

## Digitization of the Individual – Personal Decision Analytics

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### 1. Introduction

In this era of pervasive digitization, the concept of the Digitization of Individuals (DI) has gained significant traction, reshaping personal decision-making across various aspects of life. The ability to collect, analyze, and utilize personal data through artificial intelligence (AI) and advanced analytics has made decision-making processes more precise, timely, and impactful (Ribeiro-Navarrete et al., 2021). This minitrack focuses on how digitization enables individuals to make informed, data-driven decisions, improving their overall well-being.

A key focus within DI is Personal Decision Analytics (PDA), where AI-driven systems help individuals process personal data to make decisions in areas like health, finance, and productivity (Leidner & Tona, 2021). PDA provides innovative solutions that enhance personal finance management, predict health risks, and boost productivity through personalized recommendations. For instance, machine learning algorithms in financial systems offer tailored budgeting and investment advice, while predictive analytics in health systems assess risks and provide customized wellness recommendations. Additionally, productivity tools help users prioritize tasks and manage their time more effectively, supporting better decision-making in both professional and personal contexts.

This minitrack provides a platform to explore cutting-edge research and applications in DI and PDA, focusing on how these technologies enhance decision-making and drive life transformations. It aims to examine the adaptive nature of DI systems, which serve as decision companions that evolve by learning from personal data. Research in this area also addresses the ethical and privacy challenges associated with the use of personal data, addressing critical questions around data ownership, responsibility, and potential misuse as individuals increasingly entrust their private information to digital systems.

Another important area of exploration in this minitrack is the integration of DI with emerging technologies such as natural language processing, blockchain, and digital environments. These technologies hold great potential to enhance the personalization, security, and immersion of DI systems, offering more intuitive and effective user experiences. However, they also raise challenges, including ethical dilemmas related to data privacy and the impact of increasingly personalized digital environments on human behavior.

The research presented in this year's papers spans diverse disciplines, including computer science, information systems, health informatics, and AI, highlighting the value of cross-disciplinary collaboration in addressing domain-specific challenges such as privacy-preserving data management and healthcare system integration. These papers aim to deepen our understanding of how digital innovations (DI) can improve personal decision-making in critical areas like health and education, while also exploring solutions to make these technologies more scalable, privacy-conscious, and user-friendly.

The first paper, “Towards Minimally Domain-Dependent and Privacy-Preserving Architecture and Algorithms for Digital Me Services,” explores privacy-preserving AI systems that predict user status and offer personalized recommendations based entirely on personal data. By employing Personal Federated Learning (PFL), a decentralized method that ensures sensitive data remains on personal devices, this approach increases trust and privacy without compromising the accuracy of predictions. This research demonstrates how DI systems can be adapted across various domains, such as healthcare and education, while maintaining flexibility and scalability—key attributes for building robust, user-centric services in an increasingly digital world.

The second paper, “Unlocking the Potential of Pre-Eclampsia Self-Management System: Analyzing Benefits, Challenges, and Gaps,” examines the use of PDA in the context of pre-eclampsia, a severe condition affecting up to 10% of pregnancies. By leveraging Self-Management of Blood Pressure

(SMBP) systems, this work highlights how real-time monitoring can lead to earlier diagnosis and more effective management. The paper also identifies critical factors such as integrating SMBP systems with electronic health records (EHRs) to streamline communication between patients and providers. However, challenges like data privacy concerns, user technical literacy, and cost remain barriers to widespread adoption, pointing to the need for further innovation to enhance usability and accessibility in healthcare technology.

## 2. References

- Ribeiro-Navarrete, S., Saura, J. R., & Palacios-Marqués, D. (2021). Towards a new era of mass data collection: Assessing pandemic surveillance technologies to preserve user privacy. *Technological Forecasting and Social Change*, 167, 120681.
- Leidner, D. E., & Tona, O. (2021). The CARE Theory of Dignity Amid Personal Data Digitalization. *MIS Quarterly*, 45(1).