

Human-centricity in a Sustainable Digital Economy

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Abstract

Human-centricity is arguably one of the fundamental aspects of a sustainable digital economy. The goal of this minitrack is to advance the level of understanding of what human-centricity and sustainable digital economy are, to identify the main interdisciplinary challenges for the realization of human-centricity in a sustainable digital economy, and to provide the best-practice case studies on how human-centricity and sustainability may be achieved in specific domains.

1. Introduction

The Internet and the global digital transformation have changed many different aspects of our lives. Not only the economies and the societies but also people's personal lives have been influenced by this new and ever-emerging era of our history. While the digital age has made it possible to provide novel services and solutions for end-users [1, 2], it has also caused serious concerns in different individual and societal levels, such as issues regarding online privacy, algorithmic bias, fairness and accountability of information systems, transparency, governance, and explainability of information systems, end-user manipulations, fake news, traceability, etc. [3, 4]. The development of human-centric [5] and end-user empowering [6, 7] information systems can be one approach towards "digital sustainability", i.e. providing novel and personalized services for the end-users, while considering potential negative multidimensional consequences of digital transformation. This is included in the notion of sustainability, which covers multiple dimension, which are summarized by the triple-bottom line (i.e. an economic, an ecological as well as a social dimension) and the desire to improve or at least maintain a certain state [8].

2. HICSS-54 Objectives and Papers

This minitrack is based on the results of the previous minitrack on "End-user Empowerment in the Digital

Age" at HICSS-53 (see [6]). In contrast to the year before, this years minitrack emphasizes sustainability aspects of human-centricity and end-user empowerment in the digital economy. It adopts an interdisciplinary perspective, which considers human-centricity and end-user empowerment across application domains (e.g. software development, digital commerce, healthcare, administration, mobile apps, social media, and online services). Possible topics of the minitrack are:

- Understanding the nature and the development of human-centric information systems
- Evaluation of existing information systems from a human-centric perspective
- Co-creation and co-production of human-centric sustainable information systems
- Analysis and design of technologies (e.g. AI, Blockchain) that empower end-users
- Human-centric end-user agents, AI and machine learning
- Fairness, transparency, accountability and controllability of information systems
- Privacy, GDPR, personal data on the Internet, or consent management
- Legal or economic aspects of human-centricity in information systems
- Identity and privacy management systems
- Business value of human-centric and/or user empowered solutions
- Socio-technical studies of human-centricity in information systems
- Opportunities and challenges of digital behavior change, habit formation, and digital addiction
- Digital nudging for increasing social or ecological responsibilities
- Ethical concerns regarding human-centricity

After a rigorous review process five papers were accepted for the minitrack. They address various aspects of the minitrack theme, in particular the economic and the social dimension of sustainability in the design of human-centric information systems as well as the key topics of data privacy and user behavior.

First, Gautam Ramasubramanian, Aijaz Shaikh, and Ravishankar Sharma present a data-driven narrative of how ICT development impacts the sustainable growth of economies. Titled “Examining the Impact of ICT on Sustainable Development: A Data-Driven Narrative” they describe the findings from their historical panel data from 39 economies across the developed and developing economies.

Second, Nils Koester, Patrick Cichy, David Antons, and Torsten Oliver Salge examine how individuals perceive privacy risks that might be caused by connected car services. In their paper on “Privacy Risk Perceptions in the Connected Car Context” they show how user’s privacy risk perceptions in turn influence their decision-making, i.e. their willingness to share car data with the car manufacturer or other service providers.

Third, Lisa Patterson, Sue Chard, Bryan Ng, and Ian Welch explore user perceptions and user behavior towards IoT devices. Titled “Internet of Things (IoT) Privacy and Security: A User-Focused Study of Aotearoa New Zealand Home Users”, they adopt the theoretical lens of Protection Motivation Theory (PMT), and determine which of the four factors of PMT contribute to user behavior.

Fourth, Enestine Dickhaut, Mahei Li, Andreas Janson, and Jan Marco Leimeister present their research on “Developing Lawful Technologies – A Revelatory Case Study on Design Patterns”. They conduct a revelatory case study using design patterns to develop and assess a smart learning assistant. They scaffolded the case interpretation through the human-centered view of socio-materiality and provide contributions concerning the use of design patterns in the development and assessment of lawful technologies.

Finally, Fumiya Akasaka and Momoko Nakatani present a case study illustrating how to involve various citizens in the long-term co-creative design process in Urban Living Labs (ULL). Titled, “Citizen Involvement in Service Co-creation in Urban Living Labs”, they describe living labs in which citizens and companies collaborate to create services for solving problems in a city or region.

3. Future Research

While we hope that this minitrack has contributed to the body of knowledge on human-centricity and sustainability in the digital economy, many aspects still need to be further studied and discussed. Among others, we can identify several important potential future research directions: while the role of end-users has been recognized as a key element in information systems and

end-user computing [1, 2], the basic interdisciplinary concepts and elements of human-centricity, end-user empowerment, and digital sustainability need to be further developed in the context of the digital economy. For example, this includes studies that pursue multiple sustainability dimensions and the interrelationship among these dimensions. The recent advancements in consent management, digital trust, ethical AI, cognitive science, and Science—Technology—Society provide an opening spectrum of research to be integrated with the already existing concepts in information systems and digital economics in order to develop innovative interdisciplinary concepts and theoretical frameworks. These frameworks can then contribute to develop novel evaluation approaches, as well as new multidimensional and multidisciplinary co-production mechanisms.

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References

- [1] M. Alavi, R. R. Nelson, and I. R. Weiss, “Strategies for end-user computing: An integrative framework,” *Journal of Management Information Systems*, vol. 4, no. 3, pp. 28–49, 1987.
- [2] R. Alt, J. F. Ehmke, R. Haux, T. Henke, D. C. Mattfeld, A. Oberweis, B. Paech, and A. Winter, “Towards customer-induced service orchestration-requirements for the next step of customer orientation,” *Electronic Markets*, vol. 29, no. 1, pp. 79–91, 2019.
- [3] B. Wagner, T. Winkler, and S. Human, “Bias in geographic information systems: The case of google maps,” in *Hawaii International Conference on System Sciences 2021*, 2021.
- [4] S. Human, G. Neumann, and M. F. Peschl, “[how] can pluralist approaches to computational cognitive modeling of human needs and values save our democracies?,” *Intellectica*, no. 70, pp. 165–180, 2019.
- [5] S. Human and F. Cech, “A human-centric perspective on digital consenting: The case of gafam,” in *Human Centred Intelligent Systems* (A. Zimmermann, R. J. Howlett, and L. C. Jain, eds.), pp. 139–159, Springer, 2021.
- [6] R. Alt, S. Human, and G. Neumann, “End-user empowerment in the digital age,” in *Hawaii International Conference on System Sciences 2020*, pp. 4099–4101, 2020.
- [7] S. Human, R. Gsenger, and G. Neumann, “End-user empowerment: An interdisciplinary perspective,” in *Hawaii International Conference on System Sciences 2020*, pp. 4102–4111, 2020.
- [8] R. Alt, “Electronic Markets on sustainability,” *Electronic Markets*, vol. 30, no. 4, 2020.