

Chapter 2

Managing User Integration: Insights From the Field of Publicly- Funded Research and Development Projects in Germany

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ABSTRACT

The importance of robotics and assistive technologies for healthcare is increasing. For their introduction into practical application, the continuous integration of the user perspective is crucial to ensure acceptance and usability. This can be achieved by the user-centered design approach. In an earlier publication, several problems with its functional implementation within research and development (R&D) projects were pointed out. This chapter discusses possible solutions to promote an effective integration of the user perspective in R&D projects based on six interviews with experts from Germany. The results can be summarized in three main requirements: first, the generation of a common understanding of the target group; second, a scientific research approach considering the context of technology usage; third, projectification, with a focus on efficient resource planning, the development of generic technologies, and technology evaluations with the user group. Leaders of innovative projects can benefit from implementing these strategies in the development process.

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INTRODUCTION

Publicly funded research and development (R&D) projects typically serve to develop and investigate socially, economically, and technologically risky developments, such as innovative products or processes (Fellbaum, 1982, p. 88). Within the framework of interdisciplinary collaborative projects, manufacturers, and industry (e.g., hardware and software developers), scientific institutions (e.g., research institutions), and social and healthcare institutions closely work together on innovative solutions. By contributing and sharing their expertise, collaborative project partners can enhance their own knowledge and test early-stage developments or methods. Due to third-party funding, financial risks are limited, and failure has no impact on the partners' credibility or success outside the project's framework.

Particularly, innovation-driven projects with societal significance are often the focus of R&D projects. Due to the crucial impact of worldwide demographic change on various areas of society, such as the working world, social security systems, and the healthcare sector, robotics for assistance and care are at the center of global discussion. In the healthcare sector, those discussions affect patients, healthcare stakeholders, policy makers, and industrial players, and are therefore the object of many R&D projects (Dolic et al., 2019). While robotic systems are generally used for various tasks in healthcare, such as surgery or logistics (Acosta Calderon et al. 2015; Peters et al., 2018), a vast amount of development is invested into the care of older adults (Graf, 2020). Reasons are the increasing number of the elderly, a shortage of professional caregivers and related to that, an increased burden for social security systems. Furthermore, elderly are a highly heterogeneous group characterized by different health conditions, disease patterns, coping strategies and therefore have individual care requirements. In this context, care robots are being attributed great potential to support persons with physical and/or mental impairments and disburden formal and informal caregivers (Law et al., 2019). Potential fields of robot application include support for activities of daily living, e.g., eating, toileting, mobility, household management, and social participation as well as the cognitive and physical relief of formal and informal caregivers (Becker 2013, p. 21 ff.; Kehl 2018, p. 59 ff.).

Despite the wide range of possible applications, it must currently be stated that the developed systems often do not go beyond the project status (Bedaf et al., 2015, p. 80). Furthermore, robotics research in the field of care and nursing is still in its infancy, so that there is little evidence of the solutions developed compared to existing forms of care and nursing. Barriers of the implementation of care robots comprise socioeconomic, user acceptability and ethical issues related to the care-receiving individual in particular as well as the care provision as a whole (Johansson et al., 2014; Servaty et al., 2020). Finally, it must also be critically noted that existing user

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