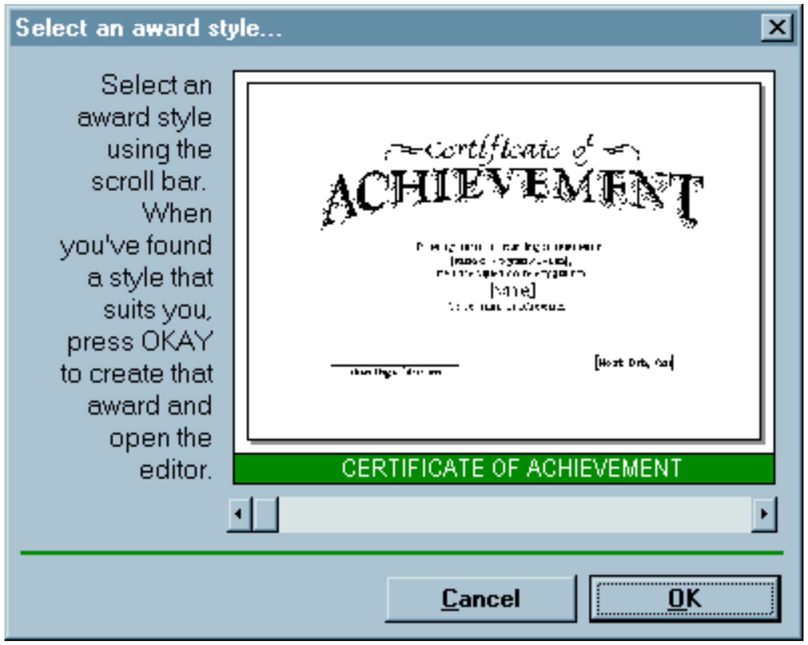
Usability

*Some slides are modified from ocw.mit.edu

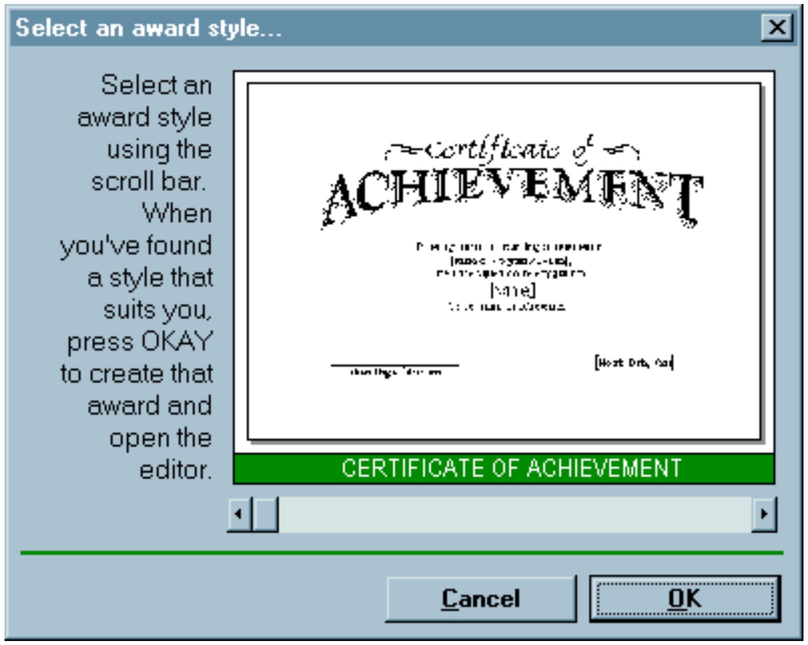
Hall of Shame


Select an award style...

Select an award style using the scroll bar. When you've found a style that suits you, press OKAY to create that award and open the editor.

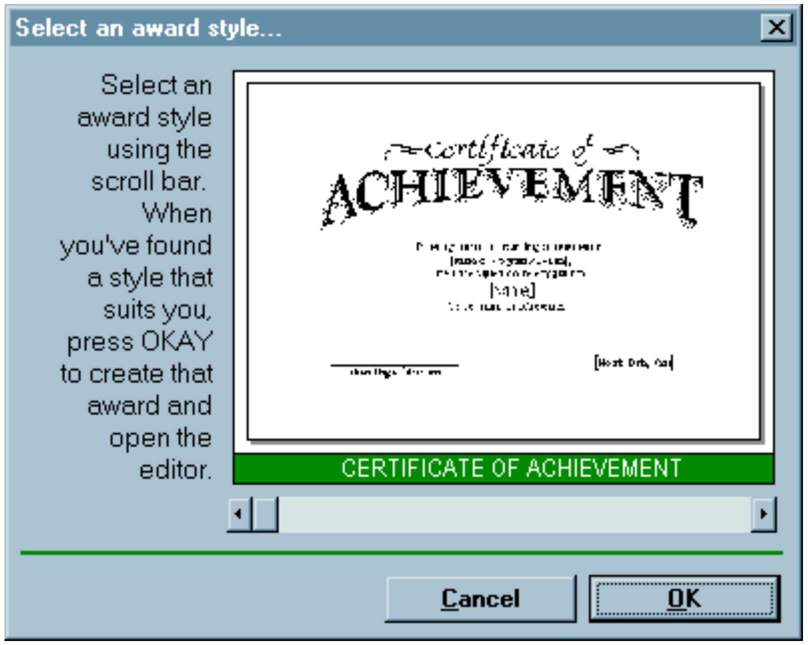
Is this a good design?

Hall of Shame


Select an award style...
Select an award style using the scroll bar. When you've found a style that suits you, press OKAY to create that award and open the editor.
Certificate of ACHIEVEMENT
CERTIFICATE OF ACHIEVEMENT
Cancel
OK

It is WYSIWYG
Bad use of scroll bar
Normally scrollbars are used for scrolling content horizantally

Hall of Shame



Select an award style...

Select an award style using the scroll bar. When you've found a style that suits you, press OKAY to create that award and open the editor.

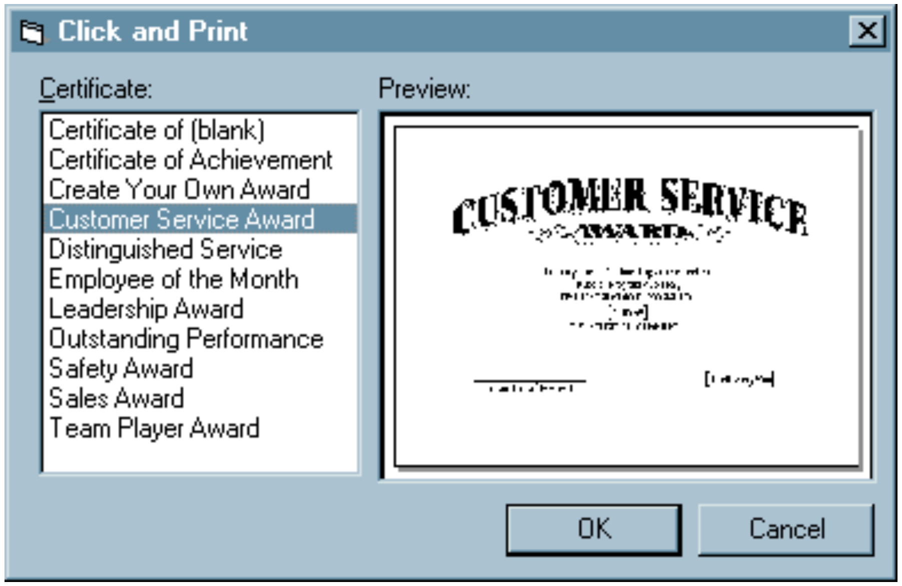
Behaviour is not consistent with user habits

The help message is too long for a simple task

How can a user find a template that they found in the past. They need to remember the exact location of the scroll

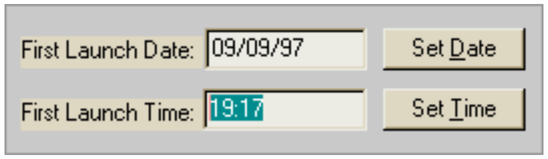
How can we make it better?

Hall of Shame



Using the correct controls

Hall of Shame



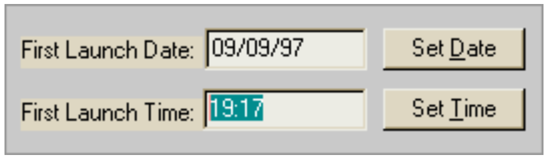
First Launch Date: 09/09/97

First Launch Time: 19:17

AutomatePro Scheduling an event

What would you expect when you click set time?

Hall of Shame



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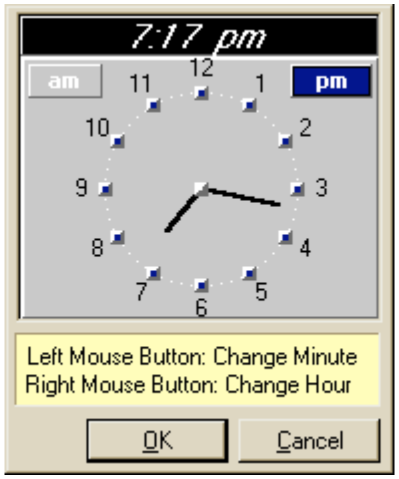
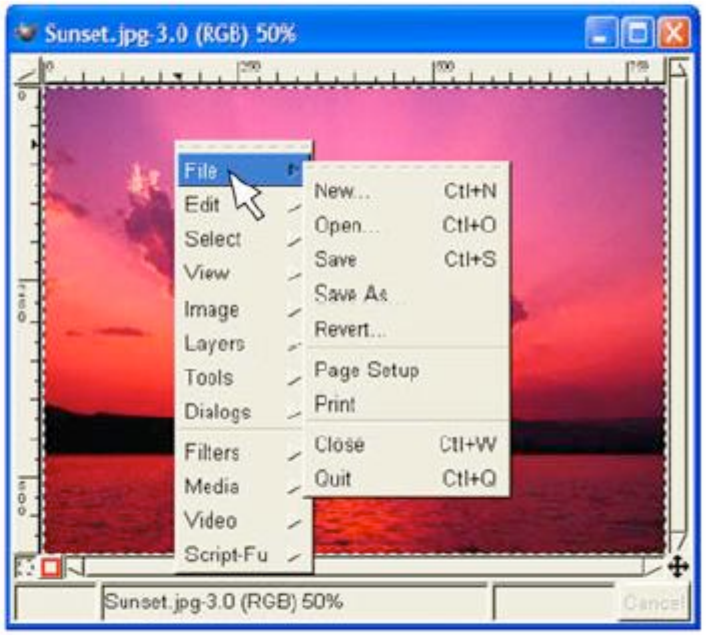


Left Mouse Button: Change Minute
Right Mouse Button: Change Hour

Someone put in a lot of effort to create this useless interface

Continue…



GIMP program doesn't have any menu bar.

Everything is a context menu accessed with a right click.

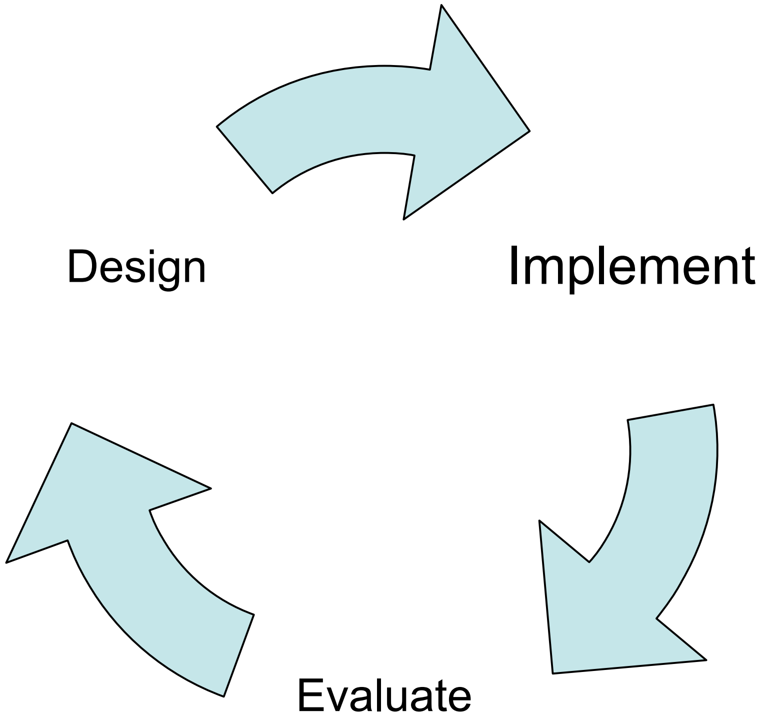
Again consistency

User Interfaces are Hard to Design

- You are not the user
  - Most software engineering is about communicating with other programmers
  - UI is about communicating with users
- The user is always right
  - Conssitent problems are the systems fault
- ….but the user is not always right
  - Users aren’t designer, our job is to help them

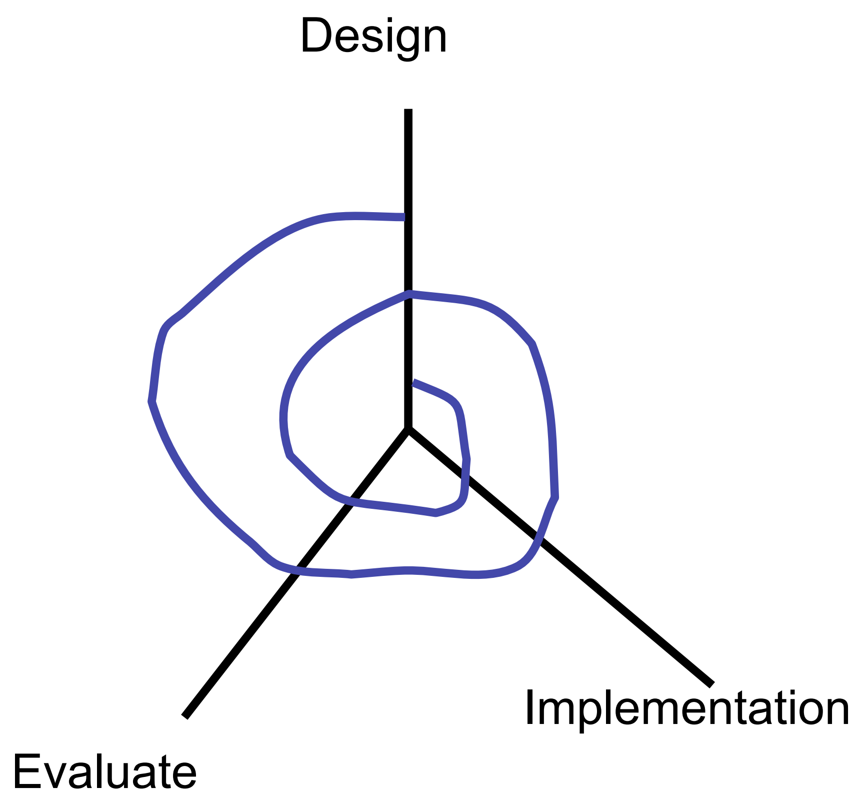
Iterative Design

- UI development is an iterative process
- Iterations can be costly
  - If the design turns out to be bad, you may have to trow away most of your code



Spiral Model

- Use throw-away prototypes and cheap evaluation for early iterations



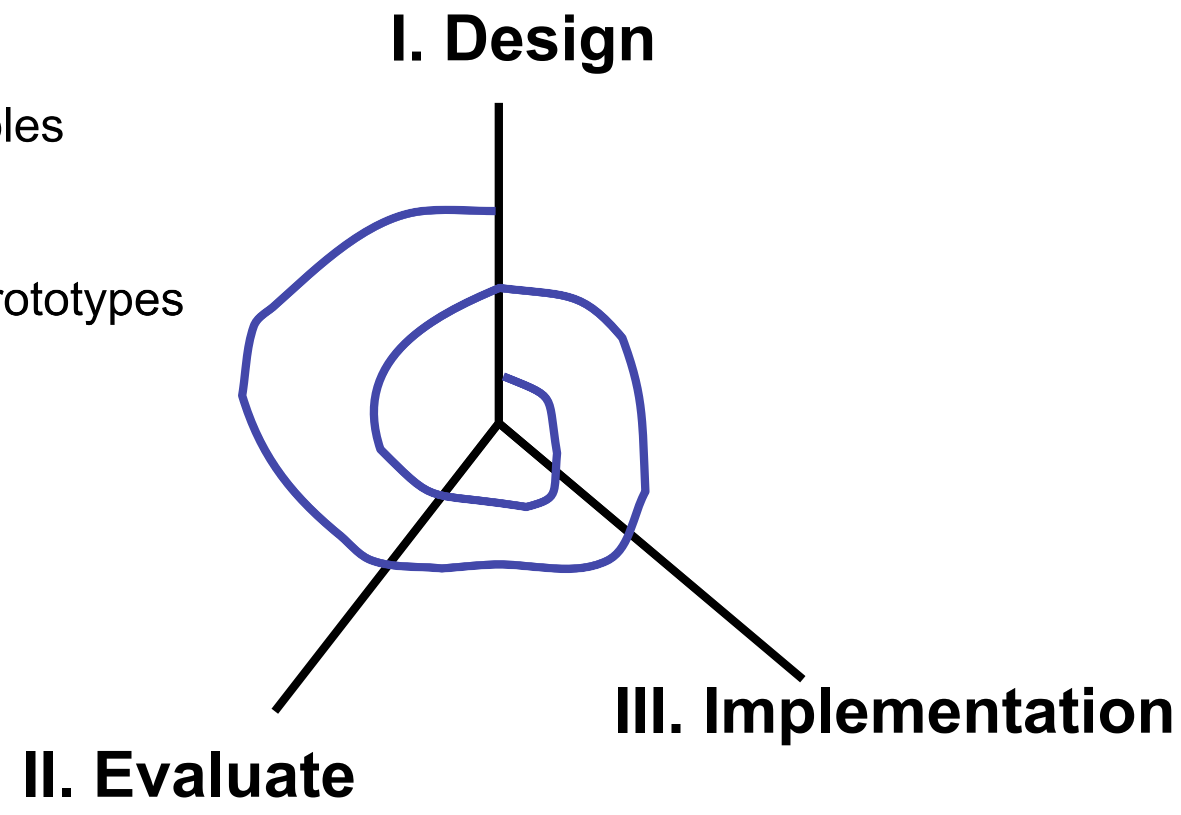
Usability Defined

- Usability: how well users can use the system's functionality
- Dimensions of usability
  - Learnability: is it easy to learn?
  - Efficient: oncee learned is it fast to use?
  - Memorability: is it easy to remember what you learned
  - Errors: are errors few and recoverable?
  - Satisfaction: is it enjoyable to use?

I. Design Principles

II. Low-fidelity prototypes

III. User testing

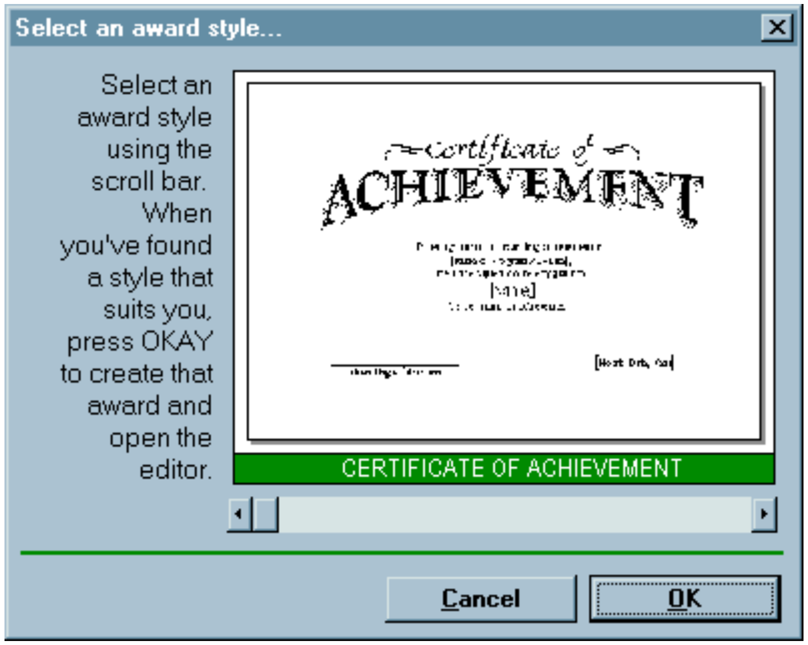


Usability Goals

- Learnability:
  - Easy to learn or not
- Visibility
  - Interface gives feedback, makes its state easy for user to see
- Efficiency
  - is it fast to operate or not
- Error Handling
  - Frequency and cost of errors
- Simplicity
  - Fewer parts easier to understand and use

Jakob Nielsen’s 10 heuristics

Learnability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Certificate of ACHIEVEMENT

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Intuitive?

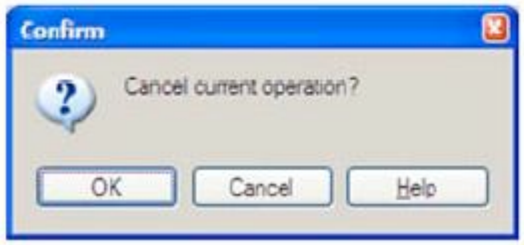
User-friendly?

Scrollbar in this context is unfamiliar and inconsistent

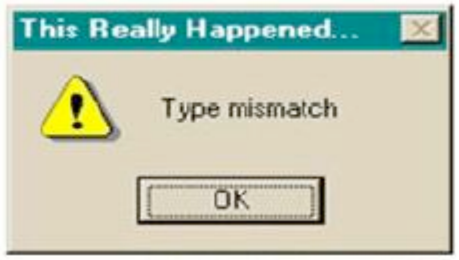
Some Facts About Memory and Learning

- Working Memory
  - Small: 7+/-2 “chunks”
  - Short-lived: gone in 10 seconds
  - Maintenance reharsal is required to keep it from decaying
- Long term memory
  - Practically infinite in size and duration
  - Elaborative reharsal transfers chunks to long-term memory

Design Principles for Learnability



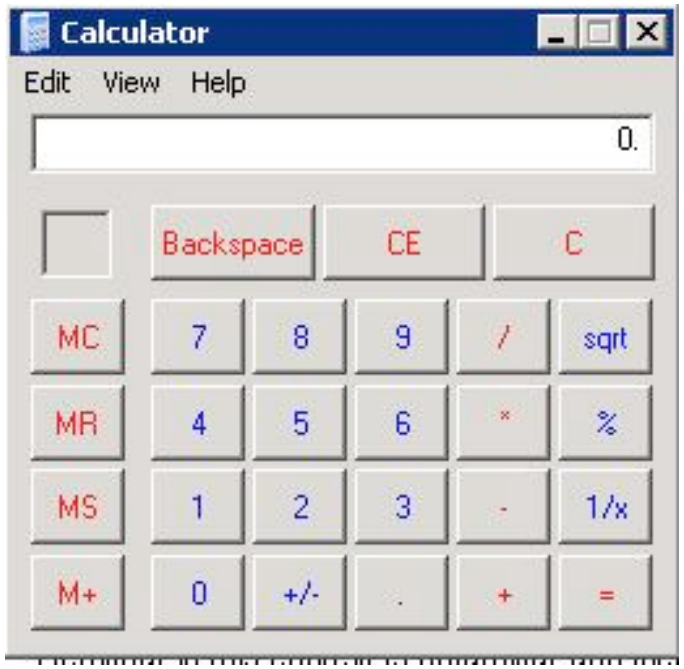
Cancel current operation?



Type mismatch

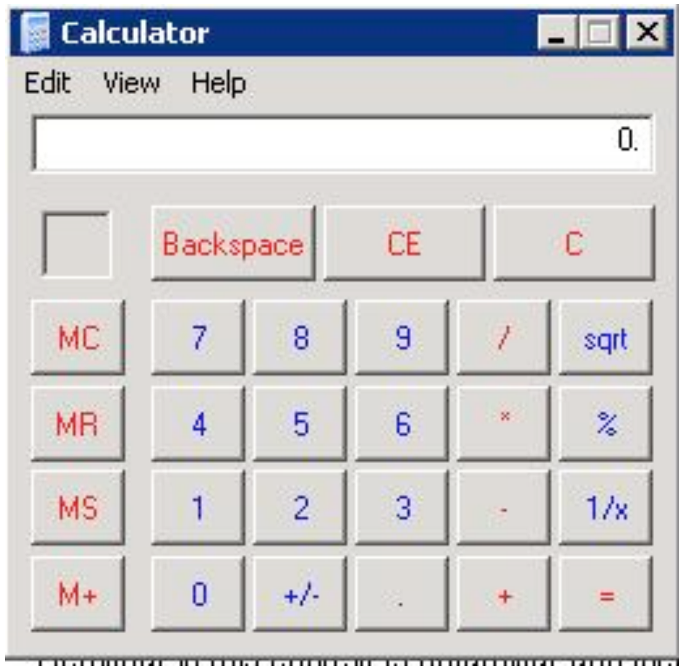
- Consistency
  - Similar things look and act similar
  - Different things look and act similar
  - Consistency of wording location argument order
  - Internal consistency: within your UI
  - External consistency: with other UIs
- Match the real world
  - Use common words not technical jargon
- Recognition, not recall
  - Labeled buttons are better than command languages
  - Combo boxes are better than text boxes

Visibility



What is wrong with the default windows calculator?

Visibility



Sqrt button

* For multiplication

Backspace

For a calculator software interface can be better than a regular calculator to show current state (i.e. 3+4=7

Some Facts About Human Perception

- Perceptual fusion: stimuli<100ms apart
  - Computer response <100ms feels instanteneous
    - Imagine a word processing program that takes more than 100ms to display characters on the screen

Design Principles for Visibility

- Make system state visible: keep the user informed about what is going on
  - Mouse cursor, selection highlight, status bar

- Give Prompt feedback
  - Response time rules of thumb

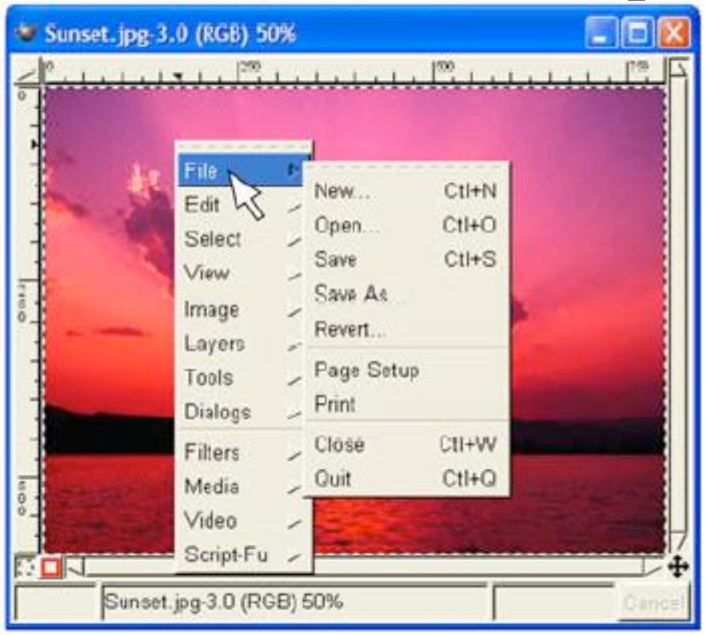
    <0.1 sec seems intantaneous

    0.1-1 sec user notices but no feedback needed

    1-5 sec display busy cursor

    >5 sec display progress bar

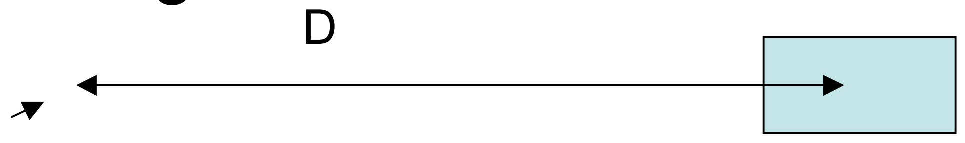
Efficinecy



How quickly an expert user can operate the system

Pointing Tasks

– How long does it take to reach a target?



– Moving mouse to target on screen

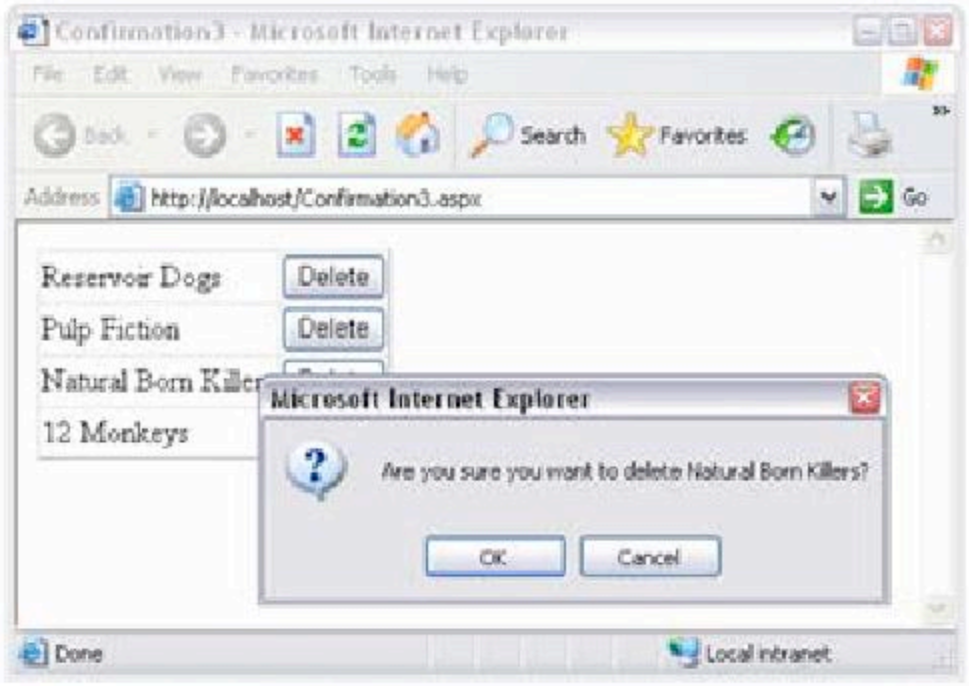
– Moving finger to key on keyboard

– Moving hand between keyboard and mouse

Design Principles for Efficiency

- Make important targets big, nearby or at screen edges
- Avoid steering tasks
- Provide Shortcuts
  - Keyboard accelerators
  - Styles
  - Bookmarks
  - History

Confirmation Dialogs



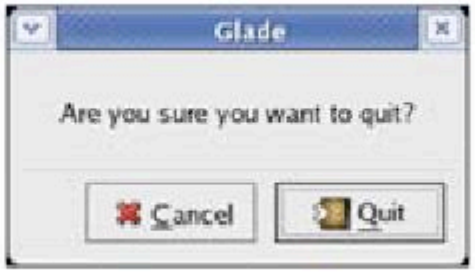
Confirmation3 - Microsoft Internet Explorer

http://localhost/Confirmation3.aspx

Reservoir Dogs
Pulp Fiction
Natural Born Killers
12 Monkeys

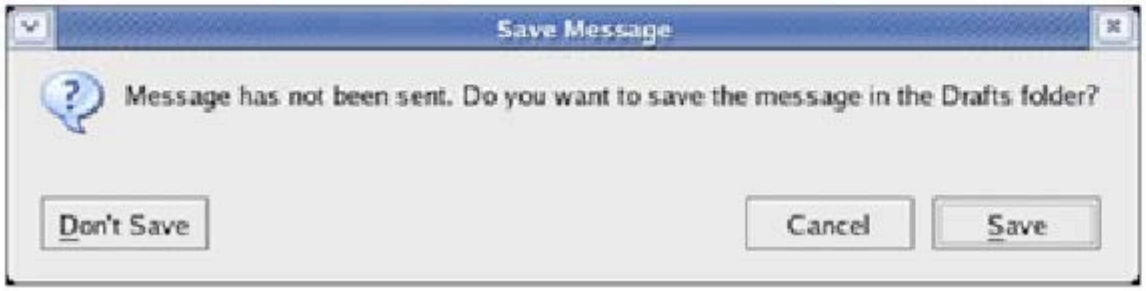
Microsoft Internet Explorer

Are you sure you want to delete Natural Born Killers?



Glade

Are you sure you want to quit?



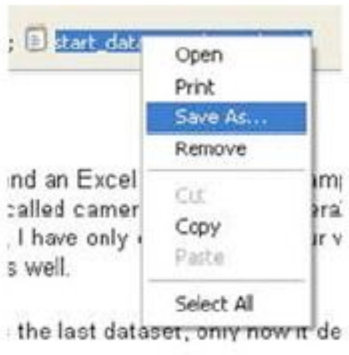
Save Message

Message has not been sent. Do you want to save the message in the Drafts folder?

Design Principles for Error Handling

- Prevent Errors as much as possible
  - A selection is better than typing
  - Disable illegal commands
  - Separate risky commands from common ones

- Use confirmation dialogs sparingly
- Support Undo
- Good error messages
  - Precise
  - Polite
  - Constructive help



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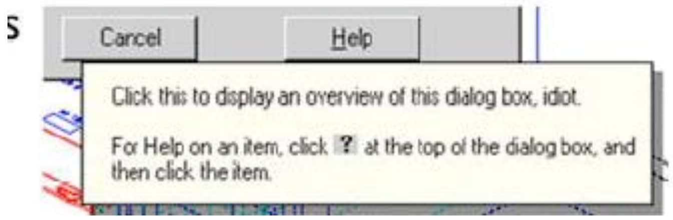
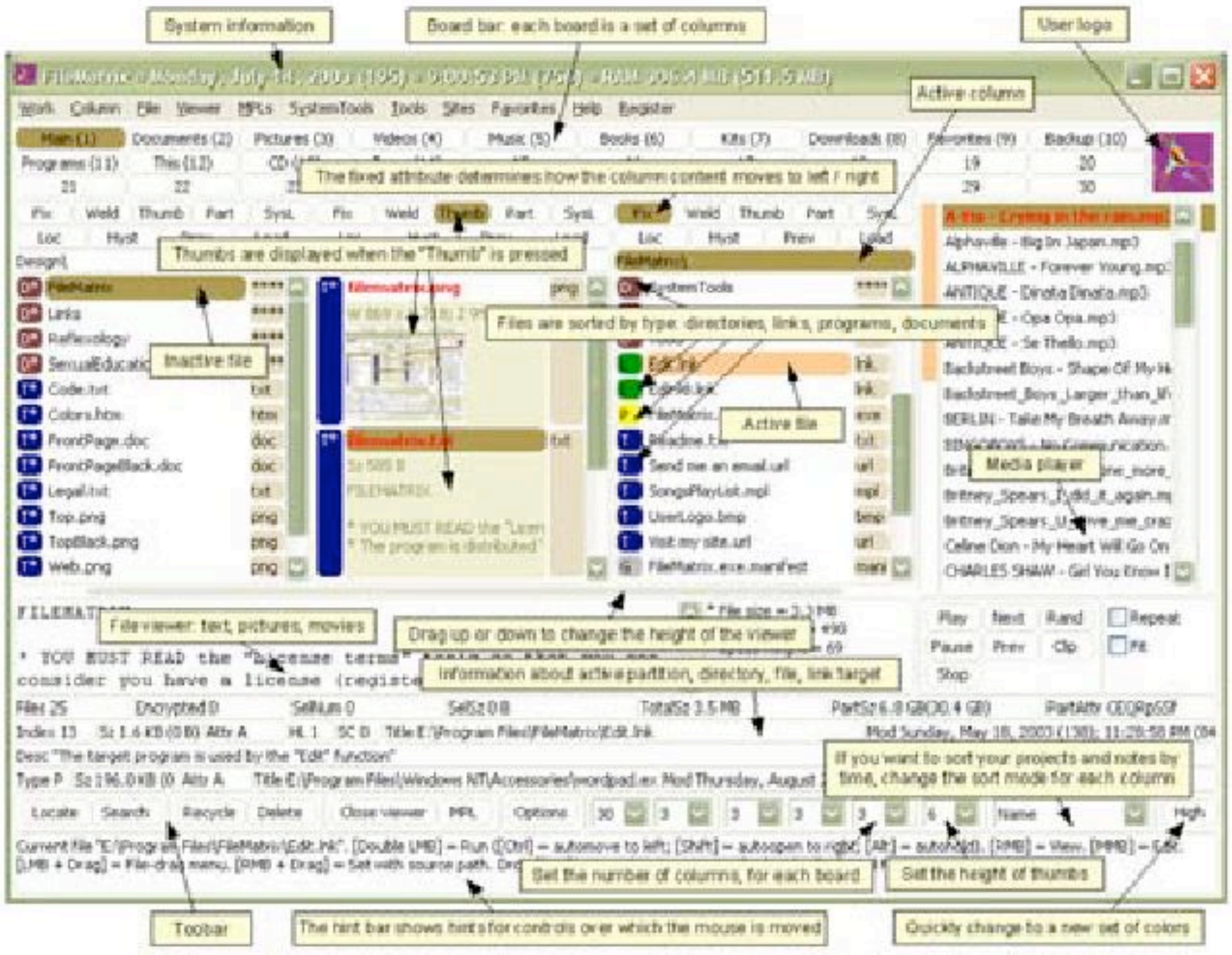
the last dataset, only now it de



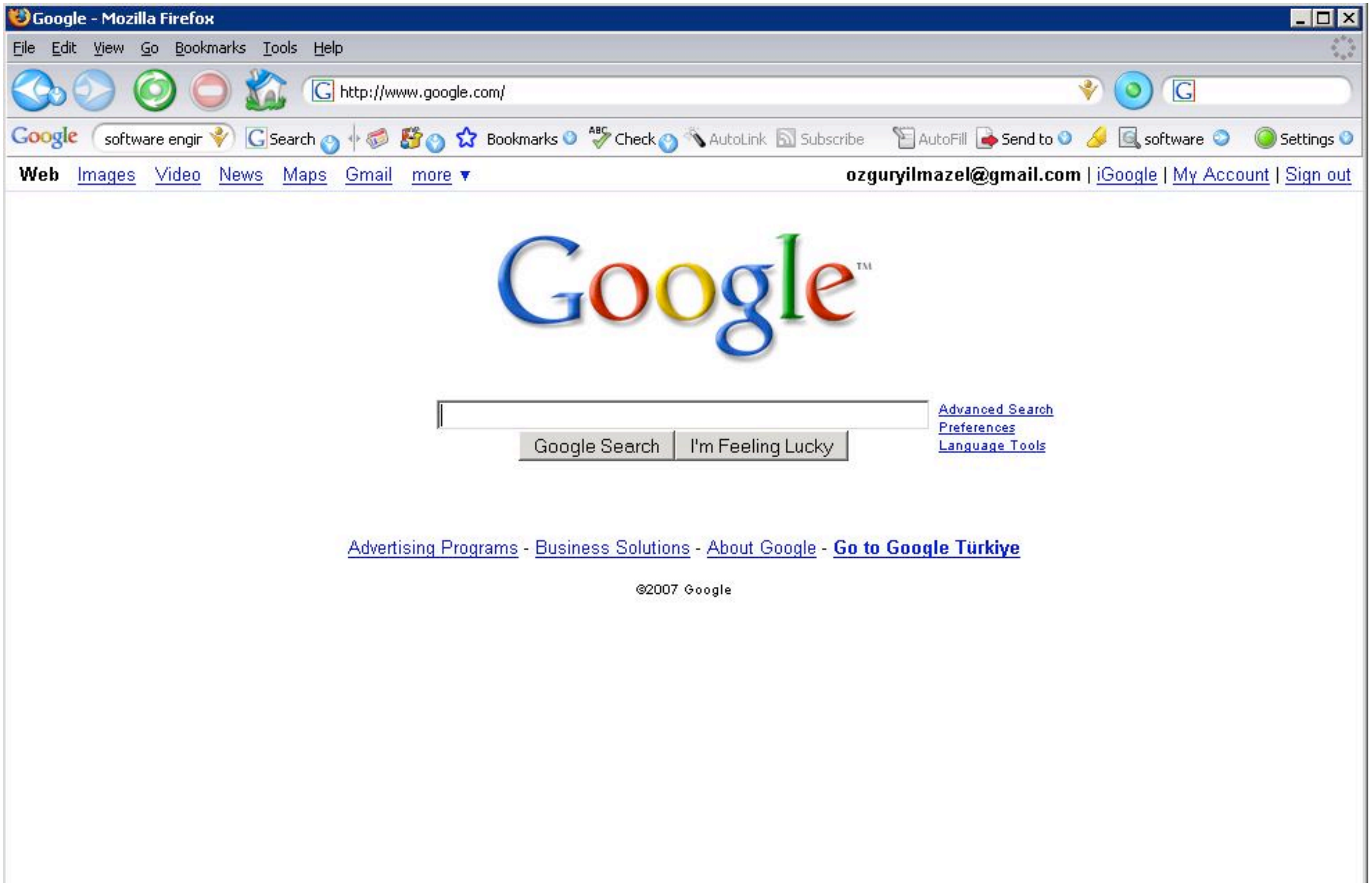
Click this to display an overview of this dialog box, idiot.

For Help on an item, click ? at the top of the dialog box, and then click the item.

Simplicity


System information
Board bar: each board is a set of columns
User logo
Active column
The fixed attribute determines how the column content moves to left / right
Thumbs are displayed when the "Thumb" is pressed
Files are sorted by type: directories, links, programs, documents
Inactive file
Active file
Media player
File viewer: text, pictures, movies
Drag up or down to change the height of the viewer
Information about active partition, directory, file, link target
If you want to sort your projects and notes by time, change the sort mode for each column
Set the number of columns, for each board
Set the height of thumbs
Toolbar
The hint bar shows hints for controls over which the mouse is moved
Quickly change to a new set of colors

Simplicity


Google - Mozilla Firefox
File Edit View Go Bookmarks Tools Help
http://www.google.com/
Google software engir Search Bookmarks Check AutoLink Subscribe AutoFill Send to software Settings
Web Images Video News Maps Gmail more ▼
ozguryilmazel@gmail.com | iGoogle | My Account | Sign out
Google™
Google Search
I'm Feeling Lucky
Advanced Search
Preferences
Language Tools
Advertising Programs - Business Solutions - About Google - Go to Google Türkiye
©2007 Google

Design Principles for Simplicity

- – Less is More
  - Omit extraneous information, graphics, features
- – Good graphic design
  - Few well-chosen colors and fonts
  - Group with whitespace
- – Use concise language
  - Choose labels careully

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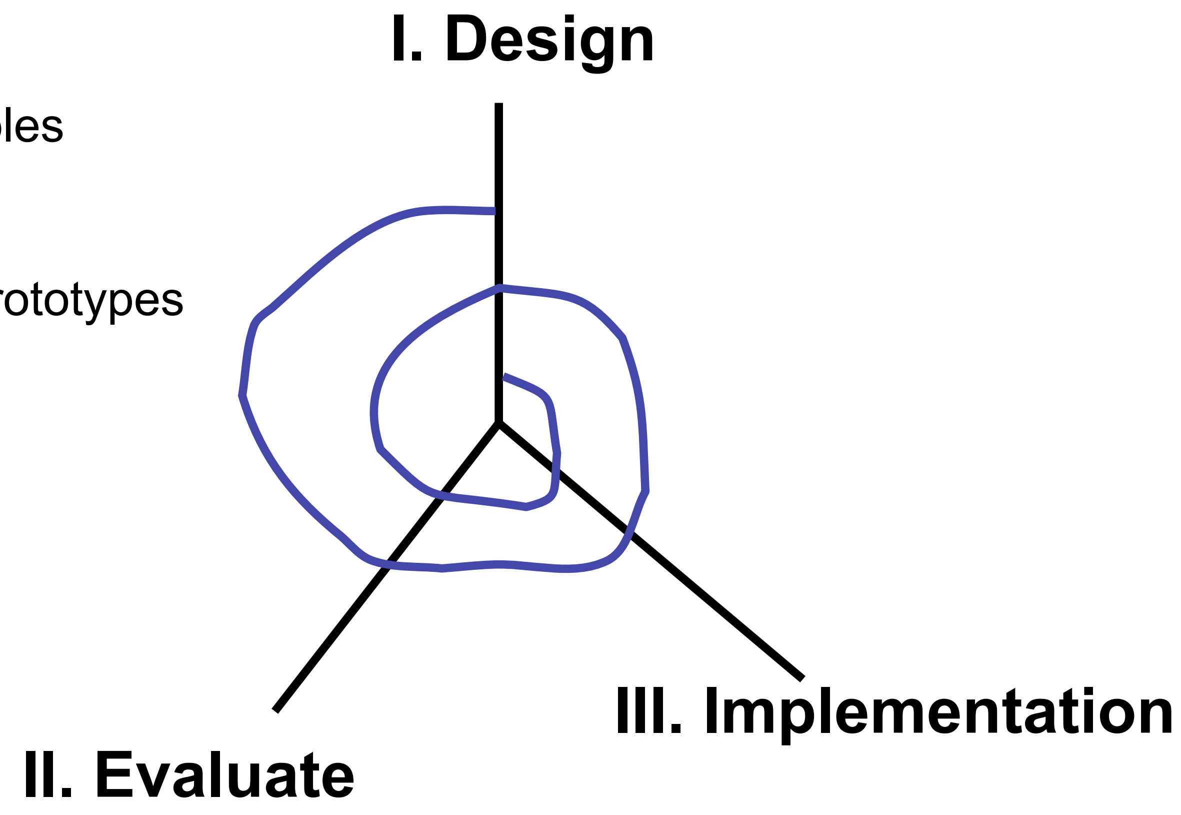
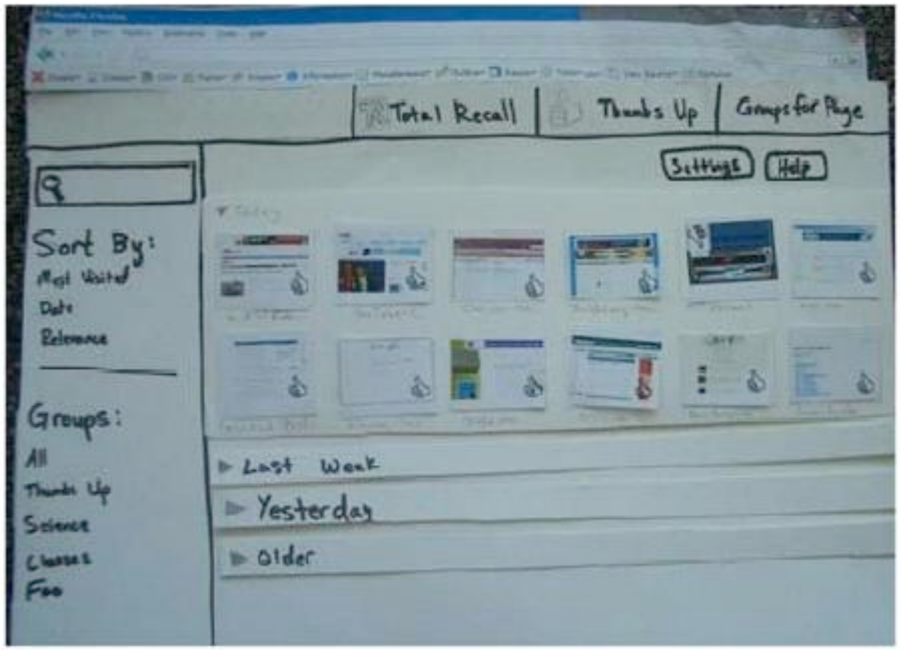


Low-fidelity Prototypes

- Paper is very fast and effective prototyping tool
  - Sketch windows, menus, dialogs, widgets
  - Crank out lots of designs and evaluate them
- Hand sketching Ok
  - Focus on behavior and interaction, not fonts and colors
- Paper prototypes can even be executed
  - Use pieces to represent windows, dialogs, menus
  - Simulate the computer’s response by moving pieces around and writing on them

Paper prototypes



Paper prototypes

User Testing

- Start with a prototype
- Write up a few representative tasks
  - Short but not trivial
  - E.g.
    - Add this meeting to calendar
    - Type this letter and print it
- Find a few representative users
  - 3 is often enough to find obvious problems
- Watch them do tasks with the prototype

How to Watch Users

- Brief the user first (being a test users is stressful)
  - I am testing the system not testing you
  - If you have trouble, it's the systems fault
  - Feel free to quit at any time

  Always to an Informed Consent

- Ask user to think aloud
- Be quiet!
  - Don't help, don't explain, don't point out mistakes
  - Sit on your hands if it helps ☺
  - Two exceptions: prod user to think aloud ("what are you thinking now?") and move on to next task when stuck
- Take lots of notes – or even record the session

Watch for Critical Incidents

- Critical incidents: events that strongly affect task performance or satisfaction
- Usually negative
  - Errors
  - Repeated Attempts
  - Curses
- Can also be positive
  - “Cool!”
  - “Oh now I see!”

Summary

– You are not the user
– Keep human capabilities and design principles in mind
– Iterate over your design
– Make cheap throw away prototypes
– Evaluate them with users

Further Reading

– Nielsen “Heuristic Evaluation”
– Tognazzini “First Principles”
– “GUI Bloppers:Don’ts and Dos for Software Developers and Web Designers” Johnson, Morgan Kaufmann, 2000