MONASH University

FIT3175 - Usability

Unit Overview and Introduction to Usability Concepts

Week 1 Lecture P1

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Learning objectives

Unit overview

- Unit delivery
- Responsibilities
- Assessment overview
- Usability Design Project overview

Introduction to usability

- Usability defined
- Measuring usability
- HCI and UX
- Interface Design

Assignment Project Stage A + B

Unit Overview

The team

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Tutors

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Unit learning outcomes

1. **Explain the theories and principles** of usability as applied to interface and interaction design

2. **Apply usability principles** to the design of interfaces for Web, small screen and mobile devices

3. Design an interface for user **diversity and accessibility**

4. Employ **user-centred design**

5. **Evaluate** an interface and interaction design.

Semester overview

Week 1	**Part 1**	Unit Overview and Introduction to Usability Concepts
	Part 2	Understanding Users
Week 2	**Part 1**	Psychology of User Interaction
	Part 2	User Interfaces and Design Guidelines
Week 3	**Part 1**	Navigation and Information Architecture
	Part 2	Visual Design Principles and Guidelines
Week 4	**Part 1**	UX Design Methods
	Part 2	UX Evaluation Methods
Week 5	**Part 1**	Accessibility and Inclusive Design
	Part 2	Interaction Devices and Styles
Week 6	**Part 1**	Multimodal Interfaces
	Part 2	Beyond Traditional Interfaces

Unit teaching and delivery

This unit requires active participation and discussion.

During Summer B semester there will be timetabled **P1** and **P2** classes every week.

- **2 x 2-hour lecture sessions**
  - Learn and discuss usability theory
  - Q&A discussion
- **2 x 2-hour tutorial sessions**
  - Discuss and collaborate on practical UX techniques

Appreciating the unique experiences of users is a central theme of understanding how to design for users. **Discussion is welcomed in all classes - even the lectures!**

Check your Allocate+ timetable

Before attending tutorials this week, confirm your details in Allocate+ and Moodle.

- **"OnCampus"** classes require in-person attendance.
- Attend **both P1 and P2** sessions each week.
- Room locations for on-campus P1 and P2 sessions may be different.
- Zoom links for online P1 and P2 will be different - use links provided on Moodle.

Wednesday 26 January (Australia Day public holiday) is a university holiday.

If you have a P1 tutorial timetabled on Wednesday...

- In week 4 only, Wednesday P1 classes will not run.
- Week 4 has P3 replacement classes scheduled on different days.
- Room locations for P3 replacement classes will be different.

Assessment overview

The following assessment components are **unit hurdle requirements**

- 50% in-semester assessment
- 50% Scheduled Final Assessment (exam)

To successfully complete this unit you must achieve...

- at least 45% of the available marks in the final scheduled assessment
- at least 45% in total for in-semester assessments
- an overall unit mark of 50% or more

The hurdles are threshold mark hurdles. If you do not achieve a threshold mark, you will receive a fail grade (NH) and a maximum mark of 45 for the unit.

In-semester assessment

Assessment Task	Weight	Submission
Stage A - Gather User Data (Group)	**5%**	**Friday Week 2**
Stage B - Understand Your Users (Individual)	**5%**	**Tuesday Week 3**
Discussion Forum 1 (Individual)	2.5%	Friday Week 3
Stage C - Defining Project Requirements (Individual)	**5%**	**Tuesday Week 4**
Stage D - Low-Fidelity Sketch Prototype (Group)	**10%**	**Friday Week 4**
Discussion Forum 2 (Individual)	2.5%	Friday Week 5
Stage E - High-Fidelity Digital Prototype (Group)	**15%**	**Friday Week 6**
Stage F - In-Class Presentation (Individual)	**5%**	**P2 Tutorial Week 6**

Late submission and special consideration policies

Late submission is highly discouraged

Each day, or part thereof, an assessment task is overdue, a late penalty of **10% of the available total marks** applies up to a maximum of seven days. Assessment tasks submitted more than seven days late will not receive a mark or feedback.

If you need to apply for special consideration:

- **Extensions up to 5 days:** Email the unit Chief Examiner and lecturer up to 2 days after the due date. Include relevant documentation to support your request.
- **Longer extensions or alternative arrangements:** Apply online via the university special consideration website and inform your lecturer/tutors that you have submitted an online request.

Student responsibilities

For successful study of this unit students are expected to:

- Attend classes to participate in activities.
- Share your ideas and experiences - especially if they are unique.
- Ask questions - all questions that contribute to learning are welcome.
- Take notes during class.

Successful completion of assessment tasks requires:

- Timely start and timely submission of work.
- Keep in touch with group mates and listen to each other's ideas.
- Ask questions and alert staff to personal or group issues.
- Demonstrate knowledge gained from classes in assessment tasks.

Monash COVID-19 updates for on-campus study

If you are studying on-campus this semester, please keep up to date with the Monash COVID-19 updates.

https://www.monash.edu/news/coronavirus-updates

- Register your vaccination status: https://forms.monash.edu/vaccinate-monash/
- Scan QR codes and swipe your ID card to enter buildings.
- Face masks are only be mandatory indoors in some high-risk settings.

You must not come to campus if you're unwell.

Introduction to Usability

Think about this...

Do you own a smart device?
Does it work well?
Do you like it?

What is "usability"?

From Nielsen Norman Group:

*"Usability is a **quality attribute** that assesses how easy user interfaces are to use. The word "usability" also refers to methods for improving ease-of-use during the design process."*

Related terms you may have heard of:

- User Experience (UX)
- Human Computer Interaction (HCI) and Computer Human Interaction (CHI)
- Accessibility
- Inclusive Design

ISO 9241-11

The **International Organization for Standardization (ISO)** defines a global standard and framework ***(figure 1)*** for usability that is used in professional industries.

ISO 9241-11 (Ergonomics of Human-System Interaction) defines **"usability"** as

"extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use"

https://www.iso.org/obp/ui/#iso:std:iso:9241:-11:ed-2:v1:en

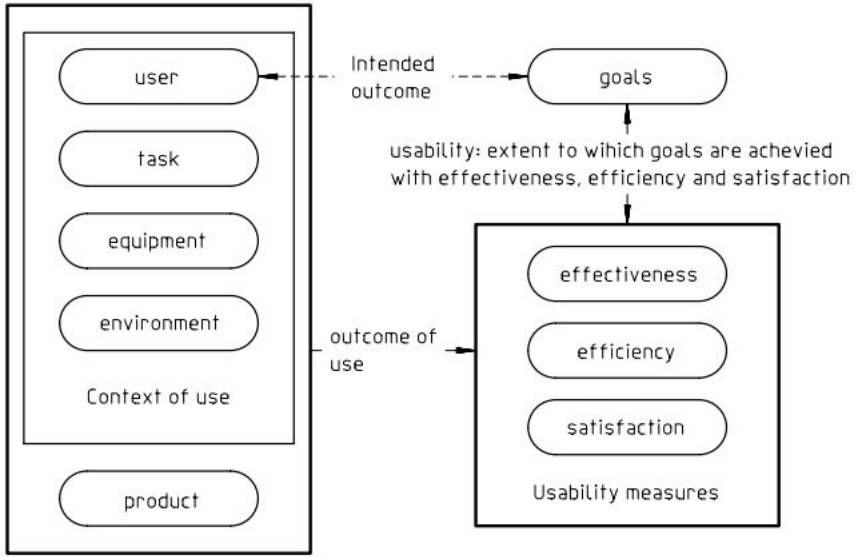


Figure 1 — Usability framework

Usability goes beyond product design

Usability considers the users' entire experience and refers to the ease of access and/or use of a product or website.

> ***"A design is not usable or unusable per se; its features, together with the context of the user (what the user wants to do with it and the user's environment), determine its level of usability."***

The Interaction Design Foundation

https://www.interactiondesign.org/literature/topics/usability

Components of usability

Let's examine each of the **usability components** defined in **ISO 9241-11**:

- **Effectiveness** measures relate to the goals or subgoals of the user to the accuracy and completeness with which these goals can be achieved.
- **Efficiency** measures relate the level of effectiveness to the expenditure of resources. This includes mental and physical effort, time and cost.
- **Satisfaction** measures relate to the extent that users are free from discomfort and their attitudes towards the product.

When designing or evaluating a product, we should provide at least 1 measure (target or actual values) for each of the 3 components.

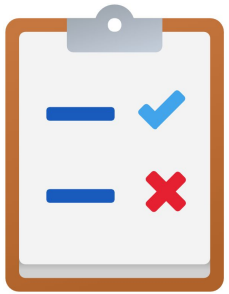
Effectiveness measures

Measures of effectiveness relate the goals or subgoals of the user to the accuracy and completeness with which these goals can be achieved.

Example goal: Transcribe a written 2-page document to Word document.

Possible measures:

- Number of spelling mistakes
- Number of formatting differences
- Percentage of document transcribed
- ***What else?***



Which measures represent accuracy, and which represent completeness?

Efficiency measures

Measures of efficiency relate the level of effectiveness achieved to the expenditure of resources.

Example goal: Transcribe a written 2-page document to Word document.

Possible measures:

- Total time taken to transcribe the report
- Number of menu items accessed
- **What else?**

Which measures represent time resources and human effort resources?

Can you think of a measure for mental effort?

Satisfaction measures

Satisfaction measures the extent to which users are free from discomfort, and their attitudes towards the use of the product.

Example goal: Transcribe a written 2-page document to Word document.

Possible measures:

- Was the task enjoyable or uncomfortable?
- Number of positive or negative experiences during use
- Specific aspects of the product that are liked or disliked

Satisfaction is often subjective and will be difficult to measure to measure in an objectively quantifiable way.

Alternative definitions: Nielsen Norman Group

Another perspective from Jakob Nielsen (co-founder of Nielsen Norman Group):

- **Learnability:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency:** Once users have learned the design, how quickly can they perform tasks?
- **Memorability:** When users return to the design after a period of not using it, how easily can they re-establish proficiency?
- **Errors:** How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- **Satisfaction:** How pleasant is it to use the design?

https://www.nngroup.com/articles/usability-101-introduction-to-usability/

Alternative definitions: Whitney Quesenbery's 5 Es

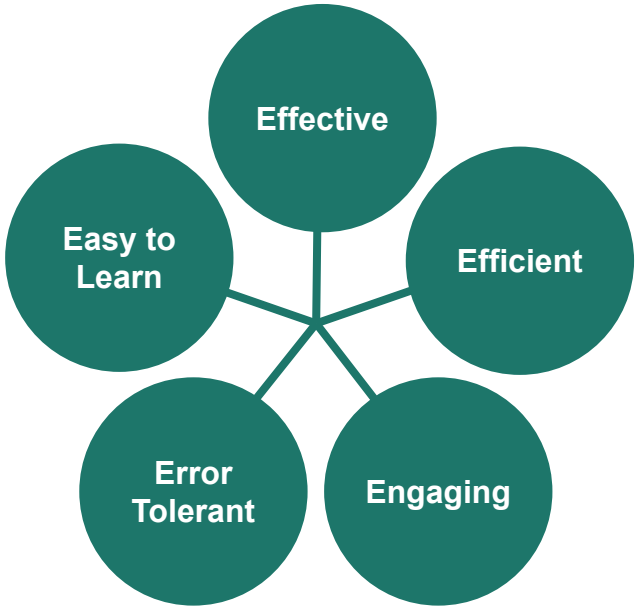
Whitney Quesenbery (co-founder of Civic Design Center) proposes **5Es**:

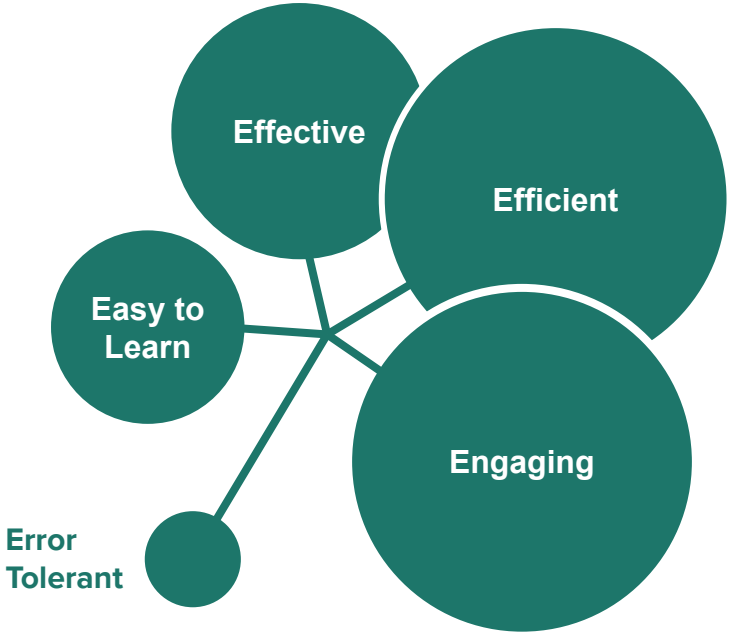
- **Effective:** How completely and accurately the work or experience is completed or goals reached
- **Efficient:** How quickly this work can be completed
- **Engaging:** How well the interface draws the user into the interaction and how pleasant and satisfying it is to use
- **Error Tolerant:** How well the product prevents errors and can help the user recover from mistakes that do occur
- **Easy to Learn:** How well the product supports both the initial orientation and continued learning throughout the complete lifetime of use

https://www.wqusability.com/articles/getting-started.html

Quesenbery's 5Es in an applied context

Quesenbery also demonstrates how usability dimensions can be weighted to visualise the needs of a specified context of use.





UX

ISO 9241-11 also defines User Experience (UX):

> *"person's perceptions and responses resulting from the use and/or anticipated use of a product, system, or service".*

What does this imply about the difference between "UX" and "usability"?

Due to the similarities in the high-level goals of both:

> *"Usability, when interpreted from the perspective of the users' personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be used to assess aspects of UX".*

HCI and CHI

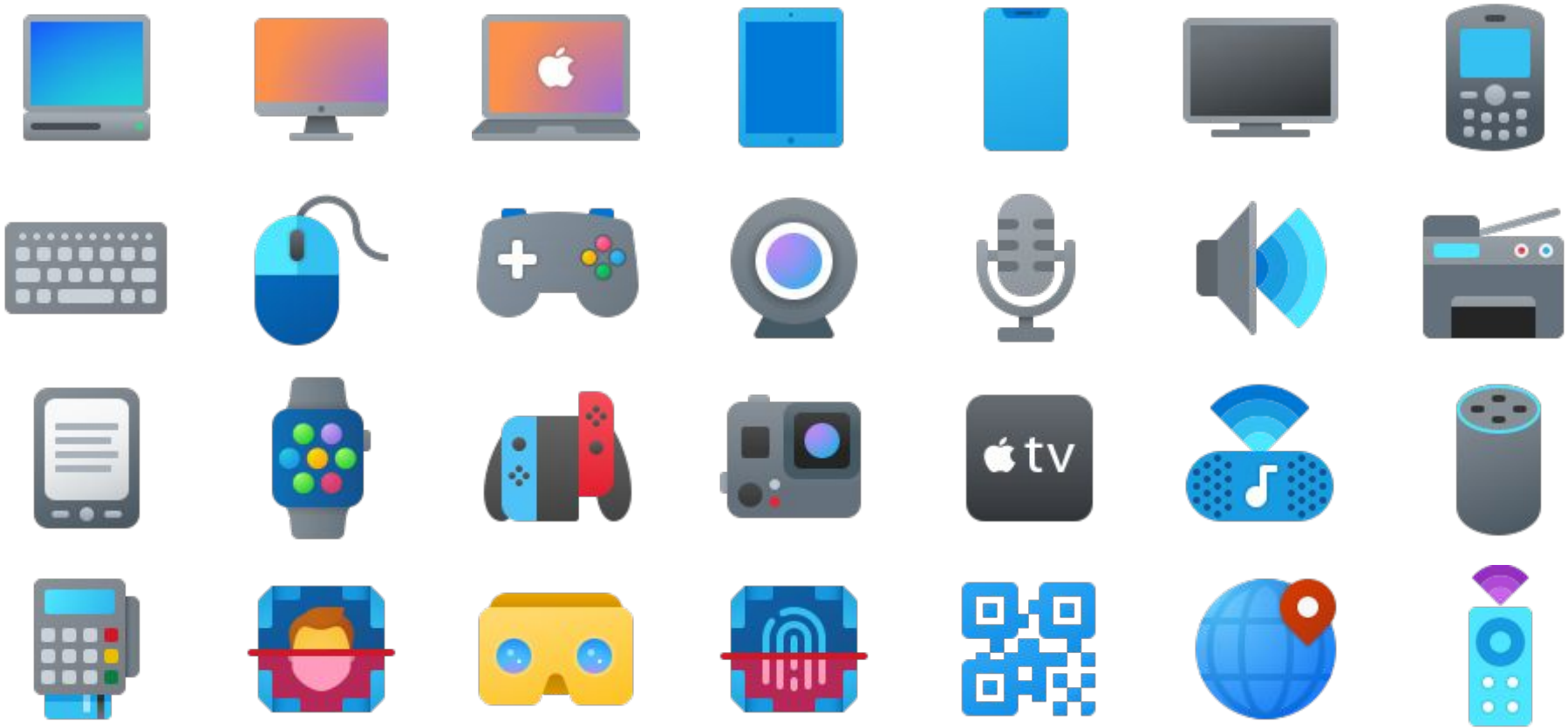
Human-Computer Interaction (HCI) and **Computer-Human Interaction (CHI)** are closely related to usability.

- **ISO Usability:** is concerned with use of designs in many different industries.
- **HCI/CHI:** The field of research that studies how humans interact with computing devices and computer interfaces.

Modern research prefers the name "HCI" to emphasise a **human-centred** approach.

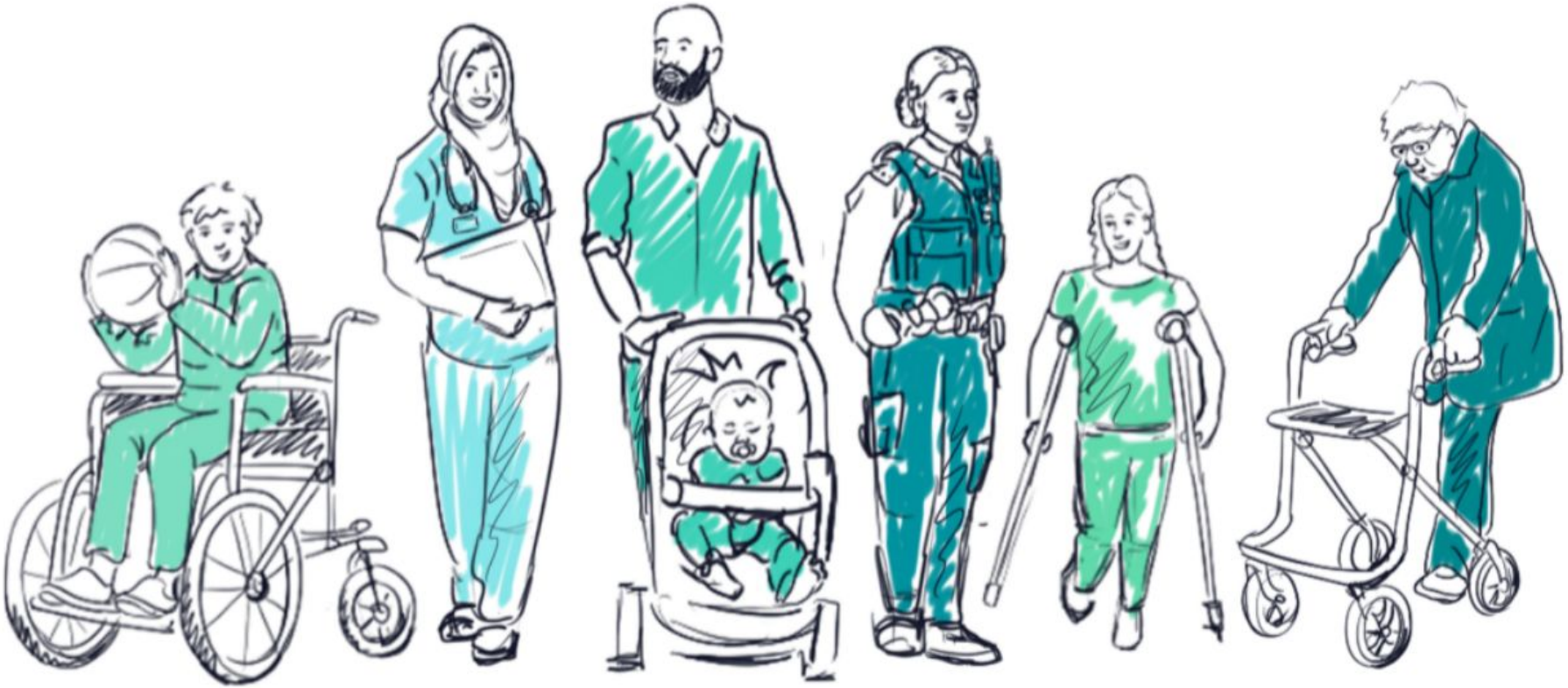
Did you know? The ACM Conference on Human Factors in Computing Systems is commonly referred to by the shorter name of **CHI** or **ACM CHI**.

Diversity of devices, interfaces and interactions



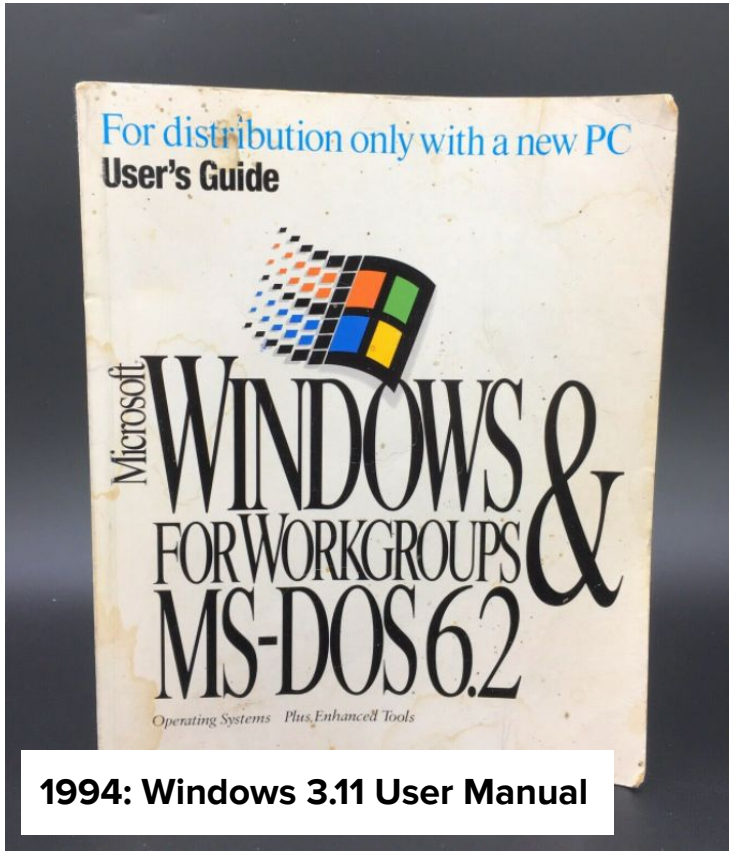
Icons by Icons8

Diversity of users



https://uxdesign.cc/designing-for-diversity-cfdf8c8ad54d

Changes in how we learn computing skills



1994: Windows 3.11 User Manual

2022: Windows 11 User Manual

Design thinking process

1. EMPATHISE
Conduct research to develop an understanding of your users.

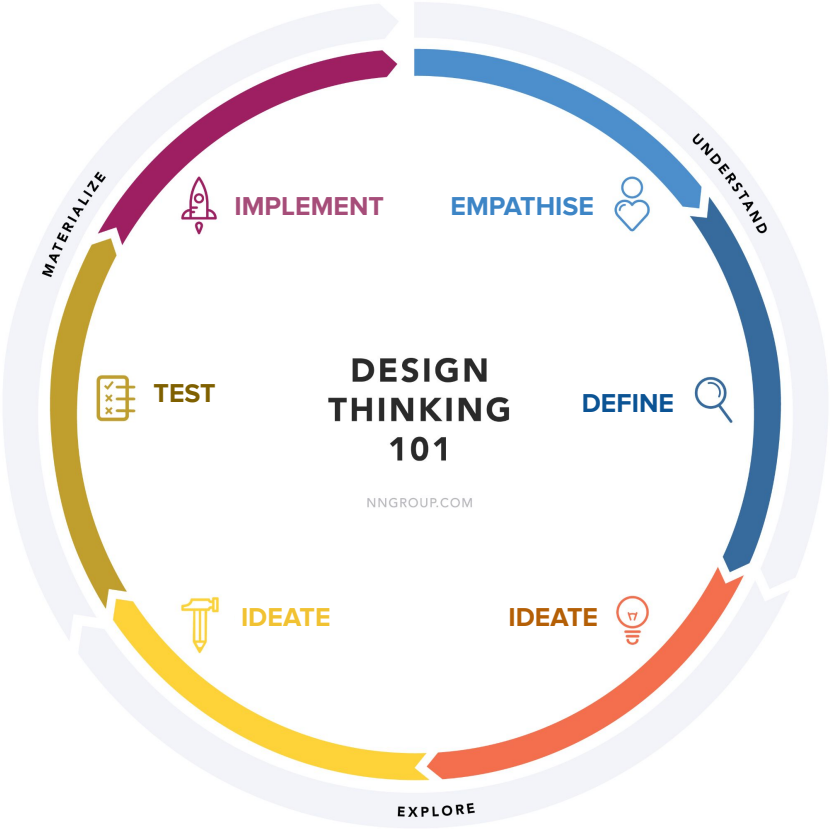
2. DEFINE
Combine all of your research and observe where users' problems exist.

3. IDEATE
Generate a range of crazy, creative ideas.

4. PROTOTYPE
Build real, tactile representations for a range of your ideas.

5. TEST
Return to your users for feedback

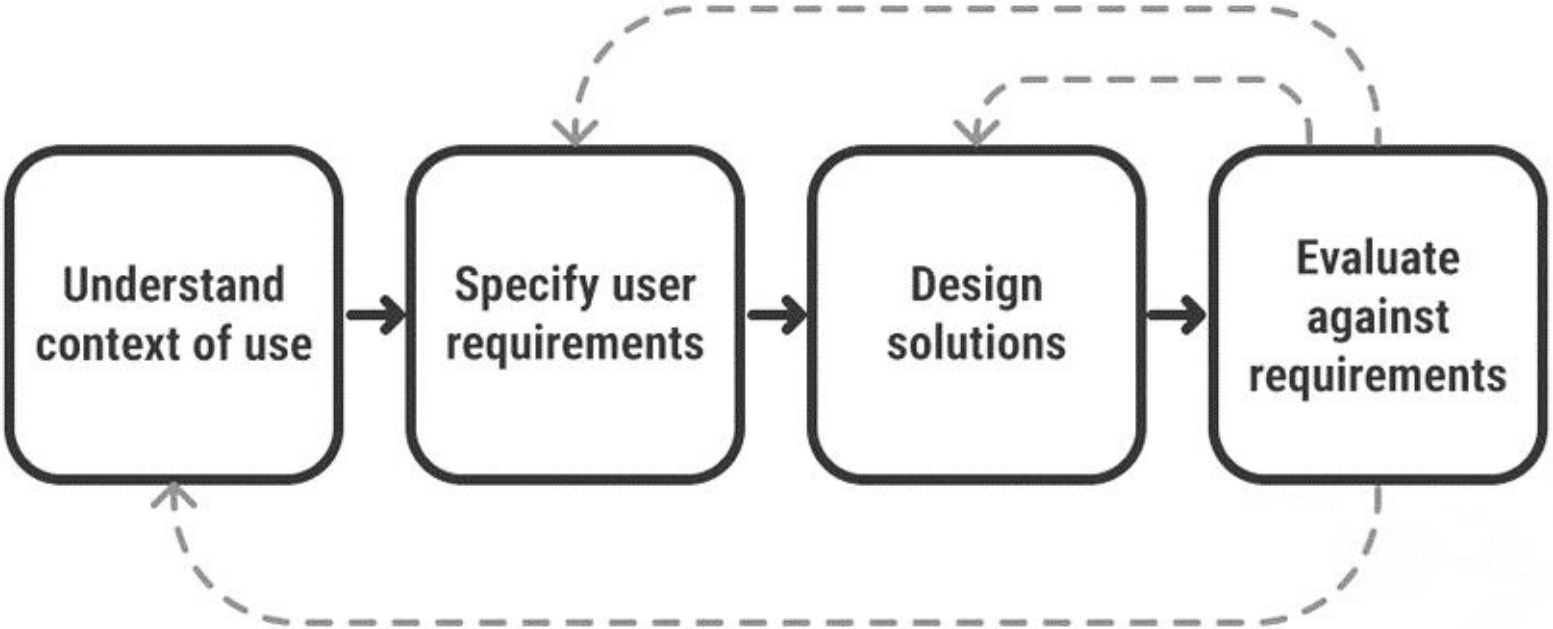
6. IMPLEMENT
Put the vision into effect.



https://www.nngroup.com/articles/design-thinking/

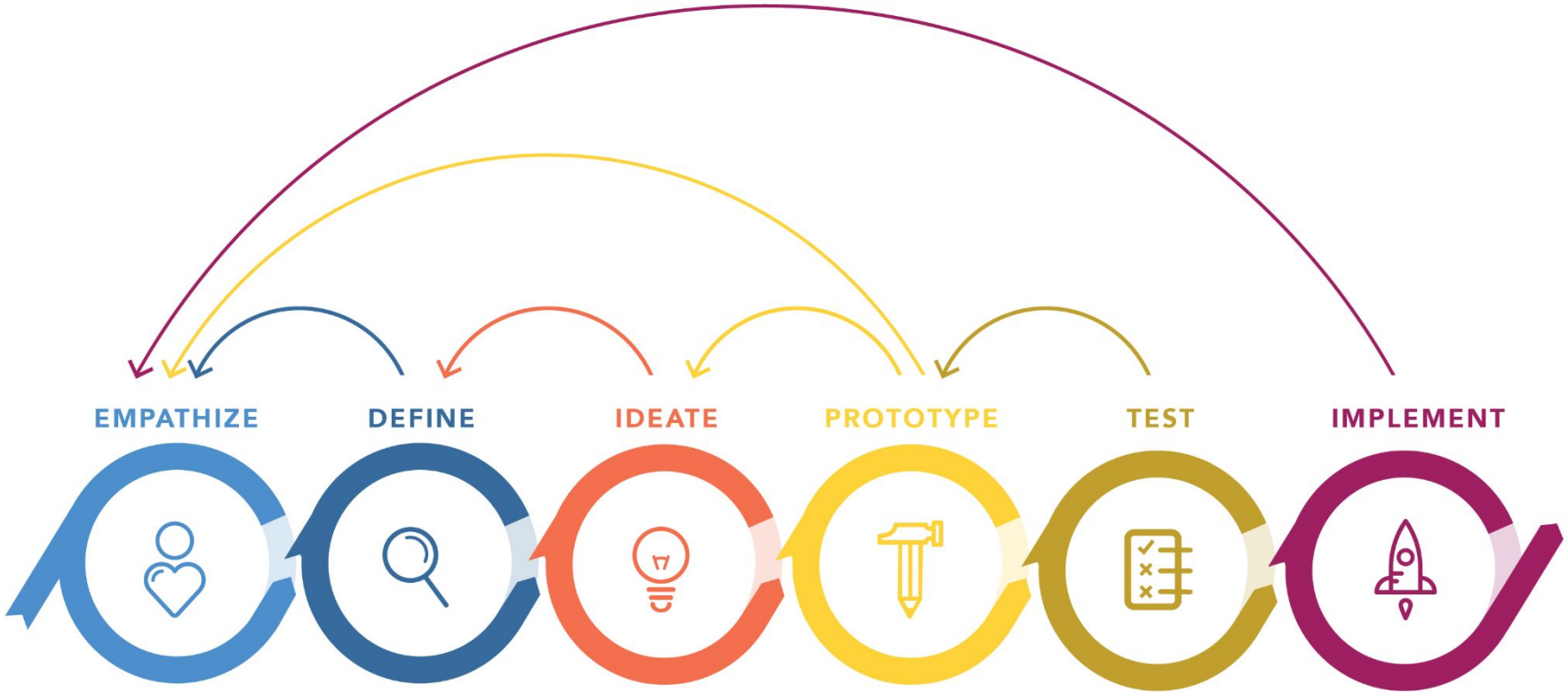
User-centred design

UCD considers the whole user experience. The specified users and context of use are given emphasis and considered in all stages of development.



https://www.interaction-design.org/literature/topics/user-centered-design

Design processes can support iteration



https://www.nngroup.com/articles/design-thinking/

This semester

You will earn how to apply UCD processes this semester.

- **Data collection methods**, both quantitative and qualitative.
- **User empathy** via the creation of documentation and other deliverables.
- **Features and requirements** based on established user needs.
- **Low-fidelity prototypes** that apply usability theory correctly.
- **High-fidelity prototypes** that carefully apply standards and guidelines.
- **Evaluations** to identify successes and failures in design

Note: The assignments for this unit will not require any final programmed implementation (i.e. we are not building real executable applications)

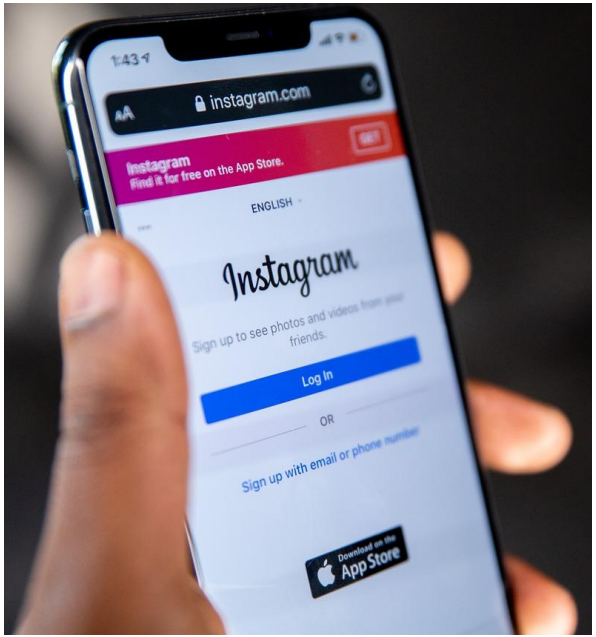
So, why is usability important?

Usability design is present throughout almost all aspects of how we interact in a modern society and world.

- We are surrounded by devices with user interfaces - we use them everyday in many aspects of our lives.

- When an interface is highly usable, we our goals, we enjoy it - we are more likely to use it again.

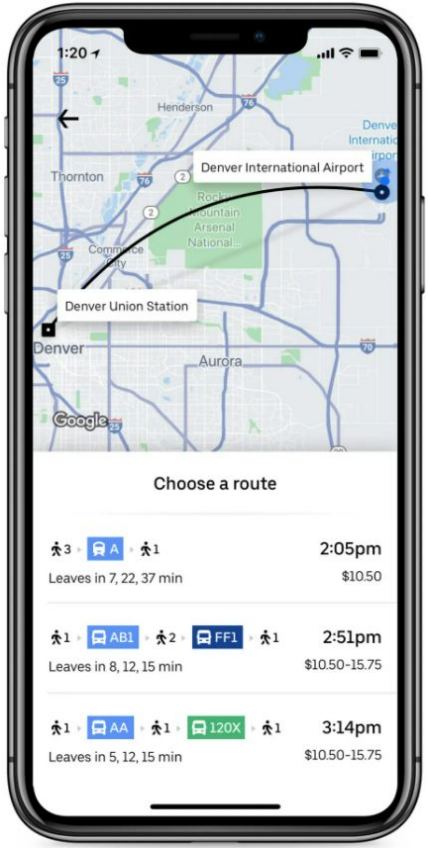
What is the incentive for a company to implement usability in its product designs?



Assignment project pitch:

"a mobile application that allows users to manage a large collection of items"

Users often manage complex information



What type of items could you manage with an app?

Working in a small group, think of a type of collection that where items could be managed using a mobile app.

- ***Physical items?***
- ***Digital items?***

Make sure your team has an agreed idea before the end of this week.

Summer B assignment stages have tight turnaround times. Pay attention during classes to make quick, educated, decisions when you start doing work.

- Stage A (user data gathering and analysis) is due Tuesday next week.
- Stage B (user personas and stories) is due Friday next week

People with different goals perform different tasks

Beyond the primary purpose of an application, most useful apps are designed with support for a wide range of functionality related to the main supported goals.

How many of the following common tasks have you done recently?

- Use the camera to capture or scan
- Send messages
- Use a map to find something
- Share content as a link or image
- Create and update a user profile
- Rate and review things
- Search within an app or on the Internet
- Earn and keep track of rewards points
- Get recommendations based on usage

You don't need to decide any specific features yet!

You will determine user requirements and features in Stage C of the assignment.

Assignment group allocation in tutorials

Assignment groups are pre-allocated. Attend this week's P1 tutorial class and contact you group members.

This is a multi-stage project that includes individual and group tasks.

The following tasks are due next week:

- **Stage A - Gather User Data** (5%, group, due Friday Week 2)
- **Stage B - Understand Your Users** (5%, individual, due Tuesday Week 3)

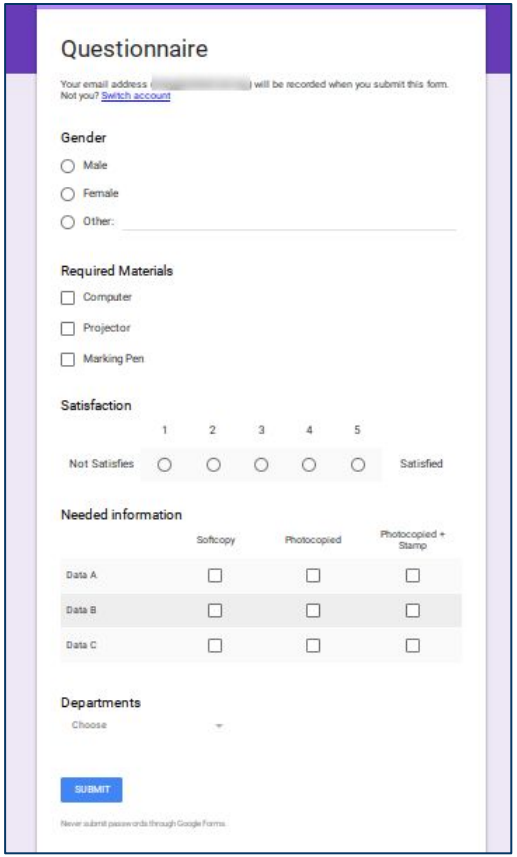
Important techniques are covered in the Week 1 Tutorial P2 session.

Stage A - Survey

At the start of a project's development cycle, surveys are a low-risk way to discover the true requirements of a project.

Working as a group, design a survey that can be easily distributed to many users.

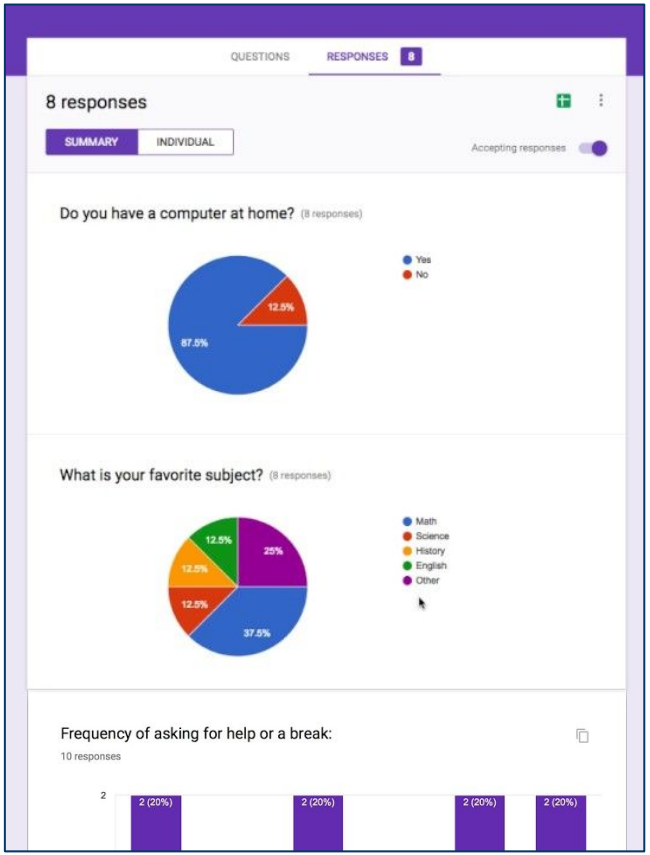
- 5 questions per group member
- Distribute the questionnaire to between **15 and 25 respondents**
- Aim to collect at least **10** survey responses for your analysis.



Stage A - Analysis

Write a short report **(1-2 pages)** that outlines the findings from your data collection.

- Introduce your group's idea and describe how the group designed and distributed the survey.
- Analyse the data collected and explain the most important insights **(1 per group member)**.
- Consider the limitations of the survey and explain further assumptions **(1 per group member)**.
- Append survey questions and collected responses to the end of the report.



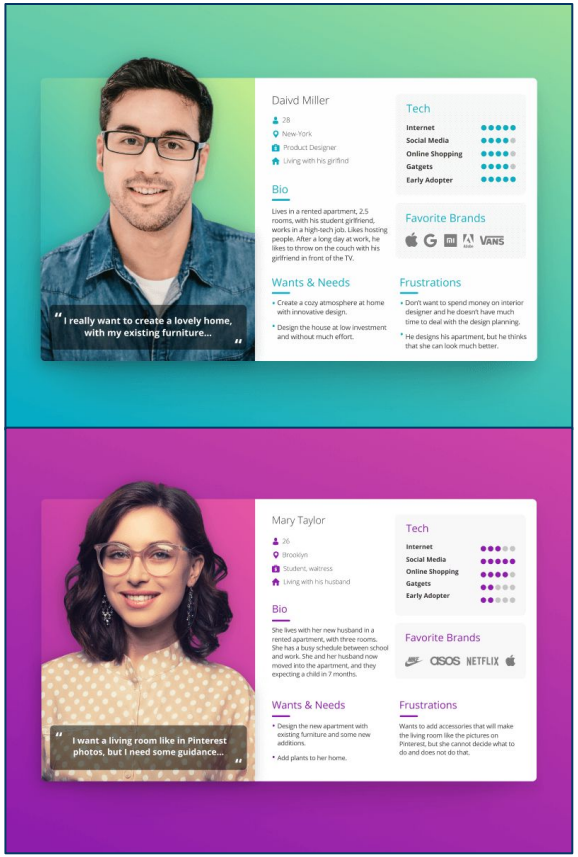
Stage B - Personas

Consider findings from Stage A and discuss with your team the variety of user types that the data represents.

Working individually, each team member creates **1 high-fidelity narrow-scope persona**:

A successfully persona should include:

- Demographic, biographic and personality traits
- Behavioural and attitudinal traits
- Motivations, needs and frustrations
- Being linked to your project's context



Personas by Ofer Ariel - https://dribbble.com/ofergpr

Stage B - User Stories

Working individually, create **3 user stories** describing user goals that the project needs to satisfy to provide an exemplary user experience for your persona.

Rank your user stories in order or importance and assign each story a priority.

Personas, user stories and priority ranking will be covered in Week 1 P2 lecture and tutorial.

Next session

- Understanding users
- Data gathering and personas

Self-study

Review the assignment Project, Stage A and Stage B assessment briefs.

Reminders

- **Important assignment tasks to complete immediately**
  - Contact your assignment group members (Week 1 Tutorial P1)
  - Agree on a basic assignment idea by the end of this week.