

Chapter 23

Final Conclusions and Outlook



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In this final chapter, we reflect on the contributions of this book as a whole while also identifying challenges for future research.

23.1 Summary

As discussed in Chap. 1, the creation of this book was triggered by three, mutually amplifying, trends that drive enterprises to change: the transition to the digital age, the emergence of service ecosystems, and the growing role of data as a key underlying resource. As a result of these intertwined, and mutually amplifying, trends, enterprises are more than ever confronted with a need to transform while becoming increasingly *service-focused*, *digitally powered*, and *data-fueled*.

To meet these challenges, there is no one-size-fits-all approach. Therefore, the aim of this book was to explore different relevant aspects in more detail while at the same time also providing concrete suggestions for enterprises to meet the resulting challenges. In line with this, the contributions brought together in this book covered four key perspectives:

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1. Part I—involving *experience reports* on how enterprises deal with these trends in practice
2. Part II—concerned with the need for a new *design logic*
3. Part III—addressing the need for *architectural coordination* of the needed transformations
4. Part IV—discussing consequences for *enterprise modeling*

23.2 Fundamental Challenges

The contributions in this book also point toward more fundamental challenges underlying digital transformation and enterprise transformation in general. Below, we discuss three of the main challenges we see.

Each of these challenges requires further research: both to understand the underlying mechanisms and to formulate strategies and approaches to meet these challenges.

23.2.1 A Multi-speed and People-Driven Approach to Change

As different contributions in this book already underlined, “the only constant is change.” At the same time, these changes come at different speeds, thus implying a need to also follow a multi-speed approach in dealing with change: for instance, involving at least a fast cycle (dealing with the immediate threats and opportunities at hand) and a slow cycle (steadily directing the enterprise toward a desired future). However, as needed, additional levels may be identified.

From an enterprise architectural point of view, these different speeds of accommodating change result in a gradual shift from a descriptive style of architecting for those elements/aspects of the enterprise that can be assumed to be stable for a longer time toward a more prescriptive style of architecting for those elements/aspects that are likely to involve a high level of dynamics.

As also observed in different contributions in this part, digital transformation is not only about *technology* but also about the *people* driving/realizing changes. The challenge then becomes how to, on the one hand, engage/mobilize the right people to drive change while, on the other hand, remaining in control of many (human-driven) bottom-up changes as they occur across an enterprise.

23.2.2 Building Capabilities for Change

Several contributions in this book highlighted the need to better organize an enterprise’s capabilities for change. Capability is a contraction of capacity and ability. Understanding and influencing capability of an enterprise can be dubbed

capability-based planning, a notion that stems from the military domain (we need the capability to wage war on two fronts and win).

Research on strategic management (Winter, 2003; Teece, 2007; Pavlou & El Sawy, 2010) argues that, in dealing with turbulent environments, enterprises need three types of capabilities, namely, *operational*, *dynamic*, and *improvisational*. Operational capabilities are organizational routines and processes that are developed over time through learning and provide organizations with the capacity to undertake activities in a reliable manner. Dynamic capabilities are forward-looking capabilities by which organizations extend, modify, or reconfigure existing operational capabilities into new ones in response to disruptive technological shifts and innovations. Improvisational capabilities are second-order dynamic capabilities by which organizations spontaneously reconfigure existing resources into new ones to address urgent and unpredictable environmental situations.

For enterprises to be successful in managing change, they will need to find a balance between the different capabilities while also managing the needed differentiation in speed as discussed in the previous subsection.

23.2.3 *Modeling Capability as a Foundational Capability*

In dealing with the many levels and speeds of change that confront enterprises, it will become increasingly important for enterprises to be aware of all relevant activities and activities inside, and outside, the organizational boundaries. Even more, the different actors involved in/impacted by these changes need (1) to have insight into the existing structures and operations of an enterprise; (2) to be able to express, assess, and evaluate different design options for their future; and (3) to have instructions on how to make the necessary changes to these structures and operations and (4) how to operate in the future.

These needs were also touched upon in the different contributions in this book. Chapter 11 explicitly introduced the notion of organizational self-awareness to stress the need for the actors involved in an enterprise to be aware of the current operations of an enterprise, as well as its future. As argued in, e.g., Magalhães and Proper (2017), Proper and Bjeković (2019), Proper (2021), (enterprise) models should also be understood from a broader perspective than mere “boxes and lines” diagrams. More specifically, enterprise models potentially capture important enterprise knowledge Lillehagen and Krogstie (2010). This can, e.g., pertain to knowledge in relation to the well-known interrogatives (*why*, *who*, *whose*, *when*, *how*, *with*), be positioned in time (*as-was*, *as-is*, *as-planned*, *to-be*, etc.), be nuanced in terms of modalities (*must*, *ought*, *desired*, etc.), take a prescriptive or a descriptive perspective, etc.

As such, next to, e.g., an enterprise’s operational capabilities and dynamic capability, its *modeling capabilities* will become an increasingly important foundational

capability of enterprises. The challenge will be to further improve these *modeling capabilities* by means of tools, modeling languages, and associated processes while balancing the return on modeling effort (RoME Op't Land et al., [2008b](#); Guizzardi & Proper, [2021](#)).