

## Contents – Part II

### Health Care Technologies and Services for the Elderly

The Role of Health Status in Older Adults’ Perceptions of the Usefulness of eHealth Technology. . . . .	3
<i>Ryan Best, Dustin J. Souders, Neil Charness, Tracy L. Mitzner, and Wendy A. Rogers</i>	
The Use of Smartwatches for Health Monitoring in Home-Based Dementia Care . . . . .	15
<i>Costas Boletsis, Simon McCallum, and Brynjar Fowels Landmark</i>	
Lack of Development and Usability Descriptions in Evaluation Reports on Online Health Information Tools for Older Patients . . . . .	27
<i>Sifra Bolle, Julia C.M. van Weert, Ellen M.A. Smets, and Eugène F. Loos</i>	
Older Users’ Rejection of Mobile Health Apps a Case for a Stand-Alone Device? . . . . .	38
<i>André Calero Valdez and Martina Ziefle</i>	
Delivering Telemonitoring Care to Digitally Disadvantaged Older Adults: Human-Computer Interaction (HCI) Design Recommendations . . . . .	50
<i>Hongtu Chen and Sue E. Levkoff</i>	
Accessibility in Serious Games for Adults Aging with Disability . . . . .	61
<i>Keiko Gomez-Gurley, Anne Collins McLaughlin, Maribeth Gandy Coleman, and Jason C. Allaire</i>	
How Measuring an Older Person’s Walking Pattern Can Help Keep Them Mobile: ‘Personalised Healthcare for Mobility’ . . . . .	72
<i>Diana Hodgins and Ian McCarthy</i>	
Opportunities for Technology: Translating an Efficacious Intervention to Improve Medication Adherence Among Older Adults . . . . .	82
<i>Kathie Insel, Jeannie K. Lee, Gilles O. Einstein, and Daniel G. Morrow</i>	
Taiwanese Middle-Aged and Elderly Patients’ Acceptance and Resistance Toward the Health Cloud. . . . .	89
<i>Wen-Tsung Ku and Pi-Jung Hsieh</i>	

Multi-disciplinary Design and In-Home Evaluation of Kinect-Based Exercise Coaching System for Elderly . . . . . 101  
*Gregorij Kurillo, Ferda Ofli, Jennifer Marcoe, Paul Gorman, Holly Jimison, Misha Pavel, and Ruzena Bajcsy*

Considerations in Evaluating Technologies in Memory Care Units . . . . . 114  
*Amanda Lazar, Hilaire J. Thompson, and George Demiris*

Influence of Mobile ICT on the Adherence of Elderly People with Chronic Diseases. . . . . 123  
*Alexander Mertens, Peter Rasche, Sabine Theis, Matthias Wille, Christopher Schlick, and Stefan Becker*

Principles for Developing Digital Health Interventions for Prostate Cancer: A Community-Based Design Approach with African American Men . . . . . 134  
*Otis L. Owens*

Evaluation of Complex Distributed Multimodal Applications: Evaluating a TeleRehabilitation System When It Really Matters . . . . . 146  
*Carlos Pereira, Nuno Almeida, Ana Isabel Martins, Samuel Silva, Ana Filipa Rosa, Miguel Oliveira e Silva, and António Teixeira*

Innovative Technology-Based Healthcare and Support Services for Older Adults: How and Why Industrial Initiatives Convert to the Living Lab Approach. . . . . 158  
*Maribel Pino, Caroline Moget, Samuel Benveniste, Robert Picard, and Anne-Sophie Rigaud*

Developing Radical-Digital Interventions to Tackle Loneliness Amongst the Elderly . . . . . 170  
*Dhruv Sharma, Lynne Blair, and Stephen Clune*

Effects of Using Care Professionals in the Development of Social Technology for Elderly . . . . . 181  
*Marie Sjölander and Isabella Scandurra*

More Light! Improving Well-Being for Persons Suffering from Dementia . . . 193  
*Charlotte A. Sust, Peter Dehoff, Christina Hallwirth-Spörk, Dieter Lang, and Dieter Lorenz*

The Design of Pain Management and Creative Service for Older Adults with Chronic Disease. . . . . 201  
*Wang-Chin Tsai, Chia-Ling Chang, and Hsuan Lin*

The Design of Mobile Technology to Support Diabetes Self-management in Older Adults. . . . . 211  
*Laura A. Whitlock, Anne Collins McLaughlin, Maurita Harris, and Jessica Bradshaw*

Design and Fabricate Neckwear to Improve the Elderly Patients’ Medical Compliance . . . . . 222  
*Xiaolong Wu, Young Mi Choi, and Maysam Ghovanloo*

**Home and Work Support**

Psychosocial Approach of Skills Obsolescence in Older Workers: Contribution of Methodological Triangulation. . . . . 237  
*Florence Cros, Marc-Eric Bobillier Chaumon, and Bruno Cuvillier*

HAVAS: The Haptic Audio Visual Sleep Alarm System . . . . . 247  
*Ali Danesh, Fedwa Laamarti, and Abdulmotaleb El Saddik*

CogniWin – A Virtual Assistance System for Older Adults at Work . . . . . 257  
*Sten Hanke, Hugo Meinedo, David Portugal, Marios Belk, João Quintas, Eleni Christodoulou, Miroslav Sili, Miguel Sales Dias, and George Samaras*

Developing Mobile Application Design of Virtual Pets for Caring for the Elderly . . . . . 269  
*Hsiu Ching Laura Hsieh*

Implementing the SimpleC Companion: Lessons Learned from In-Home Intervention Studies. . . . . 278  
*Chantal Kerssens, Renu Kumar, Anne Edith Adams, Camilla C. Knott, and Wendy A. Rogers*

Investigation of Sensitivity of Foot Soles to Vibrational Stimuli: First Results for Developers of Information Interfaces . . . . . 290  
*Stefan Lutherdt, Eva Kaiser, Tim Kirchhofer, Philipp Wegerich, and Hartmut Witte*

Robotic Interfaces Design: Avatar and GUI Competing for Older User’s Attention . . . . . 300  
*Angie L. Marin Mejia*

An Adaptable AR User Interface to Face the Challenge of Ageing Workers in Manufacturing. . . . . 311  
*Maura Mengoni, Matteo Iualè, Margherita Peruzzini, and Michele Germani*

Development of Caricature Robots for Interaction with Older Adults. . . . . 324  
*Jeffrey Sebastian, Chih-Yin Tai, Kim Lindholm, and Yeh-Liang Hsu*

Computer Input Devices and the Elderly: A Musculoskeletal Disorder Focus . . . . . 333  
*Alvaro D. Taveira and Sang D. Choi*

Development of Automatic Speech Recognition Techniques for Elderly Home Support: Applications and Challenges . . . . . 341  
*Michel Vacher, Frédéric Aman, Solange Rossato, and François Portet*

Aging Working Population: Hearing Impairment a Growing Challenge for the Working Environment. . . . . 354  
*Verena Wagner and K. Wolfgang Kallus*

**Smart Environments and AAL**

Spatial Modeling Factors in Sensor-Based Ambient Assisted Living Technologies Designed for Ageing Populations. . . . . 367  
*Dua'a Al-Hajjar, Reem Al Ehaidib, Sarah Al Muhanna, May Al Sohibani, and Areej Al-Wabil*

Modeling the Interaction and Control of Smart Universal Interface for Persons with Disabilities . . . . . 377  
*Shady Aly, Ghassan Kbar, Mohammed Abdullah, and Ibraheem Al-Sharawy*

Signing Off: Predicting Discontinued ICT Usage Among Older Adults in Assisted and Independent Living: A Survival Analysis. . . . . 389  
*Ronald W. Berkowsky, R.V. Rikard, and Shelia R. Cotten*

Understanding the Socio-Domestic Activity: A Challenge for the Ambient Technologies Acceptance in the Case of Homecare Assistance . . . . . 399  
*Salima Body-Bekkadja, Marc-Eric Bobillier-Chaumon, Bruno Cuvillier, and Florence Cros*

The Wearable Multimodal Monitoring System: A Platform to Study Falls and Near-Falls in the Real-World . . . . . 412  
*Tracy Jill Doty, Bret Kellihan, Tzyy-Ping Jung, John K. Zao, and Irene Litvan*

Smart Textiles as Intuitive and Ubiquitous User Interfaces for Smart Homes. . . . . 423  
*Julian Hildebrandt, Philipp Brauner, and Martina Ziefle*

Designing an Indoor Navigation System for Elderly People’s Capabilities . . . 435  
*Mathias Källström, Sondre Berdal, and Suhas Govind Joshi*

Exploring Use Cases of Smart Presence for Retirement Communities . . . . . 446  
*Karina R. Liles, Rachel E. Stuck, Allison A. Kacmar, and Jenay M. Beer*

A Meta User Interface for Understandable and Predictable Interaction in AAL . . . . . 456  
*Aida Mostafazadeh, Ali Asghar Nazari Shirehjini, and Sara Daraei*

Giving Elderly Access to Smart Environments: Providing Adaptive User Interfaces Based on Web Components, the Universal Remote Console and the Global Public Inclusive Infrastructure . . . . . 465  
*Lukas Smirek, Alexander Henka, and Gottfried Zimmermann*

**Communication, Games and Entertainment**

Baby Boomers and Gaze Enabled Gaming . . . . . 479  
*Soussan Djamasbi, Siavash Mortazavi, and Mina Shojaeizadeh*

Assessing Older Adults’ Usability Challenges Using Kinect-Based Exergames . . . . . 488  
*Christina N. Harrington, Jordan Q. Hartley, Tracy L. Mitzner, and Wendy A. Rogers*

Play for the Elderly - Effect Studies of Playful Technology . . . . . 500  
*Henrik Hautop Lund*

TwitterIDo: What if My Shopping Bag Could Tell My Friends I’m Out Shopping . . . . . 512  
*Elena Nazzi and Tomas Sokoler*

Designing Cross-Age Interaction Toys for Older Adults and Children . . . . . 524  
*Wang-Chin Tsai, Chi-Hsien Hsu, and Kung-Chih Lo*

A Slow Game Design for Elderly with Their Family and Friends . . . . . 533  
*Yi-Sin Wu and Teng-Wen Chang*

**Author Index** . . . . . 541

# Contents – Part I

## HCI Design and Evaluation Methods for the Elderly

The Benefits of Involving Older People in the Design Process . . . . .	3
<i>Britt Östlund</i>	
Emotions Identification to Measure User Experience Using Brain Biometric Signals . . . . .	15
<i>Ivan Carrillo, Victoria Meza-Kubo, Alberto L. Morán, Gilberto Galindo, and Eloisa García-Canseco</i>	
Adopting Scenario-Based Design to Increase the Acceptance of Technology Innovations for Older People . . . . .	26
<i>Diego Compagna and Florian Kohlbacher</i>	
Constructing Third Age eHealth Consumers by Using Personas from a Cultural Age Perspective . . . . .	35
<i>Maria Ekström and Eugène Loos</i>	
Capturing Older People’s Cognitive Capability Data for Design . . . . .	44
<i>Shan Huang and Hua Dong</i>	
Designing Tangible Interactions for Aged Users Though Interactive Technology Prototyping . . . . .	53
<i>Wei Liu and Yanrui Qu</i>	
Developing a Framework for Effective Communication with Older People . . .	61
<i>Ying Jiang, Hua Dong, and Shu Yuan</i>	
Music in the Retiring Life: A Review of Evaluation Methods and Potential Factors . . . . .	73
<i>Mao Mao, Alan F. Blackwell, and David A. Good</i>	
Collecting Old People’s Data for More Accessible Design: A Pilot Study . . .	84
<i>Weining Ning and Hua Dong</i>	
Time Reduction Design Method for Cognitive Assist Technology . . . . .	94
<i>Junji Ohyama, Nana Itoh, Kenji Kurakata, and Ken Sagawa</i>	
A Robot of My Own: Participatory Design of Socially Assistive Robots for Independently Living Older Adults Diagnosed with Depression . . . . .	104
<i>Selma Šabanović, Wan-Ling Chang, Casey C. Bennett, Jennifer A. Piatt, and David Hakken</i>	

Universal Design as an Approach to Technology Intervention for Seniors . . . <i>Jon A. Sanford</i>	115
A Living Lab Method for Innovations to Increase Quality of Life for Elderly - A Pilot Case . . . . . <i>Isabella Scandurra, Madeleine Blusi, and Rolf Dalin</i>	123
Talking Faces in Lab and Field Trials: A View on Evaluation Settings and User Involvement Results of Avatar Based User Interaction Techniques in Three Ambient Assisted Living Projects. . . . . <i>Miroslav Sili, Jan Bobeth, Emanuel Sandner, Sten Hanke, Stephanie Schwarz, and Christopher Mayer</i>	134
Gamification and Accessibility . . . . . <i>Andreas Stiegler and Gottfried Zimmermann</i>	145
 <b>ICT Use and Acceptance</b>	
Evaluating All-Inclusive ICT with Developers, End Users and Stakeholders. . . . . <i>Eleni Chalkia, Evangelos Bekiaris, and R. Ignacio Madrid</i>	157
Access and Use of ICTs Among the Italian Young Elderly: A Field Study. . . <i>Fausto Colombo and Simone Carlo</i>	166
Patterns of ICT Use among “Senior Technology Experts”: The Role of Demographic Variables, Subjective Beliefs and Attitudes . . . . . <i>Michael Doh, Laura I. Schmidt, Florian Herbolsheimer, Mario Jokisch, and Hans-Werner Wahl</i>	177
Why Age Is Not that Important? An Ageing Perspective on Computer Anxiety . . . . . <i>Mireia Fernández-Ardèvol and Loredana Ivan</i>	189
Values and Ethics in Making Emerging Technologies Work for Older People . . . . . <i>Caroline Holland</i>	201
Accessing InterACTion: Ageing with Technologies and the Place of Access. . . . . <i>Constance Lafontaine and Kim Sawchuk</i>	210
Review of Empirical Research in Recent Decade About the Use of IT for Older Adults . . . . . <i>Yi-Chang Li</i>	221

Exploring the Impacts of Age and Usage Experience of e-Service on User Perceived Web Quality . . . . . 230  
*Chien Hsiang Liao*

Acceptance of ICTs by Older Adults: A Review of Recent Studies . . . . . 239  
*Qi Ma, Ke Chen, Alan Hoi Shou Chan, and Pei-Lee Teh*

An Appraisal-Based Approach to the Stigma of Walker-Use. . . . . 250  
*Andrew McNeill and Lynne Coventry*

Perceptions of Computer System Usefulness: Insights for Design from Experienced Older Users . . . . . 262  
*Tracy L. Mitzner, Neil Charness, and Wendy A. Rogers*

Useful or Easy-to-Use? Knowing What Older People Like about Near Field Communication Technology . . . . . 273  
*Pei-Lee Teh, Pervaiz K. Ahmed, Alan H. S. Chan, Soon-Nyeon Cheong, and Wen-Jiun Yap*

Pitfalls when Placing Electricity Pylons - The Influence of Age on Acceptance . . . . . 282  
*Barbara S. Zaunbrecher, Katrin Arning, Baris Özalay, Hendrik Natemeyer, and Martina Ziefle*

**Aging, the Web and Social Media**

Usability Evaluation of a Social Networking Site Prototype for the Elderly . . . . . 297  
*Jessica Arfaa and Yuanqiong (Kathy) Wang*

ICT Access in Libraries for Elders . . . . . 307  
*Amrish Chourasia, Jim Tobias, Steve Githens, Yao Ding, and Gregg Vanderheiden*

Examining the Validity of the Banner Recommendation System . . . . . 317  
*Rong-Fuh Day and Chien-Ying Chou*

Conducting Acceptance Tests for Elderly People on the Web: Using the GPII Preference Set for a Personalized Evaluation . . . . . 325  
*Alexander Henka, Andreas Stiegler, Gottfried Zimmermann, and Thomas Ertl*

Older Adults’ Usage of Web Pages: Investigating Effects of Information Structure on Performance . . . . . 337  
*Jincheng Huang, Jia Zhou, and Huilin Wang*



Perceived Barriers for Older Adults’ Shopping Channel Selection Toward Online Shopping: Comparisons Between Different Business Models . . . . .	347
<i>Jiunn-Woei Lian</i>	
Processing Speed and Vocabulary are Related to Older Adults’ Internet Experiences . . . . .	354
<i>Jennifer Romano Bergstrom, Erica Olmsted-Hawala, and Wendy A. Rogers</i>	
Validation of the Computer Literacy Scale (CLS) . . . . .	365
<i>Michael Sengpiel and Nicole Jochems</i>	
Age(ism) in Digital Information Provision: The Case of Online Public Services for Older Adults . . . . .	376
<i>Maria Sourbati</i>	
A Framework for Evaluating the Implementers’ Experience in Making Existing Products Accessible: The Prosperity4all Approach . . . . .	387
<i>Katerina Toulidou, Maria Gemou, Till Riedel, Maria Panou, and Evangelos Bekiaris</i>	
The Study of Using Facebook in Taiwan’s Elderly Population—a Case Study in Learners of the Senior Citizens Academy in a City of Taiwan . . . . .	398
<i>Ming-Wei Wang and Yu-Chin Lin</i>	
An Older Person and New Media in Public Discourses: Impossible Encounters? . . . . .	405
<i>Monika Wilińska</i>	
Technology Generation and Media Usage in B-2-B Communication: A Cross-Cultural View . . . . .	414
<i>Martina Ziefle, Vanessa Cabral, Judith Leckebusch, and Toni Drescher</i>	
Patterns for User Interface Adaptations: Towards Runtime Adaptations for Improving the Usability of Web Forms for Elderly Users . . . . .	426
<i>Gottfried Zimmermann, Annkristin Stratmann, David Reeb, and Tobias Glaser</i>	
<b>The Elderly and Mobile Devices</b>	
Older People’s Attitude Towards Mobile Communication in Everyday Life: Digital Literacy and Domestication Processes . . . . .	439
<i>Francesca Comunello, Simone Mulargia, Francesca Belotti, and Mireia Fernández-Ardèvol</i>	
Differences in the Adoption of Smartphones Between Middle Aged Adults and Older Adults in China . . . . .	451
<i>Shang Gao, John Krogstie, and Yuhao Yang</i>	

Ease-of-Use of Tactile Interaction for Novice Older Adults . . . . . 463  
*Lilian Genaro Motti, Nadine Vigouroux, and Philippe Gorce*

Age-Related Differences in a Usability Study Measuring Accuracy, Efficiency, and User Satisfaction in Using Smartphones for Census Enumeration: Fiction or Reality? . . . . . 475  
*Erica Olmsted-Hawala and Temika Holland*

Older Adults and the Appropriation and Disappropriation of Smartphones . . . 484  
*Natalie Pang, Samantha Vu, Xue Zhang, and Schubert Foo*

Abilities to Use Technological Communication Tools in Aging: Contribution of a Structured Performance-Based Evaluation . . . . . 496  
*Lisa Quillion-Dupré, Emmanuel Monfort, and Vincent Rialle*

Elderly and Tablets: Considerations and Suggestions About the Design of Proper Applications . . . . . 509  
*Eliseo Sciarretta, Andrea Ingrosso, Valentina Volpi, Antonio Opromolla, and Roberta Grimaldi*

Developing New Gesture Design Mode in Smartphone Use for Elders. . . . . 519  
*Ming-Hong Wang, Yu-Chi Chang, Shuo-Fang Liu, and Hsin-Hsi Lai*

Research on Interaction Design of Intelligent Mobile Phone for the Elderly Based on the User Experience . . . . . 528  
*Minggang Yang and He Huang*

**Author Index** . . . . . 537



<http://www.springer.com/978-3-319-20912-8>

Human Aspects of IT for the Aged Population. Design  
for Everyday Life

First International Conference, ITAP 2015, Held as Part  
of HCI International 2015, Los Angeles, CA, USA, August  
2-7, 2015. Proceedings, Part II

Zhou, J.; Salvendy, G. (Eds.)

2015, XXIII, 544 p. 172 illus., Softcover

ISBN: 978-3-319-20912-8