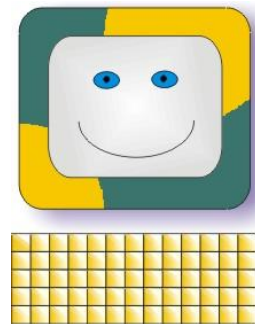


Task analysis

5 lecture

Adapted from chapter 10

Kristina Lapin



Herbert Simon and behavior

HERBERT A. SIMON



15 JUNE 1916 · 9 FEBRUARY 2001

- if we change the environment, we change the behavior.
- Design transforms existing situations into (hopefully) preferred ones.

<http://www.amphilsoc.org/sites/default/files/proceedings/213.pdf>

All design is redesign

- At least for me, that says we ought to have a really good sense of what the existing situations are and what preferred means for us.
- “preferred” has to do with both the user’s goals and your point of view as a designer.

Explicit activity analysis

- Gives a *conceptual representation*
- This helps to understand the domain, and helps you communicate and discuss with other stakeholders
- Having this intermediate, conceptual representation makes it easier to be creative because you're taking a couple small leaps instead of one big one

The outcome of activity analysis

- What are the steps?
- What are the artifacts?
- What are the goals?
(how you'll measure success)
- What are the pain points?

Example: steps

- Unlock driver's door
- Take a seat behind the wheel
- Insert key in ignition switch
- Turn key fully clockwise
- When engine starts, release the key
- Artefacts
 - key, car, door-lock, ignition switch

Example: pain points

- In the narrow version:
 - necessary to put the key in? It's already in the car. Why not just drive off?
- In the slightly broader framing, the pain point could be
 - needing a car to get bread.
(Alternatively, bread could be delivered, or you could walk/bike/...)

Task analysis

- *A task is the sequence of steps a user will follow to achieve a specific goal.*
- Job analysis is the identification of all tasks a person performs as part of a job role or to achieve some overall goals.

Task descriptions

- Stories, scenarios
 - an informal narrative story, simple, 'natural', personal, not generalisable
- Use cases
 - assume interaction with a system
 - assume detailed understanding of the interaction
- Essential use cases
 - abstract away from the details
 - does not have the same assumptions as use cases
 - Storyboards

Scenario for travel organizer

“The Thomson family enjoy outdoor activities and want to try their hand at sailing this year. There are four family members: Sky (10 years old), Eamonn (15 years old), Claire (35), and Will (40). One evening after dinner they decide to start exploring the possibilities. They all gather around the travel organizer and enter their initial set of requirements – a sailing trip for four novices in the Mediterranean. The console is designed so that all members of the family can interact easily and comfortably with it. 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 Thomsons would have their own boat. The travel organizer shows them descriptions of flotillas from other children their ages and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities. Will confirms this recommendation and asks for detailed options. As it’s getting late, he asks for the details to be printed so everyone can consider them tomorrow. The travel organizer prints out a summary of the different options available.”

Use case for travel organizer

1. The system displays options for investigating visa and vaccination requirements.
2. The user chooses the option to find out about visa requirements.
3. The system prompts user for the name of the destination country.
4. The user enters the country's name.
5. The system checks that the country is valid.
6. The system prompts the user for her nationality.
7. The user enters her nationality.
8. The system checks the visa requirements of the entered country for a passport holder of her nationality.
9. The system displays the visa requirements.
10. The system displays the option to print out the visa requirements.
11. The user chooses to print the requirements.

Alternative courses for travel organizer

Some alternative courses:

6. If the country name is invalid:

6.1 The system displays an error message.

6.2 The system returns to step 3.

8. If the nationality is invalid:

8.1 The system displays an error message.

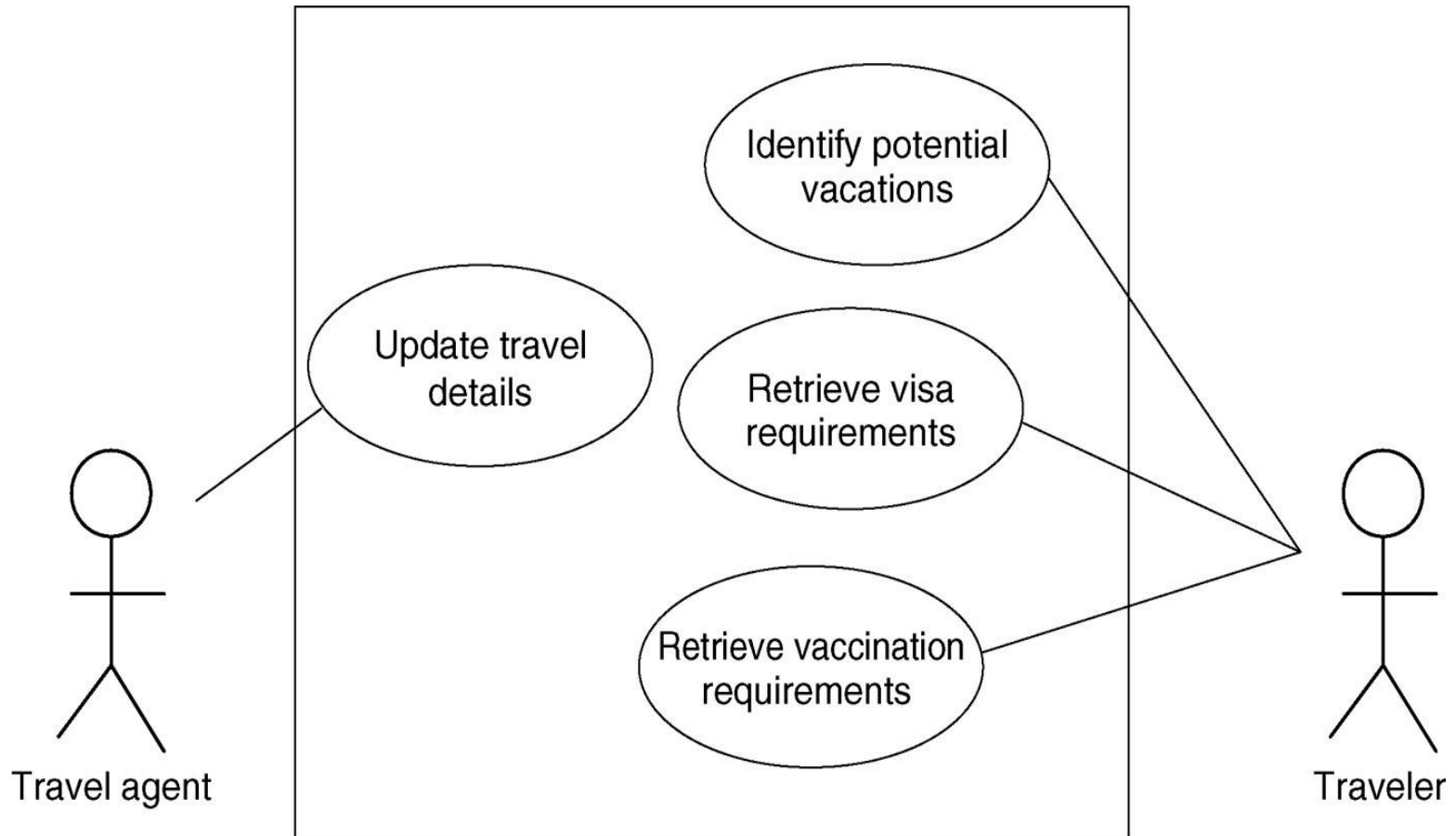
8.2 The system returns to step 6.

9. If no information about visa requirements is found:

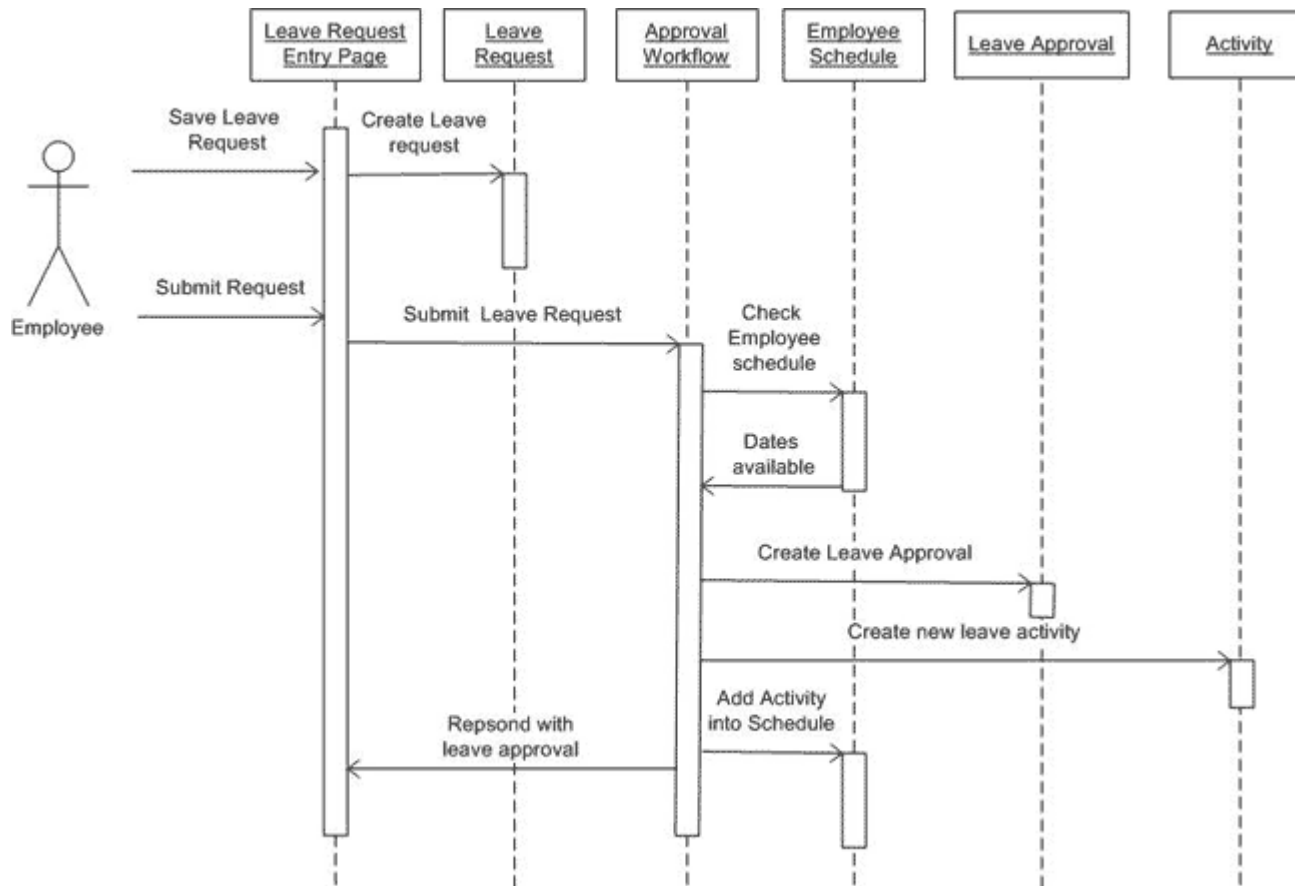
9.1 The system displays a suitable message.

9.2 The system returns to step 1.

Example use case diagram for travel organizer



Example of sequence diagram



Sequence diagrams decompose use case

Example essential use case for travel organizer

retrieveVisa

USER INTENTION

find visa requirements

supply required information

obtain copy of visa info

choose suitable format

SYSTEM RESPONSIBILITY

request destination and nationality

obtain appropriate visa info

offer info in different formats

provide info in chosen format

Task analysis

- Task descriptions are often used to envision new systems or devices
- Task analysis is used mainly to investigate an existing situation
- It is important not to focus on superficial activities
 - What are people trying to achieve?
 - Why are they trying to achieve it?
 - How are they going about it?
- Many techniques, the most popular is Hierarchical Task Analysis (HTA)

Hierarchical Task Analysis

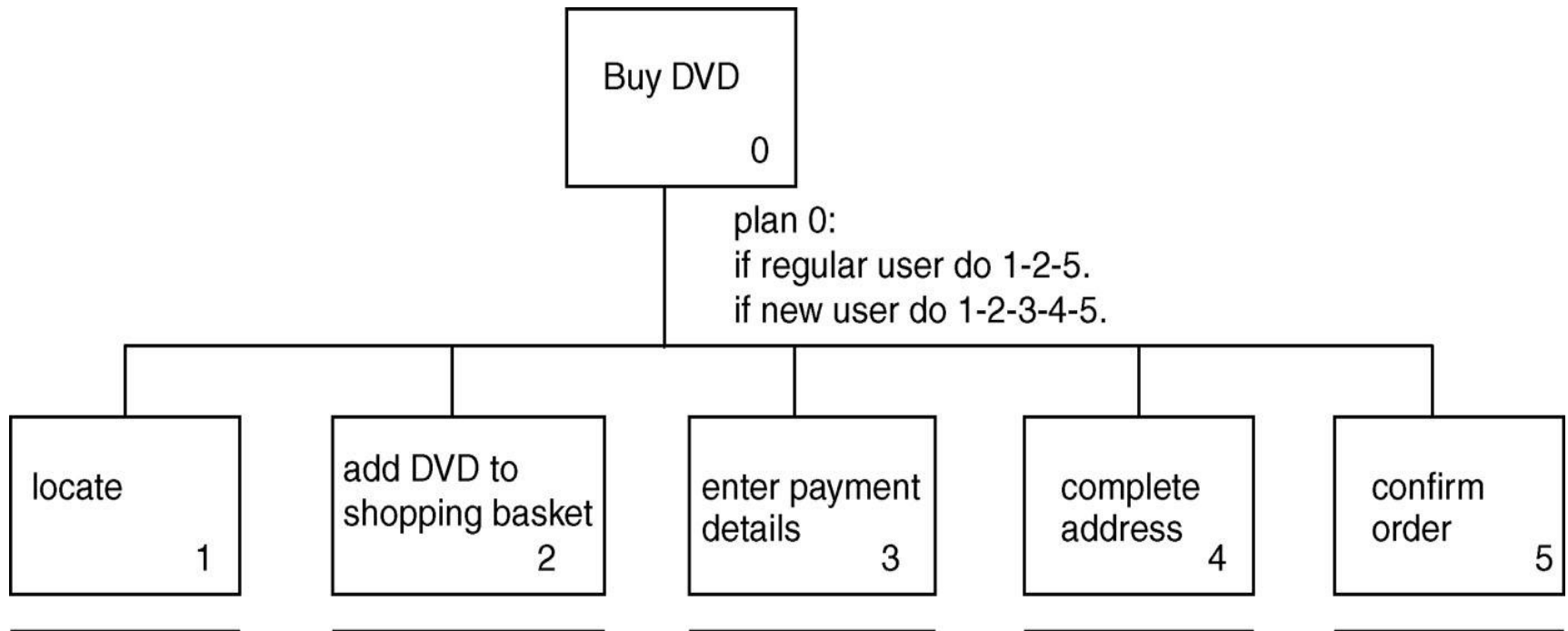
- Involves breaking a task down into subtasks, then sub-sub-tasks and so on. These are grouped as plans which specify how the tasks might be performed in practice
- HTA focuses on physical and observable actions, and includes looking at actions not related to software or an interaction device
- Start with a user goal which is examined and the main tasks for achieving it are identified
- Tasks are sub-divided into sub-tasks

Example Hierarchical Task Analysis

0. In order to buy a DVD
 1. locate DVD
 2. add DVD to shopping basket
 3. enter payment details
 4. complete address
 5. confirm order

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

Example Hierarchical Task Analysis (graphical)



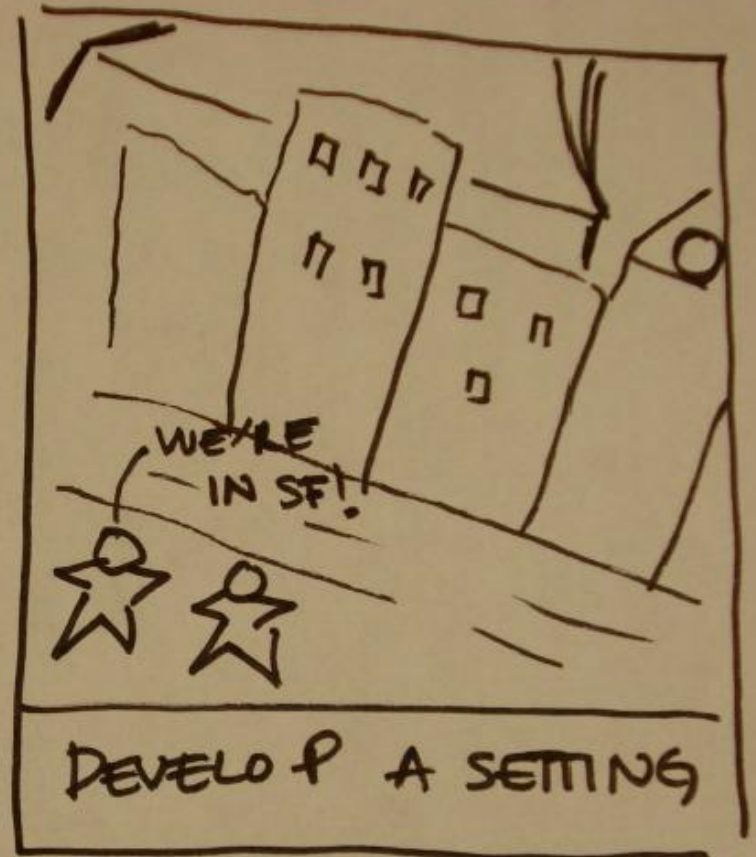
Storyboards

- Often used with scenarios, bringing more detail, and a chance to role play
- It is a series of sketches showing how a user might progress through a task using the device
- Used early in design

Storyboards



Storyboarding isn't about
"pretty pictures"
**it's about communicating
ideas**





Storyboards Should Convey

- Setting: people involved, environment, task being accomplished
- Sequence:
 - What steps are involved?
 - What leads someone to use the app?
 - What task is being illustrated?
- Satisfaction
 - What's motivates people to use this system?
 - What does it enable people to accomplish?
 - What need does the system fill?

Amal Dar Aziz, Guide to Storyboarding, <http://hci.st/story>

Benefits of Storyboarding

- Holistic focus: Helps emphasize how an interface accomplishes a task
- Avoids commitment to a particular user interface (no buttons yet)
- Helps get all the stakeholders on the same page in terms of the goal

Summary

- Getting requirements right is crucial
- There are different kinds of requirement, each is significant for interaction design
- The most commonly-used techniques for data gathering are: questionnaires, interviews, focus groups, direct observation, studying documentation and researching similar products
- Scenarios, use cases and essential use cases can be used to articulate existing and envisioned work practices.
- Task analysis techniques such as HTA help to investigate existing systems and practices

Readings

- Rogers, Sharp, Preece (2002, 2007,2011). [Interaction design](#): Beyond Human Computer Interaction. Wiley.
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<https://www.youtube.com/watch?v=lgEm67KLIIM>
- Tom Brinck, Darren Gergle, and Scott D. Wood. Chapter 2. User needs analysis. Task analysis, pp. 53-60. In *User experience re-mastered: Your guide of getting design right*. Edited by Chauncey Wilson.

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