

# EE4717/IM4717 Web Application Design

## Web Application Design Principles

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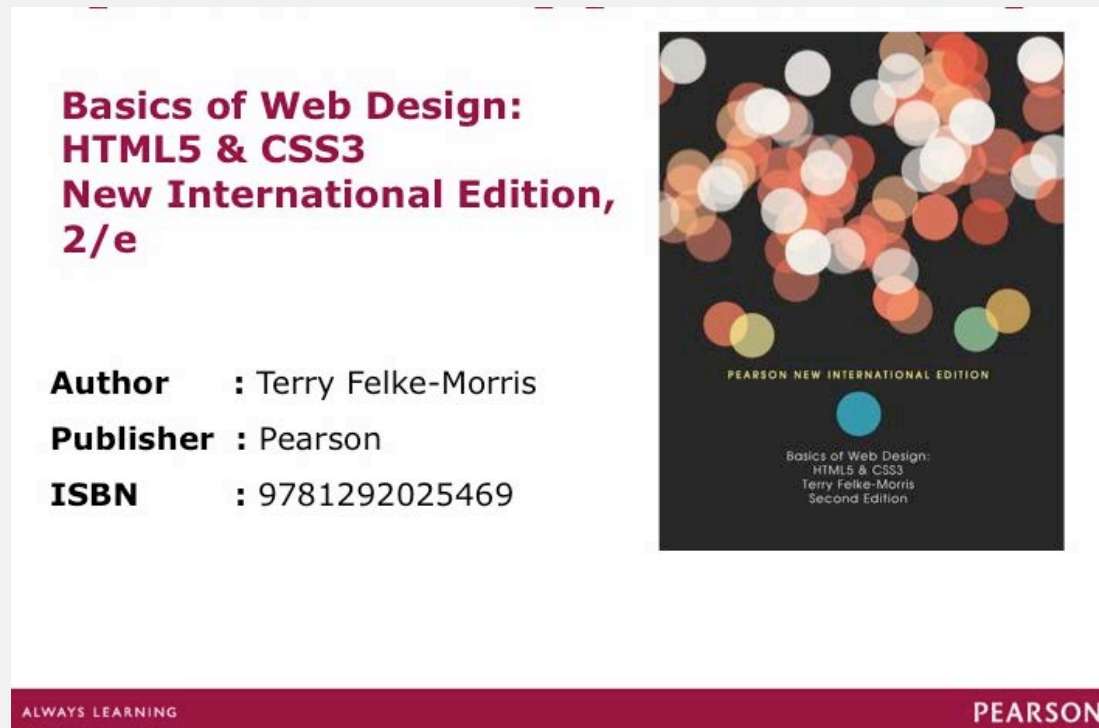


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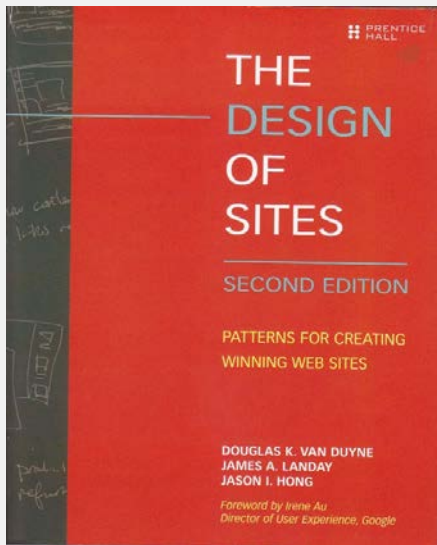
- The teaching are mostly adopted from the slides provided by the author and publisher of the following textbook:



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# Design of web application

- It is more than just web-programming.
- Recommended text:



□ Title: The Design of Sites  
Authors: Douglas K. Van Duyne;  
James A. Landay;  
Jason I. Hong  
ISBN: 978-0-13-134555-3  
Publisher: Prentice Hall PTR

- Emphasis : **Customer-centered** web design.
- Some slides are based on the chapters in this book

# Applying Customer-Centered Design

## ➤ Principles

- high-level concepts that guide the entire design process and help you stay focused.
- must acquire a deep understanding of your customers' needs.
- design your Web site iteratively, moving from rough cuts to refined prototypes, before creating the production Web site.

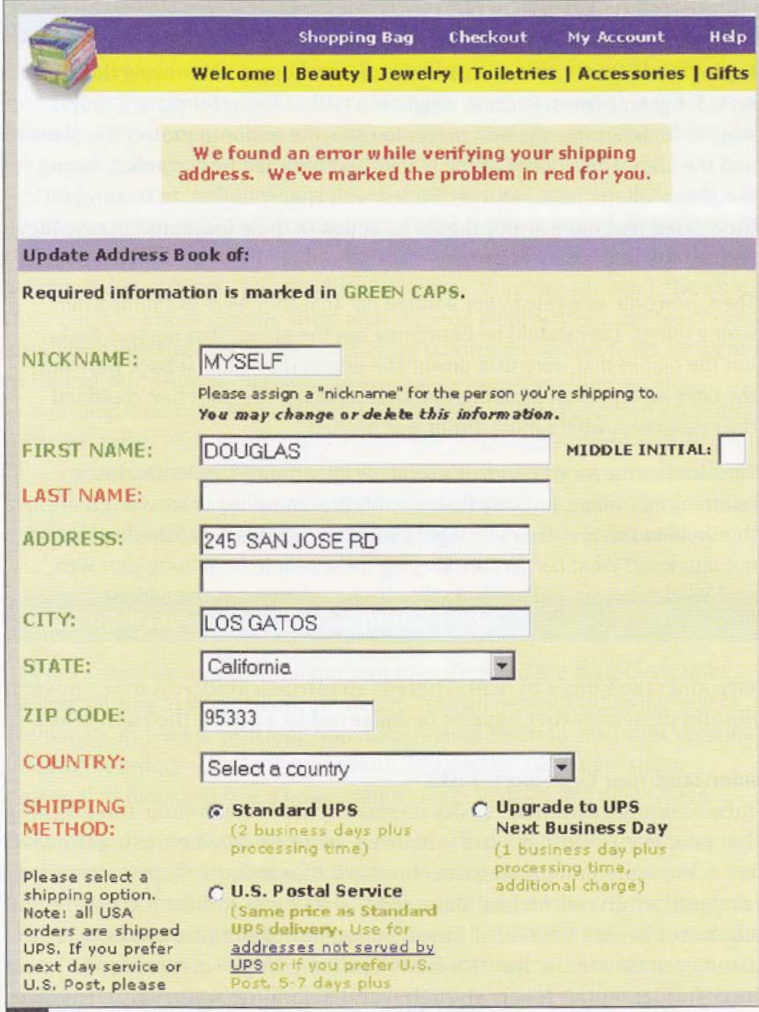
➤ Design is about making informed **trade-offs** between competing constraints.

# Understand Your Customers' Tasks

## Example:

- A small dentist 's office decided to automate its billing, switching from paper-based forms to electronic versions. Hoping to reduce costs in the long term, the dentist spent a nontrivial amount of money to hire a programming team to develop a new system. After it was finished and deployed, however, all of the dentist's assistants were extremely dissatisfied with the new system
- What happened?
  - The programmers did not pay attention to how the paper forms were used, and many of them had handwritten notes in the margin, such as, “this patient's insurance takes longer than most”.
  - But the new system simply did not support this kind of flexibility.
- A **careful analysis** of the existing tasks could have revealed this use of notes, and the appropriate flexibility could have been designed into the system.

# Choose the right combination of colors



Shopping Bag Checkout My Account Help

Welcome | Beauty | Jewelry | Toiletries | Accessories | Gifts

We found an error while verifying your shipping address. We've marked the problem in red for you.

Update Address Book of:

Required information is marked in GREEN CAPS.

NICKNAME: MYSELF  
Please assign a "nickname" for the person you're shipping to.  
*You may change or delete this information.*

FIRST NAME: DOUGLAS MIDDLE INITIAL:

LAST NAME:

ADDRESS: 245 SAN JOSE RD

CITY: LOS GATOS

STATE: California

ZIP CODE: 95333

COUNTRY: Select a country

**SHIPPING METHOD:**

☒ Standard UPS  
(2 business days plus processing time)

☐ Upgrade to UPS Next Business Day  
(1 business day plus processing time, additional charge)

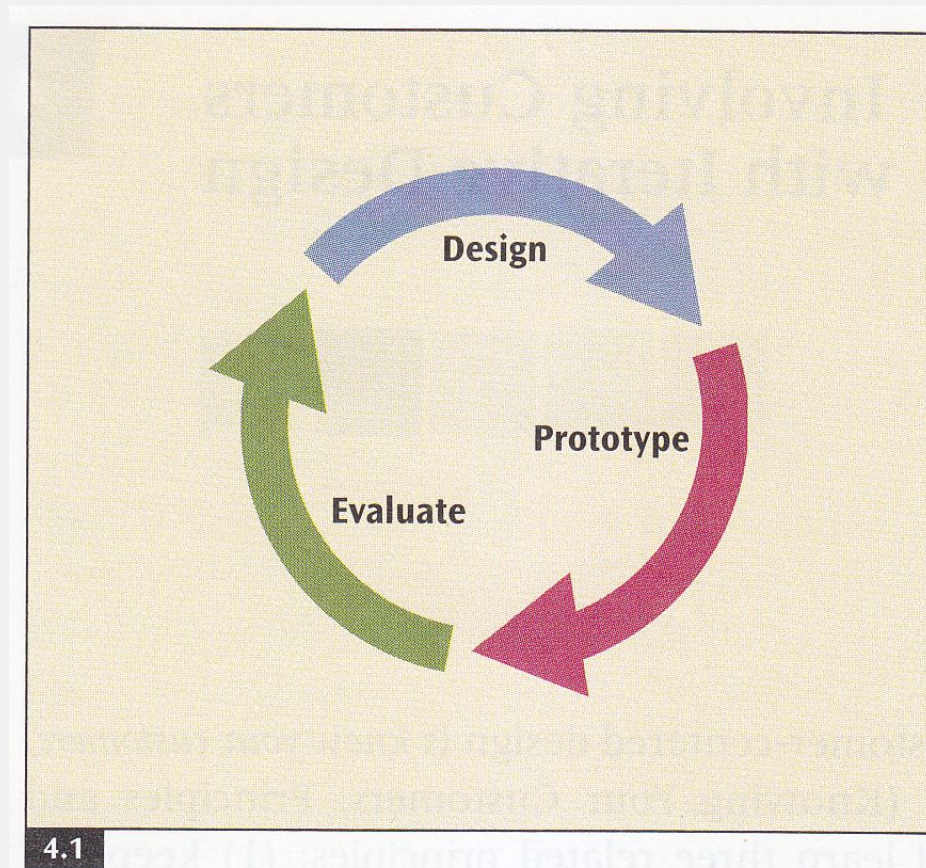
☐ U.S. Postal Service  
(Same price as Standard UPS delivery. Use for addresses not served by UPS or if you prefer U.S. Post, 5-7 days plus processing time)

Please select a shipping option.  
Note: all USA orders are shipped UPS. If you prefer next day service or U.S. Post, please

3.2



# The Iterative Design Process



Detect problems while they're still inexpensive and easy to fix, building site with the features that your customers need, in a way that your customers can use.

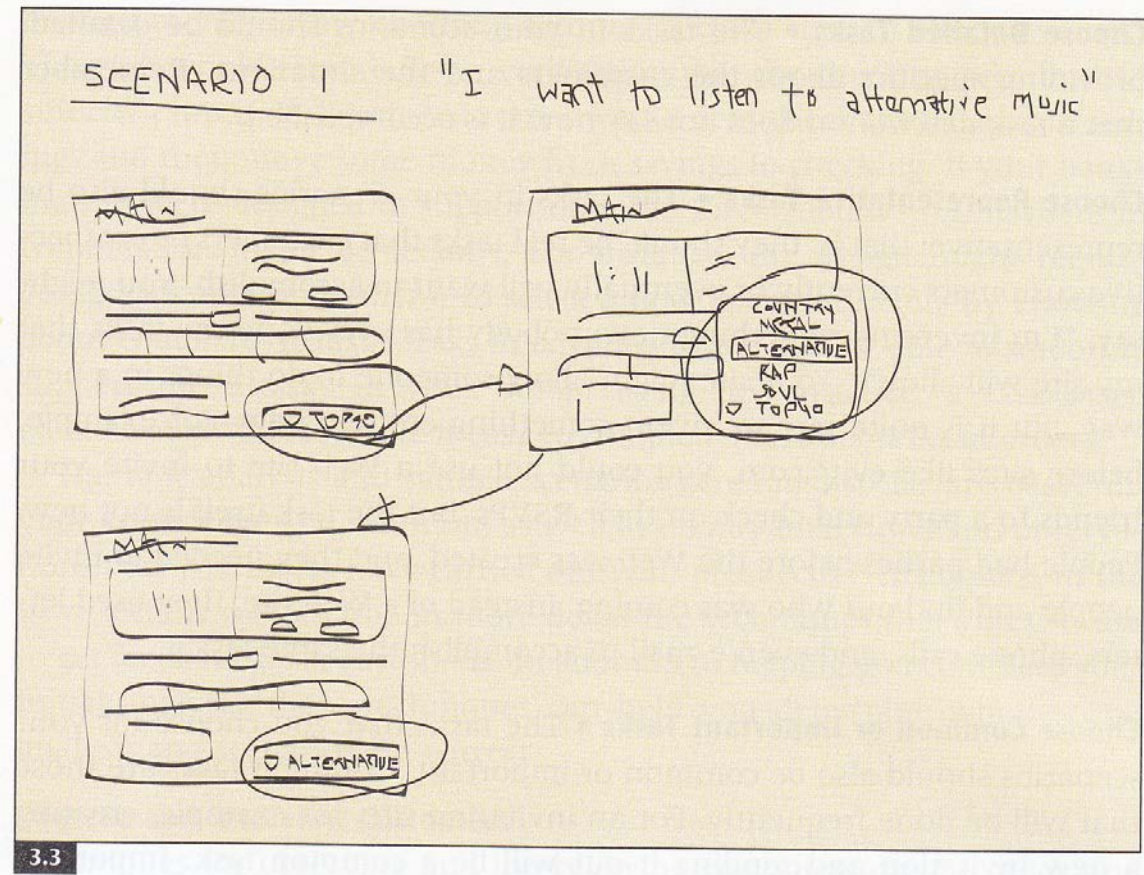
# How to start: Build Scenarios

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- Create **scenarios** illustrating why people would use your Web site.
- Use photographs or sketched **storyboards**.
- **Storyboard** is a **sequence of Web pages** that you create to give a rough idea of how someone might **accomplish a given task**.



# Storyboard



This sketcher storyboard shows how a customer would accomplish one task using the design of a music site targeted at mobile device users.

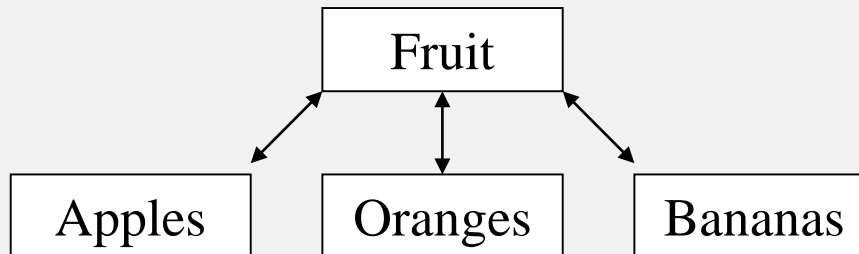
# Card Sorting

- It helps to determine the best **site structure**.
- Example

suppose your site starts with the following content:

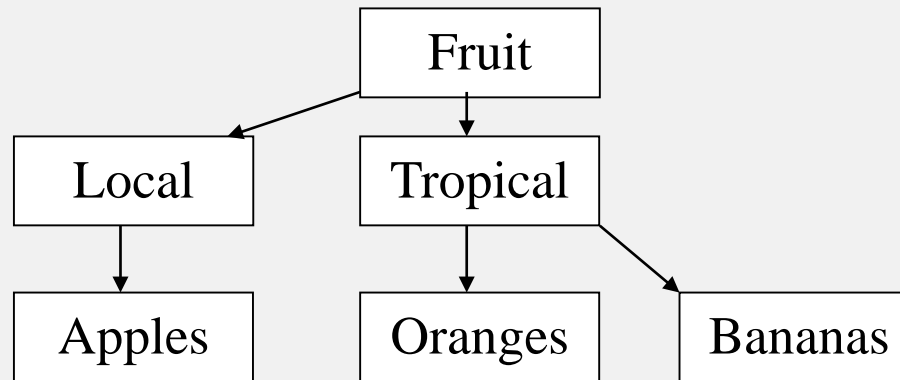


- for a grocery site:

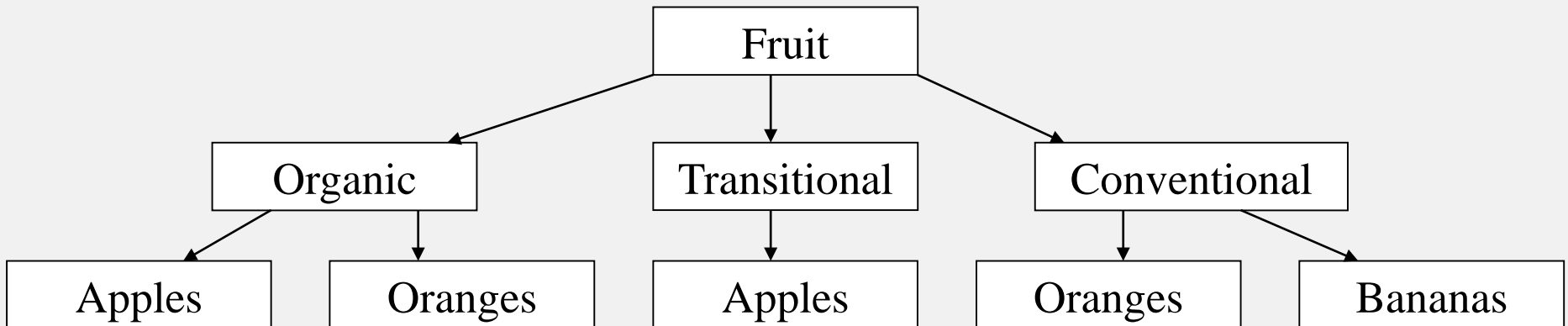


# Card Sorting

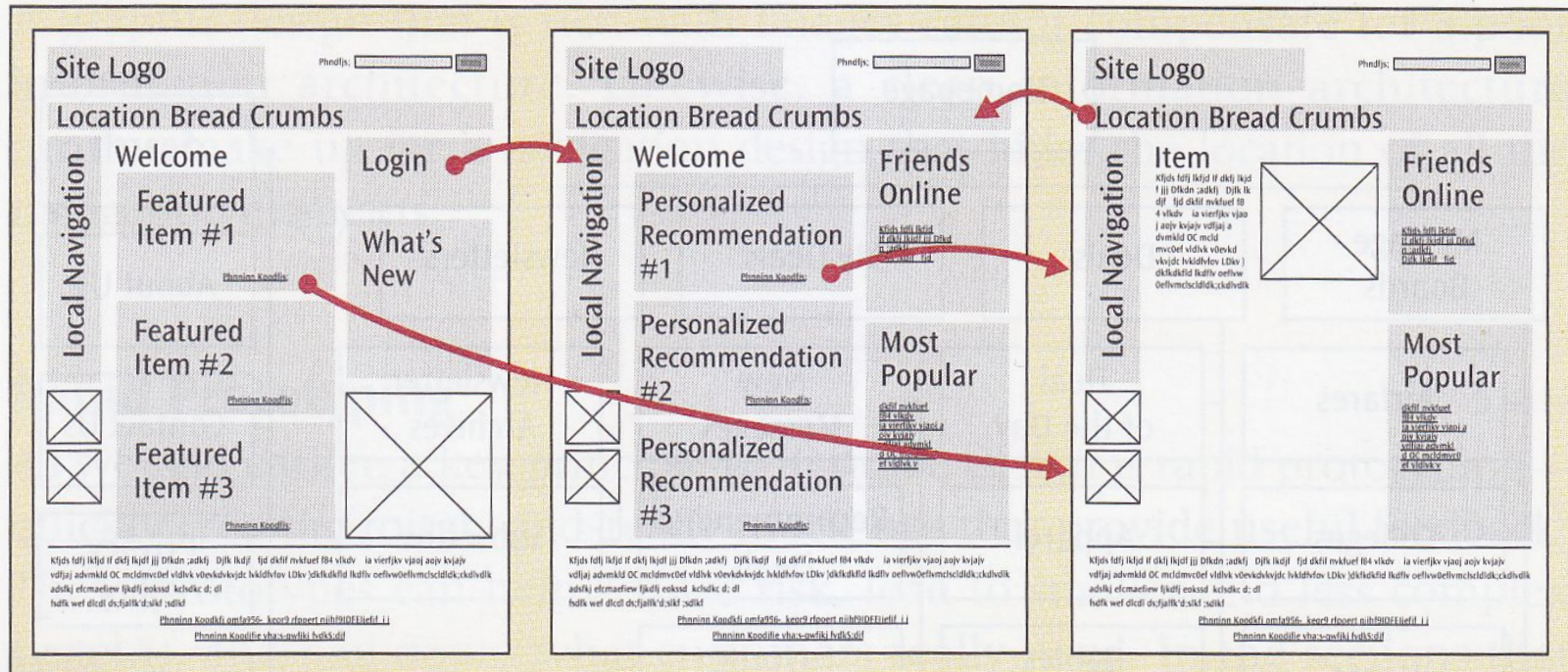
- If customers were particularly concerned about freshly picked, locally grown fruit,



- If customers were concerned about pesticide use,



# Rapid Prototyping – Storyboard

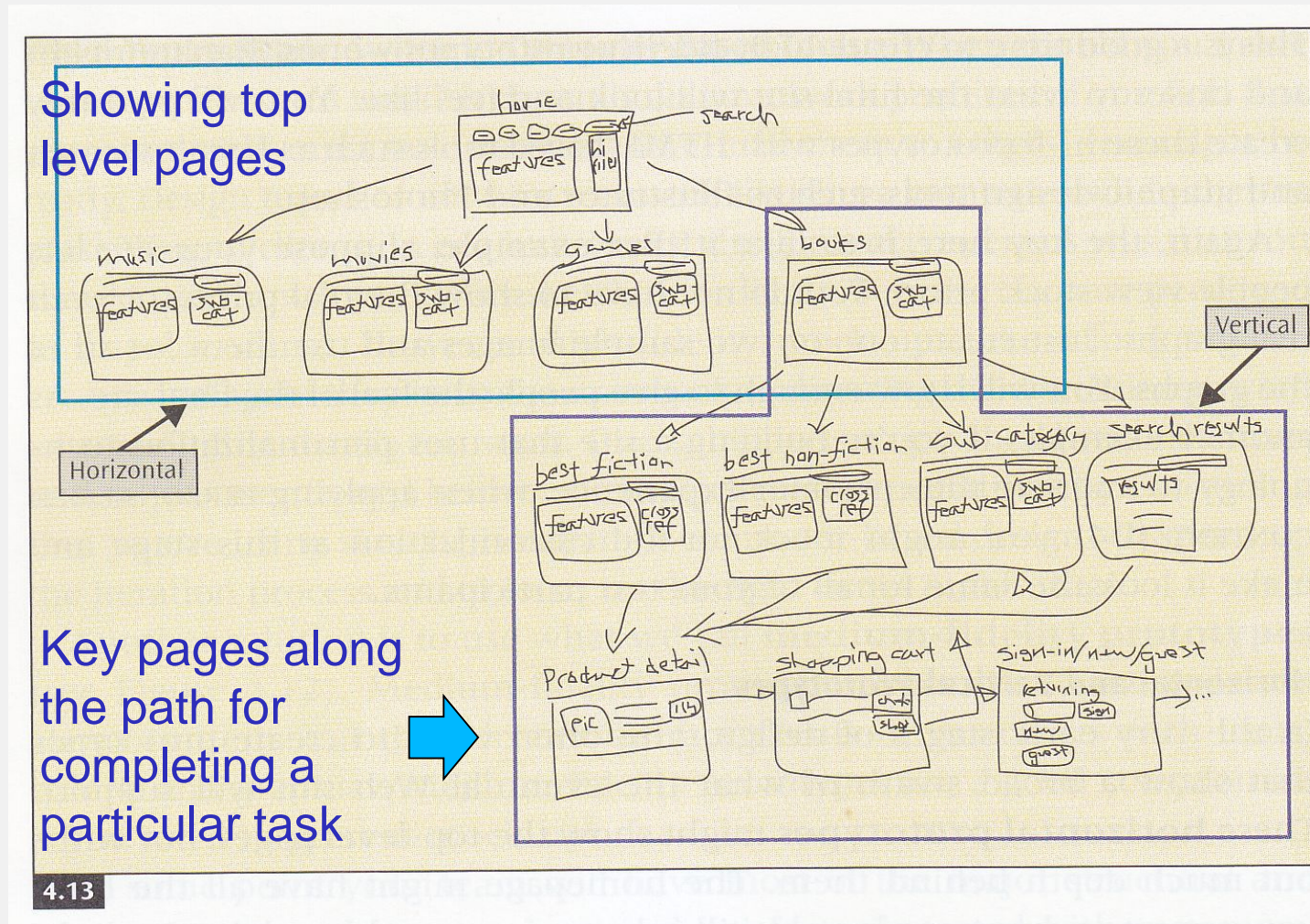


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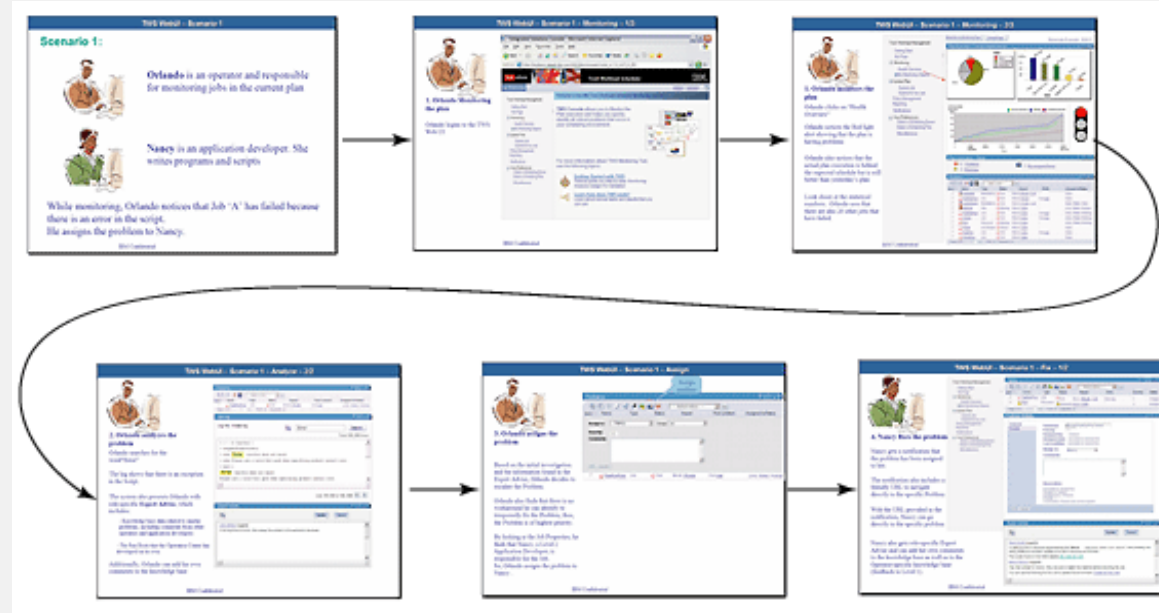
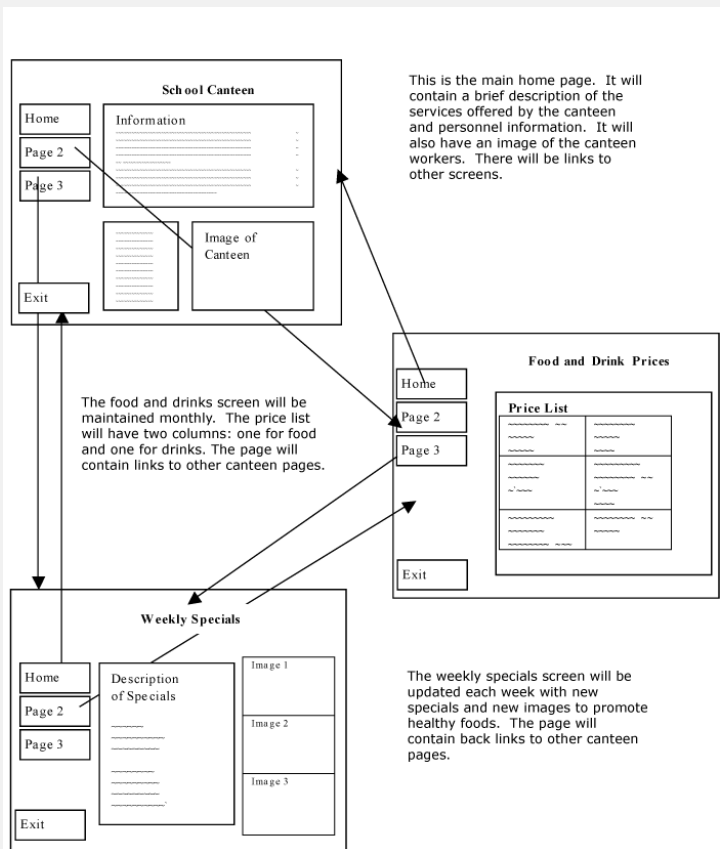
Storyboards show the steps that a customer would take to accomplish a task. This storyboard shows how a customer interacts with a site that lets groups of friends find, recommend, and share things with each other.



# Horizontal and Vertical Prototypes



# Sample Storyboards



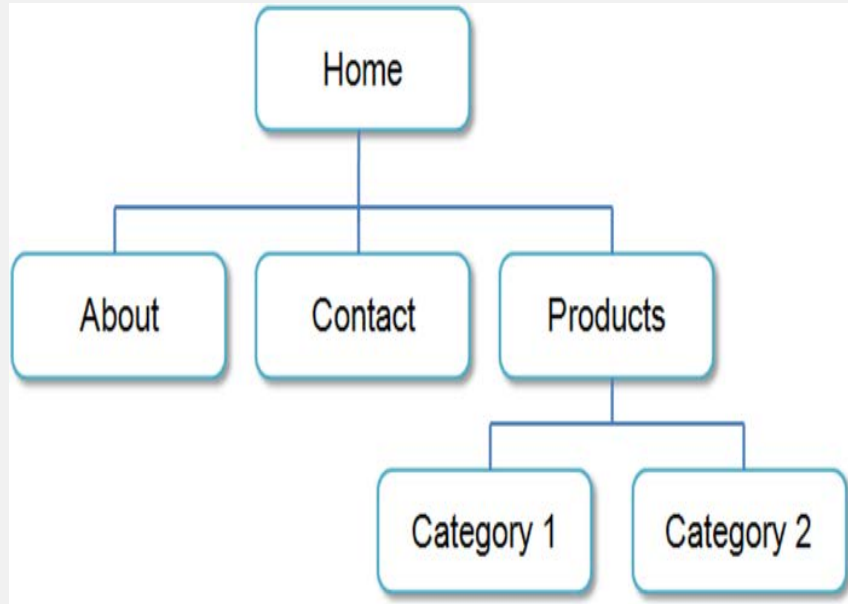


# Website Organization

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- Hierarchical
- Linear
- Random

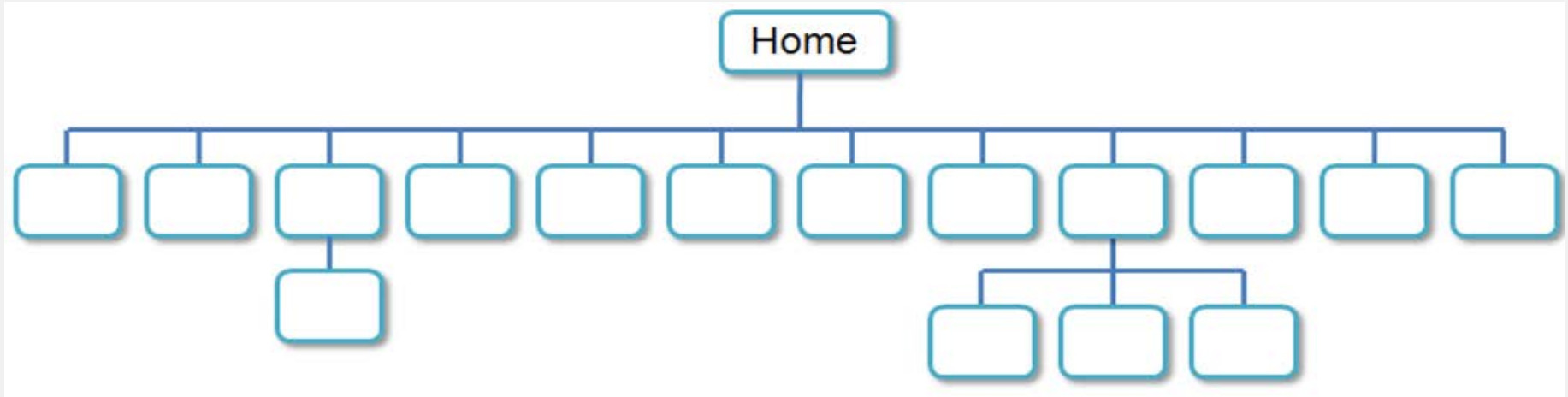
# Hierarchical Organization



- A clearly defined **home page**
- Navigation links to major site sections
- Often used for **commercial and corporate** websites

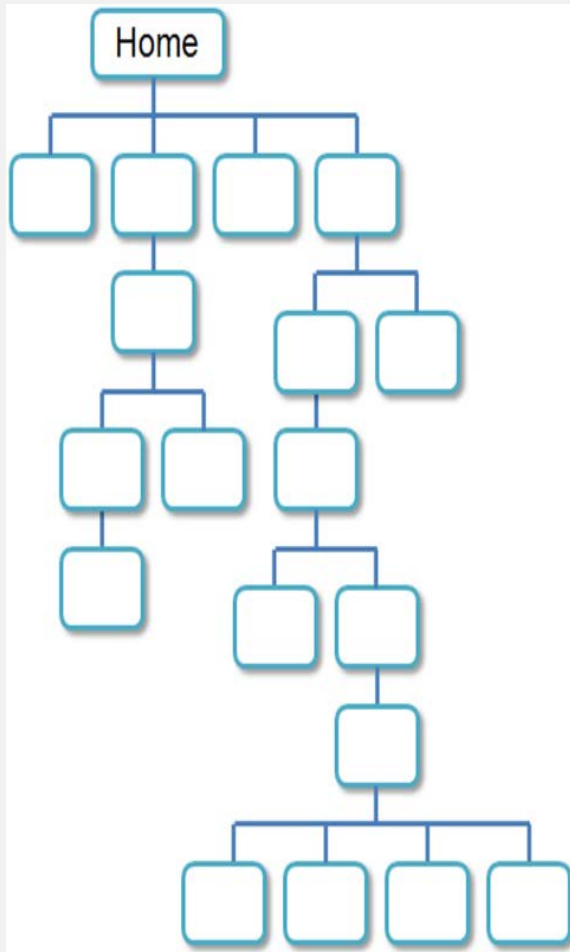
Site Map

# Hierarchical: Too Shallow



- Be careful that the organization is **not too shallow**.
- **Too many immediate choices** → a confusing and less usable website.
- Group, or “chunk”, related areas

# Hierarchical: Too Deep



- Be careful that the organization is **not too deep**.
  - This results in **many “clicks”** needed to drill down to the needed page.
  - User Interface **“Three Click Rule”**
    - A web page visitor should be able to get from any page on your site to any other page on your site with a **maximum of three hyperlinks**.

# Linear Organization

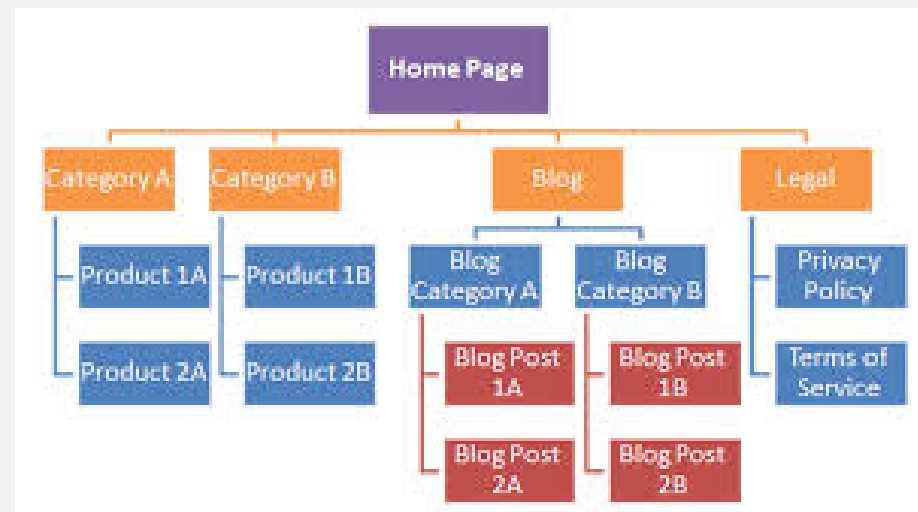
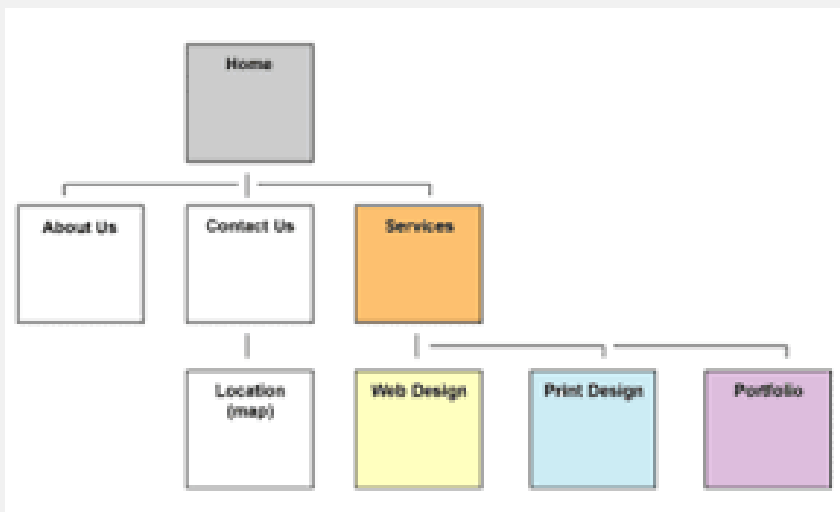
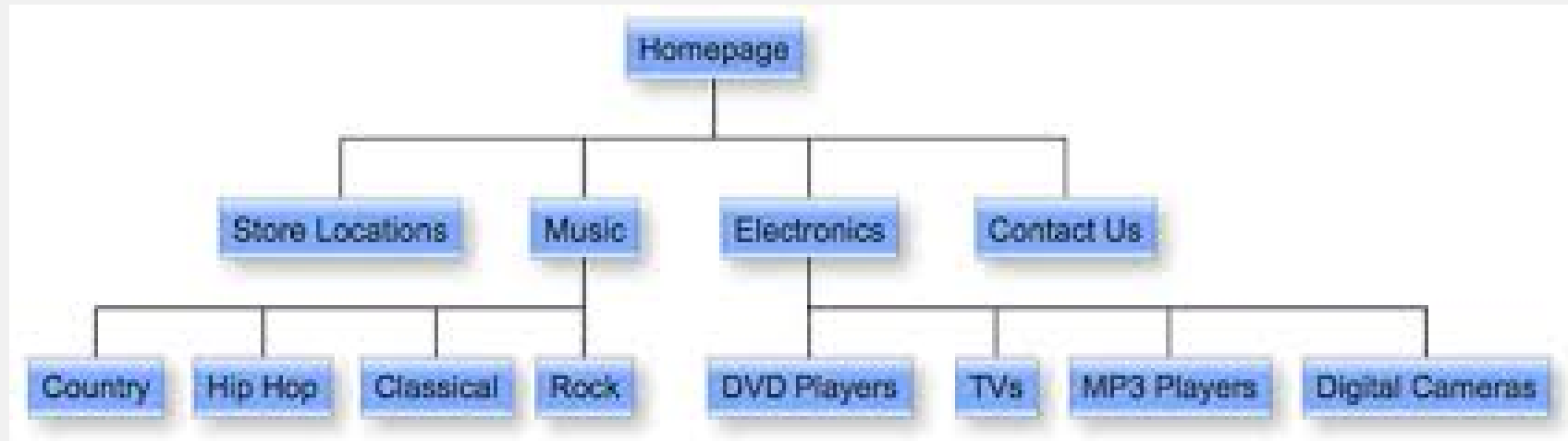


- A series of pages that provide a **tutorial, tour, or presentation.**
- **Sequential** viewing





# Sample Site Maps



# Visual Design Principles

- **Repetition**
  - Repeat visual elements throughout design
- **Contrast**
  - Add visual excitement and draw attention
- **Proximity**
  - Group related items
- **Alignment**
  - Align elements to create visual unity



# Writing for the Web

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- Avoid long blocks of text
- Use bullet points
- Use headings and subheadings
- Use short paragraphs
- Use common fonts:
  - Arial, Helvetica, Verdana, Times New Roman
- Use appropriate text size:
  - medium, 1em, 100%
- Use appropriate line length
  - Between 50-75 characters is recommended
- Use strong contrast between text & background
- Use columns instead of wide areas of horizontal text

# More Text Design Considerations

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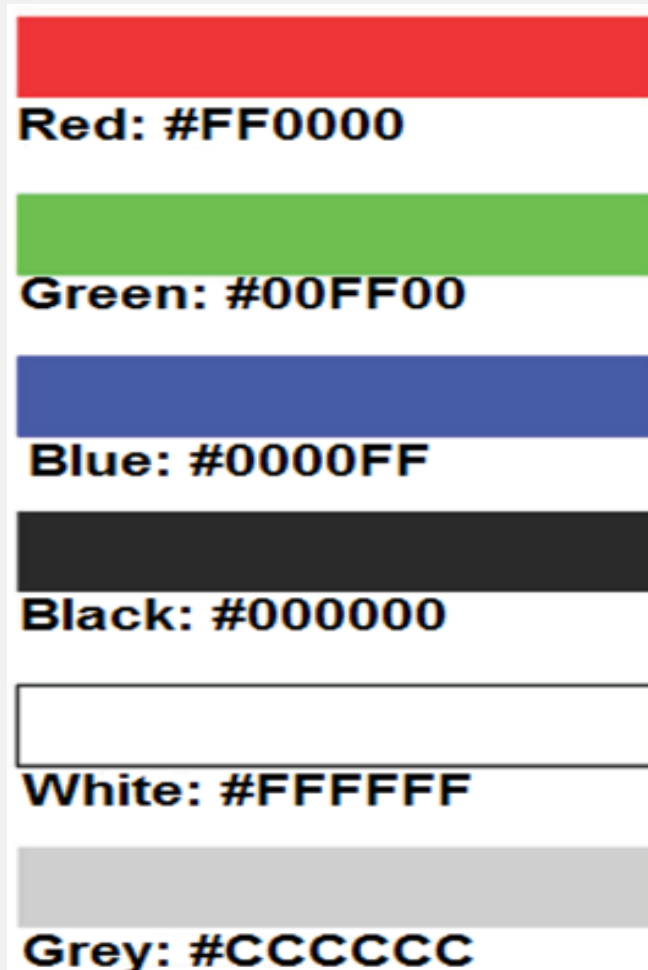
- Carefully choose text in hyperlinks
  - Avoid “**click here**”
  - Hyperlink key words or phrases (eg. [Book Ticket](#))
  - Do not hyperlink entire sentences
- Chek yur spellin (Check your spelling !!)

# Using Color on Web Pages

- Computer monitors display color as intensities of red, green, and blue light
- RGB Color
- The values of red, green, and blue vary from 0 to 255.
- Hexadecimal numbers (base 16) represent these color values.

#FFFFFF	#FFFFCC	#FFFF99	#FFFF66	#FFFF33	#FFFF00
#FFCCFF	#FFCCCC	#FFCC99	#FFCC66	#FFCC33	#FFCC00
#FF99FF	#FF99CC	#FF9999	#FF9966	#FF9933	#FF9900

# Hexadecimal Color Values



- # indicates a hexadecimal value
- Hex value pairs range from 00 to FF
- Three hex value pairs describe an RGB color



# Web Color Palette

#FFFFFF	#FFFFCC	#FFFF99	#FFFF66	#FFFF33	#FFFF00
#FFCCFF	#FFCCCC	#FFCC99	#FFCC66	#FFCC33	#FFCC00
#FF99FF	#FF99CC	#FF9999	#FF9966	#FF9933	#FF9900
#FF66FF	#FF66CC	#FF6699	#FF6666	#FF6633	#FF6600
#FF33FF	#FF33CC	#FF3399	#FF3366	#FF3333	#FF3300
#FF00FF	#FF00CC	#FF0099	#FF0066	#FF0033	#FF0000

- A collection of 216 colors
- Display the most similar on the Mac and PC platforms
- Hex values:  
00, 33, 66, 99, CC, FF
- Color Chart : <http://webdevbasics.net/color>
- Color Picker : [http://www.w3schools.com/colors/colors\\_picker.asp](http://www.w3schools.com/colors/colors_picker.asp)

# Making Color Choices

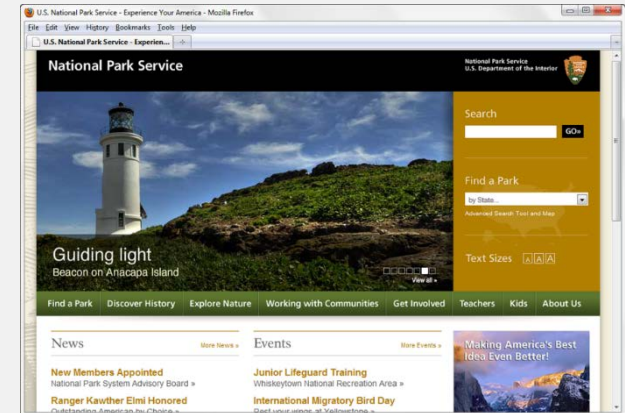
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- How to choose a color scheme?
  - Monochromatic
    - <http://meyerweb.com/eric/tools/color-blend>
    - <http://www.0to255.com>
  - Choose from a photograph or other image
    - <http://www.colr.org>
  - Begin with a favorite color
    - Use one of the sites below to choose other colors
      - <http://www.colorschemedesigner.com>
      - <http://www.colorsontheweb.com/colorwizard.asp>

# Use of Color



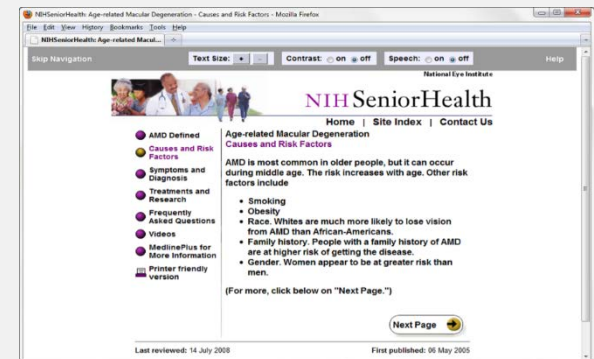
Appealing to Kids & Preteens



Appealing to Everyone



Appealing to Young Adults



Appealing to Older Adults

# Use of Graphics & Multimedia

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- **File size** and **dimension** matters
- Provide for robust navigation
- Anti-aliased/aliased text considerations
- Provide alternate text
- Use only necessary multimedia

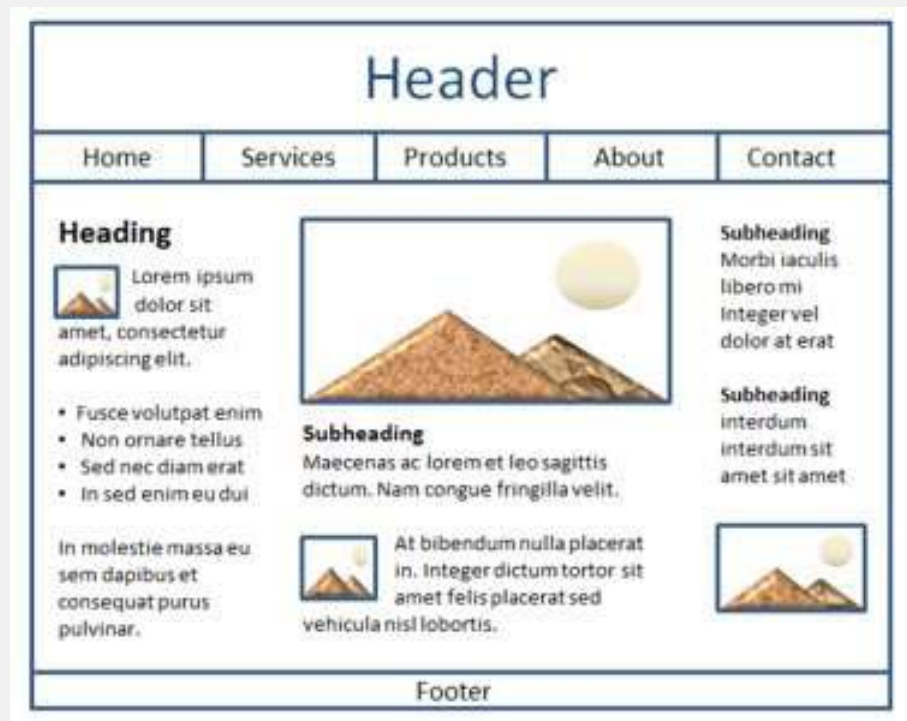
# Navigation Design

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- Make your site easy to navigate
  - Provide clearly labeled navigation in the **same location on each page**
  - Most common – across **top or down**, **left side**
- Consider:
  - Navigation Bars
  - Breadcrumb Navigation
  - Using Graphics for Navigation
  - Dynamic Navigation
  - Site Map Links
  - Site Search Feature

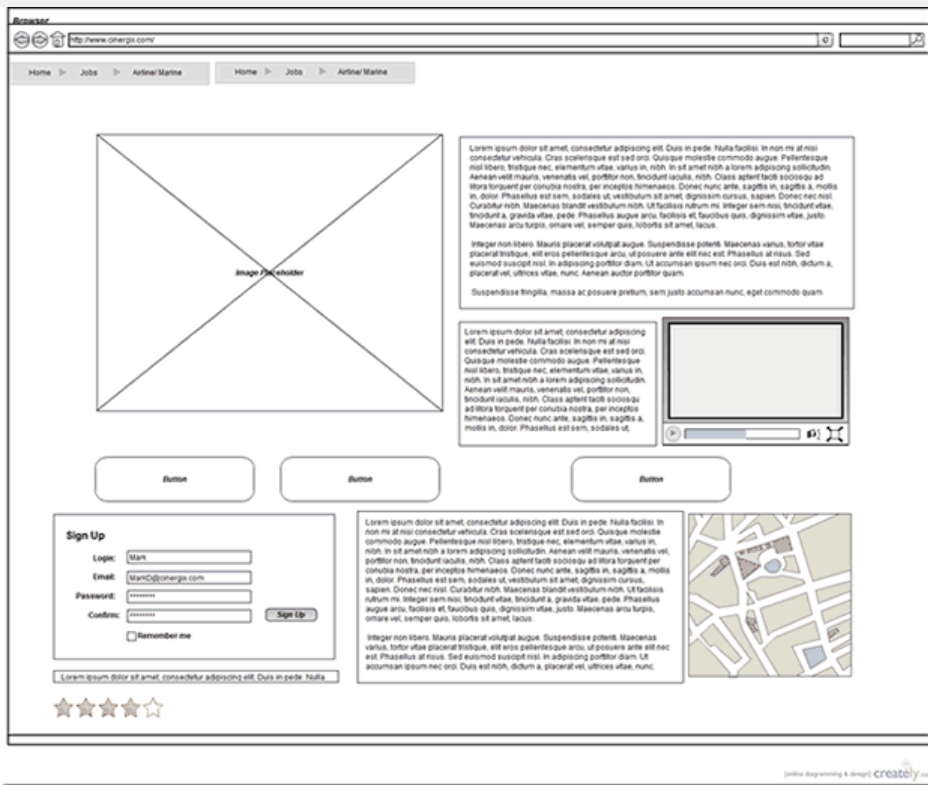
# Wireframe

- A **sketch** of blueprint of a web page
- Shows the **structure** of the basic page elements, including:
  - Logo
  - Navigation
  - Content
  - Footer





# Sample Wireframes



- 1 For Q1 release, music search only
- 2 Related artists determined by user purchasing data mining
- 3 Album art to be approved by legal

# Web Page Design Page Layout (1)

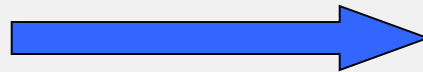
- Place the most important information "above the fold"
- Use adequate "white" or blank space
- Use an interesting page layout



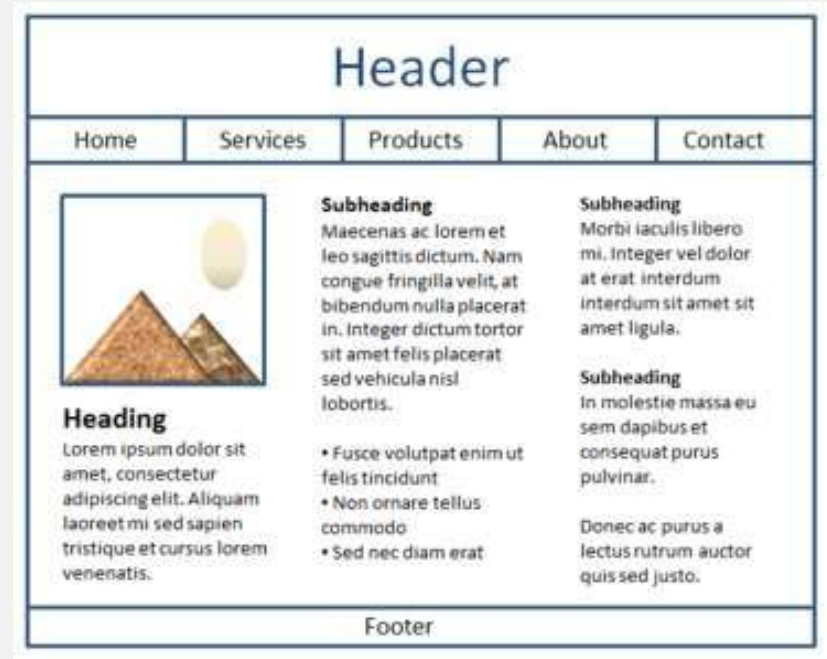
This is usable, but **a little boring**. See the next slide for improvements in page layout.

# Web Page Design Page Layout (2)

**Better**



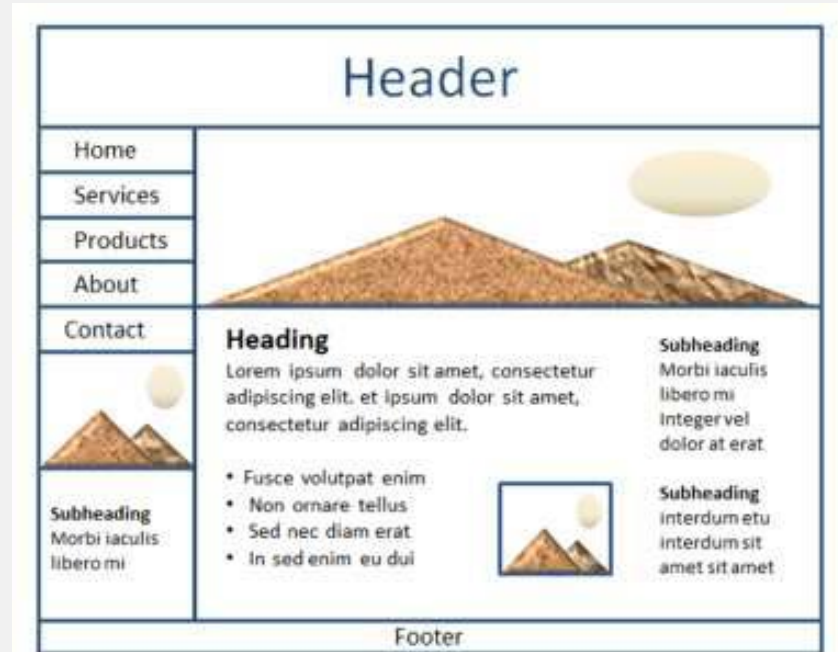
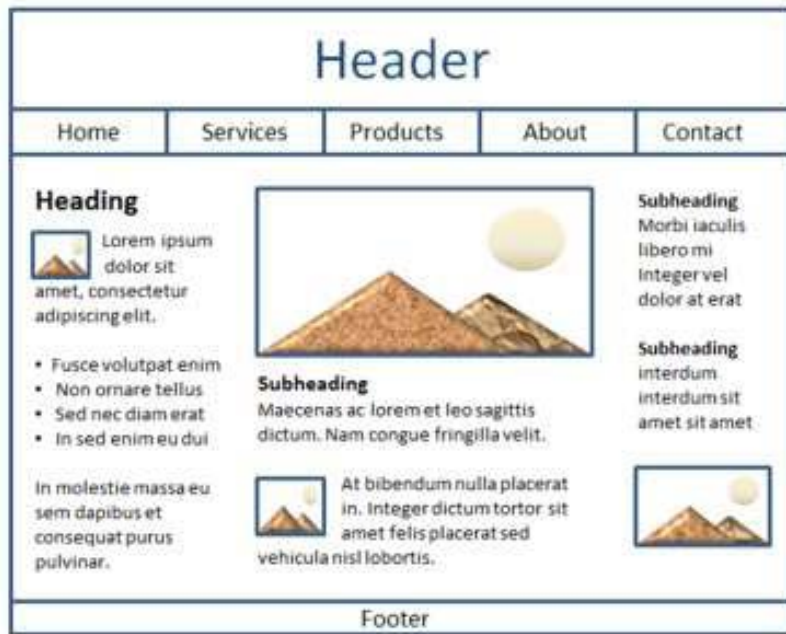
**Columns** make the page more interesting and it's **easier to read** this way.



# Web Page Design Page Layout (3)

## Best

Columns of different widths, interspersed with graphics and headings create the most interesting, easy to read page.



# Page Layout Design Techniques

## Fixed Layout

- AKA rigid or “ice” design
- Fixed-width often at left margin
- More appealing if fixed with **content centered**

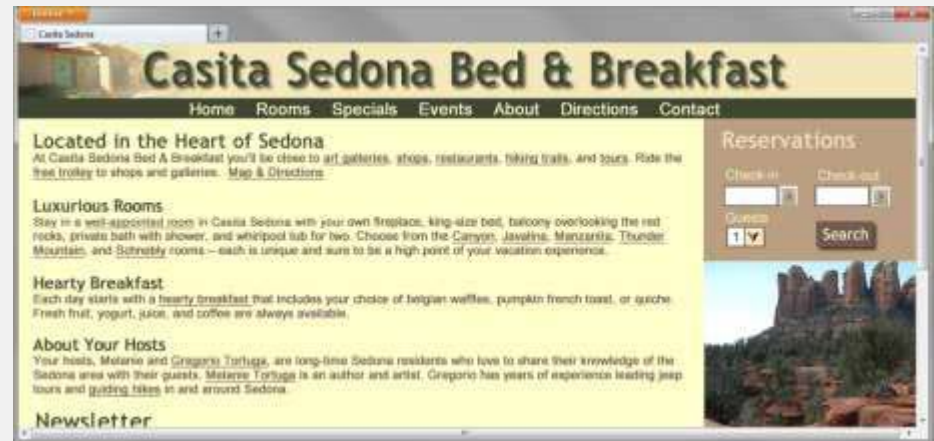




# Page Layout Design Techniques

## Fluid Layout

- AKA “liquid” design
- Expands to fill the browser at all resolutions.



## Adaptation:

- Page content typically **centered**, with a **percentage width** (such as 80%)
- Set **Minimum width**



# Web Design - Best Practices Checklist

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<http://terrymorris.net/bestpractices>

- Page Layout
- Browser Compatibility
- Navigation
- Color and Graphics
- Multimedia
- Content Presentation
- Functionality
- Accessibility

# Final Words on design

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- Avoid Computer-Based Tools in the Early Design Stages
- Designer who work out conceptual ideas **on paper** tend to iterate more and explore the design space **more broadly**. Using computer-based tools tend to take only one idea and work it out in detail.
- When should you move to computer-base tools?
  - when you absolutely must save designs and email them to others.