

Requirement Gathering

INFO3315 – Lecture 05

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Unit Outline



Fundamentals of HCI

Introduction to HCI

Guidelines & Principles

Understanding interaction

Cognitive aspects



Basics of User Interfaces

Evolution of Interfaces

Interface Types

Social, collaborative and
emotional interfaces



Design Process

Requirement gathering

Design and Rapid prototyping

Evaluation

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Evaluation

Contents

The importance and types of requirements

How to establish requirements for a UI?

Methods to gather data from users

Bringing requirements to life



Reference

- Preece et. al., Interaction Design, 5th Edition.
- Chapter 8 and 11

Human Computer Interaction

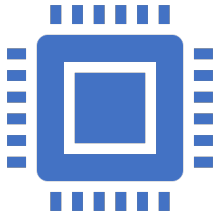
How to design better user interfaces and experiences?



Design Process



- Understand the problems and requirements



- Create designs to address the requirements



- Evaluate



User-Centred Design (UCD)

Shown to be most
successful

Hence frequently used

UCD – Key Principles

John Gould and Clayton Lewis (1985)

- **Early focus on users and tasks**
 - Who is the user? How they do normal tasks (observe)? Get the user involve in design
- **Empirical measurement**
 - The reactions and performance of intended users are observed and measured
 - E.g. simulations and prototypes
- **Iterative design**
 - When problems are found in testing, fix and do more tests

The Importance of Involving Users

- **Good functionality**

- Ensure that the end product is usable and will be used
- Best perspective is from the user who performs the activity every day

- **Expectation management**

- Make sure that the users' expectations are realistic. (no surprises)
- When users are involved in development, they can see the product's capabilities from an early stage
- Adequate and timely training is another technique for managing expectations

- **Ownership**

- Users who are involved are more likely to feel a sense of ownership and support its use (Bano et al., 2017).
- How to involve users and in what roles for how long -- needs careful planning

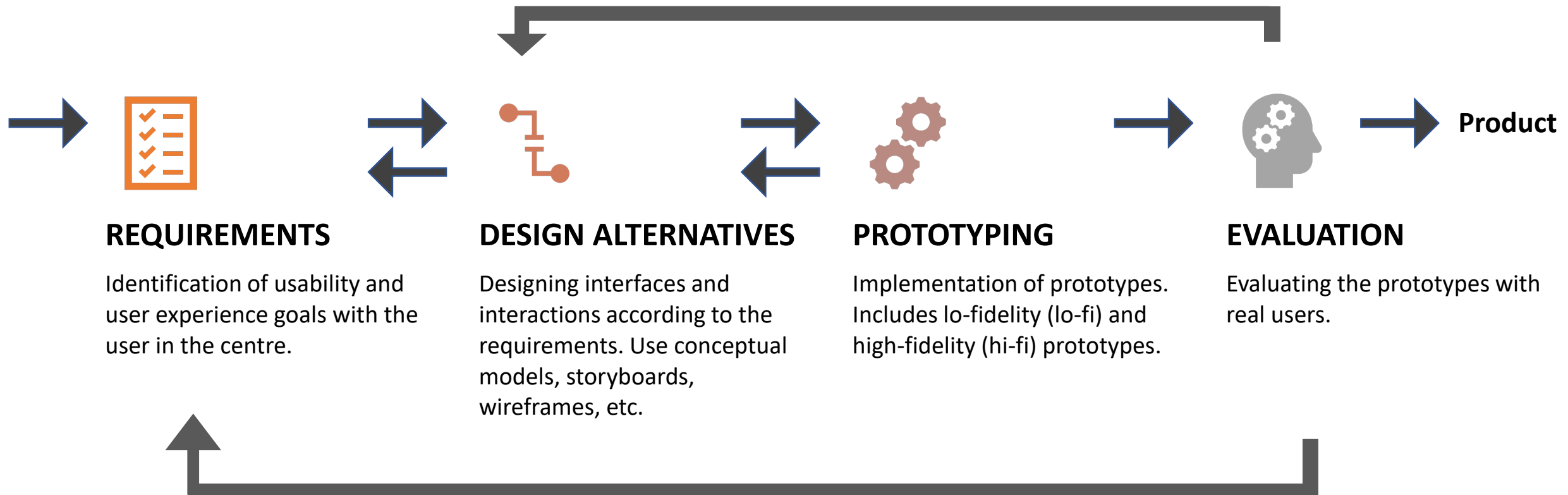
Empirical Measurement

- Identify specific goals up front
- Empirically evaluate at regular stages throughout development
 - Reactions and performance of **intended users**

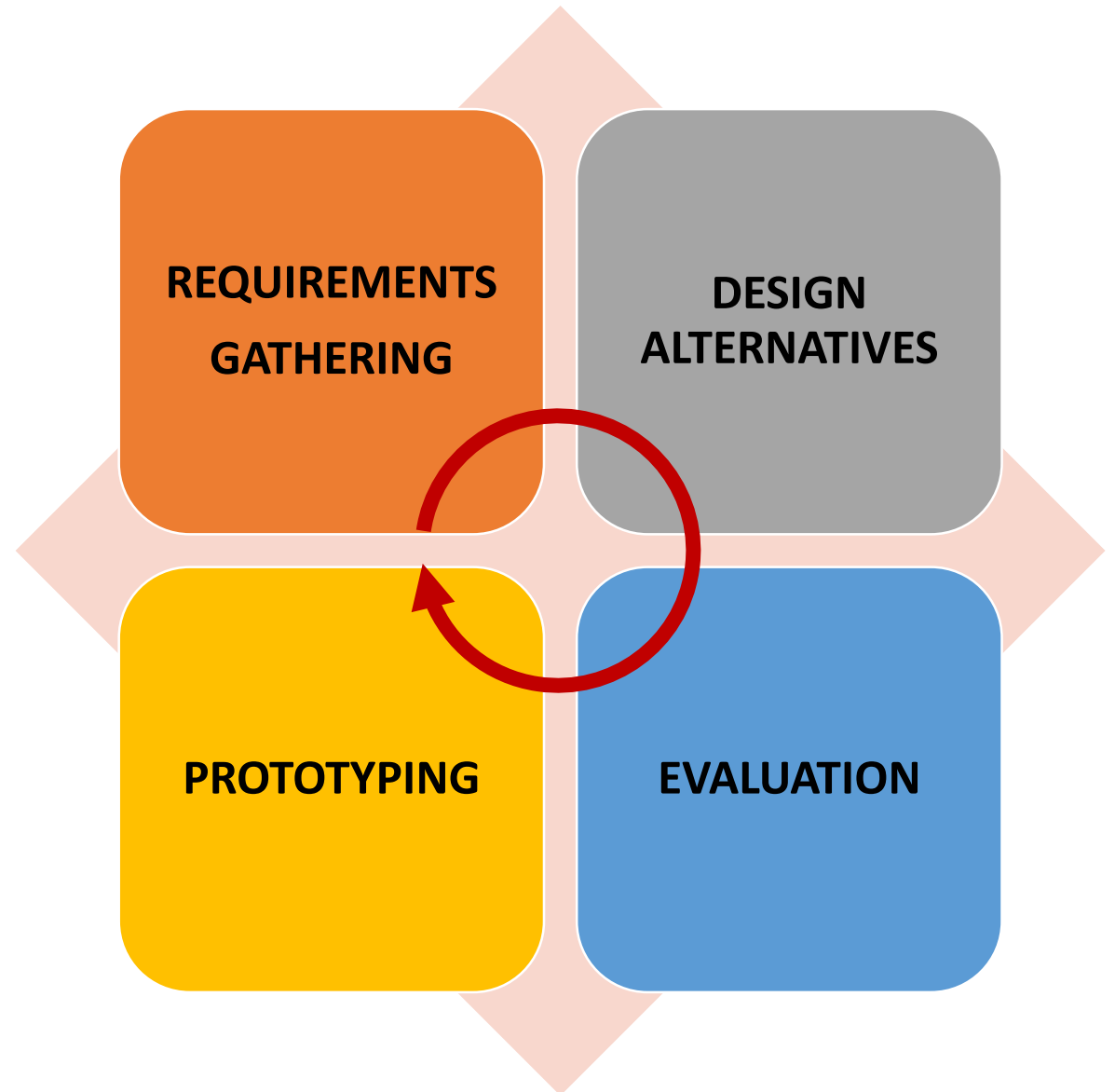
Iterative Design

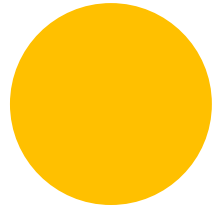
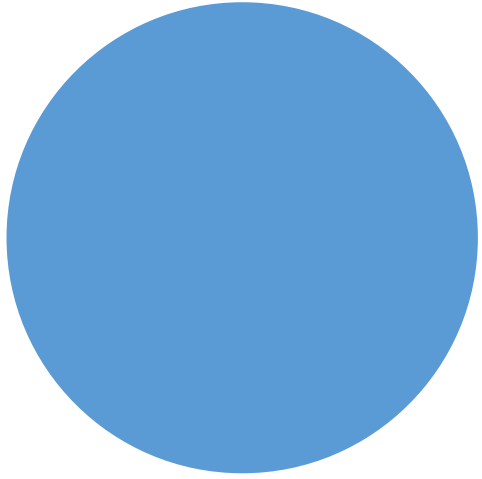
- Allows designs to be refined based on feedback
 - Artefact and ideas need to be revised several times in light of feedback
- Particularly true when trying to innovate
 - Innovation rarely emerges whole and ready to go
 - It takes time, evolution, trial and error, and a great deal of patience

User-Centred Design Process



User Centred Design Process

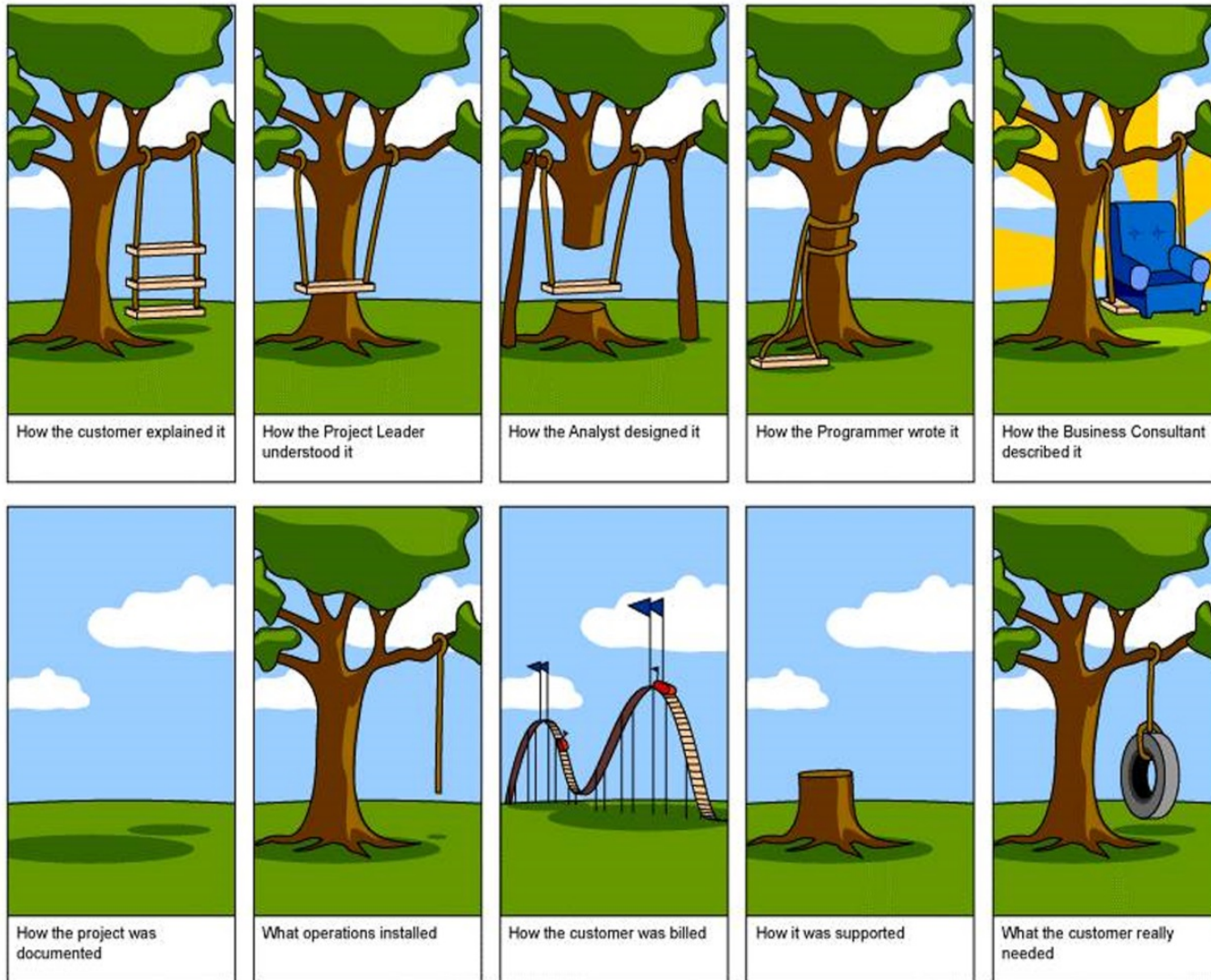




Requirements Gathering

User-Centred Design
Process

Why Bother?



- This is where **miscommunication** occurs most commonly
- Fixing errors at a later phase is very **costly**
- Getting requirements right is **crucial**

What are requirements?

- A statement about an intended product that specifies what it is expected to do or how it will perform
 - A requirement for a smartwatch GPS app:
 - “the time to load a map is less than half a second”.
- Different forms and different levels of abstraction
 - E.g. User stories (most prevalent in agile development contexts)
 - As a <role>, I want <behaviour> so that <benefit>
 - As a <traveller>, I want <to save my favourite airline for all my flights>
so that <I will be able to collect air miles>

Different kinds of requirements

- **Functional requirements**

- What the system should do?
- E.g.
 - A robot in a car assembly plant should be able to weld together the correct pieces of metal accurately

Different kinds of requirements

- **Data requirements**

- What kinds of data need to be stored and how?
- The type, volatility, size/amount, persistence, accuracy, and value of the required data
- In database or files
- E.g.
 - In a personal banking application, data must be accurate and persist over many months and probably years

Different kinds of requirements

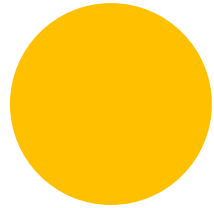
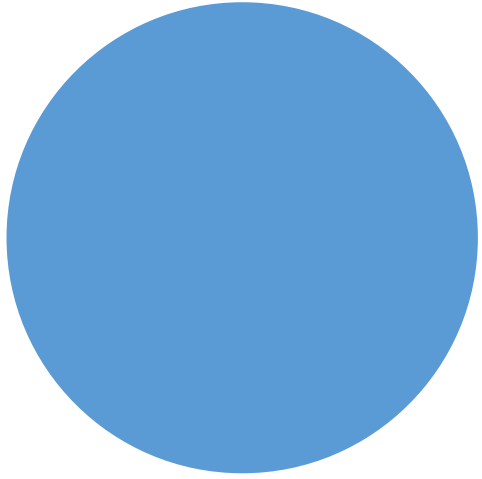
- **Environment requirements** (or context of use)
- *Physical*
 - dusty? noisy? vibration? light? heat? humidity? (for example, in a hospital)
- *Social*
 - collaboration and co-ordination, data sharing, distributed, synchronous or asynchronous, privacy
- *Organizational*
 - user support, communications structure and infrastructure, availability of training
- *Technical*
 - On what technologies will it run or need to be compatible?

Different kinds of requirements

- **User Requirements** / Who are they?
- *Characteristics*
 - Nationality, educational background, preferences, personal circumstances, physical or mental disabilities
- *System use*
 - Novice: clear step-by-step guidance, constrained
 - Expert: flexibility, access to advance features
 - Frequent: shortcuts
 - Casual/infrequent: clear menu paths
- Collectively called a **user profile**

Different kinds of requirements

- **Usability / User Experience requirements**
- Different interactive products will be associated with different requirements
 - E.g. A telecare system designed to monitor an elderly person's movements
 - Should be easily worn -- constrained by the type and size of sensors
 - Fashionable, preferably hidden



Establishing Requirements

Important Questions

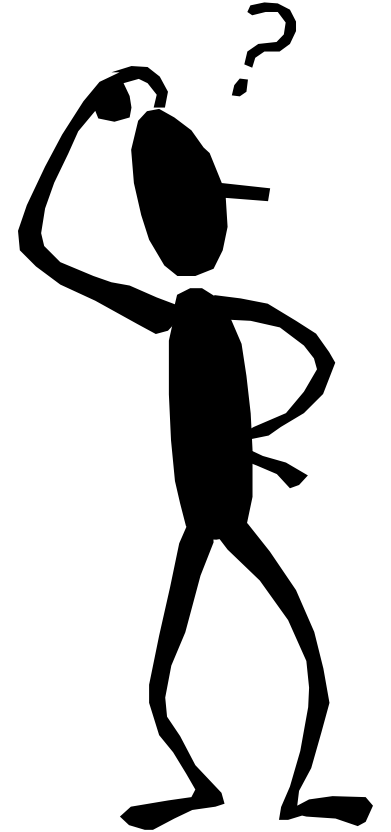
This section adapted from Prof. Juergen Steimle's slides on Establishing requirements

Three Questions

- Why develop the system?
 - The problem space
- Who are the users?
- What do they want to do with the system?

Why develop the system?

- Rationale
 - Reduce cost, improve efficiency/quality, new ways to do tasks, etc.
- How?
 - New UI, new program, new device
- Understand Existing Solutions
 - Are there problems and why?
 - What are good aspects and why?



The problem space

- **Situation of concern**

- Brief text (1-3 sentences) that describes the main goal and main constraints

- Example:

“Freshmen students of a relatively new program of study are often unsure what classes they should best choose. They are interested in learning from the experience of more advanced students. They generally have a higher demand for mentoring.”

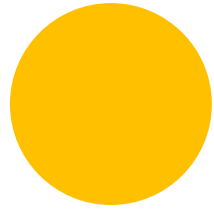
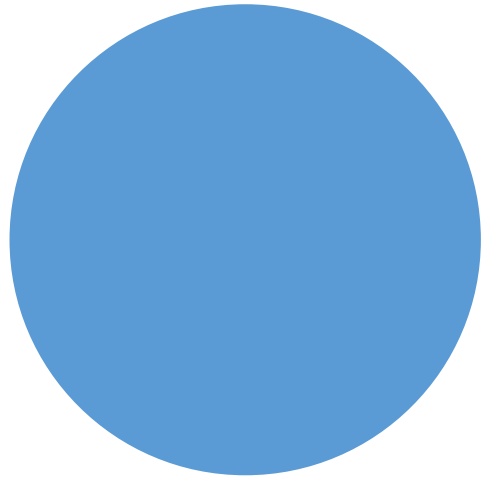
The problem space

- **Problem statement**

- A brief text (a few sentences) that concisely captures the intended solution. It comprises information about
 - form of solution
 - type of support it provides to the user
 - activities it support
 - the users

- Example:

“A clearly arranged web-based system including a moderated forum shall present recommendations and tips from advanced students and instructors for younger students of the program of study.”



Who are the user?

Bringing requirements
to life

Who are the Users?

- Many products are multi-purpose and used by many, so user is “everybody”
- More targeted products are associated with specific roles



www.socialsounddesign.com

Users vs stakeholders

- Normal perception of the term “user” is narrow
- **Stakeholders** are everybody who is affected by or has an influence on the system
 - Larger than the group of direct users
 - Identifying stakeholders helps identify groups to include in interaction design activities

Users vs stakeholders



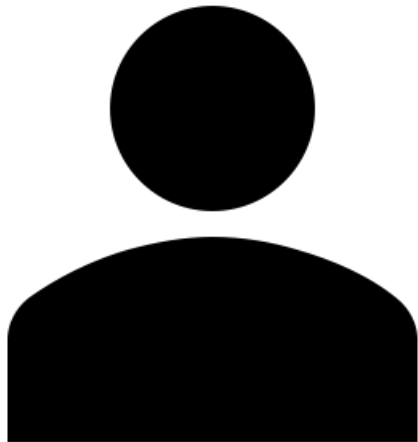
www.travelex.com.au

- User?
 - Bank customer who use the machine
- Stakeholders
 - Bank employees
 - Teller, managers. Etc.
 - Tech support team

Bringing requirements to life

- Augmenting the basic requirements expressed as stories
- To characterize users
 - **Personas** - Rich descriptions of typical users

Personas




- Capture a set of user characteristics (user profile)
 - Fictional
- Synthesized from real people based on user research
- Typical, not idealized

Personas

- Bring to life with
 - Name, characteristics, goals, and personal background
- Captures the unique set of goals of this set of users
- Characterizes
 - Skills
 - Attitudes
 - Task(s)
 - Environment of the user

Personas - Example

- A persona developed by the U.S. Department of Agriculture's (USDA) Economic Research Service (ERS) for senior managers

Persona:	USDA Senior Manager Gatekeeper
Photo:	
Fictional name:	Matthew Johnson
Job title/ major responsibilities:	Program Staff Director, USDA
Demographics:	<ul style="list-style-type: none"> • 51 years old • Married • Father of three children • Grandfather of one child • Has a Ph.D. in Agricultural Economics.

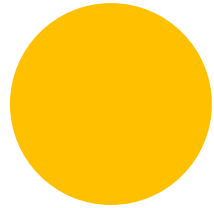
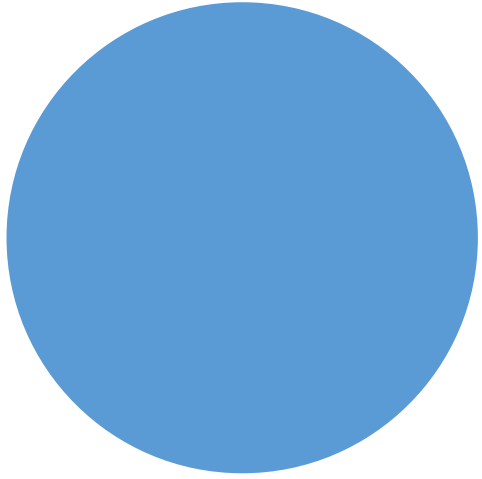
Goals and tasks:	<p>He is focused, goal-oriented within a strong leadership role. One of his concerns is maintaining quality across all output of programs.</p> <p>Spends his work time:</p> <ul style="list-style-type: none"> • Requesting and reviewing research reports, • preparing memos and briefs for agency heads, and • supervising staff efforts in food safety and inspection.
Environment:	<p>He is comfortable using a computer and refers to himself as an intermediate Internet user. He is connected via a T1 connection at work and dial-up at home. He uses email extensively and uses the web about 1.5 hours during his work day.</p>
Quote:	<p>“Can you get me that staff analysis by Tuesday?”</p>

Elements of a Persona

- Persona Group (who is it for i.e. online shopper)
- Fictional name
- Job titles and major responsibilities
- Demographics such as age, education, ethnicity, and family status
- The goals and tasks they are trying to complete
- Their physical, social, and technological environment
- A quote that sums up what matters most to the persona as it relates to the system
- A casual picture(s) representing that user group

Personas

- Benefits
 - Helps to focus decisions around real-world considerations
 - Personas can inform functionality
 - Helps designer with design decisions
 - Reminds team about who will use the product
- Develop **a small set of personas with one primary**
 - Focus on the major needs of the most important user groups



What would
users do?

Bringing requirements
to life

What users want to do with the system?

- Users have a little understanding about possibilities
- User won't tell you what they **need**
- Would users have imagined the concept of a smartphone 20 years ago?



similarweb.com



thewirecutter.com

Task Analysis

- Rather than waiting user to tell you,
 - **Look at existing tasks**

Task Analysis is useful to understand:

- Your users' goals and what they are trying to achieve
- The steps that your users currently take in order to achieve their goals
 - **Follow instructions or work arounds**
- The personal, social and cultural experiences that users bring to the tasks
- The influence of the physical environment on the users while attempting to meet a goal

Techniques for understanding tasks

- Scenarios
- Use Cases

Scenarios

- A scenario is an “informal narrative description” (Carroll, 2000)
 - Telling stories is a natural way
- Describes human activities or tasks in a story
- Using the vocabulary and phrasing of users
 - Stakeholders can understand

Scenarios - Example

- A group travel organizer app that supports a group of people, perhaps a family, who are exploring vacation possibilities together

Scenarios – Example (Part 1/3)

The Thomson family enjoys outdoor activities and wants to try their hand at sailing this year. There are four family members: Sky (8 years old), Eamonn (15), Claire (32), and Will (35).

One evening after dinner, they decide to start exploring the possibilities. They want to discuss the options together, but Claire has to visit her elderly mother so she will be joining the conversation from her mother's house down the road. As a starting point, Will raises an idea they had been discussing over dinner—a sailing trip for four novices in the Mediterranean.

Scenarios – Example (Part 2/3)

The system allows users to log in from different locations using different devices so that all members of the family can interact easily and comfortably with it wherever they are. The system's initial suggestion is a flotilla, where several crews (with various levels of experience) sail together on separate boats.

Sky and Eamonn aren't very happy at the idea of going on vacation with a group of other people, even though the Thomson's would have their own boat. The travel organizer shows them descriptions of flotilla experiences from other children their ages, and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities.

Scenarios – Example (Part 3/3)

Will confirms this recommendation and asks for detailed options. As it's getting late, he asks for the details to be saved so that everyone can consider them tomorrow. The travel organizer emails them a summary of the different options available.

Scenarios

- Allows the designer to identify the stakeholders and artefacts involved in an activity
 - Repeated references (particular app, drawing, behaviour, or location) indicates it is central to the activity being performed
- Allows the designer to explore the constraints, contexts, irritations, facilitators

Use Cases

- Focus on functional requirements and capture interaction
- Can be used in design or to capture requirements
- Use cases are step-by-step descriptions of interactions

Use Cases - Two styles

- **Essential use cases:**

- Division of tasks between the user and the system
- Focuses on user intentions and product responsibilities
- No implementation/interaction detail

- **Use case with normal and alternative courses:**

- More detailed
- Captures the user's goal when interacting with the product

Essential use cases: Example

- Use case for the visa requirements element of the group travel application

RetrieveVisa	
USER INTENTION	SYSTEM RESPONSIBILITY
find visa requirements	request destination and nationality
supply required information	obtain appropriate visa information
obtain a personal copy of visa information	offer information in different formats
choose suitable format	provide information in chosen forma

Normal and alternative courses

- **Normal course**

- Set of actions most commonly performed

- **Alternative courses**

- Other possible sequences
 - Captured at the bottom of the use case

Normal course: Example

1. The product asks for the name of the destination country.
2. The user provides the country's name.
3. The product checks that the country is valid.
4. The product asks the user for their nationality.
5. The user provides their nationality.
6. The product checks the visa requirements of that country for a passport holder of the user's nationality.
7. The product provides the visa requirements.
8. The product asks whether the user wants to share the visa requirements on social media.
9. The user provides appropriate social media information.

Alternative courses: Example

4. If the country name is invalid:

- 4.1 The product provides an error message.
- 4.2 The product returns to step 1.

6. If the nationality is invalid:

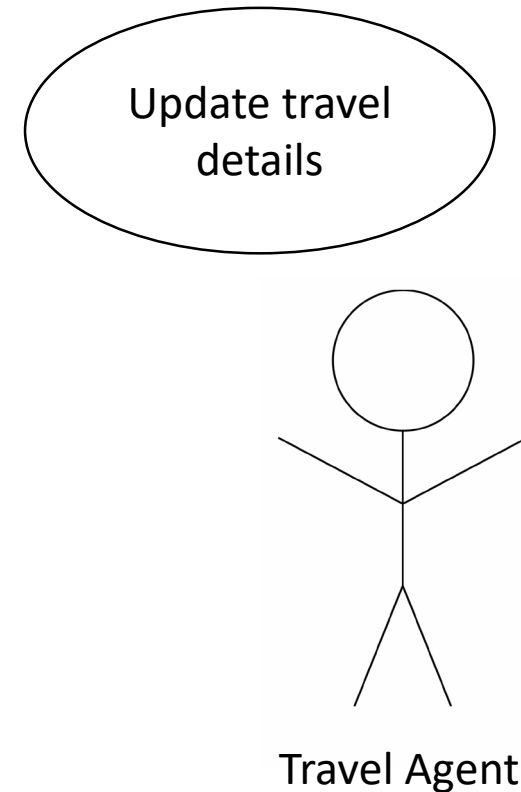
- 6.1 The product provides an error message.
- 6.2 The product returns to step 4.

Use Case Diagram

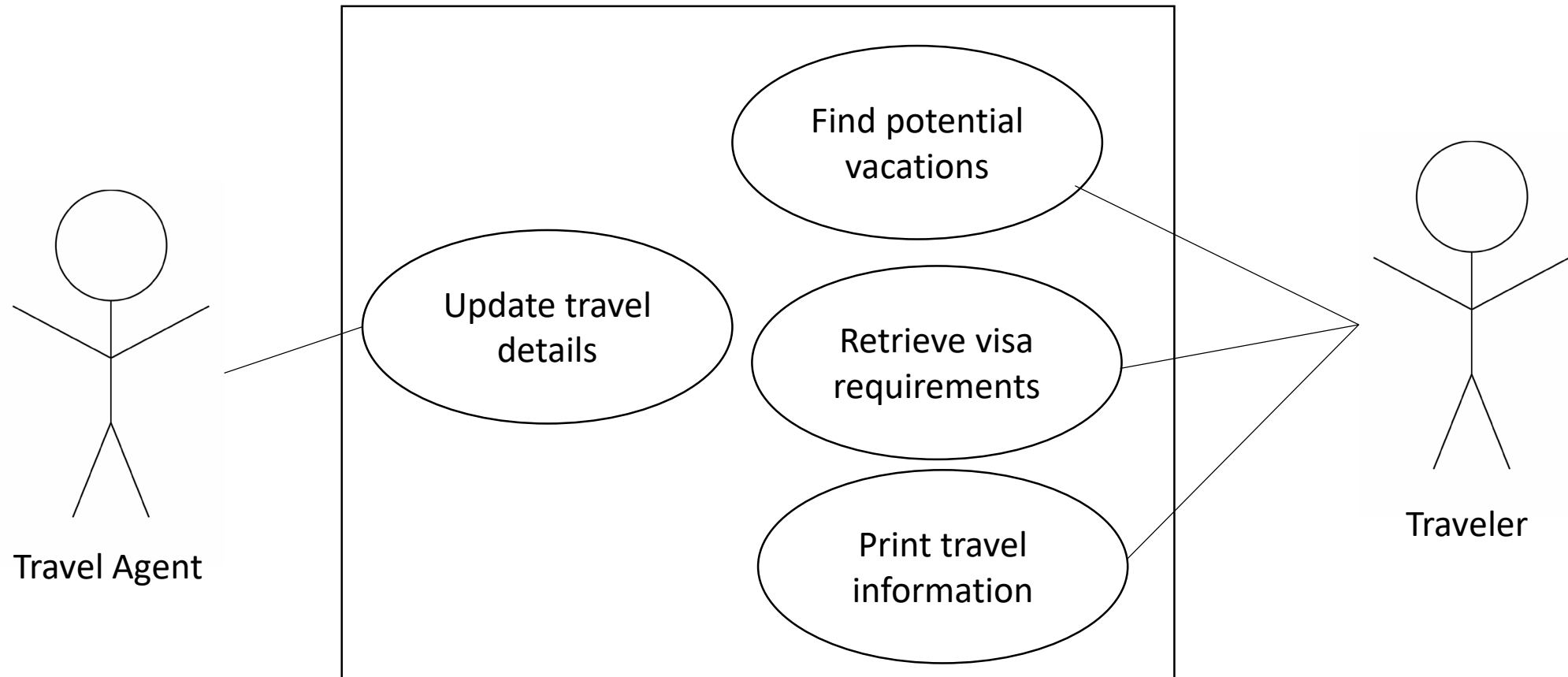
- Capture a list of possible actions between an actor and a system to achieve a goal
- Follows Unified Modelling Language (UML) format

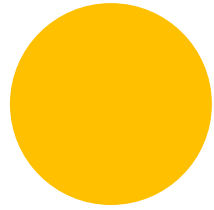
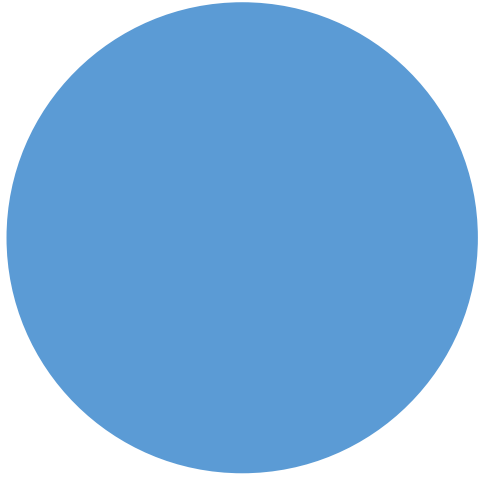
Use Case Diagram - Elements

- **Use cases** (ellipse):
A use case represents the actions that are performed by one or more actors to pursuit a particular goal
- **Actors** (stick figure ***annotated***):
A person, organization, or external system that plays a role in interactions with the system
- **System** (box, optional):
Boundary box around use cases indicates the scope of the system
- **Associations** (solid lines):
An actor is involved with an interaction described by a use case



Use Case Diagram - Example





Data Gathering

Collect sufficient,
relevant and
appropriate data

Five key issues

1. Setting goals

- Identifying users/stakeholder
- Task – Context – Rationale
- Decide how to analyse data once collected

2. Decide from whom to gather data

- How many participants are needed (more than one)
- Involve all the stakeholder groups

Five key issues

3. Relationship with participants

- Clear and professional
- Informed consent when appropriate
- <https://intranet.sydney.edu.au/research-support/ethics-integrity/human-ethics.html>

4. Triangulation

- Look at data from more than one perspective
- Collect more than one type of data/method
 - for instance, qualitative data from experiments and qualitative data from interviews

Five key issues

5. Pilot studies !!

- Small trial of main study
- More than one is better

Data recording

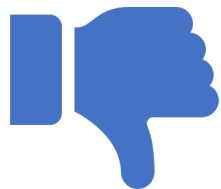
- Notes, audio, video, and photographs can be used individually or in combination

Notes

- Notes



- Gives the analyst a good overview
- Less intrusive and more flexible
 - Can write, draw, annotate
- Helps to focus on what is important



- Writing and decipher is difficult and slow
- Easy to lose concentration
- Biases creep in

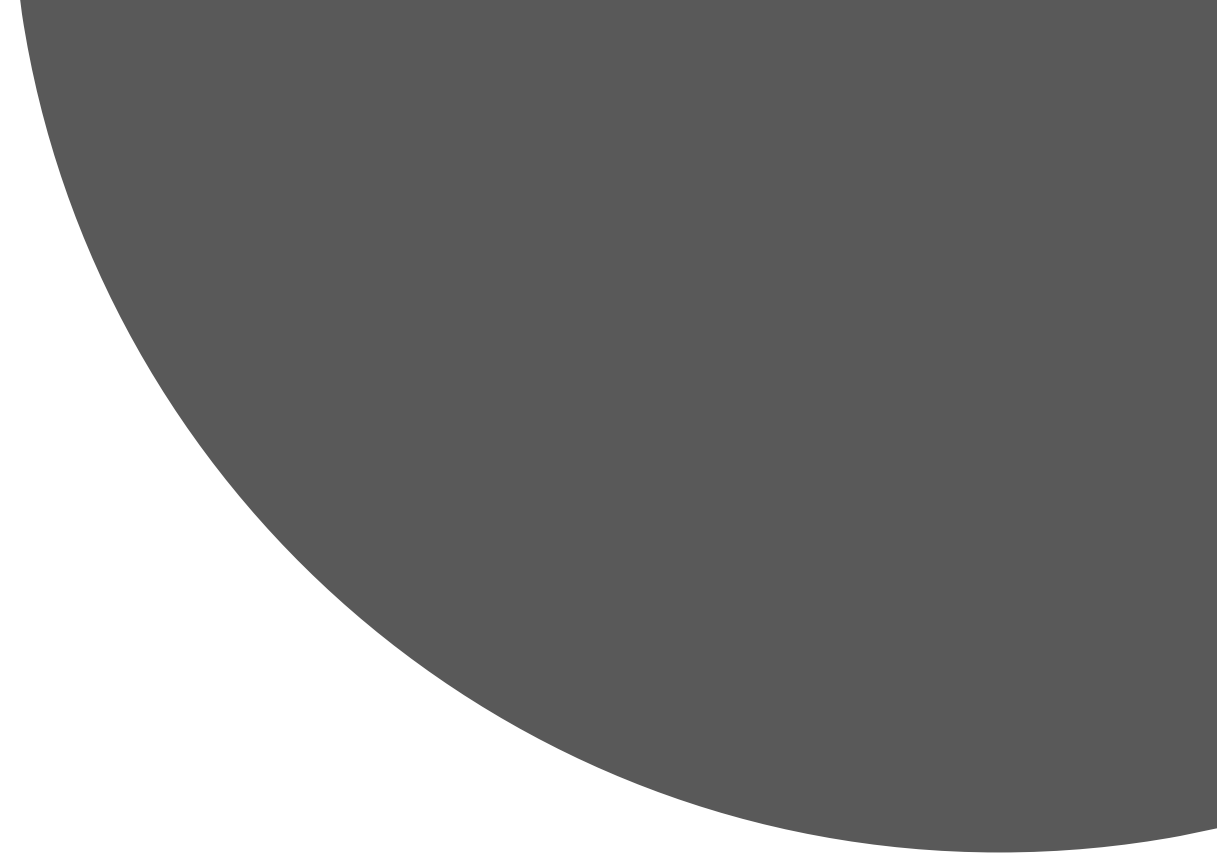
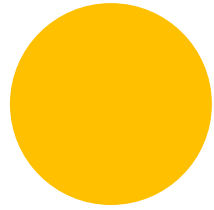
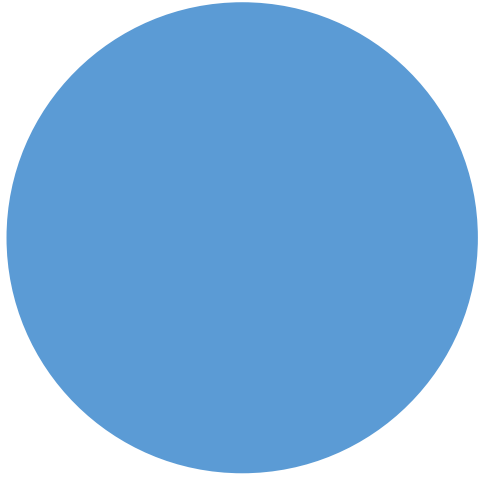
- Working with a colleague can help

Audio / Video

- Audio plus photographs
 - A useful alternative to note-taking
 - Provide added context to the analysis
- Video
 - Short video clips of activity
- Both methods need:
 - Special permission and leads to privacy issues
 - Have to ensure quality (sound level, camera angle, etc.)

Data Gathering Techniques: Overview

- Observation
- Interviews
- Questionnaires



Observation

Data Gathering
Techniques

Observation

- Useful at any stage during product development
 - Early in design:
 - helps designers understand the users' context, tasks, and goals
 - Later in development
 - for example, in evaluation, may be used to investigate how well a prototype supports these tasks and goals

Observation

- **Direct observation**
- **Indirect observation**

Observation

- **Direct observation**

- Observed directly by the investigator as they perform their activities
- Requires time and commitment from a member of the design team
- Can result in a huge amount of data

Observation

- **Indirect observation**

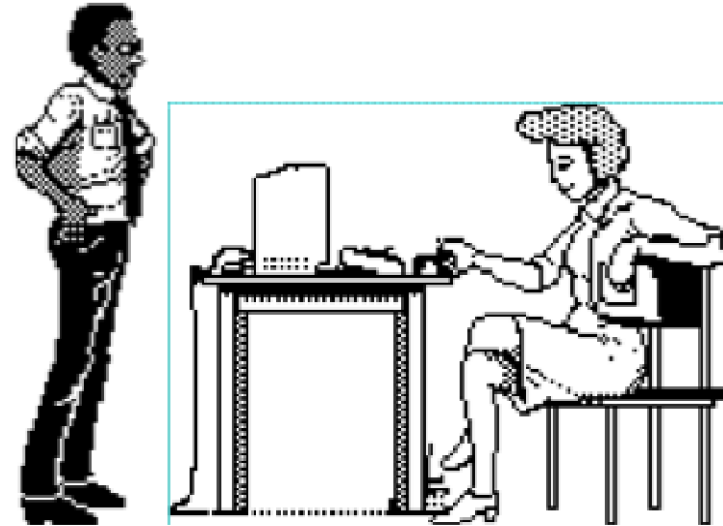
- Through records of the activity that are studied afterward
 - Diaries
 - Interaction logging
 - Video and photographs collected remotely

Direct Observation

- Silent observation
- Think aloud
- Constructive interaction

Silent observation

- Designer watches user while user is working
- No communication during observation
- Example
 - Observe how a student use canvas



Silent observation



- Benefits
 - Helps discover what the user does



- Problems
 - No understanding of
 - The decision process(that lead to problems)
 - user`s mental model
 - user`s opinions or feelings

Think aloud

- Like silent observation, but user is asked to say aloud:
 - What s/he thinks is happening (**state**)
 - What s/he is trying to achieve (**goals**)
 - Why s/he is doing something specific (**actions**)
- Example
 - Student talks over while s/he uses canvas



Think aloud



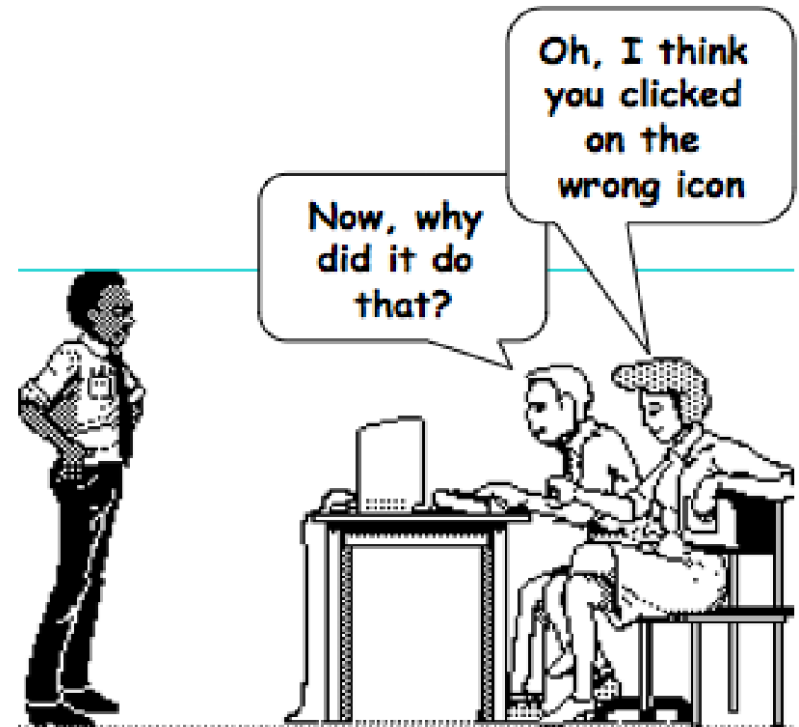
- Benefits
 - Give insights into user's thinking



- Problems
 - Not easy to talk while focusing on a task
 - Not natural to talk aloud
 - Talking can change behaviour

Constructive interaction

- Two people work on a task together
 - Their conversation is observed
 - More natural and comfortable than think aloud
- Variant of this:
 - Different partners Semi-expert as “trainer”, newbie as “student”
 - Student uses UI and asks; trainer answers
- Good: gives insights into mental models of beginner and advanced users at the same time

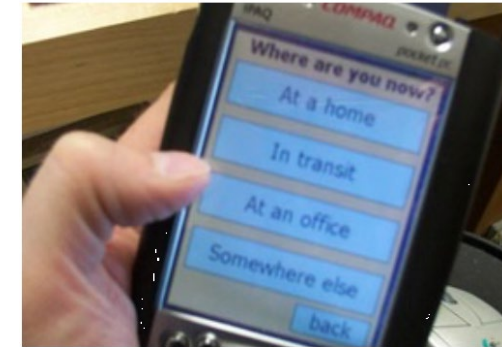


Indirect Observation

- Diaries
- Interaction logging

Diaries

- Diaries are used in (long-term) field studies
- Goal is to get information from users at regular intervals
- Users have to provide some feedback at specific points in time
 - E.g. fill in a short questionnaire at the end of each day
 - E.g. each time an error occurs, describe the error in a Web form
 - E.g. system asks user at specific instances a question



What were you doing at the beep?

☐ Preparing lunch

☐ Watching TV

☐ Getting ready for work

☐ Sleeping

◀ Answers 1-4 of 12 ▶



Interaction logging

- System continuously logs the user activities related to the problem under evaluations

Interaction logging: Eye tracking



<https://www.usability.gov/how-to-and-tools/methods/eye-tracking.html>

Interaction logging

Benefits

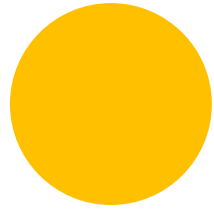
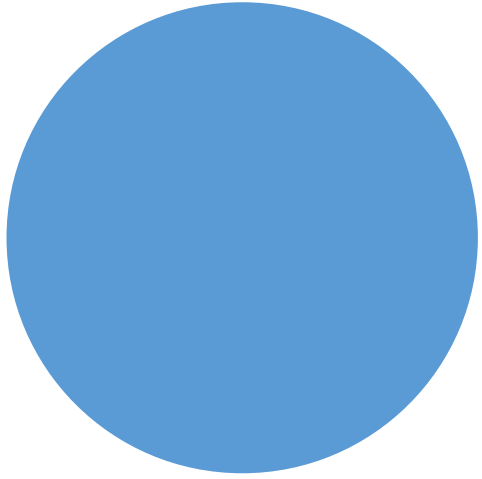
- Good source of detailed (quantitative) data
- Requires only little effort
- Data collection even in remote places
- Good for long-term and field studies

Problems

- Potentially privacy issues
- Not to be used in isolation, only when combined with other methods

Planning and conducting observations

- Decide on how involved you will be
 - From passive observer to active participant
- How to gain acceptance
 - How to handle sensitive topics, for example, culture, private spaces, and so on
- How to collect the data:
 - What data to collect
 - What equipment to use
 - When to stop observing



Interviews

Data Gathering
Techniques

Interviews

- “conversation with a purpose”
 - (Kahn and Cannell, 1957)
- Four main types - (Fontana and Frey, 2005)
 - Open-ended or unstructured
 - Structured
 - Semi-structured
 - Focus groups

Open-ended (unstructured) Interviews

- Not directed by a script
- But needs a plan
- Exploratory
- Similar to a conversation around a particular topic

Open-ended (unstructured) Interviews

- Questions are open
 - No particular expectation about the format or content of answers
- “What are the pros and cons of having a wearable?”
- “Can you tell me a bit more about ...”
 - Referred to as probing

Open-ended (unstructured) Interviews



- Benefits

- Rich data - provides a deep understanding of the topic
- Mention issues that the interviewer has not considered



- Problems

- The interviews will not be consistent across participants
- Time-consuming to analyse

Structured Interviews

- The interviewer asks predetermined questions
- Tightly scripted, often like a questionnaire
- Questions are worded the same for each participant and are asked in the same order

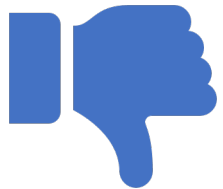
Structured Interviews

- The questions need to be short and clearly worded
- Typically closed questions
 - Require an answer from a predetermined set of alternatives
- “Which of the following websites do you visit most frequently: Amazon.com, Google.com, or msn.com?”
- “How often do you visit this website: every day, once a week, once a month, less often than once a month?”

Structured Interviews



- Benefits
 - Replicable
 - Less time consuming
 - Consistent



- Problems
 - May lacks richness
 - Useful only when:
 - The goals are clearly understood
 - Specific questions can be identified

Semi-structured Interviews

- Combines features of structured and unstructured
- Interviewer has a basic script for guidance
 - Same topics are covered
- Starts with pre-planned questions, then probes the participant

Semi-structured Interviews

Q: Which music websites do you visit most frequently?

A: Mentions several but stresses that they prefer hottestmusic.com

Q: Why?

A: Says that they like the site layout

Q: Tell me more about the site layout.

A: Silence, followed by an answer describing the site's layout

Q: Anything else that you like about the site? (Probe)

Focus Groups

- Interview people in groups
 - A representative sample of the target population
 - For example, in the evaluation of a university website
 - a group of administrators, faculty, and students as three groups
 - Normally, three to ten people are involved led by a trained facilitator
- Appropriate for investigating shared issues rather than individual experiences

Focus Groups

- A preset agenda with the flexibility to follow unanticipated issues as they are raised
- The facilitator guides and prompts discussion
 - Encourages quiet people to participate, and stops verbose ones from dominating the discussion

Focus Groups



- Benefits

- Allows diverse or sensitive issues to be raised
 - Multiple points within a collaborative process
- Good at gaining a consensus view



- Problems

- Can be dominated by individuals
- Interviewer needs to be experienced

Running the interview

- **Introduction**

- Introduce yourself, explain the goals, reassure about the ethical issues, ask to record, present the informed consent form, and capture demographic information

- **Warm-up**

- Make first questions easy and non-threatening.

- **Main body**

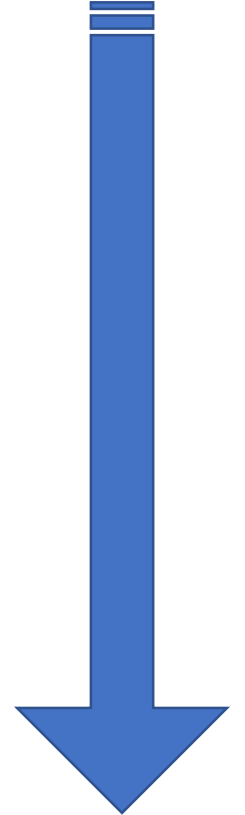
- Present questions in a logical order, ask most important questions

- **A cool-off period**

- Include a few easy questions to defuse tension at the end

- **Closure**

- Thank interviewee, signal the end, for example: switch recorder off



Other forms of interviews

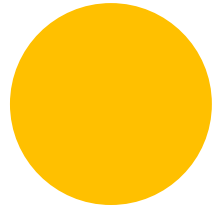
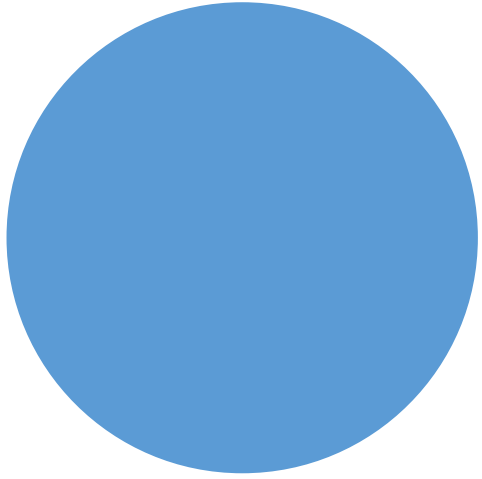
- Digital conferencing systems
 - Skype, Zoom, email, and smartphones
- Some advantages are:
 - Participants are in their own environment
 - No need to travel
 - For sensitive issues, participants can be anonymous

Interviews: Things to note

- Don't pre-empt an answer
 - "You seemed to like this use of colour ..."
- The body language of the interviewer matters
 - Smiling, looking disapproving have a strong influence on agreement

Interviews: Things to note

- Appropriate type depends on:
 - The purpose
 - The questions to be addressed
 - Interaction design activity



Questionnaires

Data Gathering
Techniques

Questionnaires

- Questions can be closed or open
 - Closed questions are easier to analyse, and may be analysed by computers
- They can be administered to large populations
 - Disseminated by paper, email and the web

Questionnaire Design

- You may need different versions of the questionnaire for different populations
- Provide clear instructions on how to complete
- Keeping the questionnaire compact
 - Avoid very long questions and questionnaires

Question and response format

- Fixed choices
 - Checkboxes that offer many options
 - e.g. yes/no
 - e.g. <20 20-39 >=40

Question and response format

- Rating scales
 - Likert scales

2. The use of color is excellent:

Strongly agree	Agree	OK	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Semantic scales

Attractive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ugly
Clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Confusing
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Colorful

- 3, 5, 7 or more points

Questionnaires

Advantages

- Easy and quick to distribute
- Responses are usually quick
- Low cost
- Data can be collected in database for analysis
- Time required for data analysis is reduced
- Errors can be corrected easily

Problems

- Sampling is problematic if population size is unknown
- Preventing individuals from responding more than once can be a problem
- Individuals have also been known to change questions in email questionnaires

Deploying online questionnaires

- Plan the timeline
- Design offline
- Program/complete online template
- Test the survey to make sure that it behaves as you would expect
- Test it with a group that will not be part of the survey to check that the questions are clear
- Recruit participants

Overview of data gathering techniques and their use

Technique	Good for	Kind of data	Advantages	Disadvantages
Interviews	Exploring issues	Some quantitative but mostly qualitative	Interviewer can guide interviewee if necessary. Encourages contact between developers and users.	Artificial environment may intimidate interviewee. It also removes them from the environment where work is typically being done.
Focus groups	Collecting multiple viewpoints	Some quantitative but mostly qualitative	Highlights areas of consensus and conflict. Encourages contact between developers and users.	Possibility of dominant characters.
Questionnaires	Answering specific questions	Quantitative and qualitative	Can reach many people with low resource requirements.	The design is key. Response rates may be low. Unless carefully designed, the responses may not provide suitable data.
Direct observation in the field	Understanding context of user activity	Mostly qualitative	Observing gives insights that other techniques don't provide.	Very time-consuming. Huge amounts of data are produced.
Direct observation in a controlled environment	Capturing the detail of what individuals do	Quantitative and qualitative	Can focus on the details of a task without interruption.	Results may have limited use in the normal environment because the conditions were artificial.
Indirect observation	Observing users without disturbing their activity; data captured automatically	Quantitative (logging) and qualitative (diary)	User doesn't get distracted by the data gathering; automatic recording means that it can extend over long periods of time.	A large amount of quantitative data needs tool support to analyze (logging); participants' memories may exaggerate (diary).

Summary

- Getting requirements right is crucial
- There are different kinds of requirements, each is significant for interaction design
- Requirements are established by gathering data from users, analysing it and then extracting requirements
- Scenarios, use cases, and hierarchical task analysis can be used to articulate existing and envisioned work practices
- A wide variety of methods exist for gathering data for establishing requirements (Interviews, Observation, etc.)

