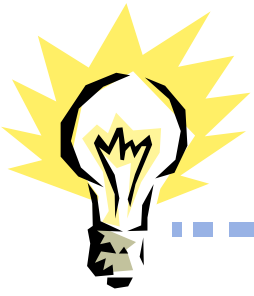


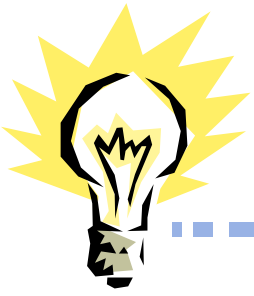
Design

The light bulb goes on

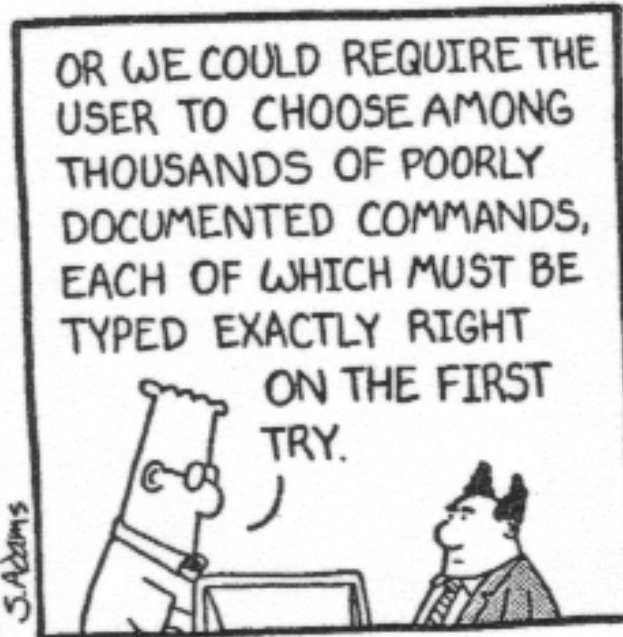
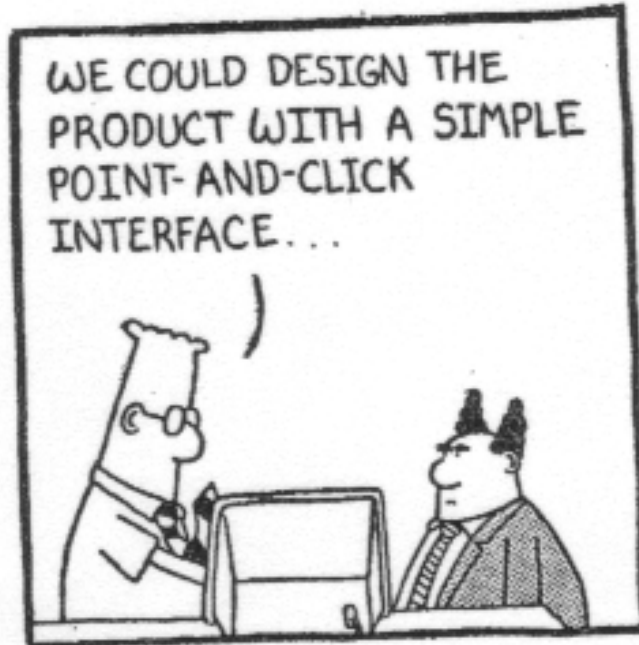


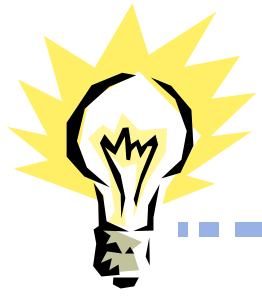
Agenda

- Idea generation
- Design principles
- Poster, Exam, Project



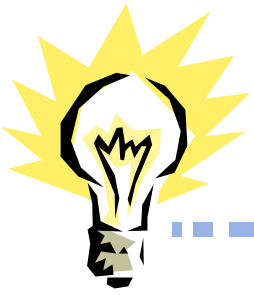
Design Choices...





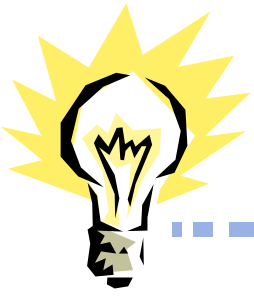
Design is Easy?

➤ Or is it . . . ?



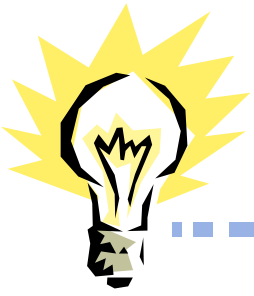
Design Process

- Fill the design space with ideas
 - ❖ Informed Brainstorming !!
- Pare down, combine
- Why is it so difficult?



Why Design is Hard

- Number of things to control has increased dramatically
- Displays are more virtual/artificial
- Marketplace pressure
 - ❖ Adding operations cheaper (computers)
 - ❖ Adding controls expensive (real estate, cost)
- Errors are becoming increasingly serious



Idea Creation

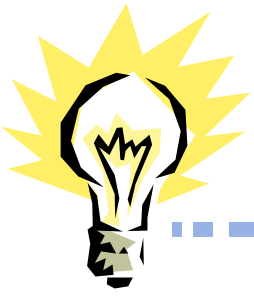
➤ Ideas come from

- ❖ Imagination
- ❖ Analogy
- ❖ Observation of current practice
- ❖ Observation of current systems

➤ Borrow from other fields

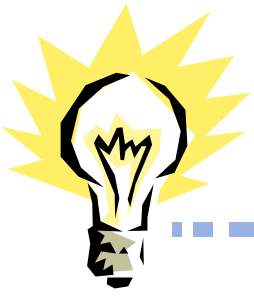
- ❖ Animation
- ❖ Theatre
- ❖ Information displays
- ❖ Architecture
- ❖ ...

Informed Brainstorming !!



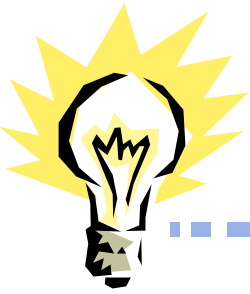
Idea Creation Methods

- 1. Consider new use for object
- 2. Adapt object to be like something else
- 3. Modify object for a new purpose
- 4. Magnify - add to object
- 5. Minimize - subtract from object



Idea Creation Methods

- 6. Substitute something similar
- 7. Rearrange aspects of object
- 8. Change the point of view
- 9. Combine data into an ensemble



Overall Guidelines for Design

- 1. Provide a good conceptual model
 - ❖ User has mental model of how things work
 - ❖ Build design that allows user to predict effects of actions

- 2. Make things visible
 - ❖ Visible affordances, mappings, constraints
 - ❖ Remind person of what can be done and how to do it



More Specific Design Principles

➤ 1. Use simple and natural dialog in user's language

- ❖ Match user's task in a natural way
- ❖ Avoid jargon, techno-speak

Insufficient funds to
withdraw \$100

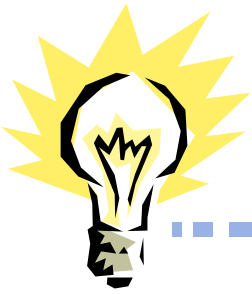
VS.

X.25 connection discarded due
to network congestion. Local
limits now in effect

- ❖ Present exactly info that user needs

Less is more!

Fewer unnecessary windows, prompts, dialogs



“Fun” Examples

Installation Program Message



This will uninstall JAWS for Windows.
This will remove your JFW directory and everything in it.
If you have files you wish to save in the JFW directory
or any subdirectories under it, abort this uninstall
by pressing ESCAPE and save them now.
Press ENTER to continue, ESCAPE to abort.



Exit file manager?

Continue

Cancel

Abort

Error Deleting File



Cannot delete 016: There is not enough free disk space.
Delete one or more files to free disk space, and then try again.

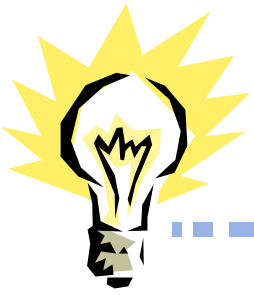
OK

Now click **Finish** to end this setup...

<< Back

Next >>

Finish



Design Principles

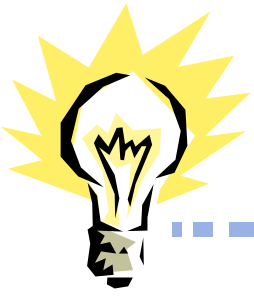
➤ 2. Strive for consistency

- ❖ Sequences, actions, commands, layout, terminology
- ❖ Makes more predictable

A rectangular dialog box containing three buttons arranged horizontally: "OK", "Cancel", and "Help".

A rectangular dialog box containing three buttons arranged horizontally: "Done", "Cancel", and "Apply".

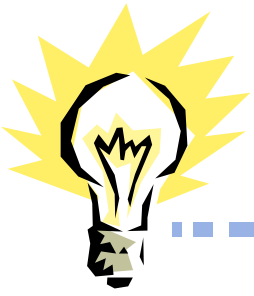
A screenshot of a software form with a grey background and a torn-edge effect. It features two sections: "Subscriber" and "Contact". The "Subscriber" section has fields for "Name:" and "Account #:" with corresponding input boxes, and labels for "Tech. Re" and "Status:". The "Contact" section has fields for "Telephone:" and "Address:" with corresponding input boxes, and a label for "E-Mail:". At the bottom, there are two buttons: "Save" (with a dotted border) and "Cancel".



Design Principles

- 3. Provide informative feedback
 - ❖ Continuously inform user about what is occurring
 - ❖ Most important on frequent, substantive actions

 - ❖ How to deal with delays?

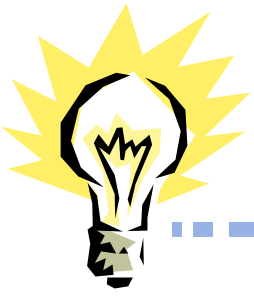


Design Principles

- 4. Minimize user's memory load
 - ❖ Recognition is better than recall

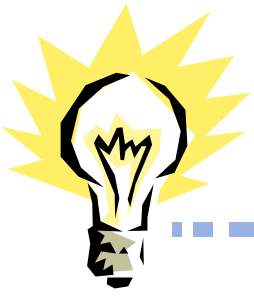
 - ❖ Describe required input format, include example and default
 - Date: __ - ___ - __ (DD-Mmm-YY, e.g., 02-Aug-93)

 - ❖ Use small # of generally applicable commands



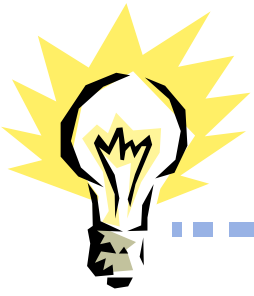
Design Principles

- 5. Permit easy reversal of actions
 - ❖ Undo!
 - ❖ Reduces anxiety, encourages experimentation



Design Principles

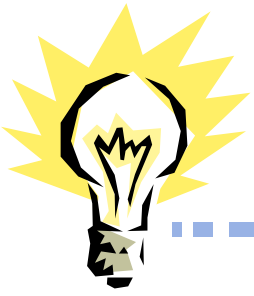
- 6. Provide clearly marked exits
 - ❖ Don't want the user to feel trapped
 - ❖ Examples
 - Cancel button on dialogs
 - Interrupt/resume on lengthy operations (modeless)
 - Quit - can exit anytime
 - Reset/defaults - restore on a property sheet



Design Principles

➤ 7. Provide shortcuts

- ❖ Enable frequent users to perform often-used operations quickly
 - Keyboard & mouse
 - Abbreviations
 - Menu shortcuts
 - Function keys
 - Command completion
 - Double click vs. menu selection
 - Navigation between windows/forms
 - Reuse
 - Provide history system



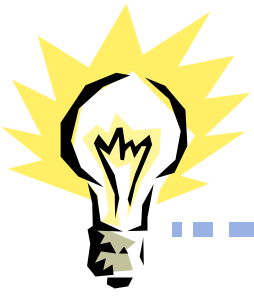
Design Principles

- 8. Support internal locus of control
 - ❖ Put user in charge, not computer
 - ❖ Can be major source of anxiety

System prompt: **Enter next command:**

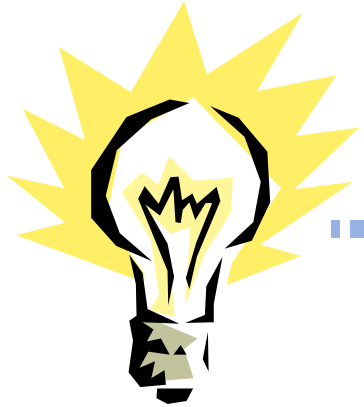
VS.

Ready for next command:



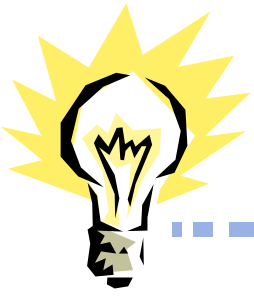
Design Principles

- 9. Handle errors smoothly and positively
- 10. Provide useful help and documentation
 - ❖ (More to come later in course on these two)



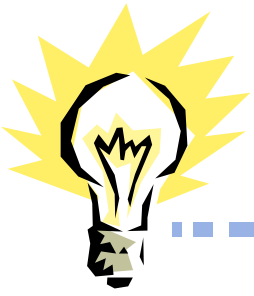
Graphic Design

The “look & feel”



Graphic Design

- The “look & feel” portion of an interface
- What someone initially encounters
 - ❖ Conveys an impression, mood



Design Philosophies

- Personal preferences:
 - ❖ Economy of visual elements
 - ❖ Less is more
 - ❖ Well organized (good info architecture!)

Sequencing

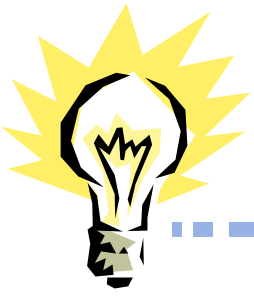
Layout

Imagery

Color

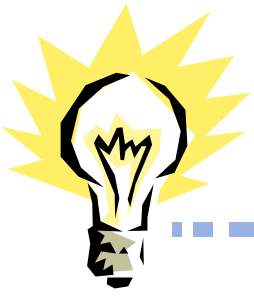
Organization

Typography



Graphic Design Principles

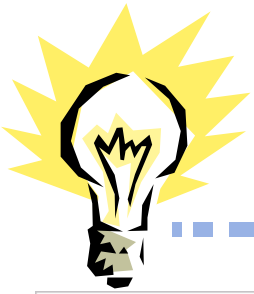
- Metaphor
- Clarity
- Consistency
- Alignment
- Proximity
- Contrast



Metaphor

- Tying presentation and visual elements to some familiar relevant items
 - ❖ e.g., Desktop metaphor
 - ❖ e.g., Elevator metaphor

- ❖ If you're building an interface for a grocery application, maybe mimic a person walking through a store with a cart

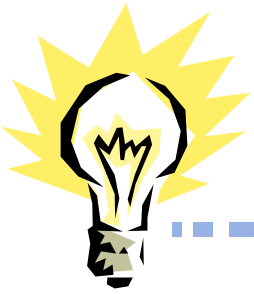


Example



Overdone?

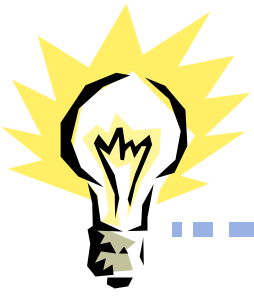
www.worldwidestore.com/Mainlv1.htm



Clarity

- Every element in an interface should have a reason for being there
 - ❖ Make that reason clear too!
- Less is more
 - ❖ Unless more is more...

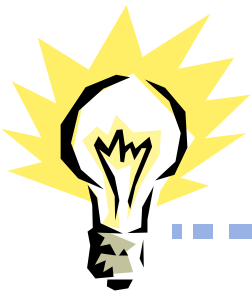




Clarity

➤ White space

- ❖ Leads the eye
- ❖ Provides symmetry and balance through its use
- ❖ Strengthens impact of message
- ❖ Allows eye to rest between elements of activity
- ❖ Used to promote simplicity, elegance, class, refinement



Example

Clear, clean
Appearance

(?)

www.schwab.com

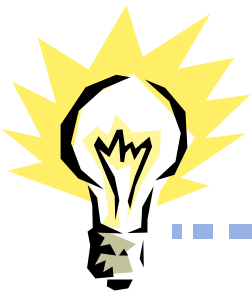
Fall 2019

The screenshot shows the Charles Schwab website in a Netscape browser window. The browser title is "Charles Schwab | Home - Netscape". The address bar shows "http://www.schwab.com/". The website has a dark blue header with navigation links: "Login", "Open an Account", "My Schwab", "Contact Us", and "Home". Below the header is a navigation menu with links: "Getting Started", "Accounts & Services", "Investments", "Mutual Funds", "Quotes and Research", and "Smart Investor". The main content area features a large "Welcome to the world of smarter investors" message. To the right is a "Login" button. Below the welcome message are several promotional banners: "Get started at SchwabWelcome", "Select an account that's right for you", "Free trial! Stock Explorer™ & Schwab Select List@", and "Get a web phone on us". The page is divided into several columns of content. The left column includes sections for "Learn", "Plan", "Invest", and "Schwab Worldwide". The middle column includes "Research" and "Trade". The right column includes "Free Quotes & Charts" with a search box, "Today's Markets" with a line chart and a table of market data, and "Latest from Schwab" with a list of news items. The table of market data shows the following values:

Index	Value	Change
DJIA	10,609.55	+5.28
NASDAQ	2,640.57	+116.39
S&P 500	1,326.82	+13.55

The page footer includes links for "Home", "My Schwab", "Contact Us", "Site Map", "Demo", and "Help". The browser's status bar at the bottom shows "Document: Done".

PSYCH / CS 6755



Example

Clear, clean
Appearance

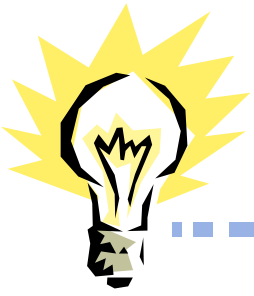
(?)

www.adobe.com

Fall 2019

The screenshot shows the Adobe website homepage in a browser window. The browser's address bar displays "http://www.adobe.com/". The website features a navigation menu with links for SOLUTIONS, PRODUCTS, SUPPORT, COMMUNITIES, COMPANY, DOWNLOADS, and STORE. A search bar is located on the right side of the navigation menu. The main banner is a blue-themed image with the text "MAX" and "Hear what Adobe Professionals are saying about MAX 2007." Below the banner, there are three columns of content: "Solutions and products" with links to Adobe Reader and Flash Player, "Announcements" with sections for Adobe Creative Suite, Premiere Pro, Audition, and Font Folio, and "Purchase" with offers for stock footage and savings on Photoshop. The footer includes the text "PSYCH / CS 6755" and "See more Industries".

PSYCH / CS 6755



Example

Clear, clean
Appearance

(?)

Address: <http://www.apple.com/> go

Store Switch .Mac QuickTime Support Mac OS X
Hot News Hardware Software Made4Mac Education Creative SmallBiz Developer Where to Buy

"Nobody does anything like iPhoto in the PC world. That's why I switched to Apple."

— Gautam Godse,
Software projects manager

Hot News Headlines "AppleScript Studio makes life easier," says veteran developer.

iCal
Organize your life.
Download now.

Jaguar
Mac OS X Version 10.2
Now available.

Power Mac G4
All dual processors starting at just \$1,699.
Dual 1.25GHz now shipping.

iPod
5GB
10GB
20GB

Search

[Site Map](#) | [Search Tips](#)

Visit the Apple Store [online](#) or at [retail](#) locations.
1-800-MY-APPLE

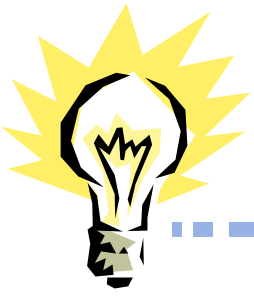
Find [Job Opportunities](#) at Apple.

Visit other Apple sites around the world:
Choose...

www.apple.com

Fall 2019

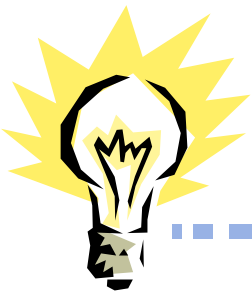
PSYCH / CS 6755



Consistency

- In layout, color, images, icons, typography, text, ...
- Within screen, across screens
- Stay within metaphor everywhere

- Platform may have a style guide
 - ❖ Follow it!



Example

Logo-icon principle



Home page

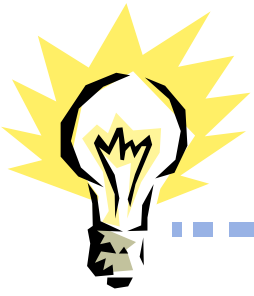


Content page 1



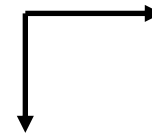
Content page 2

www.santafean.com

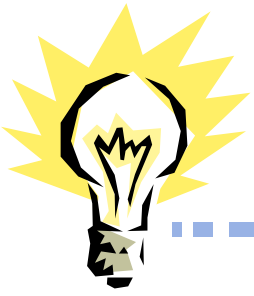


Alignment

- Western world
 - ❖ Start from top left



- Allows eye to parse display more easily
- “Read-flow” principle

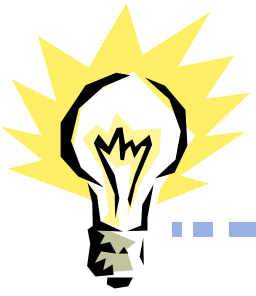


Alignment

➤ Grids

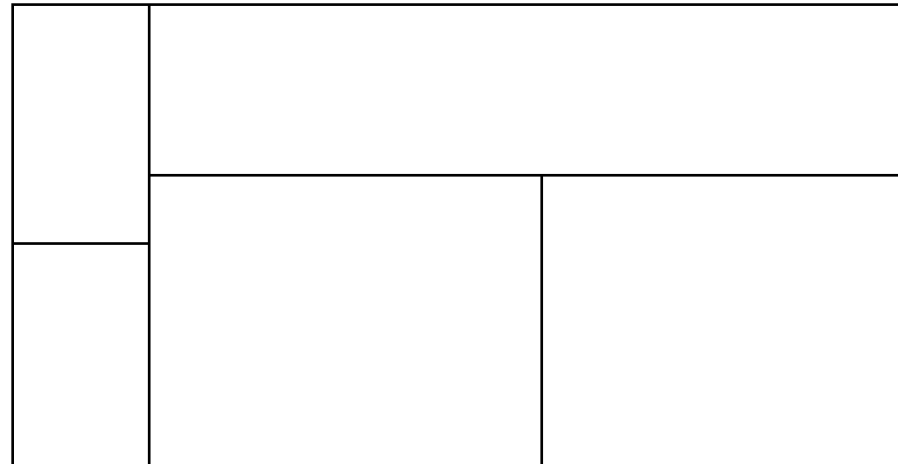
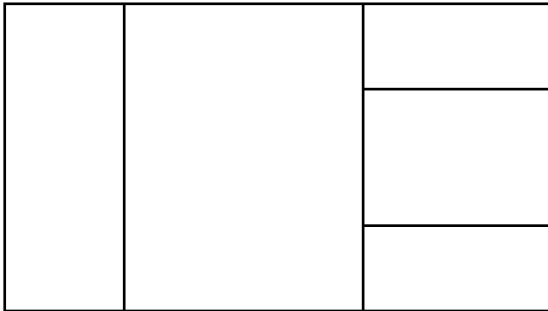
- ❖ (Hidden) horizontal and vertical lines to help locate window components
- ❖ Align related things
- ❖ Group items logically

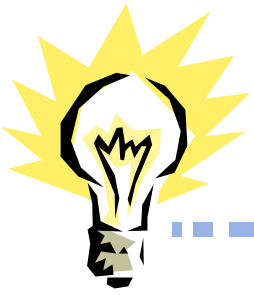
- ❖ Minimize number of controls, reduce clutter



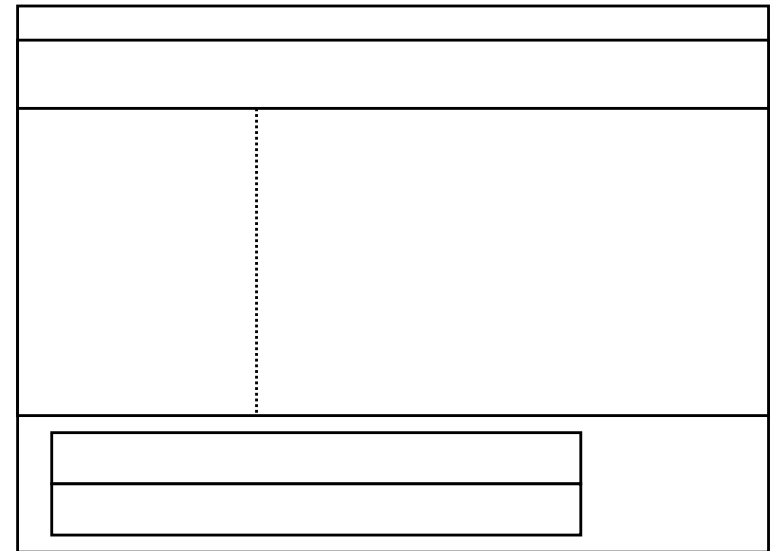
Alignment

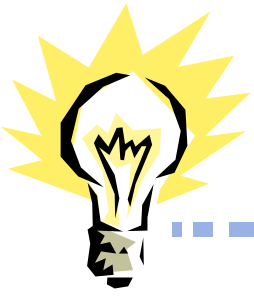
➤ Grids - use them





Grid Example





Alignment

- Left, center, or right?

Here is
some
new text

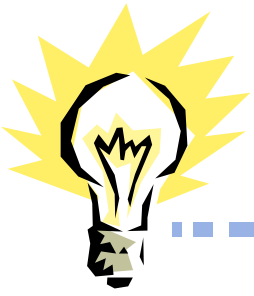
Here is
some
new text

Here is
some
new text

- Choose one, use it everywhere

- Novices often center everything

- ❖ No definition, calm, very formal



Proximity

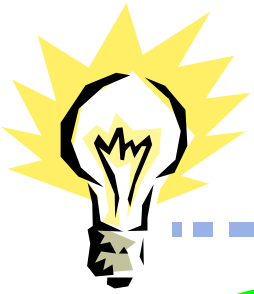
- Items close together appear to have a relationship
- Distance implies no relationship

Time

Time

- Colon ties label and field together

Time:



Example

Name:

Addr1:

Addr2:

City:

State:

Phone:

Fax:

Name:

Addr1:

Addr2:

City:

State:

Phone:

Fax:

Name

Addr1

Addr2

City

State

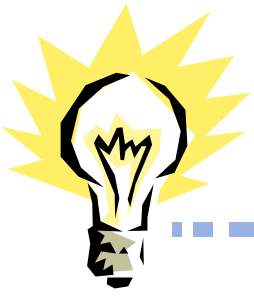
Phone

Fax

Right-align
Field labels

Enhance grouping
With boxes

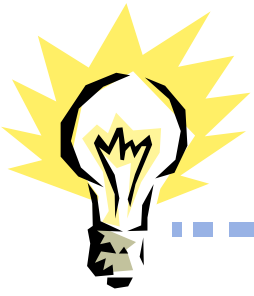
Not
zesty



Contrast

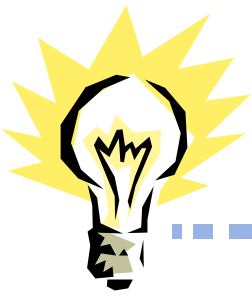
- **Pulls you in**
- Guides your eyes around the interface
- Supports skimming

- Take advantage of contrast to add **focus** or to energize an interface
- Can be used to distinguish active control



Contrast

- Can be used to set off most important item
 - ❖ Allow it to dominate
- Ask yourself what is the most important item in the interface, highlight it
- Use geometry to help sequencing



Example

Important
element

Delta Air Lines - Welcome to Delta - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Stop

Bookmarks Netsite: http://www.delta.com/home/index.jsp

Delta
delta.com

Home

HOME TRAVEL SKYMILES® PROGRAMS & SERVICES INSIDE DELTA CUSTOMER CARE

SkyMiles log in
SkyMiles number and PIN

Start in:
Home

Remember my SkyMiles number:
 Yes No

GO

[SkyMiles Enrollment & PIN](#)

Links

[Reservations](#)

[View Itineraries](#)

[Upgrades](#)

[Flight Schedules](#)

[Special Offers](#)

[Investor Relations](#)

Round-Trip Reservations

[One-way & multi-city reservations](#) | [Calendar](#) | [City codes](#)

Purchase online and earn up to 1,000 [Bonus SkyMiles!](#)

Leaving from: Select departure date and time: Jan 11 10 AM

Going to: Select return date and time: Jan 11 10 AM

Passengers and preferred cabin: 1 Coach (Restricted)

GO

Customer Advisory

Thursday, January 11, 2001

Delta is experiencing delays and cancellations due to reduced pilot availability associated with an ongoing job action by some Delta pilots.

Delta's Reservations personnel are doing all possible to notify customers regarding schedule changes. You can also check your flight status from this homepage or you can call our automated Flight Information Line at 800-325-1999.

We apologize for any inconvenience you may experience.

NEW from delta.com

Online Hotel Reservations

Book your ideal hotel, B&B, or resort worldwide

Document: Done

www.delta.com



UI Exercise


- Look at interface and see where your eye is initially drawn (what dominates?)
- Is that the most important thing in the interface?
- Sometimes this can (mistakenly) even be white space!



Example

Disorganized

Advanced FAX Settings

 **Aptiva Communication Center**

Speaker setting

On On until connect Off

Wait seconds for connection

Retry after seconds **N**umber of retries

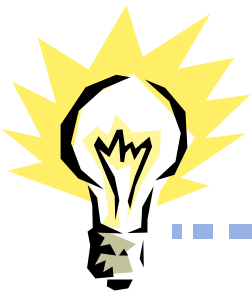
Resolution

Fine Standard

Maximum transmit rate:

Paper size:

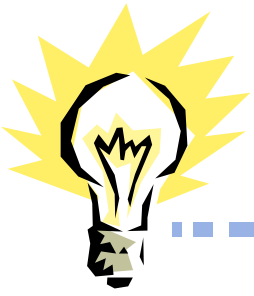
Use custom editor:



Example

Form Title -- (appears above URL in most browsers and is used by WWW search engines)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on page)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!		
<input type="button" value=" << Prev Tab"/>		<input type="button" value=" Next Tab >>"/>

Visual noise



Example

Exporting

Form to Export:

Export to Access Database
 Export to text file (CSV)
 Purge responses from original table

? OK Cancel

This dialog box is crossed out with a large red 'X'. It features a title bar with 'Exporting', a 'Form to Export' label above a text input field, and three radio button options: 'Export to Access Database' (selected), 'Export to text file (CSV)', and 'Purge responses from original table' (unchecked). At the bottom, there is a help icon, an 'OK' button, and a 'Cancel' button.

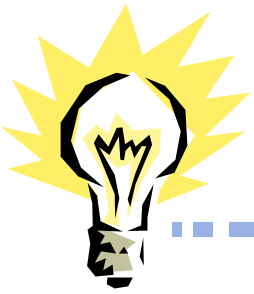
Exporting

Form to Export:

Export to Access Database
 Export to text file (CSV)
 Purge responses from original table

? Cancel OK

This dialog box is identical to the one on the left but with the 'OK' and 'Cancel' buttons swapped in order at the bottom.



Example

The image shows a dialog box titled "Exporting" with a blue header bar. The dialog contains a label "Form to Export:" above a dropdown menu. Below the dropdown are three options: "Export to Access Database" (selected with a radio button), "Export to text file (CSV)" (unselected), and "Purge responses from original table" (unselected). At the bottom, there is a help icon (a question mark in a square), a "Cancel" button, and an "Export" button.

Exporting

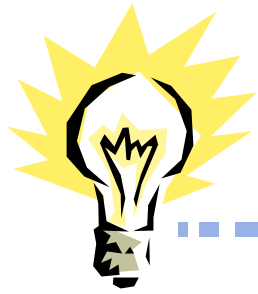
Form to Export:

Export to Access Database

Export to text file (CSV)

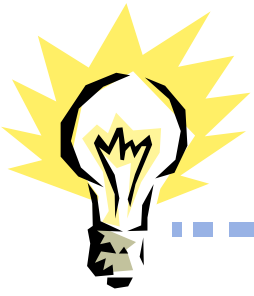
Purge responses from original table

Cancel Export



Economy of Visual Elements

- Less is more
- Minimize borders and heavy outlining, section boundaries (use whitespace)
- Reduce clutter
- Minimize the number of controls

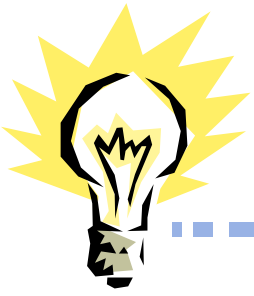


Typography

- Characters and symbols should be easily noticeable and distinguishable
 - ❖ Avoid heavy use of all upper case
 - ❖ Mixed case promotes faster reading

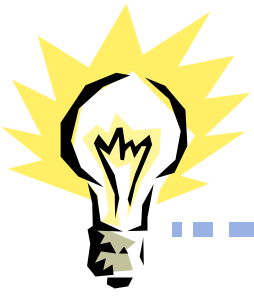
HOW MUCH FUN IS IT
TO READ ALL THIS TEXT
WHEN IT' S ALL IN
CAPITALS AND YOU
NEVER GET A REST

How much fun is it
to read all this text
when it' s all in
capitals and you
never get a rest



Typography

- Readability
 - ❖ How easy it is to read a lot of text
- Legibility
 - ❖ How easy it is to recognize a short burst
- Typeface = font
(not really, but close enough)

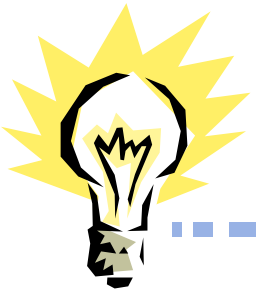


Wow

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

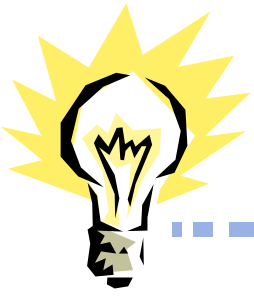
To start the demonstration, click the "OK HERE" button of the screen.

Yuk



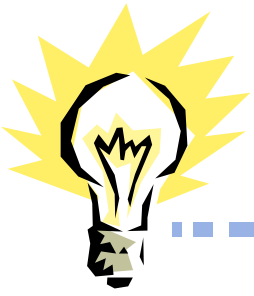
Typography

- Serif font - readability
- Sans serif font - legibility
 - ❖ (both are variable spaced)
- Monospace font



Fonts

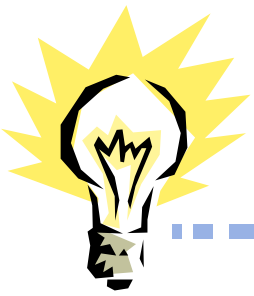
- Serif
 - ❖ Times, Bookman
 - ❖ Palatino
- Sans serif
 - ❖ Tahoma, Arial
- Onscreen fonts
 - ❖ Georgia
 - ❖ Geneva
 - ❖ Verdana
- Decorative
 - ❖ Comic Sans
- Script
 - ❖ Script
- Monospaced
 - ❖ Courier,
Lucida



Typography

➤ Guidelines

- ❖ Use serif for long, extended text; sans serif for “headlines”
- ❖ Use 1-2 fonts/typefaces (3 max)
- ❖ Use 1-3 point sizes max
- ❖ Never use bold, italics, capitals for large sections of text
- ❖ Be careful of text to background color issues



More Wow

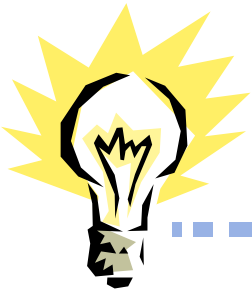
PIRATES Tutorial

PIRATES is a multiplayer strategy game of piracy and plunder on the high seas. As a ship captain, you may trade with island merchants and make an honest living, or plunder local ships and other players. You will probably do a little of each!

Press arrow to move to next frame --->

HTML/Browse

WebForms™ 2.5 – ©1995,96 Q&D Softw



Example

Which do you prefer?

CRAFTS AND GAMES
ARTS FESTIVAL
OF ATLANTA AND DECATUR

SEPTEMBER 19-24



COME AND ENJOY

Crafts and Games:

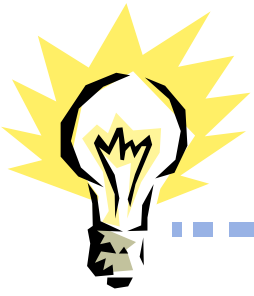
Arts Festival
Of Atlanta and Decatur



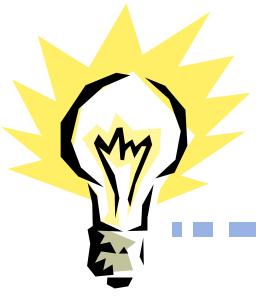
September 19-24

Come and Enjoy!

Applies lots of these principles



- We see the world via a *reflective* color model
 - ❖ Light strikes a surface and is reflected to our eyes--Properties of surface dictate color
 - ❖ Printers
- Colors on display follow the *emitted* model



Color Attributes

- Hue

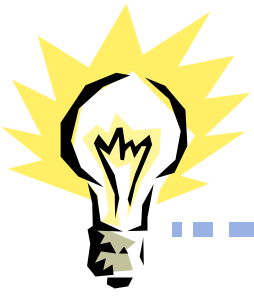
- ❖ native color, pigment

- Saturation

- ❖ relative purity, brightness, or intensity of a color

- Value

- ❖ lightness or darkness of a color

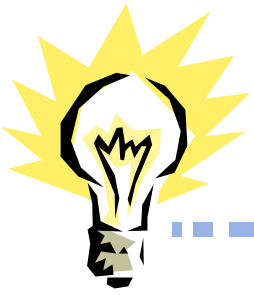


Color

- On monitors, typically RGB scheme
 - ❖ 0-255 value each red, green, blue

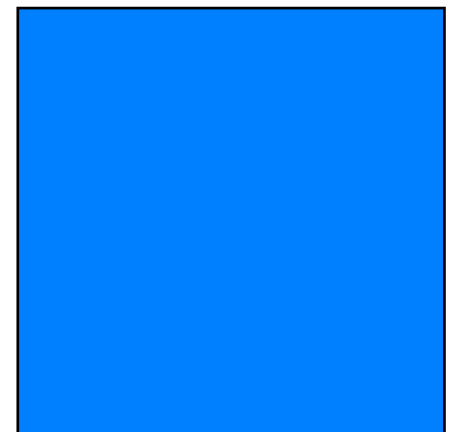
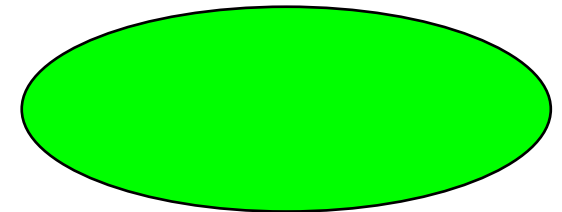
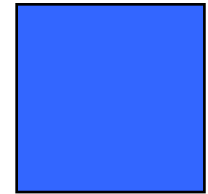


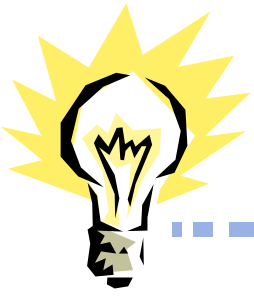
❖ R: 170 G:43 B: 211



Color Guidelines

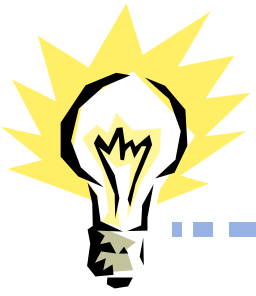
- Design in b/w then add color where appropriate
 - ❖ Print your design out in b/w to test it
- Use color to draw attention, communicate organization, to indicate status, to establish relationships
- Avoid using color in non-task related ways





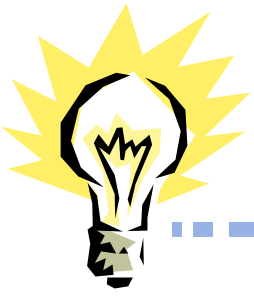
Color Guidelines

- Display color images on black background
- Choose bright foreground color (white, bold green,...)
- Avoid brown and green as background colors
- Be sure foreground colors contrast in both brightness and hue with bg colors



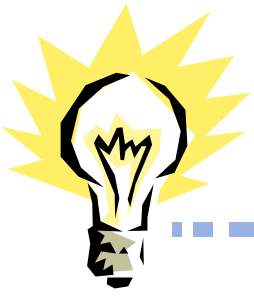
Color Guidelines

- Color is good for supporting visual search
- Do not use color without some other redundant cue
 - ❖ Color-blindness
 - ❖ Monochrome monitors (and printouts)
 - ❖ Redundant coding enhances performance
- Be consistent with color associations from jobs and cultures

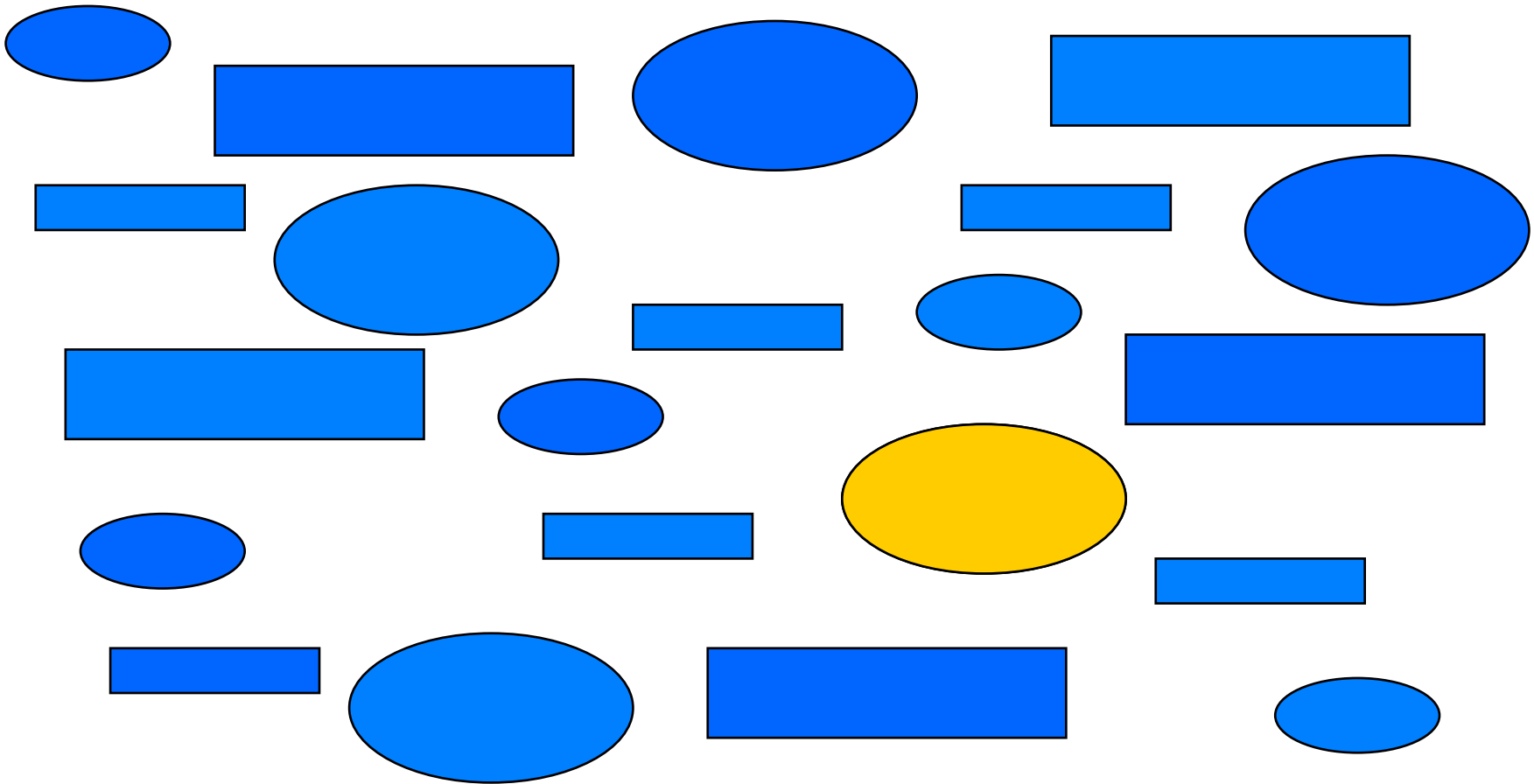


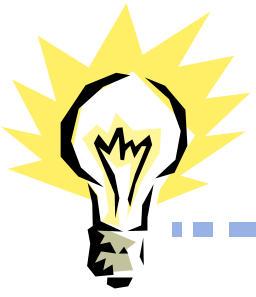
Color Guidelines

- Limit coding to 8 distinct colors (4 better)
- Avoid using saturated blues for text or small, thin lines
- Use color on b/w or gray, or b/w on color
- To express difference, use high contrast colors (and vice versa)



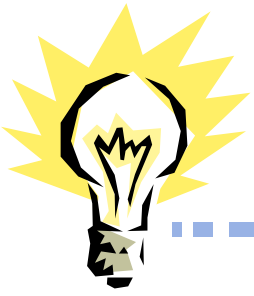
How many...





Find the...

L B U O
T C W M
V R I D V G
F N A Q P
Y A S H K Z E
J X



Color Associations

➤ Red

- ❖ hot, warning, aggression, love

➤ Pink

- ❖ female, cute, cotton candy

➤ Orange

- ❖ autumn, warm, Halloween

➤ Yellow

- ❖ happy, caution, joy

➤ Brown

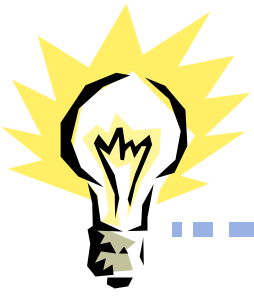
- ❖ warm, fall, dirt, earth

➤ Green

- ❖ lush, pastoral, envy

➤ Purple

- ❖ royal, sophisticated, Barney



Color Suites

- Designers often pick a palette of 4 or 5 colors



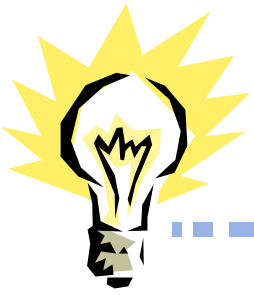
Professional



Monochromatic

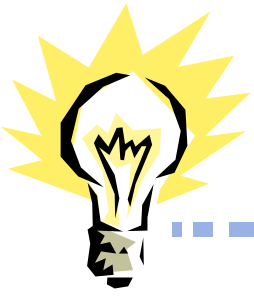


Southwestern



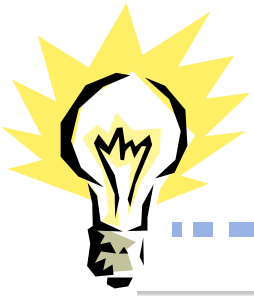
Icon Design

- Design task
- Represent object or action in a familiar and recognizable manner
- Limit number of different icons
- Make icon stand out from background



Icon Design

- Ensure that singly selected icon is clearly visible when surrounded by unselected ones
- Make each icon distinctive
- Make icons harmonious members of icon family
- Avoid excessive detail

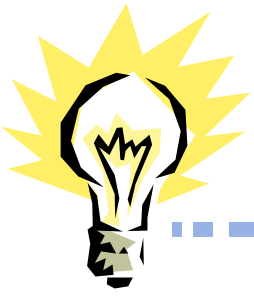


Icon Design



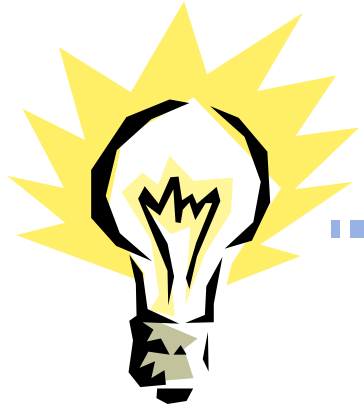
What do each of these signify?

Almost always want to accompany your icons by a text label



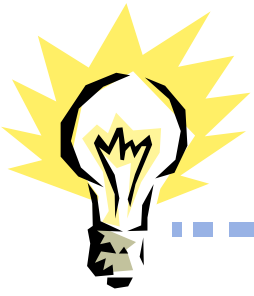
Good & Bad Designs

➤ www.baddesigns.com



Design of Everyday Things

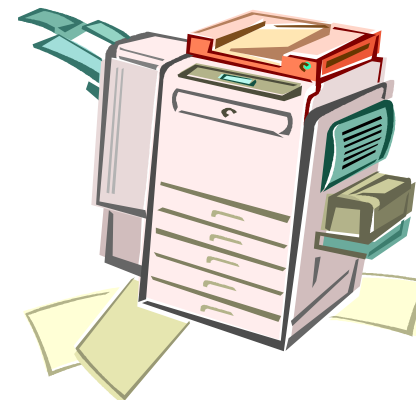
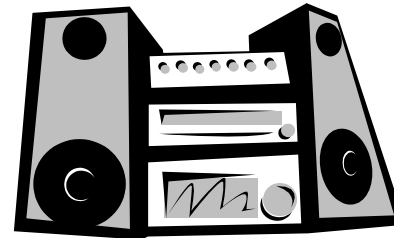
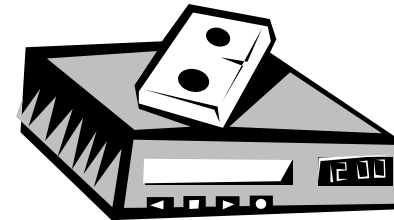
Don Norman

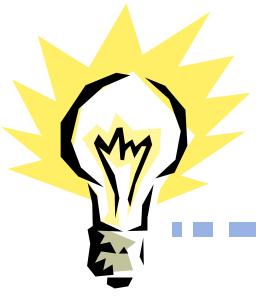


Daily Challenges

➤ How many of you can use all the functionality in your

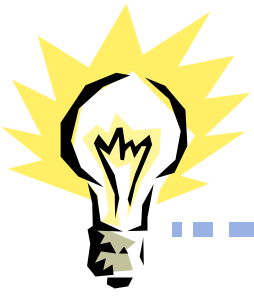
- ❖ VCR
- ❖ Digital watch
- ❖ Copy machine
- ❖ Stereo system
- ❖ Plumbing fixtures





Important Concepts

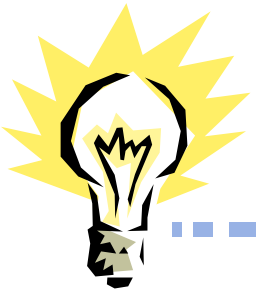
- Affordances
- Conceptual models
- Visibility
- Mapping
- Feedback
- Constraints



Affordance

- Perceived and actual fundamental properties of an object that determine how it could be used
 - ❖ Chair is for sitting
 - ❖ Ball is for throwing
 - ❖ Button is for pushing

- Complex things may need explanation, but simple things should not

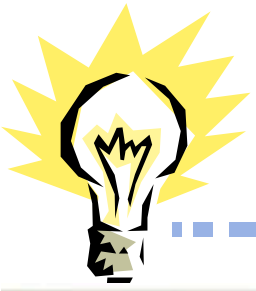


Fun Examples

- Leitz slide projector
 - ❖ To move forward, short press
 - ❖ To move backward, long press

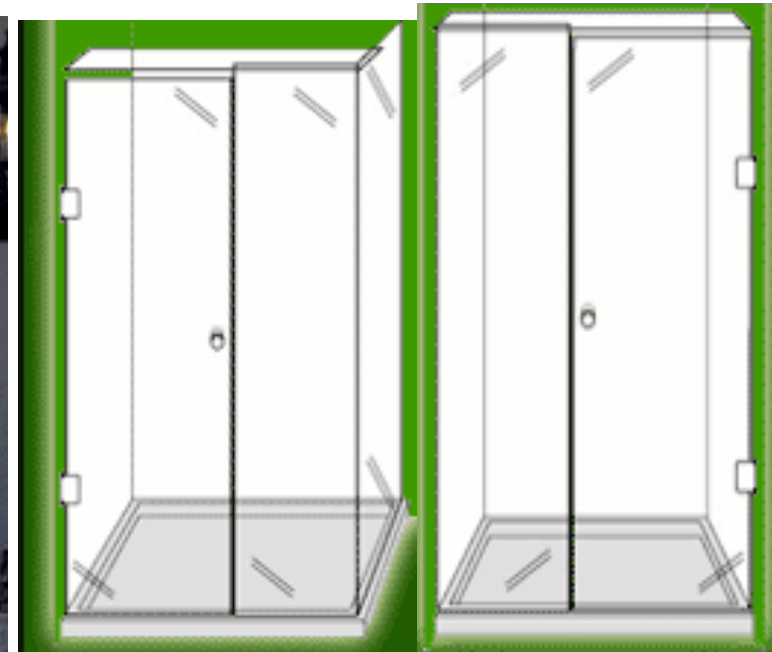
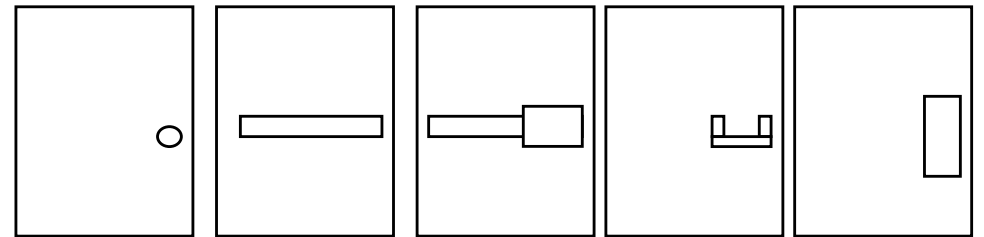
- What happens when you get frustrated?

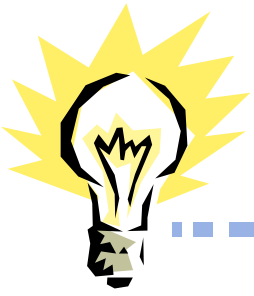




Fun Examples

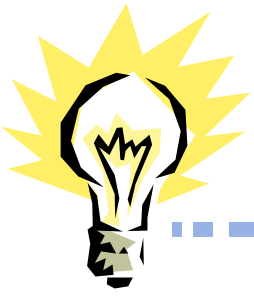
Doors





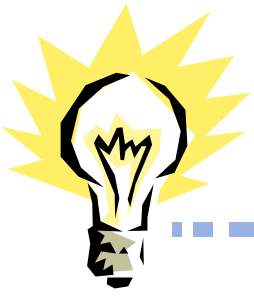
Designing for People

- Norman's 2 main principles
 - ❖ Provide a good conceptual model
 - ❖ Make things visible



Conceptual Models

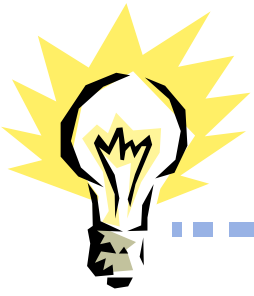
- People build their own systems of how things work
 - ❖ Example - car
- Designer can help user foster an appropriate conceptual model
 - ❖ Appearance, instructions, behavior...



Visibility

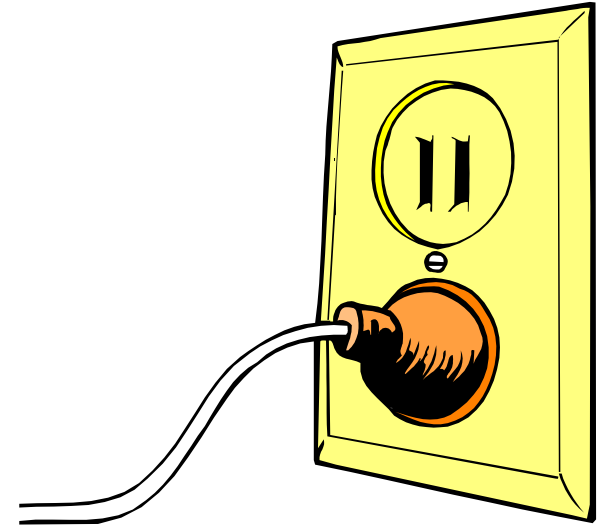
- When functionality is hidden, problems in use occur
 - ❖ Occurs when number of functions is greater than number of controls

- When capabilities are visible, it does not require memory of how to use
 - ❖ Remind person how to use something

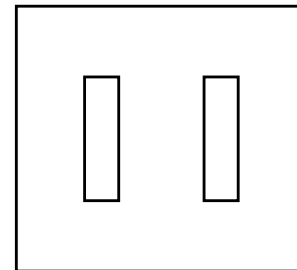
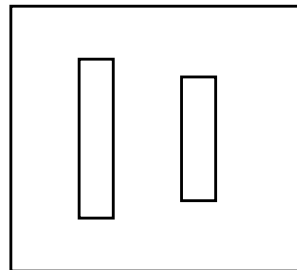


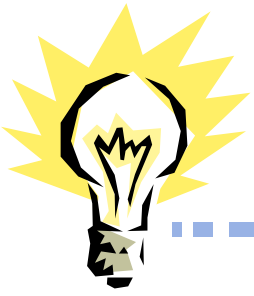
Simple Example

Electric plugs



What if both slots of the receptacle were “big” and you had to remember which side the “small” side of the plug went into?



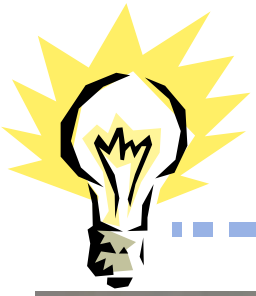


Simple Example

➤ Bathroom faucets

❖ Two functions

- Hot/cold
- Pressure

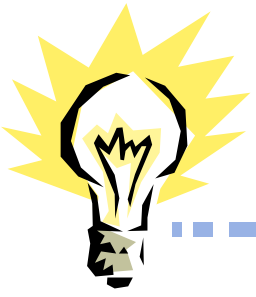


Bathroom Faucets 1



Can you figure out how to use it?

Are two functions clear and independent?

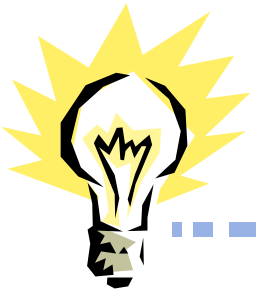


Bathroom Faucets 2



Can you figure out how to use it?

Are two functions clear and independent?

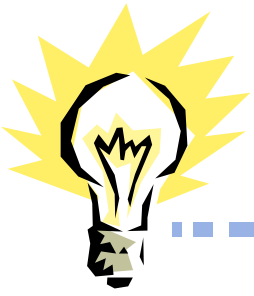


Bathroom Faucets 3



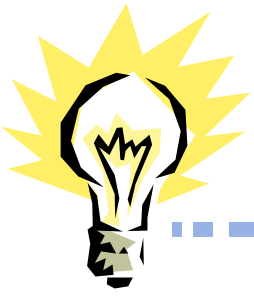
Can you figure out how to use it?

Are two functions clear and independent?



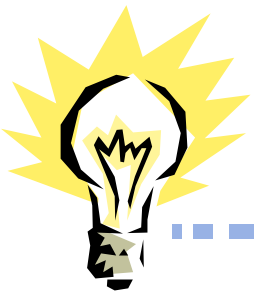
Two Important Principles

- Mapping
- Feedback



Mapping

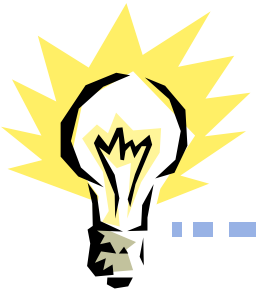
- Relationship between two objects, here, between control and action/result
 - ❖ Good:
 - Car, various driving controls
 - Mercedes Benz seat adjustment example
 - ❖ Bad
 - Car stereo - Knob for front/back speakers
 - Stoves



Mapping Examples

Money:
Euros vs. US Dollars
Size::value

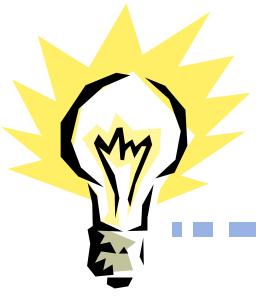




Why Not Design Better?

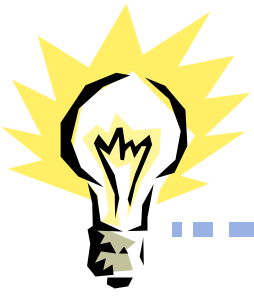
➤ Stoves





Feedback

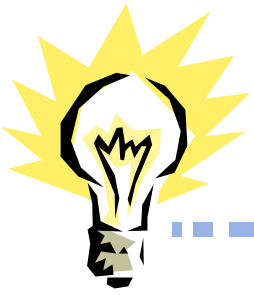
- Let someone know what just occurred
 - ❖ Can be sound that's made
 - ❖ Can be change in physical state



Individual Differences

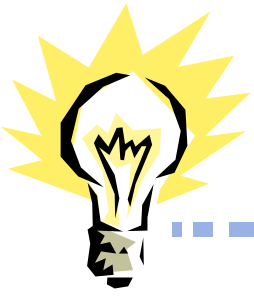
- For whom do you design?
 - ❖ Everyone? Impossible
 - ❖ Average? Excluding half audience
 - ❖ 95%? Still may miss a lot

- Can't accommodate everyone



Individual Differences

- Designers are not representative of the user population for whom they are designing
- Don't expect users to think or act like you
- People vary in both physical attributes and mental/cognitive attributes



Example

Affordances - Insert something into holes

Constraints - Bigger hole for several fingers, small for thumb

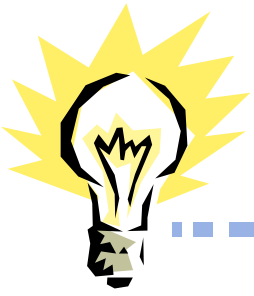
Mapping - How to insert fingers into holes suggested by visible appearance

Conceptual model - Suggested by how parts fit together and move

Users - Often for right handed users only

Scissors





Try and Try Again

- Norman thinks that it often takes 5 or 6 tries to get something “right”
- Designer may not have luxury of time in a competitive business environment