



Creating the Difference

Proceedings of the Chi Sparks 2014 Conference

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Creating the Difference

Editorial

'Creating the Difference' is the theme of the 2014 edition of the Chi Sparks conference. It is also the challenge that the Human-Computer Interaction (HCI) community is facing today. HCI is a creative field where practitioners engage in design, production, and evaluation of interactions between people and digital technology. Creating excellent interfaces for people, they make a difference in media and systems that people are eager to use. Usability and user experience are fundamental for achieving this, as are abilities at the forefront of technology, but key to a successful difference is getting the right concepts, addressing genuine, intrinsic, human needs. Researchers and practitioners contribute to this area from theory as well as practice by sharing, discussing, and demonstrating new ideas and developments. This is how HCI creates a difference for society, for individuals, businesses, education, and organizations.

The difference that an interactive product or service makes might lie in the concept of it but also in the making, the creation of details and the realisation. It is through powerful concepts and exceptional quality of realisation that innovation is truly achieved.

At the Chi Sparks 2014 conference, researchers and practitioners in the HCI community convene to share and discuss their efforts on researching and developing methods, techniques, products, and services that enable people to have better interactions with systems and other people. The conference is hosted at The Hague University of Applied Sciences, and proudly built upon the previous conferences in Arnhem (2011) and Leiden (2009).

KEYNOTE LECTURES

The conference enjoys the presence and performance of five keynote lecturers. Thomas Marzano, Global Head of Brand Communication Design at Philips Design, challenges the HCI community to think about Brand Experience instead of User Experience. "Brand Experience, there's no app for that..." Tapping from his experience with the new Philips Brand he shows us how a company should approach its brand in a holistic way and thus creating a better and deeper felt brand differentiation.

Ohyoon Kwon and Albert Kivits give us "The making of HomelessSMS," a story of how designers, technologists and entrepreneurs work with homeless people, service professionals and directors of organisations. They collaborated to provide social and economic added value enabled by everyday mobile technology in a complex social problem - homelessness. This talk also reflects how this social innovation project has been evolved ever since 2010 in East London initiated by Will Brayne and has gone through several iterations across South Korea and The Netherlands, spinning off a new business activity.

STEIM has been at the forefront of new interfaces for musical expression since 1969, and the presentation will

feature some of the work that has been done in the past. Dick Rijken and Frank Baldé demonstrate how they have come a long way since then, with "Music, Intuition, and Interfaces." New technologies have not only changed the things we can make, but also how we make them, and, increasingly: why we make them. Today's complex problems are forcing us to rethink the relation between thinking and intuition, between the mind and the body, and between control and surprise. Musical instruments are a good context for experimenting with these issues. Dick and Frank outline current developments in the world of music and musical instruments and interfaces, and also offer a live performance using new technology from STEIM that is available also to designers of interactive instruments and installations.

CONTRIBUTIONS FROM THE HCI COMMUNITY

In addition to the three excellent keynote addresses at the conference, these proceedings offer 21 contributions, from academia as well as industry, which we have organised in five sections.

TECHNOLOGY PUSH

While new technologies for interaction emerge from the drawing boards and laboratories of engineers, it is the joyful task of interaction designers to create useful applications of new technology that have meaning and relevance to people. It is by forging technical capabilities into useful and usable products and services that innovation offers its true value for society.

Gómez-Maureira, Teunisse, Schraffenberger, & Verbeek use shadows both as an interaction input and as an area for display in spatial augmented reality. This allows them to create an environment for physical interaction with information, useful for, e.g., augmenting museum exhibits with information. (p.11)

Heydra, Jansen, & van Egmond designed an auditory signal for a system used in police cars to automatically recognise suspicious number plates. The signal design takes the environment in the police car into account and helps identify and locate the suspicious car in the vicinity of the police car. (p.19)

Social interactions between people living together are reflected in the rearrangement of objects they use together. **Egerer & van Dijk** experimented with simulating this phenomenon in long-distance relationships. They discuss the possibilities and effects of synchronizing the position of domestic objects in remote places in order to mediate social presence. (p.24)

Measuring the interaction between user and system is an essential part of good interaction design. **Noldus, Loke, Kelia, & Spink** present a set of tools for user experience studies that automates this on mobile devices, visualising the user's activities on the device as well as their location and spatial behaviour, over extended periods of time. (p.31)

WHERE WE LIVE

Innovation has the strongest impact when it takes place closest to us, at our homes and in our daily lives. In this section we collected four papers that offer experiences and insights from projects that innovate the places we live and the ways we live together with others.

Informal care of elderly people, by their relatives, is increasingly important in our ageing population. **Jeurens, van Turnhout, & Bakker** describe their design process of a system that encourages and facilitates social involvement of family members in the care of elderly people. It motivates social awareness by connecting physical presence of one relative with attention and involvement on a distance of others. (p.36)

Acceptance is one of the key aspects of user experience. **Bennis & Lenior** discuss three case studies of so-called telecare applications, in order to investigate what user-centred design approaches may lead to better acceptance of such tools for varying tasks and circumstances. (p.45)

Linehan, Foster, Lawson, Schoonheydt, & Heintze present an experience-centred design of interventions to motivate reduced energy consumption in pre-paid rented accommodations. The paper describes their research and design method, based on large-scale participatory design, that aimed to elicit experiential and reflective data in order to inform the design process by identifying experiences, perceptions, attitudes, behaviours, challenges, and opportunities. (p.50)

Social media play an increasingly important role in the online strategy of organisation. In order to assess the communication through social media of such organisations as museums, **Waardenburg, Brussee, & Hekman** have developed a monitoring system that is meant to continually track social media activities of the heritage sector and mine its history as well. (p.60)

USER PERSPECTIVES

User-centred design is an old adage in the HCI field that places the user's needs, abilities, and objectives at the centre of the design process. From a user's perspective, technology will work only when it contributes to the needs and objectives, and leverages the abilities. This section introduces four projects where the focus on user perspectives drives the design of new tools.

Van Eekelen, van den Elst, & Khan propose a framework for classification of graphical password schemes. In doing so, they also discover that a combination of graphical elements, e.g., shape and colour, can be used to devise password schemes that are both easier to memorise and less prone to shoulder attacks. (p.65)

More and more, the objective of a designed interaction is to change the behaviour of its users. Knowledge of psychological theory is essential in achieving desired results, but often not sufficiently available to designers. **Hermesen, Renes, & Frost** present a tool that help designers in

creating evidence-based interventions for behavioural change. (p.74)

Navigating, pointing, and manipulating objects in a virtual environment has been subject of research for many years now. With new interaction devices coming to the market, optimal ways of interacting in virtual environments are still to be determined. **Coelho & Verbeek** experimented with the Leap Motion sensor that is capable of sensing hand gestures and compare its performance to that of other 3D input devices. (p.78)

Serious games are an effective tool in training skills and behaviour. **Peters, Bruijnes, & Op Den Akker** contribute to this area, focusing on social skill training and argue that the credibility of virtual agents in serious games is crucial for this purpose. Their paper reports on how appropriate turn-taking in conversations by such agents influences their credibility in the game. (p.86)

KIDS @ PLAY

Games are important to kids, not just for the fun of it, but also because they learn from them. They acquire mental and motor skills as well as social skills by playing games, learn solitary or in groups, whether collocated or at a distance.

Social play is essential for the development of children and the design of a play environment that encourages social behaviour is important. **Van Beukering, de Valk, & Bekker** developed an open-ended play environment that allows children to engage in various levels of social activity and that supports the three stages of social play: invitation, exploration, and immersion. They discuss how various elements of interaction design have helped develop this play environment. (p.91)

With the abundant availability of sensors in our lives, including those on our bodies, gameplay is being taken to the next level. **Emmen & Lampropoulos** study the possibilities to use physiological data, such as heartbeat and galvanic skin response, to adapt game attributes for the individual user's present state. They argue that this kind of data can be used to assist gamers during gameplay. (p.100)

Thayne & Cooper present a set of digital tools that were developed for collaborative teaching in the Media Culture 2020 programme. This involves a range of social media platforms and open, virtual environments for collaborative learning. When properly and effectively utilised, these tools are not merely a vehicle for distant collaboration in learning, they also help establish trust and bonds between students and teaching staff. (p.104)

De Moor presents an instrument that helps rouse the interest of young children in science and technology. The Kid's Knowledge Base forms the basis for collaborative activities in a network of educational stakeholders, from primary schools to universities, utilising a combination of online and physical tools. Although the tools are important, de Moor concludes that it is essential in each context to find the right connections between content, tools, activities, and stakeholders. (p.108)

GETTING IT DONE

HCI is an intriguing domain with unique challenges, because of the complexity of the technology, the variety of the application domains, the wide and often conflicting interests of the stakeholders involved, the incredible speed of development, and not in the least because of the human impact. This forces us to reflect and critique our methods and to incessantly search for better tools, techniques, approaches, guides, principles, and criteria for designing, producing, and evaluating our designs.

Inclusive design is the area of HCI where we aim to empower users through products and services that match their capabilities. **Zoon, Cremers, & Eggen** offer a toolbox, consisting of an app and a book, that helps designers in practice to find suitable research methods for a range of specific groups of users, such as elderly people, or people with low literacy. (p.113)

Human-computer interactions are often optimised towards effectiveness and usability. There are situations, however, when an interface should encourage reflection before interaction occurs. **Quanjer & Lamers** argue that the rules of usability may need to be broken to instil reflection in users, for example by enforcing a delay in the interaction to make sure that actions are purposeful. (p.122)

De Haan discusses the design of a course on ambient and pervasive design, in a curriculum on human-centred creative technology. Topics such as the Internet of Things and Ubicomp form parts of this course. The challenge for educators is to embed these topics and research skills in these areas without becoming too academic. (p.126)

Grimes & van de Langkruis report on a successful effort to establish the discipline of user experience in a company that was traditionally technology-focused. Their approach was to introduce the UX awareness from strategy down to operations, gradually building the capabilities in the company that were previously fully outsourced. (p.130)

Scrum brings an interdisciplinary team of designers and developers together with the product owner and project manager, in an agile process of designing and developing a new product. Testing with users is a particular challenge in this rapidly moving context. **Ugur, Oei, & de Bruijn** propose a set of guidelines to integrate user testing in scrum projects. This approach will help address usability issues during every sprint in the project, allowing for improvements in the next sprint based on test results. (p.133)

IN CONCLUSION

The 2014 edition of the Chi Sparks conference has brought together a fascinating blend of research output and practical case studies from both industry and education. It proves once again how wonderfully broad the HCI domain is, with many areas of application, and in strong relation with life itself.

The contributions to the conference, gathered in these proceedings, inspire and motivate researchers and practitioners alike to continue the quest for improving our methods, our results, and indeed our goals.

As programme chairs of the conference, we were pleased to notice an increase in the participation of students as authors in the conference. This tells us that educators actively stimulate students to participate in research activities and to publish on their results. We regard this as an essential development for expanding the domain's power to innovate, both in research and practice.

The contributors and audience of the conference have beautifully adopted the conference theme, 'creating the difference,' by showing us their efforts to find and develop methods and means to create the right concepts, and to apply innovative technologies in a sensible and sensitive way.

The conference offered a stage not only to the 21 papers presented in these proceedings, but also to demos and posters displayed at the conference. The short papers accompanying the demos and posters are included at the end of these proceedings.

Finally, we would like to express our gratitude to all the volunteers who made this conference possible, including the many reviewers that participated in selecting and improving the contributions.

The Hague, April 3, 2014

Jos van Leeuwen, Pieter Jan Stappers,
Maarten Lamers, Maarten Thissen
Conference Chairs