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# Editorial – Elsevier smart health special issue: Advancing ICT for health, accessibility, and wellbeing

Information and Communication Technology (ICT) has emerged as a cornerstone in addressing global health challenges, accessibility needs, and promoting overall wellbeing. Article 9 of the United Nations Convention on the Rights of Persons with Disabilities highlights ICT accessibility as integral to ensuring equity and inclusion for persons with disabilities (PwDs) (World Health Organization, 2023). The World Health Organization (WHO) estimates over one billion individuals live with disabilities, 80 % of whom are in low-income regions. These individuals face compounded challenges of exclusion and poverty, exacerbated by limited access to affordable and inclusive technologies (United Nations, 2025).

The exponential advancement and decreasing costs of ICTs present unprecedented opportunities to enhance quality of life. However, this progress must be matched with inclusive design and implementation strategies that prioritize user-centricity. The intersection of accessibility and technology demands a multidisciplinary approach, incorporating fields such as natural language processing, augmented and virtual reality, and real-time data analytics. These technologies must be intuitive and responsive to the needs of diverse users, including those with chronic illnesses or age-related impairments.

The pandemic underscored vulnerabilities in healthcare systems and societal structures, excessively affecting marginalized populations, including those with disabilities. Non-pharmaceutical interventions, as explored in this special issue's paper on their effectiveness in Italy, demonstrate the critical role data-driven methodologies play in public health strategies. Such approaches enable tailored interventions that safeguard the most vulnerable without relying exclusively on medical interventions. Equally transformative are innovations inspired by biological systems, as evidenced by the robust navigation assistive device model presented in the paper accepted in this issue. These technologies exemplify the convergence of ICT with neuro-cognitive and biomedical research, offering tangible solutions to enhance mobility and independence for individuals with sensory impairments. By mimicking biological processes, these technologies can address real-world challenges with enhanced precision and resilience.

The contributions to this special issue showcase cutting-edge research that addresses these imperatives, underscoring the transformative potential of ICT in health, accessibility, and wellbeing. The papers featured reflect the breadth of innovation needed to tackle contemporary challenges. For example, data-driven approaches are increasingly critical in understanding and mitigating public health crises, as they enable policymakers to design more effective, evidence-based interventions. These methodologies demonstrate how the integration of real-time analytics and predictive modeling can improve decision-making processes and outcomes, particularly during emergencies such as pandemics.

Similarly, advancements inspired by biological systems are paving the way for assistive technologies that are not only robust but also adaptive to user needs. These technologies leverage principles from neuroscience and biomechanics to offer practical solutions for individuals with mobility or sensory impairments, fostering independence and improving quality of life. By combining technical innovation with a deep understanding of human biology, such research highlights the importance of interdisciplinary approaches in addressing accessibility gaps.

Together, these contributions reflect the journal's focus on interdisciplinary, user-centered ICT solutions that transcend traditional healthcare paradigms. They emphasize the necessity of co-designing with end-users to ensure that technologies are not only effective but also equitable, inclusive, and responsive to diverse needs. Such work exemplifies how ICT can drive the evolution toward healthcare models that are personalized, predictive, and participatory, with the goal of enhancing health outcomes and societal

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wellbeing. They highlight the potential of ICT to transcend traditional healthcare paradigms, shifting towards models that are personalized, predictive, and participatory. Such work highlights the necessity of integrating the voices and experiences of end-users in the co-design and evaluation of ICT solutions.

As we address the complexities of global health and accessibility challenges, the imperative for innovative, inclusive, and scalable ICT solutions remains clear. This special issue offers a glimpse into the promising future of technology as a catalyst for equitable health outcomes and societal wellbeing.

## References

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