2015

ACM INTERNATIONAL CONFERENCE ON INTERACTIVE EXPERIENCES FOR TELEVISION AND ONLINE VIDEO

CONFERENCE PROGRAM

June 3-5 2015 - Brussels, Belgium

MEDIALAAN

CONCLUSION OF OUR VIEWER HAPPINESS SURVEY 2014 IN ASSOCIATION WITH IVOX

TELEVISION VIEWERS ARE MORE SATISFIED THAN EVER

MORE SCREENS

MORE POSSIBILITIES

MORE VIEWING OCCASIONS AND PLACES

MORE HAPPINESS

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Authors will be presenting their work during the demo and WiP session on thursday at 4pm

WELCOME

Dear conference participant,

It is our great pleasure to welcome you to the second ACM International Conference on Interactive Experiences for Television and Online Video (ACM TVX2015) at the Crowne Plaza Hotel in Brussels, Belgium. We hope you already had a pleasant trip before arriving here and that you are ready to enjoy the exciting conference program which has been put together in the past months by the several conference chairs, authors and reviewers. You are now holding the conference program booklet in your hands, which is your guide to make the most out of the conference. You'll find the titles and abstracts of the many contributions, the various locations where you'll need to go when, as well as practical information to make your conference visit a comfortable one.

If you're attending a course, workshop or the doctoral consortium on Wednesday June 3rd, you'll need to head to the first floor of the Crowne Plaza Hotel, where you will find the registration desk to pick up your badge and conference bag, as well as the rooms where your event will take place. All coffee breaks and the lunch will also take place on this floor, so there's no need to go elsewhere, unless of course you want some fresh air.

During the main conference, on Thursday June 4th and Friday June 5th, all activities will take place on the ground floor. Since we have a single-track conference this year, there are no tough choices to make, and you can attend all presentations without worrying where you will go for the next session. The keynotes and paper presentations will be held in the Palace Ballroom I, while the Exhibitions, Demos and Work in Progress posters will be shown in Palace Ballroom II. The coffee breaks will also be served in the Palace Ballroom II, while lunch will be served in the hotel lobby.

A conference would not be the same without social events to make new friends or catch up with old ones. We are therefore very pleased to be able to invite you to our conference dinner on Thursday June 4th at 20:00 in the 'Klimt' room. Be prepared for the best of Belgian cuisine in a beautiful surrounding. We also invite you to join the cocktail reception after our closing session, on Friday 5th June at 16:30, for a relaxing drink before you return home.

As you can see from this conference program, you will be spoilt with high quality content on all levels. This only leaves us with wishing you a great conference experience and a lot of inspiration for doing research on interactive experiences for television and online video, so you can submit your best work to next year's conference!

David Geerts, Caroline Pauwels and Lieven De Marez
General Chairs ACM TVX2015

REGISTRATION

Registration is possible on-site on the following dates and locations:

June 3:	**08:00 - 18:00**	- First Floor
June 4:	**08:00 - 18:00**	- Palace Lobby
June 5:	**09:00 - 12:00**	- Palace Lobby

INTERNET

Wireless internet connectivity is available throughout the hotel. Use the following information to connect:

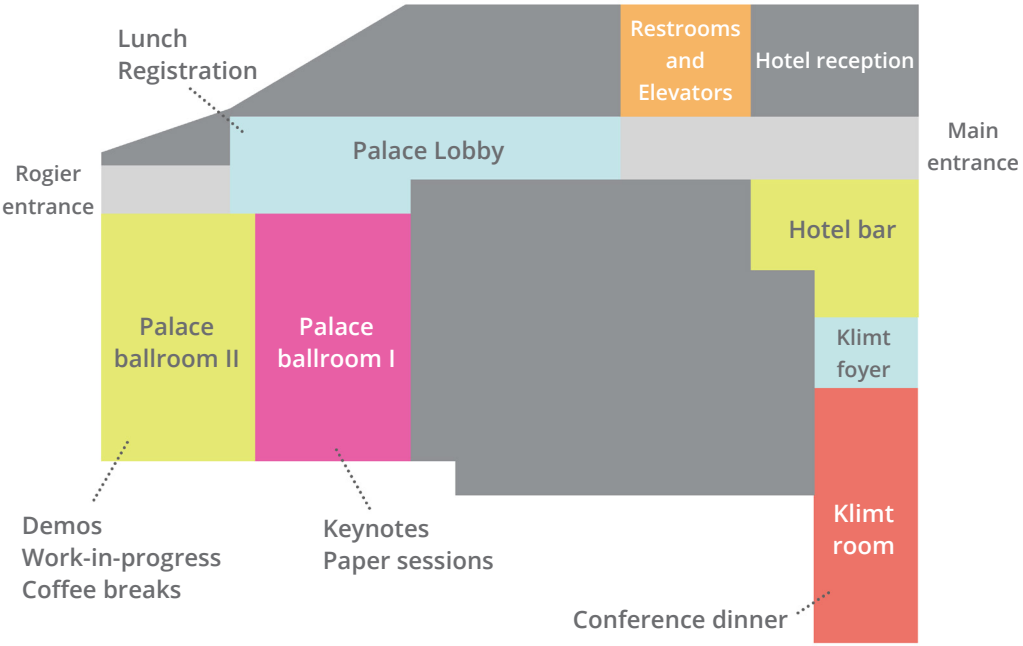
SSID:	**Crowne-Plaza-Free-Internet**
Password:	**ACMTVX2015**

CONFERENCE DINNER

The conference dinner takes place on june 4 at 20:00 in the Klimt room of the Crowne Plaza. Drinks served at the table during dinner are included, additional drinks can be purchased during or after dinner in the adjoining hotel bar.

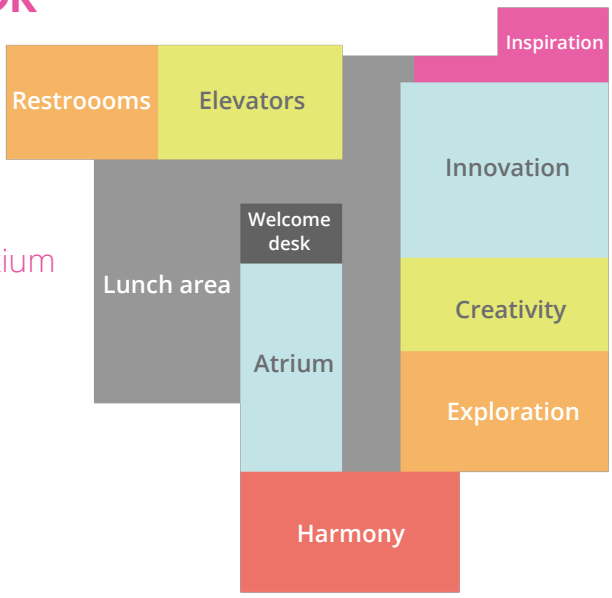
FLOOR PLAN

GROUND FLOOR



FIRST FLOOR

Courses
Workshops
Doctoral consortium



WEDNESDAY, JUNE 3

Coffee breaks will be served from 10:30-11:00 and from 15:30-16:00. Lunch will be served from 12:30-14:00. Both coffee breaks and lunch are served on the first floor.

COURSES

09:00 – 12:30

Gesture Interfaces, Ambient Intelligence, and Augmented Reality for the Interactive TV

Creativity room

p.12

14:00 – 17:30

To Hack or not To Hack: Interactive Storytelling in the 21st Century

Creativity room

p.13

WORKSHOPS

09:00 – 17:30

People, Context, and Devices: Defining the New Landscape of TV Experiences

Innovation room

p.14

Media Synchronization Workshop

Harmony room

p.15

3rd International Workshop on Interactive Content Consumption (WSICC'15)

Exploration room

p.16

14:00 – 17:30

Doctoral Consortium

Inspiration room

p.17

THURSDAY, JUNE 4

09:00	Welcome and opening	Palace Ballroom I	
09:30	Opening Keynote	Palace Ballroom I	p.18
10:30	Coffee break	Palace Ballroom II	
11:00	Demo madness	Palace Ballroom I	p.30
11:15	Session 1: Social Experiences and Awareness	Palace Ballroom I	p.20
12:30	Lunch break	Palace Lobby	
14:00	Work in Progress madness	Palace Ballroom I	p.34
14:15	Session 2: Experiencing Live Events	Palace Ballroom I	p.22
15:30	Coffee break	Palace Ballroom II	
16:00	Demos and Work-in-Progress	Palace Ballroom II	p.30 p.34
17:30			
20:00	Conference dinner	Klimt room	

FRIDAY, JUNE 5

09:30	**Session 3:** Context-aware systems	Palace Ballroom I	*p.24*
10:30	**Coffee break**	Palace Ballroom II	
11:00	**Session 4:** Multi-screening	Palace Ballroom I	*p.26*
12:30	**Lunch break**	Palace Lobby	
14:00	**Session 5:** Design for User Experience and Engagement	Palace Ballroom I	*p.28*
15:15	**Closing Keynote**	Palace Ballroom I	*p.19*
16:00	**Closing session**	Palace Ballroom I	
16:30	**Cocktail reception**	Palace Lobby	
17:00			

Use #acmtvx for live Tweets

COURSES

ACM TVX 2015 offers a set of courses designed to appeal to our audience of researchers and practitioners in the TV User Experience field. Courses will take place on June 3rd 2015, the day prior to the main ACM TVX2015 conference program. The duration of all courses is half a day.

GESTURE INTERFACES, AMBIENT INTELLIGENCE, AND AUGMENTED REALITY FOR THE INTERACTIVE TV

Wednesday 3 June from 9:00-12:30 Creativity room

Radu-Daniel Vatavu University Stefan cel Mare of Suceava, Suceava, Romania
Contact: raduvro@yahoo.com

Overview/Abstract: This course is about new designs for highly-interactive smart home entertainment spaces. Attendees will be introduced to fundamental aspects of ambient intelligence, augmented reality, and gesture user interface design by falling back on examples of applications for the interactive TV. It is my hope that this course will prove a valuable source of inspiration for practitioners interested in prototyping novel, highly-interactive smart spaces for our future home entertainment experience.

TO HACK OR NOT TO HACK: INTERACTIVE STORYTELLING IN THE 21ST CENTURY

Wednesday 3 June from 14:00-17:30 Creativity room

Sandra Gaudenzi Digital Cultures Research Center, UWE, Bristol, UK Contact: sgaudenzi@yahoo.com

Overview/Abstract: Interactive storytelling is not just about telling stories on digital platforms. It is also about making them relevant to an audience, and using different platforms for a clear purpose. This involves thinking differently and starting stories with a bottom up approach, using techniques more akin to digital design processes than linear storytelling, and putting the final user at the center of the creative process. In the past few years software development methodologies such as hackathons and agile development are permeating the narrative realm. Tribeca Hacks, POV Hackathons and Popathons are all events that want to put together storytellers, coders and designers in the hope that new methodologies of collaborative work can emerge. Is this the way forward for interactive storytelling production, or is it just a moment of disruption? Are the rules of storytelling really changing for good? What are the tensions that are emerging from this changing of paradigm?

WORKSHOPS

ACM TVX 2015 offers a set of workshops designed to appeal to our audience of researchers and practitioners in the TV User Experience field. Workshops will take place on June 3rd 2015, the day prior to the main ACM TVX2015 conference program. All workshops are of full day duration.

PEOPLE, CONTEXT, AND DEVICES: DEFINING THE NEW LANDSCAPE OF TV EXPERIENCES

Wednesday 3 June from 9:00-17:30 Innovation room

Organizing team:
Isha Dandavate, User Experience Researcher, YouTube
Jennifer Milam, User Experience Designer, YouTube
Jeanne Allen, User Experience Producer, YouTube
Christiane Moser, ICT&S Center, University of Salzburg
Thomas Kargl, ICT&S Center, University of Salzburg
Manfred Tscheligi, ICT&S Center, University of Salzburg
Jeroen Vanattenhoven, CUO | Social Spaces, iMinds – KU Leuven
Lilia Perez Romero, CWI: Centrum Wiskunde & Informatica
Fabian Schiller, IRT
Joost Negenman, Dutch Public Broadcast, NPO

Summary: Modern technologies (e.g., tablet, smartphone, large public displays) remove many of the constraints that define the scope of what television is or can be, but we often define it based upon our prior TV experiences with broadcast and cable television. This one-day workshop at TVX 2015 will address design challenges and opportunities (e.g., of video streams, social TV apps, second screens) in order to consolidate existing knowledge to describe the changing landscape of TV experiences. It's time to redefine what we think of when we say "television," and this workshop will engage participants in that process.

This workshop aims at exploring the changing landscape of the television experience. We will explore the impact of devices, context and social interactions on users' television watching behaviors. The day will bedivided into two portions led by different organizations:

1. Members of the University of Salzburg and KU Leuven, in collaboration with three industry practitioners, will lead a discussion about lessons learned through practice or research, and best practices.
2. Members of the YouTube User Experience team will lead an interactive working session to enumerate and characterize key facets of the developing landscape of TV experiences, culminating in the creation of a framework that will inform and foster innovation.

This workshop is for academics and professionals who have experience in TV UX. It encourages interdisciplinary discussions and aims to include researchers and practitioners in the fields of content creation, interaction design, user interface design, computer science, psychology, cognitive science, and sociology, etc. Through this two-part workshop, we aim to bring together experts to discuss lessons from previous work, and articulate and challenge existing assumptions.

Website: https://projects.icts.sbg.ac.at/tvx2015

MEDIA SYNCHRONIZATION WORKSHOP

Wednesday 3 June from 9:00-17:30 Harmony room

Organising team:
Hans Stokking, Media & Network Services, TNO
Pablo Cesar, CWI (Centrum voor Wiskunde en Informatica)
Fernando Boronat, Universitat Politecnica de Valencia

Summary: The third edition of the Media Synchronization Workshop will happen in conjunction with ACM TVX 2015. This workshop series brings together an active community around the topic of media synchronization, attracting many relevant researchers in this area. The objective of this workshop is to further built this community and set the research agenda on the topic of media synchronization. We will do this by sharing our current research in short presentations, and by having an active afternoon. We will be working in subgroups on key problem areas, present our work to the whole group as a starting point for an active discussion on the most relevant research to be carried out in the coming years.

Website: https://sites.google.com/site/mediasynchronization/mediasync2015

3RD INTERNATIONAL WORKSHOP ON INTERACTIVE CONTENT CONSUMPTION (WSICC'15)

Wednesday 3 June from 9:00-17:30 Exploration room

Organising team:
Rene Kaiser, Institute for Information and Communication Technologies, Joanneum Research
Britta Meixner, Passau University
Joscha Jäger, Merz Akademie
Katrin Tonndorf, Passau University
Omar Niamut, TNO
David Marston, BBC

Summary: The third edition of the WSICC workshop aims to bring together researchers and practitioners working on novel approaches for interactive multimedia content consumption. WSICC has established itself with a truly interactive workshop format at EuroITV and TVX with two successful editions. This year's workshop will put emphasis on the user experience. It allows for lots of discussion and makes sure every participate can learn something new and network.

Website: http://wsicc.net/2015/

DOCTORAL CONSORTIUM

Wednesday 3 June from 14:00-17:30 Inspiration room

FROM EYEBALLS TO CLICK-THROUGH: THE CHANGING VALUE OF THE USER/CONSUMER IN THE COMMERCIAL TELEVISION VALUE NETWORK IN A DIGITAL CONNECTED ERA

Iris Jennes - Vrije Universiteit Brussel, iMinds - SMIT

DESIGNING CO-CONSTRUCTED EXTENDED LIVE EVENT COVERAGE EXPERIENCES

Raphael Velt - Mixed Reality Lab, The University of Nottingham
BBC Research & Development

ENHANCING WATCHING EXPERIENCE OF FOOTBALL MATCHES ON TV VIA MODES OF INTERACTION AND TYPES OF VISUALISATION OF MATCH-RELATED INFORMATION ON SECOND SCREEN

Ege Sezen - HighWire Doctoral Training Centre, Lancaster University

CHARACTERISING AND IMPROVING THE ACCESSIBILITY OF CONNECTED TV FOR USERS WITH VISUAL IMPAIRMENTS

Daniel Costa - Faculdade de Ciências, Universidade de Lisboa
LaSIGE, University of Lisbon

MEDIA MULTITASKING BEHAVIOUR IN THE LIVING ROOM: WHICH FACTORS AFFECT IT AND HOW CAN WE EXPLOIT IT?

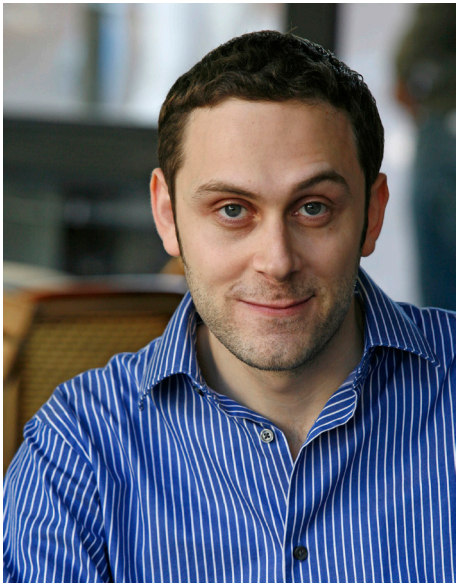
Jacob Rigby - UCLIC, University College London

OPENING KEYNOTE

Thursday 4 June from 9:30-10:30 Palace Ballroom I

JACOB SHWIRTZ

Chief Social Media Officer at Endemol Beyond USA



Jacob Shwirtz has been a part of the Endemol Beyond USA since its launch in November 2013 as Chief Social Media Officer, where he has been responsible for creating and implementing forward-looking strategies that maximize the potential of social media as a global storytelling platform, using new methods and genres of content creation for distribution and monetization. Prior to joining Endemol Beyond USA, Shwirtz served as social TV lead for Viacom and, previously, he launched dozens of initiatives that blended linear and digital for MTV and VH1. As a digital entrepreneur, Shwirtz co-created TweetBookz, offering personalized coffee table books of tweets. In 2012, Shwirtz was named as one of the top 10 social media mavens in media by Multichannel News.

EMPOWERING STORYTELLERS WITH SOCIAL MEDIA

From entertainment to news to corporate marketing, social media has infused, informed and revolutionized the way creators are reaching their audience. In this discussion we will explore the core impact of social media as a storytelling medium, how standard operating procedures and strategies have changed, delve into case studies and how we chart a path forward. When viewed through the lens of storytelling, social media becomes a wildly exciting domain for innovative creators to push boundaries, invent new genres of content and connect with audiences in ways never before possible. Case studies considered will span everything from traditional talent making the move to the Internet, digital-native talent, already-successful and new TV programs and web series, as well as legacy content finding new life and audiences online.

CLOSING KEYNOTE

Friday 5 June from 15:15-16:00 Palace Ballroom I

MARIANNA OBRIST

Lecturer in Interaction Design at the University of Sussex, UK

Marianna Obrist is a Lecturer in Interaction Design at the University of Sussex, UK. She is leading the SCHI Lab (Sussex Computer Human Interaction) integrated in the Creative Technology research group established within the School of Engineering and Informatics. Prior to joining Sussex, she was a Marie Curie Fellow at Culture Lab at the School of Computing Science in Newcastle University and before she worked as an Assistant Professor for Human-Computer Interaction at the Department of Computer Science at the University of Salzburg, Austria. Her current research focuses on the systematic exploration of touch, taste, and smell experiences for human-computer interaction. She has been recently awarded €1.5Mk by the European Research Council for a five-year project to expand the research into 'Sensory Experiences for Interactive Technologies' (SenseX). Marianna has published widely in the fields of human-computer interaction and user experience, and is currently Vice Chair for the ACM TVX steering committee.

MULTI-SENSORY MEDIA EXPERIENCES

The way we experience the world is based on our five senses, which allow us unique and often surprising sensations of our environment. Interactive technologies are mainly stimulating our senses of vision and hearing, partly our sense of touch, and the sense of taste and smell are widely under-exploited. There is however a growing international interest of the film, video, and game industries in more immersive viewing and gaming experiences. In the 20th century there was a demand for a controllable way to describe colours that initiated intense research on the descriptions of colours and substantially contributed to advances in computer graphics, image processing, photography and cinematography. Similarly, the 21st century now demands an investigation of touch, taste, and smell as sensory interaction modalities to enhance media experiences.

SESSION 1
SOCIAL EXPERIENCES AND AWARENESS

Session chair: Santosh Basapur

Thursday 4 June from 11:15-12:30 Palace Ballroom I

EXPERIENCING LIVENESS OF A CHERISHED PLACE IN THE HOME

Jinyi Wang, Mudassar Ahmad Mughal, Oskar Juhlin

Stockholm University

Abstract: Liveness, as discussed in HCI and in media studies, focuses on an intriguing and beloved experiential quality that can influence new forms of video applications. We suggest a shift from accounts of liveness in "events" to liveness in ambient media in home decor, by designing a system called TransLive that exploits the "magic" of mediatizing the "now" at a distant and cherished place. We present a field study including four families, who experienced the system for two weeks each in a living lab setting. It shows how immediacy and unpredictability provide compelling experiences. Authenticity and engagement, which are previously considered as inherent qualities in live media, instead occur in the context of use. Finally, the experience of transcendence triggered by slow and continuous video streams and sensor data, unveils a new design space of liveness. Thus, we not only need to take inspiration from liveness theory, but also redefine it.

AUDIENCE SILHOUETTES: PERIPHERAL AWARENESS OF SYNCHRONOUS AUDIENCE KINESICS FOR SOCIAL TELEVISION

Best paper award

Radu-Daniel Vatavu

University Stefan cel Mare of Suceava

Abstract: We introduce TV audience silhouettes, which are visual representations of viewers' body movements and gestures displayed in real-time on top of broadcasted television. By using minimal visual cues, audience silhouettes are strong candidates for implementing Oehlberg et al.'s theater metaphor of an unobtrusive social TV system by conveying presence and leveraging interaction via non-verbal kinesics. We found our study participants connecting well to the on-screen silhouettes, while their TV watching experience was perceived more enjoyable. We also report viewers' body movement behavior in the presence of on-screen silhouettes, which we characterize numerically

with average body movement, percentage of distinct body postures, and amplitude of movement, e.g., we found that the number of silhouettes influences viewers' body movements and the body postures they adopt, with women producing more body movement than men.

IT TAKES TWO (TO CO-VIEW): COLLABORATIVE MULTI-VIEW TV

Mark McGill, John Williamson, Stephen Brewster

University of Glasgow

Abstract: This paper investigates how we can design interfaces and interactions for multi-view TVs, enabling users to transition between independent and shared activity, dynamically control awareness of other users' activities, and collaborate more effectively on shared activities. We conducted two user studies, first comparing an Android-based two-user TV against both multi-screen and multi-view TVs. Based on our findings, we iterated on our design, giving users the ability to transition between casual and focused modes of usage, and dynamically set their engagement with other users' activity. We provide the foundations of a multi-user multi-view smart TV that can support users to transition between independent and shared activity and gain awareness of the activities of others, on a single shared TV that no longer suffers the bottleneck of one physical view, significantly improving upon a user's capability for collaborative and independent activity compared to single-view smart TVs.

EUROPEANATV: OPEN UP CULTURE, ENRICH TELEVISION

Kelly Mostert, Lizzy Komen

Netherlands Institute for Sound and Vision

Abstract: Within the Europeana Space project several pilots are developed to inspire creative industries to reuse Europe's cultural heritage and bring new ideas to the market. The Netherlands Institute for Sound and Vision (NISV), one of Europe's largest audiovisual archives in Europe, is leading the work of EuropeanaTV; a pilot that not only creates demo applications for inspiration, but also develops a user-friendly multiscreen toolkit for creative thinkers and developers to create new interactive TV applications. The toolkit creates multiple modules of code that can be put together and made into new immersive TV experiences. One of the most innovative outcomes of this toolkit is the prototype called Rewind, which combines Smart TV viewing and smartphone navigation of archive footage into a social experience.

SESSION 2
EXPERIENCING LIVE EVENTS

Session chair: Wendy Van den Broeck

Thursday 4 June from 14:15-15:30 Palace Ballroom I

FIRST PERSON OMNIDIRECTIONAL VIDEO : SYSTEM DESIGN AND IMPLICATIONS FOR IMMERSIVE EXPERIENCE

Shunichi Kasahara, Shohei Nagai, Jun Rekimoto

University of Tokyo, Sony CSL

Abstract: Fully recording and sharing an immersive experience is one of the ultimate goals of media technology. As extensive technical evolution, omnidirectional video is one of promising media to capture an immersive experience. First person omnidirectional video provide unique experience of world through someone else's perspective. This will bring various applications such as entertainment, sports viewing, education and simulation training, newscasting and therapy. However, difficulties in wearable camera design and cybersickness induced by shaky video has been obstacle to explore applications of first person omnidirectional video. In this research, we introduce the design and implementation of "LiveSphere" a system including a wearable omnidirectional camera and image stabilization to improve cybersickness. Our evaluation revealed the improvement of cybersickness. Then we report the series of workshops to explore user experience and applications in actual use cases such as virtual travel and virtual sports. we have compiled design implications about cybersickness and motion, immersive sensation, visualization and behavior data of spectators in experience with first person omnidirectional video.

INTERACTIVE UHDTV AT THE COMMONWEALTH GAMES – AN EXPLORATIVE EVALUATION

Judith A. Redi, Lucia D'Acunto, Omar Niamut

Delft University of Technology, TNO

Abstract: In conjunction with BBC R&D experiments and demonstrations at the 2014 Commonwealth Games, an explorative field trial was conducted with a live zoomable UHD video system. The unique field trial featured the world's first live tiled streaming of 4K UHD video to end users. During the trial, we studied and evaluated the attractiveness and novelty of an interactive UHD application, and investigated system design aspects of

a live UHD tiling system. In this paper, we evaluate the overall perceived quality of experience (QoE) of the application and to what extent the QoE depends on system factors and/or network conditions. We observe that interactive UHDTV is well received by users, but the delivered experience may decrease in presence of low bandwidth availability.

TOWARDS AN EXTENDED FESTIVAL VIEWING EXPERIENCE

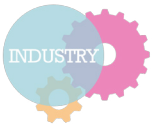
Honorable Mention

Raphael Velt, Steve Benford, Stuart Reeves, Michael Evans, Maxine Glancy, Phil Stenton

The University of Nottingham, BBC

Abstract: Media coverage of large-scale live events is becoming increasingly complex, with technologies enabling the delivery of a broader range of content as well as complex viewing patterns across devices and services. This paper presents a study aimed at understanding the experience of people who have followed the broadcast coverage of a music festival. Our findings show that the experience takes a diversity of forms and bears a complex relationship with the actual experience of being at the festival. We conclude this analysis by proposing that novel services for coverage of this type of events should connect and interleave the diverse threads of experiences around large-scale live events and consider involving more diverse elements of the experience of 'being there'.

THE WALL OF MOMENTS: AN IMMERSIVE EVENT EXPERIENCE



Rik Bauwens, Tine Deboosere, Luk Overmeire

VRT

Abstract: In this paper a prototype application developed by VRT –as part of the ICoSOLE project– is described. The Wall of Moments aims to combine user-generated content with professional content, in order to create an immersive experience for people who can't attend an event. The demo uses a selection of content recorded at the Marconi Moments, a small-scale test shoot in the Marconi studio at the VRT campus.

SESSION 3
CONTEXT-AWARE SYSTEMS

Session chair: Rene Kaiser

Friday 5 June from 09:30-10:30 Palace Ballroom I

EXPERIMENTAL ENQUIRY INTO AUTOMATICALLY ORCHESTRATED LIVE VIDEO COMMUNICATION IN SOCIAL SETTINGS

Honorable Mention

Marian Ursu, Manolis Falelakis, Martin Groen, Rene Kaiser, Michael Frantzis

University of York, University of London, University of Utrecht, Joanneum Research

Abstract: This paper asserts that more complex setups of live video mediated social communication and interaction should be able to dynamically adapt to the specific communication contexts they mediate. This feature is referred to as 'orchestration'. Previous research started to explore this concept and, by carrying out orchestration through human operators, evidence was found indicating that it could improve the quality of the communication experience. The study reported here continues that line of enquiry, but employing also a completely automatic system. A similar conclusion was inferred here, too, namely that automatic orchestration can improve the quality of the communication experience. The evidenca was based on an objective measure of 'task efficiency', defined on the basis of the points scored in the social game that framed the experience. However, two other measures employed, a questionnaire (subjective) and average number of turnshifts and turn duration (objective), were inconclusive. At this end, the paper also uncovers some of the complexities of the conceptual space associated with orchestrated mediated communication. Finally, the paper also aims to provide motivation for further research into this communication paradigm.

BROADCAST, VIDEO-ON-DEMAND, AND OTHER WAYS TO WATCH TELEVISION CONTENT: A HOUSEHOLD PERSPECTIVE

Jeroen Vanattenhoven, David Geerts

iMinds, KU Leuven

Abstract: This paper presents an investigation into they ways households currently use traditional broadcast television and video-on-demand services at the same time. The results were obtained via in-home interviews with seven households in The Netherlands. Both ways of watching television and video content still have their uses. Sometimes broadcast television is turned on out of necessity; at other times it provides a more valuable function than video-on-demand services. In this paper we go deeper into this matter and explain how each way of viewing TV content relates to different viewing situations in the home. These insights help us to formulate implications for the design of television products and services in general, and for better, contextual recommender systems.

TOWARDS PERSONALIZED LINEAR TV?

Sarie Robijt, Steven Thys

VRT

Abstract: Over the top players paved the way for on demand viewing practices. Given the large amount of available content and its diversity in genres, many players have bet on personalization techniques to increase the relevance of their offering. As public service media institute, we question how such techniques could apply to live TV. More specifically, we question what human and contextual factors should be accounted for when personalizing linear TV schedules. By means of an iterative qualitative experiment, we found a variety of internal and external human factors to be translated into future algorithms. We also uncovered a personalization-scheduling paradox and new means of interpreting viewing history. Given our "lean" user-oriented research both the findings and the approach contribute to the field of HCI.

SESSION 4
MULTI-SCREENING

Session chair: Omar Niamut

Friday 5 June from 11:00-12:30 Palace Ballroom I

WHO'S THE FAIREST OF THEM ALL: DEVICE MIRRORING FOR THE CONNECTED HOME

Mark McGill, John Williamson, Stephen Brewster
University of Glasgow

Abstract: In the UK alone smartphone adoption has reached 61\% in 2014. In home and living-room contexts, this adoption has led to "multi-screening", meaning the concurrent use of devices such as smartphones and tablets alongside the TV. The resultant private "digital bubble" of this device usage has been discussed as raising a problematic barrier to socialization and interaction, with mobile phone use in particular having significant anti-social connotations. However mobile devices have evolved new capabilities for sharing their activity, most notably through screen mirroring. This paper explores how we can utilize the TV to view screen-mirrored device activity, decreasing the digital isolation of device usage. We examine the extent to which users can attend to multiple devices on one TV, the effect this and prior systems have had on existing TV viewing, and propose ways in which we can aid users to manage their viewing of device activity on the TV. Moreover, we examine new approaches toward the accessibility of device activity, investigating systems which allow users to attend to whichever device activity they wish using multi-view displays, and discuss the social and privacy implications of having "always-on" screen-mirrored devices.

"I'M JUST ON MY PHONE AND THEY'RE WATCHING TV": QUANTIFYING MOBILE DEVICE USE WHILE WATCHING TELEVISION

Christian Holz, Frank Bentley, Karen Church, Mitesh Patel
Yahoo Labs

Abstract: In recent years, mobile devices have become a part of our daily lives, much like television sets had over the second half of the 20th century. Increasingly, mobile devices

are being used while watching a television program. We set out to understand this behavior on a minute-by-minute quantified level as well as the motivations and purposes of device use while watching television. We conducted a novel mixed-methods study inside seven households with fourteen instrumented phone and tablet devices, capturing every app launch and app use duration, correlated with the moment in the television program when it occurred. Surprisingly, we found little difference between the volume of device use during programs and commercials, but did uncover interesting patterns of device use with different genres of program as well as differences in the apps used during programs and commercials. This study sets the stage for larger-scale investigations into the details of mobile interactions while watching television. Furthermore, the novel method we employed can be used by the community going forward as a means of fully understanding multi- device use alongside television watching.

INTRODUCING LINKED TELEVISION: A BROADCAST SOLUTION FOR INTEGRATING THE WEB WITH YOUR TV CONTENT

Lyndon Nixon
MODUL University

Abstract: This paper describes a solution for synchronized delivery of Web content related to objects and topics present in a parallel online television programme, which we call "Linked Television". A content platform prepares the TV programme by analyzing, annotating and enriching it with links to Web content through a combination of innovative Web services. An editor tool allows manual correction and completion of the enrichment. A Web-based player allows multiple devices to synchronise the video and its related content across different screens. The result is a richer TV experience for the "second screen" generation who, initiated by TV viewing, like to explore further content online. We back this up by pilots using news and cultural heritage programming which have been validated in trials by viewers as enhancing their TV experience.

THE DEATH OF SECOND SCREENS AND A NEW ROLE FOR BROADCASTERS

Hendrik Dacquin
Small Town Heroes

SESSION 5
DESIGN FOR USER EXPERIENCE AND ENGAGEMENT

Session chair: Marian Ursu

Friday 5 June from 14:00-15:15 Palace Ballroom I

DYNAMIC SUBTITLES: THE USER EXPERIENCE

Andy Brown, Rhianne Jones, Michael Crabb, James Sandford, Matthew Brooks, Caroline Jay, Mike Armstrong

BBC, University of Dundee, University of Manchester

Abstract: Subtitles on television are typically placed at the bottom-centre of the screen. However, placing subtitles in varying positions, according to the underlying video content (`dynamic subtitles'), has the potential to make the overall viewing experience less disjointed and more immersive. This paper describes an investigation into the User Experience of dynamic subtitles. Qualitative data from habitual subtitle users demonstrates that dynamic subtitles can lead to an improved experience, although not for all types of user. Eye-tracking data was analysed to compare the gaze patterns of subtitle users with a baseline of those for people viewing without subtitles.

ENVDASH – AN ENVIRONMENT-AWARE DYNAMIC ADAPTIVE STREAMING OVER HTTP SYSTEM

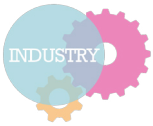
Stefan Wilk, Denny Stohr, Wolfgang Effelsberg

TU Darmstadt

Abstract: Dynamic Adaptive Streaming over HTTP (DASH) is an approach to address changing network conditions during video streaming sessions. Our system differs from the standard as it extends DASH with mechanisms that allow sensing and adapting to the environment. By this our system introduce benefits regarding network load reduction in comparison to standard adaptations rules. The system senses whether the user is interested in watching a video, if the displaying device is held stable and the ambient noise. Depending on readings sensed our EnvDASH system allows to reduce produced data traffic. This is important for mobile users having volume contracts for cellular networks.

Our work illustrates that unstable viewing conditions are common in mobile scenarios and that multi-modal analysis of the environment is able to reduce the data traffic in cellular networks. Additionally, as needs of users are very different users can easily customize rules while streaming video.

8 THINGS TO CONSIDER WHEN DESIGNING INTERACTIVE TV EXPERIENCES



Noor Ali-Hasan, Bianca Soto

Google

Abstract: TV viewing is a universal leisure and informational activity but technological advancements have changed the experience drastically in the past decade. Nonetheless, despite all of the technological developments in the TV space, there is still very little guidance for user experience professionals around how best to build and design TV products and interfaces. In this paper, we will present 8 things we have learned to keep in mind when designing interactive TV experiences.

HBBTV APPLICATION TOOLKIT

Christoph Ziegler, Janina Renz, Martin Gordon, Stefan Arbanowski, Robert Seeliger, Miggi Zwicklbauer

IRT, Rundfunk Berlin-Brandenburg, Fraunhofer FOKUS

Abstract: We present the HbbTV Application Toolkit (HAT). HAT enables content creators to build interactive HbbTV applications targeting millions of Smart TV devices, without needing specific technical skills. First operational test in live-broadcast services of the German broadcaster RBB were promising. The envisioned license model for HAT supports the creation of new markets for technology and content providers.

DEMOS

Session chair: Tom Bartindale

Madness session:
Thursday 4 June from 14:00-14:15 Palace Ballroom I

Demo session:
Thursday 4 June from 16:00-17:30 Palace Ballroom II

DISCOVERING TV CONTENTS IN A 2ND SCREEN: THE GUIDER APP

Jorge Abreu, Pedro Almeida, António Pereira, Bruno Teles, Bernardo Cardoso, Herlander Santos

University of Aveiro, Portugal Telecom

Abstract: This paper presents the second screen application GUIDER that aims to offer an advanced way for users to discover and select a TV content to watch from unified sources (live, cloud-recordings and VoD). For that it uses a set of filtering criteria and displays detailed information over an innovative user interface. The GUIDER was developed to be used in those mindless zapping situations, where the viewers do not know in advance what they are in the mood to watch on TV. The development of this App was made with the support of a Portuguese IPTV operator and is fully interconnected with its technical infrastructure.

GETVIVID: A TV PLATFORM FOR P2P SUPPORT EXCHANGE

Christiane Moser, Thomas Kargl, Manfred Tscheligi, Bernhard Feldbacher, Bernhard Collini-Nocker, Matteo Harutunian, Fabian Schiller, Michael Eitelberg, Nasser Altaani, Manuel Eisele

University of Salzburg, IRT, Evision, University of St. Gallen

Abstract: The introduction of second screens (e.g., tablet or smartphone) in social TV applications has generated new opportunities. We present the GeTVivid platform that works on a TV set in combination with a tablet as second screen. The platform aims at supporting older adults to organize informal and social care activities in a local peer-to-peer networks via the TV, tablet or a combination of both devices. We address thereby ageing in place that is increasingly emphasized as a preferable alternative to formal institutional care by strengthening informal care.

HBBTV APPLICATION TOOLKIT – DEMO

Miggi Zwicklbauer, Christoph Ziegler, Martin Gordon

Fraunhofer FOKUS, IRT, Rundfunk Berlin-Brandenburg

Abstract: HAT is an HbbTV application toolkit for developers and editors, allowing delivery of programme-accompanying content in real time.

INTEGRATED VIDEO AND SENSOR CAPTURE APP PROVIDING IMMEDIATE QUALITY FEEDBACK

Marcus Thaler, Werner Bailer, Reinhard Grandl

Joanneum Research, Bitmovin

Abstract: We describe a app for audiovisual capture content on mobile devices, enabling users to contribute content at live events (e.g., cultural and sports events) for use in broadcast and online coverage of the event. In order to ensure the quality of the contributed content, the user gets immediate feedback based from automatic visual quality analysis and sensor information. The app also integrates capabilities for streaming or uploading the content and related sensor information.

TWO SCREEN NOW: A FIRST AND SECOND SCREEN GAME APP

Joost Negenman, Susanne Heijstraten, Marc Veuger

NPO, Two screen now, Angry Bytes

Abstract: We will demonstrate a second screen platform, two screen now, that makes it possible to play along with a second screen application that interacts and aggregates scores on the HbbTV content layer on a central TV screen. Creating an engaged social in house experience. Accompanying video http://nu.omroep.nl/eentegen100.mp4

SECOND SCREEN APPLICATION – DENGUE FEVER: PREVENTION THROUGH INFORMATION

Marcos da Rocha Seruffo, Fernanda Miranda, Edylle Oliveira, Maria Malcher

Federal University of Pará

Abstract: This work introduces a second screen application called 'Dengue Fever: Prevention through Information'. The application's main objective is to allow, for users who are watching a television program, the synchronization of the first screen with a second screen and to provide extra content about the disease dengue fever, thus contributing to increase awareness of this issue.

THE WALL OF MOMENTS

Rik Bauwens, Mike Matton, Tine Deboosere, Luk Overmeire

VRT

Abstract: In this paper a prototype application developed by VRT as part of the ICoSOLE project is described. The Wall of Moments aims to combine user generated content with profes- sional content, in order to create an immersive experience for people who can't attend an event. The demo uses a selection of content recorded at the Marconi Moments, a small-scale test shoot in the Marconi studio at the VRT campus.

SOCIAL DOCUMENTARY

Fabien Grisard, Sema Alaçam, Ceren Kayalar

UMons, ETH Zurich, Sabancı University

Abstract: In this paper, we present an interactive installation for collaborative navigation through a collection of videos. The proposed setup consists of a vertical main screen which displays the video and a horizontal second screen, which is used as control panel. A touch interface and three cubes with markers give the users an intuitive and intentional way to interact with the system. Besides, a color and depth camera is used to estimate the users' gaze and quantify how interested they are in the displayed content. As the probability of displaying video is linked to visitors' interest for it, the state of the system evolves through time and depending on the assistance. A video is available at: http://www.numediart.org/2015/03/02/social-documentary

iWEBSYNC: A WEB-BASED PLATFORM FOR DISTRIBUTED MEDIA SYNCHRONIZATION AND SOCIAL INTERACTION

Jordi Belda, Mario Montagud, Fernando Boronat, Marc Martínez, Javier Pastor

Universitat Politècnica de València

Abstract: This paper presents iWebSync, which is an adaptive and accurate web-based platform that enables distributed media synchronization and social interaction across remote users. By using iWebSync, users can create or join on-going sessions for concurrently consuming the same media content with other remote users in a synchronized fashion. Besides, social interaction is provided by sharing the navigation control commands and by integrating synchronized text chat channels. Additionally, two social presence mechanisms have been added to stimulate the participation of external users in on-going sessions on iWebSync. By exclusively relying on standard web-based technologies, this platform can guarantee cross-network, cross-platform and cross-device support, which is a key point in the current heterogeneous media delivery ecosystem.

THE CBC NEWSWORLD HOLODECK EXPLORATORY DEMONSTRATION

Martha Ladly, Gerald Penn, Bryn Ludlow, Siavash Kazemian, Ana Jofre, Laura Wright

OCAD University, University of Toronto, York University

Abstract: For the past 73 years, the CBC has disseminated a unique Canadian perspective across the world, producing a phenomenally rich multimedia record of the country and our social, political and cultural heritage, and news. This project proposes novel methods to display and browse through an enormous historical CBC Newsworld data corpus to enable an "on this day" experience for viewers. Employing natural language processing technologies, the interface displays keywords and key phrases identified in the video transcripts, enabling serendipitous video search and display and offering a unique browsing opportunity within this rich "big data" corpus, spanning a 24-year period (1989-2013). This project has three interconnected preservation and research goals: 1) Digitize, visualize, and make available this collection of 23 years of Canadian news broadcasts through a state-of-the-art multimedia search and browsing system. This will ensure the preservation and use of this material, making it available as a valuable resource for researchers and students. 2) Design a real□world project as an arena in which to conduct exploratory research, develop and test new technologies for video browsing, search and visualization, and spoken document and video retrieval. 3) Design and test an immersive environment and aesthetic interface design, employing gestural and touch interfaces for browsing this incredible corpus.

JACKIN HEAD : IMMERSIVE EXPERIENCE WITH FIRST PERSON OMNIDIRECTIONAL VIDEO

Shunichi Kasahara, Shohei Nagai, Jun Rekimoto

SonyCSL, The University of Tokyo

Abstract: Fully recording and sharing an immersive experience is one of the ultimate goals of media technology. As extensive technical evolution, omnidirectional video is one of promising media to capture an immersive experience. First person omnidirectional video provide an unique experience of world through someone else's perspective. This will bring various applications such as entertainment, sports viewing, education and simulation training, newscasting and therapy. However, difficulties in wearable camera design and cybersickness induced by shaky video has been obstacle to explore applications of first person omnidirectional video. We introduce the design and implementation of "JackIn Head" a system including a wearable omnidirectional camera that provide 360 degrees spherical images of the first person's surrounding environment, and image stabilization to improve cybersickness. We've performed the series of workshops to explore user experience and applications in actual use cases such as virtual travel and virtual sports.

WORK-IN-PROGRESS PAPERS

Session chair: Hokyoung Blake Ryu

Madness session:
Thursday 4 June from 14:00-14:15 — Palace Ballroom I

Poster presentations:
Thursday 4 June from 16:00-17:30 — Palace Ballroom II

SAM: DYNAMIC AND SOCIAL CONTENT DELIVERY FOR SECOND SCREEN INTERACTION

Atta Badii, Marco Tiemann, Andreas Menychtas, Christina Santzaridou, Alexandros Psychas, David Tomas, Stuart Campbell, Juan Vicente Vidagany Espert

School of Systems Engineering, Reading, National Technical University of Athens, University of Alicante, TIE Kinetrix

Abstract: Social media services offer a wide range of opportunities for businesses and developers to exploit the vast amount of information and user-generated content produced via social media. In addition, the notion of TV second screen usage – the interleaved usage of TV and smart devices such as smartphones – appears ever more prominent, with viewers continuously seeking further information and deeper engagement while watching movies, TV shows or event coverage. In this work-in-progress contribution, we present SAM, an innovative platform that combines social media, content syndication and targets second screen usage to enhance media content provisioning and advance the user experience. SAM incorporates modern technologies and novel features in the areas of content management, dynamic social media, social mining, semantic annotation and multi-device representation to facilitate an advanced business environment for broadcasters, content and metadata providers and editors to better exploit their assets and increase revenues.

SENSITV – SMART EMOTIONAL SYSTEM FOR IMPAIRED PEOPLE'S TV

Diana Affi, Joël Dumoulin, Marco Bertini, Elena Mugellini, Omar Abou Khaled, Alberto Del Bimbo

University of Applied Sciences Western Switzerland, University of Florence

Abstract: In this paper, an innovative solution is presented: a smart emotional system for impaired people's TV. It aims to accompany the cognitive information contained in a movie, with the affective content. The affect is then communicated to the movie viewers in ways compatible for people with hearing and/or visual impairments, to let them experience all of the sensations offered by the movie. To do so, emotion recognition techniques are used to classify movie scenes into seven basic emotions. These emotions are then represented, in realtime, while the movie is playing, to the viewers, using environmental lights, emotional subtitles and a second screen application that integrates vibrations, emoticons and background music.

A SECOND-SCREEN MEETS HYPERVIDEO, STUDYING CONTENT DELIVERY THROUGH HBBTV

Toni bibiloni, Miquel Mascaro, Pere Antoni Palmer, Antoni Oliver

Balearic Island University

Abstract: In this paper, an Augmented Reality (AR) platform for Interactive TVs is presented, covering the needs of both editors and viewers to enjoy an AR experience on current generation Interactive TVs. The AR is implemented through the concept of Hypervideo, a video with hyperlinks. In this case, these hyperlinks point to the points of interest identified on the media, and lead to additional information about them. The platform consists of two modules: the first provides the producer tools to manage the audiovisual content and points of interest (PoIs), while the other is used by the viewers to play the audiovisual production and obtain additional information about the points of interest that appear on the video. A second-screen application is under development to be used together with the visualization module, enabling multiple users to obtain an AR experience on their devices. This work presents an innovative way to mix three technological concepts: interactive video, augmented reality and connected TV. The paper concludes with some improvement possibilities and extensions.

DESIGN REQUIREMENTS FOR PT-TV (PLAY THERAPY WITH TV): AN OBSERVATIONAL STUDY ON PLAY THERAPY AND TV VIEWING

Kyoungwon Seo, Garam Han, Hyunju Lee, Hokyoung Ryu, Jieun Kim

Hanyang University

Abstract: Television (TV) is hard to be separate from our daily livings. Many infants and toddlers are perpetually contact with TV and/or video contents. Recent studies focused on what characteristics of TV content would make effects on children's cognitive wellbeing. We are thus interested in the developmental play therapies performing by pediatricians and how these can be imported into TV contents design for the cognitive development of infants and toddlers. An observational study was conducted for three weeks at the Infants Care Center, Hanyang University Medical Center. Children's behavioral patterns during the play therapy and TV viewing were compared and the design requirements for children's cognitive wellbeing with TV were proposed.

LEARNING LESSONS FOR SECOND SCREEN FROM BOARD GAMES

Rinze Leenheer, David Geerts, Jeroen Vanattenhoven

iMinds, KU Leuven

Abstract: This paper identifies important requirements for second screen (game) companion apps. Participants were invited to create their own (board) game to play alongside a TV show. Afterwards they were interviewed about their experience. Analyses of the games and interviews lead to some valuable insights in what contributes to an engaging 'TV game'. Lessons learned include: using events on the TV show to influence the game, and striking the right balance between luck and skill elements.

SMALL-SCALE CROSS MEDIA PRODUCTIONS. A CASE STUDY OF A DOCUMENTARY GAME

Oliver Korn, Adrian Rees, Uwe Schulz

University of Stuttgart, KORION GmbH

Abstract: With major intellectual properties there is a long tradition of cross-media value chains – usually starting with books and comics, then transgressing to film and TV and finally reaching interactive media like video games. In recent years the situation has changed: (1) smaller productions start to establish cross media value chains; (2) there is a trend from sequential towards parallel content production. In this work we describe how the production of a historic documentary takes a cross media approach right from the start. We analyze how this impacts the content creation pipelines with respect to story, audience and realization. The focus of the case study is the impact on the production of a documentary game. In a second step we reflect on the experiences gained so far and derive recommendations for future small-scale cross media productions.

MAKING SECOND SCREEN SUSTAINABLE IN MEDIA PRODUCTION: THE BRIDGET APPROACH

Alberto Messina, Francisco Morán Burgos, Marius Preda, Skjalg Lepsoy, Miroslaw Bober, Davide Bertola Dora, Stavros Paschalakis

RAI, Universidad Politécnica de Madrid, Institut Mines Telecom, Telecom Italia, University of Surrey, Cedeo.net, Visual Atoms

Abstract: This paper presents work in progress taking place in the context of the European Commission FP7 project BRIDGET "BRIDging the Gap for Enhanced broadcasT" in the domain of second screen applications for broadcasters and media companies.

INTERACTIVE DESIGN DOCUMENTARY AS A METHOD FOR CIVIC ENGAGEMENT

David Green, Clara Crivellaro, Jimmy Tidey

Newcastle University, Royal College of Art

Abstract: We present a method for civic engagement that uses interactive video documentary to capture discourses within focused settings (eg workshops or focus groups) and translocate them to public spaces (via interactive vox-pops) and online spaces (via an interactive web- based tool). Our method aims to facilitate encounters and the exchange of perspectives between communities across these spaces. We describe how the method was developed through five stages, beginning with a workshop and culminating in a prototype design tool and offer preliminary insights into its potential benefits. We argue that a key strength of this method lies in its potential to support situated encounters and build connections between researchers, designers, institutions and members of the public, with potential benefits in the areas of user-centered research and design. Finally, we outline directions for future development, including a model for lightweight civic engagement that uses an "interactive design documentary" as a central component.

A GAME OF THRONES COMPANION: ORIENTING VIEWERS TO COMPLEX STORYWORLDS VIA SYNCHRONIZED VISUALIZATIONS

Pedro Silva, Yasmin Amer, William Tsikerdanos, Jesse Shedd, Isabel Restrepo, Janet Murray

Georgia Tech, Universidad de Antioquia

Abstract: It is not yet clear how to use second screen devices to help viewers understand and enjoy increasingly complex television series. The prototype presented here is targeted at viewers of HBO's Game of Thrones, a particularly complex storyworld; its design uses manipulable, tightly synchronized spatial visualizations to concretize complex character relationships. A preliminary user study was conducted, and results show that users were able to more accurately identify character relationships after watching segments of the TV drama with the companion app prototype.

UNITED UNIVERSE: A SECOND SCREEN TRANSMEDIA EXPERIENCE

Dillon Eversman, Timothy Major, Mithila Tople, La Schaffer, Janet Murray

Georgia Institute of Technology

Abstract: United Universe is a work-in-progress second screen transmedia experience. It is being developed using the Marvel Cinematic Universe as sample data. United Universe meets the need for a comprehensive, interactive resource to assist in understanding a complex fictional universe in an unobtrusive manner.

ENGAGING CITIZENS WITH TELEVISED ELECTION DEBATES THROUGH ONLINE INTERACTIVE REPLAYS

Brian Plüss, Anna De Liddo

The Open University

Abstract: In this paper we tackle the crisis of political trust and public engagement with politics by investigating new methods and tools to watch and take part in televised political debates. The paper presents relevant research at the intersection of citizenship, technologies and government / democracy, and describes the motivation, requirements and design of Democratic Replay: an online interactive video replay platform that offers a persistent, customisable digital space for: (a) members of the public to express their views as they watch online videos of political events; and (b) enabling for a richer collective understanding of what goes on in these complex media events.

DESIGNING TV RECOMMENDER INTERFACES FOR SPECIFIC VIEWING EXPERIENCES

Jeroen Vanattenhoven, David Geerts

iMinds, KU Leuven

Abstract: In this paper we report upon our prototyping and design efforts aimed at specific viewing experiences. In a set of different studies we gathered insights into how all TV activities can be divided into specific experiences based on the group of viewers, the mood, the type of content, and time-related factors. Based on these situated experiences we now aim to support these experiences via specific user interface designs. The focus is mainly on presenting the right content in the right way in each situation for the specific viewers in each situation. By going through different prototyping sessions we aim to increase our understanding of each situation's user requirements and to better support the user in how to make a choice what to watch on TV.

HBBTV GOES CLOUD: DECOUPLING APPLICATION SIGNALING AND APPLICATION EXECUTION IN HYBRID TV

Alexandra Mikityuk, Oliver Friedrich, Randolph Nikutta

Technical University Berlin, Telekom Innovation Laboratories

Abstract: The Browser has become the runtime environment for the execution of User Interface (UI) in TV domain. In European Hybrid TV Standard – Hybrid Broadcast Broadband (HbbTV) – the signaling of applications is terminated by special libraries and HbbTV-enabled Browser on the client. This HbbTV-enabled browser is also responsible for the execution of HbbTV applications. Therefore, the browser runtime environment for UI does directly affect HbbTV. This work presents architecture that enables the shift of HbbTV functionality into the Cloud. This is based on the decoupling of HbbTV application signaling and application execution on the client side. The shift is executed by definition of new interfaces HbbTV-to-cloud and cloud-to-device. This work describes possible approaches for such architectures, the open issues and corresponding challenges.

PROGRAM

	WEDNESDAY	THURSDAY	FRIDAY
8:00	Registration	Registration	
9:00	Courses, Workshops	Opening	Registration
10:00		Keynote	Session 3
11:00		Session 1	Session 4
12:00			
13:00	Lunch	Lunch	Lunch
14:00	Courses, Workshops, DC	Session 2	Session 5
15:00			Keynote
16:00		Demos and Wip	Closing
17:00			Reception
20:00		Conference dinner	

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