

Examining the Current State of Group Support Accessibility: An Expanded Study

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Abstract. Group support applications are widely used in workplace to support group work. Unfortunately, persons who are blind often found it difficult to access group support applications, due to the highly graphical nature of the application; this hinders their ability to contribute to the group. As a result, persons who are blind often face problems in gaining and retaining employment. In order to expand on the knowledge gained from previous research, three additional focus group studies were conducted. The focus group studies show that accessibility and usability issues of group support applications are impeding persons who are blind from productive group work. The implications of the results from this research project are also discussed.

Keywords: Group support, accessibility, usability, blind.

1 Introduction

According to World Health Organization [5], about 314 million people are visually impaired worldwide, among them 45 million are blind. In today's global economy, many organizations utilize software applications, such as: email, document sharing, scheduling software, and conferencing systems for their collaborative work. Therefore, the ability to access these software applications becomes crucial for anyone to be able to perform well in the group environment. Unfortunately, current software applications are often not accessible to persons who are blind, because of the highly graphic nature of the interface. Thus, making it even harder for them to obtain and keep employment. With the unemployment rate for working age persons who are blind in the United States of 70% to 75% [4], the accessibility problems associated with group support applications become imperative.

As an early attempt on designing a more accessible group support application, a pilot focus group session and two field studies were conducted with five blind users who are the members of an access technology team in a Mid-Atlantic state, in the summer of 2010. The purpose of these studies was to investigate how persons who are blind work in groups, specifically the types of technologies they use, and their experience with software applications during group collaboration. It was discovered that the subjects did not use full-fledged groupware applications that support complete group processes. Instead, they utilized group support applications such as email, text

messaging, shared calendars, and track changes in documents, to support their group work. Various accessibility and usability issues were discussed during the sessions. For example, the subjects reported to have experienced problems, such as: reading the wrong message; not being notified of events; not being able to share the calendar in the monthly view; and, the contacts reading repeatedly when using Microsoft Outlook, the most frequently used email application by the subjects. Will users with less experience have similar results? Are there any different challenges less experienced users face?

In order to expand on prior knowledge and to understand how persons who are blind work in groups, the group support they require, and any accessibility and usability issues they encounter, three focus group studies were conducted during a Mid-Atlantic state convention of the National Federation of the Blind (NFB), in the fall of 2010. The following research questions were addressed:

- RQ1: How do persons who are blind work in groups?
- RQ2: What are the accessibility and usability challenges persons who are blind experience with software applications (specifically groupware or group support application)?
- RQ3: What kind of support do persons who are blind require so that they can perform group work?

2 Research Method and Procedure

Focus groups are group interviews that allow for the access of multiple points of view in a short time period (e.g. a single meeting) [1]. The size of the group can vary from 4 to 6 as a mini-group to than 10 as a full group [2]. The focus group studies allow the collection of data from multiple sources at a single meeting, the observation of the group dynamic as the group interacts, the gaining of agreement among several group members, and the validation of the group process and other data with the entire group. In order to gather feedback from people with different background, focus group is utilized. In this study, after preparing the meeting guide and questionnaires that collect background information about the subjects, each focus group session contained the following steps:

1. Conduct the focus group session, based on the meeting guide. The session is audio recorded. Researchers also take notes during the discussion.
2. Perform content analysis of the audio transcript and the researcher notes, to identify content categories;
3. Validate agreement of the coded content, using Cohen's Kappa; and,
4. Report findings.

3 Research Results

3.1 Demographics

Three sessions of small focus group studies were conducted with total of fourteen participants (nine females and five males, all blind, with no residual vision) during the NFB State Convention in a Mid-Atlantic state.

All of the participants utilized the computer daily and were adults with computer experience of at least 11 years. Tables 1, 2 and 3 show the distribution of age and their screen reader and computer experience.

Table 1. Age Distribution

Age	Number of Participants	Percentage
40-49	5	55.6%
50-59	2	22.2%
60 and over	2	22.2%

Table 2. Screen Reader Experience

Years of Experience	Number of Participants	Percentage
1-5 Years	1	11.1%
6-10 Years	0	0%
11-20 Years	3	33.3%
21-30 Years	5	55.6%

Table 3. Computer Experience

Years of Experience	Number of Participants	Percentage
11-20 Years	5	35.7%
21-30 Years	9	64.3%

3.2 Preliminary Results of Content Analysis

Content analysis was performed on the audio transcript and researchers' notes from the group discussion collected from the focus group study. Two research assistants performed as coders. Key points were grouped into categories. Cohen's Kappa was used as the indicator for integrator reliability [3] to make sure the consistency of the transcript coding. Total of 97 cases were identified with Cohen's Kappa at 0.94 indicating the acceptable agreement and reliability between the coders.

Six categories were determined as a result of this analysis:

- Groupware or group support software/features utilized;
- The tasks/steps necessary to complete a group project;
- Accessibility and usability issues;
- Group interaction techniques;
- Accessibility documentation and support; and,
- Accessibility design considerations.

While working in groups, participants reported that they use a screen reader to access software interface with software such as email and chat for communications and document sharing, and a note taking device for documenting meeting notes.

Outlook, Outlook Express, GroupWise, Google Calendar, chat tools such as Instant Messenger, Microsoft Office (Excel, Word, PowerPoint), SharePoint, and Word

Perfect were utilized to support group work. Outlook, Outlook Express, GroupWise, Instant Messenger and Google Calendar were used for their email, chat, task tracking, and group calendars features, while Microsoft Office, SharePoint and Word Perfect were utilized for document sharing and exchanging. All of these applications support group work, but are not considered full-fledged groupware. It appears that software features groups utilize the most include email, chat/text messaging, document sharing, task tracking, and sharing calendars.

The general project workflow discussed by the participants matched prior research during the pilot focus group study which includes identifying the purpose of the project, assigning a project leader, exchanging documents via *email*, followed by a *combination of face-to-face meetings, conference calls and additional email exchanges*.

Participants discussed some new accessibility and usability issues such as the difficulty to track changes, to follow a conversation in a chat session, to keep up with the software upgrades, and to use Windows ribbon menus. For example, track changes are garbled with so many inserts and deletes that it is difficult to comprehend the changes to a document. A participant commented, *“My track changes goes from the next comment to the next comment. It is hard to keep up with all of the information presented, and to determine the original and the change. Frequently, I just accept all of the changes. There is too much clutter with track changes.”*

The inability to follow a conversation in a chat session was a concern for the participants. A participant commented, *“In a Chat Session – figuring out who said what, is an issue. You are no longer synchronous, when you have to look around the screen to figure out who said what. You are going to get behind the chat pretty fast. Even if you have access, chat is too difficult to keep up with the conversation.”*

Since most of the participants make customizations to make applications work with screen readers, when new software upgrades are applied, the previous customizations or settings are lost. Most participants agreed with the comments made by one of the participants, *“I try to customize my interface but you loose your changes to the interface when upgrades occur When you get a new version of Office, for example. The new software comes out for sighted people, then the access technology people scramble to make the software function for persons who are blind.”*

The ribbon menus added to new versions of Windows applications, were considered inaccessible and unusable -- *“The ribbons are not accessible – you have the up-and-down ribbons, and you are supposed to memorize the ribbons. It is not very usable. I cannot get to the other ribbons, like the spell checker for example. The prior design with the menus and the alt keys was a better approach for accessibility and usability.”*

4 Conclusion

Multiple focus group sessions confirmed the results from previous study while also presented some new issues that were not discovered when we did the pilot study with more experienced users. Even though all the participants are elder adults with extensive experience utilizing computer and adaptive technologies while working in groups, they do encounter accessibility and usability issues while interacting with

group support applications. Some common issues identified include the difficulty with track changes, following a conversation in a chat session, software upgrades, and Windows ribbon menus. The results from this study will serve as a guideline on what aspects of the applications need to be focused on when designing different group support applications/features. For example, when designing chat features for groups of more than two people, how to present the awareness in terms of what topic is discussed by which participant is extremely important; when designing document co-editing features, how to present changes or comments made by each co-worker clearly while not clutter the whole document.

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