Rich Evaluations of Entertainment Experience: Bridging the Interpretational Gap

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ABSTRACT
This paper reports a qualitative study of evaluating the 'experience' supported by a state-of-the-art interactive television application. Internet Protocol Television (IPTV) system is a new technology in the ever-growing industry of interactive entertainment. Focusing on the users' interpretations, we applied a set of rich evaluation strategies to collect data about users' experiences with the IPTV. The results show implications about how the users constructed complex and reflective understandings about the system. The evaluation suite helped us gather information about users' aspirations, expectations, and intellectual and emotional states of their understandings. The results also imply a strong support for taking into account the non-technical values of human-technology interaction.

Keywords
HCI, User-Experience, IPTV, interpretations

INTRODUCTION
Today we see a lot of computing systems around us. The emergence of pervasive and ubiquitous computing systems, for example, has shaped the way we experience the technology and the world around us. It advances and even redefines our relationships with systems and the world. During the human-technology interaction, users interpret and actively construct meanings related to the technology based on their knowledge, skills, needs and the context in which the technology is used. A great deal of information that is conveyed during this interaction is without explicit communication. This information may have cultural, emotional, sensual or other subjective significance and it is important to know the implications of this sort of information on humans' felt experiences. Aspects such as being excited while playing a challenging tasks on a game console or feeling happy after receiving a personal message from a loved one, etc., cannot be predicted in a deterministic manner. In this situation it becomes vital to understand how users construct meanings or interpretations while using technology.

The domain of interactive entertainment is growing fast with the advancements of new applications such as interactive TV, game consoles, mobile gaming, mobile TV, etc. It is becoming increasingly important to understand the pleasurable, enjoyable and the leisure-related aspects supported by these technologies. These aspects are subjective in nature and traditional HCI methods for evaluation (such as cognitive walkthrough, usability heuristics, etc.) may not adequately support reasoning about the entertainment related effectiveness of these systems. The rationalistic approaches used in HCI fall short when it comes to understanding user's motivations, emotions, feelings, aspirations, morals, values, etc. (Gaver et al. 2003a)

In this paper, we describe our work on evaluating an IPTV prototype using a set of rich interpretation-centered evaluation techniques. The goal of our interpretation-centered evaluation is not primarily focused on understanding how the system performs from a functionality, efficiency or productivity point of view but on assessing how the users experience the IPTV system. For this, we first assess different characteristics of the 'experience' phenomenon and describe a conceptual framework for evaluating users' experience with technologies. We develop several evaluation strategies based on this conceptual framework that are used in this study. We then provide details of a qualitative study of 11 participants with the IPTV prototype. The results of this study suggest that the participants positively responded to this IPTV. The non-technical aspects related to user's expectations and aspirations, the company's brand image and other social implications played an important part in participants' positive experience.

CHARACTERISING USER-EXPERIENCE - A CONCEPTUAL FRAMEWORK FOR EVALUATION
Experience is essentially rich and illusive concept. Especially, when it comes to analysing or evaluating a user's experience, it is challenging to get access to the information that is experiential in nature. Moreover, during one's experience one cannot come out of the experience (an episode) and observe the whole experience separately (McCarthy, Wright 2004). Due to this fact it is challenging for researchers to gather

information about other persons' experience. It is also important to determine the forms in which this information should be captured: i.e., should it be in verbal or behavioural or physiological forms?

In this section we look at the four main characteristics of user-experience and discuss the challenges for capturing information related to human experience. Based on Dewey (1934) and McCarthy and Wright (2004) we describe experience as a subjective, constructive, holistic and spatio-temporal phenomenon. We intend to use the analysis of these four characteristics as a framework to develop rich evaluation strategies for assessing user experience.

Experience – a 'subjective' phenomenon

Users are not concerned with products as such, but with the values and meanings these products bring to their lives. Moreover, products are not liked only because they offer a bunch of functional features and benefits but also for other, irrational and subjective, reasons. An Apple iPod is not just a portable music player; it also represents users' social status. During technology use, the meanings that are constructed by the users may differ from person to person, depending on their skills, needs and cultural background. And as a result different users may experience the same system in different ways. This subjective aspect of users' experience is not easy to capture using rationalistic and formal approaches.

Researcher and practitioners could collect objectively observable cues such as the user's discourse, facial expressions, gestures, heart-rate, etc. to measure the subjective experience of users (see Ekman's work (1999) on facial expressions). Although these types of information could refer to certain aspects of user's experience, it does not provide the whole picture. It would be unnecessary to limit an experience to a certain objectively observable states or behavioural measures. To a certain extent, based on records of users' verbal interactions we can reason about users' emotions, decision-making and other subjective information. However, these, not being the "first person" data, are also limited considering the richness of human subjective experience.

Experience – a 'constructive' phenomenon

During their interaction with technology users do not only engage in experience as a ready-made entity but they actively construct the experience using their interpretation and sense-making skills. Experience as a constructive phenomenon is reflexive and recursive (Wright et al. 2003). It is reflexive in the sense that users make sense of the world by their own construction of it and therefore we can talk about an experience only through a person, be it a first person or third person. It is recursive in the sense that users are always engaged in some sort of experience and they continuously make sense of this experience. The challenge here is to make users capable of expressing themselves about their lived experience in a complete & reliable way.

For assessing one's experience the meanings that are constructed by users need to be communicated between the users and researchers in a reliable way and need to be mediated through a language. From a design point of view, getting access of these meanings related to the system could equip designers to be able to design systems more efficiently.

Gaver et al. (2003b) argue that while technologies can suggest multiple interpretations a specific meaning of the technology is never guaranteed. The meaning of the technology heavily depends on the context in which it is used. They argue for using *co-interpretation* as a method that involves designers, users and the technology to understand how meaning occurs. Moreover, Sengers and Gaver (2005) argue that designers need to address two types of meanings: those intended by the designers and those uncovered by users or analysts of the system.

Experience – a 'holistic' phenomenon

Philosopher John Dewey (1934) argues for a holistic approach for understanding users' experience. Experience occurs through the interaction of a subject and an object and they both contribute towards the quality of an experience in a timely episode that has a specific beginning and ending. During this interaction the flow of experience is always from one point to another, in which every successive part flows freely without seam and without unfilled blanks. As one part leads into another and as one part carries on what went before, each part gains distinctness in itself. Dewey also mentions that in an experience there can be halts, interrupts, etc., and these define or punctuate the overall quality of experience. Experience as a holistic phenomenon argues for considering an episode that covers the 'totality' of users' interaction with the system. The original quality and intensity of users' experience can only be sustained and reflected upon design if this totality is taken into account.

Experience – a 'spatio-temporal' phenomenon

Experience with a technology does not come about in isolation of the lived world. In fact, context plays a vital role in shaping an experience with technology. According to Wright and colleagues all types of experience have a spatio-temporal thread (Wright et al. 2003). Experience as a spatio-temporal phenomenon indicates that experience can be best understood in real use, i.e. in the actual practice that may have social, political or cultural significance. Social scientists have argued for incorporating the notions of context into interactive technology design, so that these technologies can be made more sensitive to the details of specific settings of use (Suchman 1987). By taking a phenomenological stand point Dourish (2001) argued that context should not be seen as a pre-defined objective entity or set of entities. Referring to "context in interaction" he proposes to see context and activity

as mutually constituent. What these different approaches argue is that lived experiences are better understood in real-time and real situations. Laboratory studies may not provide sufficient experiential information.

THE QUALITATIVE STUDY

We organized a user study on a prototype of a fully functional IPTV system, in collaboration with Satama Interactive Amsterdam – a design company. An IPTV system allows distribution of television and video signals to its subscribers using Internet Protocols (IP) over a broadband connection. It often works in parallel to the subscriber's Internet connection. The prototype that was used for this study was developed for a state owned telecommunication company in the Netherlands – called KPN. The language of this IPTV was Dutch. It had six main functionalities: an 'electronic program guide' (EPG), 'radio', a service to watch the 'missed TV programs', 'recording', 'movie-on-demand' and 'other services' (e.g., traffic and weather information). An example screenshot of this IPTV prototype is shown in Figure 1.

Figure 1. Main menu of the interface

Our evaluation study aimed at exploring people's interpretations in order to assess their experience and the success of the IPTV prototype. We wanted to gain a rich understanding of our participants' experiences with the IPTV, so it was important for us to gather sufficient data using different techniques that could provide justice to the participants' 'actual' experiences. We wanted to inspire our evaluation using rich 'user-generated' data; where users' own interpretations are used and not ours or the designers'. Getting access to users' experience needs a combination of methods. However, it was clear that data related to only the participants' *use* of the IPTV would not provide sufficient information about their overall experience.

Consequently we formed our evaluation into three main categories of questions: questions about participants' TV watching experiences (the individual background); questions about the actual use of the IPTV that we wanted to test with them, and questions about the relationship they could build with the IPTV (the users' envisioning of future use and experiences).

THE PROCEDURE

We recruited 11 participants (4 designers, 5 end-users and 2 university user-centered design experts) for our study, where each participant spent on average one and a half hours in a one-to-one session. In the one-to-one session the interview conversations were audio recorded and at some stages notes were taken. The study was carried out in three stages: (1) the pre-experience stage: where, without actually introducing the IPTV, participants were asked some open-ended questions about their views on interactive technologies and their current TV watching experiences; (2) the tasks-based actual use stage: where the participants were asked to choose and carry-out several tasks from a given list and during this they were asked to 'talk aloud' about their perception of the IPTV; (3) the post-experience stage: where all the participants were asked to provide their overall impression of the IPTV.

EVALUATION STRATEGIES

In order to formalize our evaluation, we developed several evaluation strategies based on the conceptual framework, described earlier, to assess users' interpretation and valuation of the IPTV system:

- Capture users' expectations and aspirations;
- Personal Meaning Construct;
- Co-Interpretation;
- Capture the holistic experience;
- Focus on the Design elements & Functionality;
- Develop tasks utilizing the Context of use.

These strategies are described in the following.

Capture users' expectations and aspirations

To make the participants capable to talk about their feelings, emotions, values and meanings in a reliable manner it was very important that the these subjects participate in a reflective act, i.e. an act of being aware of the situation. A technique such as Explicitation Interview (Vermersch, 1994) allows subjects to participate in a reflective act and express verbally the apprehended contents that are pre-reflected. Especially at the early stage of evaluation, we intended to ask users some questions about their previous experiences with a similar sort of technology, their perception of the company's brand image, some facts about their daily routine with the TV and its place in their everyday lives. With a reflective act of this sort, we expected that participants would become more able to talk about their lived experiences in a reliable manner. Table 1 shows some example questions that were used to capture participants' expectations and previous knowledge.

Table 1: *Some questions used in phase 1*

- What types of entertainment and fun-oriented technologies do you use and how often?
- How important and valuable is having a TV in your home? Please provide details…
- Please describe your normal routine of using TV?
- What would you expect from a new KPN product?
- Please define the IPTV. What do you think it can provide you with?

Personal Meaning Construct

Fallman (2003) suggests that "complex structures of meaning are best conveyed through language, as talking with people is a two-way, social event of sharing beliefs and understandings rather than a one-way process of measuring the user". This is especially important for getting access to users' interpretations. Personal meaning construct is a technique that allows subjects to come-up with meanings associated with the technology in an easy and usable manner (Kelly 1955). We used specific keywords and adjectives derived from well-established research from Desmet (2002) and Hassenzahl et al. (2001) to support our participants' meaning making process. This was especially relevant since in an early attempt we found out that some participants had problems talking about their affective state of mind. This technique became ultimately useful to know their overall emotional and intellectual responses to the IPTV when we used it at different stages of our evaluation sessions. In Table 2a an example format is shown in combination of a question that we asked at the pre-experience stage of our evaluation.

Table 2a: *The use of personal meaning construct, phase 1*

Q. What are the factors that make your best TV watching experience?
Choose from the following and give reasons for your selection. Objective Factors: * Comprehensible * Supporting * Simple * Predictable *Clear * Controllable * Familiar * Other _____ Subjective Factors * Interesting * Exciting * Exclusive * Impressive * Original * Innovative * Thrilling * Other _____ Reasons for your selection… _____ _____

We also made changes in the format of this technique, when it was used in a different sort of context (after the actual use of the new technology). Table 2b is an example. In both cases we provided enough keywords to choose and relate to the question and asked reasons for their selection.

Table 2b: *The use of personal meaning construct, phase 3*

Q. How would you describe the overall appeal of this IPTV?
Choose from the following and give reasons for your selection. * Pleasant * Good * Aesthetic * Sympathetic * Motivating * Desirable * Attractive * Other _____ Reasons for your selection… _____ _____

Co-Interpretation

Co-interpretation is a technique to appropriate the meanings that are supported by the technology by involving different stakeholders in the design process (Gaver et al. 2003b). In our study we asked prospective users, professional interaction designers and human-factors designers, and academic experts to participate. This allowed us to generate prospective and possible meanings associated with the system from different point of views. There were 4 designers (3 from Satama Interactive Amsterdam and 1 independent) currently practicing Interaction Design, 5 prospective end-users and 2 HCI experts (from Vrije Universiteit Amsterdam), who participated in our study. Their role in the evaluation differed to some extent. For example designers were asked questions about the look and feel, color schemes, and other design-related elements.

Capture the holistic experience

We wanted to assess our participants' experience with the IPTV in a holistic fashion where the whole episode of their interaction is explored. Inspired by McCarthy & Wright (2004), in our study we approached this by having a pre-experience interview, a task-based session and a post experience interview. We were hoping that by capturing the participants' expectations before the use and observing the changes in their perception after the actual use of the IPTV would help us reason about their experiences in a reliable way. We also wanted to capture the first-person, user-generated, data that reflect participants' own interpretations. During the Task-based sessions the participants were allowed to talk aloud while they used the IPTV and during this they were also involved in conversation to elaborate specific issues about IPTV. Some of the questions were designed to allow participants to make notes or scribbles.

Focus on the Design elements & Functionality

It was important to feed the results back to the designers to make design adjustments in the IPTV. We focused on different functionalities, interaction mechanisms and other interface elements to understand users' experience with the IPTV. Some example questions are shown in Table 3. These questions where

asked during the Task-based session where the participants were involved in actual use of the IPTV.

Table 3*: Example questions used in the Task-based session*

• Do you consider this menu-overlay effect a better choice then having a full-screen menu? Why?
• Is there anything in the interface that you like or hate the most?
• Please comment on this Electronic Program Guide.
• Do you understand the use of the colour button on the remote control? Please explain to us…

Develop tasks utilizing the Context of use

An important aspect of our evaluation was that we could observe the participants' experiences with different context and different set of activities with the IPTV. We asked the participants to choose and carry-out at least three tasks, from a given list, with the IPTV that would be representative, both for the functionality of the system and for the intended context of use. Table 4 shows the list of tasks that were given out to the participants. These tasks allowed us to observe the actual use of the IPTV.

Table 4: *Tasks available to the participants*

Tasks
• Find your favourite program and try to watch it.
• Watch a specific program that you missed yesterday.
• Set-up a recording for a program that you would miss next week.
• Find your favourite movie and watch it.
• Make a new profile and try to watch a program.

RESULTS

We collected data in the form of the audio recordings and our and the participants' written notes. We then carried out qualitative data analysis. In this section we provide the results of our evaluation process.

Experience before use

We started with open questions in an initial interview. We asked questions related to the participants' knowledge about different entertainment oriented technologies, their understanding of the company's brand image and some facts about current TV watching experiences. In the following part we describe the analysis of this data.

A reflection on current interactive technologies

Participants had experiences of using different entertainment-related technologies and services such as X-Box, PS-2, SKY-box office, UPC (Dutch cable), Casema (Dutch cable), Microsoft & Philips Media Centers, TiVo, etc. It was commonly observed from all the participants that for them it was important to be able to get to the actual content. The interface should provide a fast and easy way to get there. Many participants preferred being able to program their devices based on their own needs and time-table. Many of the participants appreciated the technologies they owned. One said, *"I really like my PlayStation 2. It has some preview watching facilities that helps me to find the relevant menu as soon as I can"*. Participants also reflected on the problems they frequently face using their current interactive devices. Some participants already had interactive television services with hundreds of channels. For them being able to flick through multiple channels as quickly as possible was an important aspect. Referring to interactive television a participant said, *"when I come home from work I should know exactly what programs I need to watch today"*. For some participants, using their current TV-guide and the normal teletext services was time consuming. They preferred being able to deal with fewer options and at some places see some preview options. Participants who had less experience with these technologies recalled seeing them in museums, shops and exhibitions. Many of the participants had experienced using other similar pay-per-view and interactive television services in hotels, air-planes, etc. *"when I go to a conference or stay in a hotel I see some Internet and pay-per-view facilities on my TV"*.

The everyday TV watching experiences

Most participants considered TV as one of the important daily used products in their home. Some even said, "*I'd have a hard time living without it*" and "*it's part of my daily activities*". All of them had at least one TV set at home (most having a DVD, music system or VCR attached).

For some participants the use of a TV was mostly for relaxation and/or entertainment purposes through watching soaps, series, movies, music, DVDs, etc. E.g. "*I sometimes just want to relax after a long day at work and I prefer watching soaps, stupid series on the TV*". Especially in this case, participants would randomly look for some interesting programmes. *"I don't always remember the programs that I want to watch, unless if there is something really interesting. I have to find relevant programs everyday after I come home from work"*. Another participant said, "*When I come home from office I watch TV. I start by flipping through all the channels first to see what is interesting. I do this at least twice and after selecting a specific programme I sit and watch TV for at least 2-3 hours.*" Participants also preferred watching TV to get information through news, knowledge-oriented channels, traffic information, etc. One participant said "*I work full-time and I don't always have time to read the newspapers to know what's going on in my country and around the world*". Another said, "*I live far from where I work. And in the morning I need to know the traffic information before I leave for my work. I often need to check the airline timetable before I go and pick up my husband from the Schiphol airport. In this way TV really helps me"*.

Some participants complained about their current TV for not offering an easy way to browse channels. Some said, "*I need a faster way for zapping the channels*".

As all of the participants were involved in full-time jobs, they were really concerned about spending time on TV, "*small amount of spare time should not be wasted in searching…*"- one said. Participants also faced problems about watching certain programs that are broadcasted on the same time. "*Sometimes they show nice programs running at the same time; I sometimes have trouble putting the recording on. Mostly because of the long working hours I can only watch programmes after 9pm"*. One participant had a very interesting way of searching for programmes. He used his laptop (connected to the Internet) to see the web-based version of TV programme guide to see the upcoming programmes.

The KPN brand image

Since KPN is a state-owned company, all the participants knew what the KPN brand was and what its business was about. All of them had used at least one KPN product – the landline telephone service. Three other participants had experience of using KPN's ADSL service. All the participants' experience with these KPN products had been fine with no considerable problems. One said, "*even though I have good offers from other telephone providers I am happy to keep KPN. I don't get many problems with KPN*". All the participants expected a new KPN product as being *overly expensive* but also having good quality in terms of *reliability* and *trustworthiness*. Participants, who knew more about KPN suggested that a new KPN product may not be "*too innovative*" but performance-wise there would not be any problems. One of the participants said about a new product from KPN, "*…it is the National brand so its design would be somewhat boring but it would be functional"*.

Perception of a new interactive TV

We asked the participants to describe what an IPTV system is. The term IPTV was not too familiar to some of the participants. Many deduced it to "*something that allows movies-on-demand and other interactive facilities*", "*thousands of channels in digitised version*". Some described it as "*something that uses Internet to transmit the information*". One participant wished for an IPTV as "*something when I open it I should be able to see what I want and not what is being broadcasted*" and "*I wish I could pause a programme and go to kitchen, also fast-forward a programme when it is boring*". Participants were not too sure about the exact functionalities that an IPTV system could support besides movie-on-demand or pay-per-view. However, they expected some interactive, personalized and time-independent facilities.

Experience during use

The key part of this evaluation was to gather information about how the participants' experiences are with the IPTV, in order to provide feedback to the Satama designers for possible refinement or improvement. The evaluation strategies used in this study helped us understand participants' interpretations with respect to different design elements, interaction mechanisms and functionalities.

Several design features were appreciated.

The menu overlay mechanism was really appreciated**.** Since all the participants were familiar with menu driven interfaces, participants considered the interface to be simple and straightforward. "*It is nice to see the channel on the background and still be able to use the menu… I like the transparency of the menu*". And, "*it would look too mechanical to have the full-screen menu; it's really nice that the interface has some sort of continuation, it feels like I am still watching my original program at the time I can also check what else is going-on on other channels"*.

The electronic programme guide (EPG) was considered as too bulky but useful. A designer commented, "*The TV guides are always troublesome, it forces the designer to provide the maximum details in a very limited space*." All the designers and experts appreciated the color scheme used in the EPGs, some said, "*It's good that not too many colors are used, color Blue is very nice and relaxing*." Most participants mentioned that the EPG looked very busy, with many options and texts on it. But they also said that the navigation mechanism is very intuitive. Participants considered this EPG a better choice then the TV Teletext and other interactive TV-guides that they were currently using. One said, "*The layout is much more intuitive here then in my UPC TV guide that I have in my home*."

Mixed views on Functionalities

Several functionalities offered by this IPTV were strongly appreciated. Functionalities for Recordings and for watching the Missed Programs were appreciated for the time-flexibilities. And facilities related to the User-profiling and the Video-library were appreciated for the user's control over the system. During the actual use of this IPTV, many participants faced difficulties interpreting the mechanisms of functionalities such as Recording and User-profiling. In the Recording functionality the participants faced difficulties understanding the time tolerance mechanism. "*This is somewhat confusing. The system should know about the timing not me. Even if I provide information into the this tolerance mechanism I will just have to guess the times because I wouldn't know the exact starting and ending times of each programs*."

Look and feel appreciated

All the participants commented that this system had a really professional look, like, e.g., Microsoft or Philips products. More importantly, they appreciated the fact that the designers of this IPTV had intended to provide a look that is not too flashy like computer games, etc. and at the same time not too mechanical and boring. The Internet support was hidden from the look and feel of the system which made one participant remark: "*I don't feel like I am using a PC, there must be some Internet support for this but it is completely hidden to*

me. I really like this TV compared to Microsoft Media Center that is just like a PC".

Usability problems created some confusion.

At certain stages during the task-based session some confusion was observed because of usability problems. The main problem was the lack of efficient feedback especially when payment was made for movie-on-demand and missed programmes. Another problem resulted from the lack of instructions provided by the system. E.g. in the Radio function very few instructions were provided. This was especially a problem since none of the end user participants expected to have a radio function in this IPTV. Several options of the system were systematically misinterpreted, e.g. possibilities to define several preference profiles and possibilities regarding recovery of missed programs. Participants were confused about the total available disk space and how to manage the space. "*How would I know about the available space? I usually do a lot of recording and in this case there will be a huge list of recordings, how would I manage it*"?

New understandings were uncovered.

During the use of the IPTV, several participants uncovered meaning and functionality that was not intended by the IPTV designers. The User Profiling, for example, was initially intended for different members of the house-hold and for child protection. However, interestingly, some participants interpreted it as a tool to support their own time-table. One said, "*I would keep the profiles to suit my own timetable. In the morning I would like to watch only specific programmes so I would make a special profile for morning and same way for evening. E.g. John-Morning & John-Evening. This would be useful for my friends visiting from abroad to have their profiles*."

Experience after use

In the last session, we asked our participants questions about their overall experience with the IPTV and its perceived effects on their everyday lives. We found many of the participants' perceptions changed after actual use.

Expectations were unharmed.

All the participants were familiar with the concept of digital TV or interactive TV and they expected some generic functions such as movies-on-demand, programme guide, recordings, etc. In fact, after using this system some of the participants said that the ability to watch the missed programs and to setup the recording for future programs would add value to their interactive TV experiences. Their overall view about the system was now better then what they expected. Some participants recalled experiences of using other similar interactive applications. One participant said, "*About a year ago, I was in New York and I was in a Sony exhibition. I saw a very similar type of product there. This IPTV is as good as that Sony system"*. Another said, "*Two years ago, I saw a very similar thing. It was a PC and there were television programs running on it. I can't recall it perfectly but it was very similar"*.

Reflection on KPN's brand image

All the designers commented that the main menu doesn't have the feel of a typical KPN product, since here colour Blue is preferred over Green (the current KPN logo, as well as most of their adverts, product boxes, etc. are in a standard green colour). All participants expected a new KPN product to be more traditional, straightforward and not too innovative. But this IPTV was experienced to be more exciting and interesting then the current portfolio of the telecom company. It was interesting to note that, even though KPN is planning this system for their Dutch customers, some of the participants (especially those from Dutch origin) mentioned the need of having a choice of the English language. One participant said, "*Most of my friends are non-Dutch and I would prefer English language over Dutch*".

Reflection on the IPTV

For our participants (mainly those who were Tech-Savvy) the most important aspect of this IPTV was that it is not a computer. In comparison with Microsoft and Philips Media Centers a participant said, "*It is really good that it is not just another PC. I like the fact that it has an original TV like interface. At the same time it doesn't look old fashioned*" Participants described this IPTV as a user-friendly system. Their overall experience with this system was positive. Many of them considered this system adding value to their current TV watching experiences. Participants appreciated the Missed Program, Recordings and Video-library functions, since they thought these would improve their time efficiency and would provide more control over their television experience.

Reflection on the Quality of life

We were interested seeing how the participants think this IPTV system could affect their quality of life and what kind of relationship they could build with it. One said, "*with the use of Recording function I will be able to plan ahead and record programmes and this would lead to fewer arguments with my girlfriend"*. Another said, "*this system would not improve my life-style drastically but with the use of the Missed Programs function, the Recordings function and the Video-Library function, I would be able to work on my own timetable. Once I have this system I will spend more time watching TV and video rentals then ever before"*. Although they did not consider this system to have a huge impact on their social life-style, some of did mention that it would be nice to have so many facilities in one's home. Regarding the value, participants were concerned about the payments and rates of the movies and missed programs. At the time of this study this issue was not clear.

DISCUSSION – THE APPROACH

The approach shown in this paper attempts to address the major challenges to understand the users'

interpretations. As we mentioned in the introduction, during human-technology interaction humans interpret several bits of information that are not explicitly conveyed by the designers. For example, designers can never really estimate the level of excitement or challenge a gamer is experiencing while playing with a game console. The level of excitement, enjoyment, etc. will differ from person to person so it is challenging for the designers to understand how users interpret and make meaning of the system. Hence, for evaluating such technologies it is very important to get access a variety of prospective users and their complex and dynamically generated interpretations.

In this paper we showed different strategies to get access to users' understandings, complex interpretations and the overall experiences, especially for evaluating entertainment-oriented technology. The key point here is to make justice to the 'actual', 'lived' experiences of the users by applying rich evaluations where users' interpretations are used in their own language. The evaluation strategies such as the use of expectations and aspirations; keywords for personal meaning construct; co-interpretation using designers, users and experts; task observations focusing on the design elements; and pre, during, and post experience feedback; were helpful in addressing different challenges posed by the experience phenomenon. Allowing prospective users to reflect on their expectations and aspirations helped them to talk about their experiences in a complete way. The keywords used for the personal meaning construct technique helped participants talk about their intellectual and emotional states and feelings. Co-interpretation strategies helped us get access to multiple interpretations and meanings about different design elements. Pre, during and post experience feedback from these participants helped us get the holistic view on the real-time experience.

Being able to evaluate the experience supported by this IPTV system resulted in several design adjustments being considered after the study. Design recommendations were made for the EPG, missed programme and recording functionalities. Although we focused on the users' interpretations, usability issues were not neglected. Usability turned out to be an important element contributing to the overall experience. The user frustrations we observed during this study were often (at least partially) due to usability problems. The professional look and feel of this system clearly adds to the experienced better quality; however, the main functionalities, interaction mechanisms and usability played their part behind users' positive experience.

CONCLUSION

User experience is more than just another marketing argument for designers. Based on recent literature, it can be analyzed as a phenomenon that is multi-facetted: subjective, constructive, holistic, and spatio-temporal. We developed a set of strategies to evaluate a design prototype where we focused on prospective users' expectations, interpretations, and perceived functionality in a context of use. For a real life design case we developed evaluation questionnaires to be applied before using the prototype, during task completion, and after use. With a mixed set of users, designers, and user-centered design experts, we succeeded to analyze the experience as developing during the confrontation with the design. This allowed feedback to the design team resulting in insight from the team's part in the effect of their decisions, and in informed revision of some decisions. Experience has been shown to be a design concept that can have handles for improvement at an early state, allowing a good start of putting new technology out in the market.

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