Week 3-3
Users and Requirements

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3*

McMaster University

Quick Items

- Extended deadline for M1
  - September 22nd Monday 11:59pm
  - If you need additional time to make sure your user groups and user characteristics are right after today's lecture
  - M2 instruction will be posted next week before the first tutorial on Monday
- Individual Assignment 1 posted
  - Will do more practice next Monday

Week 3 Goals Overview

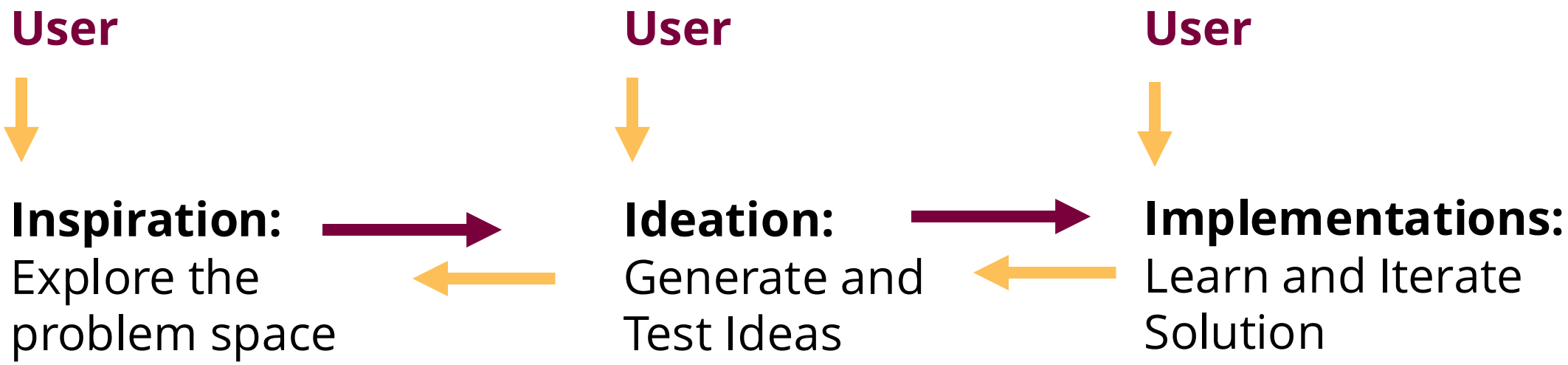
- ~~**Monday**~~
  - ~~Design Principles: Part 2~~
- ~~**Wednesday**~~
  - ~~Design Principles: Part 3~~
- **Friday**
  - **Users and User Requirements**
  - **Understanding User**

Human-Centered Design

"an approach that puts **human needs, capabilities, and behavior first**, then designs to accommodate those needs, capabilities, and ways of behaving."

Human-Centered Design

Involve users in **all phases** of the design process:



Who are Your Users?

People **who directly interact with the product/application** to accomplish a task

But is that it?

Others

- Those who manage direct users
- Those who receive products from the system
- Those who maintain the system
- Those who make purchasing decisions

Categories of Users

The large number of people who all have an interest in the design are referred to as **stakeholders**

Three categories:

1. **Primary:** frequent hands-on users
2. **Secondary:** occasional users
3. **Tertiary:** affected by introduction of system or influence its purchase

Example

I am designing **a digital remote reading system** for **older adult volunteers** to read with **elementary school kids** on a weekly basis **during the school time**. Who are the stakeholders in this system design?

- Primary stakeholders (direct users)?
- Secondary stakeholders?
- Tertiary stakeholders?

User Characteristics

User characteristics include:

- **Physical attributes:** age, gender, height, hand size
- **Perceptual abilities:** hearing, vision
- **Cognitive abilities:** memory, reading level
- **Personality/Social traits:** Likes/Dislikes, patience

User Characteristics

User characteristics include (continued):

- **Environment:** sound/lighting, surface height, internet bandwidth
- **Cultural and International Diversity:** language, symbolism
- **Experience level**
- Vulnerable populations

User Characteristics: **Experience**

Three types of experience:

- **Novices:** highly visible functions, restricted set of tasks, tutorials to more complex tasks
- **Intermediate:** reminders and tips, interface facilitates advanced tasks
- **Experts:** shortcuts visible functions, restricted set of tasks for efficiency, customizable interface

Quick Practice #1

Who are the stakeholders for an automated check-out system at a large grocery store?

- Primary?
- Secondary?
- Tertiary?

Quick Practice #1

Customers:

- Primary users: customers will operate it every time they make purchases

Check out operators:

- Primary/secondary users: they interact with the system (often daily) when customers are having difficultly

Managers and owners:

- Secondary or tertiary users: they may occasionally interact with the system but mostly concerned about satisfied customers, safety and good functionality of system

Quick Practice #2

Take 3 minutes to think and write down **the primary users and stakeholders of the following systems**:

- an **electronic calendar** or diary for yourself. You might use this system to plan your time, record meetings and appointments, mark down people's birthdays, and so on.
- an **online personal banking** system for yourself. You might use this system to check balances, transfer between accounts, pay bills, and so on.
- **a program for HCI project groups** for enables group members to record and track project contributions, to-do lists, meeting times, grades, etc.

Quick Practice #2

Calendar: the user of such a system is yourself. However, the stakeholders could be people you make appointments with, people whose birthdays you remember, etc…

Banking: the user of such a system is yourself, your partner, family or anyone else you share your finances with. The stakeholders could be the banking institutions, your family, lenders, etc…

Tracking: HCI students and other students later. Stakeholders are the HCI prof, TAs, department, faculty, university

Requirements

"A statement about a product that specifies **what it should do or how it should perform"**

The goal of **requirements gathering** is to collect a set of requirements that

- Are **as clear as possible**. As developers will not necessarily be HCI specialists
- **We can tell when they have been met, or properly considered**

Often if you can't tell when a requirement is **satisfied/considered,** it is too **vague/abstract**

Requirements

5 primary types:

1. Functional
2. Data
3. Environmental / Context of Use
4. User characteristics
5. Usability

All requirements have the user in mind

Requirements: **Functional**

What a product should do

Example: ATM Machine

The system should give users access to their cash if they use their debit card

Requirements: **Data**

What kinds of data need to be stored

Example: ATM Machine

The system will need to access clients records from the bank to determine if there is sufficient funds

Requirements: **Environmental/Context of Use**

Circumstances in which the product will be expected to operate

Environment of the use: Physical environment, social environment, organizational environment, technical environment

Example: ATM Machine

Users will use the system while being in a rush

Requirements: **User Characteristics**

What are the requirements imposed by the user group?

User Characteristics: ability, background, attitude to computers

System use: novice, expert, casual, frequent

Example: ATM Machine

ATM users will be 13/15 and older

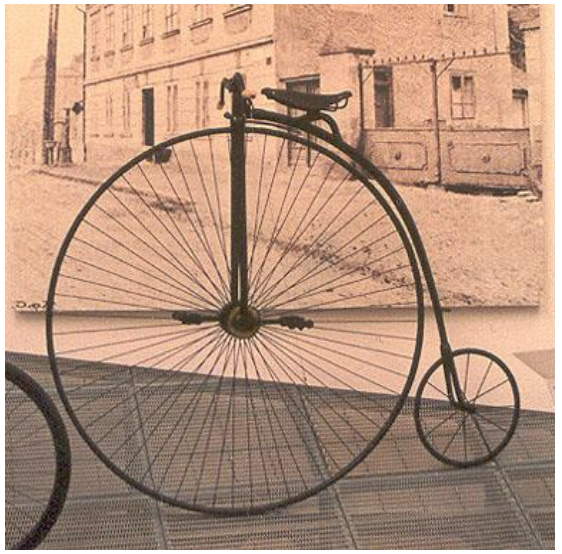
Requirements: **Usability**

What is required to make the system usable?

Should capture the usability goals and associated measures for a particular product, i.e., learnability, memorability, safety

Example: ATM Machine

Easy to learn (learnability)



Quick Practice #1

Take 3 minutes and work with the person next to you to **suggest a key requirement for each category** for the following scenario:

An **interactive system** for use in a self-serve university cafeteria that allows users to **pay with a card**

- Functional
- Data
- Environmental
- User Characteristics
- Usability

Quick Practice #1

- **Functional:** The system will calculate the total cost of the food items
- **Data:** The system must have access to the price of all food items in the cafeteria
- **Environmental:** Users will be carrying a tray
- **Users:** The majority of users will be under 25 and frequent users
- **Usability”** The system needs to be easy to learn so that new users can use it immediately

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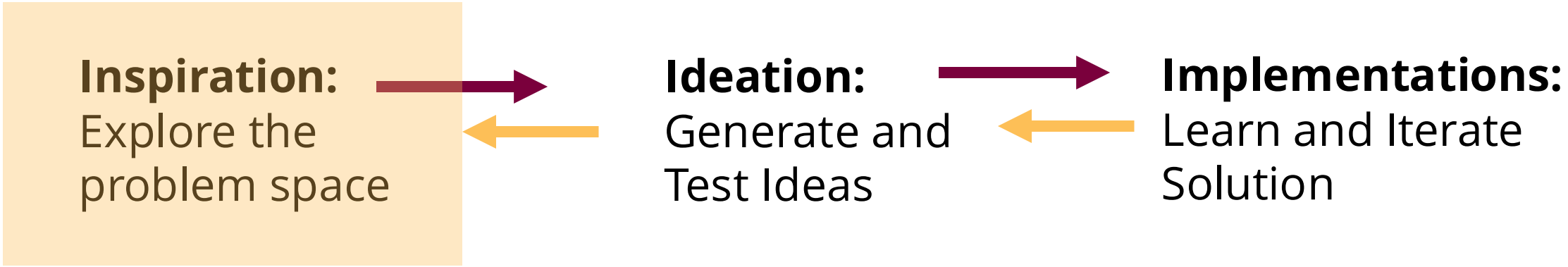
How do we gather requirements?

Investigate the problem space!

We will learn about some ways to do this, but in general there are some common techniques such as **observing** what people do or **talk** to them.



How do we gather requirements?

As you investigate, there are two things to keep in mind:

- You are **NOT** your users
- Keep an **OPEN** mind

IDEO Methods Cards

IDEO is an award-winning design company

Very successful design process

- Human-Centered Design process, Design Thinking, IDEO Brainstorming

IDEO Method Cards: easy-to-digest notes on some of their methods

IDEO Methods Cards

Let’s learn lots of methods, techniques, tried and true ways to investigate

- Not a **complete** list
- Not a **perfect** list
- A **great resource/starting point**

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