DEPARTMENT OF COMPUTER SCIENCE UNIVERSITY OF TORONTO

CSC318S

THE DESIGN OF INTERACTIVE COMPUTATIONAL MEDIA

Lecture 4 — 21 January 1998

USER-CENTRED DESIGN; ITERATIVE DESIGN

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4.1 User-centred design

Requires an early focus on users and their tasks prior to system design

User diversity Not to be underestimated Not to be overestimated

Need to *understand* potential users Not just identifying and characterizing them

Do this through direct contact with users Surveys, questionnaires, and interviews Observations of current work Task analysis User(s) on design team

User-centred vs. user-involved or user-directed

Participatory design (Scandinavia) Developers and users: equal partners on design team

Read BGBG Chapter 2 and Gould paper in BGBG

4.2 Iterative design

Talk is not enough

Need to prototype, evaluate, revise, evaluate, etc. Design-->Prototype-->Evaluate -->Redesign-->Implement-->Evaluate -->Redesign-->Revise implementation-->Evaluate-->etc. Need tools for rapid prototyping

Evaluation through empirical observation and measurement More about this later in the course

4.3 Example 1 — Movie Authoring Technology Concept

Hierarchic, outline-based script and movie organization

Top design design, bottom up implementation of movie

Integration of multiple media Text (Script) Voice, music, and sound effects Sketches (Storyboard) Recorded Video

Playback of "approximate" movie at any time

Collaborative design — multiple views and representations

4.4 Movie Authoring System Design Process

Will sketch history of the project over 6 years

1991?: AJR takes film production class at OCA, creates movie called *How To Hyoop*

Nov. 91: Diagram of hierarchic movie organization (Fig. 4.1)

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Mar. 92: Sketch of script, expanded script, and movie playback (Fig. 4.2)

Apr. 92: Canned demo, prototype in Macromind Director

May 92: First C implementation of Movie Authoring and Design (MAD) System

June 92: Prototype of outliner control strategies in Director

- 92-93: Further development of C implementation, first demos to interested people
- Sep. 93: First full-scale use in authoring SASSE movie for CHI'94 Conference (Fig. 4.3)



Figure 4.2 First hand-drawn sketch of MAD interface

Figure 4.3 Working with MAD Version 1 on the movie SASSE The Collaborative Editor



First half of 1994: Use on other small projects, evaluation of use

Summer 1994: Redesign of interface, added functionality

Fall 1994: Implementation of new interface (Fig. 4.4)

Winter 1994-5: First demos to film and video community

- 1995: Reimplementation in C++ of most significant system classes to allow malleability and further expansion
- 1995: First rethinking of markets and customers --> kids, amateur filmmakers, education

Figure 4.4 Version 2 MAD Script Interface



- 1996-7: Continued usage for projects by young adults and children, demonstrations, design discussions, multimedia summer camps (first large scale usage with children)
- 1996-8: Redesign, with help of a graphic designer (Fig. 4.5); implementation of MAD v. 3 in Java; plans to commercialize

4.5 Movie Authoring Video Demonstration

Live demonstration of current system

4.6 Movie Authoring Current Issues

Need for robustness, evaluation of sustained real use

Extensions for more metaphors, viewpoints, and disciplines

Extensions to collaboration at a distance

Use as a toolkit in various applications

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	(noise of the death ray in background) Alien 1: What's happening? Alien 2: They're reversing the lavender death ray! Both: AHHHHHHHHIIIII		
ene 1	Ship Destruction	2:42.89	2.72
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Figure 4.5 Version 3 MAD Script Interface

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4.7 Groupware and CSCW

- Groupware Information technology designed to help people work together
- Computer-Supported Cooperative Work (CSCW) The design science underlying groupware The study of the use of groupware
- Groupware allows people to work together despite the barriers of time and space

4.8 Example 2 — Collaborative Writing System Concept

Synchronous real-time viewing and editing of documents

Support various writing processes

Single writer Scribe Separate writers Joint writing

Continuity with single-user editor

Use over local and wide area networks

4.9 Collaborative Writing Design Process

Interviews

Lab study

Implementation 1 followed by usability test 1

Implementation 2 followed by usability test 2

Substantive real use and evaluation of use unfortunately crashed during Huron School Study

Reimplementation in tcl/tk, but then put on the shelf

4.10 Collaborative Writing Demo Video

Concepts, collaborative writing, system use, current issues

4.11 Collaborative Writing Current Issues

Support of asynchronous as well as synchronous work Check in and check out, document splitting and merging, version control, change management and display

Relationship to exisiting word processing software, knowledge-building software

4.12 Conclusions

Iterative design

User-centred or user-driven design

Multidisciplinary design