

Emotional Journey Map: A Way of Mapping User Experience to Conceptualization

ABSTRACT

This paper discusses an emotional user experience mapping technique, the emotional journey map (EJM), in a study of enriching emotional connectedness between couples in a long distance relationship. EJM combines contextmapping technique with vision in product design (ViP), taking both of their advantages. EJM focuses on obtaining user emotion that is elicited from the context of product use. This paper depicts the process from obtaining empathy with users to conceptualization, showing how emotion can determine form and function of a product. As an explorative concept, 'Whispers' has been developed during this research.

Keywords

contextual design, emotional design, empathic design, generative technique, ideation, interaction-driven design, user experience

INTRODUCTION

It is important for designers attempt to get closer to the lives and experiences of users, aiming to increase the likelihood that products and services fit the users and enhance their lives [7]. Obtaining *empathy* with a user enables designers to gain deeper insights into the conscious and unconscious needs of the user. Contextmapping is an emerging generative method that intensively involves users, in creating an understanding of the context of product use [18]. In the early generative phase, the main focus lies on cultural probes [4] and generative techniques [12]. Those techniques are meant to obtain tacit and latent knowledge [13] that is not readily expressed in words [10] by having users do creative exercises. The second phase of design process resembles to vision in product design approach (ViP) [5] that translates user experience and context to an interaction-driven concept.

OVERVIEW

The Emotional journey map (EJM) used in this research focuses on user emotion, referring to *core affect theory* [2]. It establishes a more solid connection between the generative phase of the contextmapping process and the conceptualization (visioning) phase of the ViP process. Emotional journey map is a mapping technique that depicts a user's emotional journey of using and experiencing a product or service, making use of data from cultural probes and generative techniques. This

method visualizes the emotional process of users in each phase of interaction between the user and product. EJM also contains research framework, user emotion, emotional quality, interaction vision, context, product vision, and concept generation.

Background

The initial research goal of the project was to enrich emotional connectedness for couples in a long distance relationship. Due to globalization, more and more couples are living apart in different places. Although they may be able to exchange important events and keep track of each other's life, their emotional bond may weaken over time.

UNDERSTANDING USER EXPERIENCE

The design process consists of three phases. The early phase is about *understanding* users in terms of their experiences. The second phase is about *connecting* the context of experience to the process of concept generation. The final phase will be *communicating* with users to evaluate the product and improve both product and process. This final phase is not described in this paper. The initial 'understanding' phase consists of framework setting, sensitizing, generative sessions, and analysis.

Framework

At the outset, a research framework was set. This is a starting point of making an emotional journey map. The framework consists of the viewpoints that determine what the current phenomena are and how to define the research parameters. Many viewpoints can be regarded, such as the relationship with other people, the relationship with objects and space, etc. In this case, it is the sequence of communication patterns. This is because people experience intense changes in emotions before, during, and after the communication and in between communication sessions.

Sensitizing

The sensitizing package was given to seven international couples and contains a daily ten-minute questionnaire and some simple activities for seven days. The activities consist of some creative activities using pictures and words (Figure 1). The couples were also asked to take a picture of their reminders (letter, photo, etc.) and its environment, and asked to clarify where and why they keep those reminders.

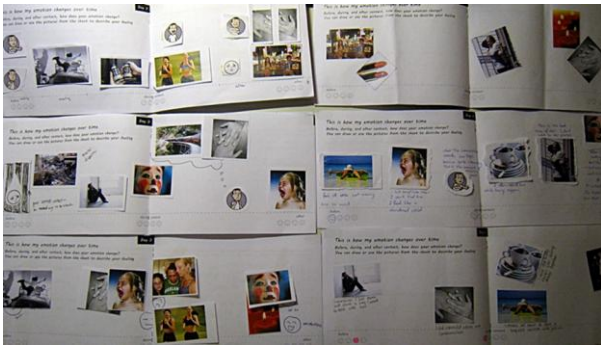


Figure 1. Creative activity in the sensitizing package

Sessions

Taking the privacy issues into account, one-to-one interviews and generative sessions were held. Participants were first asked more in-depth questions about their initial responses and creations in the sensitizing package and then the generative session was conducted. They were then told a series of using scenarios, based on the concepts introduced by the field of human computer interactions in the past decade. Sharing the using scenarios with users was useful to *feel* whether an idea fits the users' context and what interaction is sensitive to its consequences.

The generative techniques were used to uncover user emotions. Core affect theory [11] adapted by Desmet, P. A. [2] was an effective tool to measure the emotions, because it is useful for capturing continuous changes in emotional experiences and all possible affective responses can be described in terms of core affect [14].

Generative Session

Three emotion cards (representative pictures) are allocated to each affect such as astonishment, desire, relaxed, isolation, contempt, etc. (Figure 2).



Figure 2. Generative session (left) and core affect circumplex model (right)

Although the pictures were revised after a pilot session, allocating fitting images for each affect is still in an exploratory phase. Nevertheless, distributing equal amounts of images for each affect allows users to freely create from their mind without distraction, whereas randomly given materials may influence users to have an inclination toward a certain direction that is not their own.

Participants were asked to make two emotional maps (Figure 3) with the emotion cards. One is a flow of emotions; before, during, and after a recent

communication through their favorite medium (Skype, telephone, etc.) and the other displays the emotional flow when looking at their reminders in between communication sessions. Contextual inquiry followed this mapping exercise.



Figure 3. An example from the generative session

As participants (P) make the emotion maps, the emotion cards support them

- to more richly express their feelings and emotions.
 - “I can’t wait to see her when hearing the ringtone. (pointing at a child peeking through a hole) I feel like a curious child.” P5
- to explain their context and situation.
 - “I feel like I’m back in the curtain, waiting to come out. (pointing at the movie stage) I’m curious how he’s going to react.” P1
 - “This is exactly what I feel. (pointing at the glass wall in an aquarium) I can see the transparent wall but it’s not accessible.” P2
- to reflect on their past experiences.
 - “When I was with him, he helped me a lot. Now I have to do all by myself. When I discover a bug in my room, I’m freaked out and think of him.” P2
- to explain those feelings that are hard to readily express.
 - “When... I make my face like this (pointing at a child with a sour face holding a pill). P3
 - “Then I don’t feel good. I feel like um... this (pointing at a broken vase). P4
- to provide the whole picture of their emotional flows in order to be discussed with the user and other designers and researchers.

Scenario Telling

After making the emotion maps, participants were told five different concepts introduced in [6, 8, 15, 16, 17]. Three more explorative concepts generated in the early phase of the process were also explained, as well as existing communication media. Even though not all of the concepts are meant for couples, it is still meaningful in terms of interaction between separated people. Each of the concepts has distinctive features and the

participants could imagine using those concepts in different contexts. They reacted on each concept, what they found to be the positive and negative sides. Lastly, they made their own stories and concepts (Figure 4).



Figure 4. A participant explaining with a tool

Analysis

Large quantities of generated data from the sessions were analyzed. Even though each emotion card represents a certain emotion, they were interpreted differently by the participants in some cases. Those cases were reassigned according to the emotions perceived by the participants.

These sessions were not only interaction between human and product (communication media), but also human to human relationship. Therefore, both principal components of 28 human affects [11] and the adapted model for product experience [1] were taken into account. Some affects can be altered or added according to the research subject. In this case, *desirous* (not desirable) emotion has been implicitly and explicitly mentioned many times by users. *Sadness* also should not be regarded as it is. Sadness is commonly regarded as a negative emotion, but it was mentioned many times as a positive and mixed emotion. Negative emotions were also taken into consideration because they may create engaging and even enjoyable experience [3].

CONNECTING USER EXPERIENCE

The emotional journey map (Figure 5) visualizes how the emotions and contexts obtained from generative phase are transforming to a concept.

Emotional Quality

It was found, that people experience different emotions in each sequence of use as shown in figure 5. The majority of emotions in each sequence rest on a certain range of the core affect circumplex model. E.g. all participants were *activated* before communication. A certain pattern of emotions thus can be formulated as *emotional qualities* corresponding to the range of emotions.

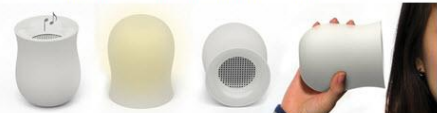
Framework	Communication			In between (Reminder)
	Before	During	After	
Emotion	Activated Curiosity(6), Eagerness(6), Expectation(2), Stressed(2), Love, Nervous, Irritation, Isolation	(Un)Pleasant Joyfulness(4), Excitement(4), Admiration(3), Softened(2), Delighted(2), Satisfaction, Fascination, Boredom, Sadness, Gloomy, Jealousy, Disappointment, Content	Calm (Activated) Satisfaction(5), Desirous(4), Sadness(2), Glad, Love, Calm, Contented, Softened, Relaxed, Depressed, Gloomy, Upset, Annoyance	Calm Desirous(6), Calm(2), Tranquil(2), Gloomy, Disappointment, Jealousy
Emotional Quality	Curious, Eager	Attentive, Engaging	Evocative, Satisfying	Empathic, Sharing
Interaction Vision	Evoking curiosity, Inviting, Welcoming	Establishing trust, Attentive communication	Reminiscence, Cheering	Implicit Communication, Togetherness
Context	Time difference, Privacy, Supporting daily routine			
Product Vision	<ol style="list-style-type: none"> 1. Subtle and active communication 2. Welcoming and empathic communication 3. Affective and attentive communication 4. Supporting mood and daily routine 			
Concept	Metaphors: Paper cup phone, Pendant clock with a cover 			

Figure 5. Emotional Journey Map

- Before communication: *Curious and Eager*

Curiosity toward their partners is maximized before communication such as the moment of hearing a ringtone or opening a letter. Users are also curious about their partners' mood and new events, and eager to tell their recent stories.

- During communication: *Attentive and Engaging*

The emotions vary between pleasant and unpleasant a number of times during communication. That means they become more immersed and focused on the communication at that moment.

- After communication: *Evocative and Satisfying*

Users are satisfied and reminisce after the communication, and recent memories sometimes abruptly comes to their mind even when they are doing something else.

- In between communication: *Empathic and Sharing*

When users look at the reminders, they display affection toward their partners and experience intense emotions. That implies there is room for sharing the feelings at an implicit and non-verbal level.

Interaction Vision and Context

Interaction vision is an image of the way the product is going to be viewed, used, understood, and experienced [5]. Emotional qualities can be achieved by well-defining interaction visions and also taking user context into consideration. For instance, time difference is a big issue for remote couples. Real-time based communication media may not be suitable for some. The couples regarded having their 'own' time and life as one of the advantages of long distance relationship. They also want the feeling of togetherness without the feeling of being monitored.

Product Vision and Concept

Product vision is a way of discovering new areas that the existing media do not cover. The desired concept is thus not meant for replacing the existing communication media. The following product visions are the new possible attributes of communication.

- *Passive (implicit) and active (explicit) communication*

Many communication media support either active or passive ways of communication. Users' emotions and the sequence of use are not fixed in either way of communication. The new concept should support users' emotions not only by subtle and implicit communication, but also by active, explicit, and focused communication.

- *Welcoming and empathic communication*

The product would be used in different context compared to the existing communication media. It does not interfere with your life by being attached to your person and ringing, but rather welcomes you when you get your place. It may welcome you with music your partner is listening or has listened to or even with a lovely voice. You are then more emotionally and physically relaxed and have empathy with him/her.

- *Affective and attentive communication*

Users' emotions should be supported along the sequence of use. People sometimes unconsciously throw their phone after a call or press the end button very quickly while the other still saying bye-bye, even if it does not represent the attitude toward the other person.

- *Supporting mood and daily routine*

Users are now by themselves. Their life is not as stable as when they were together. A communication device may support their mood and daily routine, while still providing a communication function.

Whispers

The concept prototype *Whispers* (Figure 6) is a new tangible interface that creates rich emotional connectedness between remote couples. It provides different functions and aesthetic visuals according to how it is placed. It plays shared music when placed upright and works as an ambient lamp when turned upside down. When grabbed or placed horizontally, you can actively record your voice or share all ambient sounds as a passive means of communication. Once drawn near to your ear, you can listen to the sounds recorded by your partner. The light gently blinks when there is an incoming sound.

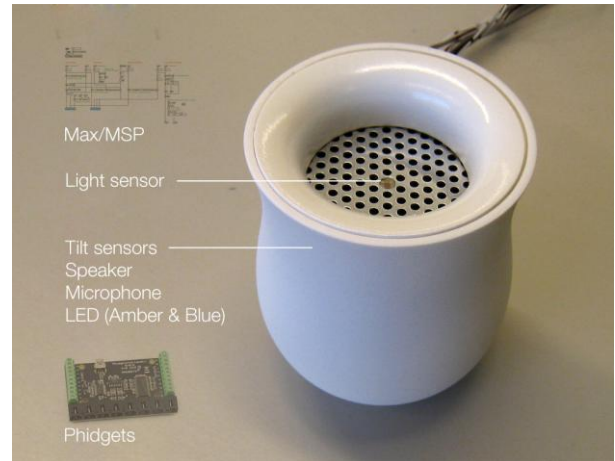


Figure 6. Whispers: The new emotional communication medium

Findings

Six couples in a long distance relationship participated in focused group interviews (FGI). They marked quite Brief results and feedbacks are described below.

- *Expanded domains as a means of communication*

The couples suggested using Whispers as a communicative alarm clock. They can wake up with partner's voice and music.

"I want something that I can use for a long time. In this regard, I feel the alarm clock is like with me. I can wake up with my partner's voice, listen to music, and even as an ambient lamp beside my bed when going to sleep."

It implies there are other product domains that are not yet satisfying users' unmet needs.

- *Expanded users*

It has the possibility of being used not only between couples but also between (grand)mother and child, and friends relationships, etc. People who are intimate but separated may be all prospective users. Unequal relationship can be also regarded. E.g. Mother and child; Mother records and the child listens.

- *Expanded functions*

The number of recorded messages can be projected on the body while the LED is hidden inside when there is no message.

Touch wheel can be integrated on the top (glossy part) to adjust volume and turn off when all the way down.

Hold function can keep play music even if a user places it upside down.

When shuffle Whispers, next music or recording can be played.

Users can determine their mood with colors when recording and listening.

• Practical issues

Sharing all ambient sound may be disturbing when listening. Users may listen no sound or have to hold it for a long time to listen when there is a long message.

How many and how long the recordings should be? E.g. each message is 3 min. long and up to 5 recordings.

Male users are less likely record which may uncomfortable for them.

During the FGI, the 1 to 7 scale was measured. The result shows that intended emotions were evoked in each sequence of using (Figure 7).

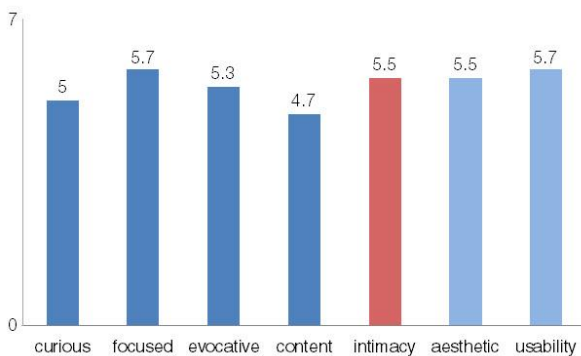


Figure 7. Result from focused group interviews

Next Step

The next step of the design process is going to be 'communicating user experience'; focused group interview (FGI) sessions also with couples recently reunited together will be held to discuss whether or not the idea fits into their context. For more practical feedback, both short and long term field trials will be conducted. Also, there will be more generative sessions with other users to generalize the emotion appraisal data. In the prototype, a distance sensor and 3-axis tilt sensor will replace the light sensor and tilt sensors, and it will be equipped with ZigBee wireless technology for mobile and practical interaction.

CONCLUSION

This paper describes an empathic design process which intensively involves the users and introduces emotional journey map (EJM), a communicative form of design process that combines contextmapping with the ViP process. EJM combines the understanding of user experience obtained through contextmapping with the conceptualizing techniques of the ViP process.

Context and emotion are deeply intermingled in terms of user experience, but not many design techniques and researches add weight to both. These design techniques either deal with one of them or regard one superior to the other. In this research, the EJM attempts to attach significance both to user emotion and context. It supports a user's emotional process in the context of

product use. EJM is however still evolving to reach the perfect balance between emotion and context.

EJM enables to enrich pleasurable experience rather than merely solving design problems. A product can be easily ignored if the product is irrelevant to user's emotional process. E.g. phone rings exciting melody when you just got fired. An explorative concept has been developed and it supports user emotion in the context of use. *Whispers* is an interactive and tangible that creates rich emotional connectedness between remote couples. *Whispers* do not have a fixed type of use; rather it provides functions adaptive to user's emotion changes.

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