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# Fostering Accessibility at the Workplace through Community-based Participatory Research

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**Abstract.** This workshop sets out to provide a forum for discussing the potential of community-based participatory research (CBPR) to foster accessibility at the workplace. It aims at opening a space to engage people with and without disability in a discussion about how this approach can contribute to bring employees, employers, developers and researchers together for the elaboration of a sensitisation concept to make people aware

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of the relevance of developing and adopting highly accessible digital solutions for the workplace. In particular, it focuses on the potential of the approach to engage people with disability in research, development and, most importantly, in the job market. Ultimately, the workshop seeks to advance the discussion of how this type of research can contribute towards the inclusion of people with disability in society and to highlight the benefits of that. The workshop is based on the European CSCW tradition of using in-depth qualitative methodologies for workplace studies and practice-based computing. It addresses issues of cooperation and collaboration between research actors, in the pursuit of a deep understanding of work contexts and the design of socio-technical systems that respond to their emerging needs.

## Introduction

Accessible information and communication technologies (ICTs) can play a very important role in progressive and far-reaching inclusion of people with disability in society. ICTs with a high degree of accessibility not only allow people with disability to socially connect and interact, but also make it possible for them to have access to a variety of services, ranging from education to entertainment (Foley & Ferri, 2012). In 2010, the World Health Organization (WHO) estimated that over 1 billion people around the world experienced some sort of disability (WHO, 2011). Just as an example, recent studies suggest that the German population has more than 145,000 blind and circa 500,000 visually impaired people (Winkelmann & Beyer, 2019). Therefore, we argue that research on the design, development and adoption of highly accessible ICTs is a timely topic with substantial social relevance.

Providing the trend towards digitalisation of work processes and the rise of the so-called “Industry 4.0”, it is expected that ICTs will keep dominating the work scene (Kagermann et al., 2013; Monostori, 2014). It is therefore of high relevance to focus on the design and development of highly accessible ICTs, so that people with disability can avail of the opportunity to use such technologies as effectively as people without disability. Here we stress that people with disability should not be excluded from the job market. On the contrary, as current governmental worldwide initiatives have been preaching, it is extremely important to include this group of people in the job market, not only because we have been experiencing a shortage of skilled workers, due to demographic changes, but above all because people with disability can be as productive as their counterparts without disability (WHO, 2011). However, past and current research has shown that there are still barriers to be overcome, especially in regard to making people aware of the potential that people with disability have and the importance that digital technology may have in unleashing it (Blanck et al., 2007). These studies recurrently highlight the high unemployment rate for people with disability;

Grussenmeyer et al. (2017), for example, draw attention to the fact that about 70% of people with visual disability were unemployed in the USA by the time of their study. Therefore, it is of particular relevance to sensitise different sectors of the society of the importance to invest in the design and development of highly accessible digital solutions for the workplace.

Although there are already well-established human-centred methodologies and frameworks for the design and development of digital technologies – as for example User-centred Design (UCD) (ISO, 2018; Sharp et al., 2006), Participatory Design (PD) (Muller & Kuhn, 1993), Usability Engineering (Mayhew, 1998; Nielsen, 1993) and Design Case Study (DCS) (Wulf et al., 2015) –, little can be found on how to successfully implement and use them in disability contexts. There is, we argue, a lack in research on what specific challenges are involved in the use of such methodologies for accessibility research. From our perspective, there is much to be done at the micro, meso and macro level of the design for and with people with disability. At the *micro level*, the adaptation of methods for context analysis under specific conditions with people with disabilities is still necessary (Frauenberger, 2015; Iwarsson & Ståhl, 2003; Mankoff et al., 2010). At the *meso level*, there is a visible need to sensitise companies, managers and employees of the relevance of including people with disabilities at the job market and the important role that accessible digital solution can play on it (WHO, 2011). At the *macro level*, there is still the need of stimulating the work culture in the sense of designing inclusive workplaces and opportunities. There is also the need to generally raise social awareness for the promotion of inclusive workplaces for people with disability (Mankoff et al., 2010; WHO, 2011).

Furthermore, despite the existence of manifold human-centred (participatory design) projects in the field of disability studies, these studies usually address highly specific applications for individuals with very specific needs, or focus on single perspectives. For instance, Golub (2006) has carried a study exploring the factors for a successful work experience of employees with visual disability from the perspective of the employers. On the other hand, Branham and Kane (2015) carried out a study from the perspective of blind employees, that focused on their strategies to manage accessibility at the workplace. The authors draw attention to the fact that only designing accessible ICTs is not enough to guarantee accessibility at the workplace. In particular, the findings suggest that the work in a sighted office environment would often hinder the autonomy employees with visual disability. Hence, it can be argued that there is still a need for approaches that can systemise smaller-scale research projects, which are often aimed at individuals or very small groups, to more broadly reflect on ‘sensitisation concepts’ that make an impact in the society. It is of special relevance to think of approaches that can support bringing different actors – with and without disabilities – together, as for example employees, employers, developers and

researchers, for the elaboration of these concepts. A socio-informatic lenses may be very helpful to achieve this goal. In particular, the use of well-stablish socio-informatics frameworks, as for example DSC (Wulf et al., 2015), in conjunction with community-oriented Action Research approaches, as for example CBPR (Holkup et al., 2009), can be instrumental.

Socio-informatics is a research approach that adopts a practice-centred perspective for the design, development and evaluation of computer systems and computer-aided processes (Wulf et al., 2018). The approach is oriented towards people's practices with the aim of: understanding the user contexts; identifying design possibilities; and investigating changes in social practices that result from the appropriation of new and innovative technologies (Müller, 2018). In addition to its focus on practices, socio-informatics also addresses institutional arrangements and technological infrastructures. Socio-informatics approaches seek to understand how innovative ICTs become part of socio-technical infrastructures that enable and shape a wide variety of different forms of social activities (Wulf et al., 2015). They consider the quality of designed systems as something that goes beyond its technical features and spans the interaction between the designed artefacts and the social systems in which they are deployed. In so doing, socio-informatics draws heavily on in-depth qualitative data collection and data analysis methods, which can eventually be complemented by quantitative methods (Rohde et al., 2017).

This workshop sets out to address how CBPR (Finley, 2008; Holkup et al., 2009) can support unravelling the actual needs of people with disability from a socio-informatics perspective, so to develop a concept to sensitise society to the relevance of investing in the development and adoption of highly accessible solutions for the inclusion of people with disability at the workplace. It targets contributions showing how this and other approaches have been used in current and past accessibility research and aims at reflecting on the lessons learned from them. In particular, it aims at generating an understanding of how CBPR can be better used for future accessibility research. The workshop pays special attention to work contexts, seeking contributions that demonstrate the relevance of the approach for research on the design and development of accessible digital solutions for the workplace.

## Workshop Goals and Activities

In this one-day workshop, we will provide a forum for researchers, practitioners and potential co-researchers interested in accessibility at the workplace to discuss the methodological advantages and potential challenges of CBPR. During the workshop, conversations between the participants will be facilitated by moving away from traditional presentations. Participants who wish to provide material to foster the discussions at the workshop – henceforth referred to as *workshop*

*contributors* – will be invited to contribute to the workshop with either posters illustrating their ideas, samples of data collected during fieldwork, or demos/prototypes elaborated as a result of their research and/or development initiatives. Naturally the participation of people who are not in the position or do not want to bring any discussion material to the workshop is also encouraged.

Materials provided by workshop contributors will be the main subject of the workshop discussions. Presentation sessions will be followed by more focused short discussions on specific questions/issues, and practical brainstorming exercises to highlight new methodological directions concerning CBPR for accessibility research at the workplace.

Interdisciplinary participation from people with and without disabilities including, amongst others, designers, developers, psychologists, ethnographers, employers and employees is mostly appreciated. Therefore, the workshop will provide an important opportunity for (co-)researchers from academia, industry and other sectors of the society to share ideas and possibly coordinate their efforts. In this way, it will be possible to gain insights that would otherwise be beyond reach. Workshop contributors will have the opportunity to share their experiences with the other participants by means of short presentations. This will help construct a productive discussion on how CBPR can be used in its full potential for future research initiatives. The workshop will be an opportunity to learn about approaches for accessibility design research and to contribute towards devising innovative ways to engage in them. This will be an opportunity to reflect on the various trade-offs concerning the cooperation between researchers and co-researchers and to identify potential bottlenecks that may be avoided during the research project.

## Contribution to ECSCW 2020

ECSCW is well-known for valuing in-depth qualitative methodologies for workplace studies and practice-based computing. The workshop addresses issues of cooperation and collaboration between research actors, in the pursuit of a deep understanding of work contexts and the design of socio-technical systems that respond to their emerging needs. It will therefore offer the conference participants the opportunity to learn about a very relevant approach to the European CSCW community as well as about results from workplace studies and the design and evaluation of digital technologies for the workplace.

## Types of Submission

Workshop contributors will be asked to submit a position paper (max 5 pages, including references) introducing the material, ideas or artefacts they would like

to address in the workshop. The submission must contain a brief overview of the key ideas and arguments of their contribution. Additionally, contributors can submit videos, links or any other relevant artefacts of systems that they would like to demonstrate during the workshop. Participants who desire to contribute with the discussions without presenting any material are not required to submit a position paper.

## Workshop Themes

Contributors may address a range of issues, including, but not restricted to:

- The adoption of CBPR to investigate and foster accessibility at the workplace;
- The use of alternative methodologies to bring different stakeholders, as for example, people with disability, companies, service providers, researchers and policy makers together in changing organisational, technological and personal circumstances;
- Methodological innovations in the study of accessibility at the workplace;
- Accounts of accessibility initiatives as emerging from novel spatial and organisational contexts;
- The range of organisational aspects, motivational factors, personal values and expectations underling the investment in accessible solutions for the workplace;
- An examination of how we might identify those forces, contexts and dynamics that hinder, resist or work against the momentum of accessibility at the workplace;
- The role of assistive technologies in empowering people with disability, but also in creating a potential range of problems/issues to be dealt with;
- The role of accessible technology as discourse in socially, culturally and ideologically shaping an ‘accessibility culture’;
- The technological, cultural, political and economic rationalities that underpin and legitimise contemporary enactments of accessibility research and foster the establishment of an accessibility culture;
- Explorations of what present and future accessibility culture might look like, and of the challenges and issues we will be addressing for the next ten years.

## Important Dates

- 5<sup>th</sup> April 2020: Submission of position papers;

- 24<sup>th</sup> April 2020: Notification of acceptance;
- 10<sup>th</sup> May 2020: Camera-ready
- 14<sup>th</sup> June 2020: Workshop day

**Important note:** Notification of acceptance will be sent in time to allow participants to organise travel to the conference and to avail of early registration rates. The submissions will be reviewed by the organisers.

## Submission and Review Process

The submission and the review process will be managed over e-mail. Workshop contributors must submit their position papers to [cbprar@googlegroups.com](mailto:cbprar@googlegroups.com) by the submission deadline. Submissions will be reviewed by the workshop organisers and selected on the basis of their quality, compliance with the workshop themes, and the extent (and diversity) of their field of application.

## Workshop Structure

The workshop is planned as a full day event divided into four sessions, as seen in Table I. It will also involve additional online activities organised both before and after the workshop.

Table I. Tentative Agenda

<b>Time</b>	<b>Activity</b>
09:00	Welcome and introduction to the workshop and participants
09:15	Introduction to exhibition materials by workshop contributors
10:30	<i>Mid-morning break</i>
11:00	Workshop exhibition
12:30	<i>Lunch break</i>
14:00	Brainstorming session in smaller groups
15:30	<i>Mid-afternoon break</i>
16:00	Wrap-up and future plans
17:30	End of Workshop

Overall, participants will briefly introduce themselves in the first session. After the introduction round, workshop contributors will provide a brief overview of the material they brought to the discussion. Participants will be oriented to take notes of the potential questions they have and to wait until the next session to clarify them. Naturally, very urgent questions will be allowed in this round. In the second

session, contributors will exhibit the material they brought and engage in more personal exchanges with the other workshop participants. This will be the moment for participants to ask the questions they noted during the first session. In the third session, participants will undergo a brainstorming, drawing on the presentations and exchanges performed in the two previous rounds. Finally, in the last session, participants will together summarise the lessons learned during the workshop.

## Number of participants

In order to assure a more focused discussion and to enhance the possibility of producing relevant results a maximum of 10 position papers and 15 participants – excluding the organisers – will be accepted for the workshop.

## Publication plans

The organisers will arrange a publication of the camera-ready version of the position papers in an issue of the International Reports of Social-Informatics (IIRSI) series from the International Institute of Socio-Informatics (IISI) in Bonn, Germany. After the workshop the organisers, together with the participants who wish to participate, will actively seek to publish a dissemination piece in the ‘Interactions’ magazine with the results of the workshop. We also plan to edit a special issue on a selected journal as eventual workshop outcome, thus encouraging participants to join and subsequently submit a contribution for review towards the publication.

## Marketing Strategy

A call for contributions is being sent to the main CSCW and HCI-related distribution lists such as EUSSET, CHI Announcements, CSCW-SIG and to national lists such as the German and the British HCI mailing lists. The organisers are also directly contacting communities as, for example, colleagues involved in EUSSET, and relevant social media outlets (e.g. CSCW Facebook group, etc.). People with experience in the industry and interest in accessibility of digital technology at the workplace are also being contacted through distribution lists and personal contacts. Distribution lists dedicated to people with disabilities has also been addressed. All information on the workshop, including the workshop themes, submission process and important deadlines are available in the workshop website available at: <https://cbprar.wordpress.com>.



## Organisers' Short Bio

*Aparecido Fabiano Pinatti de Carvalho, PhD*, is an Associate Researcher at the Institute of Information Systems and New Media of the University of Siegen (Germany). He holds a B.Sc. and a M.Sc. in Computer Science from the Federal University of São Carlos, São Paulo, Brazil, and a Multidisciplinary PhD developed within a joint project between the Interaction Design Centre of the Department of Computer Science and Information Systems, University of Limerick, Ireland, and the Department of Sociology at the same university. His interests span Human-Computer Interaction, Interaction Design, Digital Technology Accessibility, Computer Supported Cooperative Work, Ubiquitous and Mobile Computing, Cyber-Physical Systems, Mobile and Nomadic Work and Informatics in Education. The focus of his research is on technologically-mediated human practices. He has published several articles on topics related to these fields of research in prestigious international conferences.

*Sven Bittenbinder* is a research assistant at the Chair for Business Information Systems, especially for “IT for ageing society” at the University of Siegen. After completing his studies, the graduate business computer scientist worked as a product manager in software development and since 2014 has headed the “Real Estate Software” area at Buhl Data Service GmbH, Germany's largest owner-managed software company. During this activity, he has already dealt with the topics of participative software and solution development and now brings his diverse experience from an economic and scientific perspective into the preservation and creation of accessible IT and accessible IT jobs in the iDES KMU project.

*Claudia Müller, PhD*, is Assistant Professor for “IT for the Ageing Society” in the Institute of Information Systems and New Media at University of Siegen and Professor at Careum Hochschule Gesundheit, Zürich. She follows a praxeological and participatory design approach for assistive technologies for older people ([www.inclusive-ageing.com](http://www.inclusive-ageing.com)). Her projects aim at the support and enhancement of social inclusion, mobility and autonomy of elderly people in order to strengthen quality of life and health status in higher age. She is collaborator in the Siegen PraxLabs approach ([www.praxlabs.de](http://www.praxlabs.de)), which is based on a praxeological and participatory research paradigm. She is vice chair of the national German expert commission for the 8. Ageing Report “Digitalisation & Ageing” and also a member of the working group “Alter & Technik” (Age & Technology) of the German Society of Gerontology and Geriatrics e.V. as well as of the Interdisciplinary Gerontological Research Network (GeNeSi) of the Research Center “FoKos” at University of Siegen (<https://www.uni-siegen.de/fokos/>).

*Nadia David* is a specialist in training solutions. She worked in adult education and as a freelance lecturer for IT application programs and customer-oriented communication for various clients until she started her own business. Since then, her work has focused on IT and communication training as well as specialist editing of scientific work in the areas of business psychology and corporate communication. Since 2018 she has also been at the Education Centre for the Blind and Visually Impaired (BZBS) in Hamburg working in the field of IT training amongst others. In the iDES KMU project, Nadia David is responsible for the entire area of training development and implementation.

*Bente Hansen* has been working in press and public relations for 10 years. Among other things, she has built up the corporate communication of a SME in the health sector and was responsible for all associated tasks, including texts for various formats, website development, online marketing, press contact and project development for an umbrella brand. In the iDES KMU project she assumes press and public relations as well as project assistant.

*Volker Wulf, PhD*, holds the Chair of Information Systems and New Media at the University of Siegen. He is also the Managing Director of the School of Media and Information (iSchool) at the University of Siegen. In addition, he heads the business field of User-oriented Software Engineering (USE) at the Fraunhofer Institute for Applied Information Technology (FhG-FIT) in Sankt Augustin. After completing a double degree in Computer Science and Business Administration at the RWTH Aachen and the University of Paris VI, he gained his PhD at Dortmund University. This was followed by a number of visiting and deputy professorships at the Universities of Hamburg and Freiburg. The completion of habilitation (from the Faculty of Computer Science, University of Hamburg) was followed by a research stay at Massachusetts Institute of Technology (MIT). As a Fulbright Scholar, he spent a sabbatical semester at the University of Michigan, Ann Arbor and Stanford University, Palo Alto in 2006/7. From 2011 to 2019 he officiated as Dean of Faculty III (School of Economic Disciplines) at the University of Siegen. Since 2018 he is a member of the ACM CHI Academy.

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