Management for Professionals

Nils Urbach · Maximilian Röglinger
Karlheinz Kautz · Rose Alinda Alias
Carol Saunders · Martin Wiener
Editors

Digitalization Cases Vol. 2

Mastering Digital Transformation for Global Business

Springer

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Editors
Nils Urbach
FIM Research Center, Project Group BISE of Fraunhofer FIT
Frankfurt University of Applied Sciences
Frankfurt am Main, Germany

Maximilian Röglinger
FIM Research Center, Project Group BISE of Fraunhofer FIT
University of Bayreuth
Bayreuth, Germany

Karlheinz Kautz
Information Systems and Business Analytics
Royal Melbourne Institute of Technology
Melbourne, VIC, Australia

Rose Alinda Alias
Azman Hashim International Business School
Universiti Teknologi Malaysia
Johor Bahru, Malaysia

Carol Saunders
Department of Management
University of Central Florida
Orlando, FL, USA

Martin Wiener
Chair of Business Informatics, esp. Business Engineering Faculty of Business and Economics
TU Dresden
Dresden, Germany

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Testimonials

*"*Nothing helps current and future managers understand the complexities of critical issues better than case studies. *Digitalization Cases Vol. 2* offers 20 outstanding cases about companies and governmental agencies around the globe to help students and practitioners explore the challenges and opportunities they may face, and the alternatives others have made, about digital disruption, business, and transformation,*."*

—Dr. Keri Pearlson,
Executive Director of Cybersecurity, MIT Sloan Research Consortium

"While the intensity of discussions about digital transformation has significantly increased through the COVID-19 pandemic, the topic too often remains on an abstract or buzzword level. The second volume of *Digitalization Cases* brings these discussions back on the ground and delivers actionable insights. The presented cases help to reflect one's own activities and initiatives and inspire new ones. It is a great resource and a must-read for everyone interested in digital transformation*."*

—Dr. Thomas Mannmeusel,
Executive Vice President Global Process Excellence & Group CIO, Webasto

*"*Our CEO Satya Nadella said last year at the beginning of the pandemic: we have experienced 2 years of digitalization in 2 months. Since then I have spoken to so many customers; it is not a question of if, or even when. It is about the How! It is even more evident that organizations must transform to thrive in the digital economy and gain or regain a competitive edge to stay relevant. *Digitalization Cases* provides firsthand insights into the efforts of renowned companies. The presented actions, results, and lessons learned are a great inspiration for managers, students, and academics. This book gives real pointers on the how and where to start*."*

—Anna Kopp,
Head of IT Germany, Microsoft

"The second volume of *Digitalization Cases* is a successful continuation. The book offers many interesting starting points for practitioners, but also points of departure for future research. A great reading for all interested in real digitalization cases."

—Dr. Quirin Görz,
Chief Information Officer, KUKA

"Almost every organization is trying to figure out how best to respond to the opportunities and threats posed by digitalization. This book provides valuable lessons from those organizations that have already begun their digital transformation journey."

—Michael D. Myers, PhD,
Professor of Information Systems, University of Auckland

"Following a mature digitalization strategy in organizations is a key factor for the development and facilitation of new business models, business growth, and future mode of business operations. Active business-IT alignment and organizational setup change skillsets, toolset, and mindset and sustainably support digital transformation. The second volume of *Digitalization Cases* represents a real eye-opener by providing most valuable cases in different countries and sectors based on academic research and domain experience."

—Robert Mayer,
Head of IT Central & Eastern Europe, Fujitsu

"Digitalization is like New Year's resolutions: Everyone talks about it, but little is known about how to get started. By providing a highly diverse set of examples, the second volume of *Digitalization Cases* gives you an idea of how to set off your digital transformation—no matter where you currently stand."

—Melanie Kehr,
Member of the Executive Board, KfW Group

"Digital transformation is advancing at breathtaking speed, leaving no business model untouched. Hence, the close interlocking of business success and IT is the core element of our time. Publications like this help decision-makers to benefit from the wealth of experience of others. With the 20 international and cross-sector cases from the

automotive to the insurance industry, this book provides insights into multifaceted digital challenges and contributes to a successful macrosocial digitalization."

—Dr. Axel Schell,
Chief Transformation Officer, Allianz

"Digitalization puts the customer in the center and requires well-thought-through end-to-end processes, and an intelligent enterprise architecture approach to sustainably meet and exceed customer expectations. This book is a great source of inspiration as it showcases how different actors tackled this challenge. I can only recommend this book to every practitioner before engaging in digitization initiatives."

—Dr. Martin Petry,
CIO and Head of Business Excellence, Hilti Corporation

"The cases compiled in the second volume of *Digitalization Cases* show how digital disruption can be actively managed. Further, long-term insights from extended success stories of the first volume highlight that courage to change pays off well. This book serves as a motivation for many organizations to drive their digital transformation journeys proactively."

—Dr. Markus Richter,
State Secretary at the Federal Ministry of the Interior, Building and Community and Federal Government Commissioner for Information Technology, Federal Republic of Germany

Foreword

Nearly every company or organization one visits today says that it is engaging in digital transformation, planning to do so, or afraid that others will do it and make them obsolete. At the same time when asked what they mean by digital transformation, one gets a row of confusing, ambiguous answers and even avoidance to answer this question. This is no surprise as nobody can *exactly* pin down what this transformation is and what it is not, or how it differs from earlier ways of engaging and implementing information technologies in organizations that has been taking place at least over the last half-century. But everybody appears to be convinced that this time *it is different*, bigger, more pervasive, and more drastic posing unprecedented challenges to organizations.

There are several reasons to accept this account. Technologies are now cheaper, more encompassing and powerful, and faster to deploy and modify. They pose less roadblocks in imagining and introducing radical organizational change. Therefore, managers and employees need to ask: what should we do now when we can design and implement nearly everything we can imagine? Because the technologies are easier and cheaper to deploy, they can be introduced modularly and in a staggered manner. Consequently, their implementation and use take place faster and are easier. Overall, there is less resistance and friction and very different types of business cases than in the past. Because the technologies are more powerful and flexible, they are now cognitively challenging to integrate and think as part of the organization and task design. This calls for new innovative, entrepreneurial, and design-focused approaches that were not feasible in the past. This then poses new challenges of how to engage the workforce and how to make it more forward-looking and cognitively nimble. Finally, the use of these technologies demands new types of collaborations; they force new relationships and alliances and open unthinkable business opportunities and markets. Simply, they challenge the identity of many organizations and their employees. Organizations need to seriously reconsider in which business they are and what are their positions in their established supply chains, industries, or institutional fields. This overall heightened technological, organizational, and institutional complexity and speed of change is something

which we did not experience in the past waves of using digital technologies and which, I posit, has called for the use of the new label "Digital X."

In this new "digital" setting—if one wants to think of a similar whirlwind of industrial change one probably needs to look at the period of 1870–1920 in the USA when the corporate form of industrial organization and markets emerged during a short period of a half-century. In such a setting there is little guidance from what we know from the past. The only guidance we can get is to look at the moment and try to grasp the bewildering variety of changes and to build through gazing this mosaic of changes a larger picture and understanding what is truly happening, i.e., to try to see dimly through the fog of change and separate the signal from the noise. Therefore, editorial books like this second volume of *Digitalization Cases* are valuable. They provide grounded concrete histories of a variety of successful and less successful digitalization-related change and transformation initiatives and offer necessary detail and raw material to start painting the contours of the deeper transformation that is taking place.

After reading through the 21 cases in this second volume I can note some of the emerging contours more starkly. The first one is that no one will remain untouched. The variety of organizations of different sizes, industries, and settings included in the cases suggests that the phenomenon is pervasive. The second is the scale and depth of reported process re-engineering, efficiency seeking, and automation that is being sought and achieved. The predictions of the death of process engineering in the 1990s appear to have been premature. The third is the rising importance and challenge of dealing with (big) data and analytics challenges and how to integrate these new kinds of intelligent technologies to the work organization. The fourth challenge is the grandiosity of the structural, cognitive, and organizational changes that most organizations face as the steamroller of digitalization unfolds. Most struggle how to prepare for these changes structurally and through workforce transformation and education. In this regard, the cases provide ample evidence in the form of concrete detail how organizations learn to deal with and address such issues. As such, the included cases can be used by organizations and managers to learn from others. In addition, they offer valuable insights to many university-level courses and other educational settings as to convey clearly how digital transformation takes place and what challenges it poses to involved stakeholders. I hope you will enjoy examining and learning from them as much as I did.

Shaker Heights, OH, USA Kalle Lyytinen
March 2021

Preface

In the digital age, emerging technologies significantly influence processes, products, services, and business models, for example, by connecting individuals, organizations, machines, and other "things," by enabling novel working, collaboration, and automation models, as well as by providing access to untapped data sources. The resulting digital economy is volatile, uncertain, complex, and ambiguous. This raises a wide range of challenges for organizations. Hyper-connected customers with individual needs, opaque regulatory requirements, and continuously increasing competitive pressure from startups and digital giants are just a few examples. However, today's business environment also offers untapped potential and many opportunities. Among others, these include the enhancement and disruption of existing business models, the identification of previously unknown customer needs, the exploration of new markets, and the collaboration with other market players. To thrive in the digital economy, organizations must unfold the potential of digital technologies—not only emergent ones (e.g., distributed ledger, artificial intelligence, augmented reality, and quantum computing) but also established ones (e.g., social, mobile, analytics, and cloud)—in their business strategies and business models. They must also reimagine their work routines, processes, and structures, as well as manage and govern IT infrastructures that are central to their value propositions.

Our original idea behind editing this book was to present a rich compilation of real-world cases on digitalization. With all economic and societal sectors being challenged by digital technologies, we aimed at illustrating how organizations leverage their capabilities to create disruptive innovation, to develop digital business models, and to transform themselves. Since the publication of the first volume of this book, the world has moved on, which is why we decided to compile a second volume. For this volume, we have again compiled 20 diverse cases—this time from four continents—on how companies and public organizations rethink their business for the digital age. Some cases also present updates of success stories published in the first volume. The case descriptions report on best practices and lessons learned from different organizations that succeeded in tackling the challenges and seizing the

opportunities of the digital world. The cases provide insightful examples for practitioners as well as interesting cases for researchers, teachers, and students. All cases follow a unified template, making them easily accessible for readers.

As in the first volume, we grouped the cases into three major blocks, representing the major action fields of digitalization. Part I contains cases of *digital disruption,* a field that refers to the monitoring and analysis of emerging technologies. It also includes the development of competencies for leveraging these technologies. The cases of this part stem from ELIS Innovation Hub, Satherm GmbH, Arçelik, Germany's Federal Office for Migration and Refugees, Future Health, and Deutsche Telekom Service Europe. Part II represents cases related to *digital business,* a field covering the realization of new business models that are enabled by digital technologies and disrupt traditional businesses, often resulting from the smart fusion of the physical and digital world. The cases report on Huawei, DEVK, RAPS, and SCHOTT, among others. Finally, Part III covers cases on *digital transformation*, which refers to technology-induced organizational change. It embraces the organizational, processual, and technological efforts necessary for organizations to succeed in the digital age. This part includes cases from Listemann, Ghana Water Company Limited, Springest, FPT Software, Acardis, medi, and Arbonia.

We want to thank several people for supporting the compilation of this book. Most importantly, we thank Fabiane Völter for continuously supporting us in managing the overall book project. We are also very grateful to Barbara Bethke from Springer who supported the project from the publisher's side. Finally, we thank all the colleagues who served on the editorial board of this book and who dedicated much time and effort in providing reviews to further develop the cases presented in this book. We are specifically grateful for this support, as not only the business of all case companies but also the private lives of the individuals engaged in this project were substantially "shaken" by the COVID-19 pandemic during the compilation of this book. We hope you will enjoy reading the book and working with the cases, and invite you to contact us for questions, feedback, and discussions.

Frankfurt am Main, Germany — Nils Urbach
Bayreuth, Germany — Maximilian Röglinger
Melbourne, VIC, Australia — Karlheinz Kautz
Johor Bahru, Malaysia — Rose Alinda Alias
Orlando, FL, USA — Carol Saunders
Dresden, Germany — Martin Wiener
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Contents

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About the Editors

Nils Urbach is Professor of Information Systems, Digital Business and Mobility at the Frankfurt University of Applied Sciences, Germany, as well as Deputy Director of the FIM Research Center and the Project Group Business and Information Systems Engineering of Fraunhofer FIT. Nils has been working in the fields of strategic information management and collaborative information systems for several years. In his current research, he focuses on digital transformation, agile organizations, AI management, and blockchain, among others. His work has been published in renowned academic journals such as the *Journal of Strategic Information Systems* (JSIS), *Journal of Information Technology* (JIT), *MIS Quarterly Executive* (MISQE), *IEEE Transactions on Engineering Management* (IEEE TEM), *Information and Management* (I&M), and *Business & Information Systems Engineering* (BISE) as well as in the proceedings of key international conferences such as the International Conference on Information Systems (ICIS) and European Conference on Information Systems (ECIS). Nils can be contacted via nils.urbach@fim-rc.de.

Maximilian Röglinger is Professor of Information Systems and Value-based Business Process Management at the University of Bayreuth, Germany, as well as Deputy Director of the FIM Research Center and the Project Group Business and Information Systems Engineering of Fraunhofer FIT. Maximilian has been working in the fields of business process management and customer relationship management for many years. His current research centers around digitalization, digital technologies, and setups for agile and ambidextrous organizations. Maximilian's work has been published in leading academic journals including the *Journal of Strategic Information Systems* (JSIS), *Journal of the Association for Information Systems* (JAIS), *Decision Support Systems* (DSS), and *Business & Information Systems Engineering* (BISE) as well as in the proceedings of key international conferences such as the International Conference on Information Systems (ICIS), European Conference on Information Systems (ECIS), and the International Conference on Business Process Management (BPM). Maximilian can be contacted via maximilian.roeglinger@uni-bayreuth.de.

Rose Alinda Alias is Professor of Information Systems Management at the Universiti Teknologi Malaysia, as well as the President of the Malaysia Association for Information Systems (MyAIS), a local chapter of the Association for Information Systems. Rose's current research and projects focus on digital transformation of higher education in Malaysia. She was Conference Co-chair of the 21st Pacific Asia Conference on Information Systems (PACIS 2017) at Langkawi, the Organizing Co-chair of PACIS 2020 at Dubai, and the Junior Faculty Co-chair for ICIS 2022 at Copenhagen, Denmark. Rose can be contacted via email at alinda@utm.my.

Karlheinz Kautz is Professor of Digital Business at the Department of Information Systems and Business Analytics at the Royal Melbourne Institute of Technology (RMIT) University, Australia. Through his career Karl has been working in the field of information systems and digital innovation development, their adoption and implementation in practice, and their impact on society, organizations, and individuals. He considers information systems-related phenomena from a sociotechnical perspective which he also applies to the currently emerging areas of digitalization and digital transformation. Karl's work has been published in leading academic journals including *Management Information Systems Quarterly* (MISQ), *European Journal of Information Systems* (EJIS), *Journal of Information Technology* (JIT), *Information Systems Journal* (ISJ), *Communications of the Association for Information Systems* (CAIS), the *Australasian Journal of Information Systems* (AJIS), and the *Scandinavian Journal of Information Systems* (SJIS) as well as in the proceedings of key international conferences such as the International Conference on Information Systems (ICIS), European Conference on Information Systems (ECIS), and the Australasian Conference on Information Systems (ACIS). Karl can be reached via karlheinz.kautz@rmit.edu.au.

Carol Saunders is Professor Emerita at the University of Central Florida. She has received two lifetime accomplishment awards: the LEO award in the Information Systems (IS) discipline and the Lifetime Achievement Award from the OCIS Division of the Academy of Management. She is also an Association for Information Systems (AIS) Fellow and a Schoeller Senior Fellow. She served on a number of editorial boards, including a 3-year term as Editor-in-Chief of *MIS Quarterly*. She served as General Conference Chair of the premier Information Systems conference, ICIS, and Program Co-chair of AMCIS 2015. She helped found the Organization Communication and Information Systems (OCIS) division of the Academy of Management and served in a variety of positions including its program chair and division chair. She was the AIS Vice President of Publications from 2016 to 2019. She was the Distinguished Fulbright Scholar at the Wirtschafts Universitaet—Wien (WU) in Austria and earlier held a Professional Fulbright with the Malaysian Agricultural Research and Development Institute. She has held research chairs in Germany, New Zealand, Singapore, and the Netherlands. Her current research interests include business models, coopetition, interorganizational systems,

overload, sourcing, and time. She has published in top-ranked management, IS, computer science, and communication journals. She can be contacted at csaunder@ucf.edu.

Martin Wiener is Professor of Information Systems and Business Engineering at TU Dresden, Germany. He is also an Affiliated Researcher at the University of Erlangen-Nürnberg, Germany, and at the Stockholm School of Economics (SSE) Institute for Research, Sweden. His current research focuses on the managerial control of digitalization projects and programs, algorithmic control and transparency, and data-driven business models and smart machines. Martin's research has been published in top-tier IS journals, including the *European Journal of Information Systems* (EJIS), *Information Systems Research* (ISR), *Journal of Information Technology* (JIT), *Journal of Management Information Systems* (JMIS), and *MIS Quarterly* (MISQ). He currently serves as Associate Editor for the *Information Systems Journal* (ISJ), as well as on the Editorial Review Board of the *Journal of the Association for Information Systems* (JAIS) and *Information & Management*. In 2022, he will act as Program Co-chair of the European Conference on Information Systems (ECIS) in Timișoara, Romania. Martin can be contacted via email at martin.wiener@tu-dresden.de.

Introduction to Digitalization Cases Vol. 2: Mastering Digital Transformation for Global Business

Nils Urbach, Maximilian Röglinger, Rose Alinda Alias, Karlheinz Kautz, Carol Saunders, and Martin Wiener

Abstract Digitalization confronts organizations with huge challenges and opportunities. With all economic and societal sectors being affected by emerging technologies, the digital economy is highly volatile, uncertain, complex, and ambiguous. Against this backdrop, this book reports on the best practices and lessons learned from organizations that succeeded in tackling the challenges and seizing the opportunities of the digital economy on a global scale. It illustrates how 20 organizations leveraged their capabilities to create disruptive innovation, to develop digital business models and to digitally transform themselves. These cases stem from various geographical regions and industries, covering the many facets that digitalization may have.

N. Urbach (✉)
FIM Research Center, Project Group BISE of Fraunhofer FIT, Frankfurt University of Applied Sciences, Frankfurt am Main, Germany
e-mail: nils.urbach@fim-rc.de

M. Röglinger
FIM Research Center, Project Group BISE of Fraunhofer FIT, University of Bayreuth, Bayreuth, Germany
e-mail: maximilian.roeglinger@fim-rc.de

R. A. Alias
Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor Bahru, Malaysia
e-mail: alinda@utm.my

K. Kautz
Information Systems and Business Analytics, Royal Melbourne Institute of Technology, Melbourne, VIC, Australia
e-mail: karlheinz.kautz@rmit.edu.au

C. Saunders
Department of Management, University of Central Florida, Orlando, FL, USA
e-mail: csaunders@ucf.edu

M. Wiener
Chair of Business Informatics, esp. Business Engineering, Faculty of Business and Economics, TU Dresden, Dresden, Germany
e-mail: martin.wiener@tu-dresden.de

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1 The Impact of Digitalization on Global Business

Digitalization reflects the adoption of digital technologies in business and society as well as the associated changes in the connectivity of individuals, organizations, and objects (Gimpel et al. 2018; Vial 2019). While digitization covers the technical process of converting analog signals into a digital form, the manifold sociotechnical phenomena and processes of adopting and using digital technologies in broader individual, organizational, and societal contexts are commonly referred to as digitalization (Legner et al. 2017).

The key drivers of digitalization are digital technologies. Due to considerable investments in technological progress, various digital technologies are available on the market. Thereby, an ever-faster commoditization and time to market can be observed. For example, early hardware-heavy information and communication technologies such as the telephone required 75 years to reach 100 million users, whereas lightweight applications such as Instagram achieved the same coverage in little more than 2 years (Statista 2017). Digital technologies include both emerging technologies such as the Internet of Things (IoT), blockchain, and artificial intelligence (Schoeman and Moore 2019), which are currently converging into the machine economy concept (Schweizer et al. 2020), as well as more established technologies such as social media, mobile computing, advanced analytics, and cloud computing (SMAC) (Fitzgerald et al. 2014; Gartner 2017). Loebbecke (2006) refers to digital technologies as all technologies for the creation, processing, transmission, and use of digital goods and services. Further, Yoo et al. (2010) argue that digital technologies differ from earlier technologies in three characteristics: re-programmability, which separates the functional logic of a device from its physical embodiment; homogenization of data, which allows for storing, transmitting, and processing digital content using the same devices and networks; and a self-referential nature yielding positive network externalities. Digital technologies can be further classified with respect to whether they involve humans actively or passively, how they treat data, whether their input and output is purely digital or can also be physical, or whether they serve infrastructural or application-oriented purposes (Berger et al. 2018). Baskerville et al. (2020) even refer to an ontological reversal, where reality "becomes a purposeful product of the digital world" (p. 509) instead of technologies only representing it. In sum, digital technologies enable platforms, autonomous products, sensor-based data collection, analytical insight generation, as well as analytical and augmented interaction.

Based on advances in digital technologies, digitalization impacts business and society. Digital technologies enable innovative business models such as the platform-based models of well-known companies including Airbnb, Uber, or Facebook or decentralized models enabled by blockchain and 3D printing (Fridgen et al. 2018; Goodwin 2015). Digitalization also changes industry structures (Gimpel et al. 2018): reduced entry barriers help technology-savvy start-ups to flourish and digital giants such as Google or Apple to expand into manifold sectors. Regarding the IoT, for example, 50 billion smart devices are expected to be connected to the

Internet by 2030, having an economic impact of $110.6 billion in 2025 (Mercer 2019, Statista Research Department 2020). Further, the volume of available data is known to double every 3 years (Henke et al. 2016), and insights-driven businesses are predicted to take away $1.2 trillion per year from less-informed competitors by 2020 (McCormick et al. 2016).

Digitalization also empowers customers and impacts our private lives. Today, more people have access to cellphones than to toilets, and one in five people has an active Facebook account (Halleck 2015; UN International Telecommunication 2014). In the digital age, wowing customers is more critical—and more challenging—than before, independent from an organization's position in the value network, as customers decide themselves how to interact with organizations (Hosseini et al. 2018). Likewise, employee behavior and thought patterns evolve toward a new future of work, calling for new work and collaboration models (Kerpedzhiev et al. 2020). Digitalization, however, is neither a new phenomenon nor will it be the final evolutionary stage of information and communication technology (Porter and Heppelmann 2014). Data has been processed and exchanged digitally for more than half a century. An early example is electronic data interchange. Further, the Internet has been used for civil purposes since the 1990s, and e-commerce was first promoted around year 2000. With smart devices and mobile applications, digitalization experienced an additional boost. In the last couple of years, more and more companies have experienced a transformation toward software-defined businesses (Alt et al. 2020). While, in former times, digitalization only concerned data managers of corporate IT departments, it now affects all business departments as well as product and service offerings (Urbach and Ahlemann 2018; Urbach et al. 2017, 2019). Consequently, discussions moved (again) from support to core processes, from efficiency to excitement, from hygiene factors to opportunity factors, as well as from cost reduction to revenue generation.

In our opinion, the most significant characteristics of digitalization are not the usage of data or adoption of technology, but the unprecedented speed of change and level of connectedness, which also facilitates the customers' dominant role as well as the convergence of the physical and the digital world (Gimpel et al. 2018). As such, digitalization shapes a world that is at once the cause and effect of its own characteristics: volatility (i.e., constant and massive changes), uncertainty (i.e., lack of predictability), complexity (i.e., multitude of interrelated and self-organizing actors), and ambiguity (i.e., confounding cause-and-effect relationships) (Bennett and Lemoine 2014).

As our discussions with senior managers (e.g., Chief Executive Officers, Chief Information Officers, Chief Digital Officers, and Digital Transformation Officers) in the last years showed, nobody doubts that digitalization "came to stay," continuing to impact on all facets of organizations, i.e., customer relationships, value propositions, data analytics, operations, organizational setups, collaboration, and transformation management itself (Gimpel et al. 2018). Rather, the key questions relate to the "what" and the "how," i.e., what organizations should look like in the future and how a to-be state can be reached both in an agile and adaptive manner and without jeopardizing existing assets and capabilities (A.T. Kearney, Project Group BISE of

the Fraunhofer FIT 2017). Many organizations already defined accountabilities for digitalization and set up transformation initiatives. Nevertheless, digitalization remains a vague concept. What is missing are success stories, good practices, and lessons learned that make the benefits of digitization tangible, help prioritize investments, help choose among action possibilities, reveal "internal homework" that needs to be done before customer-facing initiatives make sense, and provide a platform for exchanging thoughts on challenges and opportunities ahead. However, in our research and project work, we also came across many successful companies—be it incumbents or start-ups—that successfully leveraged their capabilities to create digital innovation, develop digital business models, and transform themselves. These organizations have valuable first-hand insights to share.

Against this background, we initiated the *Digitalization Cases* book series to match the supply and demand for ideas, experiences, benefits, and lessons learned related to digitalization. Together with an international editorial board of forward-thinking digitalization experts, we set up *Digitalization Cases Vol. 2* and compiled 20 identically structured case descriptions that provide rich insights into the digitalization activities of renowned organizations from diverse geographical regions and industries.

Below, we first structure the field of digitalization into digital disruption, digital business, and digital transformation as a first step to make it more tangible (Sect. 2). After that, we provide an overview of the cases included in this book structured around these three fields of action (Sect. 3). We conclude with hints on the unified structure of the included cases and on how to read this book (Sect. 4).

2 Structuring the Field of Digitalization

To structure the field of digitalization, we use an enterprise architecture model that consists of five layers (Fig. 1). These layers include business model, business processes, people and application systems, data and information, and technological infrastructure. To tackle the challenges and to seize the opportunities of the digital age, it is essential for organizations to align these layers.

Considering the turbulence of business environments and the rich set of opportunities available, a key challenge for organizations in the digital age is to distinguish sustainable opportunities promising in the long run from short-term hypes. Against this backdrop, an organization's *business model* is of utmost importance, as it enables exploiting existing market potentials and seizing new opportunities. Business models specify on target markets, operating models as well as cost and revenue streams. This also involves the organization's value propositions, describing which customer needs are satisfied by which product and service offerings. In the digital age, digital technologies allow for entirely new business models such as platform-based business models or innovative decentral models.

To turn their business model into reality, organizations require cross-functional work routines structured around *business processes*. In the digital age, process

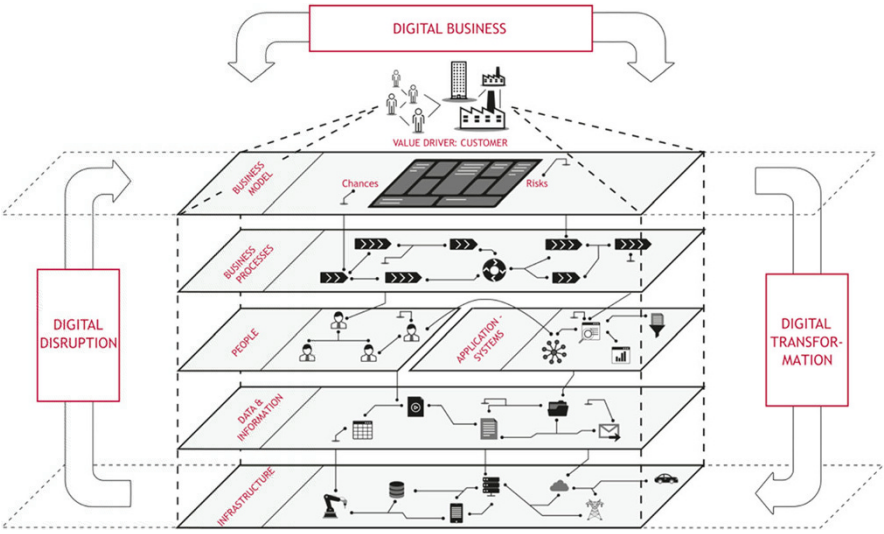

Fig. 1 Structuring the field of digitalization along the enterprise architecture

thinking must not only span across departmental but also organizational boundaries, covering the entire value networks and ecosystems. Thereby, business processes define the tasks to be performed to achieve specific goals. Beyond established business process management (BPM) concepts that support efficient and stable execution of routine operations, organizations also require agile and exploratory BPM concepts that support non-standard operations, the management of emerging and proactive organizational behavior, as well as fast reactions to changing customer needs and process innovation (Grisold et al. 2019; Kerpedzhiev et al. 2020).

The tasks included in business processes can be performed manually by employees, automatically by machines or application systems, or collaboratively. Thus, *people* are part of an organization's structure that systemizes roles, responsibilities, and reporting lines. In line with the shift toward agile BPM concepts, organizations must also foster people agility by moving from hierarchical to network-like structures as well as by fostering employees' digital mindset and related skills. Further, organizations must account for new roles involved in business processes such as crowd workers, freelancers, robots, and autonomous things. Particularly, the collaborative execution of tasks is strongly advanced by technologies related to human-machine interaction, artificial intelligence, smart devices, and robotics. Many of these technologies also push the frontier of automation, because not only well-structured but also unstructured tasks can be automated. Consequently, organizations need not only adopt traditional enterprise systems (e.g., enterprise resource planning or customer relationship management systems) but also novel system types such as mobile apps or digital assistants.

Employees, application systems, and machines create and process *data and information*. In line with the increasing adoption of digital technologies, the volume

of data available is growing rapidly, revealing new knowledge potential. Structured data (e.g., tables or relational databases) can still be analyzed by means of statistical analytical methods. In addition, modern algorithms, leveraging advances in artificial intelligence (e.g., cognitive computing or deep learning), allow for an increasingly precise processing of unstructured data (e.g., texts, graphics, videos, and audio files). Big data analyses enable analyzing and combining large amounts of data from different sources and thereby enable organizations to make better decisions, predict trends in their business environments, reveal optimization potential, and, above all, understand the needs of customers and employees.

To exploit the potential associated with digitalization, organizations need an appropriate *technological infrastructure*. Besides traditional components (e.g., personal computers, tablets, servers, network, and security components), the infrastructure includes also novel components such as cyber-physical systems as well as shared resources such as smart meters, smart grids, autonomous cars, or cloud infrastructure. In the digital age, conventional information and communication infrastructure is becoming increasingly integrated with production infrastructure (operations technology) to bridge the gap between the physical and digital world.

Organizations that aim to thrive in the digital age must unfold the potential of digital technologies, rethink their business models, and transform themselves. Accordingly, we see three major fields of action spanning the different layers of the enterprise architecture as described above (Legner et al. 2017):

- Companies face the challenge of making strategic decisions on the timely use of disruptive technologies. Due to the extensive impact on organizations at large, the goal of the action field *digital disruption* is to monitor and analyze emerging and maturing technologies to reduce uncertainty in the selection of technologies (Blume et al. 2020). In this context, systematically analyzing potentials and threats as well as deriving recommendations for action is of great importance. This also includes developing competences for utilizing these technologies.
- In the digital age, many companies are forced to adapt their business models, e.g., from product to customer and service orientation as well as from stand-alone to ecosystem-enabled value propositions. In fact, digitalization is not about making existing models more efficient, but about designing new models. Thus, the action field *digital business* refers to the realization of new business models that are enabled by digital technologies (Wessel et al. 2021). This often results from the fusion of the physical and digital world. Data-driven services, smart products, product-service hybrids, and platforms are examples of new business opportunities in the digital age. Developing viable business models requires organizations to understand the effects of digitalization on the individual, organizational, competitive, and increasingly societal level.
- Due to fundamental changes in business models, a thorough transformation of the entire enterprise architecture is necessary. The technology-induced change is covered by the action field *digital transformation* (Vial 2019). This embraces the necessary goal-oriented organizational, processual, and technological transformation necessary for organizations to succeed in the digital age. Digital

transformation requires organizations to understand how business models can be implemented and how digitalization itself changes how organizations must be managed. Existing business processes and organizational structures, application systems and data, as well as the underlying infrastructure need to be aligned with the requirements of new customer needs and business models in an integrated manner.

3 Introducing Cases of Digitalization

We classified the digitalization cases included in this book in line with whether they relate to digital disruption, digital business, and digital transformation. Below, we briefly overview all cases structured around these three fields of action.

3.1 Digital Disruption

First, in the case of *ELIS Innovation Hub*, Andreozzi et al. tackle two relevant challenges in order to foster digital transformation in the insurance value chain: sensitive data detection and anonymization on claim images as well as manipulation detection on claim images. By applying a six-step methodological approach to managing projects focused on the domain of deep learning applied to image analytics, the case analyzes the benefits resulting from the adoption of such an approach, as well as its impact in terms of training, validation, testing, deployment, and operations.

In the following case with *Satherm GmbH*, Danner et al. overcome the challenge of automating invoice processing with a volume of about 20,000 invoices per year by means of AI-based state-of-the-art technology for intelligent document processing in order to free employees from repetitive tasks and thus to counter the current as well as future shortage of skilled workers.

Yıldırım et al. report on a case with *Arçelik*. The company deploys digital twin technology to one of their thermoforming production lines developed with Simularge to increase production quality and reduce raw material consumption. Besides developing a high-tuned digital twin by combining engineering formulations, simulation modeling, and real-time data acquired from the production line, the case provides insights on and encouragement to implement digital twin technology to other manufacturing processes.

In their case with *Germany's Federal Office for Migration and Refugees*, Amend et al. examine the use of blockchain technology in the context of the asylum-seeking procedure. More specifically, they report on the development of a blockchain-based solution to support the coordination of asylum procedures across authorities on all levels of Germany's federal government structure. This case does not only provide insights into the technological solution but also creates a deeper understanding of the

organizational challenges faced in blockchain projects within public administrations and of the steps taken to overcome these.

Aiming to improve care for patients in the comfort of their own home, the case of *Future Health Services* explores the leveraging of technological solutions to expand their tele-home monitoring services. Brohman et al. report on the collaboration of the case company with paramedics to introduce a remote patient monitoring program. The authors provide insights on the development and implementation of new business cases leveraging both fruitful partnerships and technological solutions.

Further, Czarnecki et al. discuss cognitive Robotic Process Automation (RPA) as a key technology to achieve the automation targets of *Deutsche Telekom Service Europe*. Since the first RPA pilot implementation in Q3/2016, a total number of 172 software robots have been successfully implemented across six different functional areas within finance and controlling, procurement, and HR domains. Those implementations resulted in measurable performance improvements, such as lead time reductions, full-time equivalents (FTE) reductions, and cost savings.

3.2 Digital Business

As *Huawei Technologies Co. Ltd* faced internalization-related problems such as country of origin, liability of foreignness, latecomer, and lock-in effects, Guerrero et al. lay out the firm's journey of overcoming these challenges and becoming a world-leading ICT company. By following a digitalization approach on a managerial level and emphasizing the importance of promoting and coordinating management practices based on value creation, collaboration, and decentralization, the case demonstrates that the success of digitalization relies on managerial changes rather than on technological changes.

Schiffer and Stockhinger report on the case of *DEVK*, one of Germany's largest insurance companies with a long-standing tradition. The case company is—like most incumbents—primarily focusing on its non-digital core business. Nevertheless, the company is highly aware of the disruptive potential brought by new digital technologies. To benefit from new business opportunities and gain experience with digital products and business models, the company founded its own digital insurance company in 2017. The case provides in-depth insights into various challenges associated with externalizing digital business and ways to overcome them.

Glismann et al. develop a comprehensive digital service for *RAPS*, a German spice manufacturer, to overcome the main challenges of a non-digital industry. The case demonstrates how a platform-independent application helps alleviate strong market consolidation, comply with increasing regulatory requirements, and address technological complexity in the meat production industry. Thereby, the case shows how leveraging digitalization potential allows RAPS to expand its value proposition, to differentiate itself from competitors, and to increase its market share.

In the case of *MobilityXLab*, Hjalmarsson Jordanius et al. inquire how a traditional incubator, as a joint enterprise by a coalition of incumbent automotive and

telecommunication firms, transformed into a collaboration hub for matchmaking and start-up-cooperate collaboration for digital innovation in the automotive industry. Facing several tensions related to digital transformation of traditional innovation processes, the development of MobilityXLab has increased the inflow of externally initiated digital innovations to the collaboration partners supporting future mobility.

Oberländer et al. tackle the challenge of incumbents to develop digital innovations in the following case with *SCHOTT AG*. By combining problem-centric and resource-centric innovation approaches, the case demonstrates the advantages of both perspectives while applied in an overarching innovation process. Thus, the case not only introduces and compares problem-centric and resource-centric innovation approaches but also highlights how an integrated perspective benefits innovation success.

In the case of *Lohmar|Digital|For Everyone*, Schaefer et al. demonstrate the opportunities that a regional city can take to create a more sustainable and attractive city. Through the successful application of "RBS Mobil" by the Federal Ministry of Interior, Construction, and Home Affairs, the case demonstrates how digital transformation projects can be applied to the mobility sector and a regional city can be a lighthouse city for sustainable and inclusive mobility, mapping the entire journey (first and last mile).

3.3 Digital Transformation

As for digital transformation, Kamm et al. describe a digitalization project at *Listemann Technology AG* which aims at improving the company's communication and interaction with customers. As an exemplar of small- and medium-sized enterprises (SMEs) that often face the challenge of dealing with scarce resources, the case provides insights into the actions an SME can undertake to keep up in the digital age. The main takeaway is that every organization can develop a digitalization strategy in alignment with its resources.

Mensah et al. report on the public utility company *Ghana Water Company Limited* undergoing a digital transformation. The company is digitalizing customer payments, where customers can make water bill payments through mobile money and other digital payment platforms. The authors demonstrate how a digital payment change management framework was developed and implemented to increase the usage of digital payments for bill collections.

The following case presented by Schaupensteiner et al. addresses the challenges of digitalization regarding the transformation of the workforce. The approach leads to a fundamental understanding of what transformation means within a traditional organization and what needs, obstacles, and interests exist within the workforce. The case not only shows how raising awareness of the need for transformation can increase its acceptance. It also shows how management's quantitative transformation goals can be given practical relevance and validated in terms of feasibility.

Springest, a Dutch platform business, aims to draw on information technology to enable holacratic organizing (a form of self-management). In this case study, Wurm et al. explain the principles of such organizing and the various IT tools that Springest uses to support them. For Springest, Holacracy has not only led to considerable growth but also to sustained employee happiness far above industry average.

Dang-Pham et al. introduce "Digital Kaizen" as a methodology for conducting complex digital transformation programs at *FPT Software*. Inspired by the well-known Kaizen philosophy for management, Digital Kaizen focuses on making incremental changes that address pain points across organizational functions and aim for fast realization of benefits. The adoption of Digital Kaizen further allows the organization to commercialize its successful internal digital transformation initiatives, as well as nurture the organization's readiness for future digital transformation.

With the *Arcadis* case, Danneels et al. provide insights into how a fragmented incumbent organization made cultivation a key part of its digital transformation program. The case puts learning and belonging center stage and provides inspiration on how to create a learning organization to which everyone can contribute.

In their case with *medi*, a leading manufacturer of medical aids, Buck et al. illustrate the preparative steps for transformation into a digital and data-driven company. The case elucidates how the company analyzed its current process and application landscapes as starting points for its digital initiatives and development of a data strategy. Further, medi collected and prioritized ideas to successfully transform its historically grown infrastructure and data management, which had an influence on both culture and technology in the organization.

Last, Kiselev and Langenegger report on the tensions *Arbonia Doors* faced at the beginning of the implementation of their ERP program across four highly autonomous local subsidiaries and how "glocal" governance was set up to bridge conflicting demands and enable both local differentiation and global consistency. They demonstrate how a boundary-spanning sense of community and collaboration and thus a sound basis for future digital transformation within the group could be established.

4 How to Read the Cases

The case descriptions compiled in this book aim to provide insightful examples for practitioners and interesting cases for researchers, teachers, and students. Each case illustrates how a specific company or public organization leveraged its capabilities to create disruptive innovation, to develop digital business models, and to digitally transform itself.

To make the case descriptions easily accessible and comparable for readers, they follow a unified structure, which has been initially proposed by vom Brocke and Mendling (2017) and successfully adopted by Urbach and Röglinger (2018). Each case elaborates on the situation faced in the focal organization, the actions taken, the results achieved, as well as lessons learned. The situation faced highlights the initial