

# COMP3008 Midterm Notes

*William Findlay*

*February 24, 2019*

# Contents

<b>1</b>	<b>Design Concepts</b>	<b>1</b>
1.1	What is Design/UX? . . . . .	1
1.1.1	Stages of Design Process . . . . .	1
1.2	Advantages of Involving Users in the Design Process . . . . .	1
1.3	Usability Goals and Testing . . . . .	1
1.3.1	Testing of Usability Goals . . . . .	1
1.4	Common Design Principles . . . . .	3
1.4.1	Visibility . . . . .	3
1.4.2	Affordance . . . . .	3
1.4.3	Constraints . . . . .	3
1.4.4	Consistency . . . . .	4
1.4.5	Feedback . . . . .	4
<b>2</b>	<b>Requirements Gathering</b>	<b>4</b>
2.1	Basic Tasks . . . . .	4
2.2	Basic Principles . . . . .	4
2.3	Personas . . . . .	4
2.4	Scenarios . . . . .	4
<b>3</b>	<b>Data Gathering</b>	<b>5</b>
3.1	Types of Data . . . . .	5
3.2	Data Collection Techniques . . . . .	6
<b>4</b>	<b>User Studies</b>	<b>6</b>
<b>5</b>	<b>Prototyping</b>	<b>6</b>
<b>6</b>	<b>Qualitative Analysis and Cognitive Processes</b>	<b>6</b>
<b>7</b>	<b>Inspection Methods</b>	<b>6</b>
<b>8</b>	<b>Cognitive Frameworks</b>	<b>6</b>
<b>9</b>	<b>Conceptual/Mental Models</b>	<b>6</b>
<b>10</b>	<b>Types of Interfaces in HCI</b>	<b>6</b>

## List of Figures

1.1	The agile development process. . . . .	2
1.2	Royce's Waterfall design process. . . . .	2
1.3	The Rational Unified Process for design. . . . .	3
3.1	Objective/Subjective, Quantitative/Qualitative data. . . . .	5

## List of Tables

## List of Listings

# 1 Design Concepts

## 1.1 What is Design/UX?

- interaction design
  - make interactive products
  - support the way people communicate interact
  - interdisciplinary
    - not just HCI
- user experience (UX)
  - how a product behaves when used by people
  - how people feel about it
  - every product has a UX
    - software
    - ketchup bottle
    - elevator

### 1.1.1 Stages of Design Process

- requirements
- design alternatives
- prototyping
- evaluating

## 1.2 Advantages of Involving Users in the Design Process

- authenticity
  - domain expertise
  - perspective
- pragmatics
  - expectation management
  - make users active stakeholders (ownership)

## 1.3 Usability Goals and Testing

- usability means (EESUML)
  1. Effective
  2. Efficient
  3. Safe to use
  4. Utility
  5. Memorability
  6. Learnability

### 1.3.1 Testing of Usability Goals

- we care about *human performance*, not *computer performance*
- iterative design
  - find problems
  - fix them
  - do more tests

- Agile Development (Figure 1.1)
  - sprint  $N \implies$  test  $N - 1$  and plan  $N + 1$

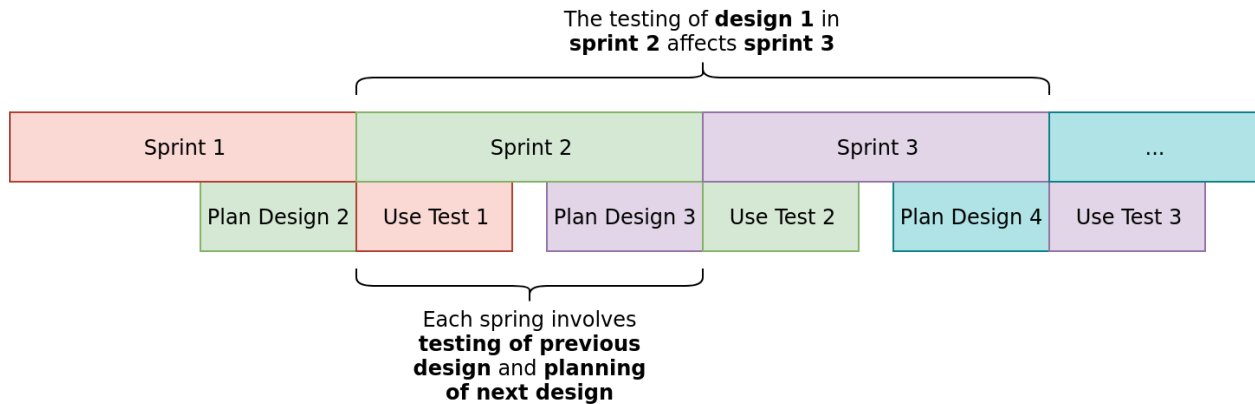


Figure 1.1: The agile development process.

- Early Developer Method
  - involve developers in design process early
  - figure out technical limitations
  - less knowledge transfer
- Continued Designer Involvement Method
  - design reviews, deliverables
  - more design at start, more development at end
- Royce's Waterfall (Figure 1.2)
  - not a great choice
  - iteration is better

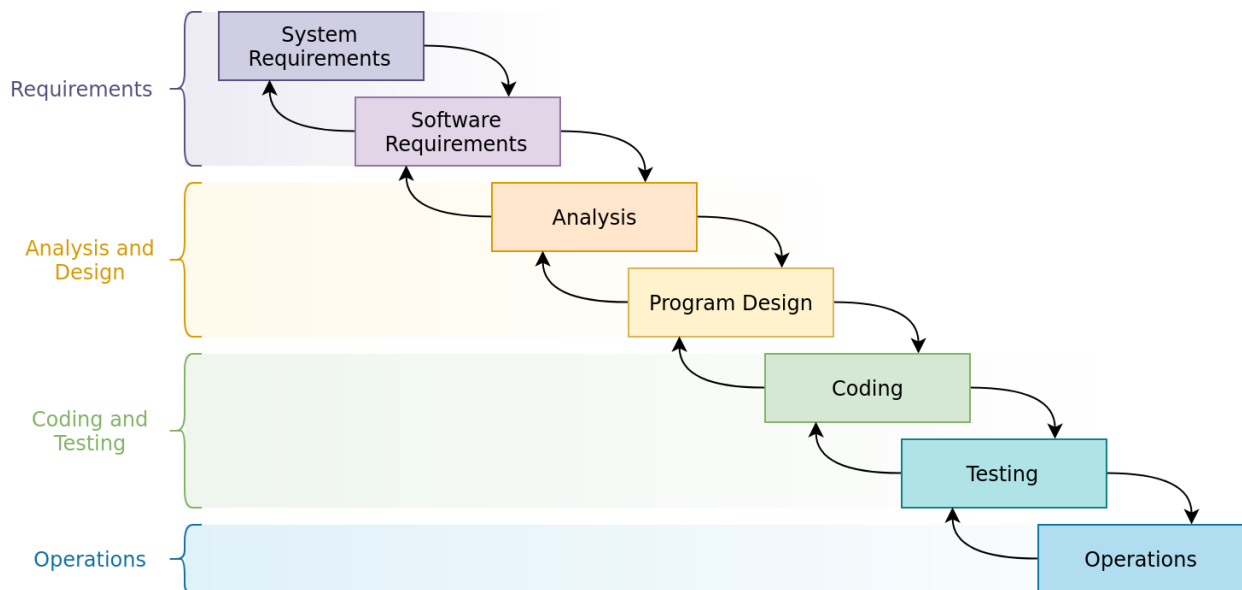
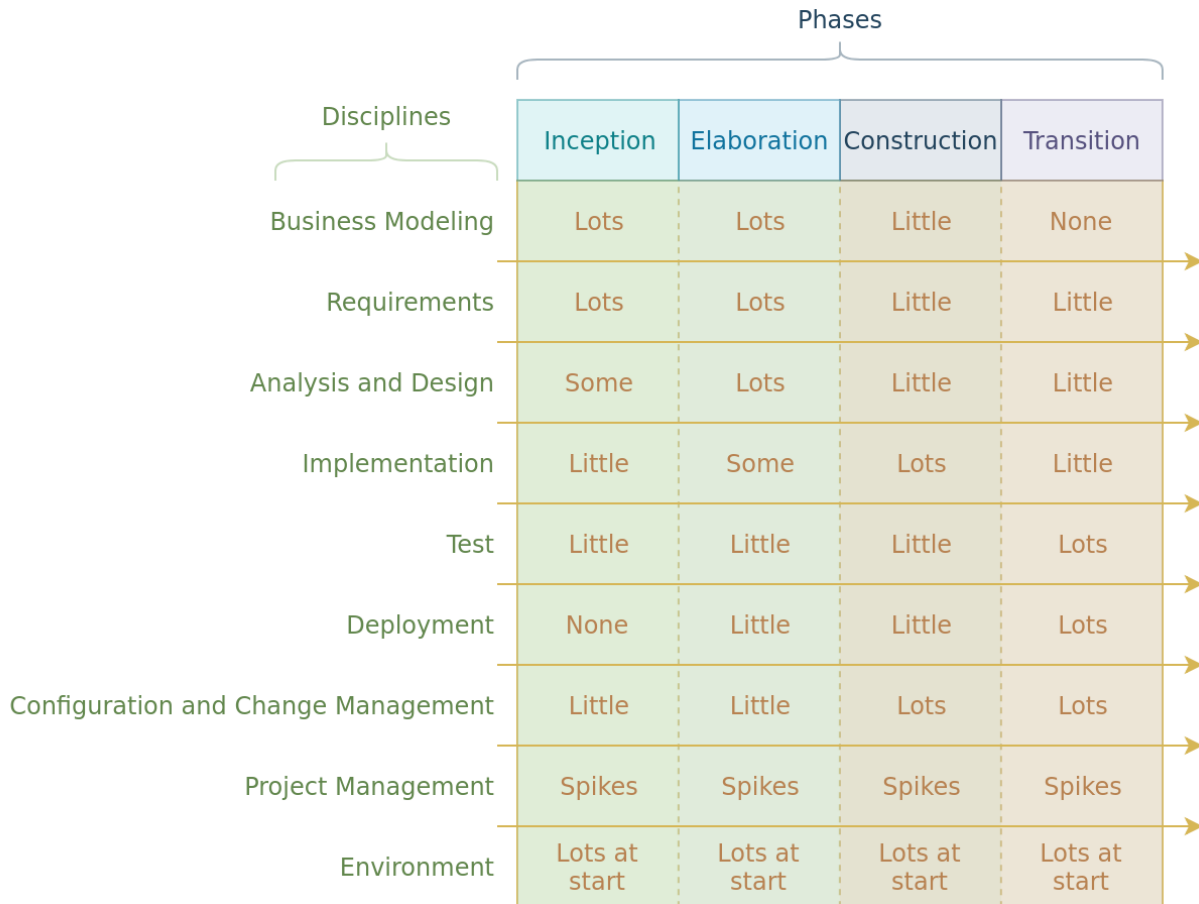


Figure 1.2: Royce's Waterfall design process.

- Rational Unified Process (Figure 1.3)
  - not a great choice
  - iteration is better



**Figure 1.3:** The Rational Unified Process for design.

## 1.4 Common Design Principles

### 1.4.1 Visibility

- show state of system, possible actions
  - make it clear what user needs to do

### 1.4.2 Affordance

- actions suggested by design of an object
  - perceived must match actual
  - false affordance
    - “looks like a button but can’t be pressed”

### 1.4.3 Constraints

- limit actions based on appearance
  - physical
  - cultural

- logical

#### 1.4.4 Consistency

- establish similarities
  - similar operation and elements for similar tasks
  - consistency with other software
  - consistency with real world

#### 1.4.5 Feedback

- show consequences after actions
  - auditory
  - visual
  - haptic

## 2 Requirements Gathering

### 2.1 Basic Tasks

- requirements
- design alternatives
- prototyping
- evaluating

### 2.2 Basic Principles

- early focus on tasks/users
- empirical measurement
  - quantifiable usability criteria
- iterative design

### 2.3 Personas

- reflect stakeholders
- capture user characteristics
- bring them to life
  - name
  - background
  - characteristics
  - goals
  - frustrations
- advantages
  - have a clear picture of users
  - humanize the design process

### 2.4 Scenarios

- description of someone using a product to achieve a goal
  - keep product general
  - include setting, actors, background, tools/objects
  - use stakeholders' language





### 3 Data Gathering

#### 3.1 Types of Data

- qualitative, quantitative
  - qualitative = descriptions
  - quantitative = numerical
- objective, subjective
  - objective = facts
  - subjective = opinions



## Types of Data

	Qualitative	Quantitative
Objective	<ul style="list-style-type: none"> <li>• detailed descriptions</li> <li>• objective facts</li> </ul>  <p>"The ball is black and white."</p>	<ul style="list-style-type: none"> <li>• numerical measurements</li> <li>• objective facts</li> </ul> <p>10cm</p>  <p>"The ball is 10cm wide."</p>
Subjective	<ul style="list-style-type: none"> <li>• detailed descriptions</li> <li>• individual opinions or judgements</li> </ul>  <p>"The ball is fun to play with."</p>	<ul style="list-style-type: none"> <li>• numerical</li> <li>• not necessarily precise</li> <li>• individual opinions or judgements</li> </ul> <p>8/10</p>  <p>"I rate my experience with the ball to be 8/10."</p>

**Figure 3.1:** Objective/Subjective, Quantitative/Qualitative data.



**3.2 Data Collection Techniques****4 User Studies****5 Prototyping****6 Qualitative Analysis and Cognitive Processes****7 Inspection Methods****8 Cognitive Frameworks****9 Conceptual/Mental Models****10 Types of Interfaces in HCI**