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INFORMATION
TECHNOLOGY

Lecture 3

User Requirement Gathering and Analysis

FIT5152 - User Interface Design and Usability

GROUP OF EIGHT AUSTRALIA

Learning objectives

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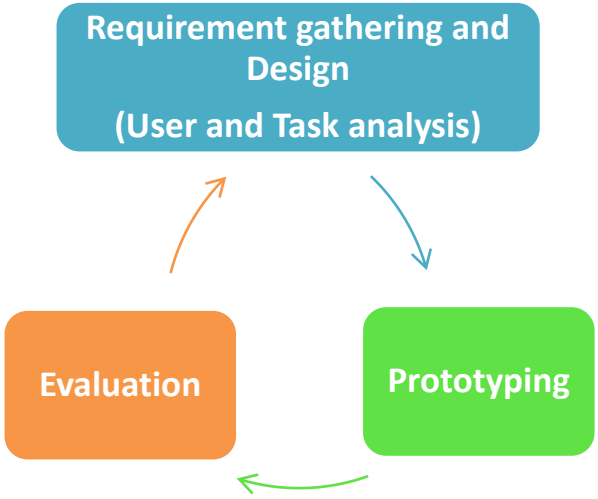
In this lecture you will learn about:

- Different techniques for data gathering
- User Analysis and Personas
- Task Analysis



HCI process (Adapted from Greenberg, 1996)

Data gathering

- The first step of user interface design is to collect information about the user, tasks, the context of use, the environment/domain and if any constraints
- Data can be collected for user analysis, task analysis, and domain Analysis
- Different techniques can be used to collect data

Preece et al (2015)

Data Gathering Methods

- Studying existing documentation
  - Manuals, instruction books or training materials
- Researching similar systems/products

*Data collection methods that involve users:

- Observation
- Interviews
- Focus groups or workshops
- Questionnaire
  - More common in the evaluation phase (usability testing)

**Ethics approval must be sought for data collection and analysis*

Chapter 15: Task analysis from Dix, Finlay, Abowd and Beale (2004). Human-Computer Interaction)

Observation

- You can learn most by actually being with the users and observing them perform tasks
- Observation can be passive or active
  - Passive observation: watching and listening to users in their environments
  - Active observation: asking users questions and having a conversation
- Hawthorne (or observer) effect: if users are aware of being observed, their behavior may be affected

Chapter 15: Task analysis from Dix, Finlay, Abowd and Beale (2004). Human-Computer Interaction

Interviews

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- Interviews involve asking users questions about a topic
  - Close-ended questions: e.g. Yes/No questions, they limit the discussion and data elicitation
  - Open-ended questions: enable exploring, probing and learning more, and allow discussing complex topics
- Different types of interviews:
  - Structured: using a list of predetermined questions
  - Semi-structured: using some predetermined questions but also allowing further elaboration and discovery
  - Unstructured: mainly using open questions
- Interviews can be conducted at the user's workplace
  - It has the advantage of learning more about the user's workplace
- Interviews can be conducted away from their workplace
  - It has the advantage of avoiding work related interruptions

(Gill et al, 2008)

Focus Group

- A focus group allows data collection through group discussions
- Participants are usually key stakeholders
- Participants' selection is important
- It allows participants to discuss their experiences and express their opinions and beliefs
- An efficient and effective way to highlight the key areas
- The role of the facilitator/moderator is very important
  - To lead and manage the discussions
  - To ensure all topics are covered
  - To ensure all participants contribute to the discussions

Questionnaire

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- It can be paper-based or electronic (online)
- It allows gathering data from a large group
- It allows the user to provide anonymous feedback
- It uses a set of standard questions
- It can include closed and open questions
  - Likert scale questions
- Questions should be carefully selected or designed
- Questions should cover all the key variables and topics
- The flow of questions should be right
- The questions should be easy to understand
- The wording should be clear

Know Your User

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"Know thy user" coined by Hansen in 1971

Important to know the user:

- Demographics: age, gender, occupation
- Needs, capabilities and limitations
- Digital literacy
- Cultural background
- Social status

User Skill Levels

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- "Novice or first-time users"
  - With little knowledge of the interface concepts
    - With little 'knowledge in the head'
  - Importance of providing online tutorials, help, informative feedback, meaningful error messages
- "Knowledgeable intermittent users"
  - Knowledgeable but not regular users
- "Expert frequent Users"
  - Very familiar with the task and interface concepts
    - With more knowledge of head
  - Look for completing tasks quickly and shortcuts

(Shneiderman et al., 2014, pg 63)

Design Personas

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- A persona: typical example of a user (a user archetype)
- Personas can provide us with better understanding of user needs, goals and behaviour patterns
- They are a useful representation of real users for designers
  - based on research and data collection such as interviews or observation
- A persona is a tool for communication and design
- Marketing personas
  - Focus more on demographics, shopping behaviour and user preferences
- Design personas
  - Focus more on user goals, needs, motivations, and user behaviour

Alan Cooper, 1998

https://www.cooper.com/journal/2008/05/perfecting_your_personas/

Goal-Directed Design and Personas

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- **Goal-directed design** involves personas, goals and scenarios
- **Persona**: “A precise description of our user and what he wishes to accomplish.” (Cooper 1999, p.123)
- **Goal:** what the user wants to achieve
  - Each persona usually have 2-4 goals
  - Goals are different from tasks, which are performed to achieve goals
- **Scenario**: is a narrative to describe the interaction of a *persona* with a product to achieve a goal in a particular situation

Example

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Clark Andrews

AGE 26
OCCUPATION Software Developer
STATUS Single
LOCATION San Jose, CA
TIER Experiment Hacker
ARCHETYPE The Computer Nerd

Friendly | Clever | Go-Getter

"I feel like there's a smarter way for me to transition into a healthier lifestyle."

Motivations

- Incentive
- Fear
- Achievement
- Growth
- Power
- Social

Goals

- To cut down on unhealthy eating and drinking habits
- To measure multiple aspects of life more scientifically
- To set goals and see and make positive impacts on his life

Frustrations

- Unfamiliar with wearable technology
- Saturated tracking market
- Manual tracking is too time consuming

Bio

Aaron is a systems software developer, a "data junkie" and for the past couple years, has been very interested in tracking aspects of his health and performance. Aaron wants to track his mood, happiness, sleep quality and how his eating and exercise habits affects his well being. Although he only drinks occasionally with friends on the weekend, he would like to cut down on alcohol intake.

Personality

Extrovert — Introvert
Sensing — Intuition
Thinking — Feeling
Judging — Perceiving

Technology

- IT & Internet
- Software
- Mobile Apps
- Social Networks

Brands

Source https://www.keepitusable.com/blog/tag/alan-cooper/

Example

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Jill Anderson

"I'm looking for a site that will simplify the planning of my business trips."

AGE	29
OCCUPATION	Regional Director
STATUS	Single
LOCATION	Portsmouth, NH
TIER	Frequent Traveler
ARCHETYPE	The Planner

Organized	Practical
Protective	Hardworking

Bio

Jill is a Regional Director who travels 4-8 times each month for work. She has a specific region in which she travels, and she often visits the same cities and stays in the same hotel. She is frustrated by the fact that no matter how frequently she takes similar trips, she spends hours of her day booking travel. She expects her travel solutions to be as organized as she is.

Personality

Extrovert	Introvert
Sensing	Intuition
Thinking	Feeling
Judging	Perceiving

Brands

KAYAK, Basecamp, Outlook, enterprise, IHG InterContinental Hotels Group

Goals

- To spend less time booking travel
- To maximize her loyalty points and rewards
- To narrow her options when it comes to shop

Frustrations

- Too much time spent booking - she's busy!
- Too many websites visited per trip
- Not terribly tech saavy - doesn;t like the process

Motivations

- Price
- Comfort
- Convenience
- Speed
- Preferences
- Loyalties/Rewards

Technology

- IT & Internet
- Software
- Mobile Apps
- Social Networks

Source https://www.keepitusable.com/blog/tag/alan-cooper/

Exercise

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- Imagine you are creating a calorie counter app and performing user analysis. Identify 3 personas of the target users and provide their details in a table
- For one of the personas you identified, create a scenario.

Name	Age	Status	Occupation	Health condition	Activity level	Digital Literacy	User Needs and Motivations	Goals

Task Analysis

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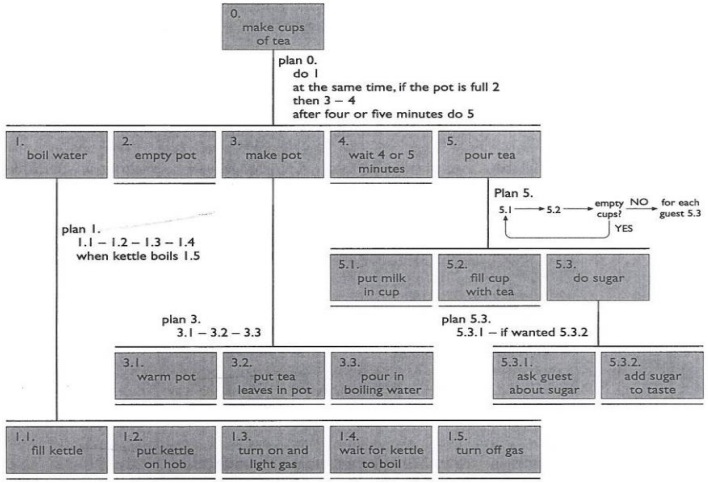
- After knowing the users and goals, tasks should be identified
- Tasks need to be performed by the user to achieve the goal (the desired final result)
- Task analysis helps us with better understanding of:
  - goals
  - what users actually do step by step to achieve the goal
  - how people perform their tasks
  - their priorities, preferences and intentions
  - task flow, frequencies and sequences
- Task analysis is not just a pre-design process and can be done for an existing system

(Sharp, Rogers and Preece 2007)

Hierarchical Task Analysis (HTA)

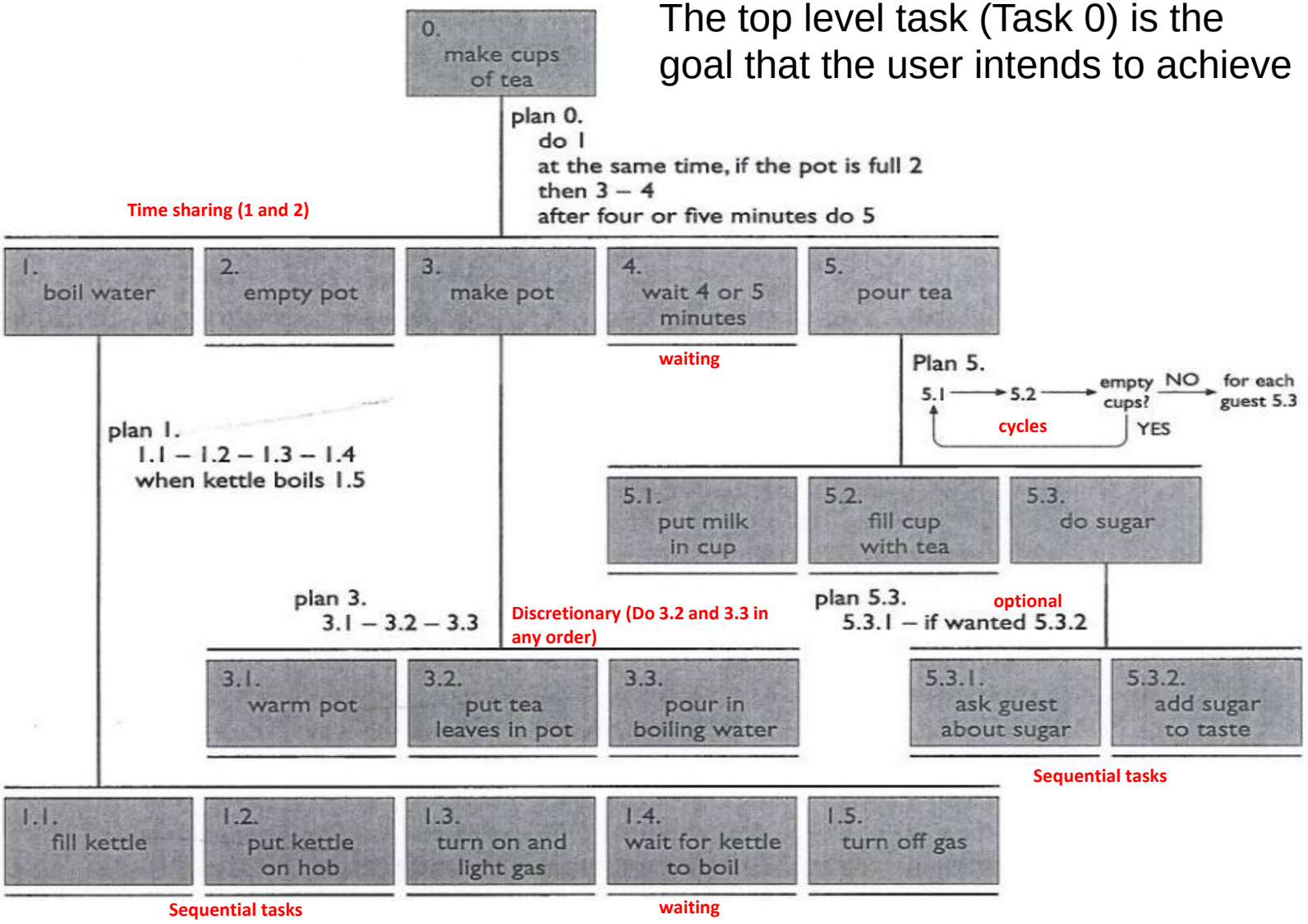
- Hierarchical Task Analysis is a popular task analysis technique
- It is used to represent decomposition of tasks and subtasks
- Tasks are clustered into plans and each plan groups the subtasks
- The diagram includes the hierarchy, subtasks, and the plans
- Plans describe the order and constraints, and the type of plan



Chapter 15: Task analysis from Dix, Finlay, Abowd and Beale (2004). Human-Computer Interaction)

Example

The top level task (Task 0) is the goal that the user intends to achieve



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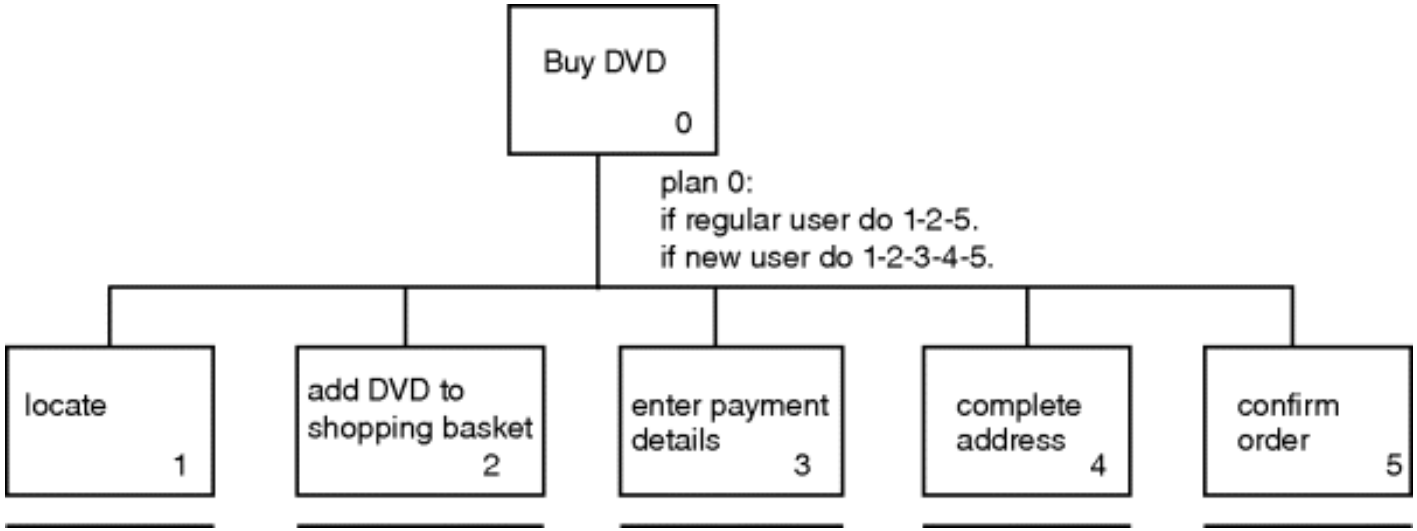
Plans in HTA

- Plans are important to explain the hierarchy, flow and relationships
- Different types of plans:
  - Fixed sequence
    - E.g. do 1.1 then 1.2 then 1.3
  - Optional tasks
    - E.g if the pot is full, do 2
  - Wait for events
    - E.g. wait for the kettle to boil 1.4
  - Cycles
    - E.g. do 5.1 - 5.3 for each guest
  - Time-sharing
    - E.g. do 1; at the same time if the pot is full do 2
  - Discretionary
    - E.g. do 3.2 and 3.3 in any order
  - Mixtures combine several of the above

DVD Example



0. buy a DVD
1. Locate and find DVD
2. add DVD to the shopping basket
3. enter payment details
4. complete address
5. confirm order

- plan 0: If a regular user, do 1-2-5. If a new user, do 1-2-3-4-5.

(source Preece et al, 2015, pg 375)

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