Perangkat Lunak Aplikasi Web

Design for Software

Pasca Sarjana UG
TYPICAL LIFE CYCLE

Phases in Web Development and Deployment

- Analysis
  - User Requirement Analysis
  - System Design
  - Prototyping

- Design
  - Database and Coding

- Implementation
  - Testing
  - Training
  - Change Over

- Operational
  - Maintenance
Design for Software: A Playbook for Developers, Erik Climzczak, 2013

**PART I  PLANNING**
1. RESEARCH
2. INSPIRATION

**PART II  DESIGN THINKING**
3. SKETCHING
4. INFORMATION ARCHITECTURE
5. WIREFRAMES
6. PROTOTYPING

**PART III  VISUAL DESIGN**
7. COLOR
8. DIGITAL TYPOGRAPHY
9. VISUAL COMMUNICATION
10. MOTION

**PART IV  INTERACTION DESIGN**
11. INTERACTION DESIGN PRINCIPLES
12. DESIGN PATTERNS
Introduction

- Design for Software connects the dots between these elements (Cognitive Psychology, Visual Aesthetics and Engineering Excellence) with a process that approaches the mechanics of design with real-world techniques.

- **Interface design** is often equated to knowing design tools like Photoshop and Illustrator—creating gradients, drop shadows, and the quintessential glass-themed buttons. That is one type of design.

- **Design for Software** is something else, “a method for producing applications that look great and people want to use”
I. Planning

• Well-designed software doesn’t start with a functional requirements list, pretty pictures, or a slick algorithm. It starts with **people**

• **USER RESEARCH TECHNIQUE #1: OBSERVATION**

• Observation is perhaps the easiest, cheapest, and quickest way to elicit real feedback from your target audience. Simply observing users in their environment can be an invaluable tool to keep in your software-design utility belt.
Case study observation

• A couple of years ago, my company was consulted on a project in which the client wanted to increase the efficiency of the retail checkout processes. You know the scene—you’re standing in a checkout line noting that there are 30 registers, with only one servicing customers. So, you decide to ditch your basket and walk. That was precisely the problem we were asked to resolve. The client voiced the problem loud and clear: “Time is money, and saving even one second per transaction matters.”

• First, we observed transactions at the checkout lane as they happened in real time. As we began our investigation, we noticed the whole process was peppered with little bottlenecks. Most peculiarly, the total checkout time was only loosely correlated to the basket size. Curious about what was causing these bottlenecks, we looked deeper into the tasks involved with ringing up a customer. We timed everything from how long it took to bag milk and weigh produce to how long it took to return cash and accept electronic payments.
Case study observation

- We discovered one consistent bottleneck—ringing up of produce. All those tasty apples, onions, and spices caused the average transaction to take up to six times longer than other items. This bottleneck occurred because each produce item had a unique barcode found by combing through a little black code book. Every time a produce item came across the belt, employees had to flip through this book, which disrupted the whole checkout process. At that point, we had our key insight, and it was clear what we had to do: eliminate the black book and make ringing up produce as fast as possible.
USER RESEARCH TECHNIQUE #2: USER INTERVIEWS

As the interviewer, you’re on a mission to find out exactly what users want.

• We’re bad at articulating what makes us happy.
• We’re bad at predicting what we’ll like or dislike.
• We’re bad at giving feedback on things we don’t care about.

Get the right users

Depending on the project, I usually try to find the following:

• Existing users, Potential users, Power users
• Former users (these are the best users to interview)
USER RESEARCH TECHNIQUE #2: USER INTERVIEWS

Wrong questions, wrong answers
• Avoid closed questions, Anda senang menggunakan software ‘X’ ini?

• Avoid leading questions, Apakah benar anda lebih produktif ketika menggunakan software ‘X’?

• Use open-ended questions, Ceritakan apa manfaat anda menggunakan software ‘X’?
USER RESEARCH TECHNIQUE
#3: PERSONAS : Using personas helps keep your feature list focused on primary users.

<table>
<thead>
<tr>
<th>PERSONA: Jamie Smith</th>
</tr>
</thead>
</table>

**DEMOGRAPHIC INFO**
- **AGE**: 28
- **GENDER**: Male
- **JOB TITLE**: Account manager
- **LOCATION**: Chicago, IL
- **SKILL LEVEL**: Intermediate

**QUOTES**
- "I hate it when a client drops a bomb on me and I didn’t expect it."
- "So many spreadsheets and emails...I wish I could see everything in one place at a glance."
- "I like to try new apps and sites that my friends and co-workers recommend."

**GOALS**
1. Keep boss informed
2. Stay up to date with the project team
3. Submit information as quickly as possible, ideally in real-time
4. Have a clear inbox before the end of the day

**MOTIVATIONS**
- Feel in control of my day
- Likes to meet interesting people to add to his personal network
- Be prepared for client meetings
- Head off problems before they become critical
- Maintain a good relationship with the client

**BEHAVIORS**
- Uses smart phone ‘off the clock’ to respond to emails
- Works on many projects at once and infrequently focuses on task at a time
- Keeps a messy computer desktop mixed with shortcuts, old files, new files, and applications.
- Frequently travels onsite to the client and uses VPN to access network files

**PAIN POINTS**
- Has to use too many programs to complete a single task
- Lack of consistency makes it hard to remember how to perform certain actions
- Most of the data is unavailable via mobile device
- The information is not real-time
USER RESEARCH TECHNIQUE #4: USER STORIES AND SCENARIOS

• To assist with creating scenarios and stories, you can use a method called P.I.E.C.E.
  ◆ Persona: Who are you targeting?
  ◆ Intrigue: What attracts users to the product?
  ◆ Engage: How do you help users achieve their goals?
  ◆ Close: How do users exit the scenario?
  ◆ Extend: How can the user extend the experience beyond the screen?

Contoh?
Gambarkan PIECE dari tugas kelompok masing-masing.
INSPIRATION TECHNIQUE #1: MATERIAL COLLECTION

“The materials which must be gathered are of two kinds: they are specific and they are general.”
INSPIRATION TECHNIQUE #1: MATERIAL COLLECTION

• Where do I find these materials?
  • Menus
  • Packaging
  • Nature
  • Video games
  • Movies and TV shows
  • Magazines
INSPIRATION TECHNIQUE #2: CREATE AN INSPIRATION BLOG
INSPIRATION TECHNIQUE #3: MOOD BOARDS

• Do explore unlikely elements from non-digital sources.
• Do create two to three unique styles.
• Don’t just copy and paste things from all your favorite websites.
• Don’t use mood boards to describe motion or transitions.
• When presenting mood boards to clients, explain your findings and try to get them to articulate why their product or brand will or will not work with a particular style. I promise, spending a brief time up front to define the design direction will save you hours of frustration later.
**INSPIRATION TECHNIQUE #4: HEURISTIC IDEATION**

- A sample that was created when we were trying to explore interesting food and technology combinations.

<table>
<thead>
<tr>
<th>CREATIVE FOOD IDEAS</th>
<th>SWEET TREATS</th>
<th>FAMILY TIME</th>
<th>HEALTHY</th>
<th>READY QUICK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MULTI-TOUCH</td>
<td>Multi-touch</td>
<td>Tablet based</td>
<td>Nutrition helper mobile</td>
<td>Refrigerator widget</td>
</tr>
<tr>
<td></td>
<td>gum ball machine</td>
<td>kick-friendly dinner planner</td>
<td>application</td>
<td>with recipe suggestions</td>
</tr>
<tr>
<td>VOICE CONTROL</td>
<td>Voice-controlled candy</td>
<td>Kitchen helper controlled by voice when hands are dirty</td>
<td>“I want something with less than 100 calories” Recipe suggestions</td>
<td>“Make the usual” voice command coffee machine</td>
</tr>
<tr>
<td>IMAGE RECOGNITION</td>
<td>Snap QR code to buy product</td>
<td>Find dinner recipe by image</td>
<td>Augmented reality “nutrition lens”</td>
<td>Snap a picture to see if it is “done”</td>
</tr>
</tbody>
</table>
Design Thinking—A Developer’s Kind of Design

Hardest part of software design because it relates to how the product feels— not how it looks → making product working, not just pretty

“A discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.”
Sketching Technique #1: Application Flows

following rules of thumb can assist you:
• Define patterns.
• Be consistent with navigation, content, and functionality.
• Reduce steps; eliminate unnecessary elements.

Creating an Application Flow
• Step 1: List User Goals
• Step 2: List the Major Elements That Will Compose Each Screen
Sketching Technique #1: Application Flows
Sketching Technique #1: Application Flows

- Step 3: List Each Unique Screen
Step 4: Place the Elements and Define Actions
Step 5: Connect and Reduce
Sketching Technique #2: Storyboards

“Must Have”

- Storyboards help describe the environment and help put the idea into context when designing for user-centric tasks. As professionals, it’s our job to facilitate a dialogue among stakeholders, team members, and the users of the product.
- can use storyboards throughout the entire design process.
FIGURE 3-16 Storyboards can help articulate the value of an application by placing it in an environment and giving it some context.
INFORMATION ARCHITECTURE

The goal of IA is to help users make decisions and complete tasks without making them have to think.

Step 1: Define Themes, Goals and Requirements
Step 2: Choose a Layout
Step 3: Group Similar Items
Step 4: Be Consistent
Step 5: Reduce
WIREFRAMES

ALL TOO OFTEN designers and developers jump headfirst into a project. Designers focus on making things look as good as possible, and developers put their focus solely on the technology platform. And both groups ignore the deeper aspects of functionality.

Producing wireframes usually comes after you’ve sketched out some possibilities for application flow and gone through the due-diligence information architecture.
an effective wireframe contains the following:
• Layout
• Hierarchy
• Interaction
• Content
• Functionality

Gambarkan Wireframes dari tugas kelompok masing-masing, boleh menggunakan tools ataupun gambar manual
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Prototyping

• When Should I Prototype?
Prototyping is a crucial part of design process, and I try to prototype as early and often as possible. In the context of software, there are at least four major scenarios where I find prototyping really valuable:

1. Communicating a New Idea
2. Creating a Proof of Concept
3. Conducting Basic Usability Testing
4. Determining Whether an Idea Is Worth a Bigger Investment
Prototyping
What Makes an Effective Prototype?

• Fast—Being able to produce a lot of ideas very quickly will ultimately allow new and better ideas to emerge as you validate concepts and refine them. Prototypes start losing their value if the process of creating them takes so long that you miss the opportunity to iterate on them.

• Disposable—Don’t get too attached to your prototypes. Ideally, you should be able to quickly validate an idea and throw it away if it isn’t working.
What Makes an Effective Prototype?

- **Focused**—Pick the two to four key scenarios or ideas that need the most communication. Don’t aim to prototype an entire product or system. Focus on key elements of the user experience first; then broaden your focus. Focused prototypes will give you concrete samples to facilitate conversations with teams and stakeholders.
Prototyping

- Bill Buxton’s book entitled Sketching User Experiences: Getting the Design Right and the Right Design—that I find to be particularly useful:
- “It is fidelity of the experience, not the fidelity of the prototype that is important…”
- In other words, while the quality of aesthetics and the implementation are important, they are far less valuable than the user’s experience. Focus on what the system actually does rather than on how it works or looks.
What does high fidelity and low fidelity mean?

I’ve mentioned the word “fidelity” a few times in this chapter. For those new to the world of prototyping, I want to briefly talk about the continuum of low- to high-fidelity. Generally speaking, fidelity refers to the amount of detail you choose to include in the prototype. This includes both the detail in aesthetics and the implementation of technology.

Depending on your timelines, project situation, you need to adjust the fidelity to accommodate the type of feedback you’re looking for. When you’re trying to validate ideas on navigation, interaction, and overall concepts, low-fidelity prototypes are most useful. When you’re experimenting with animations, timing, and visual effects, more polished high-fidelity prototypes are better suited.
Prototyping Techniques

• Prototyping Technique #1: Paper Prototypes
• Skill level: Beginner
• Time required: 45 minutes to 1 hour per prototype

What you need:
• Foam core board
• Exacto knife
• Markers and pencils
• Post-It notes
• Glue
• Plenty of paper
Prototyping Technique #1: Paper Prototypes

FIGURE 6-1
We wrapped vending machine with paper to roll out the idea sizes for the design.
Prototyping Technique #2: Interactive Wireframes

• Skill level: Beginner to intermediate
• Time required: 2 to 3 hours (maybe more if you have a complex app)

What you need:
• Any software capable of simulating click-through functionality
Prototyping Technique #3: Video Prototyping

• Skill level: Intermediate to advanced
• Time required: 4 to 8 hours

What you need:
• Video editing software
• Application concept
Summary

• Prototyping is all about refining concepts in a strategic and deliberate manner to arrive at a well-designed product. With the techniques in this chapter, you should be able to quickly and effectively bring your ideas to life and get feedback early on in a project’s lifecycle. Letting your users and stakeholders touch, poke, and prod your concepts is the best way to communicate and validate your design decisions before making a bigger investment.
VISUAL DESIGN

• focus on visual design techniques that will help you create your own unique designs. You’ll approach visual design gradually, starting with basic color theory and typography. Then we’ll move on to intermediate topics like designing grid-based layouts and animation.
COLOR

• Cool and Warm Colors
• Warm colors include red, orange, yellow, and the steps between them. These colors are associated with energy, passion, and enthusiasm and are generally positive.
• Cool colors include blue, green, violets, and the colors in between them. Cool colors are associated with feeling relaxed, reserved, and can give sense of professionalism and stability.
• If your site or application is feeling a little passive, you can warm it up by introducing some orange or yellow.
• Conversely, if your design is making you feel agitated or anxious, try cooling it off by adding some blue or violet.
The Psychology of Color

- **RED**
  - Passionate, intense, love, evil, hot

- **YELLOW**
  - High-energy, vibrant, happiness, intellect, positivity, permanence

- **BLUE**
  - Stability, trust, healthcare, finance, faith, power, calmness

- **PINK**
  - Happiness, excitement, high-energy

- **GRAY**
  - Conservative, long-lasting, refined, classic, dreary, depressing

- **WHITE**
  - Cleanliness, neutrality, hope, sterility, simplicity

- **ORANGE**
  - Vibrant, energetic, earthy, vitality, youth, happiness

- **GREEN**
  - Life, growth, healing, money, safety, relaxation, jealousy

- **VIOLET**
  - Royalty, luxury, wisdom, dignity, spirituality

- **BROWN**
  - Nature, stability, reliability, approachability

- **BLACK**
  - Power, elegance, mysteriousness, formality, death, war, evil, mourning
Color Technique

- Color Technique #1: Use a Photograph to Generate a Color Palette
- Color Technique #2: Code with Color
- Color Technique #3: Use Photoshop

```javascript
function generateShades(){
    var holder = document.getElementById('container');
    var baseColor = '#ec8dca';
    var COUNT = 6;
    for(var i=1; i <= COUNT; i++){
        // step brightness
        var color = adjustBrightness(baseColor, i*(100/COUNT));
        swatch = document.createElement('div');
        swatch.style.backgroundColor = color;
        holder.appendChild(swatch);
    }
}

function adjustBrightness(rgb, amount) {
    // convert hex to rgb
    var r = parseInt(rgb.slice(1, 3), 16),
        g = parseInt(rgb.slice(3, 5), 16),
        b = parseInt(rgb.slice(5, 7), 16),
        HSL = rgbToHSL(r, g, b), // convert rgb to hsl
        RGB;

    // adjust the lightness of the hsl color
    RGB = hslToRgb(HSL[0], HSL[1], amount / 100);

    // convert back to rgb and return as css value
    return 'rgb(' + Math.round(RGB[0]) + ',' + Math.round(RGB[1]) + ',' + Math.round(RGB[2]) + ')';
}
```
Typography

Typography is one that will benefit your applications the most. It can massively improve the usability and overall aesthetic quality of your application.

Eight Ways to Improve Your Typography:
1. Pick a Scale and Stick with It
2. Use Consistent Spacing
3. Consider the Measure
4. A Little Can Go a Long Way
5. Pick a Good Body Font
6. Use a Single Family
7. Combine Two to Three Typefaces
8. Use a Good Ampersand
Visual Communication

1. Design As Though You’re Designing for Yourself
2. Be Consistent

Five Ways to Clarify Your Design
1. Slap a Grid on It
2. Establish Hierarchy
3. Remove the Junk
4. Check for Parallelism
5. Create Clear Affordances
MOTION

When Should I Use Motion? :
- Communicating status
- Providing feedback
- Showing changes in state
- Attracting attention
- Orienting the user
- Indicating progress
- Adding or removing list items
- Sorting, filtering, or reordering items
IV. INTERACTION DESIGN
few other things to avoid when trying to facilitate flow:

- Avoid repeatedly prompting users for credentials
- Avoid asking users to fill out surveys
- Avoid input of unnecessary information
- Avoid asking multiple times for the same thing
- Avoid sign up or sign in before the application is useable
- Avoid using a modal pop-up to tell users an action was successful
Designing for Usability + Learnability

• Efficient
• Understandable
• Flexible
• Easy to remember

• Is easy to learn
• Has clear operation
• Is Attractive
• Is Focused
Ergonomics
In general, some digital displays just don’t have the brightness to overpower the sun’s intensity. When you need to design a UI intended for outdoor use, it’s best to embrace high-contrast design tactics. Here are some high-contrast techniques I’ve used to deal with intense lighting conditions:

> Use white text on a black background.
> Use black text on a white background.
> Increase the font sizes.
> Use thicker font weights.
> Use sentence case rather than all caps for better letter recognition.
> Avoid using gray text on a gray background.
OCCLUDED AREA

EASY ACCESS FOR GRIP HAND

AVOIDS OCCLUSION
Etiam At Risus Et Justo

Vivamus hendrerit arcu sed erat molestie vehicula. Sed auctor neque eu tellus rhoncus ut eleifend nibh porttitor. Ut in nulla enim.


**SIDE NOTE**

Vivamus hendrerit arcu sed erat molestie vehicula. Sed auctor neque eu tellus rhoncus.

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**LEADING** 24 = 1.5 * 16

**SPACING** 48 = 24 * 2
TUGAS dan UJIAN pada pertemuan ke-3

1. Tentukan Kelompok 46 PLSI (Gunakan pada kelompok MK yang sudah ada)

2. TUGAS dan UJIAN adalah Presentasi dan Dokumen dari Produk yang dibuat kelompok yaitu “user interface berbasis web, User Interface interaktif, User Interface dibuat dengan Prinsip Material Design”

3. UJIAN adalah Dokumen yang berisikan tahapan pembuatan user interface meliputi:
   Development : User Req analysis + Design-prototyping +Database,Coding,Testing
   Deployment : training, change over
   Operational : Maintenance
Format Dokumen

1. Cover (Judul Produk Web + Nama Kelompok)
2. Pendahuluan (Uraian yang menjelaskan secara singkat gambaran Produk web yang dibuat)
3. Tahap Development
4. Tahap Deployment
5. Tahap Operational
6. Penutup

Dokumen dijilid dibawa langsung pada pertemuan ke 3

Presentasi sebagai NILAI Tugas, Dokumen sebagai Nilai UJIAN