CSE440: Introduction to HCI

Methods for Design, Prototyping and Evaluating User Interaction

Lecture 08:
Task Analysis

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DESIGN
USE
BUILD

PAUL G. ALLEN SCHOOL
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Team contract

Team Responsibilities

Many of us have legitimate reasons to be away or be late

- Be sure to communicate the reasons to us
- Participation is an element of your grade (10%)

But your real commitment is to your team

- Be sure you communicate your "aways" to your team
- Be sure you manage your commitments
- Let us know if there are issues

Groups vs. Teams

Teams produce both **individual contributions and collective work-products**

Teams establish a social contract that relates to their purpose and guides and obligates how they must work together

“We hold ourselves accountable” is a strict requirement, whether or not a “boss” exists

Groups vs. Teams

Teams differ fundamentally from working groups:

- teams require both individual and mutual accountability
- teams rely on more than group discussion, debate, and decision
- … on more than sharing information and best practice performance standards
- teams produce discrete work-products through the joint contributions of their members
- this is what makes possible performance levels greater than the sum of all the individual bests of team members.

A team is more than the sum of its parts.

Ways to Team Success

Common commitment
- requires a purpose in which team members believe

Specific performance goals
- comes directly from the common purpose
- helps maintain focus, starts with something achievable

A right mix of skills
- technical/functional expertise (e.g., writing/visual/coding)
- problem-solving & decision-making skills
- interpersonal skills

Agreement and mutual accountability
- who will do particular jobs, when to meet & work, schedules

Team development

Forming stage

- Team tend to communicate in indirect polite ways

Storming stage

- characterized by conflict
- can be productive, but consumes time and energy

Norming stage

- formulate roles and standards
- increases trust and communication

Performing stage

- you actually achieve your goals
- highly task oriented

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Team Contracts

Establishes individual accountability

- Individuals are usually motivated to maximize their own rewards and minimize their own costs (individualistic motives)
- Even if only one person minimizes their effort, others may reduce their efforts too
- May result in a dysfunctional team and poor quality of work

A team contract avoids such obstacles — at least when done well.

Team Contracts

Establish procedures and roles

Can help jump-start a group’s collaborative efforts by focusing team members on a definite task

Ensure everyone agrees on the quality of work they all wish to achieve (“we all want an A” or “we all want a WOW project”)

Develop a Team Contract (15 minutes)

In your group discuss the first three weeks of your team work

- What did you like about it?
- What should you as a team improve in the future?

Use these talking points to fill out your team contract

- (Find team contract examples here!)

Submit a copy of it (as a PDF) via Canvas (one contract per group)

Task Analysis

Task Analysis

Focus on how do people accomplish a specific tasks

Helps identify the tasks that your solution must support

Helps to find effective ways of accomplishing a task

Task Analysis

Use in combination with other user research methods

Task Analysis is a lens on the information you obtain through other user research methods

Your assignments order the two, but **in practice** you should iteratively decide how to best draw upon all relevant methods throughout a process

Task Analysis Questions

Who is going to use the system?
What tasks do they now perform?
What tasks are desired?
How are the tasks learned?
Where are the tasks performed?
What is the relationship between people & data?
What other tools do people have?
How do people communicate with each other?
How often are the tasks performed?
What are the time constraints on the tasks?
What happens when things go wrong?

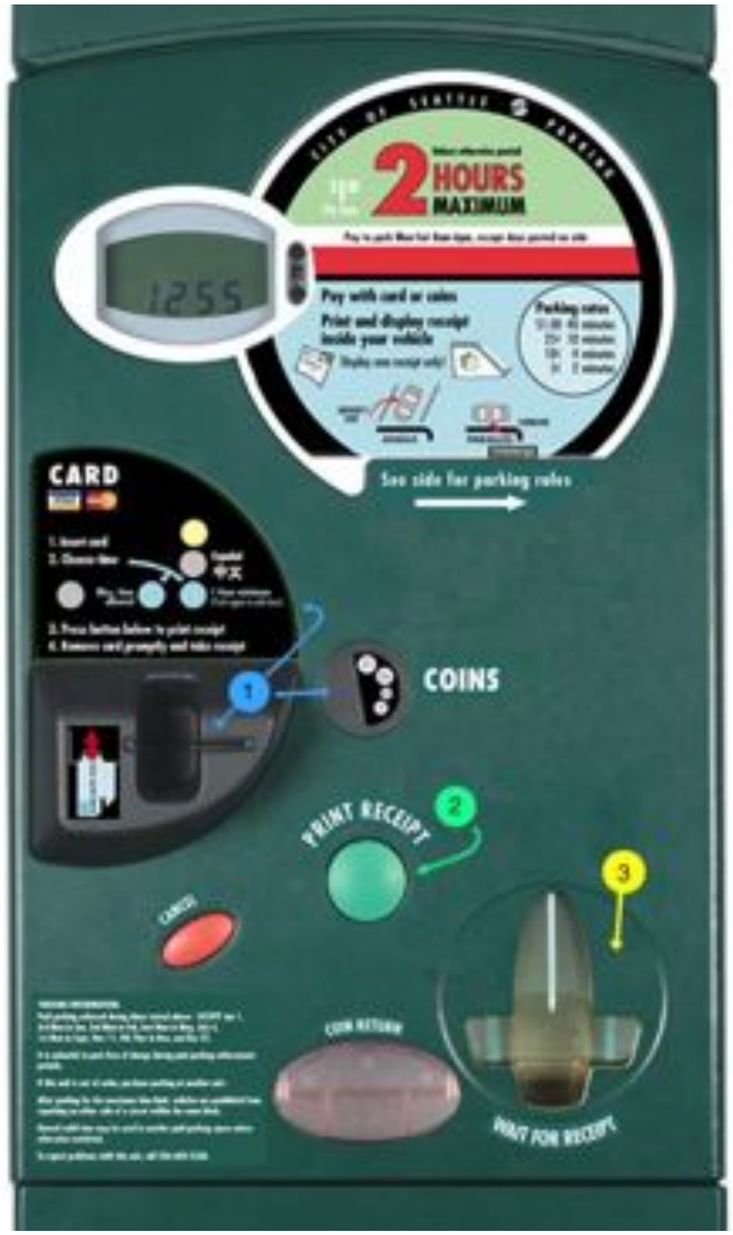
Question 1

Who is going to use the system?

Identity

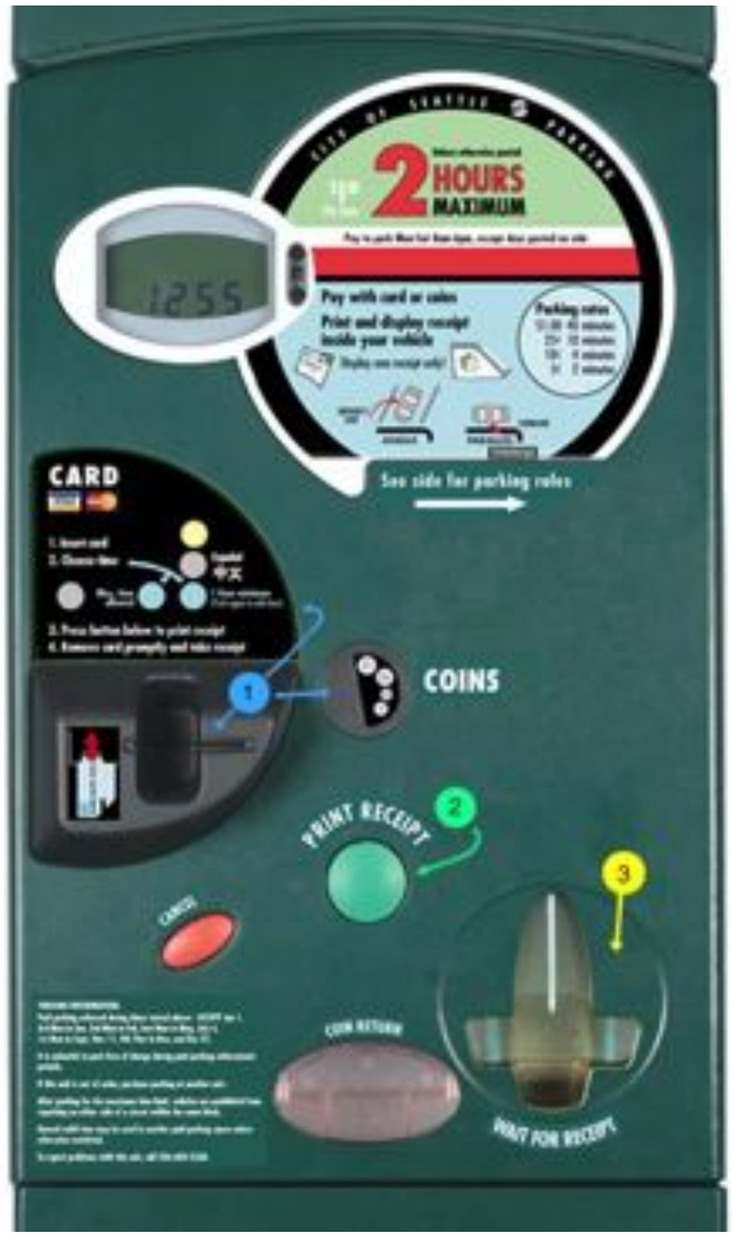
- In-house or specific customer is more defined
- Broad products need several typical consumers
- Background
- Skills
- Work habits and preferences
- Physical characteristics and abilities

Task Analysis of a parking meter



Task Analysis of a parking meter

Who is going to use the system?



Task Analysis of a parking meter

Question 2 and 3

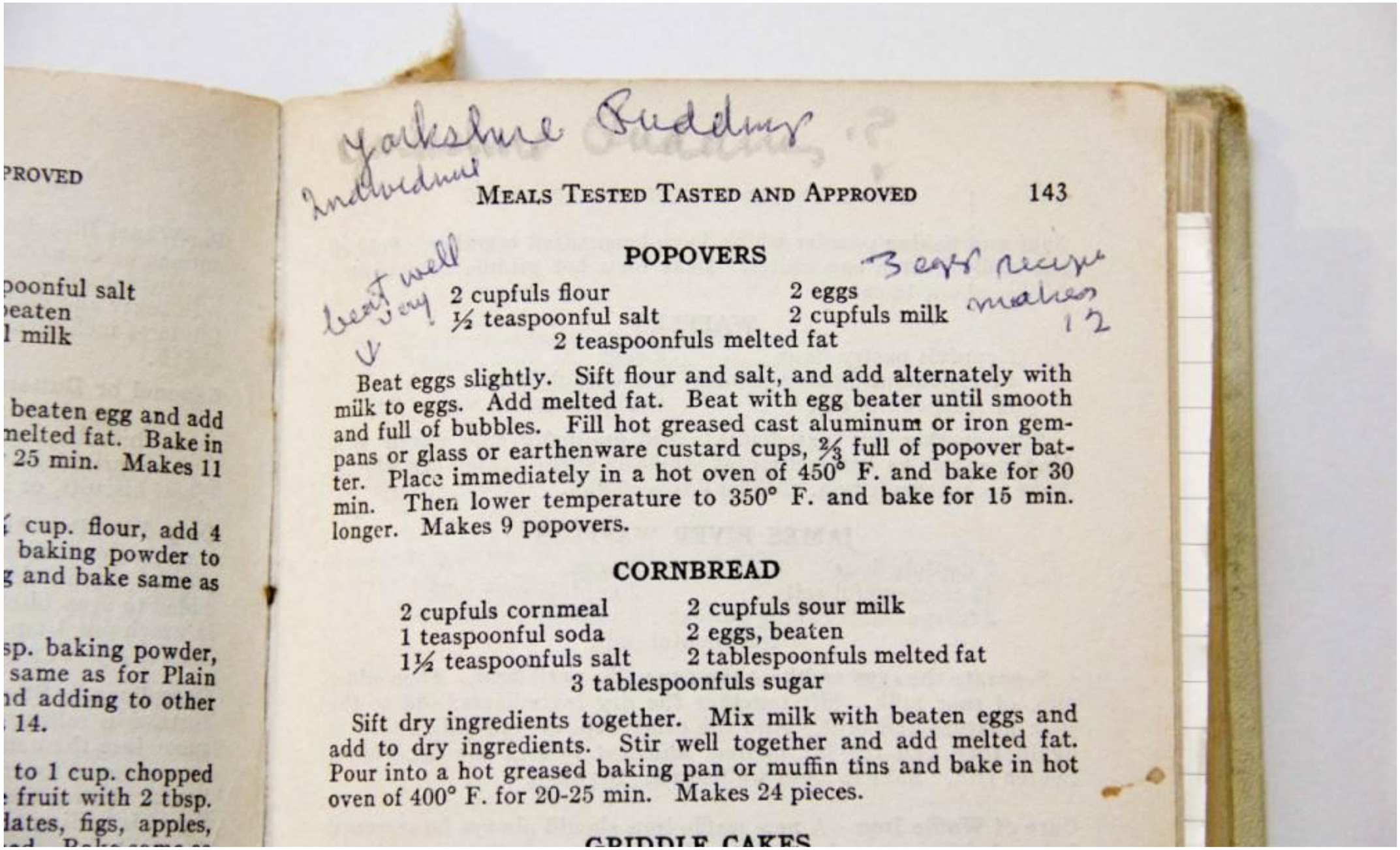
What tasks do they now perform?
What tasks are desired?

Important for both automation and new functionality
Relative importance of tasks?
Observe people, see it from their perspective

Automated Billing Example

- small dentists office had billing automated
- assistants were unhappy with new system
- old forms contained hand-written margin notes
- e.g., patient's insurance takes longer than most

Question 2 and 3



PROVED

poonful salt
beaten
l milk

beaten egg and add
melted fat. Bake in
25 min. Makes 11

cup. flour, add 4
baking powder to
and bake same as

sp. baking powder,
same as for Plain
nd adding to other
14.

to 1 cup. chopped
fruit with 2 tbsp.
lates, figs, apples,

Yorkshire Puddings
Individual

POPOVERS

beat well very!

3 egg recipe makes 12

2 cupfuls flour
½ teaspoonful salt
2 eggs
2 cupfuls milk
2 teaspoonfuls melted fat

Beat eggs slightly. Sift flour and salt, and add alternately with milk to eggs. Add melted fat. Beat with egg beater until smooth and full of bubbles. Fill hot greased cast aluminum or iron gem-pans or glass or earthenware custard cups, ⅔ full of popover batter. Place immediately in a hot oven of 450° F. and bake for 30 min. Then lower temperature to 350° F. and bake for 15 min. longer. Makes 9 popovers.

CORNBREAD

2 cupfuls cornmeal
1 teaspoonful soda
1½ teaspoonfuls salt
2 cupfuls sour milk
2 eggs, beaten
2 tablespoonfuls melted fat
3 tablespoonfuls sugar

Sift dry ingredients together. Mix milk with beaten eggs and add to dry ingredients. Stir well together and add melted fat. Pour into a hot greased baking pan or muffin tins and bake in hot oven of 400° F. for 20-25 min. Makes 24 pieces.

GRIDDLE CAKES

Question 4

How are the tasks learned?

What does a person need to know to perform the task?

Do they need training?

- academic
- general knowledge / skills
- special instruction / training

Question 5

Where are the tasks performed?

Office, laboratory, point of sale?
Effects of environment on customers?
Are people under stress?
Confidentiality required?
Do they have wet, dirty, or slippery hands?
Soft drinks?
Lighting?
Noise?

Question 6

What is the relationship between people & data?

Personal data

- Always accessed at same machine?
- Do people move between machines?

Common data

- Used concurrently?
- Passed sequentially between customers?
- Remote access required?
- Access to data restricted?
- Does this relationship change over time?

Question 7

What other tools does a person have?

More than just compatibility
How customer works with collection of tools

Automating lab data collection example:

- how is data collected now?
- by what instruments and manual procedures?
- how is the information analyzed?
- are the results transcribed for records or publication?
- what media/forms are used and how are they handled?

Question 8

How do people communicate with each other?

Who communicates with whom?
About what?
Follow lines of the organization? Against it?

Question 9

How often are the tasks performed?

Frequent use likely remember more details
Infrequent use may need more help
    Even for simple operations,
    Make these tasks possible to accomplish

Which function is performed
    Most frequently?
    By which people?
    Optimizing for these will improve perception of performance

Question 10

What are the time constraints on the tasks?

What functions will people be in a hurry for?

Which can wait?

Is there a timing relationship between tasks?

(Like the Target marketing for pregnancy case…)

Question 11

What happens when things go wrong?

How do people deal with

task-related errors?

practical difficulties?

catastrophes?

Is there a backup strategy?

What are the consequences?

Selecting Tasks

Real tasks people have faced or requested

- collect any necessary materials

Should provide reasonable coverage

- compare check list of functions to tasks

Mixture of simple and complex tasks

- easy tasks (common or introductory)
- moderate tasks
- difficult tasks (infrequent or for power use)

What should tasks look like?

- Say what **person** wants to do, but not how
  - allows comparing different design alternatives
- Be specific, **stories** based in concrete facts
  - say who person is
  - design can really differ depending on who
  - give names (allows referring back with more info later)
  - characteristics of person (e.g., job, expertise)
  - story forces us to fill in description with relevant details
- Sometimes describe a complete "**accomplishment**"
  - forces us to consider how features work together

Using tasks in design

Write up a description of tasks

- formally or informally
- run by people and rest of the design team
- get more information where needed

Manny is in the city at a restaurant and would like to call his friend Sherry to see when she will be arriving. She called from a friend’s house while he was in the bus tunnel, so he missed her call. He would like to check his missed calls and find the number to call her back.

Types of Task Analysis

Hierarchical Task Analysis

focused on decomposing a high-level task into subtasks

Cognitive Task Analysis

focused on understanding tasks that require:

decision-making

problem-solving

memory

attention

and judgement

https://www.interaction-design.org/literature/article/task-analysis-a-ux-designer-s-best-friend

Task: Park in a new neighborhood

Peter is going to brunch on a Sunday with his roommates. He is trying a new place he found on Yelp. He has the address for the place and he is using a smartphone GPS for directions. He leaves the apartment with his roommates at around 8:30am and he wants to beat the crowd so they won't have to wait in line. He is driving a Toyota Corolla that he has owned for five years. It is a rainy day and he doesn't have an umbrella.

Task: Park in a new neighborhood

unknown neighborhood/restaurant

Peter is going to brunch on a Sunday with his roommates. He is trying a **new place he found on Yelp**. He has the address for the place and he is using a smartphone GPS for directions. He leaves the apartment with his roommates at around 8:30am and he wants to beat the crowd so they won't have to wait in line. He is driving a Toyota Corolla that he has owned for five years. It is a rainy day and he doesn't have an umbrella.

Task: Park in a new neighborhood

needs to find a parking spot close by?

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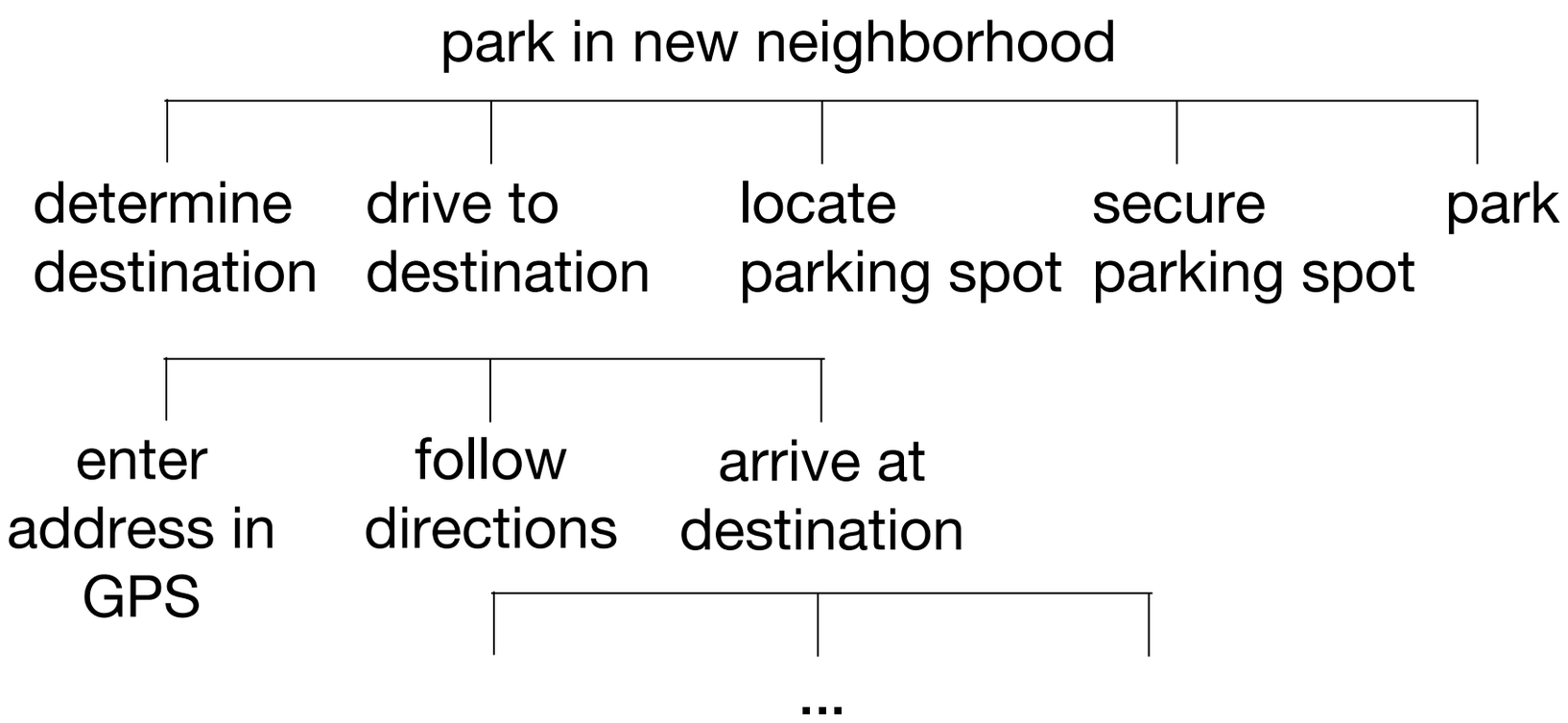
Hierarchical Task Analysis:
Park in a new neighborhood

Steps of the task execution (detailed in a hierarchy)



Using Tasks in Design

Rough out an interface design

- discard features that do not support your tasks
- or add a real task that exercises that feature
- major elements and functions, not too detailed
- hand sketched

Produce scenarios for each task

- what person does and what they see
- step-by-step performance of task
- illustrate using storyboards

Task Analysis with your group

In your team:

- remind yourself which tasks you observed when doing your user research with your first participant
- select a main task that you wish to support within the scope of your project
- perform a task analysis (use the questions on the worksheets to guide your analysis)
- mark where you need more information (i.e., where your user research will be particularly useful!

Ask me something!