**WHAT IS GUI DESIGN**

- Graphical user interface — a user interface based on graphics (icons, pictures and menus) instead of text only; uses a mouse as well as a keyboard as an input device
- Also known as WIMP (windows, icons, menus, and pointing devices)
- GUI design is the rendering of a set of GUIs used in an interactive software

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**CONTENT OF THIS MODULE**

- Layout design
  - How individual content blocks are laid out on a given GUI
- Content design (headers, color, bg graphics, page content)
- Communication Design
  - Labels (menu and buttons)
  - Messages (instructions, error messages, help messages)

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**1. LAYOUT DESIGN**

- How individual content elements are laid out on a given GUI
  - Site logo, slogan, banners
  - Icons, background graphics
  - Information units
  - Action units
- Grid vs. template

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**USE A GRID PAPER TO START A LAYOUT**

Use a grid paper to start a layout...
**Proximity Principle**

- Elements related should be placed together.
- Action items (buttons) should be closely placed next to information units and related actions units.

**Alignment Principle**

- Properly adjust items so that they are in straight or proper relative positions.
- Related items are aligned to avoid users searching for them everywhere on the GUI.
- Every item should have a visual connection with something else on the page.

**USE GROUPING TO SHOW PROXIMITY AMONG UNITS**

<table>
<thead>
<tr>
<th>Bad</th>
<th>Good</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mmmm</td>
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</tr>
</tbody>
</table>

**IBM’s Aptiva Communication Center**

Did respect task order; did not provide organization; alignment is bad.

**Alignment Principle**

- Instead of centering your text, you align the text on the left or the right. This forms the invisible line that connects the text because it has a hard vertical edge to follow.
- Don't combine a flush left and flush right alignment on the same page unless they are facing each other. Try to do one or the other.
- Find a strong alignment and stick to it. If the text is flush left, set the heads, subheads, and paragraphs flush left.
Bad alignment
• Poor choice of colors to distinguish labels from editable fields

Repetition
• Repetition increases visual consistency and reduces processing time
• If an item is similar as another one, do not render it differently

Visual Consistency
• Internal consistency
  - Same conventions and rules for all elements of the GUI (unless strong reason to do otherwise)
  - Enforced by a set of application-specific grids
• External consistency
  - Follow platform and interface style conventions
  - Use platform and widget-specific grids
  - Deviate from conventions only when it provides a clear benefit to user
Contrast

- To set in opposition in order to show or emphasize differences
- If two items are not the same, then make them different
- Strong contrast adds visual interest to a page and makes it more attractive to the reader’s eye
- Use contrast to create a focal point of a webpage
- Strong contrast is likely to be more effective

Ways to create contrast

- Typefaces
- Rules (lines)
- Sizes of items
- Colors
- Spacing
- Textures
- Shapes

Contrast

Prominent information units

- Bring out dominant elements and contrast them with the rest of the content (design for attention).
- Use contrast techniques to render dominant elements.

Typography

- Choose font sizes that are sensible to your targeted users.
- Choose types that are easy to read (sans serif fonts Arial, Verdana, etc.).

2. Content design

- Main page
  - Site name, slogan
  - Site logo & banner
  - Icons (optional)
  - Color usage (background and foreground colors)
  - Background graphics
  - Main text content
PAGE TO PAGE CONNECTIONS

- GUIs (how many, what is the main GUI, how many sub-GUI, how are they related)
- How one GUI connects to another
- Scrolling, paging
- Widgets (window objects: how many, how are they ordered, etc.)
- Menu items

ANALYSIS OF STUDENT DESIGN

- Site description
  - The site is a travel recommender system for young people (18-29)
  - The site also recommends like-minded people as travel partners
  - A user can propose a trip as well as joining one

- Demographics
  - More young women (67%) than young men (33%)
  - More singles than couples
  - More backpackers than luxury travelers

SITE NAMES

- Click & Go
- Click and Leave
- Eksotiks.com
- World Wide Love Trips
- EU in your backpack

SLOGAN - MAKE PEOPLE REMEMBER

- Slogan is a catchy phrase expressing the aims or nature of a website
  - Must be short & concise
  - Must correspond to the business goal of the site
  - Must communicate
  - Must be easy to remember

SOME EXAMPLES

- Earth’s biggest selection
- The Most Low Fares to Planet Earth!
- Don’t be evil
- Making it all make sense
- The Heartbeat of America
SLOGAN

• Click&Go – your personalized trip manager
• Click and Leave - Meeting the world is just a click away
• Eksotiks.com – Beyond your wildest dreams
• World Wide Love Trips – When people are cool, trips are!
• EU in your backpack – travel networking for the youth

CONTINUED

• Globe Explorer – the friendliest way to discover the world in groups
• Friendly Planet – Your holiday in a click
• travelNet – the link between you and the world
• World Discovery Agent – Bring travelers together
• Common Ground – the world for all, different for each

LOGO DESIGN

• A logo is a graphic element, symbol, or icon of a trademark or brand and together with its logotype, which is set in a unique typeface or arranged in a particular way.
• A typical logo is designed to cause immediate recognition by the viewer.

HOW TO DESIGN LOGOS

• Choose a typeface
• Choose a symbol that correspond to the site mental model (symbol in a logo is optional)
• Choose graphics that correspond to the site mental model (graphics is optional)
• Try to integrate typeface, symbol, and graphics into a distinct element that conveys the mental model of your site

LOGO

• Graphics logos
  - Composed entirely of non-textual elements
  - E.g. Olympic logo, Apple

• Text logos
  - Consists of text only
  - E.g. Sony, IBM

LOGO TYPES

• Graphics with text logos
  - Most common type including both graphics and text
  - Text may include the entire company name or an abbreviation
  - Graphics and text should belong together
  - E.g. Sun Microsystems logo, lack of cohesiveness

• Logo with slogan
  - A custom logo can include a “brand slogan”.
  - E.g. McDonalds, Resene, EMC corporation
**More Examples: Google**

- The simple google logo without symbol and graphics, but only the name with a unique typeface

- More fun with the logo on thanksgiving day (text and graphics)

**More Examples**

- Youtube: text + graphics (the TV)

- Yahoo: text + typeface + symbol

**Design Principles of Logos**

- Eye catching and simple
- Using simple color pattern (maximum of 3 colors) and short text
- Avoiding heavy decorations and different combinations of color
- Relevance to any relationship to the subject
- Can be abstract or realistic
- Symbols on the logo should not be intricate
- Sometimes the best thing to do is to avoid making mistakes

**Banner**

- A banner is a flag or other piece of cloth bearing a symbol, logo, slogan or other message
- Banner is often needed when a site is new on the internet

**Banner as a Web Page Header**

**Standard Banner Ad Sizes**
**Icons** are signs whose signifier bears a close resemblance to the thing they refer to:
- According to Pierce, icons are "the only means of directly communicating an idea."
- E.g. A road sign showing the silhouette of a car and a motorbike

**Symbol** shall mean what they mean and there is no natural relationship between them and their meanings:
- E.g. Most words are symbolic signs.

**Index:** In a sense, indexes lie between icons and symbols. An index is a sign whose signifier we have learnt to associate with a particular signified.
- E.g. smoke as an index of 'fire', a thermometer is an index of 'temperature'

**Example**

- **Iconic cigarette**
- **Indexical bar ("You can't do this")**
- **Symbolic red circle on a white background (something is forbidden)**
- **The sign of "Smoking is forbidden"**

**Historical Trends for Icon Design**

- Four different levels of abstraction can be found over the last 80 years (most recent on the right).
- Actual icons get more abstract compared to the past.

**An Icon Set for Different Sports**

**Redesign of Icons (1)**

- **Design Principle:**
  - avoid excessive detail in icon design.

**Redesign of Icons (2)**

- **Design Principles:**
  - design the icons to communicate object relations and attributes whenever possible; accompany icons with names.
Example: Design Effective Icons

- Design functionally suggestive icons
  - The best icon will suggest to the user the primary purpose of the program or operation without having to read accompanying text

A functionally suggestive icon for word processor
A functionally suggestive icon for underline

Procedure of Icon

1. Draw the basic outline as close to 48x48 pixels as possible
2. Fill in with black and white to create detail

Guidelines for Designing the Detail (1)

- Analyze the verbal contents and the display environment
  - Determine how icon parts and complete icons should be related
  - Too many parts may confuse the viewer
- Design icons to differ in their “global” characteristics.

Guidelines for Designing the Detail (2)

- Design the initial icons by creating quick sketches
  - Not to be too precise or detailed early in the design process
  - More important to explore possible variations
- Evaluate the designs by showing them to potential viewers
  - Which icons seem to meet the needs of the sender, the receiver, the message, and the medium

Guidelines for Designing the Detail (3)

- Design a layout grid that organizes all major elements of the icons
- Use large objects, bold lines and simple areas to distinguish icons
- Icons should be simple and clear
3. Add color and anti-aliasing (less than five colors)
4. Add gradients for a smooth, realistic effect, add a drop shadow

Adapted from GNOME Usability Project icon design (http://developer.gnome.org/projects/gup/hig/2.0/index.html)

5. Do not include a text string naming the concept
   - Your images alone must be enough to convey the right associations
   - You may use up to one “iconic word” (such as “fax” or “loan”)
6. Each icon should be prepared as a separate .gif or .jpg file

Color usage
- Background color - the dominant color of a GUI; the color of the portion of the screen that the characters are placed upon.
- And foreground colors.
- Background does not have to be always white
- Choose the foreground color so that elements stand out.
- Choose the foreground color for the target’s population and how your website wants to be perceived (fun, serious, glamorous, etc.).

Color combinations
- If multiple colors are used for the background, it is good to preserve symmetry in the horizontal dimension.

Saturated colors
- Not a good idea to use them as background colors; they make a website appear pessimistic.
- Saturated colors - if the right amount of quantity is used, they can appear to be mysterious and glamorous.

Color usage
- Blue is the king (many corporate websites use blue as the back or foreground color; see e.g., expedia.com, ebookers.com, myspace.com)
- Blue goes well with many colors: opposite color to blue is orange, and red; similar color to blue is black, marine, and various shades of blue.
**Color Combinations**

- Use opposite colors for contrast.
- Use similar colors for consistency.
- If multiple colors are used for the background, it is good to preserve symmetry in the horizontal dimension.
- The maximum number of colors can be used before a GUI is called color saturated? (see the module on Human Factor theory II to find out).

**Color Combinations**

- Which color should not be used?
- Which color is the contrast to the background (dominant) color?

**Color Wheel Web Application**


**Groups of Colors That Go Well Together**

- Groups of 2
- Groups of 3

**Background Graphics**

- **Background image** - the picture that is displayed (behind the text) on your web page.
- **Banner image** - the picture displayed in the banner.
- **Background graphics** - decoration that is intended to increase the attractiveness of a website.
- They help communicate the mental model (images of palm trees, seas to portray a travel website).
- Since it is an attention getter, use it economically to optimize its effect.

**Page Content Design**

- It refers to the design of the arrangement and order of content elements as well as text in a single user interface
  - Information units (text blocks)
  - Actions units (menus, buttons, etc)
CONTENT SELECTION

- Content selection refers to the selection of relevant and important information for that interface.
- Content design requires knowing the business goal of that interface and the needs of the users.
  - Is it to provide information.
  - Is it to attract user’s attention (or both).
  - Is it to sell something to the user.
  - Is it to help users solve problems.

CONTENT ORGANIZATION

- Once content has been selected, organize content into units.
  - Into smaller, discrete units of information (they are more functional and easier to handle than long, undifferentiated tracts).
- Group related content units together.

STRUCTURE CONTENT UNITS

- To help users locate content units on a given GUI, provide a structure that makes sense.
- Several structuring strategies:
  - Follow a hierarchy – structure and substructure to provide general to specific information or the other way around
  - Follow the alphabetical order
  - Temporal: Sunday, Monday, Tuesday, etc.
  - Follow users’ task flow – recipient name, subject of email, attachments, body of email
  - Follow a convention (file, edit, view, …)
  - Follow the order of most frequent usage to least: Web, images, video, news, maps, more >>

ECONOMY OF VISUAL AND TEXT ELEMENTS

- Simplicity: minimize number of controls and other display items to keep the interface as simple as possible
- Include only those that are necessary
  - Eliminate, or relegate others to secondary windows
  - (but don’t want too many extra windows!)
- Minimize clutter
  - So, information is not hidden

OVERUSE OF 3-D EFFECTS

Overuse of 3-D effects makes the window unnecessarily cluttered

TOO MANY GROUP BOXES

- Avoid using a group box around one setting
- Group boxes within group boxes
- One group box in a window
- (page 151 in GUI bloopers)
More Guidelines

- From Chapter 3 of GUI Bloopers
  - Missing group boxes
  - Inconsistent group box style
  - Inconsistent separator style
  - Shoddy labeling and spacing
    - Radio-button spacing
    - Inconsistent property label alignment
    - Very long labels
    - Poor label placement
    - Unlabeled container components
  - Inconsistent fonts
  - Tiny fonts

3. Communication design?

- Consistency on:
  - Grammar
  - Style
- Usage of words (verbs, nouns)
  - Verbs for actions (enter, cancel, edit, etc.)
  - Nouns for objects (file, tools, view)
- Positive tones

Criteria

- Legibility – possible to understand
- Readability – possible to read
- Typography – the choice of font types and sizes
- Symbolism – icons, symbols (logos), graphics
- Color and texture – use of color and texture for attention, and to make an interface more attractive

Things to avoid

- Ambiguous terms
- Programmers’ jargons
- Naming some commands after actions (verbs) but others after objects (nouns)
  - Show details
  - Properties

Suggested readings

- GUI Bloopers, Chapter 3
  - Jeff Johnson
- Principle of Effective Visual Communication for GUI design
  - Marcus in Baecker, Grudin, Buxton and Greenberg
- Designing Visual Interfaces
  - Mullet & Sano, Prentice Hall
- The Non-Designers Design Book
  - Robin Williams, Peachpit Press

How our students put together...
The “old” GroupFun

The “old” GroupFun

The “old” GroupFun

The “new” GroupFun

The “new” GroupFun