Developing sustainable and ethically valid gerontechnology: A comprehensive approach to aging, diversity, and participation

T. Harra & A. Kaipainen

Purpose There are significant and complex challenges related to people, nature, and technology. The purpose of this presentation is to describe the development process of sustainable and ethically valid co-development in gerontechnology. Our joint development of gerontechnology is based on WHO's Healthy Aging 2030, the UN's Sustainable Development Goals (1-5, 8-11, and 16-17), and the EU's horizontal principles. Our goal is to enable good aging and life, requiring the participation of aging populations in the development of gerontechnology while considering their diversity and equality in the community. **Method** The development process has been iterative and constantly evolving. So far, we have implemented four projects, with the fifth just starting. In the first project, we identified the needs and preferences of aging seniors and the opportunities for universities to link users and gerontech companies for joint development. In the second project, we connected users and companies, developing transdisciplinary, user-oriented co-creation, testing, and user experimentation processes, combining expertise from well-being, construction, information technology, industries, and stakeholders. In the third project, we developed remote, hybrid, and resource-efficient services for SMEs for transdisciplinary joint development of products. Next project, we combined the analysis of the functional capacity of aging residents using the ICF classification with building design ontologies to develop home and building-related digital transformation flexibility to promote planetary well-being. We are currently launching the fifth research-based gerontech development project at the national and international levels. Diversity has been a key consideration in all our projects. This includes the involvement of a wide range of individuals from both rural and urban areas of Finland, encompassing various functional abilities and cultural backgrounds. Our projects engage people living independently, those receiving homecare services, and residents of assisted living facilities. All projects have utilized interdisciplinary joint planning (Hahkala et al., 2023) and a participatory research partnership model based on the active participation and collaboration of all actors. This collaboration promotes learning, commitment and wisdom through shared experiences (Sipari et al., 2022). **Results and Discussion** As a result of these projects, we have developed sustainable and ethically valid tools for the user-friendly co-development of gerontechnology. The user-oriented value field of smart technology can be used as a content structuring tool in both joint development and evaluating the user-friendliness of solutions. It has also guided our further development activities. We have developed several practical process models and tools to facilitate the implementation of joint development, testing, and user experiments in a user-friendly manner. In addition to tools, we have produced information and insights through various articles, videos, podcasts, webinar series, and VR and AR environments to support virtual testing. The HIPPA Story Archives, a constantly expanding story bank, contains almost 350 authentic everyday stories from aging people from different parts of Finland. All materials are openly available to everyone on the Tuttunet platform. Both users and developers have found added value of co-development of gerontechnology. There are about 120 companies, several HEIs and a lot of elderly, students and staff members, who are eager to participate in the co-development of gerontechnology with Metropolia UAS. The development activities are progressing towards scientific and international collaboration. We invite all universities and other interested parties to participate in this ongoing development activity.

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Keywords: gerontechnology, co-development, transdisciplinary, sustainability
Affiliation: Futureproof Health and Wellbeing Innovation hub, Metropolia University of Applied Sciences, Finland
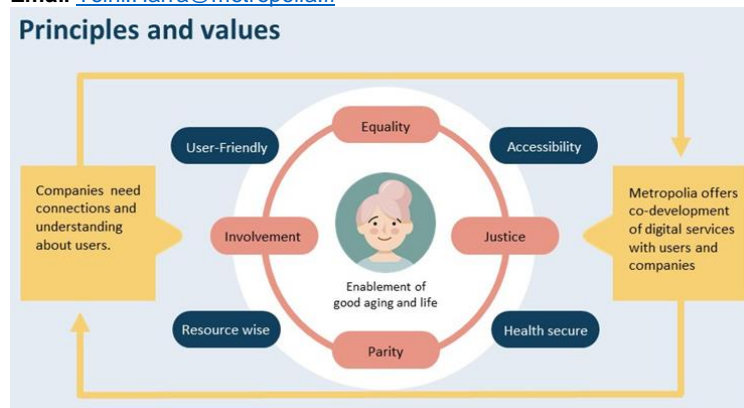**Email** Toini.Harra@metropolia.fi

Figure 1. Development of sustainable and ethically valid gerontechnology.