How do we design for interactive systems?

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Objectives

- Some basic design concepts
- Principles design for interactive systems

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What does a web designer do?

- The term “web design” is a process that encompasses a number of different disciplines:
  - user experience design
  - Document markup
  - Serious programming
- “Designer” often is responsible for more than one (if not all) of these responsibilities.
  - Interaction Design (IxD)
  - User Interface (UI) design
  - User Experience (UX) design

Interaction Designer

- Is to make the site as easy, efficient, and delightful to use as possible
- There are some principles in Interaction.
- Focused on the functional organization of the page as well as the specific tools:
  - Button
  - Links
  - Menus
  - …

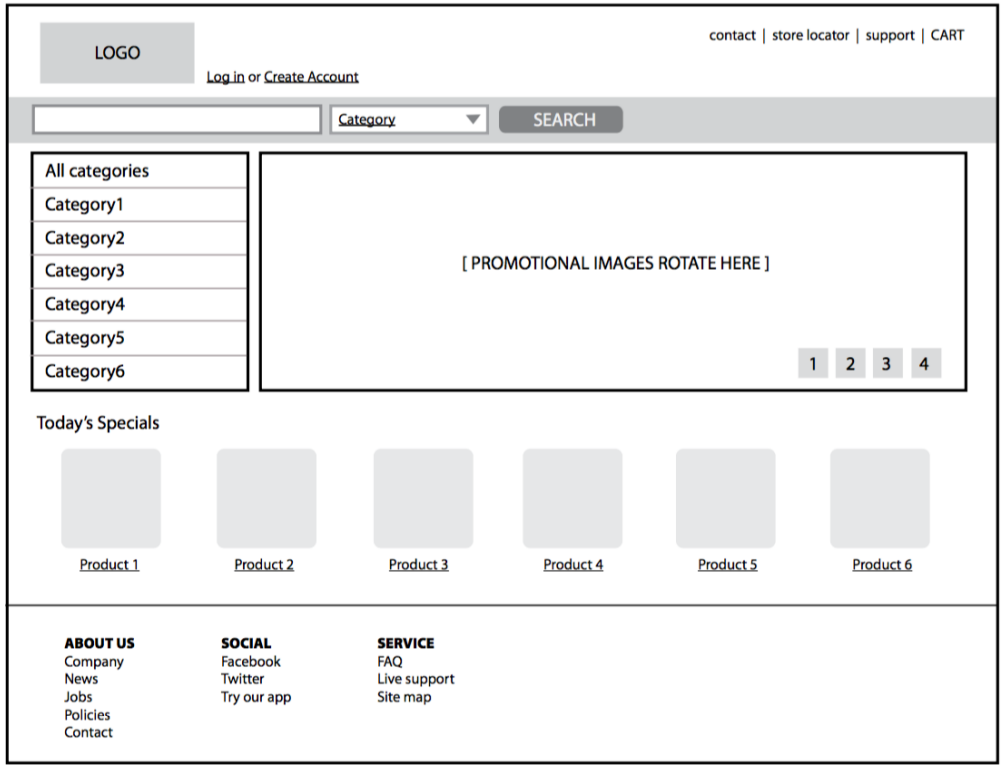
  that users use to navigate content or accomplish tasks

User Experience Designer (UX Designer)

- Ensuring the entire experience with the site is favorable
- Based on a solid under- standing of users and their needs based on observations and interviews
- Includes “all aspects of the user’s interaction with the product: how it is perceived, learned, and used.”
- For a website or application, that includes
  - The visual design,
  - the user interface
  - the quality and message of the content, and even overall site performance

Wireframe diagrams

- A wireframe diagram shows the structure of a web page using only outlines for each content type and widget



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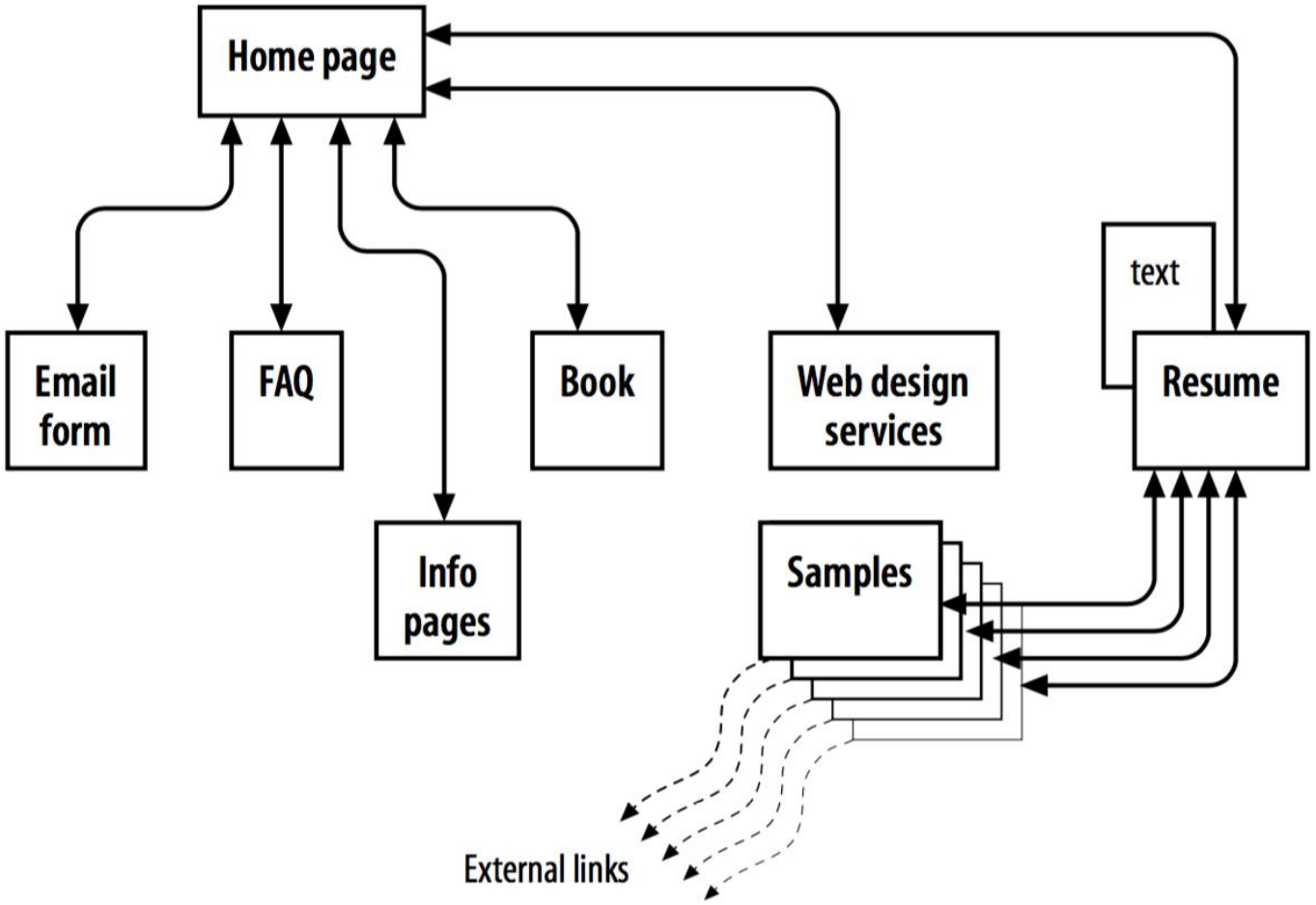
Site diagram



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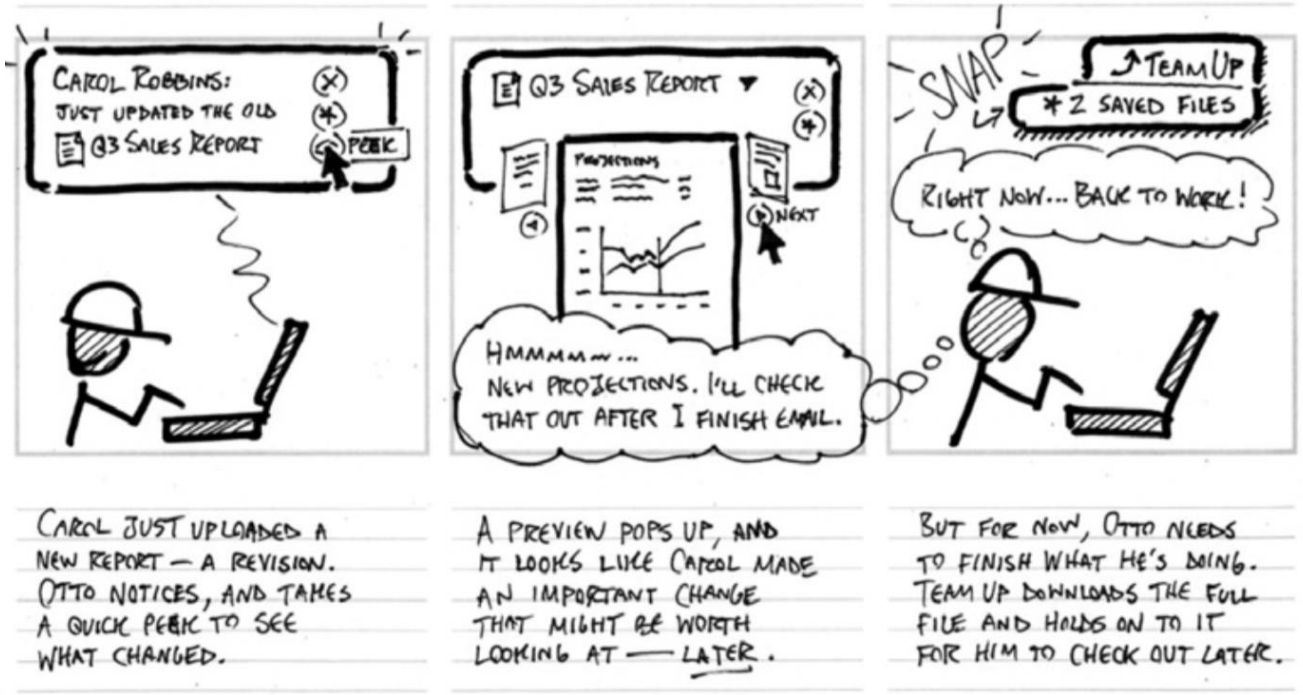
Storyboard

- The storyboard aims to demonstrate the steps it takes to accomplish tasks, possible options, and also introduces some standard page types



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What Languages Do I Need to Learn?

- Hypertext Markup Language (HTML)
- Cascading Style Sheets (CSS)
- JavaScript and DOM scripting
- Server-side programming and database management

Hypertext Markup Language (HTML)

- It is a markup language for identifying and describing the various components of a document such as headings, paragraphs, and lists

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Cascading Style Sheets (CSS)

- Describe how that content should *look such as:* fonts, colors, background images, line spacing, page layout, and so on...

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JavaScript/DOM scripting

- Is a scripting language that is used to add interactivity and behaviors to web pages
  - Checking form entries for valid entries
  - Swapping out styles for an element or an entire site
  - Making the browser remember information about the user for the next time she visits
  - Building interface widgets, such as expanding menus

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Server-side programming and database management

- To create dynamic websites. The following programming languages which support serverside programming:
  - PHP (CakePHP, CodeIngniter, Drupal)
  - Python (Django, TurboGears)
  - Ruby (Ruby on Rails, Sinatra)
  - JavaScript (Node.js, Rhino, SpiderMonkey)
  - Java (Grails, Google Web Toolkit, JavaServer Faces)
  - ASP.Net (DotNetNuke, ASP.Net MVC)

Hardware supports web design

- A solid, up-to-date computer.
- Extra memory
- A large monitor
- A scanner and/ordigital camera.
- A second computer (to test website).
- Mobile devices (to test website).
- What about virtual machines to support test both on Mac and Windows?????

Software supports web design

- Web page authoring
  - …..
- HTML editors
  - …..a
- Image editing and drawing software
  - …..
- Internet tools
  - …..
- Networking
  - ..

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Popular Web Design Software Links

AT A GLANCE

Popular Web Design Software Links

Web page authoring

Adobe Dreamweaver *www.adobe.com*

Microsoft Expression Web *www.microsoft.com/products/expression*

Nvu (open source web page editor) *www.nvu.com*

HTML editing

TextMate by MacroMates for Mac OS *www.macromates.com*

Sublime Text *www.sublimetext.com*

TextPad for Windows *www.textpad.com*

Coda by Panic Software *www.panic.com/coda/*

BBEdit by Bare Bones Software *www.barebones.com*

Image editing and drawing

Adobe Photoshop *www.adobe.com*

Adobe Photoshop Elements *www.adobe.com*

Adobe Illustrator *www.adobe.com*

Adobe Fireworks *www.adobe.com*

Corel Paint Shop Pro Photo *www.corel.com/paintshoppro*

GIMP *gimp.org*

Browsers

Microsoft Internet Explorer (Windows only) *www.microsoft.com/windows/internet-explorer/*

Firefox *www.firefox.com*

Google Chrome *www.google.com/chrome*

Opera *www.opera.com*

Safari *www.apple.com/safari*

Networking

WS_FTP, CuteFTP, AceFTP, and others for Windows available at: *www.download.com*

Transmit (for Macintosh OSX) *www.panic.com/transmit*

Cyberduck (for Macintosh OSX) *cyberduck.ch*

Fetch (for Macintosh OSX) *fetchsoftworks.com*

Cygwin (Linux emulator for Windows) *www.cygwin.com*

PuTTY (telnet/SSH terminal emulator) *www.chiark.greenend.org.uk/~sgtatham/putty/*

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Principles for web design

- As the Web matures and the number of devices we access it from increases exponentially, our jobs as web designers and developers get significantly more complicated.
- Some basic principles of web design
  - The multitude of devices
  - Web standards
  - Progressive enhancement
  - Responsive web design
  - Accessibility
  - Site performance

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A Dizzying Multitude of Devices

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Mobile Web?

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Sticking with the Standards

- One good start is to follow the HTML, CSS, and JavaScript standards as documented by the World Wide Web Consortium (W3C)

> *Sticking with web standards is your primary tool for ensuring your site is as consistent as possible.*

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Progressive Enhancement

- With a multitude of browsers comes a multitude of levels of support for the web standards. Progressive enhancement is one strategy for dealing with unknown browser capabilities
- Authoring strategy: HTML document is written in logical order and its elements are marked up in a meaningful way
- Styling strategy: You can create layers of experiences simply by taking advantage of the way browsers parse style sheet rules
- Scripting strategy: The first rule in progressive enhancement is to make sure basic functionality— such as linking from page to page or accomplishing essential tasks like data submission via forms—is intact even when JavaScript is off. In this way, you ensure the baseline experience, and enhance it when JavaScript is available.

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Responsive Web Design

One Web for All (Accessibility)

- Web designers must build pages in a manner that creates as few barriers as possible to getting to information, regardless of the user's ability and the device used to access the Web. In other words, you must design for accessibility.
- Accessible sites are also more effectively indexed by search engines such as Google. The extra effort in making your site accessible is well worth the effort.
- There are four broad categories of disabilities that affect how people interact with their computers and the information on them: Vision impairment, mobility impairment, auditory impairment, cognitive impairment

One Web for All (Accessibility)

- **Vision impairment**: People with low or no vision may use an assistive device such as a screen reader, braille display, or a screen magnifier to get content from the screen. They may also simply use the browser's text zoom function to make the text large enough to read.
- **Mobility impairment**: Users with limited or no use of their hands may use special devices such as modified mice and keyboards, foot pedals, or joysticks to navigate the Web and enter information.
- **Auditory impairment**: Users with limited or no hearing will miss out on audio aspects of multimedia, so it is necessary to provide alternatives, such as transcripts for audio tracks or captions for video.
- **Cognitive impairment**: Users with memory, reading comprehension, problem solving, and attention limitations benefit when sites are designed simply and clearly. These qualities are helpful to anyone using your site.

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The Need for Speed (Site Performance)

- Optimizing images so they are the smallest file size possible without sacrificing quality
- Minimize HTML and CSS documents by removing extra character spaces and line returns Don’t load unnecessary assets (such as images, scripts, or JavaScript libraries).
- Keep JavaScript to a minimum.
- Add scripts in a way that they load in parallel with other page assets and don’t block rendering.
- Don’t load unnecessary assets (such as images, scripts, or JavaScript libraries).
- Reduce the number of times the browser makes requests of the server: All those little Twitter widgets, Facebook Like buttons, and advertisements can make dozens of server requests each

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Search engine optimization

- The goal of website
  - Get more view/hit on the website
  - More people know about/use the product or service of the website
- Role of Search engine
  - Help advertise the website
  - Boots the ranking of the website
- It also ensures that search engines like Google will catalog the content correctly. A clean HTML document with its elements accurately and thoroughly described are the foundation for accessibility

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Search engine optimization

- Use keywords in choosing domain name
- Don’t forget a Good title for the web site
- Choosing the best element for your content
- Paragraphs and headings: search engines look at heading levels as part of their algorithms (information in higher heading levels may be given more weight)

Don’t Forget a Good Title

Not only is a **title** element required for every document, it is quite useful as well. The title is what is displayed in a user’s Bookmarks or Favorites list and on tabs in desktop browsers. Descriptive titles are also a key tool for improving accessibility, as they are the first thing a person hears when using a screen reader. Search engines rely heavily on document titles as well. For these reasons, it’s important

```
<h1>Type Design</h1>

<h2>Serif Typefaces</h2>
<p>Serif typefaces have small slabs at the ends of letter strokes.
In general, serif fonts can make large amounts of text easier to
read.</p>
```

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Search engine optimization

- A semantically marked up document ensures your content is available and accessible in the widest range of browsing environments. It also allows search engine to correctly parse your content and make decisions about the relative importance of elements on the page.
  - Three types of lists
  - Organizing content into sections
  - Text-level (inline) elements
  - Generic elements, *div* and *span*
  - Special characters

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References

- Jennifer Niederst Robbins, 2012. Learning Web Design 4th ed. Oreilly.