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

The Plan: Cheese Sampler

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
Tool 1: CRAP for understanding

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
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Research

GroupLab project describes research by my group

Publications by our group; most available in HTML, PDF, and postscript

Project snapshots describes select projects done in Grouplab

Grouplab software repository

Grouplab people

Graduate Students

I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work. Some research and project ideas honors and graduate students

Courses offered this year

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CPSC 601.43: Special Topics: Heuristic Evaluation

Alignment
- visually connects elements
- creates a visual flow
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Research Ideas. I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work.

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CPSC 601.56: Advanced Topics in HCI: Media Spaces and Casual Interaction
SENG 609.05: Graphical User Interfaces: Design and Usability
SENG 609.06: Special Topics in Human Computer Interaction
Ego alert: My entry on U Calgary’s ‘Great Teachers’ Web Site

Administration
Ethics Committee for research with human subjects; I am the chair

Last updated: March 20, 1867

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Contrast
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Repetition
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Really????

People often focus on content.
(Have you seen DanCo's web page?)

But over-focus just on beautiful graphic design is just as bad.

And though not everyone is a great graphic designer,

Everyone can CRAP.
Tool 2: Make interface, tasks parallel

provide initial focus and main path

direct attention as appropriate to important secondary, or peripheral items as appropriate

order should follow a user’s conceptual model of sequences

![Diagram of interface and task order]

×

✓
Haphazard layout
(Matches system model? Database order? Evolution of system?)
Better layout
## Ordering exercise

<table>
<thead>
<tr>
<th>Alaska</th>
<th>Texas</th>
<th>California</th>
<th>Montana</th>
<th>New Mexico</th>
<th>Arizona</th>
<th>Arkansas</th>
<th>California</th>
<th>Colorado</th>
<th>Connecticut</th>
<th>Delaware</th>
<th>Florida</th>
<th>Georgia</th>
<th>Hawaii</th>
<th>Washington</th>
<th>Oregon</th>
<th>California</th>
<th>Nevada</th>
<th>Idaho</th>
<th>Montana</th>
<th>Arizona</th>
<th>New Jersey</th>
<th>Utah</th>
</tr>
</thead>
</table>

Done
Tool 3: Guidelines and grids

Many (most?) UI toolkits support CRAP
- Hierarchical organization for grouping
- Grids for alignment
- Consistent look and feel for widgets
- Consistent font choices
- A “Look and feel” that matters

This is part of the answer to “why guidelines?”
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

Microsoft Powerpoint
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
An iPhone example of inconsistency

US

China

Canada

Iran
Sometimes it's okay to make exceptions
Example: grids (alignment, repetition)

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
Example: form organization

- Two-level Hierarchy
  - indentation
  - contrast

- Logic of organizational flow

- Alignment connects visual elements in a sequence

- Grouping by white space
Redesigning a layout using alignment and factoring
Grids help here too

Mullet & Sano
IBM's Aptiva Communication Center

No grid, no peace
## Grids by themselves won't save you

<table>
<thead>
<tr>
<th>Form Title -- (appears above URL in most browsers and is used by WWW search)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q&amp;D Software Development Order Desk</td>
</tr>
<tr>
<td>Form Heading -- (appears at top of Web page in bold type)</td>
</tr>
<tr>
<td>Q&amp;D Software Development Order Desk</td>
</tr>
<tr>
<td>Background Color:</td>
</tr>
<tr>
<td>FFFBFO</td>
</tr>
<tr>
<td>Text Color:</td>
</tr>
<tr>
<td>000080</td>
</tr>
</tbody>
</table>

- E-Mail responses to (will not appear on)
  - dversch@q-d.com
- Text to appear in Submit button
- Send Order
- Alternate (for mailto forms only)
- Clear Form
- Text to appear in Reset button

### Scrolling Status Bar Message (max length = 200 characters)

*WebMania 1.5b with Image Map Wizard is here!*

### Webforms

- 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

**Saul Greenberg**
Storytelling
Mini-break
Tool 4: appropriate widget choice

Partly defined by style guidelines (e.g., Apple UI guidelines)

Radio/options buttons versus checkboxes  Gender:  Male

Appropriate controls for data entry  Grade:  ▼100

Combo boxes vs. list controls vs. sets of checkboxes

Task-appropriate widgets
- Color pickers
- Calendar widgets

Custom widgets...
12-inch gourmet Pizza
- Cheese
- Pepperoni
- Sausage
- Sausage Pepperoni
- Supreme

Rolling Pin Pizza
Tabs: proximity power

- but can be overdone
- excellent means for factoring related items
- maybe you should make some choices?
My Account

Notifications

To control which notifications you receive from Facebook and applications, use the checkboxes below. Scroll to the bottom of the page to save your changes.

Send notifications by:

Email: dsc44@cornell.edu

Send notifications to your phone via SMS.

Send a notification when someone:

Facebook

- Sends you a message
- Adds you as a friend
- Confirms a friend request
- Posts on your Wall
- Pokes you
- Has a birthday coming up (weekly email)
- Asks to list you as family
- Confirms a family request
- Suggests a friend you might know
- Adds a friend you suggested
- Joins Facebook after your invite
- Tags you in a post
- Comments on a post you were tagged in

Photos

- Tags you in a photo

View Settings for:

Facebook
- Photos
- Groups
- Pages
- Events
- Questions
- Notes
- Links
- Video
- Help Center
- Wall Comments
- Places
- Other Updates from Facebook
- Credits
- Other Applications

Saul Greenberg
Tool 5: Simplicity

minimize number of controls

include only those that are necessary
- eliminate, or relegate others to secondary windows

minimize clutter
- so information is not hidden
Excessive decoration of dooooom

Overuse of 3-d effects makes the window unnecessarily cluttered
Legibility and readability

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

Text set in Helvetica

Text set in Times Roman

TEXT SET IN CAPITALS

Text set in Courier

✓

✗
If you wish to add/change network information, please select one of the following options.

- I WANT TO CONNECT TO AN EXISTING TIME & CHAOS WORKGROUP OR MODIFY THE CONNECTION SETTINGS.
- I WANT TO BUILD A BRAND NEW WORKGROUP.

These choices must be really important, or are they?

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

Time & Chaos
Regional preferences in Windows 95
Legibility and readability

Typesetting
- point size
- word and line spacing
- line length
- Indentation and alignment
- Color
- Whitespace

Limited variety (consistency)
- Small number of fonts, styles, colors, fonts...
From whitespace to legibility

The importance of negative space and alignment

Mullet & Sano
Legible imagery

Icon design very hard
- except for most familiar, always label them
- Fitts' law also thanks you for this

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

Signs, icons, symbols
- right choice within spectrum from concrete to abstract
Icons: appropriate levels of abstraction

Mullet & Sano
Illegible imagery

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

Novell GroupWise 5.1
Refine your metaphors
Cheese sampled!

CRAP

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