Outline

- Motivation
- Design patterns in architecture & SE
- Web design patterns
- Home page patterns
How can we Codify Design Knowledge?

- Design Patterns!
- Patterns reflect
  * what designers create
  * what users do on the web across sites
- Web design patterns emerge from how we interact with the world around us
Motivation for Design Patterns

- Most examples from UI literature are critiques
  * Norman, Nielsen, etc.
- Design is about finding solutions
- Unfortunately, designers often reinvent
  * hard to know how things were done before
  * hard to reuse specific solutions
- Design patterns are a solution
  * reuse existing knowledge of what works well
Design Patterns

- First used in architecture [Alexander]
- Communicate design problems & solutions
  * how big doors should be & where...
  * how to create a beer garden where people socialize...
  * how to use handles (remember Norman)...
- Not too general & not too specific
  * use solution “a million times over, without ever doing it the same way twice”
Knit together shops, amusements, and services which are open at night, along with hotels, bars, and all-night diners to form centers of night life: well-lit, safe, and lively places that increase the intensity of pedestrian activity at night by drawing all the people who are out at night to the same few spots in the town. Encourage these evening centers to distribute themselves evenly across the town.
Example from Alexander: *Alcoves*

Make small places at the edge of any common room, usually no more than 6 feet wide and 3 to 6 feet deep and possibly much smaller. These alcoves should be large enough for two people to sit, chat, or play and sometimes large enough to contain a desk or a table.
Design Patterns

Next used in software engineering
[Gamma, et. al.]

* communicate design problems & solutions
  + Proxy: surrogate for another object to control access to it
  + Observer: when one object changes state, its dependents are notified
Design Patterns

- We can do the same for Web Design
  * communicate design problems & solutions
    + how can on-line shoppers keep track of purchases?
      ~ use the idea of shopping in physical stores with carts
    + how do we communicate new links to customers?
      ~ Use consistent colors and mouseover highlights

- Leverage people’s usage habits on/off-line
  * if Yahoo does things a way that works well, use it
Pattern Format

1. Pattern Title
2. Context
3. Forces
4. Problem Statement
5. Solution
   ✅ Solution Sketch
6. Other Patterns to Consider
Example - Alcoves

1. Pattern Title: Alcoves
2. Context: Collaborative and common areas in buildings.
3. Forces Open spaces are inviting, but people want a sense of enclosure for private discussions.
4. Problem Statement Create an space that invites collaboration but also supports private discussion.
Example - Alcoves

5. Solution + sketch

Make small places at the edge of any common room, usually no more than 6 feet wide and 3 to 6 feet deep and possibly much smaller. These alcoves should be large enough for two people to sit, chat, or play and sometimes large enough to contain a desk or a table.
Pattern languages

Alexander emphasized the importance of pattern *languages* - more than just collections of patterns.

Languages are sets of patterns that fill out a design space, and are chosen to complement each other.

Forces in each pattern may explain the relations with other patterns.
Patterns and idioms

- Not every design idea that uses the pattern syntax is a pattern.
- If an idea is too specific (e.g. programming language specific, or architectural style), then it is not a pattern.
- Specific ideas are called *idioms*.
- Similarly, patterns cannot be too general. It must be clear how the pattern should be applied in a context.
Home page design

1. Pattern Title: Home page

2. Context:
   Pages that are the entry point for a web site.

3. Forces
   People are attracted by novelty and good design, attention span is very short on the web, home pages are regularly updated.

4. Problem Statement
   What to capture and hold visitors attention, encourage return visits, and be easy to maintain
Solution sketch
Home Page Design Rules

Strong 1st impressions
* compelling titles & logos
* simple navigation

Modularity simplifies updating
Home Page Design Rules

- Breadth on left
- Highlights articles of general interest in center & right
- Links distinguished
- Subsections further down show more detail in particular areas
Home Page Design Rules

More Forces
* without a compelling home page (H/P), no one will ever go on to the rest of your site
* surveys show millions of visitors leave after H/P
  + most will never come back -> lost sales, etc.
Six Ways to Make a Good Home Page

1. Make a positive first impression by
   * testing
     + appropriate LINK NAMES & FAMILIAR LANGUAGE?
   * looking at GUEST PROFILES (another pattern)
     + appropriate colors & graphics?
       ~ neon green & screaming graphics on a skatingboarding site, but not on a business-to-business or health site
Six Ways to Make a Good Home Page

1. Focus on a single item of interest
   * create a good “first read”
     + draw the eye to a single graphical item
   * make it clean & larger than rest on the page
   * cut down remaining elements to chosen few
Six Ways to Make a Good Home Page

1. Build your site brand
   * present the message of what your company does
   * include the value proposition (promise to visitors)
   + links to CONFIDENTIALITY INFORMATION & SITE ABUSE POLICIES to show you are trustworthy
Six Ways to Make a Good Home Page

3. Make navigation easy to use
   * novices & experts must instantly “get it”
   * use MULTIPLE WAYS TO NAVIGATE
     + basic features of site as EMBEDDED LINKS
     + NAVIGATIONS BARS (there are several types)
     + HTML table COLORED BACKGROUNDS to delineate sections
     + REUSABLE ACCENT GRAPHICS to highlight new things
Six Ways to Make a Good Home Page

1. Lure visitors to return
   * with fresh content
   + keep it updated so there is a reason to come back
   * by seducing with text
   + you have only seconds
     ~ lively, sparkling, precise
Six Ways to Make a Good Home Page

Make it download quickly (2-3 seconds)
- if not, they’ll go elsewhere

Strategies
- use HTML text as much as possible
  + first thing to download
  + images take 10 server-browser comms
- get a web-savvy graphic artist (font colors, styles, & b/g color)
- use small graphics
- use min. number of columns & sections in a grid layout
  + easy to scan
Six Ways to Make a Good Home Page

- Make it download quickly (2-3 seconds)
  - if not, they'll go elsewhere. Which have left due to slowness?
Break
Pattern Examples

Personalizing your home page
Personalizing Your Home Page

Problem
* web sites would like to have visitors return often
  + to buy, see ads, use services, etc.

Context
* E-commerce and portal sites (Amazon, Yahoo...)

Forces
* if your content isn’t changing & personal, users less likely to return or stay
Personalizing Your Home Page

Solution

* personalization
+ a home page that is customized for each visitor
for new users

for returning users

solution diagram
How to Personalize Your Page

1. Gather information from GUEST PROFILES & use it to build a site that
   * holds their interest
   * looks customized just for them

2. Visitors will need to trust you
   * to give this information directory/indirectly
   * must use for their benefit only

3. Four ways to collect information?
   * edit, interview, deduce, collaborative filtering
How to Personalize Your Page
How to Personalize Your Page
Editing Personalization Info

- Visitors click on buttons to make selections from lists
  - weather cities
  - news sources
  - stocks to follow
  - sports to follow
  - …

- Include content modules based directly on selections

- Drawbacks to this approach?
  - can get tedious if you have to do it repeatedly
  - users won’t spend time entering info if little benefit

my.yahoo.com is a good example of editing for personalization
Interviewing for Personalization Info

1. Visitors answer multiple choice questions
2. Update GUEST PROFILE
3. Include CONTENT MODULES based on one or more scoring methods
4. Allow the option of continuing the personalization process over time

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Take Charge

The way we feel day in and day out can tell us volumes about the overall state of our health. Small problems that we ignore can indicate a chronic illness. For example, we may take fatigue, indigestion or skin irritations for granted and accept a fairly poor state of physical health as our ‘lot in life.’ However, natural practitioners look at the whole picture of our day-to-day health and take note of our sleeping and eating patterns, our overall energy levels, and our list of “small” health problems. All of this, when looked at together, can give an accurate reading of our physical condition and what can be done to improve it. Our parents or close relatives are also indicators

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Step 2: Personal and Family Health Matters

1. Have either your parents, siblings, or close blood relatives had cancer or heart disease?  
2. Are you taking medications or recovering from an illness or surgery?  
3. Do you presently have chronic allergies, inflammation (including arthritis) or environmental sensitivity?  
4. Do you have elevated blood cholesterol?  
5. Do you suffer from chronic low energy or easy fatigue?  
6. Do you have blotchy reddish skin, cracks at corner of the mouth or “shark-like” skin on back of your arms or legs?  
7. Do you have problems seeing in dim light or are you unusually sensitive to bright light?  
8. Do you have difficulty managing the stress in your life?  
9. Do you have sleep disturbances or the inability to concentrate?  
10. Do you tend to get most infections that go around?  
11. Do you have chronic indigestion or problem digesting many foods?  
12. Do you have a lower libido that you think you should?  
13. Do you awake frequently at night to urinate or have difficulty in urinating?

Next Step >>
Deduction for Personalization Info

- Watch visitors behavior
  - Amazon tracks the books visitors order & later offers similar books
- Update GUEST PROFILE
- Select content modules based on scoring method
Collaborative Filtering for Personalization Info

- First provide popular content based on all visitors
- Provide customized content modules based on similar guest profiles
  - use correlation of profiles to determine areas of interest
Scoring Methods to Match Content to Audience

- **Rank**
  - * show ordered list of content

- **Top rank**
  - * content of only the top few scores shown

- **Threshold score**
  - * show all content over a particular score

- **Required attributes**
  - * show all content that is on “NCAA Sports”

- **Combination**
  - * e.g., job site might use top rank & required attributes to show best jobs a person is qualified for