data gathering for needs & requirements

Data-Gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
  - Direct or indirect
- Studying documentation
- Researching similar products

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Often in conjunction with other techniques
- Good for answering specific questions
- Can reach many people with little overhead
- Quantitative & qualitative data

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Props, e.g. sample scenarios of use, prototypes, can be used in interviews
- Good for exploring issues
- Interactive
- Encourage contact between developers and users
- Time consuming, may intimidate users

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Collecting multiple viewpoints
- Highlight areas of consensus and conflict
- Encourages contact between developers and users
- Interactive
- Possibility of dominant users

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Direct observation
  - Gain insights into stakeholders' tasks
  - Understanding nature/context of user activity
  - Time consuming
  - Huge amounts of data
- Indirect observation
  - Not often used in requirements activity
  - Good for logging current tasks

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Learning about procedures, regulations, and standards
- Good for background info
- No time commitment from stakeholders
- Probably not accurate

Data gathering

- Questionnaires
- Interviews
- Focus groups and workshops
- Observation
- Studying documentation
- Researching similar products

- Good for prompting requirements

Task analysis

- Is mainly used 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)
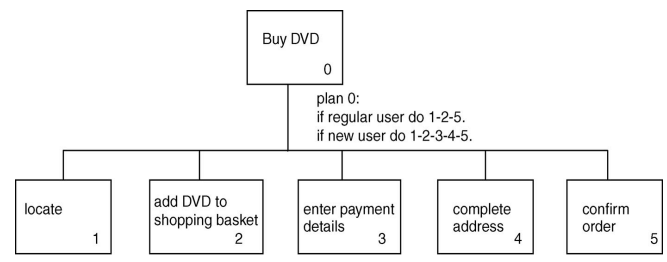
Basic guidelines for data-gathering

- Involve all the stakeholder groups
- Involve more than one representative of each stakeholder group
- Use combination of data gathering techniques
- Support the data-gathering sessions with suitable props, such as task descriptions and prototypes (if available)
- Run a pilot session if possible to ensure that your data-gathering session is likely to go as planned.
- Design data-capture exercise to collect the data you want
- How the data is recorded is very important, e.g., *notes versus video recording*

Data gathering activity

- You are developing a new software system to support a small accountant's office. There is a system running already with which the users are reasonably happy, but it is looking dated and needs upgrading
  - What kind of data gathering technique would you use?

- You are looking to develop an innovative device for diabetes sufferers to help them record and monitor their blood sugar levels. There are some products already on the market, but they tend to be large and unwieldy. Many diabetes sufferers rely on manual recording and monitoring methods involving a ritual with a needle, some chemicals, and a written scale.
  - What kind of data gathering technique would you use?

- You are developing a website for a young person's fashion e-commerce site.
  - What kind of data gathering technique would you use?

Problems with data gathering

- Identifying and involving stakeholders
  - users, managers, developers, customer reps?, union reps?, shareholders?
- Involving stakeholders
  - workshops, interviews, workplace studies, co-opt stakeholders onto the development team
- 'Real' users, not managers

- Communication between parties:
  - within development team
  - with customer/user
  - between users… different parts of an organization use different terminology
- Domain knowledge distributed and implicit
  - difficult to dig up and understand
  - knowledge articulation: how do you walk?
- Availability of key people

Some basic guidelines

- Support the process with props such as prototypes and task descriptions
- Run a pilot session
- Consider carefully how to record the data
- Start requirements analysis soon after data collection
- Initial interpretation before deeper analysis

Want to extract from all the early data gathering a set of task descriptions.

task analysis is mainly used to investigate an existing situation,
task descriptions are often use to **envision** new system or devices

Task descriptions

- Scenarios
  - an informal narrative story, simple, 'natural', personal, not generalizable
- Use cases
  - assume interaction with a system
  - assume detailed understanding of the interaction
- Essential use cases
  - abstract away from the details

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 Thomson's 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."
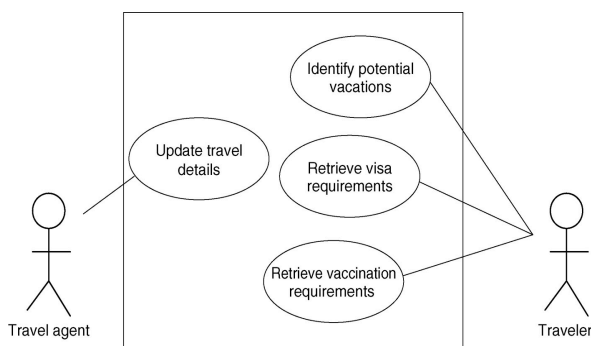
use case for travel organizer

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

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 essential use case for travel organizer: retreiveVisa

user intention	system responsibility
find visa requirements	
	request destination & nationality
supply required info	
	obtain appropriate visa info
obtain copy of visa info	
	offer info in different formats
choose suitable format	
	provide info in chosen format

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