



Web & Information Systems Engineering Lab

has the honor to invite you to the public defense of the PhD thesis of

Renny Lindberg

to obtain the degree of Doctor of Sciences

Title of the PhD thesis:

**Design Recommendations for Social Engagement Platforms:
Towards Enhanced Technology Adoption by Elderly People
and Long-Term Engagement**

Promotors:

Prof. Dr. Olga De Troyer (VUB)

Prof. Dr. Beat Signer (VUB)

The defense will take place on
**Friday, July 8, 2022 at 15h in auditorium
D.0.08**

The defense can also be followed through a live
stream using this [link](#).

Members of the jury

Prof. Dr. Malaika Brengman (VUB, chair)

Prof. Dr. Johan Loeckx (VUB, secretary)

Dr. Audrey Sanctorum (VUB)

Prof. Dr. Karin Coninckx (Universiteit Hasselt)

Prof. Dr. Suzanne Kieffer (UCL)

Curriculum vitae

Renny S. N. Lindberg has a bachelor's degree in business administration (information technology) from Haaga-Helia University of Applied Science, Helsinki, Finland and received a master's degree in computer science and engineering from Ajou University, Suwon, South Korea, in 2017.

Between 2015 and 2017 he worked as a researcher at UBILIFE, Suwon, Gyeonggi-do, South Korea and was involved in the development of two educational games. From Sept 2017 onwards, he has been working towards his Ph.D. degree at Vrije Universiteit Brussel, Brussels, Belgium.

Currently, his research largely focuses on social engagement applications, design guidelines for elderly users and different forms of gamification and digital persuasive techniques.

Abstract of the PhD research

The number of people aged 65 or older, both within Europe and globally, is projected to increase substantially by 2050, nearly doubling from the 2018 figure of 101 million. At the same time, elderly people want to stay at home for as long as possible, which increases the need for a different level of support. Services that are focusing on volunteering and helping others can be of great importance in this regard. The COVID-19 pandemic also showed the vulnerability of elderly who suddenly were recommended not to meet too many people. As a result, they became very dependent on other people. As physical meetings had to be avoided, the importance of digital social engagement (SE) platforms for this purpose became clearer. However, their use for this purpose poses two problems: 1) Some older people are lagging in adopting new technologies; and 2) The acquisition and especially retention of volunteers is not without challenges.

In this dissertation, both problems are addressed from a computer science point of view. First, we investigated what is required to make digital SE platforms that are focusing on requesting and offering help for everyday tasks more accessible to elderly. For this, we used a comprehensive view covering both social as well as technical and design issues. We first took an in depth look at technology adoption factors focusing on older users. Next, we looked at current usability guidelines focusing on designing digital applications for elderly and investigated their relevance for modern technology. To deal with the second problem, we searched and explored techniques that could be used for motivating and engaging users. More specifically, gamification, persuasive strategies, and nudging were considered. After having studied the two problems from a general point of view, we returned to our concrete use case, SE platforms. An extensive evaluation of several existing SE platforms has been conducted to examine how well they address the two problems mentioned. This evaluation was performed by means of hands-on evaluations, interviews with representatives from five platforms, and user surveys conducted on three platforms. Based on all the results, we compiled a list of recommendations on how to achieve a better adoption of social engagement platforms by elderly and how to improve the long-term engagement of their users. A pilot study with elderly was performed to evaluate some of our key recommendations. Finally, we also proposed a new approach on how gamification could be utilized in this context for bridging inter-generational divides. The concepts are illustrated by the means of an early proof of concept.

In addition to the contributions to the research domain, the findings can also be directly useful for developers of SE platforms. The proposed new approach to gamification could also be applied in other domains, such as in e-commerce or educational platforms.