
Exploring Collaboration in Challenging Environments: From the Car to the Factory and Beyond

Manfred Tscheligi
University of Salzburg
Sigmund-Haffner Gasse 18
Salzburg, 5020 Austria
manfred.tscheligi@sbg.ac.at

Vanessa Evers
EEMCS, University of Twente
PO Box 217
Enschede, 7500 AE the
Netherlands
v.evers@utwente.nl

Alexander Meschtscherjakov
University of Salzburg
Sigmund-Haffner Gasse 18
Salzburg, 5020 Austria
firstname.lastname@sbg.ac.at

Bilge Mutlu
University of
Wisconsin-Madison
1210 W. Dayton St.
Madison, WI 53706-1685 USA
bilge@cs.wisc.edu

Astrid Weiss
University of Salzburg
Sigmund-Haffner Gasse 18
Salzburg, 5020 Austria
astrid.weiss@sbg.ac.at

Volker Wulf
University of Siegen
Hölderlinstr. 3
Siegen, 57068 Germany
volker-wulf@uni-siegen.de

Abstract

We propose a daylong workshop at CSCW2012 on the topic collaboration in challenging and difficult environments, which are to our understanding all contexts, which go beyond traditional working/office settings topic. Examples for these environments can be the automotive context or the context of a semiconductor factory, which show very specific contextual conditions and therefore offer special research challenges: How to address all passengers in the car, not only the driver? How to explore operator tasks in a cleanroom? How could the long-term (social) collaboration of robots and humans be investigated in privacy critical environments?

Keywords

challenging environments; methods; human factors and ergonomics; novel interaction techniques for collaboration

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

General Terms

Human Factors

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Introduction

At CHI 2010 (28th ACM Conference on Human Factors in Computing Systems) a SIG was held, entitled Contextual User Experience: How to reflect it in Interaction Designs?, which actively discussed how to integrated contextual experiences of difficult environments in the interaction design [1]. The SIG members and the audience participation revealed the relevance of not only considering single user experiences, but collaborative activities in contexts, such as automotive, manufacturing, health care, education etc. Indeed there is a need in the CSCW community for an ongoing discussion about collaboration in very special and difficult environments.

Workshop Themes

To our understanding these challenging environments are contexts in which human-human interaction mediated by computing systems and human-machine collaboration is hard to observe. Challenges, such as sensitive contexts in which researchers can hardly be present (e.g. care settings) or safety-critical contexts in which research interruptions can cause harm (e.g. driving situations in the car or zero-defect production in a semiconductor factory) force us to think about the right approaches towards user-centered design in CSCW settings. For instance driving a car is highly context dependent (e.g. weather, type of street, traffic) and integrating a study setup in the wild could be dangerous, however, lab-based driving simulations can only partly address these issues. More in-situ methods will be required to explore the car context in a holistic way. How could we use in-car GPS data or crowdsourcing to take the advantage of collective intelligence of car drivers (e.g. mobility information on traffic density or accidents)? In the context of the semiconductor factory we have to deal with challenges posed by a cleanroom environment and the 24/7/365

production cycle. Researchers in the cleanroom have to wear cleanroom suits and novel interface prototypes firstly need to fulfill the cleanroom criteria and should not decrease the production rate. However, this context offers a variety of potentials for CSCW research, such as ambient technology or collaborative human-robot interfaces to optimize the workplace for the operators. These two exemplary contextual characterizations should demonstrate the overall topic we want to discuss during this one-day workshop, namely: Contextual influence factors and the methodological challenges they pose in challenging and difficult research environments, such as automotive, factory, hospital, school, etc. Specific topics we want to discuss in detail are:

1. Influencing factors for the different instances of “difficult” environments
2. Challenges and comparisons towards methods and measures for investigating collaboration
3. Human factors and ergonomics issues
4. Future emerging interaction possibilities to support collaboration in “difficult” environments

Details on the topics can be found here:
<http://workshops.icts.sbg.ac.at/cscw2012/>

References

- [1] M. Obrist, M. Tscheligi, B. de Ruyter, and A. Schmidt. Contextual user experience: how to reflect it in interaction designs? In *Proceedings of the 28th of the international conference extended abstracts on Human factors in computing systems*, CHI EA '10, pages 3197–3200, New York, NY, USA, 2010. ACM.