Graphical Screen Design

CRAP – contrast, repetition, alignment, proximity
Grids are an essential tool for graphical design
Other visual design concepts
- consistency
- organization
- navigational cues
- familiar idioms
- relationships
- legibility and readability
- appropriate imagery

CRAP

Contrast
- make different things different
- brings out dominant elements
- mutes lesser elements
- creates dynamism

Repetition
- repeat design throughout the interface
- consistency
- creates unity

Alignment
- visually connects elements
- creates a visual flow

Proximity
- groups related elements
- separates unrelated ones
A First Lesson in Graphical Design

Contrast
Repetition
Alignment
Proximity

Examples
- Saul's Home Page
- Proportion
- Alignment
- Contrast
- Proximity
Graphical Design
Graphical Design

Repetition

**Grades**

Horizontal and vertical lines to locate window components
- aligns related components

**Organization**
- contrast for dominant elements
- element groupings by proximity
- organizational structure
- alignment

**Consistency**
- location
- format
- element repetition
- organization

Format of variable contents

Widget to widget spacing

Window to widget spacing

Standard icon set

Message text in Arial 14, left adjusted

Fixed components
Do you really want to delete the file "myfile.doc" from the folder "junk"?

Cannot move the file "myfile.doc" to the folder "junk" because the disc is full.

The file was destroyed.

Two-level Hierarchy
- indentation
- contrast

Logic of organizational flow

Alignment connects visual elements in a sequence

Grouping by white space
Visual consistency (repetition)

internal consistency
- elements follow same conventions and rules
- set of application-specific grids enforce this

external consistency
- follow platform and interface style conventions
- use platform and widget-specific grids

deviate only when it provides a clear benefit to user

Realing screen elements

proximal clusters
alignment
white (negative) space
explicit structure
Terrible alignment
- no flow

Poor contrast
- cannot distinguish colored labels from editable fields

Poor repetition
- buttons do not look like buttons

Poor explicit structure
- blocks compete with alignment

No regard for order and organization

IBM's Aptiva Communication Center
Graphical Design
Using explicit structure as a crutch
Overuse of 3-d effects makes the window unnecessarily cluttered.

How do you choose when you cannot discriminate screen elements from each other?
Navigational cues

provide initial focus

direct attention as appropriate to important 2ndary, or peripheral items as appropriate

order should follow a user’s conceptual model of sequences

Redesigning a layout using alignment and factoring
The importance of negative space and alignment

Mullet & Sano

Economy of visual elements

minimize number of controls
include only those that are necessary
  - eliminate, or relegate others to secondary windows
minimize clutter
  - so information is not hidden
Repairing excessive display density

Mullet & Sano

Tabs
- excellent means for factoring related items
- but can be overdone
**Legibility and readability**

Characters, symbols, graphical elements should be easily noticeable and distinguishable

- Text set in Helvetica
- Text set in Times Roman

✓ TEXT SET IN CAPITOLS
- Text set in Braggadocio
- Text set in Courier

×

**Legibility and readability**

Proper use of typography
- 1-2 typefaces (3 max)
- normal, italics, bold
- 1-3 sizes max

<table>
<thead>
<tr>
<th>Large</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Small</td>
<td>Small</td>
</tr>
</tbody>
</table>

**Readable**

- Design components to be inviting and attractive
- Design components to be inviting and attractive

✓

**Unreadable**

- Design components to be inviting 
- Design components to be attractive

×
Legibility and readability

typesetting
- point size
- word and line spacing
- line length
- Indentation
- color

Readable
Design components to be inviting and attractive
Design components to be inviting and attractive

Unreadable: Design components to be easy to interpret and understand. Design components to be inviting and attractive

√ ×

Whenever your local SMS Administrator sends you an actual software Package, the SMS Package Command Manager will appear (usually at network logon time) displaying the available Package(s). The following screenshots display scenes similar to what you will see when you receive an actual SMS Package.

To start the demonstration, click the "CLICK TO CONTINUE" button of the screen.

Popkin Software's System Architect
These choices must be really important, or are they?

Greyed-out example text hard to read. Why not make it black?

Regional preferences in Windows 95
**Imagery**

Signs, icons, symbols
- right choice within spectrum from concrete to abstract

Icon design very hard
- except for most familiar, always label them

Image position and type should be related
- image “family”

Consistent and relevant image use
- identifies situations, offerings...
Choosing levels of abstraction

Refined vs excessive literal metaphors

Mullet & Sano
What do these images mean?
- no tooltips included
- one of the tabs is a glossary explaining these images!
  which one?

Novell GroupWise 5.1

Idioms

Familiar ways of using GUI components
- appropriate for casual to expert users
- builds upon computer literacy
- must be applied carefully in walk up and use systems
How to choose between widgets

What components must be in the display?
- necessary visual affordances
- frequent actions
  - direct manipulation for core activities
  - buttons/forms/toolbar/special tools for frequent/immediate actions
  - menus/property window for less frequent actions
  - secondary windows for rare actions

How are components related?
- organize related items as “chunks”

What are familiar and expected idioms?
- cross application look and feel

Displaying core functionality

Apple MacPaint & Macwrite, from

Graphical Design
Widgets and complexity

how can window navigation be reduced?
- avoid long paths
- avoid deep hierarchies

Exercise

Graphical redesign

Create a grid emphasising:
- visual consistency
- relationships between screen elements
- navigational cues
- economy
- legibility and readability
- imagery
Constructing a grid
1. Maintain consistency with GUI style
   • locate standard components - title bar, window controls, ...

2. Decide navigational layout + white space + legibility + typography
   • annotated grid shows location of generic components
   • these generic components may have their own grids.

Using the grid
3. Determine relationships, navigational structure
   • map navigational structure onto the grid

4. Economize
   • collapse two windows into one
   • trim sound dialog
Using the grid

5. Evaluate by displaying actual examples

6. Economize further
   • decide which we prefer

What you now know

CRAP

Grids are an essential tool for graphical design

Other visual concepts include
  - visual consistency
    • repetition
  - visual organization
    • contrast, alignment and navigational cues
  - visual relationships
    • proximity and white space
  - familiar idioms
  - legibility and readability
    • typography
  - appropriate imagery
Interface Design and Usability Engineering

Goals:
- Articulate: who users are, their key tasks

Methods:
- Task centered system design
  - Participatory design
  - User-centered design
- Evaluate tasks
- Brainstorm designs
- Psychology of everyday things
  - User involvement
  - Representation
  - Metaphors
- Participatory interaction
  - Task scenario walk-through
- Graphical screen design
  - Interface guidelines
  - Style guides
  - Usability testing
  - Heuristic evaluation
- Low fidelity prototyping methods
- High fidelity prototyping methods

Products:
- User and task descriptions
- Throw-away paper prototypes
- Refined designs
- Testable prototypes
- Completed designs
- Graphical screen design
- Interface guidelines
- Style guides
- Usability testing
- Heuristic evaluation

Field testing

Completed designs

Interface Design and Usability Engineering