Requirements Elicitation Technique:
Improving the Interview Technique

Nisha Jacob (10629505)

Host organization:
University of Amsterdam

Supervisor:
Hans Dekkers

January 18, 2015
Contents

1 Acknowledgement 4
2 Introduction 5
3 Problem Statement 6
4 Research Method 9
5 Research 10
5.1 Different Interviewing Techniques 10
5.1.1 Methods of Interviewing in Requirement Engineering 10
5.1.2 Methods of Interviewing in Other Domains 12
5.2 Three common situations 14
5.2.1 When the interviewee continually sidetracks with irrelevant information 14
5.2.2 When the Interviewee does not say much or gives monosyllabic answers 16
5.2.3 When the Interviewee is hostile or angry 19
5.3 How to find the right question 21
6 Conclusion 23
Abstract

All users need system capabilities to solve a problem or to achieve an objective. The process concerned with analyzing and documenting the requirements to develop such system capabilities is known as Requirement Engineering (RE). There are four activities in RE, i.e., Elicitation, Analysis, Validation and Documentation.

The elicitation process is the information-gathering step in the RE process. There are number of techniques used for requirement elicitation but the widely used technique is Interviewing. A proper interviewing requires a lot of skills and hard work, and the technique is subject to a lot of bias.

Software Engineering students are typically not trained for this technique. Thus the goal of this thesis is to provide guidelines for students to help them find the right questions, to understand common issues and to provide tips for best practices to do better interviewing.

The guidelines are the result of an extensive literature survey on proper interviewing. In my survey I have paid attention to some interview practices in fields such as crime investigation and psychology, which could be useful in requirements engineering.
1 Acknowledgement

I owe a debt of deepest gratitude to my supervisor, Hans Dekkers, for his guidance, support, motivation and encouragement throughout the period this work was carried out. His readiness for consultation at all times, his educative comments and his concern have been valuable.

I take this opportunity also to express my gratitude to everyone who supported me throughout the course of this MS project especially, the Software Engineering Department. I am thankful for their aspiring guidance and friendly advice during the project work. I am sincerely grateful to them for sharing their truthful and illuminating views on a number of issues related to the project.

Finally, I would also like to thank my parents who were always supporting me and encouraging me with their best wishes.
2 Introduction

Requirements Engineering (RE) is a crucial phase in any software development. It is a set of activities where all the needs and requirements of the stakeholders are elicited, analyzed, verified and documented which help develop a quality software. Requirements elicitation emphasizes the use of various techniques to gather information about user needs and domain requirements. The different elicitation techniques are Interviews, Observations, Prototyping, Survey, Focus group, Brainstorming, etc. In this thesis, the major focus is on the Interview technique.

Interview technique, is the widely applied technique for information gathering. It is a communicative act that involves the elicitation of information from domain experts and end user to verify facts, clarify ambiguity and identify requirements. The effectiveness of the interview depends greatly on the quality of interaction with the stakeholders. An empirical study[1], conducted on the RE techniques shows that interview is an effective technique. It also states that stakeholders and analysts prefer the use of interview technique since this will help in gathering in-depth information of the domain. There are different kinds of interviews such as structured, semi-structured and unstructured interviews[34]. Some studies also categorize them as quantitative and qualitative interviews:

Structured Interview[34][29]: It is a very well planned and controlled interview. The interviewer prepares a set of predefined questions. These questions can be both open-ended and closed-ended. This kind of interview mainly concentrates on getting quantitative data from end users. It provides structured transcripts which are easier to analyse than unstructured conversation. This interview limits the scope for the interviewees to answer questions in detail.

Unstructured Interview[34][33]: This is also called as in-depth interview. It is open-ended and flexible. There are no predefined set of questions or answer, instead it is a social interaction between the interviewer and the interviewee. Unstructured interviews are most useful when you want to gain an in-depth understanding of a particular phenomenon within a particular cultural context and it encourages the interviewers to probe for more details. The agenda of the interview is to discuss on the topic issues rather than focusing on the exact questions. This kind of interview mainly concentrates on getting qualitative data from few respondents who have knowledge of the domain. But it is consider to be time consuming and the interviewer has limited control over the interview.

Semi-Structured Interview[34][2]: It is a combination of both structured and unstructured interview. It tries to maximize the advantages of both types of interview. It contains both open and closed interview which provides both qualitative and quantitative data. The interviewer uses a basic script to guide interviews and maintain consistency across all interviewees. It starts with predefined set of questions and then probes for more detail. The success of the interview depends on the skills of the interviewer in making a difficult decision.
3 Problem Statement

Interviewing stakeholders is a communication intensive activity. Apart from the experience and knowledge it requires a lot of communication skills as well. There are many issues faced during the interview because of the lack of proper communication.

1. The stakeholders may have difficulties in expressing the needs of the software system that is desired. Or they could be generally nervous or insecure when giving information which are implicit. This can cause the stakeholders to be quiet or to give monosyllabic answers throughout the interview. [29][3]

2. Due to poor communication, another issue faced during the interview is problems in understanding which could lead to requirements becoming ambiguous, incomplete, inconsistent, and even incorrect. These problems are:

   - Interviewees have poor understanding of the Technical Terms, this makes it difficult for them to answer certain questions. Similarly, analysts also have poor knowledge of problem domain, due to this reason, they are unable to make sure if they have got the right information.
   - There are certain situations, when the interviewee might omit information they think is obvious and is familiar to the interviewer.
   - Due to the language differences between the interviewer and the interviewee, it might be difficult for the interviewees to understand what each question means, they might frame their own meaning to the question and provide responses which are irrelevant.

3. The questioning technique could be susceptible to bias which leads to the risk involved in manipulating the responses. The biases in the questioning technique that can alter the information are as follows:

   - Ambiguous Questions, leads the interviewee to misunderstand the question and answer differently than what was intended.
   - Double-barreled Question, this consist of two or more questions, which makes it difficult for the interviewee to know which part to answer and the interviewer to know which part of questions the interviewee answered.
   - Leading question, the wordings specified in the questions can direct the interviewee to a different answer. They can lead the response to the hypothesis or expectations of the interviewer.

4. It is important to ensure that the information retrieved is based on actual events and not on the interviewee’s or interviewer’s believes. Cognitive bias is described as the systematic error in judgement and decision making that occurs when people are processing and interpreting information. The biases that alters the responses of the interviewee’s are:
• Acquiescence bias: When interviewees are more likely to agree with the interviewer rather than disagree. Sometimes the interviewees can provide responses according to interviewer’s expectations or hypothesis.

• Social desirability bias: When interviewees provide answers, which are thought to be socially acceptable and desirable. They provide responses for their own personal evaluation.

• Confirmation bias: The interviewer’s expectation can bias the information obtained during the interview. They can selectively ignore or give more importance to a fact that fits their expectation.

• Recall bias: When interviewee’s make mistake in recalling past events. There are situations when interviewers uses his/her own discretion to ask ‘how or why’ on any point that is not clarified. This can interrupt the flow of information and the interviewee can even forget what information has been recollected. Hence they can miss out or make mistakes when retrieving those information which are recalled.

• Fundamental attribution error: Personal factors of both the interviewer and interviewee can be overemphasized, thus making it difficult to control the interview.

• Halo effect: Can be shown for both interviewer and interviewee. The observer’s overall impression of the person can influence the observer’s feelings and thoughts about the character of that person.

• Hindsight bias: when negative or positive events tends to happen a lot they remember more of the recent than the past.

• Overconfidence: the interviewees have constructed a coherent story in their mind, not necessarily that the story is true.

As mentioned earlier, besides communication, experience and knowledge are also required to conduct an proper interview. Most of the novice engineers are inexperienced, they have less practical knowledge. If requirements elicitation work is conducted by novice engineers, the risk that requirements specification contains omissions or errors would be high[32]. Computer Science students are given only a limited amount of knowledge and practical experience to help them understand the requirements engineering course during their study period. Since the effort of setting up and supervising a successful and stable requirements engineering course is usually quite time consuming[11]. Moreover, this course does not include much detailed study about verbal and nonverbal communication which is one of the necessities for gathering requirements from stakeholder.

Also novice engineers find it difficult to learn to ask right questions. Their focus is on finding the “right answer” rather than the art of seeking the right questions[4]. For instance, when I was working on an assignment which required me to interview students, to gather their knowledge about eBook. My main area of focus was I want the students to open up and provide in-depth response, sometimes the questions asked, were used to direct them to my hypothesis. During this period, I paid little attention
on how to ask the right question and more on how to gain the right an-
swer. Often in the rapid pace of work, we tend to find a quick solution for
the problem. But in order to have a key decision we need to focus more
on questions which are clear and penetrating that tends to open up the
context for new learning and discovery.
4 Research Method

The purpose of this thesis is to provide guidelines that could help students conduct a better interview. These guidelines are formulated based on extensive Literature Survey which aimed to answer the research question *How to gather useful information while interviewing?*

For the literature survey, certain well known research databases, IEEE Xplore and PsycINFO ans library catalogues were used to find materials from experts in the field of Requirements Engineering and other domains where interviewing has been used the most, such as Psychology, Investigation etc. For more information other search engines such as Google were also used. This search was performed with the help of various keywords related to the thesis topics. The material were extracted from different sources (articles, journals, books etc.) that were found relevant to the thesis by referring to actual author(s). The books such as Sage Publications: Handbook of Qualitative Research were used to find out different methods of conducting a qualitative interview in different domains. And Daniel Kahneman’s book: Thinking Fast and Slow were also used to describe certain biases that can affect the cognitive information retrieved.

The literature selected for referral is evaluated to make sure that they contain information which is valuable and pertinent to the thesis topic, based on the most recent research and proven facts and not opinions. Furthermore, the author(s) of the literature selected are either affiliated to a reputed university or organization.
5 Research

In this section, we will first present some overall methods to organize and structure the interviews. These interview methods are not only from the Requirements Engineering domain but also includes methods of interviewing in other domains such as Crime Investigation and Psychology. Next, we will focus on three situations, that as a student I found particularly unnerving. We will analyze these situations to see what the underlying causes are, and present solutions as found in literature. Finally some guidelines will be provided on framing the right questions to interview.

5.1 Different Interviewing Techniques

Because of the issues that causes interview to produce ambiguous data, many researchers have found ways to enhance the technique, some of the best practices are as follows.

5.1.1 Methods of Interviewing in Requirement Engineering

1. This paper [32] emphasizes the use of a interview process navigation system to help novice software engineers (SE) to gather information efficiently regardless of software engineer’s work experience or business knowledge. This system have five characteristics.

   (a) During the interview, the navigation rule is taken out of the KB (Knowledge base) server, and the Interview server generates the questions and the expected answer. Next when the interviewer asks the question to the interviewee, the answer of the interviewee is checked to see if it matches the expected answers. The KB Server then automatically determines the following question, and presents the SE the following question and expected answers navigated from the question.

   (b) The automatic storage of interview history, this history can be referred later for confirmation. The history consist of questions asked by the interviewer and the answers chosen.

   (c) This system is able to keep track of the progress of each topic, with the help of a progress table. The table consist of topics, order the topics will be chosen, questioning type (parallel or serial) and progress value (0: not discussed, 1: discussing, 2: completed discussion, 3: not necessary to discuss)

   (d) In case if the answers of the interviewees have been changed after the interview, the interviewer can have another interview, where they can go back to the point where the change occurred.

   (e) The system consist of a dictionary function, which can generate the meanings of any professional or business terms.

2. In this paper [18], The authors introduce ECOW interview (Ethno-Cognitive Interview for Work practice understanding), it is a 90-minute interview with an employee which enables the interviewer to
grasp the big picture of the employee’s task and obtain information about the employee’s invisible awareness and the realities of their non-routine tasks. The resources used in this interview are:

(a) Interview worksheet: for understanding employee’s task from different viewpoints such as time, working space and human relations.

(b) Check sheet: for understanding employee’s task for contextual information such as the amount of time taken for each task, the people included in the tasks and how often the task is performed.

(c) Interview progress chart: this shows the order of the worksheets, how much time should each sheet take, so they can perform the interview within the allotted time.

After the ECOW interview, they conduct a one day observation at the employee’s office to verify what has been said and to add some additional data if anything was left out. The result of this method was praised higher than their original expectation. This method enables them to gather system specification and produce IT system with less reworking.

3. In this paper[16], 280 interviews were conducted to help researchers who are studying on interviews in software engineering, with advices on how to plan and conduct an interview carefully. In this paper, these advices were provided keeping in mind four areas:

(a) Estimating the necessary effort: Where they have found from experience and case study that two interviewers are much more advantageous than having one interviewer conduct an interview.

(b) Ensuring the interviewer has the needed skills: Based on the literature study conducted in this area, a lot of practical advices were provided by the authors, for example: use a tidy and well organized process, gain the trust of the interviewee, be courteous at all time, be well prepared, take care with your appearance and make a good first impression, be active and show interest by nodding and asking follow-up questions, the interviewer should have appropriate knowledge otherwise the quality of the interview depends on a overwhelming extent on the interviewee.

(c) Ensuring good interaction between interviewer and interviewee: this provides techniques on how to handle silent interviewees, interviewees who talk a lot. This section also describes the types and techniques of questioning.

(d) And finally the use of appropriate tools and project artifacts during the interview such as tape recorder and visual artifacts. Careful experimentation and case studies were conducted for each of the following four areas before providing these conclusions.
5.1.2 Methods of Interviewing in Other Domains

Many research papers have presented different methods of gathering data in different domains. In this section, few interviewing techniques used in various domains, will be discussed, which could be used in Requirements Engineering.

**Crime Investigation** Cognitive Interviewing[15] has been used by investigators for years. The idea behind cognitive interviewing is to reconstruct the details of an event in a witness’s mind, in different ways to improve their overall recall of the event and also to see how accurate their story is. There are four techniques in cognitive interviewing[15]:

1. Recall the events in a different order. The witness is asked to describe the event backward or from a point in the middle and describe the event either forward or backward from that point. This technique can also be useful in determining a witness’s truthfulness. If a person is creating a story it is almost impossible to tell the story out of sequence. This technique will be best suited when asked to talk about their experience with the previous system. Or it will also help in bringing the overconfidence down to minimum.

2. Reconstruct the circumstances of the event. The witness is asked to reconstruct how the incident began and the circumstances surrounding it. The witness is asked to think about details in the environment like weather and lighting and the condition of the area. The interviewer also asks the witness to recall their emotional state at the time of the incident. There are certain situations when the interviewee is asked to describe the negative experience, they tend to talk about situations they find negative just because of a bad day or a bad mood. So reconstructing the circumstances of the event can help us gain a proper idea of what had happened actually.

3. Change perspective. The witness is asked to change roles with another person in the incident and consider what he or she might have seen. The witness is also asked to describe the incident as if they saw it from a different location.

4. Instruct the witness to report everything: The witness is asked not to leave out any detail regardless of how small they may seem. This technique could be useful in Requirement Engineering as it helps clarify the facts that are recalled. Sometimes due to overconfidence the interviewees try to construct stories. There are other interviewees who might also try to provide response according to the interviewers expectations or for personal evaluation. But by utilizing this technique we are able to find out if these are falsified or not.

**Psychology** This paper[13], describes how they perform Cognitive-Behavioural Therapy, by diagnosing disorders, discuss with the patient the goals of the treatment, plan the treatment. In order to conduct the therapy, they require to collect good information without which it would be hard to understand the patient’s problems. Communication skills are
the key elements for the information gathering process. In order to gather good information and to keep up a strong relationship with the patients, the following communication skills are considered:

1. At the beginning of the interview, it is useful to allow open inquiry. The therapist can let the patient express freely. They should be careful not to interrupt the patients too soon, as it can lead to risks of both losing information and compromising the relationship.

2. Listening: This is a basic skill in information gathering. The goal of the listening skill is to respond to what the patient is saying through actions such as eye contacts or vocal utterances, which indicates that the therapist is attentive to the patient’s story. The listening skills gives the patient time to think and contribute more without being interrupted. And it also provides therapist time to listen, think, and respond with more flexibility.

3. Facilitation: It encourages patient to say more about the topic. Brief expressions such as , “Hmm,” “ah,” “I see,” and “yes” along with body movement or facial expressions such as, nodding and smiling indicates that the therapist is attentive and interested in what is being said by the patient.

4. Reflections: Similar to facilitation, is also used to indicate that the therapist is listening, by reflecting back on what has been said. Reflections can be simple repetitions of words or a longer part of what the patient has said(echoing). Listening to the therapist repeat what has been said gives the patient the chance to reconsider things, check if the information is accurate and reflect on feelings and thoughts.

5. Clarification: helps the therapist better understand what has been said. The therapist might be confused or unclear with certain words mentioned by the patient, clarification prompts the patient for more precision, clarity, or completeness.

6. The correct use of Open ended question and closed ended question. The open ended questions, to freely narrate the story whereas closed ended questions to imply yes or no answer. They are specific and focused.

7. Summarizing: It is important to summarize all the information gathered from both the patient’s and the therapist’s points of view. This can facilitate the comprehension and improve patient-therapist communication. The therapist should be able to summarize the patient’s problems, by using the patient’s words when possible, to verify the therapist’s understanding of what has been said and to invite patient to correct the interpretation or provide further information.

As the goal of interview technique in Requirements Engineering is to gather accurate information. The same procedures used for a patient-therapist communication in Cognitive behaviour therapy can also be used for client-analyst communication.

These communication skills are also used for Motivational Interviewing, ”It is a technique which is used to engage resistant patients in the process of change”. In psychological terms, it is used for bringing a change in the
behaviour of the patients who are suffering from addictions. But it can also be used in Requirements Engineering, as a change in behaviour of the interviewees whenever required.

5.2 Three common situations

Apart from the issues mentioned in Chapter 3, Problem Statement, there are some common ones that makes the interview process difficult [8][26][16]. These situations distorts the person’s thinking ability and thus provide ambiguous information. A lot of skills are required to handle these situations. For a novice SE, who is conducting an interview for the first time, it is vital to know, why these situations occur and what can be done to reduce them, the situations are as follows:

1. The interviewee continually sidetracks with irrelevant information.
2. The interviewee does not say much or gives monosyllabic answers.
3. The interviewee is hostile or angry.

5.2.1 When the interviewee continually sidetracks with irrelevant information.

The first problem we are going to consider here is Nervousness, many people, tend to ramble on when they are nervous. It is the thought in their head that makes their body sweat and shake when they are nervous. If they are able to control their thoughts or replace their negative thoughts into positive thoughts, then they are able to control the uncomfortable feelings in their body. Sometimes nervousness can be a good thing, a certain level of nervousness is natural and acceptable and it helps to perform better. But when the “performance anxiety”, which is a form of uneasiness or fear felt, get in the way, this distorts the person from communicating naturally [9]. And due to this anxiety, the uncomfortable symptoms such as shaky, sweating, fast pulse etc will impact the confidence level, when the confidence is needed crucially.

1. Friendly Conversation [27], research by psychologist Oscar Ybarra, shows that brief, friendly conversation improves individual’s mental function. You have this type of conversation when getting to know another person. These conversation only need to be brief, 10 minutes is enough to make an impact. The mental function Ybarra has taken into consideration are working memory, self-monitoring and focus- skills that help in problem solving. Introduction during the meeting, can enhance the problem-solving capabilities, this introduction should not just state the name and position but should allow sufficient sharing for people to actually get to know each other as friends. However, we need to make sure during the conversation that the person is not completely relaxed, as stated by Daniel Kahneman [19], ” there are two modes of thinking, System 1 and System 2. System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control. Whereas System 2 allocates attention to the effortfull mental activities that demand it.”
the main characteristics of System 2 is laziness, a reluctance to invest more effort than is strictly necessary. Hence, if the interviewee seems relaxed, they wouldn’t use much cognitive effort to get the response needed. So, it is important to make sure there is a control over having a friendly conversation.

2. The other technique to reduce nervousness is by giving an assurance. Most of the time, the interviewees tries to please the interviewer for personal evaluations, they provide responses, which they think is what the interviewer expects and in order to make a good impression they talk highly about the work and organization. To avoid this, the interviewer before the interview process can inform the interviewee the purpose of the interview is to gain insight into business requirements, explaining that you are acting as an independent party and that their responses will remain confidential. And also focusing the dialogue on processes and situations rather than on the individual.

3. Most of the interviewee’s might come across the interview process for the first time. Therefore, reassure them by being open and avoiding threatening descriptions. For example, “Talk with you” is less threatening than “interview you”. In addition, to make them feel at ease, hiding the tape recorder from the sight of the interviewee, might make them feel relaxed and not conscious about what is being said.

Apart from Nervousness, the second problem being faced is when the person provide stories for every response. Here the problem is how to know the story they tell are true facts. There is another definition for this kind of behaviour, known as, Associative Thinking, which is the identification of causal relationships between actions and events where scientific consensus says that there are none. The basic concept of associative learning is that everything is connected and networked, just like in our brains. How can one get the interviewee to focus, structure and retrieve those information which are connected to what has been asked from them?

1. If the interviewee continues to provide irrelevant information, and there is an allotted time for each interview. It is advised to interrupt their flow in a friendly and endearing way. Don’t appear bored or irritated by their narrative, just nod, smile and then take control. For example: That’s really interesting. You said earlier that...

I know what you are saying! [smile & nod]. Can we return to what you were saying about...

Can I please stop you there for a moment and go back to...

By doing so, the interviewer can get control over the interview and could ask probing questions to clarify what has been said. The interviewer must be skilled to handle such situations as there are chances for the interviewee to continue providing stories.

And finally, the third problem is when people are overconfident they believe that they know more than they in fact do know, or believe their accuracy to be higher than it in fact is. Because of this tendency, he
interviewee) relies too much on his own information and too little on the opinions and perspectives of others even when they are good ones[12]. In order to have control over the interview and to get the interviewee to have a dialogue with the interviewer, rather than an learning situation, where one person talks and the other listens, we need to handle this situation with due care and respect for our interviewees.

1. To improve the conversation, the interviewer should politely interrupt the flow in a friendly manner and ask follow-up questions[14]. This proves to the interviewee that the interviewer is eager to learn more.

Here are some other tactics you can try to get an interview back on track[26]: “Let’s move on to the next question...” “Paul, I’d love to hear more, but I also want to know about...” “Sue, that’s an interesting story, but let’s get back to the question...” “Earlier you mentioned...” “I’d like to go back to...” “Park that thought and tell me more about...” “Okay, I understand your thoughts on that now. What can you tell me about...?”

5.2.2 When the Interviewee does not say much or gives monosyllabic answers.

The person who fit this profile are those who are nervous, who has problem phrasing their requirements, a person who is shy, an introvert and finally a person who is less motivated. When it comes to a nervous person, the same technique as used in Section 5.2.1, is used here as well in order to get the interviewee to talk.

Secondly, a person who has trouble phrasing their needs and requirements are inarticulate about what they reveal. Most of the time, they are unfamiliar with technical terms, they often do not know what kind of information should be given to interviewers to develop a software[32]. Because of this reason, the requirements retrieved are ambiguous and the level of requirements are inconsistent.

1. Most of the interviewees tend to believe that the interviewers coming to interview is to evaluate them or even the thought of not being technically experienced can make them quiet. It is important to ensure that the interviewees understand there are no “right” answer, and that the information provided is confidential[16]. This will therefore help in improving the communication between the interviewer and the interviewee.

2. Different questioning techniques can also be used to help phrase their requirements. Reflexive question[3], makes the interviewee’s reflexes to agree on what has been asked. Reflexive questions[21] are created with a statement of confirmation and adding a phrase such as, Don’t you? Wouldn’t you? or Couldn’t you?. This should be followed by a leading question, which gives them a base to think upon. And if they
respond, then put a probing question, to clarify what has been said. If they do not respond, use Half-reflexive questions, as this would help them in using their own brains to form a response. But there is a drawback on leading questions, leading questions would prompt them to provide responses as per the interviewer’s expectation. The interviewer should be careful in providing just one or two leading questions and not frequently leading them.

Whereas, what if the interviewee is shy or is an introvert. It is very important to know that a shy person and introverted person have different characteristics and for each different communication pattern has to be used.

**Shyness** can range from bashful timidity to social avoidance and can give rise to reticent behaviour. Shy people have difficulty with small talks, they are slow to share their feelings. They would want to interact, but would be prevented to do so because of fear of social disapproval. This shyness is rooted from social anxiety.

1. Because of the shyness, they might be nervous to talk. In this situation a friendly conversation[17] will be a good beginning. But being friendly does not mean be loud and energetic, this would just make them uneasy. But by having a moderate tone conversation with a smile and welcoming nature will help smooth the process. A friendly conversation also does not mean small talks, instead, focus your question on something that has a conversational direction and requires some elaboration when being answered. In a study conducted in[16], the approach that worked well was to warm them up by encouraging them to talk about issues that they were really interested in. Although it might not be relevant to the purpose of their meeting, but later it would be easier to talk about relevant topics in the interview. It is important to use general interviewing skills such as informal talking and not appearing to be threatening to create a comfortable environment for the shy interviewees.

2. Most of the shy people need time to think before speaking[7][17], they need time to formulate their response in their mind or find the right words before speaking. Making motions for them to hurry up and say something isn’t going to lead to a quicker response. It may well increase their potential nervousness because now they’re under pressure to live up to the subjective and self-determined time allotment to respond. Rather than trying to fill every gap or lull in the discussion by talking, be aware that silence can at times be useful[5]. Sometimes interviewees are waiting for a break in the discussion to contribute a new perspective, or introduce an unexpected issue. Especially in one-on-one interviews, silence can encourage a more conversational flow to the interview and result in a more comprehensive understanding of the issues.

Whereas with an **Introvert**, who is reserved, we need to try out a different form of communication in order to help them to collaborate. Compared to the extroverts the introverts make their own energy, they naturally find most interactions exhausting and need time to recharge,
they think first and talk later, process their thoughts in their head, they are reserved, demonstrates less facial expressions, share personal data only with selective few and they mostly prefer writing to talking[20]. But communicating with an introvert has an advantage compared to extroverts. Introverts tends to be better at thinking before they act, taking in and processing information thoroughly, remaining on task and working more accurately. Studies have shown that, introverts outperform extroverts when it comes to problem solving and critical thinking skills[20]. Whereas the downside to this is that, introverts typically do not disclose their feelings to others unless they know them well, and may not volunteer to share information the way most extroverted people do[7]. Introverts as well as shy people feel uncomfortable with public speaking. So having an one to one interview with them might reduce their nervousness. Just because, someone is introverted this doesn’t mean they don’t like company. For them interaction is expensive and they don’t want to spend their time on something wasteful.

There are very few tips on handling an introverts[24]:

1. Introverts would like to be welcomed, they don’t want to spend their energy with somebody who isn’t welcoming. If interviewee needs time to think about what has been asked, given them the time, be as patient as possible. Here energy plays a major role. In order to balance their energy small talks and friendly conversation wouldn’t help much[7]. They would just like to focus on what has been asked of them and then carry on with their business. So maybe diving into the topic would help them.

2. Use of Open-ended/in-depth questions will help in the free flow of ideas. They wouldn’t like to be bombarded with many questions, which would feel like a force of energy on them.

3. If they wouldn’t provide much information during the interview, and they would like to think before talking. And if there is limited amount of time. Perhaps, the best way to get their information, is by having an email interview[20]. Where question would be sent to the interviewee and they would have the time and space to think and answer the questions without anybody disturbing them. Introverts prefer writing to talking. When on job, most introverts, prefer email to telephone and writing reports over giving presentation[20].

And finally, there are some interviewees who are less motivated to cooperate or if they are forced to be in this position because their boss forced them to do so[16]. The interviewers might be working on their project all the hours they can but none of their stakeholders will be, they have other jobs to be getting on with. This is why the interviewers need to be careful and considerate when they engage the stakeholders, because they are doing it for two reasons. Firstly, to let them know how things are progressing and any issues that are arising and secondly, to ensure their support for the project in the future.

Why is it important to motivate stakeholders to coordinate in project development?[23]:

1. The interviewers can use the opinions of the most powerful stake-
holders to shape their projects at an early stage. Not only does this make it more likely that they will support the interviewers, but the stakeholders input can also improve the quality of their project.

2. By communicating with stakeholders early and frequently, the interviewers can ensure that the stakeholder understand what is being done and also understand the benefits of the project.

3. Gaining support from powerful stakeholders can help in getting more resources. This makes it more likely that the projects will be successful.

What can be done to get the interviewees interested and motivated to work on the project?

1. A study conducted by [16], suggest one possible approach to motivate them, is by contacting them directly and informing them about the goals and intentions. Another possible strategy, is by bringing in two interviewer. The case study [16] has shown that interviewees tends to collaborate when two interviewers are present.

Here are some tactics to get the interviewee to talk [26]:

“Let me put that another way. What if...?”

“Don’t hold back. I didn’t design this, so you won’t hurt my feelings if you have negative feedback.”

“This is not a test. There really are no right or wrong answers here. Tell me how this design could perform better for you.”

“I’ll be talking to a cross-section of our user base about this design, and it’s very important to get lots of different perspectives. Lee, your contribution is going to make this product easier for people to use in the future.”

“Help me understand more about X...”

“I really need a quotation, summing up your feelings on this issue.”

5.2.3 When the Interviewee is hostile or angry.

The reasons for the interviewee to be hostile can be either external reasons or internal reasons. External Reason [31]:

1. If a project member has had a difficult relationship with a stakeholder in the past, or worked with the stakeholder on a failed or unsuccessful project previously this can develop a stakeholder bias or attitudes that may prove to be a hindrance to project success.

2. If the stakeholder has a hostile or uncooperative attitude towards other stakeholders. There may be significant differences in perception over the project goals or requirements.

3. It could also be that, the stakeholder has come across a disturbing event recently, which could have caused them to be rude, arrogant and distracted during the meeting.

Internal Reasons:

1. The interviewee can be hostile to the interviewer because of something that he/she might have done to trigger the anger.
The hostile environment impairs one’s ability to process information and therefore to exert cognitive control. In case of the external reasons, hostile interviewees would mostly want to vent on the issue. The interviewer should come prepared to listen, but keep in mind to allow them to vent on the issue for few minutes. Non-verbal communication comes in handy along with active listening. The interviewer could nod his/her head from time to time to show they are listening. They should try to look interested rather than incredulous or irritated.

The productive approach in dealing with displaced client anger involves:

1. Giving the client a chance at the start of the meeting to externalize some of the displayed anger. An example of a statement that relates to this point is: “Mark, so how is the day going so far…? It looks like you’ve had a really demanding morning already.” This type of question gives Mark an opportunity to pause, realize that he is already upset about some issue that does not involve the interviewer, and provides him a space to vent some of his feelings about the other subject before starting to dialogue with the interviewer.

2. Taking cues from the client about how much he wants to “vent” about the subject. Be a listener, but don’t probe too much, and follow his lead about when he wants to move onto other subjects.

3. Actively redirecting the client to his work with the interviewer, while subtly helping him realize that he is really not angry with the interviewer. An example of a statement that achieves this goal is: “Mark, that sounds like a very frustrating situation… would you like to take a few minutes to catch your breath and grab a cup of coffee before you and I start our meeting?”

In case of Internal case, What can be done, if the client is tough because of something done by the interviewer? The client anger is solely based on issues with the content of the interviewer’s work or with certain task which the interviewer have done incorrectly or not on time. Certain reasons for why the client is angry, could be legitimate reasons, like for example “not getting a work done on time as promised”, or certain preparations which had to be done before the meeting which have not been fulfilled and the client finds himself wasting time.

When coming across clients with legitimate anger or content-based anger, the positive steps that can help diffuse the situation and continue with the business meeting are:

1. Non-defensive own up to mistake: There are situations when the interviewer feels the interviewee is getting angry for no reason, and the interviewer tends to show an attitude face or eye rolling. This could provoke them to be hostile more. It is the job of the interviewer to reduce it, so that they can carry on with the interviewing.

2. Trying not to make excuses for the behaviour: When the client is angry, they would be reluctant to listen to anything that the interviewer is saying. In order to get them to calm down, it would be better if the interviewer would own up to his/her mistakes.

3. Ask them what they believe is the most important thing to do right now to correct the situation: Since they are unwilling at this point
to listen, or they might not be willing to go ahead with a positive attitude to finish the meeting. Ask them what they believe is the most important thing to do right now to correct the situation. Make them feel their information is greatly valued. And being attentive and nodding for each response gives them a feel that they are being heard.

5.3 How to find the right question

Asking a right question is not a short process, it is a powerful force, which requires the interviewer to inquire over and over again. “Asking the question that matters/right question” is the primary way to engage people in their natural, self-organizing capacities for collaborative conversation, exploration, inquiry and learning. “[4]. What makes a right question? According to the paper[4], the right question is simple, clear, thought-provoking, generates energy, focuses inquiry, surfaces assumptions and opens new possibilities. And these type of question would lead the interview to be more of an interactive session rather than a one-side learning process. In order to form a better question, we need to spend more of our time and energy focused upon discovering and framing them.

There are several steps that involves strategic thinking for framing powerful questions such as[4].

1. Assessing the business and organizational landscape: Scan the current business and the organizational landscape related to the project you are working with. Allow your curiosity to lead as you identify different question that the business landscape reveals, frame your findings as questions rather than concerns or problems, this will be tough but very important. For example: In order to frame these questions, you could ask yourself: “What is the real question underneath all these data or if X was at play, what kind of question would we be asking?”

2. Discovering Core Questions: Once all the relevant questions are formed, combine them in the form of clusters and consider the relationship among them. Notice what pops up as the “Core Question” that these clusters reveal.

3. Creating Images of Possibility: Conversation with the stakeholders, based on these core questions, can provide vivid images of all the possible solutions. This often reveals new territory and opportunities for each action while remaining grounded in real life.

4. Evolving Workable Strategies: Workable strategies begin to emerge in response to compelling questions and to the images of possibility that these questions evoke.

Of course the cycle is never complete. Relevant business data, ongoing conversation with internal and external stakeholders, informal conversation among employees enable you to continually evaluate the business landscape, thus revealing new questions. Figure 2, provides a pictorial representation of the activities. The activity for framing the right question can be useful in all cases. It is one of the major reasons for having a strong
conversation even if the person talks a lot or is quiet or even if he is hostile. By taking time to focus on building the right questions, we are able to solve part of the issue on having the interviewees focused in the interview pro-

cess.

This cycle is never complete. Relevant business data, ongoing conversation with internal and external stakeholders, informal conversation among employees enable you to continually evaluate the business landscape, thus revealing new questions.
6 Conclusion

In this thesis, Interview, the most widely used technique of requirement elicitation, is explained using Literature Study. This thesis, provides guidelines to help novice engineers in better performing the interview process. The results of the literature study describes some best practices of interviewing in Requirements Engineering field and also in other domains such as crime investigation and psychology. These domains are researched to find those practices such as cognitive interviewing, motivational interviewing which could be useful in the Requirements Engineering. Besides this, the other areas the literature study was conducted was on three common situations that are commonly found in most of the interview process. The three situations are:

1. When the interviewee continually sidetracks with irrelevant information.
2. When the interviewee gives monosyllabic answers or talks less.
3. When the interviewee is hostile or angry.

In this thesis, literature study was conducted on each situations. Before finding a solution, it was vital to know why interviewees behave this way. The solutions are a set of verbal and nonverbal communication patterns, which could be used for each of the situations. These communication patterns, involves friendly conversation, ensuring the purpose of the meeting, ensuring the information collected is confidential, removing the tape recorder from the sight of the interviewee, bringing in two interviewer instead of one in order to get the interviewee to focus and collaborate, smiling and nodding, etc.

Apart from achieving this, this thesis has also succeeded in providing steps involved to frame the right questions such as, scanning the domain and organization, discovering the core questions, creating images of possibilities and finally evolving workable strategies. This is a cycle that is never complete and it can be time consuming but it helps in retrieving the right information.

These solutions, are not only used in the interview process of requirements elicitation, but it is also used in other elicitation techniques, where communication plays a major role. In an agile methodology, frequent involvement of stakeholders are required and not just in the initial phase. Therefore these solutions can help in having a good communication with the stakeholders throughout the software development phase.

Finally, It is not possible to claim “Here is the way for successful interviewing”. Each organisation has to assess their own capability. Nevertheless the results of this thesis can provide valuable inputs to organisation specific processes.
References


