Face-to-Face Collaboration Points in Storytelling using Multitouch Tabletop Systems

Jessica Rubart
OWL University of Applied Sciences
An der Wilhelmshöhe 44
37671 Höxter, Germany
jessica.rubart@hs-owl.de

ABSTRACT
This paper presents application areas for face-to-face collaboration in storytelling using multitouch tabletop solutions. The multitouch interaction appears natural and can nicely be used in a group. Furthermore, this paper describes experiences with face-to-face multitouch structures, i.e. how different structures have been used in collaboration.

Categories and Subject Descriptors
H.5.2. [**Information interfaces and presentation**]: User Interfaces—*Interaction Styles*. H.5.3 [**Information Interfaces and Presentation**]: Group and Organization Interfaces—*Synchronous Interaction*. H.5.4 [**Information Interfaces and Presentation**]: Hypertext/Hypermedia

General Terms
Design, Human Factors

Keywords
Multitouch. tabletop, storytelling, synchronous interaction, hypertext structures

1. STORYTELLING AND MULTITOUCH
Storytelling has been recognized as a learning activity. Children, for example, can be supported in developing skills, such as creative problem-solving, collaborative learning, expressive design, development of literacy, and exploration of knowledge [9]. In recent years research has been focusing on using computers to support children's collaborative storytelling. The use of tangible technologies and multitouch are also being explored to support storytelling among children [5].

Displaying visualizations on multitouch surfaces that can be manipulated collaboratively allows analysts and planners a new level of interaction [2]. Data can be explored in parallel simultaneously by multiple users. Data objects can be moved, sorted, resized, rotated, and visually arranged using natural gestures like those that would be used in exploring real-world objects.

This paper focuses on face-to-face collaboration points in storytelling using multitouch tabletop systems. Storytelling is important for many scenarios of adults, too. This paper gives some examples in the context of interactive fiction and business simulation approaches.

2. RELATED WORK
Touch and tabletop technology has been proposed for the application areas education, e.g. [3], computer games, e.g. [6], and art design, e.g. [8]. Compared to traditional user interfaces richer user experience is pointed out. Another trend is to use surface technologies for analysis work [2]. Visualization techniques and exploring huge amounts of data are in the focus. In [1] TouchStory is presented. It combines multitouch interaction with hyperfiction for single users. The multitouch space is not only used for presentation, but also for structuring. This paper proposes to use the multitouch space in collaboration for adult-oriented storytelling scenarios.

3. COLLABORATION POINTS
Group work usually takes place as a process. Different modes of collaboration are used: Individual work is done between collaborative sessions. Collaboration can take place asynchronously or synchronously. Collaboration using multitouch tabletop systems focuses on synchronous interaction. In the following, examples are given for synchronous face-to-face collaboration points in storytelling.

3.1 Interactive Fiction
In works of Interactive fiction (IF) narrative is generated during an interactive session. These works are also known as "text adventures" including playful elements, such as puzzles or riddles. IF can be seen from different perspectives [7]: On the one hand IF works are potential narratives. The interactor must figure out the simulated world, typing to the program in a dialogue. In this way the interactor can influence what goes on in the world. The narratives that result will be different depending upon the input. On the other hand IF works can be seen as games, but they are considered essentially potential narratives. From a game-theoretic perspective "solving" an IF work is a fundamentally collaborative situation. The collaboration can take place co-located or online. Through a Multi-User Dungeon (MUD) several users can jointly interact with an IF work.

Solving puzzles or riddles in collaboration, thus, is an interesting application area for multitouch tabletop systems. Collaborating users can solve such challenges jointly. For this, maps of the interactive fiction's simulated world are helpful. Usually, rectangles are used to represent locations and lines between them

to represent connections [10]. Text elements are used for objects and names of locations. Face-to-face collaboration can complement distributed collaboration with tools, such as ifMap [10]. The interaction with the map(s) can be more natural. Different maps of different users can be directly compared and discussed. This can lead to a better understanding of the IF world.

3.2 Business Simulation

Another interesting application area in the context of storytelling for collaborative multitouch tabletop solutions is business simulations. Through stories experiences can be shared. In our university we are using "Fort Fantastic[1]", for example, a business simulation focusing on training team communication, knowledge management, and IT service management.

Business simulation approaches follow David Kolb's experiential learning model [4], but are often applying it to groups. E.g. a team makes concrete experiences in a simulated business, reflects upon experiences, argues what went well and what could be improved, and discusses how to achieve improvements. At the university, we are currently designing a business simulation for training project management. At the end of each time period, e.g. an iteration loop or a phase, a retrospective is usually done to reflect upon the last iteration. Such approaches often include synchronous sessions, which can benefit from collaborative multitouch tabletop solutions, e.g. to support retrospectives, brainstorming sessions, creative tasks in general or to coordinate the team and support a shared understanding.

4. FACE-TO-FACE MULTITOUCH STRUCTURES

Figure 1 shows an exemplary face-to-face collaborative session using a multitouch tabletop system. Hypertext is usually concerned with structure. When using multitouch tabletop solutions in different storytelling settings we have made the following structural observations:

Figure 1: Face-to-Face Collaboration in Storytelling

Navigational and taxonomic structures are used in collaboration to explore the simulated world or business, to show interesting parts to team members, and to get a shared understanding about the given material. With annotations different parts of the material

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are explained and discussed. Spatial structures are often used to create structure in collaboration, e.g. to categorize ideas or prioritize tasks.

5. CONCLUSIONS AND FUTURE WORK

Face-to-face collaboration points are useful in storytelling. They can be conducted through meetings at e.g. workshops. For this multitouch tabletop systems can provide a natural interaction experience following the metaphor of a virtual meeting desk. As future work it is interesting to integrate remote users in a synchronous way. However, the challenge is to keep the easy to use interface.

6. ACKNOWLEDGMENTS

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