Mining Interview Patterns

Patterns of Effectively Obtaining Seeds of Patterns

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When creating a new pattern language, it is important to mine the seeds of the patterns from best experiences. Kerth and Cunningham identified three general approaches to pattern mining (Kerth & Cunningham 1997). If the author(s) have experience in the domain of the pattern language, they can easily get the seeds of the patterns by mining their own experiences (*introspective approach*). The author(s) can do this by using a pattern writing sheet (Iba, 2014) or other informal methods such as those proposed by Ward Cunningham (Cunningham 1994) and Joseph Yoder (2007-2012). Another approach mentioned by Kerth and Cunningham was pattern mining by examining many related systems or architectures, noticing the commonality and pattern mining the best practices from this analysis (*artifactual approach*). For example, the GoF patterns [GoF 1994] were mined from these two approaches.

However, if you are motivated to create and write a pattern language in an area where you have little or no experience, it is important to conduct interviews with experienced people to help collect the key information needed to write the patterns (*sociological approach*). Both authors have conducted various interviews for mining the seeds of patterns and one has written a couple of these into pattern languages. (Iba, et al., 2011) (Iba & Takenaka, 2013). There have been other approaches like Holistic Mining Approach (Iba & Isaku, 2012).

During an interview, it is important to ask key questions to experienced people along the following lines: Solution, Problem, and Context. Although this may seem straightforward, many pattern writers still have difficulty getting the information they need to write the patterns. Therefore, we decided to write these patterns (meta-patterns) to assist with the interview process while mining the seeds of patterns.

In this paper, we present 8 patterns to assist with the interview while mining the seeds of patterns. The patterns presented in this paper are: (0) Mining Interview, (1) Keys Worth Sharing, (2) Problem Digging, (3) Context Catching, (4) Venture of Asking, (5) Sympathetic Response, (6) Experience Overlapping, (7) Interesting Point. They are primarily intended for anyone wanting to write patterns specifically about topics where they are not the subject expert.

Our patterns are written using a modified version of Takashi Iba's Patterns 3.0 format (Iba 2011). While similar to the traditional Alexandrian pattern form, the most important differentiation of the Pattern Language 3.0 is their orientation towards pattern readers who explicitly use patterns to design their own actions in a collaborative environment.

Mining Interview

Mining patterns from the experiences of others.

You are creating a pattern language in which you have little or no experience.

▼ In this context

The patterns extracted from people who have less experience can often be weak or wrong. People that are experienced in the domain are often busy and don't understand patterns. Even if they do understand patterns they might not be interested in writing a pattern language about their domain. Therefore, it is often unrealistic to just ask the experienced people to mine and write patterns about their experiences. Additionally, although experienced people know their domain area deeply, they often do not know how to teach or share this knowledge with others.

▼ Therefore

Conduct an interview with experienced people in the area of the pattern language you are creating. Use this information to gather the core information needed to write the patterns.

In the interview, first ask what they really want to share with colleagues and newcomers in order to know the Keys Worth Sharing (No.1). This usually includes core ideas about the solutions; most people enjoy sharing this information. Then, ask what will happen if you don't practice the important points (Keys) in order to conduct Problem Digging (No.2). For example you can ask what drove them to choosing this solution. This will help to get the information about the problem the solution solves. After that, ask when or where the problem occurs in order to conduct Context Catching (No. 3). Keep good notes during the interview process by either writing them down in your notebook or on a whiteboard.

▼ Consequently

You can get explicit knowledge of the experienced people, and also tacit knowledge in the domain. It often works well that the interviewer has less experience in the domain, because readers of the pattern language will also be people who have less experience and will need to learn how to apply the patterns collected during the interview process.

Alexander discusses the importance of including the real users for pattern mining and suggests that this is the only way to create a "morphological complete" pattern language (Alexander, 1977). This suggests that the interview process might well be extended to not only from the perspective of the expert in the domain but possible in interviewing those that are using the solutions from the expert.

Keys Worth Sharing

The important points or solutions that people
working in the domain really need to know.

You are going to begin the Mining Interview (No.0) in the area that you are creating a pattern language.

▼ In this context

It can be difficult to get good information from an expert by asking in general terms about their experience is or what their expertise is. What is obvious to the experienced person is often not so obvious to the newcomer.

▼ Therefore

Ask the expert to explain the important points that colleagues or newcomers need to know when dealing with the area of interest.

If the interviewee is having problems discussing the answer, you can help by giving some examples, "Well, for example, what are the important points you need to consider when you do …." In order to help the interviewee to relax, it can be useful to emphasize, "You don't need to choose only one thing. This is just brainstorming." When the interviewee makes important points, write them down in your notebook or on a whiteboard. You can start by having the interviewee "Make a list of all the little things they have learned through the years about the area." (Cunningham 1997)

<center>▼ Consequently</center>

You will get important information extracted from the interviewee that will be worth sharing with others, not just a summary of their experiences. The information will provide the seeds for the solutions of the patterns language. Additionally, you will be learning the domain and core patterns as you go.

Problem Digging

"What will happen if you don't practice this solution?   What lead up to this solution?"

You have outlined the Keys Worth Sharing (No.1) from the Mining Interview (No.0).

▼ In this context

You cannot write patterns based only on the information of the keys. In each pattern, you will need to specify more information such as the problem that the key solves.

▼ Therefore

Ask what will happen if they do not practice their Keys Worth Sharing (No.1) in order to underline their importance To be concrete, be sure to focus on each individual solution one by one getting the necessary details for each.

These are sample question that can be used during the problem digging. "I think you said the key, ………, is important.   Can you explain the reason why you feel this is important? What will happen if you don't practice it? What was the core problem this solution was solving?" Sometimes the expert will tell more than one reason. In this case, ask which is the most important reason, or ask whether these reasons can be summarized into one reason.

▼ Consequently

You will get the information about the reasons why the Keys Worth Sharing (No.1) are important. Each reason is a candidate for a Problem of a pattern. In addition, the interviewee often re-discovers the reason for their action or problems they were addressing, which they often unconsciously practice.

Context Catching

"When or where does the problem occur?"

You just got the Keys Worth Sharing (No.1) and the reason why they are important by Problem Digging (No.2) in the Mining Interview (No.0).

▼ In this context

You cannot write patterns if you only know the problems and solutions. In each pattern, it is also important to specify a context where the problem occurs.

▼ Therefore

Ask when and where the problems solved by Keys Worth Sharing occur.

If the interviewee is having difficulty finding an answer, you can help by asking some questions, "Well, for example, in the case of … does it occur?" Also, you can ask "When should I consider this solution?" It is important to get a good dialog with the expert to mine out the context. It is often very powerful to reflect back to the interviewee what you are hearing. For example you might state, "So when I have this given context ____, and this problem arises, then this solution is what I need to consider. This really helps validate with the expert the pattern that you have just learned.

▼ Consequently

You will get the information about the condition when and where the problem occurs, and when the solution can be applied. The condition for each problem is candidate of a Context in a pattern. In addition, the interviewee often re-discovers the context of the problem and solution, which they often unconsciously know.

No.4

Venture of Asking

Venture to ask, even if you can think you know the answer."

You are asking Keys Worth Sharing (No.1), Problem Digging (No.2), or Context Catching (No.3) in the Mining Interview (No.0).

▼ In this context

Although you may assume you know the answer, it is not enough that you think you understand the details in your mind; the answers need to be verbalize. There may be important information or details missing unless your understanding is clarified with the expert.

▼ Therefore

Venture to ask the questions and listen to the answers of the interviewee, even if you think you know their answer before asking.

If you are limited in time, you can try to verbalize your expectation, and ask "do you mean this or is it like that?" In the case of Keys Worth Sharing (No.1), you may say, "I think you value …, don't you?"; In the case of Problem Digging (No.2), "In my view, the problem … will occur without the key. Do you think so?"; In the case of Context Catching (No.3), "Is this the condition when the problem will occur …, am I right?"

▼ Consequently

All of important information will be verbalized in the interview, so it will be easier to write down patterns without doubt. You really validate with the expert your understanding of the patterns. Additionally you will learn the details and know the most important information that should be described in the patterns.

No.5s

Empathetic Response

"That's right!" "I see." "Interesting."

You are asking Keys Worth Sharing (No.1), Problem Digging (No.2), or Context Catching (No.3) in the Mining Interview (No.0).

▼ In this context

If the mood of the interview is too formal, he interviewee can become bored with the interview and become less willing to share their experiences. Also, if the interviewer seems uninterested in what the expert is sharing, the expert might think the interviewer is bored or doesn't care. Or they might think that the interviewer already knows some of the details and will skip important points that the interviewer will need to know for the patterns.

▼ Therefore

Respond lively to the answers received from the interviewee. For example, "That's right!" "I see." "Interesting", and so on.

It is ok to change your expression, because the mining interview can be an intense examination of the area of interest. You must be careful that you don't have the opposite result of responding too exaggeratedly. The mining experience is an interactive dialog where the interviewer shows real interest in what the expert has learned. Make it interesting have fun with it and mix it up. Repeating back what your understanding is can also be very useful to validate that you really understood what the interviewer was saying.

▼ Consequently

In a sense you are building a relationship with the expert. They are often happy to see that someone is interested in their work, and therefore the interview will go smoothly and thus the result of Mining Interview (No.0) will succeed.

Experience Overlapping

"It looks similar to my/that experience!"

You are asking Keys Worth Sharing (No.1), Problem Digging (No.2), or Context Catching (No.3) in the Mining Interview (No.0).

▼ In this context

You will not be able to write patterns mined from others, unless you can relate it closely to things you understand.

▼ Therefore

Note or point out any experience that you have had that is similar to the experience the interviewee tells, and overlap them.

In the Mining Interview (No.0), don't hesitate to say, "Oh, I have had a similar experience. My experience is …. Is it similar to what you want to say?" If the interviewee doesn't think they are similar, then they can explain the difference between them.   This will help clarify and better understand the interviewee's point of view.

▼ Consequently

This will open a dialog leading to a better understanding of the patterns. You will be able to tie the information into something you understand which will help when writing the details of the patterns. Moreover, you can write what you mined into patterns with confidence based upon your experience.

Interesting Point

"Is it worthwhile to write the patterns, if even you are not interested in the content?"

You are conducting a pattern Mining Interview (No.0).

▼ In this context

The patterns mined by Mining Interview (No.0) will not be great patterns, if you cannot see value in what the interviewee consider as Keys Worth Sharing. The patterns might be just personal preference or points from the interviewee, but not valuable for your pattern language. Additionally, you can lose your motivation to write patterns, specifically if you do not see the value in the Keys.

▼ Therefore

Select topics from interviewee's answers according to your interest and what you learned during the interview. Guide the discussion based upon your interests.

Of course you need to respect the answers from the expert. However, some of the answers might not add value for future readers of the patterns that are solving the problem. Thus it is reasonable to select and navigate the interview based on the criterion of your interests as the first reader of the patterns. In a sense, you went through the process of what was valuable while you interviewed the expert.

▼ Consequently

You will end up with a good seed of patterns that are important and interesting to at least one reader, yourself. In addition, the interviewee will enjoy talking when you show interest in what they are telling you. Moreover, you will be able to write down the patterns better as you learn more about the problems, solution and context.

Conclusion

When mining patterns from experts in order to write a pattern language in an area of interest, it is important to mine core seeds of the patterns from the expert along with enough details in order to write the patterns. The (0) Mining Interview process starts by gathering the (1) Keys Worth Sharing which will be used as the core solutions to your patterns. These "keys" will be used to help with the (2) Problem Digging and (3) Context Catching. There are various techniques that help for a successful interview such as (4) Venture of Asking, (5) Sympathetic Response, (6) Experience Overlapping, and (7) Interesting Point. A successful interview will assist pattern authors in writing good patterns and pattern languages, including on topics where they are not the subject expert.

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Maybe Reward System Pattern as well!!!

WILL LOOK AT BETTER FORMAT OF REFS FOR FINAL PAPER LATER!!!