

## Usability Evaluation of Context-Aware Mobile Devices

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It is widely acknowledged that efforts to adapt the desktop PC's usability evaluation methods to the mobile environment are limited [4, 5]. Some researchers have addressed the challenges of interface constraints [2], while others have addressed the dynamic context of use [3, 7].

When attempting to define the attributes of an evaluation method for context-aware mobile devices, the most significant choices are the method's *where*, *who* and *how*. Our research at the University of Bath, supported by Vodafone Group R&D, attempts to address these questions and provide well-founded and empirically tested principles. Our goal is twofold:

- a) to evaluate widely used context-aware mobile services, such as 'Find & Seek'; and
- b) to develop an effective and efficient method for evaluating context-aware mobile devices.

As part of the debate regarding field [1] or lab-based [5,6] evaluation of mobile phone applications, we are investigating a hybrid approach in which our users perform cooperative evaluation sessions [8] in real world contexts (for example a café). Through this approach we anticipate some division of the users' attention (as in every field evaluation) but fewer problems with data collection than many field evaluations suffer. Because our knowledge of users' expectations from context-aware mobile services is still very limited, with few commercial systems available, we have designed a pre-test questionnaire to elicit user requirements and semi-structured post-test interviews to capture users' reflections on the services.

### References:

1. Abowd, G. and Mynatt, E. (2000), Charting past, present and future research in ubiquitous computing. *ACM Transactions on Computer-Human Interaction*, Vol. 7(1), pp. 29-58
2. Brewster, S. 2002, Overcoming the lack of screen space on mobile computers. *Personal and Ubiquitous Computing*, 6, 188-205
3. K. Cheverst, K. Mitchell, and N. Davies. Investigating context-aware information push vs. information pull to tourists. In *Proceedings of Mobile HCI 01*, 2001
4. Kjeldskov J. and Graham C. (2003) A Review of Mobile HCI Research Methods. In *Proceedings of the 5th International Mobile HCI 2003 conference*, Udine, Italy, Springer-Verlag, LNCS
5. Kjeldskov, J., Graham, C., Pedell, S., Vetere, F., Howard, S., Balbo, S., & Davies, J. Evaluating the Usability of a Mobile Guide: a Comparison of Four Different Approaches. *Journal of Behaviour and Information Technology*. Volume 24/1.
6. Kjeldskov, Jesper ; Skov, Mikael B.; Als, Benedkite S.; Høegh, Rune T. Is it Worth the Hassle? Exploring the Added Value of Evaluating the Usability of Context-Aware Mobile Systems in the Field. I: *Proceedings of Mobile HCI 2004*. Springer-Verlag, Berlin, 2004. s. 61-73.
7. Vetere, F., Howard, S., Pedell, S. and Balbo, S., 2003, Walking through mobile use: novel heuristics and their application. *Proceedings of OzCHI 2003*, Brisbane, Australia (Brisbane: CHISIG), pp. 24 – 32.
8. Wright, P.C., & Monk, A. F. (1991), "A cost-effective evaluation method for use by designers", *International Journal of Man-Machine Studies*, 35, 6, 891-912.