Sense-Making Methodology: Learn What Users Understand is Important

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ABSTRACT
This paper describes how the Sanse-Making Methodology makes it possible quickly to identify situations where users experience problems when using an interface. The paper is based on use of the methodology in three industrial software projects and a total of more than thirty interviews.

Author Keywords
Requirements, interview methods, Sense-Making.

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
Interviewing users is an essential part of learning about their needs. This paper presents a new methodology and how it can be used for interviewing computer users.

PRINCIPLES BEHIND SENSE-MAKING METHODOLOGY
In Sense-Making each individual is seen as someone who tries to make sense of his or her experiences, and different sense-makings or understandings of the same phenomena are regarded as something that makes it possible to create a more comprehensive understanding. [4]. This means that Sense-Making stresses the importance of dialogue between different understandings of a situation, and it means that the user's understanding of a situation of use shall be considered at least as important as the researchers.

Sense-Making focuses on the discontinuities experienced when the individual meets a gap and has to stop and find out what to do next. It tries to determine how an individual experiences that moment, how he or she sees the gap and try to overcome it, and how he or she progresses after having crossed the gap. [2]. See figure 1. When using
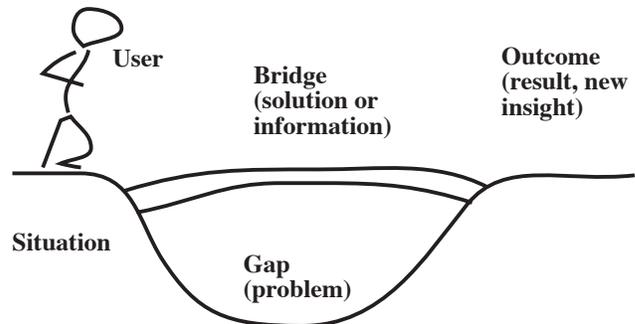

Fig 1: Making sense of a gap and crossing it (based on [2])

Sense-Making in user studies, the methodology will therefore focus on the non-routine situations where the user experience problems, and on how he or she sees the problems and tries to overcome or circumvent them.

USING SENSE-MAKING IN HCI
I have used Sense-Making to investigate problems experienced by new computer science students, in three industrial software projects, and to investigate problems experienced by computers users in Philippines, and I have in total conducted more than thirty interviews using the methodology.

Preparations
In two of the industrial projects I had the chance to learn about the organization, tasks and software used before I did the interviews. In both cases it meant that I could focus on the situations that the users described. In contrast, in the third industrial project and in the Philippine study it was not possible for me to learn about the domain in advance. In both cases it took some time and interrupted the users' description of critical situations when they had to explain their terminology and work to me.

One advantage of using Sense-Making is that it is not necessary to prepare a detailed questionnaire in advance. I found that it was sufficient with a few keywords to remind me of job titles and other basic information that I needed and a small piece of paper listing the steps in my Sense-Making interview. This means that it in principle is possible to do a Sense-Making interview with only a brief preparation.

Interviews

The interviews were very time-effective. In all interviews the user focused on the situations where he or she had experienced the biggest problems, so it in some cases took less than twenty minutes before I understood the two or three most serious problems experienced by a user.

Similar to contextual enquiry [1] I found that it was highly advantageous to conduct the interviews at the user's workplace. In most cases the user had to demonstrate a problem by using his or her daily work tools before I understood it.

In all cases the users were eager to tell about problems they had experienced. In Philippines I even found that the Sense-Making interview opened up, so the users afterwards felt more free to discuss other aspects of their work.

In a Sense-Making interview it shall be possible for the respondent to circle and repeatedly engage with the same phenomena [4]. I therefore did what in Sense-Making is called Micro-Moment Time-Line interviews [3]. I first asked the user to describe situations where he or she had faced a problem in the work. When the user had told me about the situations, I asked about each situation in more details: What the user had wanted to accomplish in each situation, what information he or she found useful to solve the problem, and what he or she afterwards believe might have helped to solve the problem. See figure 1.

In some cases I had to make adjustments to my method. In one of the industrial projects the users worked at such a staggering speed that I only could interview them in their breaks away from the workplace. In another industrial project and in Philippines users started to describe the information and functions they wanted in an interface, even when I asked about situations they had experienced. However, I could then ask about the situations where they had needed the information, and how it had been useful to them.

Results of interviews

Sense-Making is an open method. One consequence is that users may describe serious problems that are unexpected and outside the original scope of a study. Even though my focus in both cases was on the software, users in one of the industrial projects described situations where they experienced ergonomic problems, and users in Philippines described problems with an unstable power supply.

Sense-Making may also identify problems that at first appear to have nothing to do with the interface. In one of the industrial projects some users complained about situations where their colleagues had forgotten to note down what they had done. When I later investigated that problem it turned out that the note field in the interface was not designed in an optimal manner.

In one of the industrial projects I had a meeting with users and the leading software designer, where we discussed the problems based on the users' experiences and found that three of the apparent interface problems had occurred because of insufficient training, and that the best solution to a fourth problem was to change the work routine and not the interface. This demonstrates the value of dialogue as it is stressed in Sense-making.

In the same project a group of users had spend a substantial amount of time collecting proposed changes to the system before I did my interviews, and it turned out that only one or two of their proposed changes had anything to do with the situations users had described to me. However, after the meeting with the users and the leading software designer, it was decided that the upgrade to the system should be based solely on the results of my interviews, not on the list produced by the users. It appears that users give a more valid description of possible problems and how they may be solved if they are asked to describe situations where they have experienced problems and how the problems may be solved, than if they are asked to suggest improvements to an existing interface: in essence to play designers.

CONCLUSION

Sense-Making is not suitable if the goal is to document all steps in a work process, or to identify usability problems that the users are not aware of. However, when the goal is to identify the most serious problems experienced by users, it is much faster than contextual enquiry or a usability test, and it gives a more valid view of the problems experienced by users than if they are asked to suggest improvements to an interface they are using.

Sense-Making may often lead to the discovery of new and unexpected problems. This may be inconvenient for an interviewer with a narrow focus, but in most cases it is an advantage for the customer and users.

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