relevant templates were presented. However, no specific content was included in



Fig. 2. Symbols for news, exchange / communication, map and calendar (from left to right).

the prototype but just the overall structures. This was done intentionally in order to prevent that specific content (liked or disliked by the test user(s)) may distort the usability evaluation during later testing. Fig. 2 shows the key screens of the mock-up that were directly accessible using the tab bar. As stated before, the map-based view was of particular interest for the target group and enabled registered users to attach links to places of interest that then lead to chats related to this specific place. In order to prevent misuse and reduce the risk of mobbing, users of the proposed participation app can only post, react, and vote if they are logged in and have identified themselves with their mobile phones using an SMS-based authentication process. Fig. 2 shows how a user who is logged in would view the app's contents – with symbols for sharing content, and the possibility to add content (such as a new place of interest or a topic of discussion), or to add appointments. Users who are not registered and logged in can only read contributions but are unable to interact with the application beyond that.

C. Usability testing.

Based upon these preparations, usability tests took place in 2022. Due to the pandemic situation still prevalent at the time, usability testing had to be conducted remotely. In total, 8 young people aged between 13 and 25 participated in the remote usability tests via Zoom-conference. Before, the prototype had been uploaded so that it was accessible via a link, so that the test persons could access the prototype (mock-up) at their own mobile phones. Half of the test persons were male and the other half were female. Three test persons were members of a youth parliament, and the other five were visiting a youth center when they were spontaneously acquired for the usability test. Contrary to the design thinking workshop, during the testing phase all participants had some contact to „formal“ institutions of youth participation. During the test itself, a thinking aloud approach

[10] was used to collect user feedback. During the test, the users were asked to complete the following tasks:

- Open and share a specific contribution.
- Participate in a vote.
- Look for information on a map.
- Look for an appointment in the calendar.

Besides that, users were also asked to navigate the application at random, and they were repeatedly reminded „to think aloud“ in the process, to make proposals and to voice critique. During the test, the requirements identified in the focus group and the design thinking workshop were once again confirmed. The feedback of the participants mainly criticized the design of icons / symbols which were not always self-explanatory. For news, the test persons preferred a newspaper symbol instead of the star symbol which had been selected. Furthermore, the map symbol was not recognized as such by several test users. The concept with regard to anonymization was by and large accepted and approved by the test persons. In total, 26 usability issues were raised during the 8 thinking aloud exercises. 8 features of the prototype were highlighted as positive (without having explicitly required to mention positive feedback). Additionally, 38 proposals for improvements not directly related to usability were made during the remote usability tests.

The feedback from usability testing was taken into consideration when developing the overall prototype of the mobile application to support youth participation in rural areas of Germany. This development is currently ongoing (work in progress). A key focus of the development is on the map-based view with location-based chats, because this functionality has to our knowledge not yet been implemented in other German-language youth participation apps so far. What is also not avai-

lable as part of youth participation apps as of now is the requested crowd-funding functionality, but it was decided not to follow up on this feature because for minors, a lot of legal issues need to be solved related to crowdfunding and it is questionable if this is feasible. For young people over 18 (i.e., legal adults in Germany), on the other hand, several crowdfunding tools are already publicly available.

D. Application development.

It was decided to implement the proposed application as a responsive web app. One key reason for this was the limited budget which only allowed to develop one application. While cross-platform development frameworks do exist, there were concerns that developing both an iOS and an Android app would create an additional workload even with such frameworks. A web app was also seen as (a) suitable solution that (b) was by and large platform-independent and thus covering the widest possible range of users. Furthermore, a web app does not permanently consume scarce space on the mobile phone, which is a key concern of the young people. What has been implemented so far is a newsfeed for the test region in which the user is registered, and the map-based component with location-based chats, as well as a general chat for the relevant test region. Implementation of the backend with the database and the user administration was realized with Appwrite [11]. The frontend was implemented with Angular [12] and Ionic [13]. Both the backend and the app software are currently hosted on the same server and access is facilitated via a reverse proxy (using traefik [14]). Fig. 3 to Fig. 5 show the overall layout of the web application’s user interface. The profile page mainly shows the selected nickname and the region of interest for each user.

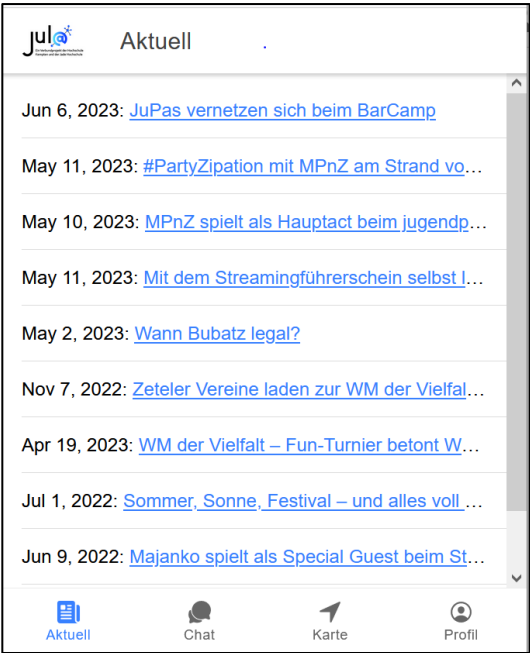


Fig. 3. Newsfeed.

The news site („Aktuell“) shows the implementation of the news feed. So far, no location-based chat is shown, this will be highlighted in the following section. Fig. 4 shows an example of

the map-based view, here with a link to a location-based chat related to Gödens castle. The icon shown next to the link can be selected from different categories (here: an icon for building-related information has been chosen).

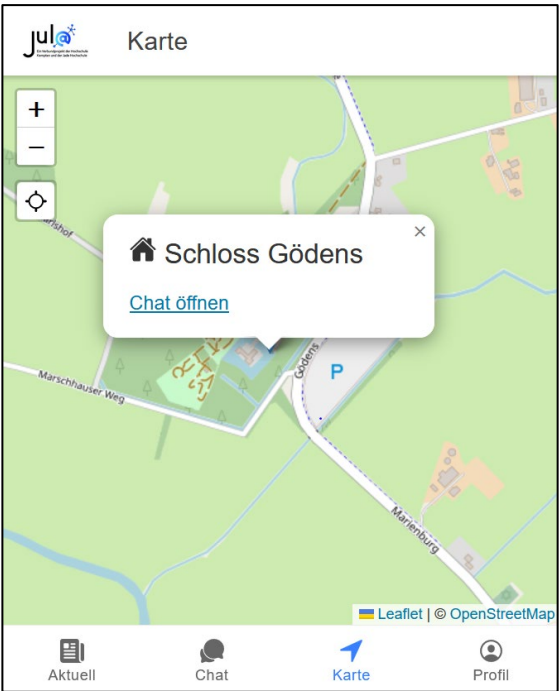


Fig. 4. Map-view with location-based chat.

Fig. 5 gives an example of a chat, here for the region of Friesland (with admin’s greetings when joining the region).

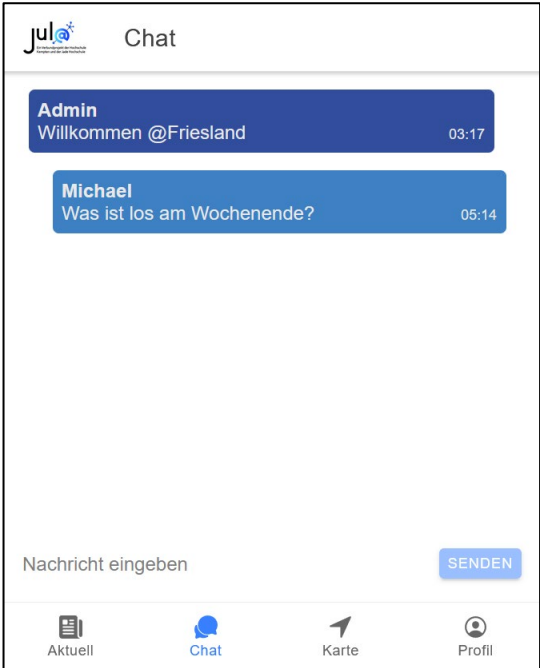


Fig. 5. Example of a chat, here for Friesland county.

IV. FIRST APPLICATION IN PRACTICE

In June 2023, the prototype of the application was used for the first time at a youth event where 18 students discussed with four local politicians at different tables. The idea for using the app in this event was twofold: (a) for highlighting key points of the discussion on a screen in the room where the event took place, so that all groups could see the input from the different tables, and (b) to document the discussion and make the results visible for future communications with stakeholders, but also for young people from the target group who were not present at the event itself. In this first event, the usage of the app was moderately successful. Some key discussion points were documented, but those participants who had registered with the app were so busy / involved in the discussions that only parts of the discussion were in fact documented. Additionally, during testing, an incompatibility was detected when using the application in the Safari browser, so that some people were not able to use it. This needs to be corrected in the next steps.

V. CONCLUSION AND OUTLOOK

During the next phase of the project, the key task will be to develop online or hybrid events for young people in rural areas that use the app to promote youth participation. Current ideas relate to formats such as outdoor activities like paper chases in which the young people visit places of interests and are then tasked with leaving comments and suggestions for that place. One key aspect will be to combine the “participation part” with other activities (here: “outdoor sports”) in order to attract also young people who haven’t been active in politics and participation so far.

VI. ACKNOWLEDGMENT

We would like to thank Alice Düwel and Dustin Schneider for conducting the preparatory study with the focus groups. We would also like to thank all participants in our study for their contribution and support, and Thomas Miller for acquiring (and co-supervising) test persons for the usability tests. And we are thankful for the input of two anonymous reviewers.

VII. REFERENCES

- [1] Schametat, J., Engel, A., & Schenk, S. (2021). Jugendpartizipation in ländlichen Räumen. *Soziale Arbeit*, 70 (10-11), pp 417-423.
- [2] Voigts, G. (2017). Beteiligung – eine Machtfrage. *DJI Impulse* 1/2017, pp. 28-30
- [3] Van Belle, J. P., & Cupido, K. (2013). Increasing public participation in local government by means of mobile phones: the view of South African youth. *The journal of community informatics*, 9(4), pp.1-18.
- [4] Jugendapp. <https://jugendarbeit.digital/produkte/jugendapp/>, accessed on July 23rd, 2023.
- [5] Ohmer, M., Booth, J., & Farzan, R. (2021). "RU connected? Engaging youth in designing a mobile application for facilitating community organizing and engagement." *Journal of Community Practice* 29 (3), pp. 257-279.
- [6] Ertiö, T.P., Ruoppila, S., & Thiel, S.-K. (2016). Motivations to Use a Mobile Participation Application. 8th International Conference on Electronic Participation (ePart), Guimarães, Portugal. pp.138-150
- [7] Pang, H. (2018). Mobile communication and political participation: unravelling the effects of mobile phones on political expression and offline participation among young people. *International Journal of Electronic Governance*, 10(1), pp. 3-23.
- [8] Düwel, A., Jung, M., Miller, T., & Pfeil, P. (2021) Zielgruppenanalyse - Jugend leben im ländlichen Raum (Jul@)-analog (e) und digital (e) Zukunft gestalten. urn:nbn:de:bvb:859-12347, accessed on June 16th, 2022
- [9] Pham, Y. D., Fucci, D., & Maalej, W. (2018). A first implementation of a design thinking workshop during a mobile app development course project. In *Proceedings of the 2nd International Workshop on Software Engineering Education for Millennials*, pp. 56-63
- [10] Rihiho, S. (2015). Experiences with usability testing: Effects of thinking aloud and moderator presence. Aalto University Publication Series Doctoral Dissertations 75/2015. Helsinki.
- [11] Appwrite. <https://appwrite.io/docs>, accessed September 30th, 2023
- [12] Angular. Introduction to the Angular Docs. <https://angular.io/docs>, accessed September 30th, 2023
- [13] Ionic Framework. The Mobile SDK for the Web. <https://ionicframework.com/>, accessed September 30th, 2023
- [14] Traefik. The Cloud Native Application Proxy. <https://traefik.io/traefik/>, accessed September 20th, 2023

This paper is a pre-print version (before final editing) of the following publication:

M. Klafft and M. Naumann, "Jul@ - A web app to support the political participation of adolescents and young adults in rural areas," 2023 42nd IEEE International Conference of the Chilean Computer Science Society (SCCC), Concepcion, Chile, 2023, pp. 1-5, doi: 10.1109/SCCC59417.2023.10315696. The publication can be accessed at: <https://ieeexplore.ieee.org/document/10315696>