

Universal Design 2024:



Shaping a Sustainable, Equitable and Resilient Future for All

Conference Compendium
of the Seventh International Conference on Universal Design
(UD2024),
Oslo, Norway, 20-22 November 2024



UD2024

UNIVERSAL DESIGN

Editors:
Kristin S. Fuglerud
Wolfgang V. Leister
Juan Carlos Torrado Vidal



Kultur- og
likestillingsdepartementet



Norsk Regnesentral

Norsk Regnesentral (Norwegian Computing Center, NR) is a private, independent, non-profit foundation established in 1952. NR carries out contract research and development projects in statistical-mathematical modelling, geomodelling, earth observation, machine learning, image analysis, artificial intelligence, language technology, digital security, digital inclusion and digital transformation. The clients include a broad range of industrial, commercial and public service organisations in the national as well as the international market. Our scientific and technical capabilities are further developed in co-operation with The Research Council of Norway, the European Research Council, and key customers.

The Norwegian Directorate for Children, Youth and Family Affairs (Bufdir)

The Norwegian Directorate for Children, Youth and Family Affairs (Bufdir) is a state administrative agency under the Ministry of Children and Family Affairs (BFD). Our main responsibilities include upbringing, child welfare, family welfare, adoption, equality, non-discrimination and violence and abuse in close relationships. Bufdir manages the Office for Children, Youth and Family Affairs (Bufetat), the agency responsible for state-level child and family welfare services.

The Ministry of Culture and Equality

The Ministry of Culture and Equality administers policies related to culture, equality and discrimination, copyright, the media, sport and the voluntary sector. The Ministry of Culture and Equality. The Ministry of Culture and Equality administers policies related to culture, equality and discrimination, copyright, the media, sport and the voluntary sector.

Title	Conference Compendium of the Seventh International Conference on Universal Design (UD2024)
Editors	Kristin S. Fuglerud Wolfgang V. Leister Juan Carlos Torrado Vidal
Date	20–24 November, 2024
Year	2024
Publication	Report at the Norwegian Computing Center (ISSN 0809-8492) no.1064, ISBN 978-82-539-0574-7

Abstract
 Universal design, inclusive design, design for all, innovation for all, and accessibility are some of the concepts aimed at making products, environments, and services usable and accessible for diverse users, regardless of ability, age, or background. While these terms imply common goals, they each offer distinct approaches to creating inclusive solutions.

This compendium comprises of 48 papers, abstracts, and posters presented at UD2024, the 7th International Conference on Universal Design, held from 20 to 22 November 2024 in Oslo, Norway. It can be seen as an addition to the conference proceedings. Although the UD conference series uses the term universal design, it welcomes researchers and practitioners from the other disciplines designing for diverse user groups in the hope that this will result in a wider spectrum of viewpoints and will help to unite these various approaches to advance the field. The contributions are grouped into six chapters, covering design approaches, theoretical perspectives and socio-economic benefits; children, learning environment, and education; universal design in the built environment; inclusive tourism and sustainable communities; digital inclusion, communication and organisation; as well as universal design of ICT and technical aspects.

Keywords	Universal design, inclusive design, design for all, innovation for all, accessibility, education, learning environment, built environment, tourism, sustainability, health, transport, digital inclusion, ICT
Target group	Researchers, policy makers, users, practitioners and experts
Access	Open
Pages	196

About the UD2024 conference

Conference Chair

Tone Alexandra Larsen
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Committee Members

Organising Committee

Tone Alexandra Larsen
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Kirsti Svinø
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Inger-Marie Hølmebakk
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Tina Hofland Engen
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Programme Committee

Tone Alexandra Larsen (Program Committee Chair)
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Camilla Ryhl
BEVICA Fonden, Denmark

Cato Lie
The Norwegian Federation of Organisations of Persons with Disabilities, Norway

Gerald Craddock
National Disability Authority, Dublin, Ireland

Inger-Marie Hølmebakk
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Kirsti Svinø
The Norwegian Directorate for Children, Youth and Family Affairs, Norway

Olav Rand Bringa
Norway

Onny Eikhaug – Former President EIDD – Design for All Europe, member of the Board IAUD, Chair of Selection Committee for the IAUD International Design Award
Founder Innovation for All AS, Norway

Valerie Fletcher
Institute for Human Centered Design, USA

Chair of the Scientific Committee

Kristin S. Fuglerud, Chief Research Scientist, PhD, Norsk Regnesentral (NR, Norwegian Computing Center), Norway; Associate professor, Center for health and technology, University of South-Eastern Norway

Scientific Committee

Alberto Arengi, Associate Professor of Building Technology, University of Brescia, Italy

Anders-Petter Andersson, Associate Professor, PhD, Department of Design, Faculty of Architecture and Design, Norwegian University of Science and Technology, Norway

Anne Britt Torkildsby, PhD Design / Associate professor, Institute for design, The faculty of Architecture and Design, The Norwegian University of Science and Technology (NTNU), Norway

Dr. Anthony Giannoumis, Associate Professor at Kristiania University College, CEO Inclusive Creation AS, Norway

Camilla Ryhl, Forskningsdirektør / Research Director, Bevica Fonden, Denmark

Cato Lie, senior adviser, The Norwegian Federation of Organizations of Persons with Disabilities (FFO), Norway

Dr Farnaz Nickpour, Reader in Inclusive Design and Human-centred Innovation, Director of The Inclusionaries Lab for Design Research, The University of Liverpool, UK

Frode Eika Sandnes, PhD, Professor, Distinguished teaching fellow, Universal design of ICT group, Oslo Metropolitan University, Norway

Dr Gerald Craddock, Chief Officer, Centre for Excellence in Universal Design, National Disability Authority, 25 Clyde Road, Dublin 4, Ireland

Gerd Berget, PhD, Professor, Department of Archivistics, Library and Information Science, Oslo Metropolitan University, Norway

Giuseppe Di Bucchianico, Ph.D, University of Chieti-Pescara, Italy, President of EIDD-Design for All Europe

Helen Petrie Phd AFBPsS CPsychol FRSA, Professor Emerita of Human Computer Interaction, Department of Computer Science, University of York, UK

Inger Maire Lid, Professor, Ph.D., Faculty of Health Studies, VID Specialized University, Norway, VID vitenskapelige høgskole / VID Specialized University, Norway

Ira Verma, Senior scientist, SOTERA research group, Department of Architecture, Aalto University, Finland

Ivor Ambrose, Managing Director, ENAT - European Network for Accessible Tourism a.s.b.l., Belgium

Prof Dr. Janice Rieger, Head Architecture, Industrial Design and Planning & Principal Research Fellow, Australian Research Council, School of Engineering and Built Environment, Griffith University, Brisbane/Gold Coast, Australia

Jasmien Herssens, Dr. Arch, founder fourmind, Belgium, vice-president EIDD Design for All Europe

Juan Carlos Torrado, Senior Research Scientist, PhD, Norsk Regnesentral (NR, Norwegian Computing Center), Norway

Jo Herstad, Ph.D., Associate Professor - Design of Information Systems, University of Oslo, Norway

Laura Nota, Full professor, Department of Philosophy, Sociology, Pedagogy and Applied Psychology, University of Padova, Italy

Liv Øvstedal (MSc), Norwegian Public Roads Administration, Norway

Dr. Merja H. Saarela, Principal Research Scientist, Research Group Leader in Multisensory and Assistive Technology (MATEC) at SMART Research Unit, Häme University of Applied Sciences (HAMK), Finland

Miriam Eileen Nes Begnum, School of Economy, Innovation and Technology, Kristiania University College, Oslo, Norway.

Olav Rand Bringa, Norway

Onny Eikhaug, Founder Innovation for All AS, Chair of Selection Committee IAUD International Design Award, Former President EIDD Design for All Europe

Professor Per-Olof Hedvall, Department of Natural Science, Design and Sustainable Development, Mid Sweden University, Sweden

Professor Sigmund Asmervik, Ph.D. civil engineer/architect, Norwegian University of Science and Technology, Norway,

Dr.-ing. Till Halbach, Senior Research Scientist, Norsk Regnesentral (NR, Norwegian Computing Center), Norway

Valerie Fletcher, Executive Director, the Institute for Human Centered Design, USA, board member, International Association for Universal Design, Japan, Trustee, Boston Architectural College, USA.

Vivienne Portaas Welsby, Assistant Professor /Study leader, IORL (Radiography), University of South-Eastern Norway, Norway

Weiqin Chen, Professor, PhD., Department of Computer Science, Oslo Metropolitan University, Norway

Dr. rer.nat. Wolfgang V. Leister, Research Director, Norsk Regnesentral (NR, Norwegian Computing Center), Norway

Yavuz Inal, Associate Professor, PhD, Department of Design, Faculty of Architecture and Design, Norwegian University of Science and Technology, Norway

Peer Reviewers

Ali Mohamed, Postdoctoral fellow, Division Of Media Technology and Interaction Design, Department of Human Centered Technology, School of Electrical Engineering and Computer, KTH Royal Institute of Technology, Sweden

Anders Kristoffer Braav Eriksen, Norwegian Directorate for Children, Youth and Family Affairs (Bufdir), Norway

Anja Fleten Nielsen, Institute of Transport Economics, Norway

Anna Szlavi, Department of Computer Science, Norwegian University of Science and Technology (NTNU), Norway

Anna-Sara Fagerholm, PhD Universal Design, Department of Design Sciences, LTH, Lund University and Senior Lecturer (artistic merited) at Department of Natural Sciences, Design and Sustainable Development, NDH, Mid Sweden University, Sweden

Antti Pirinen, Senior University Lecturer, Department of Architecture, Aalto University, Finland

Attila Bekkvik Szentirmai, Department of Design, Norwegian University of Science and Technology (NTNU), Norway

Aud Elisabeth Witsø, Associate professor, Department of Mental Health, Leader of The National Institute on Intellectual Disability and Community, Faculty of Medicine and Health, Sciences, Norwegian University of Science and Technology – NTNU, Norway

Barbara Nino Carreras, Postdoctoral Researcher at DTU Management, Department of Technology, Management and Economics in the Human-Centered Innovation Section, Denmark

Brynhild Runa Sterri, Fagdirektør, Norwegian Digitalisation Agency, Authority for Universal Design of ICT/ Digitaliseringsdirektoratet, Tilsynet for universell utforming av ikt, Norway

Chris Atherton, Norwegian Labour and Welfare Administration (NAV), Norway

Dr Chris McGinley, Senior Research Fellow, Helen Hamlyn Centre for Design, Royal College of Art, London, UK

Christian Hellevang, Senior Advisor, The Norwegian Association of Local and Regional Authorities (KS), Norway

Dag Sletteå, Researcher, Consumption Research Norway (SIFO), Oslo Metropolitan University, Norway

Dagfinn Rømen, Senior Adviser, Norwegian Directorate for Higher Education and Skills, Department of Universal Design and Learning Environment, Norway

Delfín Jiménez Martín, PhD Architect. EQAR, Architecture Team for Accessible Urban Planning and Building. Spain

Dr Donal Fitzpatrick, Senior ICT Design Advisor Centre for Excellence in Universal Design at the National Disability Authority, Ireland

Elinor Jeanette Olaussen, Senior Adviser, Norwegian Directorate for Higher Education and Skills, Department of Universal Design and Learning Environment, Norway

Elisabeth Ugreninov, Research Professor, Oslo Metropolitan University, Norway

Fahd Bin Malek Newaz, University of Oslo, Østfold University College, Norway

Finn Aslaksen, Vista Utredning, Norway

Dr Flaithrí Neff. Technological University of the Shannon and National Disability Authority, Ireland

Francesc Aragall, Design for All International, Spain

Gaute Rygh, Norwegian Directorate for Children, Youth and Family Affairs (Bufdir), Norway

Giulia Bencini, University of Bologna, Italy

Ilaria Garofolo, Full Professor, University of Trieste, Italy

Ingeborg Bjark, Norwegian Directorate for Children, Youth and Family Affairs (Bufdir), Norway

Inger-Marie Hølmebakk, Norwegian Directorate for Children, Youth and Family Affairs (Bufdir), Norway

Ingrid Olsson, Associate Professor, Senior Lecturer and Distinguished Teacher in Education, PhD in Psychology, Department of Education, Uppsala University, Sweden

James Hubbard, Senior Design Advisor Products and Services, Centre for Excellence in Universal Design, National Disability Authority, Ireland

Jan Benjamin Kwiek, Advisor, The Authority for Universal Design of ICT, Norway

Dr. Jim Harrison, Lecturer, Cork Centre for Architectural education, Ireland.

John Gilligan, Technological University Dublin, Ireland

Karina Göransson, Senior Lecturer, Department of Natural Sciences, Design and Sustainable Development, NDH, Mid Sweden University, Sweden

Karina Ludwig, Head of Accessibility and Inclusive Design of ICT at the Norwegian Labor and Welfare Administration (NAV), Norway

Larry McNutt EdD, Higher Education Consultant, Registrar (retired) TU Dublin, Ireland

Leif Daniel Houck, Associate Professor, Institute of construction engineering and environmental technology Norwegian University of Life Sciences, Norway

Lilian Müller, PdD, affiliated researcher Lund University, Sweden

Morten Tollefsen, Norwegian Labor and Welfare Administration (NAV), Norway

Nieves Peinado Margalef, Architect, State Reference Center for Personal Autonomy and Technical Aids (CEAPAT), Spain

Nils Fearnley, senior researcher, Institute of Transport Economics (TØI), Norway

Niina Kilpelä, senior architect, Ministry of the Environment, Finland

Odd Morten Mjøen, Associate Professor, Department of Mental Health, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology – NTNU, Norway

Oddbjørn Sørmoen, Senior Adviser for Cultural Heritage, Church of Norway

Rakel Marie Hansen, spesialrådgiver, Akershus fylkeskommune, Norway

Roberta Cassi, Cluster for Spatial Inclusion at Royal Danish Academy – Architecture, Design, Conservation, Denmark

Rudolph Brynn, Norsk helsenett (Norwegian Health Network), Norway

Ruth O'Reilly, Senior Built Environment Design Advisor, Centre for Excellence in Universal Design, National Disability Authority, Ireland

Sarah Brodwall, Senior Advisor in Accessibility and Inclusive Design at the Norwegian Labor and Welfare Administration (NAV), Norway

Dr Satoshi Kose, Professor Emeritus, Shizuoka University of Art and Culture, Japan

Satu Wäre-Åkerblom, Architect, Finnish Association of Architects SAFA, Accessibility specialist, Finland

Sidse Grangaard, M.Arch MAA, PhD, senior researcher, Research Group Universal Design, Department of the Built Environment, Aalborg University, Denmark

Terje Gjørøseter, Department of Information Systems, University of Agder; Department of Computer Science, Oslo Metropolitan University, Norway

Tom Petersen, senior adviser, myndigheten Trafikanalys (Transport Analysis), Sweden

Tom Widerøe, Finn.no, Norway

Tone Alexandra Larsen, senior adviser, Norwegian Directorate for Children, Youth and Family Affairs (Bufdir), Norway

Tore Bjørback Amblie, Advisor, universal design, Vy, Norway

Trenton Schulz, PhD, Senior Research Scientist, Norsk Regnesentral (NR, Norwegian Computing Center), Norway

Way Kiat Bong, Department of Computer Science, OsloMet – Oslo Metropolitan University, Norway

Wenche Pedersen. Senior advisor, Strategy and sustainability, Ruter As, Norway

Zuzana Čerešňová, Assoc. Prof. Zuzana Ceresnova, PhD., Faculty of Architecture and Design, Slovak University of Technology in Bratislava, Slovakia

Sponsors

The Norwegian Directorate for Children, Youth and Family Affairs (Bufdir)

The Norwegian Ministry of Culture and Equality

Norsk Regnesentral (NR, Norwegian Computing Center)

Preface

The Seventh International Conference on Universal Design (UD2024), organized by the Norwegian Directorate for Children, Youth, and Family Affairs (Bufdir) on behalf of the Norwegian Ministry of Culture and Equality, continues the tradition of fostering cross-disciplinary dialogue on universal design. The first conference was held in Oslo in 2012, and we are pleased to return to Oslo for UD2024. Previous conferences have also been held in Lund, Sweden (UD2014), York, UK (UD2016), Dublin, Ireland (UD2018), and online in 2021 due to the pandemic, organized by Aalto University in Finland (UD2021). The most recent conference before UD2024 was held in Brescia, Italy (UD2022).

Universal design, as emphasized by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), aims to ensure inclusivity for all, regardless of abilities, age, or background. This conference embraces diverse approaches such as inclusive design, design for all, and accessibility, inviting contributions from various traditions to advance the field.

UD2024 features keynotes, academic and practical presentations, workshops, posters, field trips, and panels, promoting best practices, recent research, and collaboration across sectors and disciplines. The goal is to provide insights for creating accessible and beneficial products, environments, and services.

This compendium includes extended abstracts, posters, and full papers that complement the IOS proceedings, showcasing a broad spectrum of research and practical work. Topics cover design approaches, theoretical perspectives, socio-economic benefits, design for vulnerable children, inclusive learning environments and education, universal design in the built environment, tourism, as well as approaches to promote digital inclusion and universal design of ICT.

We hope this collection serves as a valuable resource for advocates, policymakers, practitioners, and researchers, facilitating the exchange of ideas and best practices. As we face societal challenges like social exclusion, polarization, climate change and pandemics, ongoing dialogue and research in universal and inclusive design are crucial. This compendium reflects the importance of understanding diversity and promoting universal design to achieve the United Nations' Sustainable Development Goals (SDGs).

We trust this collection will inspire continued work in this evolving field.

*Kristin S. Fuglerud,
Juan Carlos Torrado Vidal,
Wolfgang Leister*

Peer review

This compendium contains contributions that were accepted after a review process with three or more peer reviewers. Reviewers were encouraged to provide constructive feedback to all authors, highlighting strengths and offering suggestions for improvement. The authors were asked to improve their contributions based on said feedback and submit a final version to be published.

The conference received submissions from 26 countries, most of them from Norway, Denmark, and Sweden, followed by Ireland, Italy, India, the United States, Belgium, Australia, and Japan. Reviewers were recruited from 15 countries, predominantly from those that had previously hosted the conference, including Norway, Ireland, Sweden, Italy, Denmark, and Finland. The acceptance rate was fairly evenly distributed across the different countries. The most frequent topic of the submitted contributions, as well as of the accepted contributions, were built environment and digital accessibility, followed by best practice, user participation, community engagement and co-design.

Foreword

NR is honoured to sponsor the UD2024 conference. As a non-profit research institute, part of our mission is to disseminate research findings to the broader society. It is important that these findings are utilized and that decisions are made based on sound research.

This is particularly relevant to the topics of universal design and digital inclusion. There is often a prejudice that digital inclusion practices put an extra burden on designers and service providers. Despite the argument that universal design meets ethical standards and legal requirements, it is frequently perceived as an additional cost. But is this really the case? Or could it be that universal design actually helps save costs? Some argue that universally designed solutions are easier for everyone to use, which can lead to increased efficiency and reduced training costs. In this way, universal design can reduce costs and expand the potential user base of a solution.

Determining which claim is true, and under what conditions, remains a hot topic among scientists. Contributing to this discussion is part of NR's social mission.

Of course, NR's researchers also contribute to other research questions in the fields of universal and inclusive design, assistive technology and digital accessibility. We propose and develop innovative solutions, in close collaboration with user advocacy groups, end users, the private and public sector and other stakeholders. This approach has helped NR establish one of the most renowned research groups for digital inclusion in Norway. The group is led by NR's chief research scientist, Kristin S. Fuglerud, who also has the honour of chairing the scientific committee for the UD 2024 conference.

NR has a rich history of innovation in information and computation technologies, tracing back to the first Norwegian computer, NUSSE, and the development of the SIMULA programming language by Ole-Johan Dahl and Kristen Nygaard. In the late 1960s and early 1970s NR contributed to the foundation of what is now known as participatory design. This approach emphasizes the active involvement of end-users, including workers, in the design process to ensure that the systems developed meet their needs and improve their working conditions. Today NR hosts one of Europe's largest research groups for statistical modelling, machine learning, and artificial intelligence. NR's research in areas such as digital security, digital transformation, and digital healthcare technologies contributes to advancing universally designed AI, inclusive privacy technology, usable security, and more.

We wish the UD2024 conference great success and hope that it will become a focal point for good discussions. We hope this compendium will effectively disseminate excellent results to a broader audience.

Dr. rer. nat. Wolfgang Leister

*Research Director DART,
Norsk Regnesentral (NR, Norwegian Computing Center)*

Contents

Scientific Committee	V
Preface	XI
Foreword	XIII
Erasmus+ Youth programme	XVII

Chapter 1 Design approach, theoretical perspectives and socio-economic benefits

Walk of Shame – ripple effects of design activism <i>Brita Fladvad Nielsen and Heidi Pedersen</i>	3
Inclusive Design the Nor Way <i>Jannicke Hølen and Knut Bang</i>	6
More Inclusion for Berlin! <i>Gregor Strutz</i>	9
Empathy Exercises for The Design Process. Case study: The Empathy Retreat <i>Iris Popescu</i>	11
Co-Design with Diversity as Resource for Innovation <i>Cecilie Marie Eide and Anders-Petter Andersson</i>	15
Creating Inclusive Privacy: Universal Design Strategies for Smart Home Innovation <i>Cristina Paupini and G. Anthony Giannoumis</i>	23
Rolling Towards Empathy: Using a VR Simulation to Bridge the Gap in Understanding Wheelchair Users' Experiences in Public Spaces <i>Andreas Jin Sum, Achillefs Apostolou, Nicolai Lind Bouquin, Mathias Adrian Wagner Kristiansen, Rune Korsgaard Ludvigsen, Peter Mathiesen, and Carlos Mauricio Castaño Díaz</i>	25
UD4.0 _ Design as Disabled? <i>Prof Yanki Lee</i>	33
Universal design and socio-economic analysis: A mapping of analyses and literature <i>Lars Lindberg and Anna Amilon</i>	36

Chapter 2 Children, learning environment and education

There is no beauty in exclusion, it matters. School for kids with special needs <i>Marie-Louise Holst and Lotte Rønne</i>	41
Universal Design in Education (UDE) A View through the Student Lens <i>Donal Fitzpatrick, Gerald Craddock and James Hubbard</i>	44
Unlocking Access: Prioritising Video Captioning in Norwegian Higher Education <i>Dagfinn Rømen, Kjetil Andreas Knarlag, Elinor Jeanette Olaussen, and Hanne Kristin Berg</i>	46
Establishing best practices in digital learning materials through standardisation in Norway <i>Yngvar Nordberg, Vegard Østhagen and Haakon Heyerdahl</i>	49
Scaling New Heights in Ireland: ALTITUDE The National Charter for Universal Design in Irish Tertiary Education <i>Maureen Haran and Dara Ryder</i>	51
Pilot Project 'Schools for Sustainable Cities and Communities': 3 Cases in Norway - Gran, Larvik, and Nesodden Municipalities on Upgrading of Existing School Facilities <i>Eva Storrusten, Inger-Marie Hølmekbakk and Kai Reaver</i>	54
Universal Design of the University of Galway Campus: Micro level actions in the built environment <i>Deirdre McHugh and Imelda Byrne</i>	63

Chapter 3 Universal design in the built environment

A systemic approach to accessibility: leading actors and means to support regional policies for more inclusive cities <i>Ilaria Garofolo, Barbara Charelli and Elena Marchigiani</i>	67
Changing Housing - The New Zealand Lifemark success story <i>Geoff Penrose</i>	69
Accessibility information: New features in the Ruter app <i>Wenche Pedersen, Andrea Isaachsen Olvin, Stine Sæter</i>	71
Mapping accessibility in Norway <i>Sven Michaelis and Kathrin Bögelsack</i>	73
Breaking Barriers: Designing Accessible Environments for People with Dual Sensory Loss <i>Rolf Lund and Ann-Britt Johansson</i>	76
Transforming Higher Education Spaces: A Case Study of Universal Inclusive Design Implementation at Granheim, HVL Stord <i>Åse Benedikte Danbolt and Vitalis Pavlovas</i>	79
A new Square, but not for all. <i>Sigmund Asmervik</i>	82
Aging and Inclusivity: Combining Universal Design and Lighting Design Strategies for Enhancing the Living Environments of Older Adults. Systematic literature review <i>Veronika Zaikina, Randi Mork and Helle Falkenberg</i>	90
Diverse Perspectives on Physical Accessibility in Public Entrances: Six Cases in Sweden <i>Oskar Jonsson, Marianne Salén, Stefan Olander, Eva Månsson Lexell, Gunilla Carlsson, and Björn Slaug</i>	92
Carpe Diem Dementia Village - Redefining Dementia Care through Inclusive Design <i>Camilla Heier Anglero</i>	95

Chapter 4 Inclusive tourism and sustainable communities

Treetop Walk for all - Hamaren, Fyresdal, Norway <i>Monica Sølyst</i>	99
LocationCompanion - the indoor navigation app <i>Lars-Cyril Blystad and Einar Myreng</i>	101
Designing an inclusive waterfront <i>Iulian Canov, Iris Popescu, Marius Vasile and Mihaela Serban</i>	103
Universal Design to build a more inclusive touristic ecosystem. The SITE project approach <i>Barbara Chiarelli and Ilaria Garofolo</i>	107
Universal Design in Museum Mediation: Inclusive and Communicative Labels? <i>Muriel Molinier</i>	115
Co-designing Inclusive Multisensorial Interventions in Museums <i>Janice Rieger, Sarah Barron and Samantha Rowe</i>	123

Chapter 5 Digital inclusion – motivation, communication and organisation

Make your colleagues care! <i>Tom Widerøe and Lotte Johansen</i>	129
Case study: Testing the text, not the reader How to make plain language encyclopedic texts for a wide audience <i>Guro Djupvik and Kristine Magnesen</i>	131
We Are All Getting Older – Why We Should Design For Digital Elders <i>Elen Haksø and Signe Berg</i>	133

Universal design compliance criteria in the Norwegian Labour and Welfare Administration <i>Miriam Begnum and Karina Ludwig</i>	135
Our digital life – An ecosystem map for inclusive digital services <i>Cathrine Einarsson</i>	138
The role of the library in a digital age: Designing for public digital culture <i>Sofia Strömqvist and Jan Gulliksen</i>	140
Running an accessibility team across the Nordics <i>Pankhuri Sanjay Jain</i>	146
Towards inclusive digital design – visual strategies in communication processes of government agencies <i>Karina Goransson and Anna-Sara Fagerholm</i>	148
Chapter 6 Universal design of ICT and technical aspects	
Common Accessibility Issues of Norwegian Mobile Banking Applications <i>Bogdan Cerovac</i>	159
A comprehensive approach to Universal Design of digital services for neuro-inclusion in the workplace <i>Laura Cruz Stieglmeier and Rudolph Brynn</i>	162
Using APCA to develop an accessible colour palette for data visualisation <i>Jon Olav Eikenes</i>	169
Hidden user experience. Every experience has two sides, even when one is hidden <i>Kitty Toft and Martin Storsletten</i>	171
The accessibility relay - how to seamlessly hand off the baton from design to tech <i>Vishaka Mantri Roininen</i>	173
Norway's Approach to Web Accessibility Statements <i>Quinn Coffey, Adrian Bjørseth and Espen Tjøstolvsen</i>	175
<u>Autotekst.uio.no</u> : Early use of OpenAI Whisper with good UX to solve captioning in Norwegian for higher education <i>Oddmund Møgedal, Dagfinn Bergsager and Tomm Eriksen</i>	177

A systemic approach to accessibility

Actors and tools to support regional policies for inclusive cities

I.Garofolo*¹, B.Chiarelli¹, E.Marchigiani¹, V.Novak¹

¹ Department of Engineering and Architecture, University of Trieste, Italy
(E-mail: garofolo@units.it, barbara.chiarelli@dia.units.it, emarchigiani@units.it, valentina.novak@dia.units.it)

Keywords: [inclusive design, accessibility, operative tools, cross-sectoral approach]

Introduction

Thanks to efforts made in recent years, today spatial accessibility in Italy is understood to be a significant challenge for spatial regeneration in small, medium and large cities. Since 1986, national legislation has promoted the implementation of Plans for the Removal of Architectural Barriers (PEBAs; Law no. 41/1986). However, over time, their development has severely decreased, mostly due to a lack of targeted resources and specific information regarding their operational contents. Nonetheless, over the last 15 years, a number of regional governments have made efforts to foster planning for accessibility at a local level. This commitment has resulted in the development of regional laws addressed to guarantee the right to inclusion for all and to promote the implementation of the PEBAs. In 2018, FVG passed Regional Law no.10 and launched the project FVG Accessibile, proving the Region to be one of the most upstanding public administrations in Italy and one of the few adopting a systemic approach to mapping and enhancing accessibility. Since that time, several initiatives have been developed to increase the use of PEBAs by regional municipalities, and improve the quality of public spaces and services.

Approach

Within the framework of FVG Accessibile and in collaboration with the FVG Region, the two regional universities (Trieste – UniTS and Udine -UniUD) have been carrying out joint research projects since 2020, with the aim to establish a set of criteria for developing PEBAs and focused actions to support their implementation. Local municipalities, professionals and associations have been involved in raising awareness of accessibility issues, and the Region has engaged relevant institutional bodies in fostering a systemic approach [1, 3]. Each body has played a significant role: i) in promoting the making of public policies based on the evidence from academic research; ii) in developing tools to improve spatial accessibility in a Universal Design (UD) perspective; iii) in supporting professional training.

Results

Between 2020 and 2024 all the involved subjects worked together to achieve and test the projects' findings. The partnership among the Region, the Universities and

the local stakeholders is producing meaningful and effective results. The most relevant are:

- a methodological approach to engage all the actors (including the final users) in the process of developing PEBA's, specifically to highlight and overcome criticalities in public spaces and buildings that make accessibility difficult or unavailable to the most vulnerable people. The main output is a set of guidelines for the PEBA's formulation [2].
- an accessibility classification system and the sharing of a common language among the different actors in the process, from a UD perspective. The main output is an ontology, namely a set of terms and performance criteria that define the concepts relating to the domain of spatial accessibility, integrated into a WEB-based app.
- targeted tools to develop plans and projects, and proper training for professionals. The main outputs are a WEB-based app (PEBA FVG) and its user manual, a WEB portal, a training course format (2 on site and 2 by remote modules).
- a regional open-access Observatory on Accessibility, also providing information on national and international best practices, and addressed to public administration, professionals, associations, and citizens.

Conclusion

Thus far, the main outcome of developed research and actions can be seen in the increasing number of PEBA's delivered by regional municipalities (data and facts reported on the WEB portal <https://accessibile.regione.fvg.it>). The oral presentation will highlight the role and the tasks of each stakeholder involved in the conception and implementation of PEBA's, as well as some criticalities of the activities carried out, and strengths and weaknesses in the process. These issues are currently under consideration by the project partners to conceive further improvements.

References

- [1] Marchigiani E, Garofolo I. Italian Universities for Territorial Sustainable Development and Responsible Communities—The Case Study of the University of Trieste. *Sustainability*, 2023, n. 15: 20-21. doi <https://dx.doi.org/10.3390/su15032325>
- [2] Garofolo I, Marchigiani E. PEBA. Piano di Eliminazione delle Barriere Architettoniche. Linee guida. Regione Friuli Venezia Giulia – FVG Accessibile. 2020, EUT - Edizioni Università di Trieste, ISBN 978-88-5511-168-3
- [3] Marchigiani E, Chiarelli B, Novak V, Peraz A. Plans for the Removal of Architectural Barriers (PEBA's) from a UD Perspective. An Interdisciplinary Process in the Italian Region Friuli Venezia Giulia. In Garofolo I et al. (eds.), *Transforming our World through Universal Design for Human Development*. IOS Press. 2022: 271-279. doi:10.3233/SHTI220849

Acknowledgments

Authors thank the Friuli Venezia Giulia Central Department of Infrastructures and Territory, that financed the projects “Accordo operativo per la messa a regime di un sistema di rilevazione e monitoraggio permanente delle barriere architettoniche” (2020-2022) and “Osservatorio per l’analisi e il monitoraggio della qualità dei Piani di Eliminazione delle Barriere Architettoniche” (2022- ongoing).