Users, Needs, and Tasks

User Experience Design

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Hall of Fame or Shame?
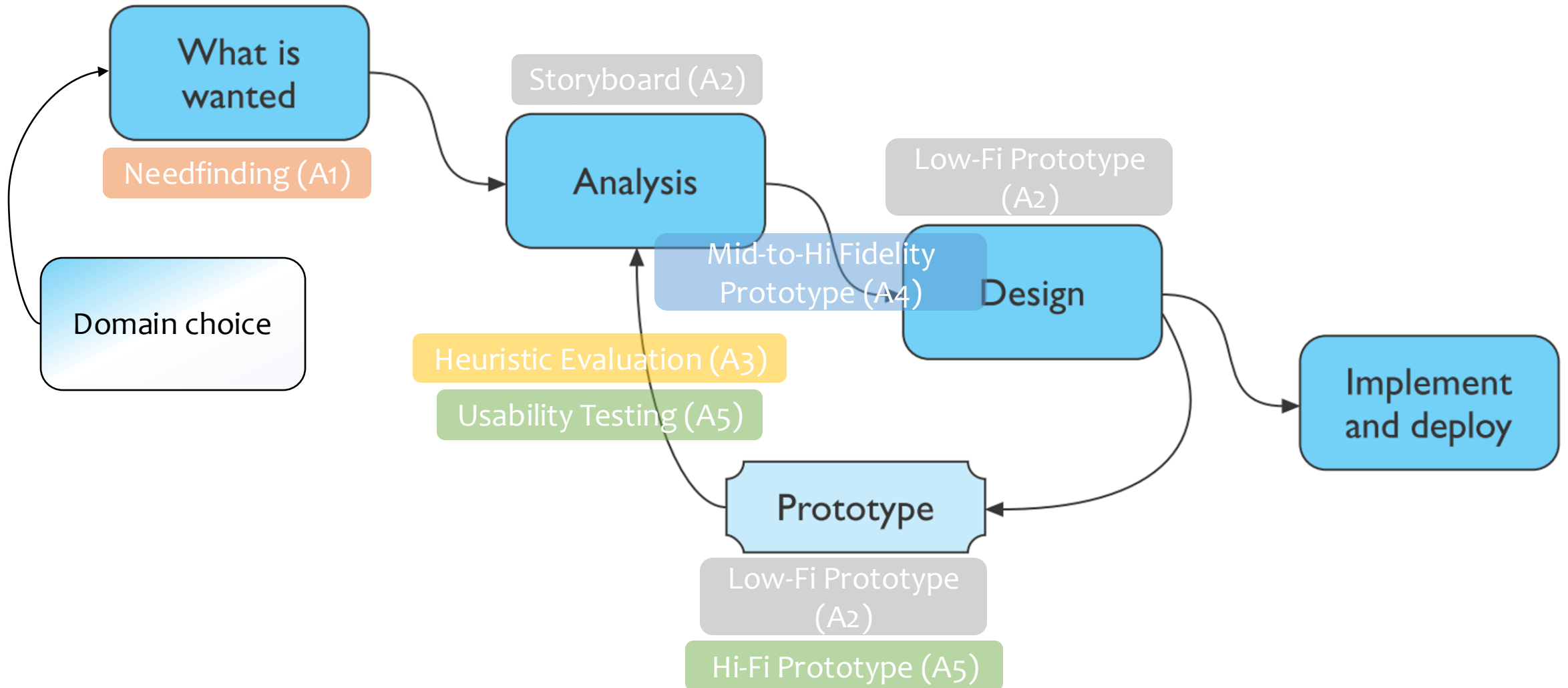
Hall of Fame or Shame?

https://www.youtube.com/watch?v=e2R0NSKtVA0

User Experience Design

Human-Centered Process vs. Assignments

What Are Needs?

- "Human emotional or physical necessities"

- "Gaps in a system"

- They are **verbs**: activities and desires with which your user could use help
  - o not nouns (solutions)

- Often, it is helpful to use the phrases 'needs a way to' or 'needs to be able to' to describe user needs

- They emerge directly from user traits or from contradictions between two traits
  - o such as a disconnect between what they says and what they do

What is Needfinding?

- Needs: **gaps** in a system

- Needfinding: discovering opportunities by **recognizing** this gaps

What is Needfinding?

- Figure out the story of **what** and **why...**

- ... and tell a new one!

Main Needfinding Questions

- Needfinding = **Finding Potential User Needs**
  - What do users need?

- That also requires
  - Who are the users?
  - How are they doing it, now?
  - What is the context in which they are doing it?
  - Can't we just ask them?

Know Your Users (1)

- Who are the users of the system?
  - Uniform, or different categories/groups?
  - Young/old? Novice/experienced?
  - Do not think of "generic" users, split the categories

- ***You*** are not a [representative] user
  - Designers and developers' skills, knowledge, attitude, background, interests, … are totally unlike those of your users
  - Except by chance (e.g., you are also students, developers, …)

- The **client** is not a [representative] user
  - Bosses, managers, directors, … believe they know their employees and their jobs. Actually, they don't
  - Always seek the actual users that will use the system

Know Your Users (2)

- Talking to users
  - Surveys
  - Interviews
  - Direct involvement (participatory design)
  - Bypass corporate policies
  - Understand real current behavior, pain points, workarounds, …

- Watching users
  - Observation sessions
  - Video recording (and analysis)
  - Diaries
  - Analyze their work (artifact, processes, action sequences)
  - Discuss with users the findings of the observation (may discover the "why")

Know Your Users (3)

- Imagining users
  - When real users are not available
  - Imagine how a real user would behave (very difficult)
  - Building "imaginary" users: *personas*
    - Detailed description of hypothetical persons in a given role
    - Imagine them as they were a real person

Who are the Users?

- **Immediate Users**: the typical users who will engage with the product or service as soon as it's available. They represent the _primary target audience_ and interact with the design under normal circumstances

- **Lead Users**: the _more advanced or experienced_ individuals who face problems that the broader user base will likely encounter in the future. They often push the boundaries of how a product or service is used and can provide insights into future trends and innovative solutions.

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Who are the Users?

- **Extreme Users**: they fall at either end of _the spectrum in terms of how they use a product_—either using it far more intensely or minimally than most. Studying extreme users helps designers consider edge cases and understand how design can cater to diverse needs.

- **Domain Experts**: they have _deep knowledge and experience in the field_ related to the product or service. They provide critical insights about best practices, standards, and potential pitfalls, helping the design process align with the technical and professional expectations of a specific domain.
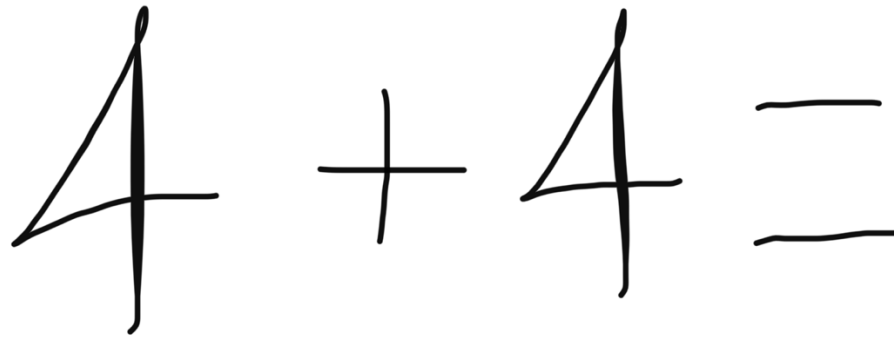
Example (2022) – Math-ilo Tu!
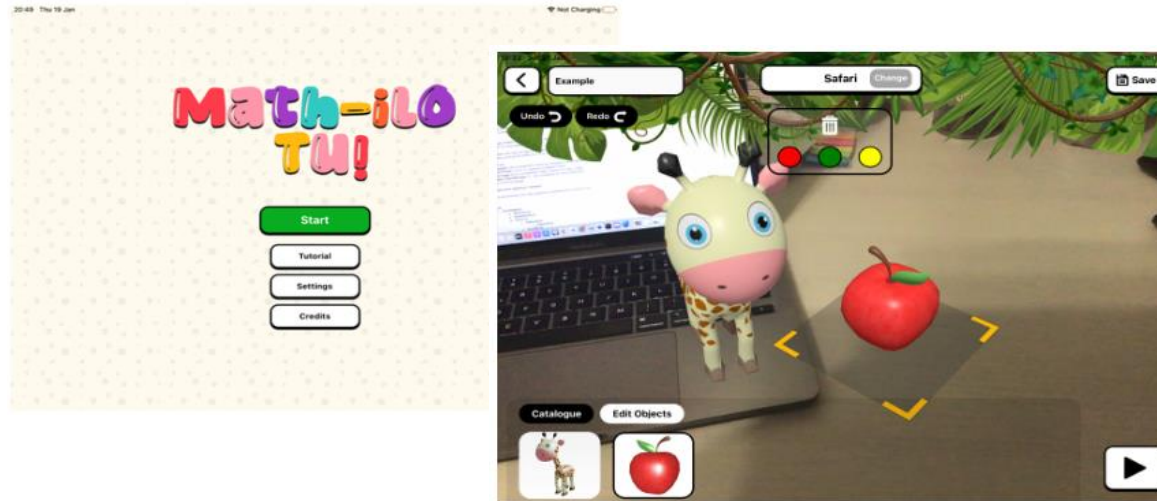
- Immediate users:

- Lead users:

- Extreme users:

- Domain experts:

Problem Framing

- Framing problems is as important as finding them
  - we need to check our and other people's **assumptions** to fully understand the needs, the context, and emphasize with them

- For example, let's say that a person shows this to us:

$$4 + 4 =$$

Hall of Fame or Shame?
User Needs Edition

- Users need a faster horse

- Users need to have financial help

- Users needs a way to move faster from one place to another

- Users need to have more tools

- Users need to practice more with the appropriate tools

- Users need to be able to run faster

"Needs are human emotional or physical necessities. [...]
Needs are verbs (activities and desires with which your user could use help), not nouns (solutions). [...]
It can be helpful to use the phrases 'needs a way to' or 'needs to be able to' in your list of user needs."

What is The Context? A Sample Domain (1)

- Theme: Transportation

- Specific domain:

Target user(s)

- Immediate users:

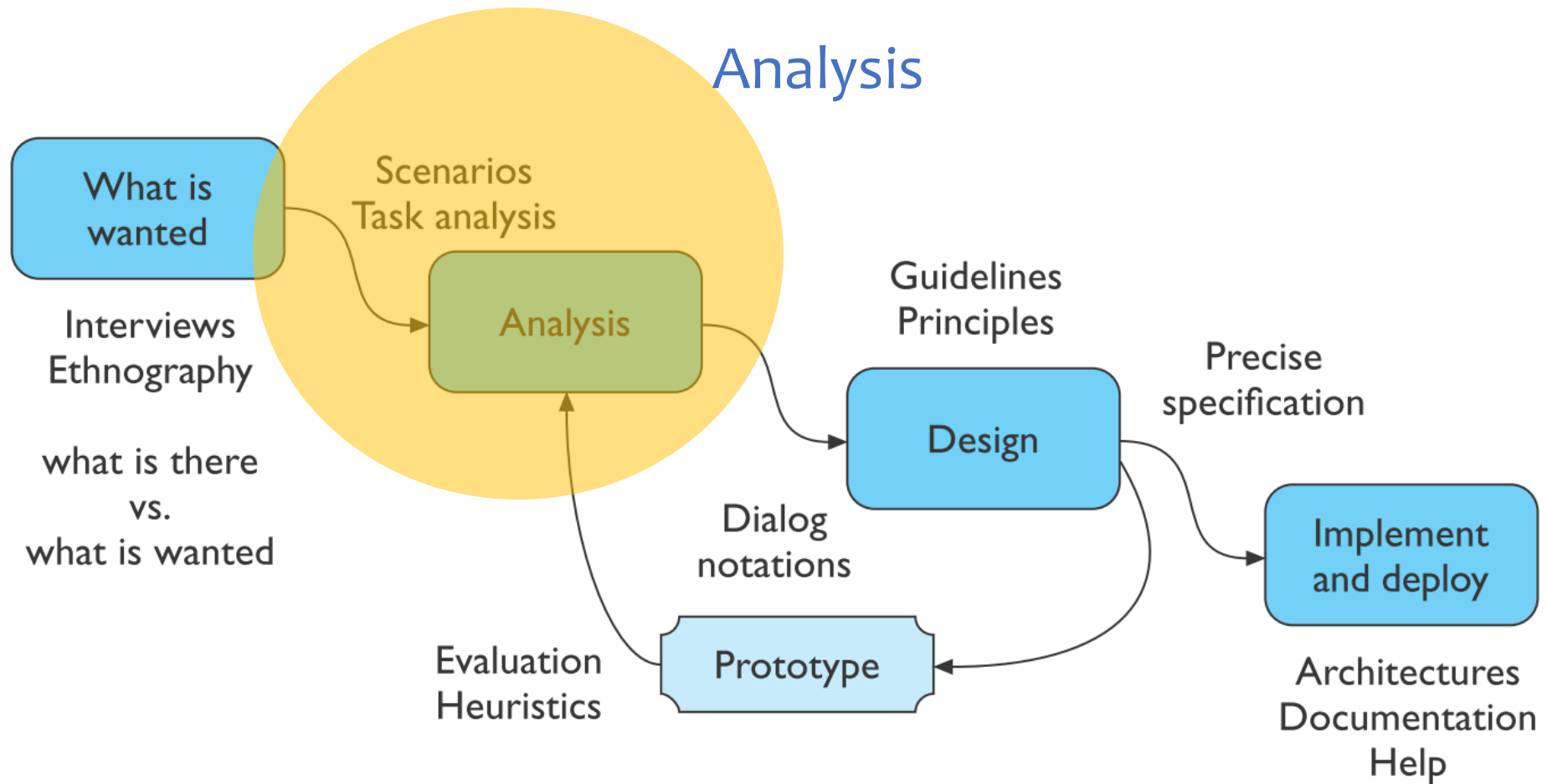- Domain experts:

- Lead users:

- Extreme users:

What is The Context? A Sample Domain (2)

- Theme: Health

- Specific domain:

Target user(s)

- Immediate users:

- Domain experts:

- Lead users:

- Extreme users:

Human-Centered Design Process

Analysis

What is wanted

Scenarios
Task analysis

Interviews
Ethnography

what is there
vs.
what is wanted

Analysis

Guidelines
Principles

Design

Precise
specification

Implement
and deploy

Dialog
notations

Evaluation
Heuristics

Prototype

Architectures
Documentation
Help

Analyzing and Synthetizing

- Create **design goals**
  - As an intermediate representation before the user interface design

- Make the user needs' analysis **explicit**

- Think about the *interplay* between the activity that someone has and the interface we offer

- **Represent** and synthetize the results of the analysis and the design goals

Tasks

- Task: the structured **set of activities**/high-level actions required to **achieve** a user goal
  - It says what a person *wants to do*, <u>not</u> how, while describing a *complete* goal

- Often, given a domain, you have a **mix** of tasks with different **complexity**
  - Simple tasks – common or introductory
  - Moderate tasks
  - Complex tasks – infrequent or for power/extreme users

Tasks

- Through tasks, you can study of the way people perform their activities

- Aim is to determine:
  o what they **do** (steps)
  o what things they **use** (artifacts)
  o how well they **succeed** (goals, pain points)

Sample Task: To Clean The House (I)

Sample Task: To Clean The House (I)

- **Steps:**
  - get the vacuum cleaner out
  - fix the appropriate attachments
  - clean the rooms
  - when the dust bag gets full, empty it
  - put the vacuum cleaner and tools away

- Must know and use different **artifacts:**
  - vacuum cleaners, their attachments, dust bags
  - cupboards, rooms
  - …

Sample Task: To Clean The House (II)

- **Goals:**
  - Here your *point of view* comes in
  - Removing dust? -> narrow goal
  - Tidying up the house after a party?
  - Hosting people for the dinner?
  - Having a satisfying evening? -> wide goal

Sample Task: To Clean The House (III)

- **Pain points**:
  - Narrow version: Why I need to empty the dust bag?
  - Broader version: Why I need a vacuum cleaner to have the house cleaned up?

Another Example of Task (with Steps)

- A person preparing an overhead projector for use would be seen to carry out the following steps:
  1. Plug in to main and switch on supply.
  2. Locate on/off switch on projector.
  3. Discover which way to press the switch.
  4. Press the switch for power.
  5. Put on the slide and orientate correctly.
  6. Align the projector on the screen.
  7. Focus the slide.

What is a Tasks?

- «A **task** is a **goal** together with some ordered set of **actions**.» (Benyon)

| Goal	• A state of the application domain that a work system (user+technology) wishes to achieve. • Specified at particular levels of abstraction.
Task	• A structured set of activities required, used, or believed to be necessary by an agent (human, machine) to achieve a goal using a particular technology. • The task is broken down into more and more detailed levels of description until it is defined in terms of actions.
Action	• An action is a task that has no problem solving associated with it and which does not include any control structure. • Actions are 'simple tasks'.

What You Learn by Analyzing Tasks?

- What your users' goals can be; what they are trying to achieve

- What users actually do to achieve those goals

- What experiences (personal, social, and cultural) users bring to the tasks

- How users are influenced by their physical environment

- How users' previous knowledge and experience influence:
  - How they think about their work
  - The workflow they follow to perform their tasks
  - The pain points they experience to perform the tasks

Why Is It Useful?

- Task analysis is the process of learning about ordinary users by observing them in action to understand in detail **how** they perform their **tasks** and achieve their intended **goals**

- Tasks analysis helps in:
  o Identifying the tasks that your application **must support**
  o Refining or re-defining your app's navigation or search
  o Application requirements gathering
  o Developing your content strategy and app structure
  o The initial stages of Prototyping
  o Performing usability testing

Example
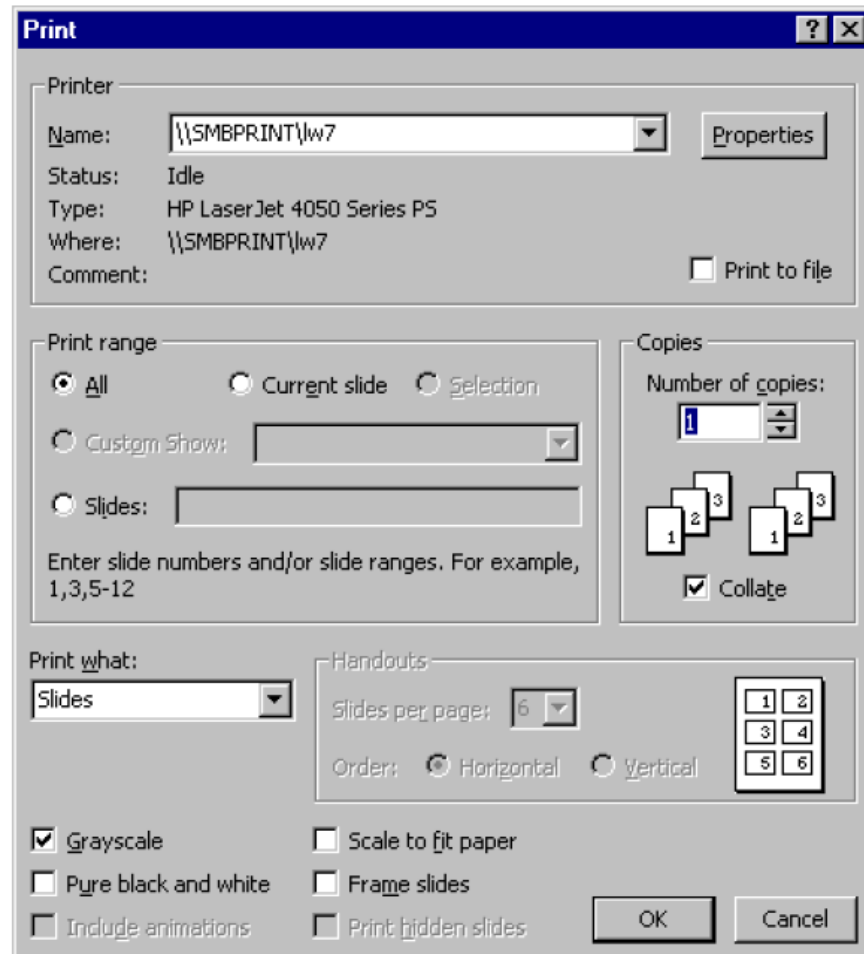
- Tasks are used to plan for the layout of the application window
- Proximity and Boundaries reflect the decomposition of tasks
- Order of tasks is not mandatory

Tasks: Exercises

Goal

- Reflect on (good vs. bad) tasks

- Experiment with task analysis

Example of Tasks

- Service/App: Uber

- Simple task: signaling for a ride
  - *Is it a task? Why is it simple?*

- Moderate task: reach out to the driver to get a forgotten object
  - *Is it a task? Why is it moderate?*

- Complex task: become a driver for Uber
  - *Is it a task? Why is it complex?*

Other Examples

- Service/App: Uber

- Open the app and tap on "Travel"
  - *Is it a task?*

- Go into your account settings, check the messages, and then send a present
  - *Is it a task?*

- …

Example of (Good) Tasks

- Service/App: Glovo/JustEat

- Simple task:

- Moderate task:

- Complex task:

Example of (Good) Tasks

- Service/App: ChatGPT

- Simple task:

- Moderate task:

- Complex task:

References

- Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale: Human Computer Interaction, 3rd Edition, Chapter 15 "Task Analysis"

- David Benyon: Designing Interactive Systems, Chapter 11 "Task Analysis"

- http://www.usabilitybok.org/task-analysis

- https://www.usability.gov/how-to-and-tools/methods/task-analysis.html

Acknowledgements

- Some icons from https://icons8.com

- Some material by
  o http://www.inf.ed.ac.uk/teaching/courses/hci/0708/lecs/tasks.pdf
  o https://www.tutorialspoint.com/human_computer_interface/design_process_and_task_analysis.htm
  o https://www.slideshare.net/alanjohndix/hci-3e-ch-15-task-analysis

- Most of the slides are adapted from those used in the "Human Computer Interaction" course of Politecnico di Torino
  o http://bit.ly/polito-hci

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