ABSTRACT

This position paper is an interpretation of the special theme of the 3rd EuroITV conference (2005): “User centred systems, programmes and applications.” It investigates the question: How does the generic notion of “user centric” translate into specific actions for interactive TV user interface design and evaluation? Traditional usability engineering techniques have been popular, but it is argued that the user interfaces in interactive TV should move beyond usability. Mass communication literature has been investigated, in order to augment the user centric approach with a toolset of concepts, methods and techniques that are suitable for the needs of the interactive TV audience. Finally, further directions for research are outlined.

INTRODUCTION

In the Human Computer Interaction (HCI) discipline, the “user centric” mentality is usually materialized into the usability engineering techniques. Accordingly, previous evaluations of the user interface (UI) for Electronic Program Guide (EPG) and digital video navigation user interfaces (UIs) have employed task efficiency concepts. Since interactive TV (ITV) applications gratify entertainment needs and leisure activities in a domestic environment (Livaditi et al. 2003), there is a need to re-examine the suitability of the traditional usability engineering tasks and goals. In particular, the mass communication discipline is very relevant to the study of TV and it has been highlighted as a significant area for further research in HCI (Mcdonald 2004). Moreover, depending on the type of ITV application, there are many alternative paradigms for conceptualizing the quality of an ITV UI, such as persuasion and play. This position paper will highlight research findings and future directions for user-centric methodologies that are appropriate for the design of ITV UIs.

USER INTERFACE QUALITY

It has been argued that people spend most of their leisure time trying to moderate their moods. Daniel Goleman (1995) said that ‘managing our emotions is something of a full-time job: much of what we do —especially in our free time— is an attempt to manage mood. Everything from reading a novel or watching television to the activities and the companions we choose can be a way to make ourselves feel better. The art of soothing ourselves is a fundamental life skill.’ Thus, interactivity with TV could be conceptualized as mood management (Vorderer 2000). In this way, the UI of an ITV application could be conceptualized as an additional —to channel changing and program selection— means to moderate the mood of the TV viewer (Chorianopoulos and Spinellis, working paper).

METHODOLOGY

The generic user-centric approach usually includes the following activities: 1) user studies, 2) user analysis and modelling, 3) prototyping, 4) implementation and 5) evaluation. The above activities are highly iterative with the exception of user studies and implementation, which are performed less frequently during the product lifecycle. In the following sections, the user-centric approach is examined in the field of ITV UI design.
Conceptual Models
Previous research about conceptual models for ITV is only limited to the EPG and to the transfer of experience from the Web and the PC. Instead, the development of conceptual models for ITV should be based on: 1) the investigation of the evolution of the established conceptual model for TV (thus identifying the familiar patterns) and 2) the emerging usage patterns (e.g. digital video recording). Moreover, designers should distinguish between two levels of conceptual models: 1) operating system and 2) application. In this way, broad categories of ITV applications could be modelled and approached in a consistent way. For example, ITV news and music could be organized in virtual TV channels (Chorianopoulos 2004).

User Interface Principles
A short list of UI principles for ITV has been devised and applied in personalized advertising and interactive music TV (Chorianopoulos et al. working paper). For example, ITV researchers should not assume an attentive user like the traditional usability engineering methods do. Instead they should measure explicitly the degree of involvement of the ITV user. Moreover, the established TV grammar dictates a constant flow of content, regardless of user interactivity, which is not the case with traditional usability principles.

Prototyping Techniques
Early prototyping (low fidelity) could be based on scenarios and storyboards. Then, the emphasis is placed on the TV viewer experience realized on a high-fidelity prototyping platform, which imitates the look and feel of an ITV application by employing (Chorianopoulos and Spinellis 2004a): 1) remote control and TV screen connected to a portable PC, 2) TV content (e.g. video clips) and 3) TV-language rules and aesthetics (e.g. transparent overlays, related information).

Programming Toolkits
The development strategies employed in an ITV application are usually reflective of an IT developer viewpoint, instead of that of a TV producer. The creative part of the development process has a subordinate (decorative) role, because the requirements in technical knowledge for using the respective authoring tools demand a strong IT background. Chorianopoulos and Spinellis (2004a) have developed a high-level ITV platform (on-top of the Microsoft TV platform), which facilitates the workflow of the TV producer.

User Interface Evaluation Methods
Traditional HCI evaluation methods focus on informing the product development phase and employ small numbers of subjects iteratively with discount usability engineering techniques (Nielsen 1994). Maguire (2002) raised the question: ‘Should tasks be fixed or should users be allowed to use the service as freely as they wish?’ It has been argued that the users should be allowed to use the service for a predefined but flexible duration of time (e.g. 10-20 minutes), without any particular task to complete (Chorianopoulos and Spinellis 2004b). Besides the evaluation procedure, there is a need for measuring instruments that correspond to the affective dimension of the ITV UI. Chorianopoulos and Spinellis (Working paper) have identified and suggested constructs that are relevant to the quality dimensions of an ITV UI and presented the respective measuring instruments. These instruments are easy to administer and are compatible with popular UI evaluation methods, such as the usability test.

DISCUSSION
The emphasis on an alternative UI conceptualization for ITV applications does not entail a complete abandonment of the traditional usability paradigm. An ITV news application, used in the morning before leaving the home for work, should be very efficient. The same application, used in the evening after returning home from a long day at work, should be more automated and encourage relaxed use (Steve Draper, personal communication). In general, the UI design and evaluation for ITV applications should be regarded to have both an affective and an efficiency dimension.

Although mass communication theory might offer many concepts, it cannot be the basis for the UI evaluation methodology itself, because its research methods are not focused on improving interactive media during the development phase. In addition, mass communication methods are not relevant to the design part of the HCI research, although they might be helpful in the conceptualization of the affective quality (e.g. mood management) of an ITV UI. In the next section, alternative conceptualizations –beyond usability and mood management- of the UI quality are suggested.

DIRECTIONS FOR FURTHER RESEARCH AND PRACTICE
Further research should consider the emerging paradigms in the HCI discipline, such as persuasion, and play. Further application areas should consider the design of user interfaces for emerging ITV delivery channels, such as peer-to-peer networks. Moreover, ITV should be considered in the context of an ecosystem of consumer devices, such as mobile phones, PCs, video-game consoles, portable media players and information appliances.
Research
Besides mass communication, there might be alternate paradigms for conceptualizing the affective dimension of an ITV UI. Indeed, ITV applications are supposed to offer more than just an improved version of the traditional TV experience. HCI research is gradually diversifying into additional areas: 1) influencing the user through persuasion (Fogg 2002). The latter theory offers concepts related to the trust in ITV applications, which have an advertising and commerce characteristics. 2) Video-games and fun (Draper 1999), which offers concepts related to the game-play dimension of an ITV UI. Depending on the application domain (e.g. e-commerce, game-play, information) the design and evaluation of an ITV UI should employ the most suitable concepts.

Practice
Peer-to-peer (P2P) technologies such as Bittorrent are currently employed by early adopters in order to gain prompt access to TV content. In the legitimate side of P2P delivery, BBC is employing a PC-based P2P client in order to give access to its vast archive of audiovisual content. Then, the research question is: What is an ITV UI for P2P delivery of multimedia content? Similar research questions apply also to Internet delivery, cross media delivery and user-contributed ITV content. In conclusion, the employment of HCI theory and methods in the ITV field is a growing area for research and practice. The implications of future research will have a significant impact on the HCI theory, media industry and consumers.

REFERENCES

• Chorianopoulos, K. and Spinellis, D. Is usability engineering suitable for interactive TV applications? Working paper.
• Draper, S. W. Analysing fun as a candidate software requirement. Personal and Ubiquitous Computing, 3(3), 1999.
4th European Interactive TV Conference

EuroITV 2006
Beyond Usability, Broadcast, and TV

4th European Interactive TV Conference

Athens, Greece, May 18-19, 2006

Following on from three previous EuroITV conferences, the steering committee of the EuroITV has decided to hold the 4th European Interactive TV Conference in Athens, Greece. After the successful organization of the Summer Olympics 2004, Athens enjoys a modern infrastructure that facilitates business and leisure activities. EuroITV brings together researchers and practitioners from diverse disciplines that include human-computer interaction, media studies, computer science, telecommunications, audiovisual design and management. The organizing committee invites you to submit original high-quality papers addressing the special theme and the topics, for presentation at the conference and inclusion in the proceedings.

Special Theme
The special theme for the EuroITV 2006 conference is: "Beyond Usability, Broadcast, and TV." We welcome submissions that address interactive TV with a focus on the following emerging research and practice issues:
- Beyond usability: Sociability, playability, emotional design
- Beyond broadcast: Internet Protocol TV (IPTV), peer-to-peer (P2P) distribution
- Beyond TV: Cross media, mobile TV, smart home, home media station

Topics
Your contributions on any aspect of interactive TV are invited. Papers are solicited from, but not limited to the following topics:
- Audience research
- Interactive storytelling
- Interactive advertising
- Entertainment computing
- e-commerce, e-learning, e-health
- Ethical, regulatory and policy issues
- Interoperability, standards, metadata
- Games, betting, play-along game shows
- Enhanced TV (news, weather, sports, etc)
- Authoring, production and virtual reality systems
- Content management, digital rights management
- Multimedia, graphics, broadcast and video technology
- Communication services, video conferencing, messaging
- Business models, media management, media economics
- Personalization, user modeling, intelligent user interfaces
- Electronic program guide (EPG), video search, video navigation
- Usability, accessibility, universal access, multimodal interaction

Important Dates

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Paper submissions will be peer reviewed and all accepted papers will be published in a book, by an international publisher.

A selection of the best papers will be published in a special issue of ACM Computers in Entertainment (http://www.acm.org/pubs/cie).