

IFSM 303 Human Factors



“Real programmers don’t document. If it was hard to write, it should be hard to understand.”

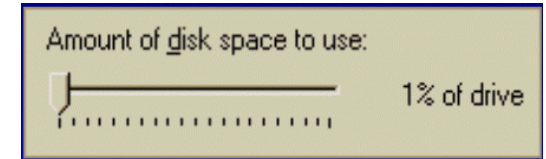
Topics

Reports

Managing Design Processes

Experiment / Group Work

What's Wrong with this?



MS Internet Explorer

Set Cache Size from 1% to 100%



HF Tips

If you gotta put up a sign, it is a bad design...



Today's Experiment

The Mouse vs. The Trackball

How good are you at using them?

Procedure

Use Mouse, Click Start, Track Target

Use Trackball, Click Start, Track Target

Recording Form

Name		
	Mouse	Trackball
Lag		
Distance		

Results of Experiments

Colors

MBTI

Group Activities

Experiment
Research
Testing
Results

Project
Idea
Design
Testing

HCI in the **EDUCATION**

News Red ink falling out of favor with teachers

Monday, April 4, 2005 Posted: 12:11 PM EDT (1611 GMT)

WASHINGTON (AP) -- Of all the things that can make a person see red, school principal Gall Karwoski was not expecting parents to get huffy about, well, seeing red.



At Daniels Farm Elementary School in Trumbull, Connecticut, Karwoski's teachers grade papers by giving examples of better answers for those students who make mistakes. But that approach meant the kids often found their work covered in red, the color that teachers long have used to grade work.

Parents objected. Red writing, they said, was "stressful." The principal said teachers were just giving constructive advice and the color of ink used to convey that message should not matter. But some parents could not let it go.

At Public School 188 in Manhattan, 25-year-old teacher Justin Kazmark grades with purple.

So the school put red on the blacklist. Blue and other colors are in.

Chapter 3

Managing the Design Processes

The Design Process

Sears Conference Table

Usability Laboratories

Get the User Involved!

Design

It is a process, not a state

Nonhierarchical

Radically Transformational

Discovery of New Goals

Design

Design is driven by requirements
what is it for
not how it is to be implemented

Design represents the item
for UIs these include
Sketches or Storyboards
Flow diagrams
Executable prototypes

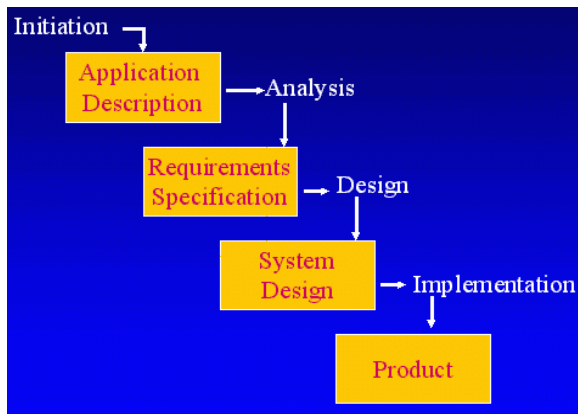
Design Process

Waterfall model
sequence of steps from software
engineering

customer is not the user
Spiral model
only continue after step if feedback is
positive

Prototyping
User-centered design

Waterfall Model



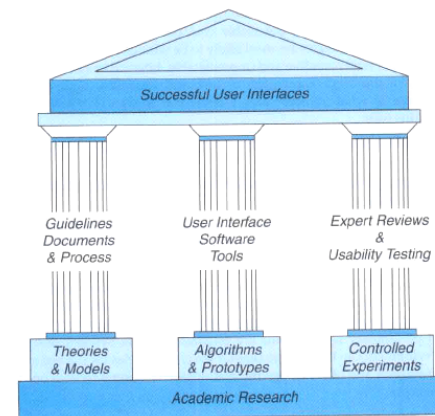
Other Models of Design

Design / implementation models

Waterfall vs. Iterative Design
cost of fixing errors in requirements
increases by a factor of 10 at each
stage

Iterative design find these earlier

Three Pillars of Design



Three Pillars of Design

Guidelines Documents
 Screen layout
 Input / Output Devices
 Action Sequences
 Training

Guidelines Documents

Words and icons
 Terminology, abbreviations, and capitalization
 Character set, fonts, font sizes, and styles
 Icons, graphics, line thickness
 Use of color, backgrounds, highlighting, and blinking

Guidelines Documents

Screen-layout issues
 Menu selection, form fill-in, and dialog-box formats
 Prompts, feedback, errors
 Justification, white space, and margins
 Data entry/display formats
 Headers and footers

Guidelines Documents

Input and output devices
 Keyboard, display, cursor control, and pointing devices
 Audible sounds, voice feedback, touch input, and other
 Response time for different tasks

Guidelines Documents

Action sequences
 Direct-manipulation clicking, dragging, dropping, and gestures
 Command syntax, semantics, and sequences
 Programmed function keys
 Error handling and recovery procedures

Guidelines Documents

Training
 Online help and tutorials
 Training and reference materials
 Command Syntax, Semantics, and Sequences

Three Pillars of Design

User-Interface Management System
 Realistic Impression of final system
 Prototypes

Three Pillars of Design

Usability Laboratories and Iterative Testing
 Informed Consent
 Pilot Tests
 Think Aloud
 Videotaping
 Can You Break This?

Developmental Methodologies

Six Stages of Logical User-Centered Design Methodology (Kreitzberg):
 Stage 1: Develop Product Concept
 Stage 2: Research and Needs Analysis

Developmental Methodologies

Stage 3: Design Concepts and Key Screen Prototype

Stage 4: Iterative Design and Refinement

Stage 5: Implement Software

Stage 6: Provide Roll-Out Support

The Twelve areas of the Lucid Management Strategy

1. Product Definition
2. Business Case
3. Resources
4. Physical Environment
5. Technical Environment
6. Users

The Twelve areas of the Lucid Management Strategy

7. Functionality
8. Prototype
9. Usability
10. Design Guidelines
11. Content Materials
12. Documentation, Training, and Help

Understanding the User

How do your users work?
task analysis, interviews, and observation

How do your users think?
understand human cognition
observe users performing tasks

How do users interact with UIs?
observe!

Involving the User

Users help designers learn
what is involved in their jobs
what tools they use
i.e, what they do

Developers reveal technical capabilities
builds rapport and an idea of what is possible

Users try prototypes and comment

Observation Techniques

In the work place
Use recording technologies
notebooks, tape recorders
video cameras

Ask users to think out loud
Look for job-specific procedures / terminology

Show users transcript and ask them about it

Ethnographic Observation

Preparation

- Understand organization policies and work culture.
- Familiarize yourself with the system and its history.
- Set initial goals and prepare questions.
- Gain access and permission to observe/interview.

Ethnographic Observation

Field Study

- Establish rapport with managers and users.
- Observe/interview users in their workplace and collect subjective/objective quantitative/qualitative data.
- Follow any leads that emerge from the visits.

Ethnographic Observation

Analysis

- Compile the collected data in numerical, textual, and multimedia databases.
- Quantify data and compile statistics.
- Reduce and interpret the data.
- Refine the goals and the process used.

Ethnographic Observation

Reporting

Consider multiple audiences and goals.

Prepare a report and present the findings.

Participatory Design

Controversial

- + Accurate information
- + Argue over design decisions
- + Increase acceptance
- Stupid Users
- Increased Costs, Delays
- Rejections

What is User-centered Design?

Developers working with users define what the system will do and how

lots of iteration and feedback
Think of the world in users terms
user and customer not the same
Don't design for the managers
Understanding work process
Not technology but feature driven

Why do it?

Nearly 25% of all applications projects fail

- overrun budgets & management pulls the plug
- others complete, but are too hard to learn/use

Avoid failure if we pay attention to needs of users

What is Usability?

Ease of learning
faster the second time...

Recall
remember from one session to the next

Productivity
perform tasks quickly and efficiently

What is Usability?

Minimal error rates
if they do occur, good feedback so user can recover
High user satisfaction
confident of success

Scenario Development

Day-in-the-life scenarios:

Characterize what happens when users perform typical tasks

Can be acted out as a form of walk-through

May be used as basis for videotape

Scenario Development

Useful tools

Table of users / tasks

Table of task sequences

Flowchart or transition diagram

Social Impact Statement for Early Design Review

Describe the new system and its benefits.

Convey the high level goals

Identify the stakeholders.

Identify specific benefits

Address concerns and barriers

Anticipate changes in job functions and potential layoffs.
Address security and privacy issues.
Discuss accountability and responsibility for system misuse and failure.
Avoid potential biases.

Address concerns and barriers

Weigh individual rights vs. societal benefits.
Assess trade-offs between centralization and decentralization.
Preserve democratic principles.
Ensure diverse access.
Promote simplicity and preserve what works.

Outline the development process

Present and estimated project schedule.
Propose process for making decisions.
Discuss expectations of how stakeholders will be involved.

Outline the development process

Recognize needs for more staff, training, and hardware.
Propose plan for backups of data and equipment.
Outline plan for migrating to the new system.

What Users Might Say

"This is too difficult"
"You don't have the steps in the order we do them"
Do not take these comments personally
You shouldn't have such a personal stake
Goal is to make the system easy to use for your intended users

Caveats

Politics
"Agents of change" can cause controversy
Get a sense of the organization
Important to get buy-in from all those involved
Design forever without prototyping
Rapid prototyping, evaluation, & iteration is key to technique

Legal Issues

Potential Controversies

What material is eligible for copyright?

Are copyrights or patents more appropriate for user interfaces?

See: www.patents.ibm.com

Legal Issues

Potential Controversies

What constitutes copyright infringement?

Should user interfaces be copyrighted?

Lotus vs. Paperback Software

End of This Lesson