

Living lab as a framework to co-create a personalized user experience for the promotion of Active and Healthy Ageing

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Abstract— This paper presents a personalized interactive experience for promoting Active and Healthy Ageing (AHA) through the discovery of various technologies by different user profiles in a Living Lab.

Clinical Relevance— The primary objective of this work is to advance the innovation and digitalization process in the health sector by utilizing a Living Lab facility to promote technology adoption among older people, with the ultimate goal of enhancing their quality of life.

I. INTRODUCTION

Living Labs are open innovation ecosystems based on a systematic cocreation approach [1] that facilitate simultaneous processes creating user centric products and services. Designing adequate solutions to support senior's autonomy, health and well-being represents a global challenge where all sectors of the economy can be benefited. Within this context, the work presented in this paper describes a personalized interactive experience co-created in a living lab to promote Active and Healthy Ageing (AHA) in a friendly and entertaining way for older people.

II. METHODS

This work was developed using User-Centered Design (UCD) as the primary principle [2], with the aim of empowering people in their health by creating an interactive experience that aligns with their needs, values and expectations. To create a user-centric solution, *Personas* were first identified using the Blueprint model [3], which considers both the physical and cognitive aspects of the user. Based on the identified user types, a personalized research and intervention protocol was established including the Heuristic Evaluation and System Usability Scale (SUS) for the evaluation of the proposed solution [4].

III. RESULTS

The Figma design tool was used for the creation of a high-level prototype consisting of a welcome and registration process, self-assessment, a tour of activities, and feedback, culminating in a farewell experience. Based on the data collected in the user's self-assessment, the system suggests a set of activities that integrate innovative technologies to help the user improve aspects within four categories: health and

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wellbeing, active body, cognitive training, and friendly environment. The activities collect metrics that are used to provide feedback to the user at the end of the experience, along with advice and motivation to continue taking care of their health and well-being. To ensure the usability of the solution, it was tested by six heuristic usability experts, and refined based on their feedback. Additionally, a System Usability Scale (SUS) study was conducted with nine participants to further evaluate the solution's effectiveness.

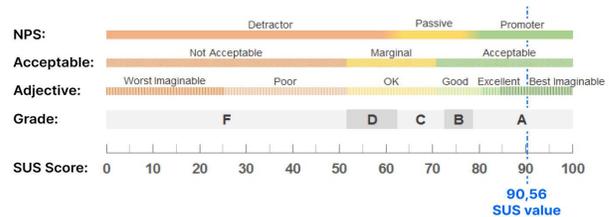


Figure 1. System Usability Scale (SUS) of the user experience.

IV. DISCUSSION & CONCLUSION

The results obtained from the study are very promising as evidenced by Figure 1, with a high System Usability Scale (SUS) value of 90,56 indicating that the solution was well-received by users. This study highlights the potential of Information and Communication Technologies (ICT) in providing personalized attention to older people, who are often overlooked in the implementation of new technologies. By offering access to personalized care for both physical and cognitive health, the solution has the potential to improve the quality of life and independence of older people. Moreover, the solution presented in this study has become a core element of the LifeSpace Lab [5] infrastructure and will soon be validated with real users.

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