

Friction in Digital Methods Making: A Road Towards Accessible Mobile Ethnography

Keywords:

digital methods - digital methods making - digital tools - web accessibility - participatory design - participatory research - inclusive co-design - disability-led design



THE CASE - URBAN BELONGING PHOTO APP

The Urban Belonging Project is an award winning research project conducted by architects, social scientists and software engineers. The initial project (2020-2023) combined digital, participatory and ethnographic methods to study how different communities relate to and belong in urban spaces (1). One of the digital methods developed for this project is "The Urban Belonging Photo App" (UB App). This open-source toolkit was designed by the developer Iain Kettles in close collaboration with the project members.

In the app, research participants can take pictures, annotate, share, and comment on their own and pictures taken by others. The data collected through the app is available for analysis through a desktop dashboard interface that participants and researchers can access.

The app was initially implemented and used by six organizations representing marginalized communities in Copenhagen. The final user group consisted of 32 citizens representing LGBTQ+ community members, Deaf people, people with an ethnic minority background, people who identified as mentally vulnerable, physically disabled, international expats, and people who were unhoused. Over a research period of three months, users created over 1400 photos and 200 photo routes.

START AUGUST 2024



RETHINKING THE TOOL WITH ACCESSIBILITY FOCUS

Since the Urban Belonging project ended, the UB app has been maintained by the developer as an open source toolkit that ethnographers and architects are using for different participatory projects.

In 2024 professors Anders Koed and Anders Munk decided to further develop the app building a bridge between the work of the TANT Lab and ECHO Lab.

At this time, postdoc Barbara N. Carreras joined the ECHO Lab and got introduced to the Urban Belonging project and the app. She obtained her PhD studying the accessibility of public sector websites in Denmark and suggested assessing the accessibility of the app in collaboration with two digital accessibility consultants, Stein Erik Skotterup and Anne Thyme, from UseIT Denmark.

SEPTEMBER 2024



START OF THE ACCESSIBILITY ASSESSMENT AND FIELD OBSERVATIONS

Gaining access to the UB App, the ECHO lab team initially tested its functionalities with the Human-Centred-Innovation group. The researchers use the app during a data walk in Copenhagen, which gave ECHO Lab the opportunity to observe the app being used in the field.

After the walk, the ECHO lab team collected feedback on the user experience of the app, including a collective data session discussing the results of the exercise. Revising the experience, the team agreed that learning about guidelines and tools to design accessible tools can improve the inclusivity of participatory ethnographic projects.

JANUARY 2025



APP DEVELOPMENT - ITERATIONS TOWARDS AN ACCESSIBLE TOOL

When Iain finalized the first round of iterations, he presented the changes to the teams from TANT Lab, ECHO Lab and UseIT in a joint meeting.

We discussed the need for a second round of iterations that was planned for the redesign of the user interface. Due to budget constraints and time restrictions, certain changes must be prioritized. We prioritized accessibility issues before changing the whole user interface.

The assessment and redesign iterations exemplify how access-making is an ongoing process. Realizing the web accessibility of the app is not a static goal but an iterative proceeding.



DECEMBER 2024 NOVEMBER 2024

FROM PEN & PAPER PROTOTYPE TO APP REDESIGN

With Stein Erik's and Anne Thyme's feedback, we created a list of issues and worked on a new interface of the app. We built a mock-up of a redesigned app and presented everything to the developer of the UB App, Iain Kettles.

Iain translated the issues qualified by Stein Erik and Anne into technical requirements. He divided them into development steps and organized them into weekly sprints.

OCTOBER 2024



WEB ACCESSIBILITY ASSESSMENT & WORKSHOP

The ECHO Lab hosted a workshop with Stein Erik and Anne Thyme from UseIT. The consultants presented tools and guidelines for inclusive digital design and web accessibility and guided workshop participants through the assessment of the UB App.

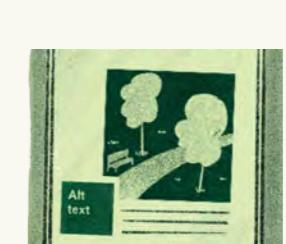
Stein Erik who is blind and a digital accessibility specialist, tested the Urban Belonging app with his screen reader and walked participants through the UB Apps' key accessibility issues. With Stein Erik and Anne's help we found that essential accessibility and usability barriers across the app and the dashboard.

Accessibility Barriers Identified



VISUAL CONTRAST:

How we display textual information matters. People who have low vision or are colorblind benefit from high contrast against the background. Faint visual elements can be difficult to perceive. Open source tools, such as contrast checkers, are a great way to help ensure visual elements with sufficient contrast.



SEMANTIC ACCESSIBILITY ELEMENTS:

Blind people or people with low vision people use screen readers, speech recognition, and other assistive technologies to access digital information. The structure of the code, the implementation and validation of UI elements, and semantic accessibility elements are crucial to ensure that users of assistive technologies can navigate through websites and mobile apps.

MULTIMODAL INFORMATION:

When disabilities and accessibility are integrated at the start of the design, it is easier for writers, designers, and researchers alike to think about ways to communicate knowledge through more than one sense. They can explore the use of braille, sign language, audio description, haptics, plain language and much more.

ONBOARDING:

When designing inclusive apps, it is crucial to guide users clearly, otherwise interactions can cause confusion. When Stein Erik first tested the UB App with assistive technologies it was not clear what actions to take to complete the tasks. We designed an onboarding flow for new users, changed the language to be more action oriented, and made changes to interactive features to improve usability.



FONT SIZE AND READABILITY:

People with low vision benefit from the flexibility of apps and websites that easily enable text and visual elements to resize. When users zoom in on a website at 200 percent, all the elements of the interface must be perceivable. When we zoomed in on the screen, valuable information disappeared from the screen, we thus made changes to the layout of the UB app to make sure the visual interface was responsive to adaptive uses.

FUTURE STEPS



NEXT STEPS & LOOKING FOR FURTHER FRICTION

The redesign of the UB App is not done. The ECHO lab currently plans to conduct user tests with participants with disabilities to continue improving the app.

We want to assess the dashboard, which we did not have the time and resources to do in this first assessment. It is essential to improve the analytical part of the interface to ensure that researchers and participants with disabilities can participate in data analysis on equal terms.

Creating a more accessible UB App required us to collaborate across different areas of expertise. Identifying accessibility and usability barriers helped us identify friction. For example, when the screen reading user experience was confusing. The openness of the researchers and developer to work with these frictions derived to productive discussions on how to improve the app and design for a broader range of users.

Importantly, we reflected how accessibility principles could have been implemented from the start, and how ensuring accessibility and usability are a shared responsibility in research design and development of digital tools.

The importance of multimodality and disability expertise

Universal usability starts by acknowledging the diversity of ways in which people use technologies. This knowledge is essential in participatory research, to ensure participants of different backgrounds and bodies have equal opportunities to benefit, engage in, and contribute to research.

The Urban Belonging projects' participatory research design aimed to include diverse perspectives, especially marginalized ones. However, in dialogue with members from the Urban Belonging project we realized that web accessibility principles and universal design were not at the center of the design process of the UB App and the dashboard.

The tool had been designed without existing digital accessibility principles and guidelines in mind. One example is the reliance on visual information as the primary means to create and analyze data, neglecting other forms of perception. Moreover, the app was not designed to be operable with a screen reader, nor was the interface designed to be displayed in horizontal mode, which are important software adjustments for people with low vision, blind people or people with reduced dexterity.

The accessibility assessment served as a form of diffraction how digital methods are designed when disability expertise is at the core of creating digital tools and methods for ethnographic analysis. Through this iterative and at times frictional dialogue with the developer of the app and two digital accessibility experts, we worked on reconfigurations of the digital interface.

Friction emerging from conversations that identify accessibility barriers became an opportunity for dialogue. Diffraction helped us to derive collaborative design ideas and anticipate a broader range of users that could benefit from The UB App for participatory research (2).

References

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Lessons Learned

1 FRICTION CAN BE AN OPPORTUNITY

Bringing development, design, and disability experts together created moments of confrontation and questioning a previous design choices that led to a valuable collaboration. The conversations made us aware that frictional moments can lead to constructive design iteration.

4 TIME CONSTRAINTS COST ACCESSIBILITY

Most of the accessibility issues were a consequence of a lack of time during the development process and a lack of awareness of web accessibility and universal design principles. Without prioritizing web accessibility from the beginning, a long list of requirements for changes became apparent when the UB App was already in use, which increased the cost of maintaining the app.

2 COMPLEX TOPICS CAN BE COMMUNICATED IN PLAIN LANGUAGE

3 ACCESSIBILITY ASSESSMENT CAN UNPACK USABILITY ISSUES

Great ideas and valuable arguments do not need to be explained through jargon. Creating research tools that use plain language, that tell a clear story, and provide clear calls to action helps research participants to understand the purpose and use of new digital tools for research.

5 ACCESSIBLE DESIGN IS A SHARED RESPONSIBILITY

Creating accessible research methods relies on revisiting norms about who we imagine as researchers and participants, and how we can collaborate across different disciplines to consider different modes of knowledge production. It is essential to involve experts who have lived experiences of disability and knowledge in creating universal digital methods for technology development. Our collaboration with Stein Erik and Anne from UseIT was crucial to revisit the design of the UB app.

6 PARTICIPATORY RESEARCH CAN BE EXCLUSIONARY IF EXISTING NORMS ARE UNCHALLENGED

The accessibility assessment helped us identify user experience elements that were not easy to navigate without help. This included text, visual information and different embodied uses of digital devices. Some of the issues were related to usability issues that were not identified previously in the development process.

Read more about this project by scanning the QR code.



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ECHO LAB
The Observatory for Human Centered Engineering

Urban Belonging

Use it.