

Engaging with stakeholders: Mobile Diaries for social design

Title of submission: Engaging with Stakeholders: Mobile Diaries for Social Design

Category of submission: Design Research Study

Name and full contact address (surface, fax, email) of the individual responsible for submitting and receiving inquiries about the submission: Contact First Author, Penny Hagen, Digital Eskimo, 16 Foster Street, Surry Hills, Sydney, 2010, Australia, +61 2 9212 3399, ph@digitaleskimo.net

Engaging stakeholders: Mobile Diaries for social design

Penny Hagen

Digital Eskimo
16 Foster Street.
Surry Hills, NSW 2010
Australia
ph@digitaleskimo.net

Toni Robertson

Interaction Design and Work
Practice Lab, UTS,
Broadway, NSW 2000
Australia
toni@it.uts.edu.au

David Gravina

Digital Eskimo
16 Foster Street.
Surry Hills, NSW 2010
Australia
dg@digitaleskimo.net

Abstract

Interactive systems such as community blogs and online campaign sites that require, expect or anticipate user contributions, can be conceptualised as containers, or spaces for interaction. Digital Eskimo is a design agency responsible for creating such online social spaces. In this case study we outline how we have adapted the design research method we call Mobile Diaries into Digital Eskimo's process for the design of community, campaigning and content-sharing based sites.

We describe the development of the method, and evaluate its contribution to our design process and suitability for use in the design of social systems in particular. As such the solution that we have developed and documented in this case study is a methodological one.

Keywords

Handheld Devices and Mobile Computing, Interaction Design, Marketing / Market Research, Participatory Design, Social Media, User-Centered Design / Human-Centered Design, User Experience, User Interface Design, User Generated Content, User Research, User Studies, Design Research

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Copyright © 2007 AIGA | The professional association for design.

Project/problem statement

Digital Eskimo is a design agency with a commitment to working on projects we consider to be progressing humanity towards a nurturing (and more sustainable) way of being. The interactive technologies we design have an arts, educational or socio-political purpose to them, e.g music sites for young composers, online campaigns for refugee rights, community building websites on sustainability and so on. Many of our projects not only invite an 'engagement' with an audience, but depend on a contribution by them.

Websites such as Future Makers (www.futuremakers.com.au), Amnesty Message in a Bottle Refugee Rights campaign (<http://message.amnesty.org.au>) and the ACTU's Your Rights at Work campaign site (www.yourrightsatwork.com.au), are structures, containers or platforms for interaction, spaces for sharing and social change. The relationship between the designers and the users/stakeholders is one of collaboration and these sites take their final form through use, over time.

From our perspective, the landscape of interactive technology design *is* changing, and this affects the way in which we conceptualise the design process, our roles within it and the tools we use to support that process. As designers we facilitate the formation of systems in the hope that they will be used, adapted, appropriated and shared by our clients and their stakeholders. The design process is ongoing, not complete at the point of (system) delivery. This conceptualisation of design has been referred to as co-creation [18] design in use [3],

and design as facilitation [7] and it forms the basis of our approach.

To support this approach we invest time in design research and are committed to working with stakeholders through the design process. It is our belief that an early connection to the system can lead to a strong one in use.

This paper describes the adoption and adaptation of a method we call Mobile Diaries, and forms part of ongoing internal work to identify design research methods that are appropriate for the kind of design we do. We are interested, in particular, in methods that support co-design, co-content development and participation by stakeholders during the design process, and those that are compatible with the development of interactive social systems.

However, in doing this kind of design we cannot necessarily rely on methods that have been developed for traditional workplace based technologies. The combination of online, mobile and ubiquitous computing technologies leads researchers beyond the workplace and beyond traditional work focused methods, into more personal, mobile and private spaces. As a result traditional methods to accessing data about technology use, and users, are being rethought.

In 2004 the first two authors of this paper conducted a review of Mobile Human-Computer Interaction (Mobile HCI) methods and found that there was a move towards using self-reporting techniques to respond to the new, more personal, research domains emerging in technology design [8]. A significant benefit of self-reporting methods is that the data reflects the

perspective of those for whom the technology is intended. Participants have control over data collection and interpretation, and are able to select information that they consider relevant and important. This reinforces their role as a contributor, rather than a research subject.

Additionally, in the review we found that researchers have begun to exploit the potential of new mobile and connected devices to do design research about the role of these same technologies in our lives. Mobile devices have been employed as research tools in design agencies e.g [13] and in the field of Mobile HCI e.g [10, 11, 15, 16] (for a full review see [8]). Using mobile devices for reporting means participants are able to document their experiences remotely, using functions native to mobile devices such as voice, text, image and video recording and upload this information in situ. Participants can be prompted via Short Message Service (SMS) to take a 'snapshot' of their current actions or thoughts [12] or the inbuilt phone diary can be used for setting reminders.

At Digital Eskimo we saw the potential for such techniques to assist us in our design research for social systems. Influenced by other self-reporting methods (such as Cultural Probes [5], diary techniques [2, 6, 14, 19]) and mobile publications tools (such as Aware [1]) we developed Mobile Diaries. They have now been integrated into the Digital Eskimo process for the design of community, campaigning and content sharing based sites. As such the solution that we developed and documented in this case study is a methodological one.

Background

Digital Eskimo has eight fulltime staff and a range of contractors that come together on a project by project basis. Design research is a core part of our process and is either overseen by the Executive Producer and, if the budget and scale allows, a dedicated Research Manager. Results are shared with the Creative Director and Design Team as well as the client team.

Our design research is conducted with clients and/or their stakeholders. Stakeholders are considered to be anyone with a significant stake in the system and can be direct or indirect users of the system front end or admin. Typically they may be members of staff from the client team, core members of the user or client community, or members of the public. We prefer the term stakeholder to user as it encompasses the broad range of people we work with and learn from during a design project.

We have developed and evaluated the Mobile Diary format and supporting mobile blog (mo-blog) platform with clients and their stakeholders in the following three projects across 2006 and 2007:

Study 1. An Internal Pilot at Digital Eskimo.
(Digital Eskimo Team as participants)

The study took place over 3 weeks in September 2006. Four members of the Digital Eskimo design team participated in an internal research project using Mobile Diaries. Each team member used a different mobile recording device (being a digital camera, mobile phone and lo-fi video camera) to record images, audio, video and text exploring their notions of sustainability. The purpose of this study was to sensitize the design team to the potential opportunities and challenges made

available through the use of such tools and techniques in design research with clients. Inspired by a similar reflective study by Chris Heathcote on GPS tracking technologies [9], we felt it was important for us to be familiar with the tools that we were intending to use with clients and we wanted to evaluate the approach ourselves rather than depend simply on the documentation of others. Using these tools ourselves internally and reporting back on what we found helped us to understand the excitement as well as the time burden of self-reporting, and raised pertinent issues about how to collate, display and share the multi-format data.

Study 2. Client Study (Client as participant)

The second study took place over three weeks in November 2006 with one of our clients. The client received a mobile phone and video camera with which to record a day in the life of making her product. The purpose of this study was threefold, to evaluate the appropriateness of the mobile diary method on a small scale (in this case a single client), to understand more about the client's business that would enable us to evolve her online presence appropriately, and to introduce to the client new methods of interaction that could be applied in that evolution (e.g mo-blogging and other forms of content sharing). There was an existing blog site supporting the product and the diary study contributed to the development of an online strategy for future growth.

Study 3. 6 Stakeholder Study for a Client (Volunteer members of public as participants)

This study took place over March and April of 2007. Six participants were recruited to take part in the diary

studies on behalf of one of our clients. The organisation was developing an online community tool and wanted to know more about the worlds and perspectives of their intended target audience and potential contributors. Participants were given reporting tools and asked to document aspects of their daily lives. The intention was to provide a window into the lives of participants, a way for them to share their world with us, and their perspective on it. This research was to inform the design of online tools that enabled and encouraged such sharing between people on an ongoing basis.

Challenge

Historically it has been a challenge to convince clients of the value of research. Digital Eskimo is a small firm and it lacks the internal capacity to support a formal research & development program. As such the type of methods suitable to a small agency such as ours are those that are relatively cheap to deploy, nimble, scalable and participatory in nature.

However, it is one thing to read about new design research methods such as diaries and probes and another to employ them in a commercial environment with clients and stakeholders. While the method itself returned the type of data we expected and enabled us to build a relationship with the participants in the ways that we had hoped, it was the technical components - learning the boundaries and limitations of the technology - that proved the most challenging to translate from theory to practice. It is for this reason that we privilege these aspects in the next section.

Process

In this section we describe the development of the Digital Eskimo Mobile Diary method and supporting mobile platform over three studies. Common to all three was the use of a diary pack with prompts, instructions and digital tools for recording reports e.g a lo-fi video camera, mobile phone and exit interview.

Some of the packs also included (non-digital) storytelling tools such as paper notebooks and maps. The content of the packs depended on the project and the research questions being asked. As mentioned, we were able to draw on our existing design and research skills as well as ample documentation on probes and other similar self-reporting studies in successfully developing this part of the Mobile Diary pack. It was the use of digital devices and their role as mobile reporting tools that required the most refinement.

Study 1 helped us to become sensitive to issues involved in using the method, including the strengths and weaknesses of potential mobile recording devices. Based on our internal evaluation we found the best and most rewarding results to be from the mobile phone and the video camera. This is because mobile phones produced quick snapshots that could be sent through in situ (refer Figure 1), while the video cameras enabled longer, richer reports and descriptions (refer Figure 2).

Based on their complementary nature we included both these devices as base tools in the Mobile Diary kit for Studies 2 and 3. We excluded digital cameras as we found their lack of connectedness and expense outweighed the advantage of the high-resolution images they could provide.



Figure 1 Image from a mobile phone with accompanying text message , "Here's that wicker lamp I mentioned"

While it was relatively straightforward to determine the recording components of the mobile diary pack, the tools we used to collate, display and share the data collected evolved significantly over the first and second studies.

During Study 1 and 2, participants sent the mobile diary phone data via Multimedia Message Service (MMS) to an email address. While this enabled a single person to monitor incoming reports via a mail client, it was hard to share this information with others, and it gave the participants no visibility of the messages that they had sent.

Feedback from participants of Studies 1 and 2 indicated they would have liked to be able to see the material they were sending. This was consistent with the premise of the Aware mobile publication system [1]

which allows users to monitor their messages online and it reinforced the need for us to also develop a platform that enabled automated uploading, collating and sharing of the incoming data.

We experimented with a few different approaches. Part way through Study 2 a web gallery (a series of web pages with thumbnails auto generated through Photoshop) of all the mobile diary data to date was created and made available to the participant online. The participant indicated that this had helped in reassuring them that the messages were being received, and that they were being 'used'. However this way of collating and displaying data was neither automated, nor did it easily support audio or video media without a manual hack.

Finding something that could handle all the formats and amalgamate these posts into one place proved problematic, even with the current plethora of easy to use and often free media sharing tools. We reviewed tools such as iPhoto, iMovie, Keynote, YouTube, Flickr, Photobucket and mo-blog software as potential tools to automate the secure display of data as it was sent in.

The two main challenges we faced were the lack of tools that could handle all the media types gracefully and the requirement to protect the privacy and copyright of data. For example Vox, a free blogging service was identified as able to handle all the required formats and was easy to use, however like other free service providers they retained content rights. Based on these considerations we decided to build our own system based on Wordpress, an open source blogging tool that supported audio, video, image and text data.



Figure 2 A still from a five minute video by participant clip describing roof and laundry facilities.

Solution

Having decided to build our own system, we were then exposed to a range of other issues related to working with mobile technology including: different types of media codecs, embedded network metadata; and MMS size limits. MMS formats can differ even from the same network at different times of the day depending on how each message is sent. Because phone networks are closed working out their behaviour is pure guesswork. In terms of sending formats both email and MMS are an option for sending data over the mobile networks. We

chose to go with MMS despite its format limitations because it was easier to set up and much cheaper than email on current Australian data plans.

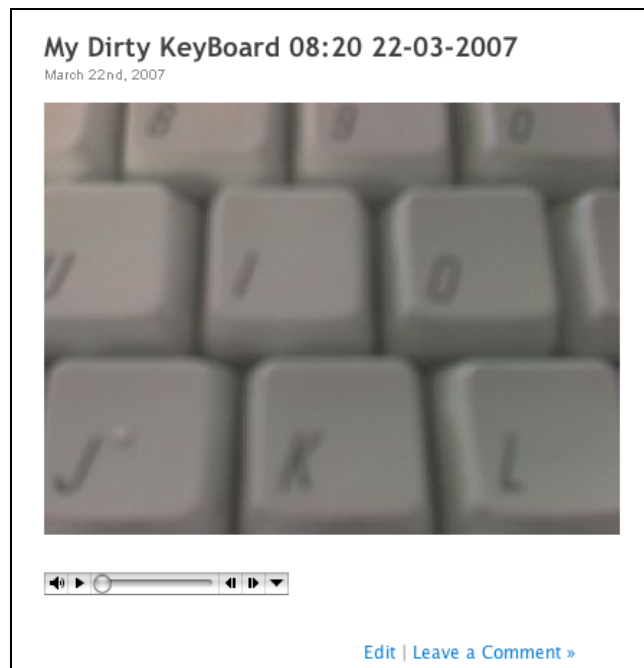


Figure 3 Example of mobile phone image with audio attachment posted to our system.

To reduce the variables with which we had to work we decided to provide all participants with a specific phone as part of the diary pack, rather than relying on their own phone. This resolved a number of issues as we knew the formats we were developing for and we could put credit on the phones which removed the need to reimburse participants for the cost of sending the

MMS's. In addition, the participants now had a dedicated reporting tool and we were able to provide consistent instructions on how to operate it.

By the time we deployed Study 3, each Mobile Diary participant was given a password protected blog, customised to handle MMS data from a particular phone. Participants sent a message image, audio or text data to an address pre-programmed into the phone and the entry was posted automatically. The upload was near instantaneous (depending on the network) and participants and members of the research team could log in, view, read and listen to posts, as well as comment on specific posts.

The combination of video, camera, text and audio enabled the collection of rich data and meant that people were able to adapt the reporting method to modes that most suited their personal expression and technology preferences. This diversity of modes enabled *in situ* reporting and annotation, as well as what Cater and Mankoff refer to as "*ex situ* annotation and review" .[4].

Although developed quite separately our Mobile Diary structure has a number of similarities to the Reporter Tool developed by Carter and Mankoff and our findings about best practice supporting a range of media modes are consistent with theirs. We depart however in our use of the mobile phone as the reporting tool which enables participant to report in real-time, rather than relying on uploading the images after returning to their desktop computer.

Results

The evaluation of the Digital Eskimo Mobile Diary is based on the empirical experience of being on the design team, as well as feedback from users, clients and other team members gained through interviews and debriefs.



Figure 4 Example of a mobile phone image with SMS text comment posted to our system.

We frame the following discussion of our results around the type of data that Mobile Diaries made available, and the experience of the participants (users). We then draw attention to how we believe Mobile Diaries can support co-design, co-content development and participation by stakeholders during the design process,

and how, as a design method, they are compatible with the development of interactive social systems. We also highlight design considerations, and how we have found this method in particular to be compatible with the Digital Eskimo design sensibility.

The Data: Inspirational and Informational

In terms of our expectations of the data and how we intended to analyse it, the data was treated as "probe" data with the intention that it would be inspirational [5]. Such data is a resource, a window to the world of the participant for the designer to draw upon in a creative sense. It was to be interpreted and used by the design team as a form of "ambient" stimulus or inspiration. We found it to be completely successful in this regard delivering very rich and deep insights into people's daily rhythms, thoughts and experiences. Because it occurs over time and in situ we were privileged with examples, information and experiences that would not normally be drawn out in an interview.



Figure 5 "me as a bottle Neck"

For example, participants sent images and audio that described aspects of their day or their current feelings. In Figure 5 an image of a bottle neck is used as a metaphorical representation of how one of the participants felt during a stressful time at work.

The lead researcher on Study 3 made the following comment in reflecting on the data *"So much of life and living is routinised so being able to intervene and capture some of these patterns using photos as well as activities in the booklets meant participants could be more reflective and atuned [sic] to things they would otherwise be unable to comment upon...We were able to obtain real life experiences and examples rather than simply attitudes towards..." [Rowland, personal communication, 2007]*

Like probe data Mobile Diary data enabled us to build an empathetic relationship with the participant, seeing their world through their eyes.

Co-creation

An important aspect that emerged during the studies was that the objects and images that are collected as data also became potential design material or content in their own right. Images about sustainability became potential content for posts about sustainability on a public blog for example (refer Figure 6). This rather obvious but delightful discovery represents a blurring of the design research process and the generative process, into one of true co-design or co-authoring that gives stakeholders a role in the design process. This is a very appropriate role for the design of interactive systems that rely on participation and contribution.

This co-content generation occurred in a slightly different way in Study 2, when it was the client doing the mobile diary. The data immersed us in her business, telling a "behind the scenes" type story. The client wanted to reveal some of this kind of material to her audience but was not sure how much. We looked at the material together at the completion of the project. While the client 'talked to the data' we responded with emotional and design-orientated responses to what we saw and heard, for example, this type of image would be great for showing x, that really reminds me of y, or you could turn this into section on the website etc.

In effect she was able to use the Digital Eskimo design team as a pseudo audience, a sounding board for the types of content and ideas she might share with her audience on the website. At the same time this became a reciprocal exchange, enabling the client to gain an insight into our design process; that is, into how we would turn her everyday thoughts (documented through Mobile Diary data) into design material or identify potential for sharing and interaction. Furthermore, by doing the Mobile Diary herself, she had been introduced to new interaction modes and technologies for interacting with and building her online community.

Participate: collaborate, reflect, change

Part of the appeal of Mobile Diaries is that they are engaging and rewarding for both participants and the design team. We had been concerned about the time self-reporting requires but the frequent postings of the majority of participants suggested this was not an issue. At times we received more than eight posts a day from an individual participant, creating a very rich pool of data for us to draw upon.

Participants highlighted being able to include other members of their family, friends and colleagues in the process as a positive aspect, and this also deepened our exposure to their world view. Feedback from one participant included how much the kids enjoyed seeing the images they had taken on the phone on the blog site.



Figure 6 Images from posts on recycling and ways to re-use cigarette butts from one participant.

As would be expected of reflective self-reporting methods participants found the method triggered thoughts about their lives in the “third person”, and generated dialogue amongst family and peers. This observation of their own habits and attitudes in some cases, led to a change in practice. For one participant questions about sustainability in their daily lives led to the instigation of a composting and recycling system in her share house. In this way we found the method to be interventionist. This is

particularly significant to Digital Eskimo because of the kind of work we do with our clients, and our vision as an agency to be change agents through design.

We found that doing the diaries had the potential to effect change in peoples lives in two ways: firstly through this type of self-reflection inspiring action and change; and secondly through the introduction of new technologies for interaction.

While mobile devices in themselves are ubiquitous and participants to date have been happy to carry them around as mobile reporting tools, in Australia MMS and mobile email use is still not that common. We found that for the most part people did not yet use these features on their own phones. Instead they learnt through the Mobile Diary project how to add audio annotations, send images, and delete them when the relatively small memory of the phone becomes full. This is significant because participants are learning new technical interaction skills that they might later apply when using the site we design.

Considerations

There is a certain amount of bravery required in this kind of research as the results are so wildly unquantifiable. Like all qualitative research such methods are harder to sell to the client team than perhaps a statistical analysis.

Anyone considering employing this type of method would need to take into account both the audience and the research questions being asked. As articulated by our Research Manager, we believe the method works best for designers and clients *“when seeking: real life examples of activities, when wanting to understand or*

see the lives of a range of people and the richness of their lives in context. It is particularly effective when trying to understand and create something for people with lives quite different to your own ... it builds greater empathy due to proximity to their lives, values and priorities.” [personal communication, Rowland].

Other considerations include the privacy and security of the data which must be taken into account as part of the process. This is particularly important because the data is not anonymous, it includes videos and photos of faces and families. Also participants are being asked to take portable recording devices with them into private, commercial and public settings, and guidance on appropriate places for data collection may be required. For example see [10].

Furthermore, in planning the studies the workload of the researcher needs to be acknowledged. The downside to constantly flowing information via the mobile tools is the need to continually check in with participants and in some cases keep them motivated. We will consider Electronic Sampling Methods or similar in the future to automate some of those trigger actions.

Despite the need for good planning, in terms of its applicability to commercial design (time, cost, uptake, complexity etc) we found it be a relatively cheap and easy to deploy method. In situations where access to traditional users cannot be obtained for whatever reasons, this is a method that can be successfully used with clients too.

Ethics in Praxis

In our introduction we stated that from our perspective the landscape of interactive technology design *is*

changing, and methodologies for their design are changing with it. We are seeking flexible and innovative methods for working with clients and their stakeholders that support a ‘participatory practice’, a practice where stakeholders are recognised as contributors if not co-authors, co-designers.

Yet such a practice raises its own ethical issues. As Robertson points out “it matters how human activities are represented in technology design practices because some representations can encourage and support human capabilities, such as flexibility, creativity, sociability and learning, while others can discourage or preclude them” [17] .

We have a responsibility for the messages we put out into the world, and the types of behaviours and actions we invite and make possible. We may intend to build a system in response to stakeholders needs and inputs, but the methods we use to explore and represent those needs have an effect in themselves. The methods we use need to be sensitive to this and appropriate to the context. And we need to work hard with our stakeholders to enable them to develop their own representations to embed in the design process.

Conclusion

We were aware, at the outset of our research, that mobile devices presented opportunities to us as cheap, remote data collection devices. However over the three studies, other exciting and rewarding aspects emerged that indicated these methods were suitable, in particular, for the design of interactive social systems, and for the kind of work we do at Digital Eskimo.

We found that data generated by participants was not only information and inspiration for the designers, but could also be used as content or design material. This provides potential for participants to contribute early to design.

Furthermore, when designing specifically for online systems where people participate, share and contribute, there is a symbiotic relationship between the nature of the interaction with Mobile Diaries in the design research phase and interaction with the final system. That is, we are using design research methods that require participation and contribution by participants, to design tools that encourage participation and interaction.

We suggest that this relationship between method and the system being designed is particularly useful in the design of interactive social software, as differentiated from perhaps, more traditional workplace applications. For example, at Digital Eskimo when we are building work applications we continue to use more conventional research methods such as contextual interviews. Traditional methods can still give us adequate access to evaluate existing work practices. However for research that spreads beyond a focused action, into interaction that intertwines with peoples values, attitudes and lifestyles more flexible modes of data access are beneficial.

Mobile Diaries are also a vehicle for social change in themselves. Like other self-reporting methods, participants are given an opportunity for self-reflection, and to observe their own habits. This can translate into a change in practice, even prior to the system we are designing being released.

This investigation into methods is part of ongoing work to develop methods compatible to our design sensibility. It was such a significant relationship building exercise with such rich results we continue to draw upon them (between ourselves, with clients and with participants) as shared experiences in some cases a year later. For these reasons the contribution of Mobile Diaries to future design is multilayered, and continues to emerge over time.

References

- [1] Aware 2005. <http://aware.uiah.fi/>. Accessed 2005
- [2] Barkhuus, L. and Dey, A., Is Context-Aware Computing Taking Control away from the User? Three Levels of Interactivity Examined. Proceedings of Ubicomp 2003, (Seattle, WA, USA, 2003), Springer-Verlag, 149-156.
- [3] Carroll, J., Completing design in use: closing the appropriation cycle. . Proceedings of European Conference on Information Systems, (Finland , 2004).
- [4] Carter, S. and Mankoff, J., When participants do the capturing: the role of media in diary studies. Proceedings of CHI 2005, (Portland, Oregon, USA, 2005), ACM Press, 899 - 908.
- [5] Gaver, B., Dunne, T. and Pacenti, E. Design: Cultural Probes. Interactions (1999), 21-29.
- [6] Grinter, R. and Eldridge, M., y do tngrs luv 2 txt msg. Proceedings of ECSCW, (Amsterdam, 2001).
- [7] Hagen, P., Notions Of Practice; Design As Facilitation For Interactive Social Systems. Proceedings of FutureGround, (Melbourne, 2004).
- [8] Hagen, P., Robertson, T., Kan, M. and Sadler, K., Emerging Research Methods for Understanding

- Mobile Technology Use. Proceedings of OZCHI2005, (Canberra, 2005), ACM.
- [9] Heathcote, C. can we get excited yet? 2004. <http://antimega.textdriven.com/antimega/2004/10/04/can-we-get-excited-yet>. Accessed 3 Sept 2004
- [10] Hulkko., S., Mattelmäki, T., Virtanen, K. and Keinonen, T., Mobile Probes. Proceedings of NORDICHI 04, (Tampere, Finland, 2004).
- [11] Isomursu, M., Kuutti, K. and Väinämö, S., Experience Clip: Method for User Participation and Evaluation of Mobile Concepts. Proceedings of Participatory Design Conference, (Toronto, Canada, 2004), 83-92.
- [12] Jönsson, B., Svensk, A., Cuartielles, D., Malmborg, L. and Schlaucher, P. Mobility and learning environments - engaging people in design of their everyday environments, CERTEC, 2002.
- [13] Masten, D. and Plowman, T. Digital Ethnography: The next wave in understanding the consumer experience. Design Management Journal, 14 2 (2003), 75-81.
- [14] O'Hara, K., Black, A. and Lipson, M., Everyday practices with mobile video telephony. Proceedings of CHI'06, (Montréal, Québec, Canada, 2006), ACM.
- [15] O'Hara, K. and Perry, M., Shopping Anytime Anywhere Proceedings of CHI '01, (Seattle, WA, 2001), 345-346.
- [16] Palen, L. and Salzman, M., Voice-mail diary studies for naturalistic data capture under mobile conditions. Proceedings of ACM conference on CSCW, (2002).
- [17] Robertson, T. Ethical Issues in Interaction Design. Ethics and Technology, 7 (2005)
- [18] Sanders, E., Information, Inspiration and Co-creation. Proceedings of The 6th International Conference of the European Academy of Design, (Bremen, Germany, 2005).
- [19] Taylor, A.S., Berg, S. and Harper, R., Mobile phones for the next generation: device designs for teenagers. Proceedings of CHI 2003, (Ft. Lauderdale, Florida, USA, 2003), ACM Press, 433-440.

Acknowledgements

We would like to give our sincere thanks and respect to our clients and participants for working with us towards a nurturing world. We would also like to thank the rest of the Digital Eskimo team including Research Manager Natalie Rowland, Tom Cameron from Mooball (our tech team), and also our generous research colleagues Dr Tim Mansfield, Astrid T. Larssen and Kirsten Sadler for their input and feedback.