

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

TU Dortmund University, Germany

Madhu Sudan

Microsoft Research, Cambridge, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max Planck Institute for Informatics, Saarbruecken, Germany

Marco Winckler Peter Forbrig
Regina Bernhaupt (Eds.)

Human-Centered Software Engineering

4th International Conference, HCSE 2012
Toulouse, France, October 29-31, 2012
Proceedings



Springer

Volume Editors

Marco Winckler
Regina Bernhaupt
ICS-IRIT Université Paul Sabatier
118 route de Narbonne, 31062 Toulouse Cedex 9, France
E-mail: {winckler, regina.bernhaupt}@irit.fr

Peter Forbrig
Universität Rostock
Fachbereich Informatik, Lehrstuhl Softwaretechnik
18055 Rostock, Germany
E-mail: peter.forbrig@uni-rostock.de

ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-642-34346-9 e-ISBN 978-3-642-34347-6
DOI 10.1007/978-3-642-34347-6
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012949461

CR Subject Classification (1998): D.2, H.5.2, H.5, I.2, H.3-4, C.2

LNCS Sublibrary: SL 2 – Programming and Software Engineering

© Springer-Verlag Berlin Heidelberg 2012

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The International Conference on Human-Centered Software Engineering (HCSE) is a single-track working conference which aims at bringing together researchers and practitioners interested in strengthening the scientific foundations of user interface design, examining the relationship between software engineering and human-computer interaction and on how to strengthen user-centered design as an essential part of the software engineering process.

HCSE 2012 was the fourth edition of a series of conferences promoted by the IFIP Working Group 13.2 on WG 13.2 Methodologies for User-Centered Systems Design. Traditionally, this conference is organized in conjunction with other conferences in the field of human-computer interaction. The first edition (HCSE 2007) was organized in Salamanca, Spain, in conjunction with the conference Engineering Interactive Systems (EIS). The second edition (HCSE 2008) was held in Pisa, Italy, with the conference Task Models and Diagrams (TAMODIA). The third edition (HCSE 2010) was organized in Reykjavik, Iceland, in conjunction with NordiCHI. For the first time, HCSE was organized as a standalone conference this year. The 2012 edition of HCSE was held in Toulouse, France, October 29–31 2012, at the Institute of Research of Informatics (IRIT), on the campus of the Paul Sabatier University (Toulouse III).

HCSE 2012 welcomed 12 full research papers (acceptance rate of 22%) and 14 short papers (acceptance rate of 33%) that are presented hereafter. This year, we improved the reviewing process by moving to two rounds of reviews. All contributions were first screened by the members of the international committee and received a set of suggestions for improving the submissions and a recommendation of likely accept/reject. Authors of contributions that received a recommendation of likely accept were then asked to send a rebuttal and a revised version of their contributions. Then, in a second round of reviews, a meta-reviewer screened the original version of the paper, the revised version, and the authors' rebuttal. The final decision took into account the way authors addressed the reviewers' comments, which included the edited paper and the argument in the rebuttal. This two-round review process requested extra work both from the authors and the reviewing committee and we are very thankful for all the efforts made. This procedure aimed to support scientific argumentation and guidance toward excellence in research and we believe that it fulfilled these goals. Our sincere gratitude goes to the members of our Program Committee, who devoted countless hours to ensure the high quality of the HCSE Conference.

We would like to thank Neville A. Stanton and Emilia Mendes, our keynotes, who accepted to give an inspiring speech at HCSE and for providing us with a written record that is also presented in these proceedings. In addition, sincere thanks must be extended to the local organizers, Veronique Debats and Sabine Lartigau, whose logistic support was essential to make this conference possible.

Finally, our thanks go to all the authors who did the scientific work and especially to the presenters who took on the additional task of discussing the results with their peers at HCSE 2012 in Toulouse.

Marco Winckler
Peter Forbrig
Regina Bernhaupt

Organization

HCSE 2012 Technical Committee

Organizers

Marco Winckler	ICS-IRIT, Université Paul Sabatier, France
Peter Forbrig	University of Rostock, Germany
Regina Bernhaupt	ICS-IRIT, Université Paul Sabatier, France

Program Committee

Ahmed Seffah	Université de Technologie Troyes, France
Alistair Sutcliffe	University of Manchester, UK
Andy Dearden	Sheffield Hallam University, UK
Anirudha N. Joshi	Indian Institute of Technology, India
Anke Dittmar	University of Rostock, Germany
Bertrand David	Ecole Centrale de Lyon, France
David Benyon	School of Computing Napier University, UK
Effie Law	ETH Zürich, Switzerland and University of Leicester, UK
Emilia Mendes	Zayed University, Dubai
Fabio Paternò	Istituto di Scienza e Tecnologia dell'Informazione "A. Faedo" (ISTI), Italy
Francisco Montero	University of Castilla - La Mancha, Spain
Frank Maurer	University of Calgary, Canada
Gerrit Meixner	German Research Center for Artificial Intelligence (DFKI), Germany
Gerrit Van Der Veer	Open University Netherlands (OUN), The Netherlands
Gustavo Rossi	Universidad Nacional de La Plata (UNLP), Argentina
Hallvard Trætteberg	Norwegian University of Science and Technology, Norway
Janet Wesson	Nelson Mandela Metropolitan University (NMMU), South Africa
Jean Vanderdonckt	Université catholique de Louvain (UcL), Belgium
John Carroll	Virginia Tech, USA
José Campos	University of Minho, Portugal
Marcelo Pimenta	Federal University of Rio Grande do Sul (UFRGS), Brazil
Maria Dolores Lozano Perez	University of Castilla - La Mancha, Spain
Marta Kristín Lárusdóttir	Reykjavik University, Iceland

VIII Organization

Matthias Rauterberg	Technische universiteit Eindhoven (TU/e), The Netherlands
Morten Borup Harning	Dialogical, Denmark
Natalia Juristo Juzgado	Universidad Politécnica de Madrid, Spain
Oscar Pastor	Universidad Politécnica de Valencia, Spain
Pedro Campos	Universidade da Madeira, Portugal
Philippe Palanque	Paul Sabatier University (Toulouse III), France
Simone Barbosa	PUC-Rio, Brazil
Stefan Sauer	University of Paderborn, Germany
Xavier Ferré	Universidad Politécnica de Madrid, Spain

Local Organizing Committee

Sabine Lartigue	IRIT-UPS, Toulouse, France
Veronique Debats	IRIT-UPS, Toulouse, France

Sponsors

The conference chairs and conference organizers would like to thank our sponsors:

Institute of Research in Informatics of Toulouse (IRIT)

interaction-design.org

University Paul Sabatier (Toulouse III)

Société de l'Electricité, de l'Electronique et des Technologies de l'Information
et de la Communication (SEE)

Scientific Sponsors

IFIP WG 13.2 Methodologies for User-Centered Design

Table of Contents

Keynotes

Human Factors Engineering as the Methodological Babel Fish: Translating User Needs into Software Design	1
<i>Neville A. Stanton</i>	
Improving Software Effort Estimation Using an Expert-Centred Approach	18
<i>Emilia Mendes</i>	

Full Papers

A Compositional Model for Gesture Definition	34
<i>Lucio Davide Spano, Antonio Cisternino, and Fabio Paternò</i>	
A Design Process for Exhibiting Design Choices and Trade-Offs in (Potentially) Conflicting User Interface Guidelines	53
<i>Llúcia Masip, Célia Martinie, Marco Winckler, Philippe Palanque, Toni Granollers, and Marta Oliva</i>	
A Development Process for Usable Large Scale Interactive Critical Systems: Application to Satellite Ground Segments	72
<i>Célia Martinie, Philippe Palanque, David Navarre, and Eric Barboni</i>	
Agile User Experience Development in a Large Software Organization: Good Expertise but Limited Impact	94
<i>Kati Kuusinen, Tommi Mikkonen, and Santtu Pakarinen</i>	
Can GUI Implementation Markup Languages Be Used for Modelling?	112
<i>Carlos Eduardo Silva and José Creissac Campos</i>	
Constraining and Creating Solutions – Reflections on the Analysis of Early Design	130
<i>Chris Roast</i>	
Smartphone Applications Usability Evaluation: A Hybrid Model and Its Implementation	146
<i>Artur H. Kronbauer, Celso A.S. Santos, and Vaninha Vieira</i>	
Methods towards API Usability: A Structural Analysis of Usability Problem Categories	164
<i>Thomas Grill, Ondrej Polacek, and Manfred Tscheligi</i>	

Putting Dementia into Context: A Selective Literature Review of Assistive Applications for Users with Dementia and Their Caregivers ... 181
Joël Vogt, Kris Luyten, Jan Van den Bergh, Karin Coninx, and Andreas Meier

Puzzle: A Visual-Based Environment for End User Development in Touch-Based Mobile Phones 199
Jose Danado and Fabio Paternò

Requirements Sensemaking Using Concept Maps 217
Shamal Faily, John Lyle, Andre Paul, Andrea Atzeni, Dieter Blomme, Heiko Desruelle, and Krishna Bangalore

Towards Conflict Management in User Interface Composition Driven by Business Needs 233
Anne-Marie Déry-Pinna, Audrey Occello, and Michel Riveill

Short Papers

A Model for Assessing Organizational Learning in Software Development Organizations 251
Oumout Chouseinoglou and Semih Bilgen

A Personality Based Design Approach Using Subgroup Discovery 259
Kay Behrenbruch, Martin Atzmüller, Christoph Evers, Ludger Schmidt, Gerd Stumme, and Kurt Geihs

Assessing Use Complexity of Software: A Tool for Documentation Designers 267
Brigit van Loggem

Collecting Users Profiles for Web Applications 275
Amin Rasooli, Peter Forbrig, and Fattaneh Tagivareh

Creativity Patterns Guide: Support for the Application of Creativity Techniques in Requirements Engineering 283
Elton R. Vieira, Carina Alves, and Letícia Duboc

Exploring Local Cultural Perspectives in User Interface Development in an Indian Offshoring Context: A View from the UK 291
Malte Ressin, Cecilia Oyugi, José Abdelnour-Nocera, David Lee, and Dharam Panesar

Improving Support for Visual Task Modelling 299
Fabio Paternò, Carmen Santoro, and Lucio Davide Spano

Integrating Usability Evaluation into Model-Driven Video Game Development	307
<i>Adrian Fernandez, Emilio Insfran, Silvia Abrahão, José Ángel Carsí, and Emanuel Montero</i>	
Lessons Learned from Evaluating the Usability of Mobile Spreadsheet Applications	315
<i>Derek Flood, Rachel Harrison, and Claudia Iacob</i>	
ProtoTask, New Task Model Simulator	323
<i>Lacharme Thomas, Girard Patrick, Guittet Laurent, and Fousse Allan</i>	
The Usage of Usability Techniques in Scrum Projects	331
<i>Yuan Jia, Marta Kristin Larusdottir, and Ása Cajander</i>	
Usability Reporting with UsabML	342
<i>Johannes Feiner and Keith Andrews</i>	
Visualizing Sensor Data: Towards an Experiment and Validation Platform	352
<i>Claudia C. Gutiérrez Rodríguez and Anne-Marie Déry-Pinna</i>	
Graphical Controls Based Environment for User Interface Evaluation . . .	360
<i>Selem Charfi, Abdelwaheb Trabelsi, Houcine Ezzedine, and Christophe Kolski</i>	
Author Index	369