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Introduction: Inclusive Design

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The Inclusive Design Research Special Interest Group (Inclusive SIG) of the Design Research Society provides an international platform for researchers, design practitioners, and the general public to exchange knowledge about accessible and attractive design and to empower wider participation in the design process.

The main foci of the Inclusive SIG include:

- Building and advancing knowledge for inclusive design and research
- Creating and evaluating tools and methods for inclusive design practice
- Developing strategies for engaging designers and the public
- Exploring new territories of inclusive design for the majority world
- Through these activities, we aim:
 - To share best practice in contemporary design, research, education, and public engagement
 - To keep pushing the boundaries of inclusive design and explore its potential in different contexts

As one of the special interest groups of the Design Research Society (DRS), Inclusive SIG organizes symposia on a regular basis, and the inclusive design session for the 2016 DRS received 18 papers, in addition to the relevant submissions from the open call. Following a thorough review process and strict selection criteria, 11 papers were selected for presentation at the conference. These papers cover a diverse range of topics, from redefining ageing, measuring user capabilities, to assessing product-related stigma.

For example, the paper 'Designing for older people: But who is an older person?' by Raghavendra et al. from University of Canberra, Australia, addresses one of the critical aspects of inclusive design discourses, i.e. the definition of ageing. It reports the experiment investigating if redundancy in interface design can facilitate intuitive use in older users and



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users with low technological prior experience. The findings proved that diversity in older age groups presents a great challenge in developing intuitively usable interfaces. The research suggests that looking at a target group based on their cognitive abilities instead of chronological age will provide a much more effective approach in dealing with this challenge.

Understanding user capability has been a topic for inclusive design for many years; the main challenges include: lack of appropriate definition of product-design related capabilities or related measurement scales and methods. The paper 'Towards designing inclusion: insights from a user data collection study in China' by Ning and Dong from Tongji University, has attempted to collect user data of 130 older persons in China, covering many areas of competence, from the more quantitative domain of biomechanics, interaction, to more subjective and qualitative areas (e.g. comfort). As a pilot study in collecting Chinese older people's capabilities in relation to product use, the study explores the relation between 'maximum' and 'comfortable' capability measurements, and verifies the feasibility of establishing predictive models of successful product interactions in the 50-70 user group. This study has provided promising directions for further exploration of user data.

With increasing longevity and changes in population demographics; designers, engineers and architects are faced with the challenge of providing older adults with enabling technologies and home environments that facilitate physical activity and wellbeing. For instance, there is an overall theme that older people encounter difficulty in opening household packaging for a variety of reasons. Ma and Dong's paper reports upon a survey-based investigation into such difficulties encountered by older Chinese individuals. The paper not only identifies difficult packaging types from the older users' perspectives, but also tackles the problem by considering several critical design research areas such as user participation in the design process, end user acceptance, decision-making and inclusion.

Lim and Nevey from the University of Dundee also focuses on the design process. Their paper reports a co-design project, involving care-home residents, to address the issue of acceptance and adoption of wearable technologies for older adults to monitor their activities and movements. It describes a 'craft-based' approach 'to allow designers to understand and uncover people's capabilities and needs in a non-intrusive and empathic way'. The paper raises, at the outset, the issue of non-compliance of current wearable technologies, and posits that co-design of these with older adults - through a 'crafting' process - will provide a greater sense of ownership and acceptability of designs. The authors' particular emphasis is on the 'crafting' of these artefacts, suggesting this is being led by 'non-techies' which may prove of significance in the design of acceptable technologies.

Dijk and Verhoeven's paper 'to shed some light on empowerment: towards designing for embodied functionality' uses a participatory design project to examine whether an interactive lighting system could empower a person with autism by supporting domestic activities. Reflecting on the case the authors develop the vision of *Embodied Functionality* (EF) and argue that designing for EF goes beyond 'distributing' information technology in the

environment and opens up an alternative design space, holding the promise of a more successful appropriation of interactive (assistive) products into people's everyday lives.

Stigma is a subject frequently discussed within the field of inclusive design, however measurement of this trait is under-explored. The paper 'Product stigmaticity: measuring product-related stigma' (by Kristof Romain Viktor Vaes, Pieter Jan Stappers, Achiel Standaert) presents two measuring techniques that aim to objectively assess the 'degree' of 'product-related stigma' (PRS) that is 'attached' to products. It is argued that both experimental techniques are predominantly suited as comparison tools, able to compare products on their PRS-eliciting potential. It is expected that designers and developers to use these results to justify design decisions with quantitative data, to assess which product properties have influenced certain reactions, and to what extent subsequent improvements have been successful.

The selected papers not only address the traditional dimensions of inclusive design, i.e. young-old, able-disable, professional-lay, but also raise emerging topics such as participatory action and the cultural aspect of inclusive design.

Through case study analysis, Nicola St John's paper 'Towards more culturally inclusive communication design practices: exploring creative participation between non-Indigenous and Indigenous people in Australia' explores and discusses a more culturally inclusive communication design practice particularly in relation to framing a process for creative participation and creation between Non-Indigenous and Indigenous people within Australia. It draws from and applies principles of Transformative Participatory Action research to communication design practice. This approach moves away from co-design and participatory design models to focus more on participatory action, active engagement and empowering Indigenous communities through design.

Zhao Chao, Popovic Vesna and Lu Xiaobo's paper 'Designing meaningful vehicles for older users: culture, technology, and experience' investigates Chinese middle-aged vehicle users and older vehicle users pertinent to their current travel experience and future travel needs. The study utilizes grounded theory to analyze the travel activities of two age cohorts and compare the travel-needs-influencing factors. The researchers have adapted technique of interviews, logbook and co-discovery to help collect data and explore these factors within the Chinese cultural frameworks. The study contributes to a framework and method for automotive designers to incorporate user feedback in a human-centered design process, aiming at designing vehicles that are both meaningful, functional and locally relevant for an aging population in China.

Grangaard's paper 'Towards an innovative and inclusive architecture' describes a study investigating how architectural firms and organizations related to disability in the built environment perceive and work with the Danish Building Regulations Accessibility Requirements. It discusses about accessibility regulations, in particular the challenges they present by forcing the firms to consistently meet the prescribed requirements as opposed to

the behavioural/experiential needs of the users, when not all users have the same accessibility needs.

David Fassi, Laura Galluzzo and Liat Rogel report a series of design interventions that open up the Bovisa Campus of the Politecnico di Milano as a hidden space to its surrounding communities, aiming at making normally hidden marginalized public spaces within a university campus accessible to the wider community. The paper presents a means of engaging students in future thinking and how design and design education might play a more active role in enabling such practices to be more systematically developed through a series of social activities, highlighting how design research as a creative and active force invites reconsideration of ideas about design and its role in shaping our lives in more expansive ways.

With these interesting papers addressing inclusivity from a variety of perspectives, I expect that the Inclusive Design session to provide an inspirational form for discussion and debate. For example, although engaging users creatively in the design process could help increase the sense of ownership of the participants, thus increasing the acceptance of the final design, with designers being knowledge users of inclusive design knowledge, there is a challenge yet to be addressed, i.e. how such user data would be made available, accessible and attractive to designer practitioners to exploit. We hope participants will share experience and good practice and help move the field forward.