

ICT20-034 - ShapeTech - Shaping technology: biometric data, collective empowerment and humanization of work

Abstract

Background

Occupational health has become increasingly important due to ongoing digitalization. The growing use and dynamic changes in information and communication technologies are affecting working conditions. We observe accelerating work intensification and trends towards self-optimization. However, digital technologies also provide opportunities to take steps to secure employees' health. The ShapeTech project captures the effects of digitalized office environments through qualitative and biometric data to support workers in the development of concrete proposals to humanize work.

Methods

To achieve this, we developed an exploratory research design. Selected employees were researched for two working weeks in two extensive company case studies using semistructured interviews, tools to collect biometric data during work, daily questionnaires and a diary study. These data were interpreted and condensed in reports to provide feedback to individual employees about potential stressors in specific work situations. In a final step, the employees shared and debated this information in focus-group discussions, focusing on their working conditions and possibly proposing improvements. The anonymized results were made available to the companies for occupational health promotion.

Main Findings

Main outcomes and findings in the research project concern the development and refinement of algorithms to identify stress and attention levels and designing a user interface; we identified main stressors in highly digitalized office environments in the two case studies (including interruptions, high availability, overload, and work intensification); and we discussed with the participants their responses to these challenges (including increased need for selfmanagement or frustration). Regarding the research design and the methods, we found that biometric data used to detect stress and attention in a real-life work environment on its own is insufficient (including bugs and noise that influences the data collection) and needs to be supported by additional scientific methods to provide a more detailed interpretation. On its own the data might lead to excessive self-optimisation.

Conclusions

In both case studies the participants experienced stress in relation to their highly digitalized work. Nonetheless, digital technologies are often perceived as unchangeable and the need for shaping digital technologies is rarely understood in day-to-day business and is, as a result, in practice usually negotiated through the work organisation. This lack of leverage to shape digital technologies led to frustration, to feelings of helplessness, and ultimately to an individualization of organizational challenges. In the focus-group discussions participants were able to discuss specific work-related stressors in more detail. As such, the focus-group discussions allowed room for digital humanism and workers' agency towards shaping digital workplace technologies.

Open Access Publications:

Gerdenitsch, C., Bieg, T., Gaitsch, M., Schörpf, P., Tscheligi, M., & Kriglstein, S. (2023). Tracking to Success? A Critical

Reflection on Workplace Quantified-Self Technologies from a Humanistic Perspective. In CHIWORK '23: Proceedings of the 2nd Annual Meeting of the Symposium on Human-Computer Interaction for Work (CHIWORK 2023) (pp. 1-7). Article 6 Association for Computing Machinery (ACM). <https://doi.org/10.1145/3596671.3597653>

Scientific disciplines:

Sociology of work (40%) | Occupational psychology (30%) | Human-computer interaction (15%) | Practical computer science (15%)

Keywords:

self-monitoring tools, biometric data, co-determination, quantified self, work-related stress and health, humanization of work, social shaping of technology

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Status: Completed (01.10.2021 – 30.09.2024)

GrantID: 10.47379/ICT20034

Further links to the persons involved and to the project can be found under <https://www.wwtf.at/jpeto2.brunner.at/funding/programmes/ict/ICT20-034/>