The purpose of data gathering is to collect sufficient, relevant, and appropriate data so that a set of stable requirements can be produced.

Data-gathering techniques

Questionnaires. Most of us are familiar with questionnaires. They are a series I of questions designed to elicit specific information from us. Well-designed questionnaires are good at getting answers to specific questions from a large group of people, and especially if that group of people is spread across a wide geographical area, making it infeasible to visit them all.

Interviews. Interviews involve asking someone a set of questions. Interviews can be broadly classified as structured, unstructured or semi- structured, depending on how rigorously the interviewer sticks to a prepared set of questions. In the context of establishing requirements, it is equally important for development team members to meet stakeholders and for users to feel involved. This on its own may be sufficient motivation to arrange interviews. However, interviews are time consuming and it may not be feasible to visit all the people you'd like to see.

Focus groups and workshops. As an alternative or as corroboration, it can be very revealing to get a group of stakeholders together to discuss issues and requirements. These sessions can be very structured with set topics for discussion, or can be unstructured. In this latter case, a facilitator is required who can keep the discussion on track and can provide the necessary focus or redirection when appropriate. In the requirements activity, focus groups and workshops are good at gaining a consensus view and/or highlighting areas of conflict and disagreement.

Naturalistic observation. It can be very difficult for humans to explain what they do or to even describe accurately how they achieve a task. Observation involves spending some time with the stakeholders as they go about their day-to-day tasks, observing work as it hap- pens, in its natural setting. A member of the design team shadows a stakeholder, making notes, asking questions (but not too many), and observing what is being done in the natural context of the activity.

Studying documentation. Procedures and rules are often written down in manuals and these are a good source of data about the steps involved in an activity and any regulations governing a task. Other documentation that might be studied includes diaries or job logs that are written by the stakeholders during the course of their work. In the requirements activity, studying documentation is good for understanding legislation and getting some background information on the work. It also doesn't involve stakeholder time, which is a limiting factor on the other techniques.

Table 1: Overview of data-gathering techniques used in the requirements activity

Technique	Good for	Kind of data	Advantages	Disadvantages
Interviews	Exploring issues	Some quantitative but mostly qualitative	Interviewer can guide interviewee if necessary. Encourages contact between developers and users.	Artificial environment may intimidate interviewee. It also removes them from the environment where work is typically being done.
Focus groups	Collecting multiple viewpoints	Some quantitative but mostly qualitative	Highlights areas of consensus and conflict. Encourages contact between developers and users.	Possibility of dominant characters.
Questionnaires	Answering specific questions	Quantitative and qualitative	Can reach many people with low resource requirements.	The design is key. Response rates may be low. Unless carefully designed, the responses may not provide suitable data.
Direct observation in the field	Understanding context of user activity	Mostly qualitative	Observing gives insights that other techniques don't provide.	Very time-consuming. Huge amounts of data are produced.
Direct observation in a controlled environment	Capturing the detail of what individuals do	Quantitative and qualitative	Can focus on the details of a task without interruption.	Results may have limited use in the normal environment because the conditions were artificial.
Indirect observation	Observing users without disturbing their activity; data captured automatically	Quantitative (logging) and qualitative (diary)	User doesn't get distracted by the data gathering; automatic recording means that it can extend over long periods of time.	A large amount of quantitative data needs tool support to analyze (logging); participants' memories may exaggerate (diary).