**Chapter 4: Interactive Methods of Information Gathering**

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By interactive, we mean there is actual interaction between us and a user. These include things like interviewing, joint application designs (JADs) and questionnaires. This is opposed to non-interactive methods like documentation analysis, observation (since we do not actually talk to users), etc.

## Interviews

When we want to perform an interview, we need to first prepare ourselves. We need to read up on background material and establish objectives for the interview, what exactly we want to get from the interview. Next, we need to decide which particular people from our user base we want to interview and then prepare the interviewee. We need to inform them about what sort of questions we will be asking so that they can think a little about it and how they want to answer. And finally, we need to decide on our questions of course.

### Open- and Closed-Ended Questions

Questions can be open-ended or closed-ended. Open-ended questions can be answered however the user wants to. They decide how they want to respond, in what way and how long their answer will be. For example, if we ask a user about a new interface we made, they can answer very shortly or go into a lot of detail, it is up to them. Closed-ended questions only allow a limited response. For example, if we were to ask the user about how many errors they encounter in a month, they would have to give us a specific estimated number. They cannot go into a speech with this question.

Open-ended questions tend to put the interviewee at ease. This allows us to use the way they talk to estimate details about what sort of person we are dealing with, such as whether or not they are technically competent. It also retrieves a lot of details we can use which we might not have otherwise had.

On the flip side, all that detail we just got also has a lot of irrelevant stuff in it. There’s also the risk of losing control over the interview, with the interviewee talking for a very long time and making it difficult for us to talk about the things we actually need to talk about.

Closed-ended questions save us time and get right to the point. We get very specific and organized data, which allows us to compare the data easily between different interviewees. We also have complete control over the interview, which allows us to quickly gather a large amount of data.

However, the problem with closed-ended questions is that the interviewee might dislike the process, getting bored and feeling interrogated. There is also a lack of details about real-life experiences, since we are not allowing the interviewee to tell their story.

### Bipolar Questions

Bipolar questions are yes/no questions. They are essentially a special kind of closed-ended questions. It is inadvisable to use too many of these, since we get an extremely limited amount of detail.

### Probes

Probes are follow-up questions we ask when we want more detail on a point. These can be both open-ended or closed-ended. For example, say we ask someone if they are satisfied with the current interface and they say no. Now, we need more details, so we can follow-up with a question about why they dislike it.

### Arranging Questions

Once the questions we want to ask have been decided, we need to arrange the questions in an orderly fashion. There are three structures to this – Pyramid, Funnel and Diamond. None of these structures can be classified as the best, since which one we use varies from situation to situation and person to person. In fact, we do not even need to follow these structures. We can arrange the questions in any way we want.

The Pyramid structure starts off with closed-ended questions and goes into open-ended ones. We start with detailed questions we need to ask and the move to ones that the interviewee can give more generalized responses to. This if useful if the interviewee needs some warming-up.

The Funnel structure is the opposite of the Pyramid structure, starting with open-ended questions and moving to the closed-ended ones. The advantage to this approach is that we can begin the interview in an easy, non-threatening way.

The Diamond structure is a mix of the two, starting with closed-ended questions, moving to open-ended ones, and the finally ending with some closed-ended questions again. This gives us the benefits of both previous structures, but it also means it will take more time.

### Interview Report

We should write a report on the interview as soon as possible after the interview ends. If we allow too much time to pass, we might not be able to accurately represent the interview in our report anymore. The report should provide an initial summary and then go into details about specific points. If possible, we should also review the report with the respondent.

## Questionnaires

A questionnaire is just a form with the questions we want to ask that is sent to users. They respond and send the forms back to us. Questionnaires are used when we have a large number of users we want to take feedback from, making it infeasible to interview them, or when it is difficult to physically reach them, due to distance or a once-in-a-lifetime pandemic is going on and for some reason everyone still thinks it normal to go about our lives as though nothing is happening.

The details about what types of questions to ask and how to structure them are the same as discussed for interviews.

## Joint Application Design

Joint Application Design (JAD) is an agile modelling method, meaning it follows the different agile rules for application and system development. Sometimes, it is also called a focus group. As opposed to the previous two methods we discussed, which involved individual interviews and sending out questionnaires, JADs focus on inviting over a group of users to a particular spot and meeting them as a group. There is a group discussion in which the different user requirements are voiced. This is the basic idea behind JADs and also behind the agile development methodology in general.

An important part about the meeting is ensuring that all the different target user groups are invited. For example, we may be able to divide our user base into different groups based on age, gender, profession, etc. We must make sure that there are people from each of those groups involved in this meeting. This will ensure that our requirements are not biased.

### Agile Development Requirements

There are a few requirements to agile development that we need to make sure we are following before we begin a joint application design:

* We have to ensure that users actually want this new system. If we are developing something that users are not particularly interested in, they will not want to put in the time and effort required by an agile development approach.
* The time during which the JAD meeting is going on, employees will be unable to work on anything else. In fact, the JAD meeting will most likely not even happen on office premises, but rather in a completely different location, to ensure that everyone can focus all their time and energy on just the meeting. Thus, we have to make sure that it is possible for the company to allow this time to its employees and that it will not cause any major problems.

### Members of JAD Meetings

The people involved in a JAD are:

* **Executive Sponsor** – This is essentially the special guest of the event. They introduce the meeting and end it.
* **System Analyst** – They are here to give expert opinions on the features being suggested. They need to analyse the costs and feasibility and give an opinion about whether or not it would be possible.
* **Users** – They are here to give their opinions about what they want to see in the system to help achieve their goals.
* **Session Leader** – They work as co-ordinators, helping everyone communicate properly.
* **Observers** – These are usually technicians who can give opinions on different technical problems that may occur and whether or not the suggested features would be possible.
* **Scribe** – They write everything down.

### Advantages and Disadvantages

From the perspective of the system of user requirement analysis, JADs are great. They save a huge amount of time that would have otherwise been spent running around doing interviews with a hundred different people.

The entire process of system development is also sped up with the use of JADs. Plus, users will like the system more since they were so heavily involved in it. Suggestions are also more likely to be creative and better in general, since a large group is discussing the issue and there will be a lot of brainstorming.

However, from the company’s perspective, JADs are costly and time consuming. This is because they have to give up a block of time at once. They cannot give short amounts of time here and there to talk with just a few people, but have to sit together in a large meeting for a significant amount of time. It may not even be possible in the organization’s culture to do JADs at all. It is also expensive, firstly since the people involved are not working during this time, but also because everyone needs to be taken to a separate location to ensure complete focus.

There are more issues, such as the amount of risk involved. If the report on the meeting is not done properly, all this effort will be pointless. Interviews and questionnaires do not involve this risk since if an individual one fails the overall effect is negligible. We can even work off of individual failures to ensure our future work is better. A do-over is very difficult with JADs.

## Measurement Scales

Once we have asked questions and gathered data, we need to be able to quantify the answers. We need to know how close or how far apart the answers were, which are the most important parts, how the users want the system to work, etc. so that we can see the patterns of similarities or differences between these things.

Scaling is the process of assigning numbers to something so that it can be measured. There are two forms of measurement scales, nominal and interval.

Nominal scales are used to classify things. For example, say users were asked about their favourite social media sites. They would perhaps create a numbered list of the sites. However, these numbers they used are purely for classification purposes. The numbers themselves do not have some value in our analysis.

Interval scales have numbers that are actually meaningful and give us data. For example, if users were asked about their satisfaction levels with the current interface on a scale of 1 to 5, the specific number they respond with is extremely important to us.

### Validity and Reliability

Reliability refers to whether or not the answers are likely to change. We need to ask questions in such a way that the answers are factual, that they will not change if we ask the question again a few days later. If the data we collect is not reliable, then we will end up developing a system on one analysis, only to find out later on that the analysis has changed.

Validity refers to how well the question measures what we are intending to measure.

### Problems with Scales

There are mainly three problems with scales – leniency, central tendency and the Halo effect.

Leniency refers to the fact that some users will answer questions very leniently, not criticising things that need to be criticised. They will give high ratings to almost everything.

The solution here is to move the ‘average’ category either to the left or right of the centre. Instead of having a scale like ‘very bad, bad, average, good, very good’, we have something like ‘very bad, bad, average, very, very good’. This will reduce the chances of the leniency problem occurring.

Central tendency is similar, in that some users tend to select the central answer to every single question.

The way to resolve this is to reduce the distance between the lowest rating and the highest, such as by using a scale from 1 – 5 instead of 1 – 10.

The halo effect is when an impression from a previous question is carried over to the current one. For example, if the first question asks for a rating on a particular teacher, and the next one asks for a rating on their communication skills, people who like the teacher and thus gave them a high rating are more likely to give a high rating on the second question too, even if the rating is not entirely accurate. The opposite may happen as well.

The solution to this problem is to put the questions that run the risk of causing or being affected by the halo effect on separate pages. For the example above, we could ask for a rating on the teacher on one page, and ask about their communication skills in a completely different area.