Research Methods in HCI
CPSC 681

Contextual Interview

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Introduction

Contextual Design is a user-centered design process developed by Hugh Beyer and Karen Holtzblatt[1]. It is an approach to define software and hardware systems that collects multiple customer-centered techniques into an integrated design process. Data is the key for designing any system and the only reliable outside arbitrator for people. Contextual Design makes data gathered from customers the base criteria for deciding what the system should do and how it should be structured. The goal of this paper is to discuss Contextual Inquiry: how to gather data from customers.

The core premise of Contextual design Inquiry is: "go where the customer works, observe customer as he/she works, talk to the customer about the work, gather data and finally interpret the observations". A useful relationship model for gathering data is the Master/Apprentice model. Just as an apprentice learns a skill from master, a design team wants to learn about its customers' work from its customers. The basic apprenticeship model needs modifications to handle a design team's needs and situation. Four principles guide the adaptation of the technique: context, partnership, interpretation and focus.

Four Principles of Contextual Inquiry

Contextual inquiry tailors apprenticeship to the needs of design team. There are four principles to modify the behavior to better get design data: context: go where the work is and watch it happen; partnership: talk about the work while it happens; interpretation: find the meaning behind the user's words and action; focus: challenge your input hypothesis.

***Context*;** This tells us to get as close as possible to the ideal situation of being physically present. Staying in context enables us to gather ongoing experience rather than summary experience and concrete data rather than abstract data. As an example consider we asked a secretary how she started her day. Her answer was: "I come in and check my messages and get started." But when we asked her to go ahead and do as she would any other morning, she described: "First I hang up my coat, start my computer, even before that I'll see if my boss left something on my desk, if he has that's first priority. While the computer's coming up I check the answering machine for urgent messages, look to see if there is a fax that has to be handled right away…"

***Partnership*;** The goal of partnership is to make you and the customer collaborators in understanding his work. Articulating work structure and correcting design ideas during the interview gives the customer the power to shape the way designers think about the work. Some common pitfalls and possible solution for avoiding them:

Interviewer/interviewee: In this relationship, interviewer and customer start to act as though there were a questionnaire to be filled out. You ask a question which the customer answers and then falls silent.

The best solution for this is to suggest returning to ongoing work, which effectively prevents this question/answering interaction. Remember that you aren't there to get a list of questions answered but to observe.

Expert/novice: It is hard when you are the one designing the system but you have to get the customer to treat you as an apprentice. Remember you are there to observe and learn, not to answer questions.

Set the customer's expectations correctly at the beginning by explaining that you are there to hear about and see their work because only they know their own work practice. You aren't there to help them with problems or answer questions. Step out of the expert role explicitly by: "you go ahead and do what you would do if I weren't here, and at the end I'll answer any questions that remain. The only exception to this rule is if the customer is so stuck that he will not be able to do any more of the task you came to see.

Guest/host: Because it is customer's workplace and you are a stranger, it is easy to act like a guest. A guest is polite and not too noisy; a host tries to make the guest comfortable by seeing to his needs. But it is a goal for interviewer to be noisy.

If you find yourself feeling like a guest, move quickly and past the formal relationship to the role of partner in inquiry. Partnership transforms the apprenticeship relationship into a mutual relationship of shared inquiry and discovery of the customer's work.

Interpretation; It is not enough to just observe and bring back observation. Interpretation is the assignment for meaning to the observation. Sharing the interpretations with customer ensures that the work is understood correctly. We ensure the interpretation is true by creating and maintaining the right relationship with our customer. However interviewers need to be committed to hearing what the customer is really saying. They may say "no" to an interpretation, but to be polite may not say "no" directly. For example: "Huh?" means the interpretation was so far off that it had no apparent connection to what the customer thought was going on. "Umm… could be" means "no". If the interpretation is closed, the customer will nearly always respond immediately. A pause for thought means that they are trying to make it fit their experience and cannot. "Yes, but…" or "Yes, and…" means you have to listen carefully to what follows the "but" or "and". If it is a new thought, this is a right interpretation and yours was wrong. If it builds on yours, this is confirmation with a twist or with additional information. Customers say "Yes" by twinkling their eyes at you as they realize your words match their experience or by elaborating on what you said or by saying "Yes" flatly, as if the whole point was obvious.

***Focus*;** Focus defines the point of view an interviewer takes while studying work. Focus gives the interviewer a way to keep the conversation on topics that

are useful without taking control entirely back from the customer. As an example consider three interviewers watching a scientist go about her work; one interviewer, a software developer, notices the quantities of paperwork the scientist uses to define the procedure she follows, to record her actions, and to report her results. Another interviewer is more familiar with the lab technology and sees the kind of instruments she has and the problems she has getting them set up and calibrated. The third interviewer was once a scientist and sees how scientist moves about her lab, getting out glassware and chemicals and putting them on the bench near the equipment she will use. Each interviewer sees different aspects of the work, all of which are true, but which may be more or less relevant, depending on what is being designed. Having a focus means that the interviewer sees more.

Contextual interviews structure

The most common method for contextual inquiry is contextual interview: a one-on-one interaction lasting two to three hours, in which the customer does her own work and discusses it with the interviewer. Each interview has its own rhythm, set by the work and the customer. But they all share a structure that helps interviewer and customer get through the time without losing track of what they are supposed to do. Every interview has four parts: ***The conventional interview***: you as an interviewer introduce yourself and your focus, promises confidentiality and start the tape recorder. Explain that you depend on the user to teach you the work and correct your misunderstandings. Remember that this is summary data not contextual data so don't seek any specific topic. ***The transition***: The user will do his/her work while you watch; you will interrupt whenever you see something interesting. He/she can tell you hold off if it is a bad time to be interrupted. ***The contextual interview proper***: you are the apprentice, observing, asking questions, suggesting interpretations of behavior. You are analyzing artifacts. You are taking notes by hand whole time, do not depend on the tape to catch everything. ***The wrap-up***: at the end you can wrap-up your understanding of the work user does. Try to explain what is important about the work and not to repeat exactly what happened.

Contextual Inquiry in Practice

How to do Contextual Inquiry in practice? What are the concrete actions? The main step is to "knock on people's doors, asking them to let us watch them use our product". The most difficult barrier to introducing a new way of working is people's assumptions about what is or is not done. But when they accept the idea, they need to know exactly what steps to follow.

Setting project focus. As the first step we need to define the problem we intend to solve. Next we have to figure out who to talk to and what to look for to decide what is important in this domain. Ask: What is the work we expect to support? How does this work fit into the customers work life? What are the key work tasks? These are the aspects of work to find out. Who is involved in making

the work happen? Who are the informal helpers? Who provides the information needed to do the job, and who uses the results? These are the people to talk to. Where does the work happen physically? What is the cultural and social context in which the work happens? These constrain the interview situation you can setup. These questions will guide you in thinking about how the system fits in customer's overall work. To expand your perspective on the work, look for metaphors for the work, unrelated kinds of work that have the same structure as the work you want to support. If you are studying online search and retrieval, you can study how people search for physical objects libraries and grocery stores. This will help you understand the basic structure of finding, independent of technology and content. Metaphors like this give you insight into the work you are supporting, suggesting hidden aspects that might be important.

After setting project focus, you are ready to apply it to the particular project situation including how to gather data. Different kinds of projects and their focus will constrain the data-gathering.

Design the interviewing situation. The key questions for defining the interviewing situation are always: how do I get close to the work? How close can I get? How do I create a shared interpretation with the customer? Different kinds of tasks make different demands on the interview. A *normal* task can be planned, is performed in a reasonably continuous session, and can be interrupted by the interviewer. Writing a letter, delivering mail, installing software and writing code are normal tasks. Audiotapes are useful but videotape them only if the work is so UI-intensive or it is especially important to communicate the customer experience to developers who can't go on interviews themselves.

An *intermittent* task can not be scheduled and does not last long (for example crashing a system). The chances of observing it during a standard contextual interview are low. To learn about this kind of tasks, a trial log (electronic or paper) can be generated to enable the user to re-create the sequence of involving events. You could design the suitable documents so the users can easily keep their log in those documents.

An *uninterruptible* task like a surgical operation, a high level management meeting and a sales call can not be stopped. In these situations you can capture the events clearly enough that you can recall all the details later. For example, you can videotape the event, then review it with the customer, stopping to discuss events as the happen.

Some tasks are *extremely long* and take years to complete, like shipping a major software system or developing a new drug. These tasks take considerable longer than the two or three hours of a typical contextual interview. You can first interview wide range of users at different points in the process and playing different roles in the process. Then choose willing customers with the best examples and do a work walkthrough.

Sometimes the problem is *extremely focused* on the detail of a person's action that is too hard to run a standard interview. The details of how a craftsman manipulates his tools can be an example of this kind. This is the case where videotape can be useful.

Sometimes the inquiry needs to focus on *internal* mental process such as how decisions are made. In this case the interviewer must be present when the mental process is happening because there is no way to recover enough in these kinds of tasks. You need to interrupt many times and make a lot of hypotheses. Therefore, this would be a very disruptive process.

Deciding who to interview. After you know how to set up the interview, you need to decide on interviewees. In general, you may interview two or three people in each role you identified as important to the focus. You collect data from 10 to 20 people in all unless the focus is very narrow. If you are making commercial software, you want to go to at least four or six businesses to see variety. Diversity in work practice usually is not equivalent to diversity in market segment. Financial institutions, high tech, and retail may be different market segments, but office work is done very similarly in any modern corporation. To get different work practice, look for different business strategies (doing the work as a business for hire vs. doing it as a department in a large company). Look for cultural differences (a truck company vs. a high-tech company). Look for differences of scale (a small business vs. large corporation).

Discussion: Problems and Benefits

When you are watching the work happen, learning is easy. Because it is based on natural human behavior you will have closer understandings of customer's needs. Seeing the work reveals details, structure and what matters. You will gather concrete data instead of abstract, and observe ongoing explanation instead of summary. While this long session time enables researchers to collect much valuable information, many companies balk at spending the time to collect and analyze so much data. In addition, participating companies usually cannot spare employees for such a long period of time.

A Real Example

Now let's see how Contextual Inquiry works in a real example. In general, accessing and sharing photographs within the home is a hard task. Michael Nunes et al. [4] designed a system for this task through physical mementos and souvenirs. The main concept behind of this system is that a person can assign a set of photos to a physical keepsake in a way that makes this association personally

relevant. Then in social engagements, the keepsake can be brought near a large display which would automatically start a slide show of those related photos(see Figure 1). To facilitate the hardware system for this idea, they have used a Phidget RFID reader [5] to design a reader for the tags attached to the mementos.

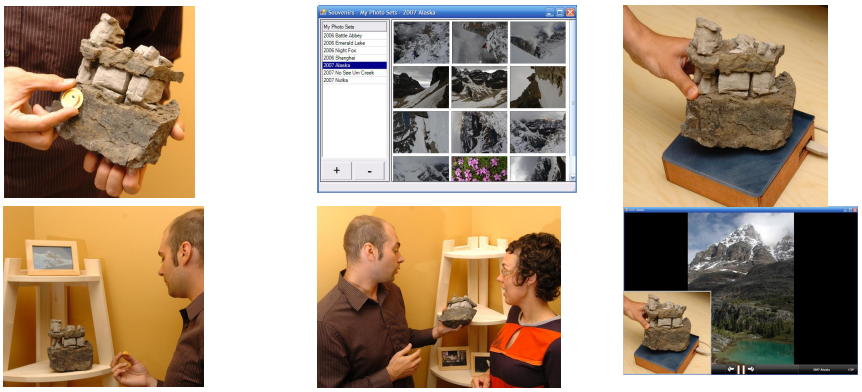

Figure 1: Souvenirs in action.

Michael Nunes et al. had designed the first version of this system only based on their inspiration. For evaluating this system, they decided to be physically present in the context, the home, and setting up contextual interviews. In order to *set the project focus* they considered the questions: What are the people's existing practices around film and digital photos? How do people use and store mementos in the home? How could it be improved? What are people reactions to a video of the system in action?

For *designing the interviewing situation*, they worked on questions like: Where does the work happen physically? What is the cultural and social context in which the work happens? How create a shared interpretation with the customer? To address these issues, they deiced to run interviews in participants' places where the regular routines for photograph storage and sharing happen. Although, it was not directly discussed in the paper, the interviewing situation was *normal.*

For *interviewees*, they recruited 20 homes within the city of Calgary. The homes were selected from variety of occupations, household sizes and ages. Additionally, participant homes were selected which owned at least one camera and took pictures on a fairly regular basis.

For *data-gathering*, Michael Nunes et al. audio recorded and took handwritten notes for all interviews. After using suitable methods for analyzing this data, they presented findings in three parts: use of digital vs. print photography, use of souvenirs and mementos, and reactions to the system design.

In summary, the study which is done by Michael Nunes et al. not only validated several of the design goals behind the system but also nicely suggested ways and concerns in which its design could be improved. For example, public versus private photo sets, using other physical objects as link, and using other displays are some of these issues that are addressed in the design change and revision of the souvenir system.

References:

[1] wikipedia.org/wiki/Contextual_design

[2] Hugh Beyer and Karen Holtzblatt. Contextual Design: Defining, Customer Centered System, *Morgan Kaufmann, chapters 3 and 4*

[3] Holtzblatt, K., & Jones, S. R. M. Baecker, J. Grudin, W. A. S. Buxton, & S. Greenberg (Eds.), Readings in Human-Computer Interaction: Toward the year 2000, *(2nd ed.). San Francisco, CA: Morgan Kaufmann (1995).*

[4] Michael Nunes, Saul Greenberg and Carman Neustaedter, Sharing Photographs in the Home Through Physical Mementos, Souvenirs and Keepsakes, *Proc ACM Conf. on Designing Interactive Systems (ACM DIS, 2008), Feb 25-27, Cape Town, South Africa.*

[5] Greenberg, S. and Fitchett, C., Phidgets: Easy Development of Physical Interfaces through Physical Widgets, *Proc ACM UIST'01, 209-218, (2001).*