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Human-Centered Software Engineering

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► **To cite this version:**

Regina Bernhaupt, Carmelo Ardito, Stefan Sauer. Human-Centered Software Engineering: 8th IFIP WG 13.2 International Working Conference, HCSE 2020, Eindhoven, The Netherlands, November 30 – December 2, 2020, Proceedings. Springer International Publishing, LNCS-12481, 2020, Lecture Notes in Computer Science, 978-3-030-64265-5. 10.1007/978-3-030-64266-2 . hal-03250485

HAL Id: hal-03250485

<https://inria.hal.science/hal-03250485>

Submitted on 7 Jun 2021

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Human-Centered Software Engineering

8th IFIP WG 13.2 International Working Conference, HCSE 2020
Eindhoven, The Netherlands, November 30 – December 2, 2020
Proceedings

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-64265-5 ISBN 978-3-030-64266-2 (eBook)
<https://doi.org/10.1007/978-3-030-64266-2>

LNCS Sublibrary: SL2 – Programming and Software Engineering

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

The 8th International Working Conference on Human-Centered Software Engineering (HCSE 2020) was intended to be held physically at Eindhoven University of Technology, The Netherlands, during November 30 – December 2, 2020, but was held virtually due to the COVID-19 pandemic. HCSE is a bi-annual, single-track, working conference organized by the IFIP Working Group (WG) 13.2 on Methodology for User-Centred System Design. It 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 human-centered design as an essential part of software engineering processes. Previous events were held in Salamanca, Spain (2007); Pisa, Italy (2008); Reykjavik, Iceland (2010); Toulouse, France (2012); Paderborn, Germany (2014); Stockholm, Sweden (2016); and Sophia Antipolis, France (2018).

The organization of the HCSE 2020 conference reflected how research in general, and conference organization in particular, is changing. Starting in August 2019, preparing the conference announcement and details to be distributed during INTERACT 2019’s still physically held workshop, HCSE 2020 was organized not only once but three times: To be held physically in August 2020, to be held possibly in hybrid mode November 2020, and finally to be run fully as a virtual event due to the second wave of COVID-19 in The Netherlands envisaged for this time frame. It has now been the first edition run virtually, a milestone for our research field, demonstrating how publication models and associated conferences will change in our field. As organizers of HCSE, we are grateful to our community and loyal members of IFIP WG 13.2 from research and industry for virtually following us through this labyrinth of organizational changes, still submitting their recent work, and actively participating in our working conference online.

HCSE 2020 was focused on the interdependencies (overlapping and possibly conflicting dependencies that might occur) between user interface properties (such as usability, ux, privacy, trust, security, reliability, among others). We were also concerned by how stakeholders and developers value diverse user interface properties and how they manage conflicts between them (when a property might degrade the value of another). Our aim was to cover a large set of user interface properties and try to reveal their inner dependencies. The ultimate goal was to contribute to the development of theories, methods, tools, and approaches for dealing with multiple properties that should be taken into account when developing interactive systems.

The HCSE 2020 program included contributions from Belgium, Finland, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden, and the UK. All contributions were peer-reviewed and received at least three reviews. In total, HCSE 2020 accepted six full research papers and four late-breaking results, with an acceptance rate of 35%. Five posters and demos were also accepted for inclusion in the conference program. Our sincere gratitude goes to the members of our Program Committee who

devoted countless hours to providing valuable feedback to authors, ensuring the high quality of HCSE 2020's technical program.

The program was organized in three technical sessions and a demonstration and poster session. The conference program is available at <http://www.hcse-conference.org/>.

HCSE 2020 was supported by Eindhoven University of Technology, the Software Innovation Campus Paderborn (SICP) at Paderborn University, Springer, and IFIP's Technical Committee on Human–Computer Interaction (IFIP TC13) whose generous support was essential for making HCSE 2020 special and successful! Finally, our thanks go to all the authors who actually did the research work and especially to the presenters who sparked inspiring discussions with all the participants at HCSE 2020.

For further information about past and future events organized by IFIP WG 13.2, its members and activities, please visit the website <http://ifip-tc13.org/working-groups/working-group-13-2/>.

We thank all contributors and participants for making HCSE 2020 a special and fruitful conference!

Stay safe and healthy.

November 2020

Regina Bernhaupt
Carmelo Ardito
Stefan Sauer

IFIP TC13 - <http://ifip-tc13.org/>

Established in 1989, the International Federation for Information Processing Technical Committee on Human–Computer Interaction (IFIP TC 13) is an international committee of 32 member national societies and 10 Working Groups (WG), representing specialists of the various disciplines contributing to the field of human–computer interaction. This includes (among others) human factors, ergonomics, cognitive science, computer science, and design.

IFIP TC 13 aims to develop the science, technology, and societal aspects of human–computer interaction (HCI) by: encouraging empirical research; promoting the use of knowledge and methods from the human sciences in design and evaluation of computer systems; promoting better understanding of the relation between formal design methods and system usability and acceptability; developing guidelines, models, and methods by which designers may provide better human-oriented computer systems; and, cooperating with other groups, inside and outside IFIP, to promote user-orientation and humanization in system design. Thus, TC 13 seeks to improve interactions between people and computers, to encourage the growth of HCI research and its practice in industry and to disseminate these benefits worldwide.

The main orientation is to place the users at the center of the development process. Areas of study include: the problems people face when interacting with computers; the impact of technology deployment on people in individual and organizational contexts; the determinants of utility, usability, acceptability, and user experience; the appropriate allocation of tasks between computers and users especially in the case of automation; modeling the user, their tasks, and the interactive system to aid better system design; and harmonizing the computer to user characteristics and needs.

While the scope is thus set wide, with a tendency toward general principles rather than particular systems, it is recognized that progress will only be achieved through both general studies to advance theoretical understanding and specific studies on practical issues (e.g., interface design standards, software system resilience, documentation, training material, appropriateness of alternative interaction technologies, guidelines, the problems of integrating multimedia systems to match system needs and organizational practices, etc.).

IFIP TC 13 stimulates working events and activities through its WGs. WGs consist of HCI experts from many countries, who seek to expand knowledge and find solutions to HCI issues and concerns within their domains. The list of WGs and their area of interest is given below.

WG13.1 (Education in HCI and HCI Curricula) aims to improve HCI education at all levels of higher education, coordinate and unite efforts to develop HCI curricula and promote HCI teaching.

WG13.2 (Methodology for User-Centred System Design) aims to foster research, dissemination of information, and good practice in the methodical application of HCI to software engineering.

WG13.3 (HCI and Disability) aims to make HCI designers aware of the needs of people with disabilities and encourage development of information systems and tools permitting adaptation of interfaces to specific users.

WG13.4 (also WG2.7) (User Interface Engineering) investigates the nature, concepts, and construction of user interfaces for software systems, using a framework for reasoning about interactive systems and an engineering model for developing user interfaces.

WG 13.5 (Resilience, Reliability, Safety, and Human Error in System Development) seeks a framework for studying human factors relating to systems failure, develops leading edge techniques in hazard analysis and safety engineering of computer-based systems, and guides international accreditation activities for safety-critical systems.

WG13.6 (Human-Work Interaction Design) aims at establishing relationships between extensive empirical work-domain studies and HCI design. It will promote the use of knowledge, concepts, methods, and techniques that enable user studies to procure a better apprehension of the complex interplay between individual, social, and organizational contexts and thereby a better understanding of how and why people work in the ways that they do.

WG13.7 (Human-Computer Interaction and Visualization) aims to establish a study and research program that will combine both scientific work and practical applications in the fields of human-computer interaction and visualization. It will integrate several additional aspects of further research areas, such as scientific visualization, data mining, information design, computer graphics, cognition sciences, perception theory, or psychology, into this approach.

WG13.8 (Interaction Design and International Development) is currently working to reformulate their aims and scope.

WG13.9 (Interaction Design and Children) aims to support practitioners, regulators, and researchers to develop the study of interaction design and children across international contexts.

WG13.10 (Human-Centred Technology for Sustainability) aims to promote research, design, development, evaluation, and deployment of human-centered technology to encourage sustainable use of resources in various domains.

New WGs are formed as areas of significance in HCI arise. Further information is available at the IFIP TC13 website: <http://ifip-tc13.org/>.

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