Requirements to Prototype

COMP3511/9511 Human Computer Interaction

Alex Mednis

Adapted from slides by Dr Daniel Woo and Dr Nadine Marcus

So far

- Week 1
  - The language of usability evaluation and critique
- Week 2
  - Accessibility
  - Creative thinking

Last Week

- Week 3
  - Scenarios
  - People involved
  - Techniques to discover information about users
  - Started looking at data gathering for requirements

This Week

- Week 4
  - Continue with data gathering for requirements
  - Consideration for information requirements

This Week

- Just starting to look at screen sequence and layout
- Interaction design is not only about the visual look and feel of the user interface, it is SO much more

Requirements

Requirements

- Functional
- Non-functional
- Specific, non ambiguous
- Iterative
- Will be influenced by data gathering

Data Gathering

- Questionnaires
- Interviews
- Focus Groups and Workshops
- Naturalistic Observation
- Studying Documentation

Product Description Statement

30 words or less

Describe what the product will do to meet the users goals

Sample Product Description Statement

- This interactive utilizes a virtual steering wheel control system for user exploration. The user points on a virtual map, to trigger information including transportation details. 'Auto-exploration' triggers a passive learning mode.

Sample Product Description Statement

- Our exhibit will present a graphical interactive museum exhibit exploring the history of fuels used in transportation with focus on current and future technologies. It will be presented to appeal to anyone with minimal computer knowledge. Different transport eras can be explored through an engaging first person view and the efficiency of different fuels compared.

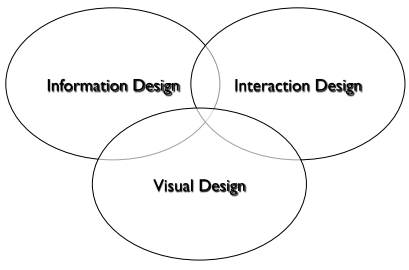
Sample Product Description Statement

- Our graphical interactive museum exhibit explores the history of fuels used in transportation, focussing on current and future technologies. Different transport eras can be explored, and users can compare the efficiency of different fuels.

Trilogy

Trilogy

- Components of a user interface can be broken down into three parts
  - Information Design
  - Interaction Design
  - Visual Design



From Hiser

Information Design

How might we represent information users access in our designs?

Information Design

- Information meaning/usefulness
- Structure of data
- Hierarchies
- Relationships

Information Design

- Discover how information is used
- What elements constitute a meaningful piece of information
- How information is combined at different stages of the process

Information Design

- Formulated as the requirements for the system are uncovered
- An existing paper based system will reveal the groups of information that need to be present in one place to make a meaningful unit of information
- Involves talking with the users of the system

Information and Interaction

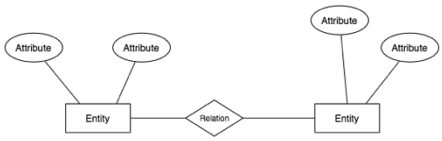
- Through your research understand the information that will be required in the system
- Consider, but do not lock yourself into, possible interaction styles and interaction paradigms

Entity Relationship Diagramming

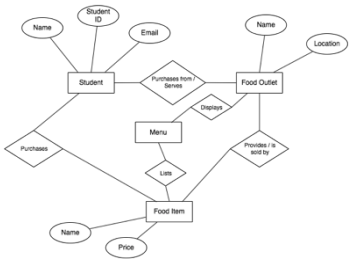
- Entities
  - Nouns
- Relationships
  - Verbs
- Attributes
  - Properties of the entities

http://www.umsl.edu/~sauterv/analysis/er/er_intro.html

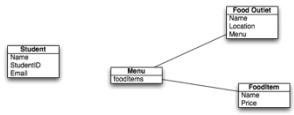
ERD



ERD

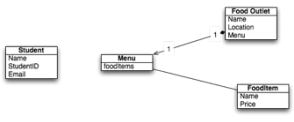


UML Class Diagram



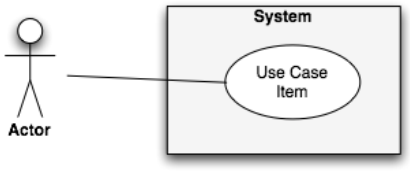
Also see http://www.holub.com/goodies/uml/

UML Class Diagram

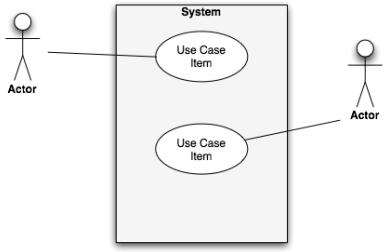


food outlet has a menu
food outlet has one menu
the menu belongs to one food outlet

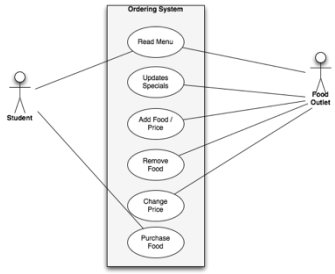
Use Cases



Use Cases



Use Case



Prototyping

Forms of a Prototype

- Paper mock up of screens
- Storyboard
- Card board mock up
- Wizard of Oz
  - a prototype that works by having someone behind-the-scenes who is pulling the levers and flipping the switches
- 3D object (physical devices, Palm)
- Electronic mock up

Keep it?

- Evolutionary Prototyping
  - Each prototype is a real piece of the final product
- Throw away prototype
  - Prototypes don't go into production systems

Process

- Prototyping is iterative
- Communicate aspects of the design

Fidelity

- Low Fidelity
- High Fidelity

Horizontal vs Vertical Prototyping

- Horizontal
  - broad, lots of functions
- Vertical
  - analyse functionality quite deeply, not many functions

Table 8.1 Relative effectiveness of low- vs. high-fidelity prototypes (Rudd et al., 1996)

Type	Advantages	Disadvantages
Low-fidelity prototype	• Lower development cost. • Evaluate multiple design concepts. • Useful communication device. • Address screen layout issues. • Useful for identifying market requirements. • Proof-of-concept.	• Limited error checking. • Poor detailed specification to code to. • Facilitator-driven. • Limited utility after requirements established. • Limited usefulness for usability tests. • Navigational and flow limitations.
High-fidelity prototype	• Complete functionality. • Fully interactive. • User-driven. • Clearly defines navigational scheme. • Use for exploration and test. • Look and feel of final product. • Serves as a living specification. • Marketing and sales tool.	• More expensive to develop. • Time-consuming to create. • Inefficient for proof-of-concept designs. • Not effective for requirements gathering.

ID, p246

In Favour of Low Fidelity Prototyping

- Rettig (ID p535) on high fidelity prototypes
  - They take too long to build
  - Reviewers and tests tend to comment on superficial aspects rather than content
  - Developers are reluctant to change something they have crafted for hours

In Favour of Low Fidelity Prototyping

- A software prototype can set expectations too high
- Just one bug in a high fidelity prototype can bring the testing to a halt

Prototyping

- Prototypes will be based on the previous user centred design activities
  - Product objectives
  - User research
  - Scenarios
  - Information design

Storyboards

- The sequence of interactions will be an important tool in the design process to help visualise the order of activities and events
- Screen layouts will be used in the storyboard images
- Also review any flow charts that were derived earlier in the process

Evolution

- As you understand more about your user goals and the business domain you will understand the priority of competing goals
- This should suggest high priority scenarios that are very important factors for success
- Cooper (About Face) refers to these as key path scenarios

Scenarios

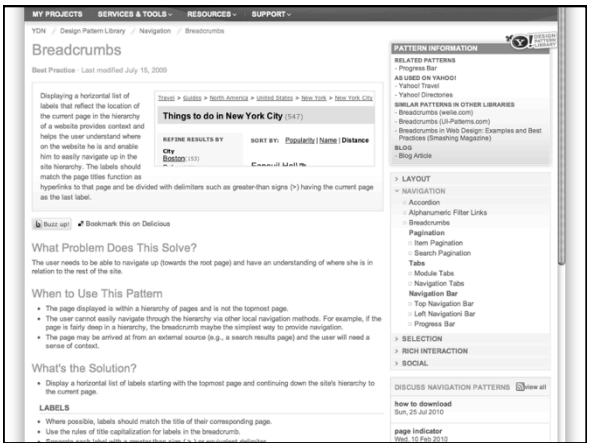
- Scenarios will help you validate your design
- Read the scenarios and compare against the design - do they still meet the original goals?

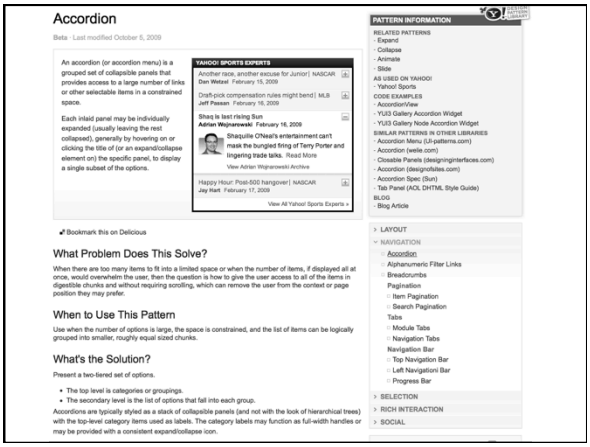
Design Patterns

- There are common user interface elements used in user interface design
- Button - presents an affordance to invite clicking, has a label, does something when pressed
- Breadcrumbs - gives a user a linear view of a hierarchy
- Accordion - grouped set of collapsible panels that gives access to large number of links in constrained space

Links

- http://developer.yahoo.com/ypatterns/
- http://developer.yahoo.com/ypatterns/navigation/breadcrumbs.html
- http://developer.yahoo.com/ypatterns/navigation/accordion.html




Accordion
Beta · Last modified October 5, 2009
An accordion (or accordion menu) is a grouped set of collapsible panels that provides access to a large number of links or other selectable items in a constrained space.
Each inlaid panel may be individually expanded (usually leaving the rest collapsed), generally by hovering on or clicking the title of (or an expand/collapse element on) the specific panel, to display a single subset of the options.
YAHOO! SPORTS EXPERTS
Another race, another excuse for Junior | NASCAR
Dan Wetzel February 15, 2009
Draft-pick compensation rules might bend | MLB
Jeff Passan February 16, 2009
Shaq is last rising Sun
Adrian Wojnarowski February 16, 2009
Shaquille ONeal's entertainment can't mask the bungled firing of Terry Porter and lingering trade talks. Read More
View Adrian Wojnarowski Archive
Happy Hour: Post-500 hangover | NASCAR
Jay Hart February 17, 2009
View All Yahoo! Sports Experts »
Bookmark this on Delicious
What Problem Does This Solve?
When there are too many items to fit into a limited space or when the number of items, if displayed all at once, would overwhelm the user, then the question is how to give the user access to all of the items in digestible chunks and without requiring scrolling, which can remove the user from the context or page position they may prefer.
When to Use This Pattern
Use when the number of options is large, the space is constrained, and the list of items can be logically grouped into smaller, roughly equal sized chunks.
What's the Solution?
Present a two-tiered set of options.
The top level is categories or groupings.
The secondary level is the list of options that fall into each group.
Accordions are typically styled as a stack of collapsible panels (and not with the look of hierarchical trees) with the top-level category items used as labels. The category labels may function as full-width handles or may be provided with a consistent expand/collapse icon.
PATTERN INFORMATION
RELATED PATTERNS
Expand
Collapse
Animate
Slide
AS USED ON YAHOO!
Yahoo! Sports
CODE EXAMPLES
AccordionView
YUI3 Gallery Accordion Widget
YUI3 Gallery Node Accordion Widget
SIMILAR PATTERNS IN OTHER LIBRARIES
Accordion Menu (UI-patterns.com)
Accordion (welie.com)
Closable Panels (designinginterfaces.com)
Accordion (designfollites.com)
Accordion Spec (Sun)
Tab Panel (AOL DHTML Style Guide)
BLOG
Blog Article
LAYOUT
NAVIGATION
Accordion
Alphanumeric Filter Links
Breadcrumbs
Pagination
Item Pagination
Search Pagination
Tabs
Module Tabs
Navigation Tabs
Navigation Bar
Top Navigation Bar
Left Navigationi Bar
Progress Bar
SELECTION
RICH INTERACTION
SOCIAL