

---

# Mobile iTV: New challenges for the design of pervasive multimedia systems

**Dr. Anxo Cereijo Roibás**

SCMIS  
University of Brighton  
Watts building, BN2 4GJ, UK  
a.c.roibas@brighton.ac.uk

**David Geerts**

Centre for Usability Research  
E. Van Evenstraat 2A  
3000 Leuven – Belgium  
david.geerts@soc.kuleuven.be

**Dr. Licia Calvi**

Centre for Usability Research  
E. Van Evenstraat 2A  
3000 Leuven – Belgium  
licia.calvi@soc.kuleuven.be

**Akseli Anttila**

Nokia Design, Insight and  
Innovation  
Helsinki, Finland  
akseli.anttila@nokia.com

**Owen Daly-Jones**

Serco Usability Services  
22 Hand Court  
London  
WC1V 6JF  
owen.daly-jones@serco.com

**Abstract**

This SIG will stimulate informal debate around the futures of interfaces for pervasive multimedia systems such as mobile and ubiquitous iTV with special attention to the new contextual usage of this media in entertainment, work and government contexts.

It aims to create a provocative framework to uncover future usage scenarios and generate debate about novel processes for creation, sharing, and consumption of digital content that match the nomadic lifestyles of mobile users and about related new applications and original interaction models that support social use. Likewise it intends to discuss possible controversial evolutions and trends of this prospected scenario such as 'an utterly controlled society' (as in Aldous Huxley's book 'Brave New World'), applications in nano and biotechnology, etc.

**Keywords**

Prospected scenarios, future user experience, pervasive iTV, novel interactive patterns, new sociability, context awareness, novel cross-media smart content, controversial trends, design of the innovation

---

Copyright is held by the author/owner(s).  
*CHI 2006*, April 22–27, 2006, Montreal, Quebec, Canada.  
ACM 1-59593-298-4/06/0004.

**ACM Classification Keywords**

H.4.3 Communications Applications: miscellaneous,  
H.5.2 user Interfaces: Theory and methods, H.5.1  
Multimedia Information Systems: interactive TV.

**Introduction**

During the last years we have been witnessing how industry continuously failed to understand and forecast users' needs and expectations in sectors which are normally characterized by innovation-driven approaches (such as telecommunications and iTV). Many companies developed mobile devices and products/applications for iTV using inappropriately ICT resources that imply massive modifications in users' habits and perceptive/cognitive overload. On the other hand, new challenges for interactive multimedia such as pervasive communications systems (interoperability between handhelds, i-TV, PCs, in-car-navigators, smart office and the smart-house), tangible computing, biotechnology, digital-physical hybrids and intelligent environments (spaces and installations mediated by information and communications technology) are currently not seriously considered at industrial levels. Consequently, the market's response to investments in developing new products and applications (e.g. mobile TV broadcasting, iTV) has not been positive to date. Rapid changes in users' habits and technological advances generate enormous uncertainties and call for innovative research and development methodologies. As the variables that need to be taken into account have a diverse nature, a cross-disciplinary approach that includes human factor studies, behavioral theories, socio-cultural and economic trends, technological developments and emerging technologies markets, interactive arts, product design, etc. is necessary. Moreover, original techniques could be successfully

combined – collaborative and user-centered approaches that focus on users' cultural, social, behavioural, ergonomic, spiritual and biological circumstances and backgrounds.

**Mobile and Pervasive iTV**

Becoming interactive, TV is replacing traditional 'passive' TV platform through the increase of active participation by the viewers, substantially influencing people's experience with television and their TV-related social behaviour.

Users' adoption of powerful handhelds with multimedia features together with an increasing interoperability between platforms (making communications pervasive) is resulting in expanding the iTV consumption beyond the domestic context (mobile iTV is already operating in Europe, USA, Canada and South Korea). We can define this 'almost everywhere TV' as 'pervasive TV'. However, we envisage that the future of mobile and pervasive iTV and that of pervasive multimedia systems in general cannot just be content broadcast on handhelds in the format we know it now. It will be crucial instead to take advantage of all the potentiality of mobile phones not only as highly creative and interactive multimedia tools but also in terms of mobility, context awareness and sociability. Mobile phones are suitable interfaces for contextualized applications, that is, services which are correlated to the specific user experience. This feature might compensate the intrinsic limitations of this small device (screen size, data transmission and processing speed autonomy and memory) if compared to traditional multimedia interfaces such as TV and PC.

The traditional context taxonomy, considers four main elements: the domain context, the system context, the

physical context, the temporal context. However, recalling William H. Whyte's statement "What attracts people most, in sum, is other people..." (Whyte W. H., 1988), there is an element that cannot be ignored in a social media such as iTV: the social context. It is related to the ability of a system to enhance the communication possibilities between users and augment awareness of social surroundings contributing to building group coherence and helping to reduce inefficiency in social practices.

Therefore critical user experience issues in future development of pervasive multimedia systems, go beyond usability and innovative interaction design issues. They extend into paradigms such as wearable or body embedded communication systems, sociability and the interaction with the broad context.

### Objectives

This SIG is thematically connected to a workshop titled 'Investigating New User Experience Challenges in iTV: Mobility and Sociability'. The workshop will be a formally structured platform to share experiences and points of view on late breaking research practices - such as ethnographic praxis in industry and academia - focused on the user experience in pervasive interactive television (iTV). On the other hand, the SIG will have a more informal approach with a rather exploratory objective with a fairly futuristic timeframe. It aims to create a provocative framework to generate debate new challenges and trends for the design of future pervasive multimedia systems. The SIG organizers will facilitate discussion around the following interrelated emerging concerns:

- Novel sociality issues for cross-media applications requiring strong collaboration and interaction between

users across traditionally personal interfaces (such as handhelds).

- Incoming usability challenges and future interaction design issues such as new interfaces, interaction modalities and forms of smart content including tangible computing and other digital-physical hybrids.
- New paradigms in context awareness in intelligent environments beyond the traditional taxonomy of context (user model, physical, system and temporal).
- Controversial evolutions and trends such as a potential 'utterly controlled society' (as in Aldous Huxley's book 'Brave New World') and cross-media applications in nano and biotechnology, etc.
- Original contributions from diverse disciplines (art, design, sociology, anthropology, biology, etc) for unveiling the user experience in prospected scenarios of mobile & pervasive iTV.

The main outcome will be the prediction of some credible and relevant usage scenarios for future pervasive interactive television and pervasive multimedia systems in general. It will also be defined the main guidelines to establish a common research agenda in the area.

### Planned timeline for the SIG session

- Presentation of the SIG goals and topics (10 mins).
- Introduction of participants (10 mins).
- Interactive debate with participants on the research topics introduced (50 mins).
- Summary of the topics and discussion on future actions and how to create a common background in this area among those interested (20 mins).

**Audience**

This SIG is of interest of practitioners as well as researchers interested in the area of pervasive computing, cross-media and multimedia. This includes managers of HCI projects working in the iTV, cinema, web and mobile industry (telecom companies, device manufacturers, broadcasters, service and content providers, etc.); new media 'oracles', industrial designers; customer experience managers, user experience architects; human factors practitioners and academics, researchers and students with interests in the futures of human computer interaction; designers in general and new trends consultants.

**Follow-up plan**

A website has been created in order to provide information about this SIG so candidates can get familiar with the scope of the subject and the goals of it. This website is also intended to become an active discussion platform about the topic with polls on new topics, Active forum discussions, blogs, announcements and postings, mailing list and events calendar. Organizers will commit to publicize their SIG.

**Organizers' details**

Dr. Anxo Cereijo Roibás is Senior Lecturer at the University of Brighton. He has collaborated with Nokia and worked as a consultant for Vodafone. He is involved in research addressing the future of pervasive TV mobile phones, with support of the Vodafone Group Foundation, the British Royal Academic of Engineering and the BT IT Futures Research Centre. He is member of the Executive Committee of the British-HIC Group.

David Geerts is project leader of the Centre for Usability Research (CUO), and as such involved in

several research projects on user-centred design, a.o. to evaluate the usability of interactive television. He is Programme Manager of the recently started Belgian SIGCHI.be chapter.

Dr. Licia Calvi is a senior researcher at the CUO where she is responsible for setting up new research projects at national and international level. She is a member of the editorial board of the International Journal of E-learning and the IASTED technical committee on Education.

Owen Daly-Jones, is Director of Serco Usability Services, and Principal Consultant. He has over fifteen years experience in the application of human factors to interactive systems development, particularly new categories of products such as mobile devices and interactive TV services. Owen has advised many leading UK companies including Sky, Telewest, Carlton, ntl, ITV and the BBC. Before joining Serco Usability Services He is the editor of Usableitv and founded the online discussion forum Usableitv, which has over 700 international members.

Akseli Anttila is User Experience Manager at the Nokia Design, Insight and Innovation Center. He has been Senior Designer at Nokia Research Center. He founded his own company, Mandala Productions and at the same time he collaborated with the Finnish film company SoftModel. Recently he has been working on a series of animations for Finnish Broadcasting Service's top 40 music video program.