Introduction to the Digital Services and Digitalization of Services Minitrack

Tilo Böhmann
Universität Hamburg
Department of Informatics
tilo.boehmann@uni-hamburg.de

Ola Henfridsson
University of Warwick Business School
ola.henfridsson@wbs.ac.uk

Tuure Tuunanen
University of Jyväskylä
Faculty of IT
tuure@tuunanen.fi

This minitrack deals with the innovation, design, development, management, and use of digital services and the digitalization of services. The key drivers in this area of research are the multiplying technological opportunities for digital services, such as ubiquitous connectivity, wearable devices, cyber-physical systems, Internet of Things (IoT), natural language assistants, virtual/augmented reality, cognitive computing, and so on. The minitrack provides a discussion forum for researchers interested theoretical and practical problems related to such services [1-4].

In a broad sense, digital services can be defined as systems that enable value co-creation and limit value co-destruction through the development and implementation of information communication technology (ICT) enabled processes that integrate system value propositions with customer value drivers [5-7]. Such services meld the worlds of bits and atoms and promise to transform the transportation, energy, and other sectors like the media industries before them. They draw on different technologies such as sensors, real-time analytics of data, augmented and virtual realities, computer hardware, software, and human and system actors. Such technologies form a service platform where different actors [8] assemble the service together, in situ, as argued by Grönroos [9]. As a result, the embedded systems of today and the Internet-of-things of tomorrow are the precursors for the upcoming era of cyber physical services (CPS). Examples of such services are, e.g., biomedical and healthcare systems such as telerobotic surgery, (semi)autonomous vehicles and intelligent highways, augmented human capabilities with body net sensors and virtual reality, and intelligent machines.

Furthermore, there are substantial opportunities for ICT and digitalization driven service innovation in industrial and business-to-business settings. These opportunities exist particularly in manufacturing in which innovation activities increase the digitization of products and production processes. We see that the global awareness of the power of the manufacturing industry will be linked to horizontal cyber-physical systems that enable value co-creation and co-destruction in the networked business environment. The cyber-aspects of such systems are ICT infrastructure, computer hardware, software, and different kind of sensors and actors. These components turn cyber-physical systems into platforms for designing and operating service. The data on products and processes gained through networked CPS and the ability to act on this data through control systems and actors enables novel ways of co-creating service in industrial contexts.

This year we received twelve submission, of which five were accepted to the minitrack (acceptance rate of ca. 42%). The papers included in this year's minitrack cover topics of decision automation and delegation in robo-advisors, role of anthropomorphism as a driver for acceptance of digital voice assistants, customer responses to service robots, disadvantages of media as a service with regard to psychological ownership, and digital platform and how to navigate the emerging ecosystems. The articles are summarized in below:

"*A Classification of Decision Automation and Delegation in Robo-advisors*" by Alexander Rühr, David Streich, Benedikt Berger, and Thomas Hess:
- Financial services and investment management specifically, robo-advisors pose new alternatives to traditional services conducted by humans. However, users must give up control over their investments and rely on automated financial decision-making. Because humans display aversion to high degrees of delegation and automation, it is important to understand the interplay of these two aspects. The study proposes a taxonomy of robo-advisors' levels of decision

delegation and automation along the investment management process. We find that the degree of automation depends on the frequency and urgency of decisions as well as the accuracy of algorithms. We identify archetypical system designs.

"*Customer Responses to Service Robots – Comparing Human-Robot Interaction with Human-Human Interaction*" by Moritz Merkle:

- This paper investigates how service failures affect customers by comparing human-robot interactions with human-human interactions. The extant literature on the uncanny valley paradigm proposes that service robots would create lower satisfaction than human frontline employees would. However, we find that service robots could keep up with human frontline employees. We propose that customer satisfaction after a service failure declines far less for a human frontline employee compared with a service robot. We find evidence that service robots can create even higher customer satisfaction than human frontline employees after the exactly similar service failure.

"*Is It Human? The Role of Anthropomorphism as a Driver for the Successful Acceptance of Digital Voice Assistants*" by Katja Wagner, Frederic Nimmermann, and Hanna Schramm-Klein:

- The market of digital voice has grown significantly over the recent years. Especially smart speakers are on the rise but also in smartphone integrated voice applications are getting more popular. The main characteristics of this new technology include both elements of human-computer-interaction and especially the attribution of human characteristics. However, drivers and barriers of digital voice assistants have not yet been sufficiently empirically investigated. Our empirical study highlights the importance of anthropomorphism in relation to other determinants known from the literature.

"*On the Disadvantages of Media as a Service with Regard to Psychological Ownership*" by Claus-Peter H. Ernst and Dirk Weitzel:

- Media as a Service (MaaS), which enables customers to access entire media libraries over a subscription period, has become an important revenue driver for the entertainment industry. By using an experiment, our study suggests that MaaS services, and in particular the ones that are free of charge, cause customers to feel a lower degree of psychological ownership (PO) for the provided content than for content provided via physical media and media files. Since PO is known to be an important driver of customers' behaviors and feelings such as their willingness to pay, these findings suggest that PO might hinder MaaS' continuing success.

"*Digital Platform Establishment: Navigating Competing Concerns in Emerging Ecosystems*" by Hosea A. Ofe and Johan Sandberg:

- Digital Platforms impose organizing logics on ecosystems that enable certain practices, relationships, and value distribution among actors while preventing others. Incumbent platforms often have a strong power to implement contested configurations since they control access to attractive user groups/markets. We report on a study of the establishment and continuous dynamics of a digital platform used for service innovation. We inductively identify a pattern of the dynamics in this navigation process, locate four salient tensions driving these dynamics, and provide insights on how the platform provider navigated them.

The story of our minitrack started with the HICSS 44 and the future looks bright! Next year, we again look forward to receive your submissions!

References

[1] I. R. Bardhan, H. Demirkan, P. Kannan, and R. J. Kauffman, "Special Issue: Information Systems in Services," *Journal of Management Information Systems,* vol. 26, pp. 5-12, 2010.

[2] K. N. Lemon and M. H. Huang, "IT-Related Service: A Multidisciplinary Perspective," *Journal of Service Research,* vol. 14, p. 251, August 2011.

[3] R. F. Lusch and S. Nambisan, "Service Innovation: A Service-Dominant Logic Perspective," *Mis Quarterly,* vol. 39, pp. 155-175, 2015.

[4] C. Peters, P. Maglio, R. Badinelli, R. R. Harmon, R. Maull, J. C. Spohrer*, et al.*, "Emerging digital frontiers for service innovation," *Communications of the Association for Information Systems,* vol. 39, 2016.

[5] J. Lintula, T. Tuunanen, and M. Salo, "Conceptualizing the Value Co-Destruction Process for Service Systems: Literature Review and Synthesis," in *Proceedings of the 50th Hawaii International Conference on System Sciences*, 2017.

[6] T. Tuunanen, M. Myers, and H. Cassab, "A Conceptual Framework for Consumer Information Systems Development," *Pacific Asia Journal of the*

Association for Information Systems, vol. 2, pp. 47-66, 2010.

[7]   T. Vartiainen and T. Tuunanen, "Value co-creation and co-destruction in an is artifact: Contradictions of geocaching," in *System Sciences (HICSS), 2016 49th Hawaii International Conference on*, 2016, pp. 1266-1275.

[8]   K. Storbacka, R. J. Brodie, T. Böhmann, P. P. Maglio, and S. Nenonen, "Actor engagement as a microfoundation for value co-creation," *Journal of Business Research,* vol. 69, pp. 3008-3017, 2016.

[9]   C. Grönroos, "Adopting a service logic for marketing," *Marketing Theory,* vol. 6, pp. 317-333, 2006.

[10]   M. Barrett, E. Davidson, J. Prabhu, and S. L. Vargo, "Service Innovation in the Digital Age: Key Contributions and Future Directions," *MIS Quarterly,* vol. 39, pp. 135-154, March 2015.