GUI Bloopers

Graphic Design, Layout, and Web
Page/Style Design

Graphic Design and Layout Bloopers

- Once you have GUI controls appropriate for your software you have to decide on:
  - Layout
  - Colors
  - Fonts
- The following bloopers diminish software's perceived quality – it only takes a few to look amateurish and untrustworthy
- Poor graphic design and layout can also decrease user's ability and motivation to absorb the software's content

Blooper 32 : Easily missed information

- Software developers often assume that if information is displayed users will see it. Not so!
- Common flaw: not focusing user's attention
  - People scan for information, left to right, top to bottom
  - Should design for how human perception works
  - Examples users can miss:
    - Status or mode indicators
    - Prompts for input
    - Results
    - Error or status messages
    - Controls

Blooper 32 Examples

- Information too small or not where the user is looking

Client Web application: error message is easy to miss. See it?

Mac login: error message is easy to miss, even though it is displayed in orange.

Blooper 32 Example

- Information buried in noise
- Consider these prompts:
  - Enter filename and press ENTER
  - Enter username and press ENTER
- Only difference is the second word which has the only real information:
  - Filename:
  - Username:
- Status displays another common trouble spot:
  - Containing tank: normal   Pressure valves: normal
  - Fuel rods: abnormal   Discharge pump: normal

Blooper 32 Example

- Messages that don't die
  - New message displayed over a similar old message. Did it change or is it still searching?
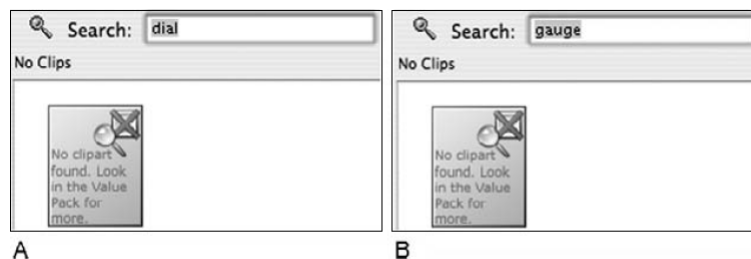
Microsoft Office Clip Gallery Search leaves old error messages up and displays new ones over them.
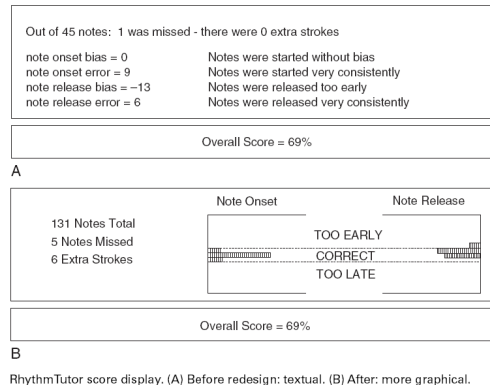
Avoiding Blooper 32

- Construct a visual hierarchy
  - Organize information displays in hierarchical chunks; users ignore irrelevant chunks and find what they want much faster
- Make important information bigger
- Put important information where the user is looking
  - Center of field, not periphery
- Use color to highlight

Avoiding Blooper 32

- If necessary, use heavy artillery
  - Dialog boxes and pop-ups
    - Impossible to ignore, but it better be important
  - Sound
    - Simple beeps usually sufficient
  - Vibration and animation
    - Peripheral vision for stationary objects is poor, but is very good at noticing movement or changes
    - Distracting if too much; have been abused by web advertisers
   - Make sure animation stops quickly and can be stopped

Avoiding Blooper 32

- Don't bury the wheat in chaff
- Display information graphically instead of textually

Out of 45 notes: 1 was missed - there were 0 extra strokes

note onset bias = 0	Notes were started without bias
note onset error = 9	Notes were started very consistently
note release bias = −13	Notes were released too early
note release error = 6	Notes were released very consistently

Overall Score = 69%

A

	Note Onset	Note Release
131 Notes Total		TOO EARLY
5 Notes Missed		CORRECT
6 Extra Strokes		TOO LATE

Overall Score = 69%

B

RhythmTutor score display. (A) Before redesign: textual. (B) After: more graphical.

Side Topic: Color

- Technical characteristics of color
  - Hue : Frequency / Wavelength
  - Value : Intensity of the hue
  - Saturation : Purity of the color from gray/vivid
- Use the color wheel

Choose:
Opposite, nearly opposite
Varying degree of value for hue
Equidistant hues

Green   Yellow

Cyan   Red

Blue   Magenta
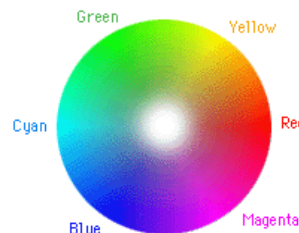
Uses of Color

- Call attention to specific data or information
- Identify elements of structure and processes
- Portray natural objects realistically
- Depict the logical structure of ideas and processes
- Portray time and progress
- Increase appeal, memorability, and comprehensibility
- Reduce errors of legibility or interpretation
- Increase the number of dimensions for coding data

Pitfalls of Color

- May cause problems for color deficient vision (8% of Caucasian males)
- May cause visual fatigue with strong colors
- May contribute to visual confusion if too complex
- May have negative cultural or historical associations
  - E.g., using black in master/slave controller diagram
- May exhibit confusing cross-disciplinary or cultural connotations
  - E.g., Red in Chinese = Warm/Happy, America = Hot/Flashy

The 10 Commandments of Color

1. Use five +/- two colors
2. Use foveal and peripheral colors appropriately
   - Blue for background, not for center
   - Black, white, yellow for periphery, no red or green
   - No blue for text or diagrams
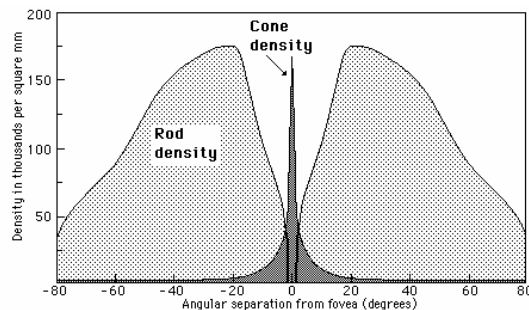
The 10 Commandments of Color

3. Minimum shift in color/size
   - Light text on dark background for dark environment
   - Dark text on light background for light environment
4. High-chroma, spectrally extreme colors may create illusions of shadows/after-images
   - Bright blue/green
5. Use familiar, consistent color coding
   - Red – stop, danger, hot, fire. Yellow – Caution, slow
   - Green – go, okay, safe. Blue – Cold, water, death
   - Warm colors – Action, response
   - Cool colors – stats, background, distance
   - Gray, white – neutral
   - Context-dependent

The 10 Commandments of Color

6. Use the same color for grouping related elements.
7. Color to your audience
   - Men prefer blue to red, women red to blue
   - Men prefer orange to yellow, women yellow to orange
   - Young prefer bright, old prefer sober/restrained colors
8. Use high-value, high-chroma colors to attract attention.
   - Bright red better / faster than yellow, orange
   - Older viewers have easier time with bright

The 10 Commandments of Color

9. Use redundant coding of shape, as well as color, if possible. The more cues to remember an object, the better.
10. Use color to enhance black-and-white information.
    - People remember better with color
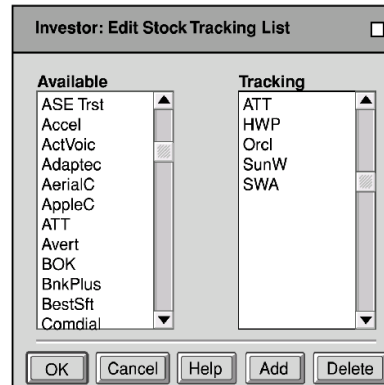   - Different emotional reaction

Examples of Bad Color Usage

- Poor background pattern
  - http://www.kencole.org/frctltes.htm
  - Also make background images large enough to avoid repeat pattern

Color Contrast

- Hard to read colors:
  - http://www2.cajun.net/~hugh/tradewar.html
- Watch out for default colors!
  - Some browsers default to a white background and others to gray. Specify a background color in your body tag to ensure all browsers use the same color.

Blooper 33 : Mixing dialog box control buttons with content control buttons

- This happens when you add new buttons to the standard "OK", "Apply", "Close", "Cancel" buttons
- Everything OK here?

Investor: Edit Stock Tracking List

Available
ASE Trst
Accel
ActVoic
Adaptec
AerialC
AppleC
ATT
Avert
BOK
BnkPlus
BestSft
Comdial

Tracking
ATT
HWP
Orcl
SunW
SWA

[OK] [Cancel] [Help] [Add] [Delete]

Align Buttons To Controls

- It can be hard to see the connection between the new buttons and data
- Make functions clear by separating content control buttons from window control buttons

Investor: Edit Stock Tracking List

Available:
ASE Trst
Accel
ActVoic
Adaptec
AerialC
AppleC
ATT
Avert
BOK
BnkPlus
BestSft
Comdial

[Add ➔]

[Delete ◄]

Chosen:
ATT
HWP
Orcl
SunW
SWA

[OK] [Cancel] [Help]

Blooper 34 : Misusing Group Boxes

- Group boxes put a visible border around related controls and have a slot for a label
- Serve no purpose around one setting; in this case a simple label is better.
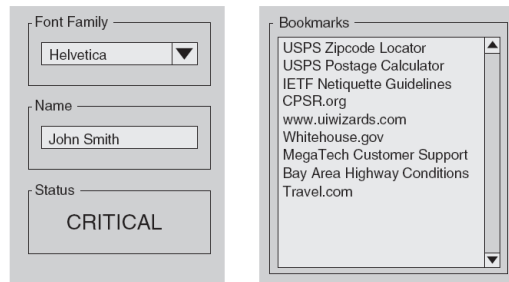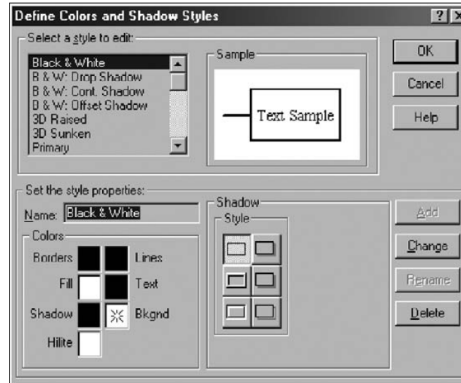

Blooper 34 Examples
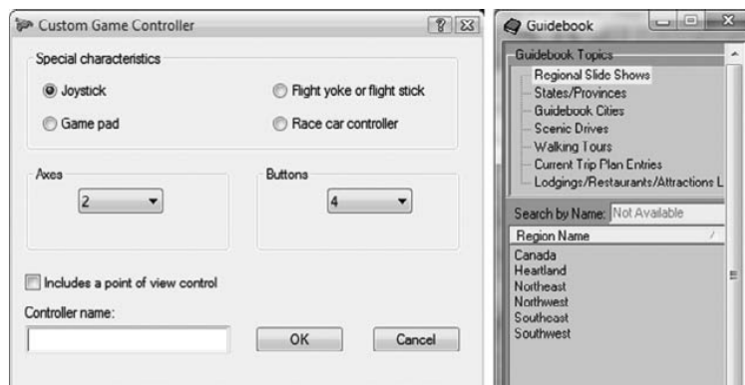
Group boxes around one item. (A) Microsoft Windows. (B) National Geographic Trip Planner.

Blooper 34 Example

- Variation: Group boxes within group boxes
  - Causes needless clutter

SmartDraw: group boxes nested two and three deep. Some are merely label-holders.

Blooper 34 Example

- Variation: Group boxes around everything
  - Causes needless clutter

Unlabeled group box around everything. (A) SoundBlaster Wave Studio. (B) Windows Media Player.

Avoiding Blooper 34

- Use group boxes for what the name suggests – boxing related groups of settings
- Container controls like tables, lists, etc. have their own borders and don't need a second one
- Label a single setting without putting a group box around it

Blooper 35: Radio Buttons too far apart

- Related radio buttons should be grouped closely together

Display:	● Summary		○ Details

Cheese	● Mozzarella	○ Jack	○ Swiss
Meat:	○ Sausage	● Ham	○ Pepperoni
Spiciness:	○ Mild	○ Medium	● Hot
Crust:	○ Whole Wheat	● White	○ Sourdough

Improved Spacing

Cheese:	⬤ Mozzarella	⭕ Jack	⭕ Swiss
Meat:	⭕ Sausage	⬤ Ham	⭕ Pepperoni
Spiciness:	⭕ Mild	⭕ Medium	⬤ Hot
Crust:	⭕ Whole Wheat	⬤ White	⭕ Sourdough

Blooper 35 Examples

E-Notice

If you received an e-mail message from the IEEE San Francisco Bay Area Council and you wish to unsubscribe, please complete and submit the following form:

IEEE Member Number: 4468542 (included in your e-mail message)

Member Name: Jeff A Johnson

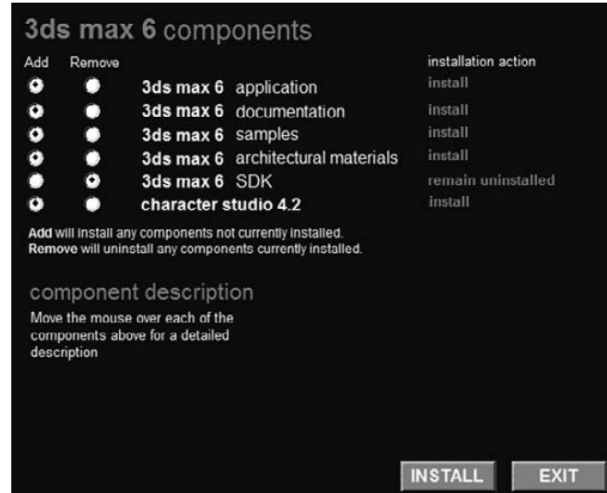List Name: IEEE San Francisco Bay Area Council e-Notice ▾

Unsubscribe: ⦿

If you would like to subscribe to the IEEE San Francisco Bay Area Council e-Notice, be sure to include your e-mail address.

Subscribe: ◯

E-Mail Address:

SUBMIT | START OVER

IEEE.org: radio buttons spaced too far apart to be seen as related.

Blooper 35 Examples

3ds max 6 components

Add	Remove		installation action
○	●	**3ds max 6** application	install
○	●	**3ds max 6** documentation	install
○	●	**3ds max 6** samples	install
○	●	**3ds max 6** architectural materials	install
●	○	**3ds max 6** SDK	remain uninstalled
○	●	**character studio 4.2**	install

Add will install any components not currently installed.
Remove will uninstall any components currently installed.

component description

Move the mouse over each of the components above for a detailed description

INSTALL EXIT

Discreet installer wizard: radio buttons appear grouped in columns rather than in the intended rows.

Blooper 36 : Labels too far from data fields

- Sometimes GUI's are developed where the label is placed too far from the control it describes
  - Common in automatic layouts where size is dictated by the largest field or screen width

Blooper 36 Example

CA.gov unemployment insurance form: "Yes"/"No" radio buttons are too far from their labels.

Blooper 36 Example

- Variation: labels closer to other settings than their own

LLBean.com: State and ZIP labels closer to previous data field than to their own.

LLBean.com: hypothetical label components inverted to show their full width.

Avoiding Blooper 36

- Don't attach labels and data fields to opposite edges of a form or control panel
- Don't allow a few long labels to dictate the alignment of the entire form
- Labels should be closer to their own field than to other fields
- Put labels above fields

Avoiding Blooper 36

| Title* | First name* | Middle initial | Last name* |

Address* ⦿ Home ◯ Business

Street address*

City*

| State/prov* | Postal code* | | Country* |

United States

required for USA/Canada

Phone* ⦿ Home ◯ Business

Country code* Telephone*

001   (   )   -   Ext.

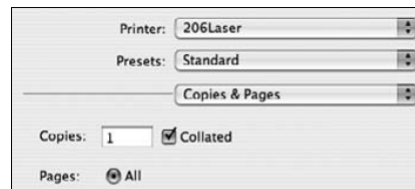Birthdate (optional)

Month   Day   YYYY   About birthdate

United.com: labels above fields.

Blooper 37 : Inconsistent Label Alignment

- Labels should be consistent in where they are placed throughout the application
- Extreme case:
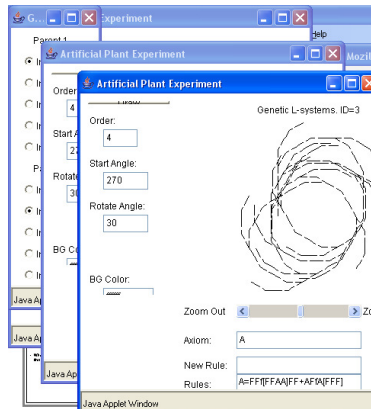

Blooper 37 Example

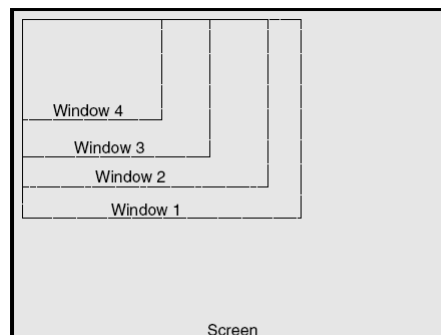Microsoft Office for MacOS: inconsistent label alignment in a single dialog box.

Blooper 38: Poor Window Location

- Where should an application's windows first appear?

- Heuristics:
  - On-screen
  - Staggered
  - No occlusion

Blooper 38 Examples

- Display all windows at the same coordinates

Blooper: all of an application's windows open at position [0, 0].

Blooper 38 Examples

- Displaying subordinate windows in middle of parent
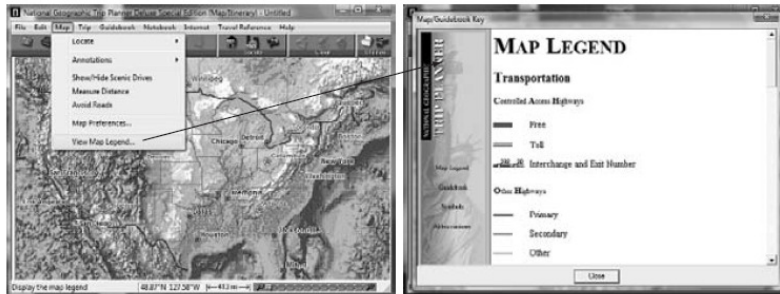
National Geographic Trip Planner: map legend opens over map, making users move it.

Avoiding Blooper 38

- Decide where each window appears
  - Don't just let the OS decide or use [0,0]
- Optimal position depends on the type of window
  - Primary or informational?
- Stagger windows
- Make sure child windows don't cover important information
- Don't place windows directly on top of each other

Blooper 39: <small>Tiny fonts</small>

- Lots of people with impaired vision can't read small fonts
  - Includes old folks over 45

MinneapolisFed.org: tiny, nonadjustable fonts in navigation bar.

Blooper 39 Example
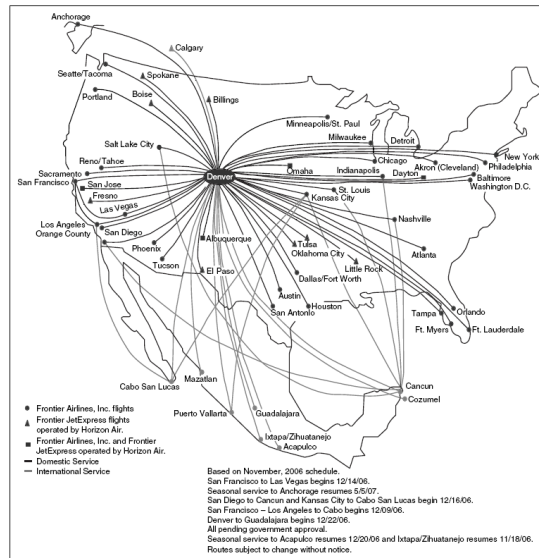
FrontierAirlines.com: tiny, nonadjustable fonts.

Blooper Bonus: Un-Natural Order

• Avoid the "random" layout

Add proper tab stops, but also reorganize layout

Excuses for Tiny Fonts

• I can read it. What's the problem?
• Hey, we gotta fit all this info in somehow.
• I just used the default font.
• It's not my fault, the text is in the image.
• It's big enough in low resolution.

• Minimum font size is 10, but 12 better
• Design for high resolution displays
• Let users adjust the font size
• Test it on users

Web Page Design

Yale Design Guidebook

User Interface Design

- We'll focus on website design, but most of the same concepts apply to standalone applications too
- What makes a good web site?
  - Similar to, but differences from printed medium
  - Hyperlinks!
  - Attempt to make web page "Free Standing"
    - Someone may link to it, or print it

Same Questions as Print

- Who is talking? Is it an individual or an institution?
- What is the content about?
  - Titles, Headers
  - Consider bookmarks
- When?
  - Our CS page is an offender
- Where on your site are you currently located?
  - Navigational aids or pointers to the main page may be appropriate.
  - Button Bars

Every page should have

- Informative title
- Creator's identity / contact link
- Creation or revision date
- At least one link back to home

- These basic elements will get you 90% of the way to an understandable interface

- Example of missing information:
  - http://www.1amp.com
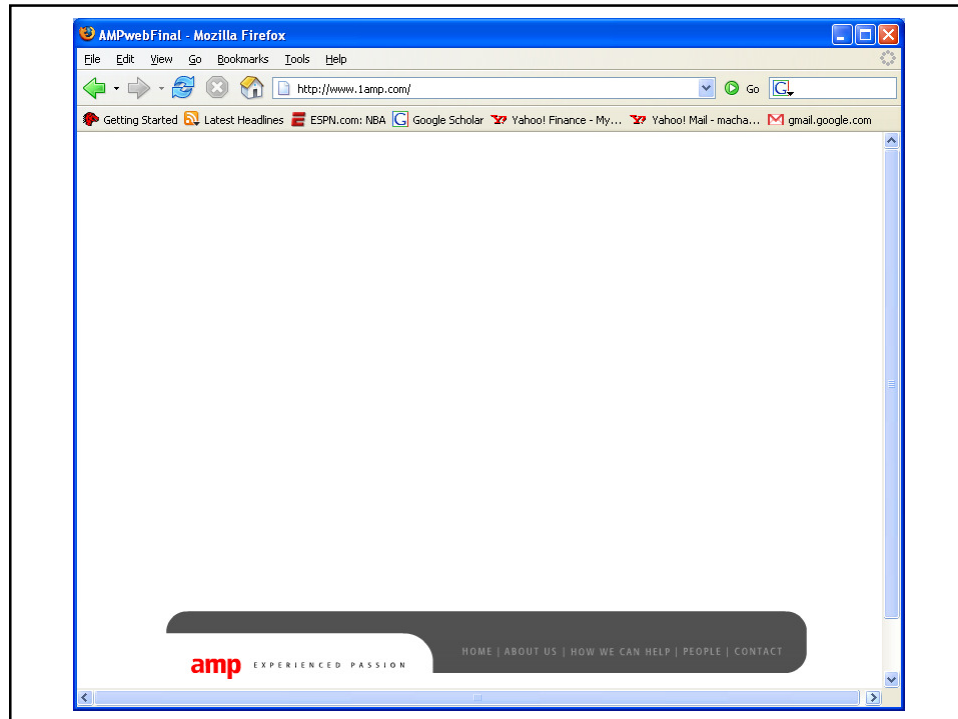
Fundamentals of Page Design

- What should be on an individual page or screen?
- Don't dumb-down the readers -- just design to their needs
  - short, fast, easy access
- Guide the user
  - Left to right, top to bottom
  - design appropriately to guide user to the next element
  - Headlines at the top
  - Don't forget whitespace

Page Design

- Avoid too-fancy graphics (unless experienced)
- Label icons
- Combine navigation bar with logo/graphics, use consistently!
- Remember that the screen is small
- Graphics or Forms too large: Layout more than 600 pixels wide may not properly render on a single page. (1024x768 probably safe assumption today, unless for an ultraportable… or cell phone…)

Image Guidelines

Safe dimensions for Web page graphics

350 pixels

13–15 inch screen (640 x 480)
Browser safe area 600 x 350)

600 pixels

670 pixels

■ Use blue dimensions to fill the maximum safe area on most screens

■ Use red dimensions for pages that will print well.

535 pixels

US Letter size page = 535 by 670 pixels safe area
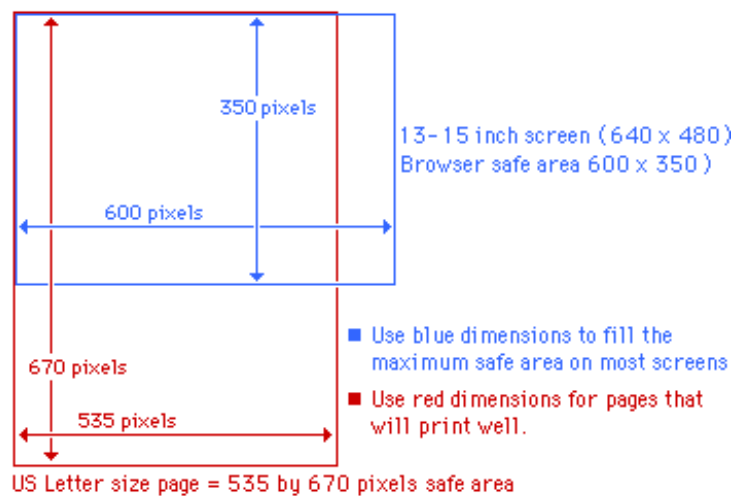
Page Design Guidelines

Poor page layout

Better page layout

Grid
Layout

Page Template

Table width 535 pixels

132

372 pixels

Gutter = 31 pixels

Scanning column

Gutter

Text & graphics
column

365 graphic
safe width
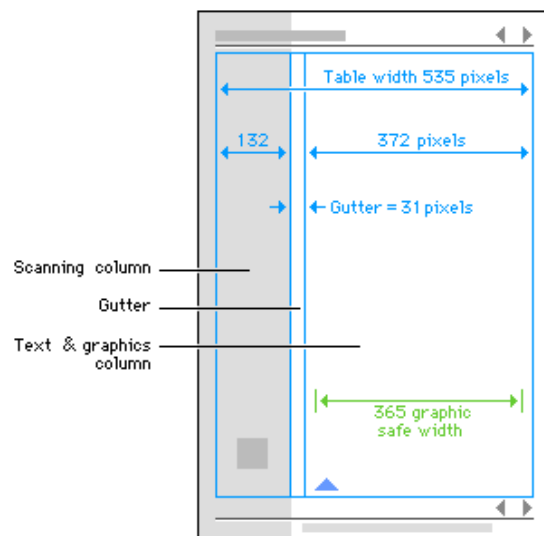
Fonts Different on Platforms

Relative sizes of TrueType font display

Windows95, 12 pt type	Macintosh, 12 pt type
Arial	Arial
Arial Black	**Arial Black**
Arial Narrow	Arial Narrow
Arial Rounded MT Bold	**Arial Rounded MT Bold**
Book Antiqua	Book Antiqua
Bookman Old Style	Bookman Old Style
Century Gothic	Century Gothic
Century Schoolbook	Century Schoolbook
Courier New	Courier New
Garamond	Garamond
MS LineDraw	MS LineDraw
Times New Roman	Times New Roman
Verdana	Verdana

Page Guidelines

- Consider tables without borders to control text layout or even better is CSS
- Caution with frames!
  - Opening new pages in frames
  - Search engines don't track frame context
  - Problems with back button

Technical Considerations

- Plug-Ins
  - PDF, Flash, RealAudio, etc.
  - Don't use unless necessary or if you know that almost all of your targeted users will have the plug-in application already installed

- Java, Javascript, Flash?

In Lynx:

```
                    Road Runner Sports - The World's Largest Running Store! (p1 of 5)
[INLINE]
[INLINE]
[INLINE]

[INLINE]
[INLINE]  [LINK]
[INLINE]
[LINK]
[INLINE]
[LINK]
[LINK] [LINK]
[INLINE] [INLINE]
```

Technology

- Compare to Yahoo!

```
                                            Yahoo! (p1 of 9
                          Yahoo!

Pepsi   Pepsi and iTunes 100 Million Free Songs. 1 in 3 wins. Play
Today.   Pepsi

  Search for:  _____ [on the web_____]
Yahoo! Search   o Advanced
o Preferences

New! Yahoo! Games Downloads: Polar Bowler
Shop Auctions, Autos, Classifieds, Real Estate, Shopping, Travel
Find HotJobs, Maps, People Search, Personals, Yellow Pages
Connect Chat, GeoCities, Greetings, Groups, Mail, Messenger, Mobile
Organize Addresses, Briefcase, Calendar, My Yahoo!, PayDirect, Photos
Fun Games, Horoscopes, Kids, Movies, Music, Radio, TV
Info Finance, Health, News, Sports, Weather More Yahoo!...

Happy HotJobs User arc divider
Yahoo! HotJobs
```

Animation

- Animation
  - Appropriate for a very limited number of web sites
  - Can be distracting and generally not appropriate on information or e-commerce web sites
  - Appropriate for children, entertainment, perhaps ads

  - Example: http://www.webpagesthatsuck.com/topic59.htm
  - Example: http://www.aurigamusic.com/
  - Example: http://www.qualitycollisionservices.com/
  - Example: http://www.ridertown.com/

User Behavior on the Web

- Reduce clicking
  - Users prefer menus with at least 5-7 links
  - Prefer dense screen with many choices over deep path with few choices
  - Chunking of data vs. hundreds of individual menu choices

Clicks per User

- Study by Huberman, et. al 1998
- Users clicking on a given number of links within a site
  - Most click once!
  - Average is three clicks
- One of Huberman's "Laws of the Web"
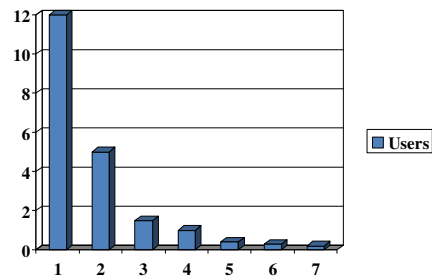
Organizing Information

- Divide your content into logical units to minimize the number of clicks
- Establish a hierarchy of importance among the units
- Use the hierarchy to structure relations among units
- Build a site that closely follows your information structure
- Analyze the functional and aesthetic success of your system

Chunk your Info

- Chunking
  - Short chunks of information that fit on a screen
  - Few users read long passages of text on screen
  - Discrete chunks lend themselves to a link
  - Supports a uniform format
- Text Length
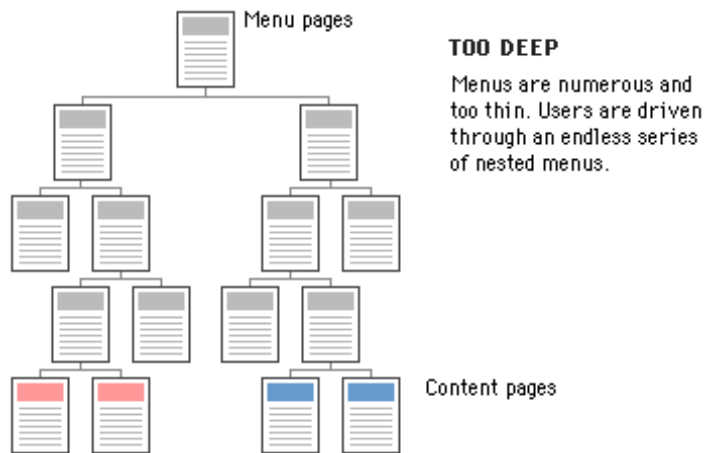 - Yale Style Guide suggests a max of four screens of information in most cases

Site Design

- "Chunk" your information

Site Organization
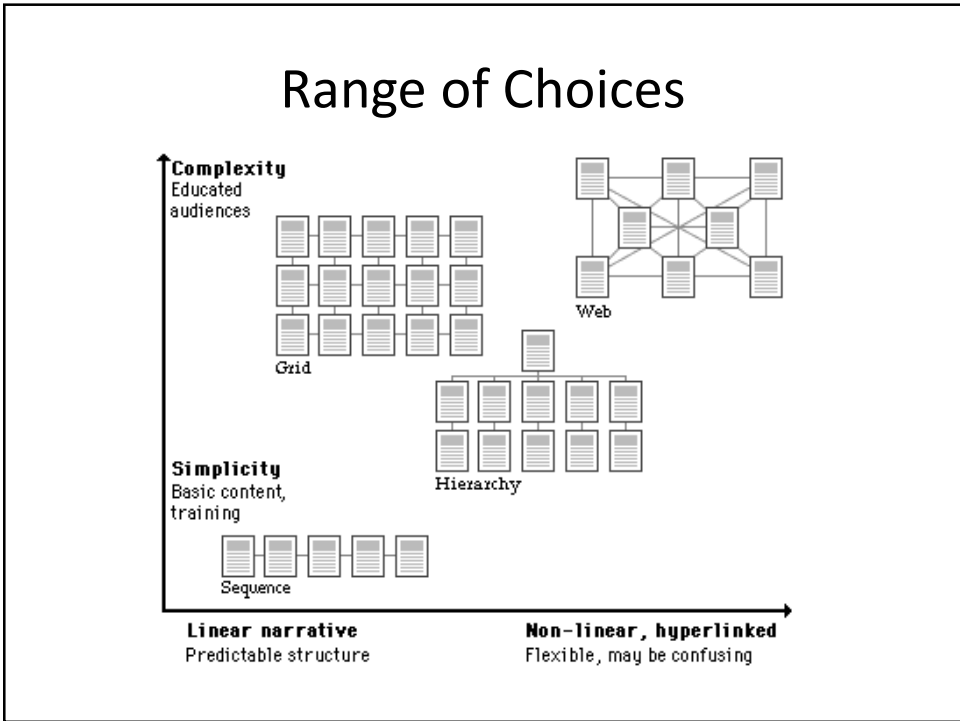

TOO SHALLOW
Main menu becomes a massive "laundry list" of unrelated topics

Site Organization

Menu pages

TOO DEEP
Menus are numerous and too thin. Users are driven through an endless series of nested menus.

Content pages

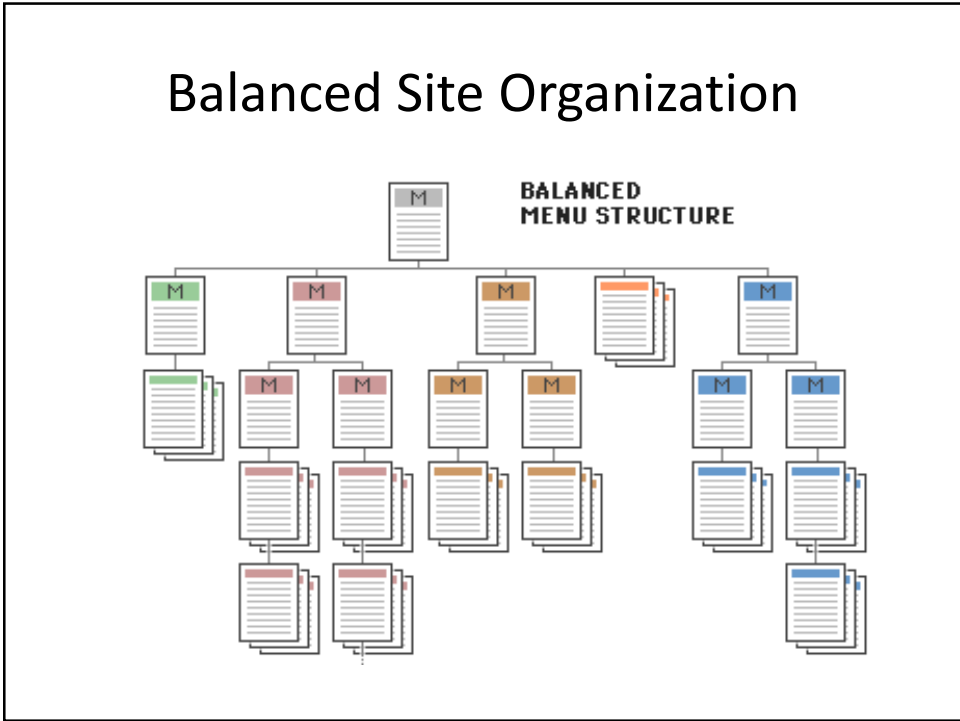# Balanced Site Organization

Range of Choices

Case Study

- Time is Money -- redesign at Sun
- Average employee views 12 intranet pages per day
- Could save 5 minutes per week per employee by redesigning the site
- $10 million/year in "lost" time

Example of Menus

- Too flat and shallow
  - Get There Fast
  - UAA Weather Observation Database
- Good example of chunking
  - Yahoo's Site

Business & Economy
B2B, Finance, Shopping, Jobs...

Regional
Countries, Regions, US States...

Computers & Internet
Internet, WWW, Software, Games...

Society & Culture
People, Environment, Religion...

News & Media
Newspapers, TV, Radio...

Education
College and University, K-12...

Entertainment
Movies, Humor, Music...

Arts & Humanities
Photography, History, Literature...

Navigation Techniques

- Topical Sections
  - Most common technique
  - Problem if user picks wrong topic
  - Some pages in multiple topics
- Path Analysis
  - Provide user the path that was used to reach the current page, shows where they are now
  - Requires hierarchical organization
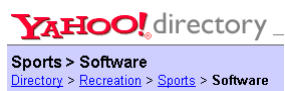
Screen Size and Good Navigation

- Caution with right-hand menus
  - Example: UAA site
  - One study showed that it does provide easier access to scrollbars for longer pages with more to navigate
  - What about menus on the bottom of the page?
- Can address browser width issue programmatically:
  - http://www.google.com

Preferred Navigation

- Left seems to be best
  - http://www.usability.gov/pubs/040106news.html

Example of a Top – Left – Left navigation structure.

Preferred Navigation

Example of a Left – Left – Left navigation structure.

Preferred Navigation

- Kingsbury and Andre's Study
  - Results showed that the left-left-left (LLL) and left-top-top (LTT) navigational structures were the top performing and most preferred.
- The three navigation structures eliciting slower performance and lower preference ratings were:
  - Top – Top – Left (TTL)
  - Top – Left – Top (TLT)
  - Right – Top – Right (RTR)

Summary of Interface Design Tips

- Build Navigational aids.
  - Navigation bars, frames
  - Critical for giving user a sense of where they are
  - Must provide context, e.g. bar with page headers
  - User shouldn't have to go "back" to figure this out
- Avoid dead-end pages
- Keep download time short
  - Frustration after 10 seconds
- Consistency!
  - E.g., keep "home" button in the same place, don't change link colors
  - Simplicity often appreciated
- Offer feedback
- Design for the disabled
  - ALT tags
    - E.g., modem user might disable graphics
  - Use elements as designed
    - E.g. don't use blank GIF as a spacer

Some Design Considerations

- Animations (e.g. Flash), older browsers, web TV won't view them
- Need for "What's new?" RSS? Only if lots of new content
- FAQ page
- Site Cover - splashy graphics or animation to draw users in. For others, an annoying click that needs to be bypassed.

Top Ten Mistakes

- Jakob Nielsen's top design mistakes

1. Using Frames
2. Gratuitous use of bleeding-edge technology
3. Scrolling text, marquees, and constantly running animations
4. Complex URLs
5. Orphan pages
6. Long, scrolling pages
7. Lack of navigation support
8. Non-standard link colors
9. Outdated information
10. Overly long download times

1/31/2008

Evaluating Your UI

- Don't forget User Centered Design

- User Testing
  - Focus Group
  - Ask users to perform a task, watch sequence of steps taken
  - Time users on specific tasks
    - E.g., shopping for a specific item
- Build from your users and work your way up!
  - Readjustment to meet user needs