CPSC 601.47 Fall 2009

Week 2 Papers

Notes on Paper #2 for the week 2 of CPSC601.47 - Tabletop and Interactive Surfaces.

Prepared by Erika Harrison


Main Point as the Author Sees It

Mahmudul Hasan:

Summary (Short Paper): Usability problems are not strongly tied to social or organization issues, or the context used, but instead from low level interactions. E.g. the ability to communicate (implicit, explicit, consequential), being able to monitor group members, etc. Poor support for these low level interactions to take place in a groupware system is the reason for some usability problems. The authors present several discount evaluation techniques (eg. modified evaluation techniques) for evaluating groupware systems.

Details:

In the shorter paper, the authors claim that some of the usability problems in a shared-workspace groupware system are not intrinsically caused by the social or organizational context in which it is used. They emphasize that the inadequate support provided by a groupware system for the mechanics of collaboration required to complete a shared task is rather accountable for some usability problems.

Based on this idea, the authors propose a conceptual framework which evaluates a groupware system by measuring the effectiveness, efficiency, and user-satisfaction for each of the mechanics of collaboration taking place in that groupware system during the execution of a shared task. Here the authors consider seven mechanics of collaboration which include explicit communication, implicit communication, coordination of action, planning, monitoring,
assistance, and protection.

The authors then describe the modified versions of some existing discount evaluation methods based on their proposed framework for groupware system evaluation. Here they consider the discount evaluation methods of heuristic evaluation, walkthroughs, user observations, and questionnaires, which have already been used in the past to uncover conventional usability problems of single user systems.

**Summary (Long Paper):** Presents the collaboration usability analysis process, and presents mechanics of interaction allowing evaluators to better explore issues in the groupware system. Note: There is inherent variability in tasks.

**Details:**

In the longer paper, the authors introduce a modeling scheme for shared tasks, called Collaborative Usability Analysis (CUA), which focuses on the collaborative actions that take place during the execution of a shared task rather than the taskwork.

In this paper, the authors reorganized the categories of the mechanics of collaboration under the general activities of communication and coordination. The CUA task model considers the extent and variability intrinsic to a shared task and grounds the collaborative actions in the mechanics of collaboration.

CUA allows the evaluators to explore the realistic use of a groupware system, to measure the support for collaborative actions provided by specific parts of the groupware interface, and to use a variety of discount evaluation methods applicable to the iterative development of groupware system.

**Main Point as the Reader Sees It**

**Darren Andreychuk:**

Last class we discussed a paper on collaboration and the whether or not a vertical display or a horizontal display is better for co-located group collaboration. During one of the studies, a participant made the comment that the interactions between group members on the horizontal display were more chaotic. That paper gave the reader some insight into the nature of teamwork in a collaborative work setting.

This weeks paper, however, provides more insight into the nature of teamwork in a collaborative work setting and I think that is the main thing that the reader can take out of this paper. This weeks paper also provides a detailed definition of groupware and how it is different from singleware. The paper gives the reader a detailed technique to evaluate a groupware system and reasons why the traditional methods for analyzing and evaluating a
singleware system cannot be applied to a groupware system.

**General Class Discussion:**

Listed Mechanics in Paper:

- an important point the paper brings up: user mechanics
- in recognizing elements of collaboration, designers can be aware of them when supporting people in a table setting (despite the discussion of the paper was related to distributed groupware)
- given the question "what are we trying to support," these mechanics and evaluation approaches provide a good starting set for things to keep in mind
- Note: interpersonal relationships are ignored during these papers
- when developing for software, its easiest to start with base mechanics. These papers elaborate on some (but not necessarily all) mechanics to explore
- we know these above mechanics work for non-digital; can we continue to enable this support (as a bare minimum) when we develop for a digital table?

Personal versus Communal Space

- with a personal computer, we can have selective sharing (distributed system); with tabletops, can we have selective sharing?
- personal space versus communal space (eg. separate table/laptop, then drag back to the table for sharing with everyone) → discussed the concept of angle-based viewing mechanisms for laptop screens (and how those outside the given display angle are unable to see what is on the screen)
- are we able to use perspective to provide privacy?
- what are the hardware restrictions/limitations to establish personal space?

Shorter Paper versus Longer Paper

- unsure if the longer covered everything from the shorter
- the shorter was easier to use (the table provided)/read than the longer
- what did the longer add, if anything? details to support arguments (alternatively, not particularly useful for those already believing what’s going on from the shorter version)
• in the longer version, they discuss a comprehensive list for communication; also covers flow charts

Methods for Communication

• papers discuss: spoken, written, gestural, dietic, manifesting actions
• are missing: body language, facial expressions (which are not commonly observed on distributed computers - the exception being video conferencing; regardless, facial expressions are relevant for tabletop systems), and other non-verbal communication
  – note: there exists discussion in the paper on people monitoring others, and awareness of others (though it is not discussed in detail)

Overview

• there is richness in second paper, but need to remember it doesn’t cover everything necessarily
• the longer paper provides a summary of their experiences from 10 - 15 years of empirical study of group ware
• the shorter paper provides the details/richness of the shorter version

How Does this Impact Our Research

Lawrence Fyfe:

Summary: Regarding research, it provides a method for applying discount usability. For this course, we don’t really care about justifying methodology. Instead, we can use these principles for designing the system, rather than evaluating it. There are a couple of issues raised: Are these mechanics presented applicable to all situations? Are these mechanics applicable as the group sizes vary? What about a group of two? of two hundred?

Details:

Activities that are the mechanics of collaboration:

1. Explicit communication
2. Consequential communication
3. Coordination of action
4. Planning
5. Monitoring
6. Assistance
7. Protection

Evaluation criteria:

1. Effectiveness
2. Efficiency
3. Satisfaction

• Teamwork vs. taskwork - does the system allow teamwork to occur?

Issues:

While the article is about evaluation methods that might occur after a tabletop system is created, the ideas introduced can be used during the design process for a tabletop system.

Of course, the usability methods can be used to validate a tabletop system as it is developed. This assumes an iterative development process.

The mechanics described in the paper may only be relevant to certain kinds of interaction. Would these mechanics work for music?

Are the mechanics of collaboration applicable to groups of various sizes? Will the mechanics work for groups of two?

General Class Discussion:

• what about expert users having different mechanics than a novice user group?

• the concept that these will be rarely used as a discount usability technique, and instead more used as design principles

• concept of incorporating additional design principles once the basic idea is generated for a groupware system