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# “Alexa, I’m in Need!” – Investigating the Potential and Barriers of Voice Assistance Services for Social Work

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**Abstract**

Due the involved counselling activities, the profession of social work might provide a promising, yet so far uninvestigated application field for voice assistants. To explore requirements and barriers for voice-based services in the field of social work, we conducted focus group sessions with 41 professionals. During the group discussions and through a questionnaire, we collected requirements for applying voice assistants in this professional setting and corresponding application ideas. Overall, the participants expected a positive impact of voice assistants on their profession. While the protection of the clients’ sensitive data and the risk of their reduced social interactions need to be considered, the participants saw high potential in documentation services and the cooperative guidance of clients by human professionals and voice assistants. Future research should investigate the design of this interplay and study appropriate handover strategies between human experts and virtual assistants for specific social work services.

**Author Keywords**

Voice assistant; conversational interface; social work; counselling service; focus group.

**ACM Classification Keywords**

H.5.m [Information interfaces and presentation (e.g., HCI)]:  
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**Figure 1:** Amazon Echo Dot (3rd generation) with the Alexa assistant, an example of a widely used smart loudspeaker system.

## Introduction

Over the last few years, voice-based personal assistants such as Apple's *Siri* or Amazon's *Alexa* gained significantly in popularity and became ubiquitous due to their availability on smartphones as well as in affordable smart loudspeaker systems such as *Amazon Echo Dot* (Figure 1). Merely Amazon sold "tens of millions" of such systems in 2018, according to a recent blog post of the company [9].

These available assistants provide support for typical everyday tasks, with playing music, searching the Web and controlling smart home appliances being the currently most used application categories in domestic settings [1]. In the meanwhile, HCI researchers started to study the application of voice-based conversational interfaces and useful customized services in various professional or specialized fields such as the automotive domain (cf. [3, 6]). Furthermore, we observe increasing efforts in user-centered design approaches in order to involve special user groups in the identification and design of suitable voice-based assistance services (cf. [2, 5, 8]).

In this paper, we explore the potential and barriers of voice assistance services for social work. Typically, professional social workers support individuals, families and groups at public social services, institutions for child and parent protection, and advice centers regarding topics such as addiction, violence, migration, work or shelter. Due to the involved counselling and mediating functions, social work might especially benefit from customized useful voice-based assistance services.

The research goals we pursue in this preliminary work are

- to learn about current practices regarding voice assistants in the field of social work,

- to investigate potential requirements and barriers of customized voice assistance services, and
- to identify promising application ideas together with social work professionals.

The contributions of these early explorations are practice-based insights into requirements, risks as well as application ideas identified by domain experts, which provide a solid basis for future in-depth investigations.

## Method

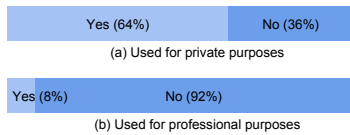
We conducted four focus groups during a conference for social work professionals ("*Bodenseetagung 2018*") in St.Gallen (Switzerland) in November 2018. Its about 200 participants consisted both of practitioners and lecturers.

### Focus Groups

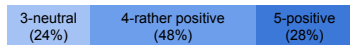
The focus groups were conducted by two moderators (one with a background in Human-Computer Interaction, one with social work expertise) during one morning session of the conference. Each group consisted of 5 to 12 participants, overall we had 41 participants.

The duration of one session was between 35 and 60 minutes. Each session comprised the following three phases:

*Phase 1:* The moderators started with a demonstration of Amazon's *Alexa* on an *Echo Dot* (Figure 1) as an example of a modern voice assistant. We prepared various exemplary services and respective voice commands for demonstration purposes. The examples covered services from answering everyday questions (time, date, weather), smart home applications (playing music), information services (highest mountain, etc.) to custom skills such as information on the local public transport and regional news. The moderators demonstrated a few services, then handed out



**Figure 2:** The participants' experience with voice assistants: 64% had used one for private purposes at least once (a), 8% for professional purposes (b).



**Figure 3:** The participants' expected impact of voice assistants on their profession (none of them expected a "1-negative" or "2-rather negative" impact).

paper sheets with further commands and let the participants freely experiment with the system.

*Phase 2:* The moderators initiated a group discussion. They asked the participants regarding the expected impact of voice assistants on their profession, potential useful applications, as well as barriers and risks in the field of social work. During the group discussion, the moderators took notes on remarkable arguments and comments.

*Phase 3:* Finally, the moderators handed out optional paper questionnaires. Following demographic data (sex, age, occupation), we asked whether the participants had ever used popular voice assistants for private or professional purposes. Then, they assessed the expected impact of voice assistants on their profession within the next 10 years on a 5-point Likert scale from 1 (negative impact) to 5 (positive impact) (with the option of no impact at all). Furthermore, we asked for features, a voice assistant must offer to be useful for their job, as well as as for reasons to not use a voice assistant for professional purposes. Finally, we wanted to know whether (and if yes, why) they considered a special voice service helpful for their clients. Filling in the questionnaire took about 5 minutes. After the conference, the returned questionnaires were digitized for a detailed analysis.

#### *Participant Characteristics*

Overall, 25 participants (12 female, 13 male) filled in and returned the questionnaire (response rate of about 61%; the remaining participants typically immediately left after the group discussions to attend another workshop or talk at the conference). These participants were aged between 26 and 63 years ( $M=41.17$ ). 16 of the participants (64%) who returned a questionnaire stated to have used a voice assistant for private purposes at least once (Figure 2a). Regarding usage in professional settings, only 2 participants (8%)

answered the question with 'yes', the majority of 23 (92%) had not used a voice assistant for professional purposes so far (Figure 2b).

## **Results**

In this section, we summarize the key results of the conducted focus group sessions. We especially focus on the participants' qualitative statements during group discussions and in the questionnaires.

### *Impact on the Professional Field of Work*

Regarding the expected impact of voice assistants on their field, the participants who filled in a questionnaire had a clear opinion (Figure 3): none of the participants expected a "negative" or "rather negative" impact on the professional area of social work. 6 (24%) expected neutral consequences, yet 19 (76%) expected "rather positive" (48%) or "positive" (28%) impact, respectively. On a five-point scale (1-negative to 5-positive), the median of the ratings was 4.13 ( $SD=.48$ ).

All of the 25 questionnaire respondents stated that they could imagine helpful applications of voice assistants for their clients. As reason, about half of the participants noted that they expected major facilitation in their daily professional routines. Especially due to support in documentation and protocolling tasks through voice assistants, they expected time savings, and thus more time for actual interaction with their clients. Additionally, they assumed that voice assistants can be beneficial for querying guidelines, laws and rules instead of looking up respective information in paper files.

### *Requirements and Features*

One requirement for a helpful voice assistant for social work raised by the participants is domain expertise. Dependent on the actual application field, a voice assistant must be

aware of respective background knowledge, general information provided by current voice assistants is not sufficient for usage in a professional context. One concrete example mentioned by the participants is information about mobbing among children and teenagers. A respective voice assistant could provide answers to the 10 most relevant questions regarding mobbing and suitable (location-dependent) advice (“Who can help me when I feel mobbed?”). An example addressing the group of long-term unemployed is information on how to prepare for a job application. A voice assistant could not only provide helpful hints but also help practicing for job interviews in a dialogue-style manner.

Further requirements identified during the focus group sessions include a voice assistant’s ability to recognize the emotional state of a speaker. Several participants emphasized the importance of delicacy of a social worker when interacting with people in emergency situations. In case a voice assistant undertakes selected tasks of a human social worker, it must adapt to the emotional state of its conversation partner and provide delicate and situation-dependent feedback.

Three participating social workers wished that a supporting voice assistant could either refer back to personal statements they made earlier during sessions with a client, or even “speak out in the social worker’s voice”. They emphasized the required positive interplay of the human social worker and the voice assistant and expected superior impacts on their clients and their progress through a homogeneous appearance.

#### *Barriers and Risks*

Overall, the identified barriers for using a voice assistant for professional purposes and respective risks can be assigned to two major categories: data protection and reduced social interaction.

Half of the participants who returned their questionnaire explicitly mentioned their concerns regarding data protection. Social workers deal with very private and sensitive data of their clients, and thus submitting respective voice samples to external data centers was regarded a knock-out criterion for a virtual assistant. Participants were afraid of “losing control over this information” and the “extensive data collection of the big players”. During the group discussions, the need for “secure” voice assistants that preserve the privacy of the processed data became apparent. At the same time, several participants expressed their doubts that their home institutions neither have the resources for setting up nor maintaining own servers and services for customized voice assistants.

The second risk, which was one of the main discussion topics, is the potentially reduced social interaction of clients and social workers. Several participants mentioned the importance of interpersonal relationships for the success of their work. They feared the increasing isolation of people who are already at risk to be socially isolated due to their handicaps such as addiction or experience of violence. Furthermore, several professionals expressed the relevance of continuous human support in order to recognize important development steps of a client. They feared to miss out respective signs when more and more advising tasks are provided to their clients by a virtual assistant.

#### *Application Ideas*

While discussing within the group and filling in the questionnaire, the participants developed several application ideas for voice assistants, which might be helpful for their clients.

One recurrent topic was the cooperation of a voice assistant with domain expertise and a human social worker. The participants agreed that a voice assistant could provide an easily accessible adviser for special user groups. Accord-

ing to several participants, clients with borderline syndrome might prefer interacting with a voice assistant over talking to a human social worker. Furthermore, topics, which might be perceived as embarrassing, such as alcohol and drug abuse or addiction to gambling might be suitable application fields for a virtual adviser. After this low-threshold entry, such a specialized voice assistant must hand over to a human expert at a suitable moment, according to the professionals.

The participants also imagined the reverse cooperation of a voice assistant and a human social worker: The initial discussion and consultation could be conducted by a human expert, yet the subsequent care and assistance (until the next appointment with the social worker) might be provided by a virtual assistant.

One of the most important expectations raised by the participants was the increased participation and autonomy of their clients through voice assistants. The experts did not only mention queries for weather forecasts or shop opening times, yet also saw potential for more extensive dialogues. For example, clients are confronted with complex forms for requesting financial support and allowances. Several participants stated that a respective voice assistant might provide an easily accessible interface for filling in and submitting respective request forms, if carefully designed.

Regarding their own duties, the participants agreed that they would like to be relieved from cumbersome and time-consuming documentation tasks - and instead spend more time with their clients. The majority of the participants had high respective expectations regarding voice assistants. They imagined secretary-like services to protocol appointments and client progress in a dialogue style.

## Discussion and Outlook

This paper introduced our initial explorations of voice assistant services in the field of social work. Referring back to our research goals, we learned that only a minority of the participating experts have used voice assistants for professional purposes so far. Yet, the outcomes of the conducted focus group sessions showed that professionals expect a major positive impact on their field regarding both supportive services for their everyday duties and useful applications for their clients.

Regarding requirements and barriers, data protection proved to be a highly relevant topic for applications in this field. Respective statements indicate the demand for alternative voice-based platforms beyond the closed cloud-based solutions such as *Alexa*. From an engineering perspective, *Snips* (<https://snips.ai>) is a decentralized, open source, on-device example. Yet, beyond the pure technology, users need to be adequately informed about such advancements and suitable setup and maintenance models are required for less technology-affine institutions. Only recently, Google announced on-device support for its voice assistant requiring no network connection [4].

Due to the importance of interpersonal contacts in social work, the relevance of the “emotional intelligence” of a voice assistant applied for social work became apparent. While emotionally sentient computer systems have been researched for about 50 years, respective results are starting to be applied in real-world applications and settings only recently [7].

Besides specialized voice-based adviser services such as the mobbing example, a future key application for the involved social workers is an intelligent voice-based assistant with domain expertise, able to perform protocol tasks in a dialogue-style manner.

A highly relevant and promising future HCI research topic turned out to be the interplay of social work professionals and specialized voice assistants in interacting with clients. It is necessary to investigate this design space of cooperation between human experts and virtual assistants in social work. Furthermore, a systematic investigation of handover strategies between the two parties is needed. We plan to conduct respective scenario-based and experience sampling studies involving both social workers and clients.

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