UI Design

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Outcomes

After today's lecture you will be able to:

- Understand the general principles of UI Design

Principles of UI Design

CS 2263

1. Match the real world

Examples

- Desktop
- Trashcan

Dangers of metaphors

1. Often hard for designers to find
2. Deceptive
3. Constraining
4. Breaking the metaphor

- Using a metaphor doesn't excuse other bad design decisions

Directly Manipulate Objects

- User interacts with visual representation of data objects
  - Continuous visual representation
  - Physical actions or labeled button presses
  - Rapid, incremental, reversible, immediately visible effects

- Examples
  - Files and folders on a desktop
  - Scrollbar
  - Dragging to resize a rectangle
  - Selecting text

- Visual representation and physical interaction are important

Objects suggest actions for use

Perceived and actual properties of a thing that determine how the thing could be used

1. Chair is for sitting
2. Knob is for turning
3. Button is for pushing
4. Listbox is for selection
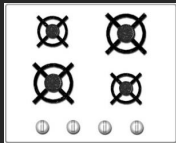5. Scollbar is for continuous scrolling or panning

Natural Mapping

- Physical arrangement of controls should match arrangement of function

- Best mapping is direct, but natural mappings don't have to be direct
  - Light switches
  - Stove burners
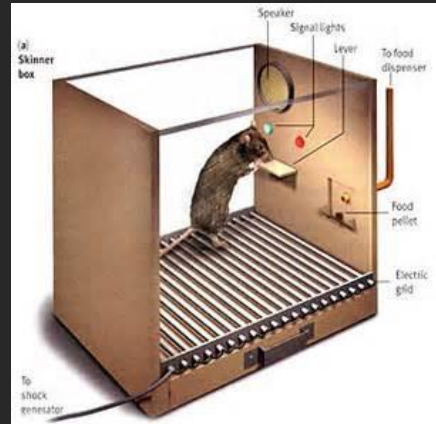 - Turn signals
  - Audio mixer
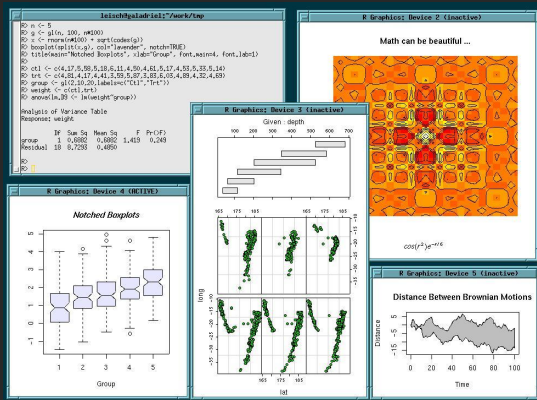

Poor mapping:
arbitrary arrangement of stove controls

Good mapping:
Full natural mapping of controls and burners

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Actions

Actions should have immediate, visible effects

- Examples
  - Push buttons
  - Scrollbars
  - Drag and drop

- Kinds of feedback
  - Visual
  - Audio
  - Haptic (conveyed by sense of touch)

2. Consistency and Standards

- Users should not have to wonder whether different words, situations, or actions mean the same thing.
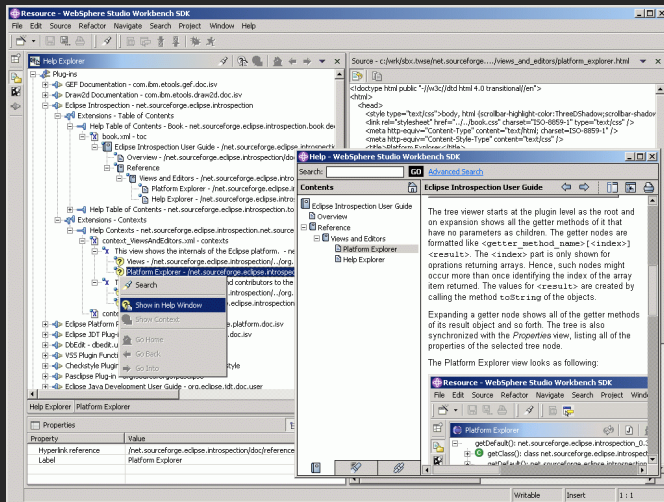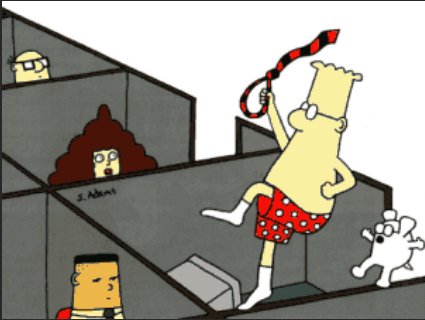
- Follow **platform conventions....**

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Help should be

1. Searchable
2. Context-sensitive
3. Task sensitive
4. Concrete
5. Short
6. **NOT NEEDED**

4. User Control and Freedom

Users may run into trouble by using a system function by mistake and need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue.

1. Provide Undo
2. Long operations should be allowed to be paused/suspended
3. All dialogs should have a cancel button

5. Visibility of System Status
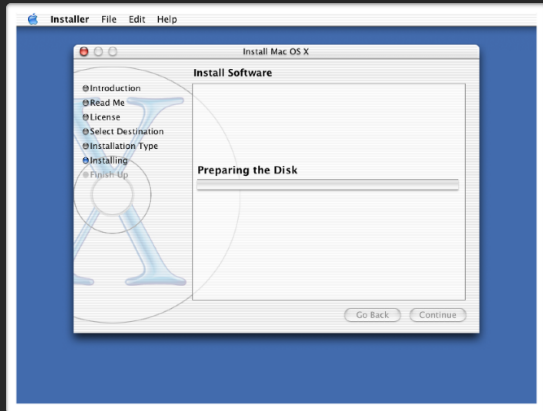
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

1. Change cursor to indicate action
2. Use highlights to show selected objects
3. Use status bar to show progress

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6. Flexibility and Efficiency

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- Accelerators – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
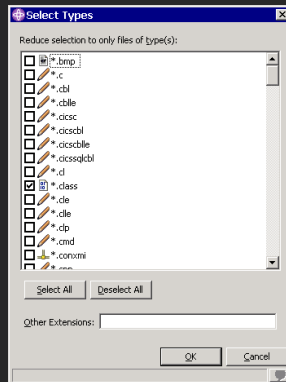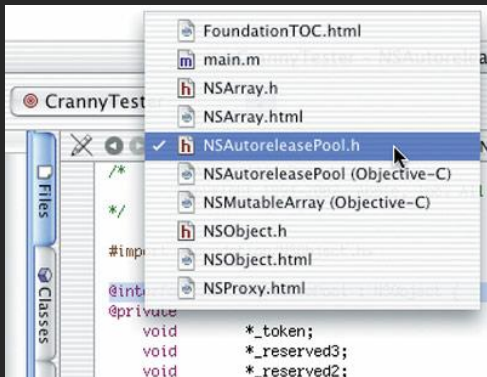
7. Recognition, Not Recall

Minimize the user's memory load by making objects, actions, and options visible

The user should not have to remember information from one part of the dialog to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

1. Use menus, not command languages
2. Use combo boxes, not textboxes
3. Use generic commands
4. All needed information must be visible

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- Even better than good error messages is a careful design which prevents a problem from occurring in the first place

- Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action

Help Users Recognize, Diagnose, and Recover from Errors

Microsoft Office 2000 Installation: Fatal Error

Installation ended prematurely because of an error.

OK

RealPlayer

Unable to contact Technical Support for further information.

More information is available at the RealNetworks Technical Support Website.

More Info

OK

- Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.
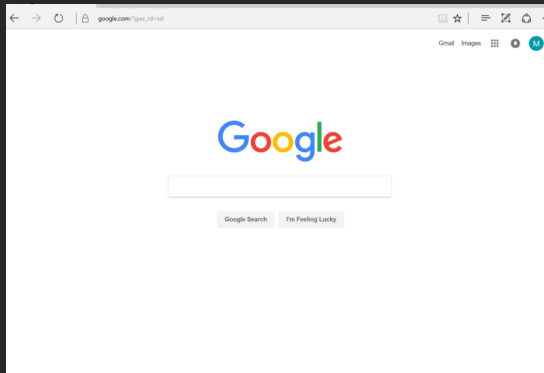
- And they should be polite…
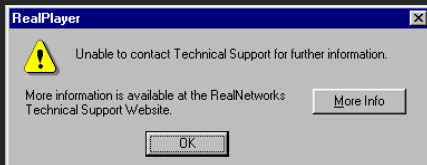
10. Aesthetic and Minimalist Design

- Dialogs should not contain information which is irrelevant or rarely needed.
- Every extra unit of information in a dialog competes with the relevant units of information and diminishes their relative visibility.

- Review this lecture

Are there any questions?

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