FRAUNHOFER CENTER FOR ASSISTIVE INFORMATION AND COMMUNICATION SOLUTIONS – AICOS

INVISIBLE DESIGN RESEARCH BEHIND TECHNOLOGY DESIGN

One of the greatest fears of companies investing in the development of new and disruptive consumer technologies is whether or not this technology will be accepted, adopted and used by the target users. For a technology to be accepted, certain conditions must be met in the person-technology-milieu relationship. Despite different theories, two widely accepted variables that come into play in modelling technology acceptance are *perceived ease* of use and *perceived usefulness* which, together, will define an *attitude* and a *behaviour intention* towards the technology[1].

These variables are essentially human perceptions, users' perceptions in relation to said technology and milieu. It follows, that the key to designing technology which people will accept and use lies not solely on the product itself, but on the deep understanding of the people who will be forming opinions and judgements on these products and deciding whether or not to welcome them into their lives. This in-depth understanding will determine the characteristics products must have.

A design researcher will start with this understanding of people (users), materiality and interaction (technology) and the milieu (context), almost always strongly grounded on qualitative research and experimentation. Often, the research process to get to the final configuration of the technological product is invisible and when thinking of design, one just tends to think of the aesthetics of the product. However, the functions we consider go beyond aesthetics to include functions of use, need, telesis, method and association[2]. And, indeed, the most transparent the research process in the final design, the better it is.

A well-crafted and rigorous research process for this purpose will be adapted to each situation and available resources. At AICOS we are experts in designing these research processes involving non-mainstream audiences due to our track-record in designing technologies with and for people with chronic diseases and/or functional impairment. Attention to detail and the ability to adapt research methods to the user groups we are working with enables us to get the best data and contribution possible from the users.

So far, these bespoke processes have helped us understand things such as how to give useful daily symptom visualisation back to people with Parkinson's disease[3], how to

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HUMAN-CENTRED DESIGN

1 Venkatesh V., Morris M. G., David G. B. & David F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly.*

2 Papanek. V. (1984). *Design for the Real World: Human Ecology and Social Change.* Chicago: Academy Chicago Publishers.

3 Correia de Barros A., Cevada J., Bayés À., Alcaine S. & Mestre B. (2013). User-centred design of a mobile self-management solution for Parkinson's disease. In *Proceedings of MUM 2013.*

meaningfully represent sleep for shift workers[4], which wording to use to improve game usability and experience for novice technology users[5], how to break tasks to reduce cognitive load for people with cognitive impairment, or how to design an inclusive wearable device, i.e., usable by the widest possible range of users, regardless of age, dexterity level or body size.

If you, as a company, think your customers are special or want to create a special, easy to use and useful product, we will design a special research process for you. To see examples of our research methods and how they are employed, follow the link.

4   Nunes F., Ribeiro J., Braga C. & Lopes P. (2018). Supporting the self-care practices of shift workers. In *Proceedings of MUM 2018*.

5   Vasconcelos A., Silva P.A., Caseiro J., Nunes F., & Teixeira L.F. (2012). Designing tablet-based games for seniors: the example of CogniPlay, a cognitive gaming platform. In Proceedings of the 4th International Conference on Fun and Games (FnG ,12). ACM, New York, NY, USA: 1-10.