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PREFACE

Digital Technologies for Supporting Inclusion.

Digital technologies increasingly shape the ways people access education, healthcare, employment, and social participation. While their promise is considerable, this promise is not distributed equally. Barriers to usability, affordability, accessibility, and cultural appropriateness mean that those who stand to benefit most from inclusive technologies are often those who are least well served. This paradox has become more pressing with the acceleration of digital transformation and the corresponding risk of reinforcing, rather than reducing, existing divides [1].

The United Nations Convention on the Rights of Persons with Disabilities (UN-CRPD) establishes equal access to technology as a fundamental human right [2]. Yet in practice, people with disabilities and other marginalized groups continue to experience what has been termed a double discrimination - first from social exclusion and second from digital exclusion [3]. Closing this gap requires more than technological availability. It requires research into inclusive user needs, participatory design methods, and human-computer interaction approaches that center on the lived realities of diverse populations [4].

This focus section of *IxD&A* takes up that challenge. Titled *Digital Technologies for Supporting Inclusion*, it brings together multidisciplinary contributions that address how design, evaluation, and deployment of emerging technologies can foster meaningful participation for people with disabilities and others at risk of exclusion. The three articles included here exemplify innovative, context-sensitive approaches to inclusion, spanning workplace accessibility, national infrastructures for assistive technology adoption, and participatory design processes.

In “Participatory Design of a Platform for the Promotion of Assistive Technology in Switzerland” [5], the authors present the *Swiss Silver Platform*, a hybrid online–offline infrastructure co-designed with older adults and multiple stakeholders. Their work responds to the fragmented landscape of assistive technology (AT) information in Switzerland, where regional initiatives and short-lived projects have failed to deliver sustainable or trustworthy sources of guidance. Drawing on workshops in German- and French-speaking regions, the authors highlight older adults’ desire for validated, comprehensible, and accessible information on AT, as well as their reluctance to self-identify as “old”.

This contribution advances the literature on participatory and value-sensitive design in later life technologies (Mannheim et al., 2021), while offering practical recommendations for creating nationally coordinated assistive technology platforms that are responsive to local cultures and long-term sustainability needs. A central insight from this study is that hybrid dissemination models are essential: purely

digital platforms risk excluding those with limited digital literacy, while offline engagement through local associations fosters trust, equity, and broader reach. The paper further emphasizes the ethical dimensions of participatory design with older adults, particularly the need to avoid paternalism and ensure that co-design methods respect users' preferences and terminologies. Importantly, the study also sheds light on sustainability challenges, as industry stakeholders often show limited willingness to invest in co-design activities. The authors argue that public agencies and insurers have a crucial role to play in supporting such infrastructures, especially given the potential of assistive technologies to reduce fall-related injuries and associated healthcare costs.

The article "Investigating Design Opportunities for an Inclusive Adaptive Worker Assistance – A Case Study with Cognitively Disabled Workers" [7] reports on a German case study exploring the role of *adaptive worker assistance systems (WAS) in* supporting people with cognitive disabilities (PwCD). The study highlights both the promise and limitations of existing non-adaptive systems in sheltered workshop environments, where PwCD engage in assembly, packaging, and production tasks. Through observations, controlled experiments, contextual interviews, and surveys, the authors demonstrate that while static WAS can reduce errors and improve task completion, it often fails to accommodate the diverse abilities and learning trajectories of PwCD. Workers expressed preferences for systems that adapt content granularity (e.g., images vs. videos), interaction speed (e.g., button activation time), and error handling strategies. Recommendation-based adaptation was particularly favored, as it gave users influence over system behavior without overwhelming them with complexity.

This research provides a very detailed empirical account to date of user preferences for adaptive WAS, showing that personalization is critical to fostering not just productivity but also autonomy and dignity in the workplace. By situating their findings within the framework of the United Nations Sustainable Development Goals, the authors underscore the potential of adaptive technologies to align with global commitments to inclusion. The implications extend beyond sheltered workshops: as automation reshapes labor markets worldwide, adaptive systems that support diverse cognitive profiles will be central to ensuring equitable participation in future workplaces.

The third contribution, "Participatory Design of a Platform for the Promotion of Assistive Technology in Switzerland" [8], complements the above focus on workplace inclusion by addressing national-level infrastructures for technology adoption. While similar in theme, its distinct contribution lies in detailing the iterative co-design methodology, e.g., spanning ideation, discovery, and testing phases, that engaged older adults, companies, and Living Labs. The study illustrates how methodological adaptations are necessary to align participatory processes with older adults' preferences, reinforcing the principle that inclusive design must extend not only to final products but also to the research methods employed. By cataloguing existing Living

Labs and their heterogeneous models, the authors expose the lack of standardization and sustainability in current assistive technology promotion efforts. The Swiss Silver Platform proposes a federated model where Living Labs, senior associations, and universities collaborate to validate products and disseminate information. In so doing, it raises critical questions about governance, trust, and the balance of responsibilities between public and private actors.

Taken together, the three papers in this special issue highlight several cross-cutting themes central to the future of inclusive digital technologies. First, *adaptivity and personalization* are essential, as inclusivity requires moving beyond one-size-fits-all solutions to accommodate diverse cognitive, physical, and cultural needs. Second, *participatory and co-design approaches* emerge as crucial, underscoring that inclusion begins with method: actively involving marginalized populations in the design process ensures that technologies are not only usable but also empowering. Third, *hybrid infrastructures* are shown to be vital, since sustainable inclusion often depends on combining digital and non-digital dissemination strategies in recognition of persistent digital divides. Finally, the papers draw attention to *sustainability and governance*, emphasizing that the long-term viability of inclusive technologies relies on robust financial models, supportive institutional frameworks, and cross-sectoral collaboration, particularly given industry reluctance to invest in co-design. This special issue thus contributes to bridging the knowledge gap on inclusive usability and HCI design identified in the call for papers, and by grounding their analyses in empirical data and real-world contexts, the authors provide actionable insights for researchers, practitioners, policymakers, and industry stakeholders committed to building more equitable digital futures.

The field of inclusive digital technologies is at a critical juncture. On the one hand, advances in AI, robotics, and interaction design hold immense potential to expand participation. On the other hand, without careful attention to usability, equity, and sustainability, these advances risk reinforcing divides. As Boger et al. [9] argue, transdisciplinary collaboration is essential to realize the promise of assistive technologies. The contributions in this issue demonstrate what such collaboration can achieve: not only technical innovations, but also infrastructures and methods that embed inclusion as a guiding principle.

We hope that this collection will inspire further research into inclusive, adaptive, and participatory design practices. More importantly, we hope it will serve as a reminder that inclusion is not a by-product of technological progress, but a deliberate outcome of ethical, collaborative, and context-sensitive design.

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