

Digital Transformation Compass – A Guide to Management Methods and Tools in Digital Transformation Initiatives (*Proposal of Future Work*)

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In an era of disruptive technologies, digital transformation is critical to an organization's ability to compete. New roles like Chief Digital Officers who orchestrate this transformation, and budgets for digital initiatives are on the rise. For enacting digital transformation, C-suite managers and their committees need novel management instruments. We propose a collection of concrete methods and tools, structured by constructs from activity theory and method engineering. Recent bestselling publications authored by academics use specific rather new designs such as visual, colorful, haptic hands-on books or card sets, and still are research grounded. Design patterns like these and user-research will provide requirements in creating two artifacts along Design Science Research: the "book" as content artifact, and a method-artifact for establishing an online authoring community.

Keywords: Chief Digital Officer, Digital Transformation, Management Methods, Online Community, Playbook

INTRODUCTION

Strategic Digital Transformation becomes pervasive

In an era of disruptive technologies including artificial intelligence and machine learning, robotics, augmented and virtual reality, autonomous vehicles, blockchain, and more, digital transformation is critical to an organization's ability to compete effectively. With this statement, Altimeter's principal analyst Solis makes clear that "digital transformation" is not just a hype or buzzword. On the contrary, the 5th annual *State of Digital Transformation Report* (Solis 2019: 21) finds that digital transformation is maturing into a pervasive and enterprise-wide movement. Eighty-five percent of the companies surveyed globally – with a respondent base of about 550 professionals - reported that their digital transformation efforts have expanded beyond IT into organization-wide initiatives (Solis, 2019: 6) and that they aspire to reshape businesses holistically. Their finding that budgets are growing strengthens the evidence for the relevance of digital transformation in practice. Not only are budgets growing, but smaller budgets are simultaneously subsiding (Solis, 2019: 21). Managing the digital transformation is certainly a current, worthy, and rich topic for academic research, and here to stay for many more years.

The understanding of digital transformation is in evolution as its manifestations in practice continuously develop. Solis (2019: 4) updated their definition to: *Digital transformation is the evolving pursuit of innovative and agile business and operational models – fueled by evolving technologies, processes, analytics, and talent capabilities – to create new value and experiences for customers, employees, and stakeholders.* Two definitions in academic publications are:

A rather broad one of "digital transformation" by Nambisan et al. (2017: 224). They use the term digital innovation and conceptualize it *as the creation of (and consequent change in) market offerings, business processes, or models that result from the use of digital technology;*

and one that clarifies the term "transformation" opposed to "change". Singh and Hess (2017: 2) state: *transformation expresses the comprehensiveness of the actions that need to be taken when organizations are faced with these new technologies. Thus, a digital transformation typically involves*

a company-wide digital (transformation) strategy, which goes beyond functional thinking and holistically addresses the opportunities and risks that originate from digital technologies. A digital transformation strategy guides the organization in its journey toward being digitally transformed.

Digital Transformation initiatives require new management methods and tools

As the definitions imply, also management methods and tools face a transformation challenge. The Digital Era with its dynamic evolvement of technologies, and the subsequent emergence of new and complex phenomena also calls for novel management methods and tools. Some are outdated and thus obsolete, like the waterfall approach to software development that is upended by new agile approaches such as Scrum. The values and principles behind agile software development along with concrete rules and practices are being transferred beyond software production to general management. SAFe (<https://www.scaledagileframework.com/>) e.g. is an agile framework for the enterprise level, and Large Scale Scrum LeSS (<https://less.works/>) an agile framework for product management. Other management methods need adaptations. Among innovation management concepts for instance, in the light of more entrepreneurial and iterative approaches (Ries, 2011) the traditional funnel model needs a revision to a next generation scheme (Back, Thoma, & Guggisberg, 2018). In sync also the academic community recognizes that in an increasingly digital world innovation management research needs to be reinvented (Nambisan, Lyytinen, Majchrzak, & Song, 2017).

While for classic management, books with overviews such as “Top 100 Management Tools” – already in its 6th edition (Schawel, & Billing 2018) – or management toolkit portals <https://www.mindtools.com/> exist, we are not aware of similar works that curate innovated and current methods and tools for managing digital transformation in organizations. Extant books by academics, like Sambamurthy and Zmud (2017), do not appeal to a management readership in the same way as the abovementioned examples that use a design explicitly targeted to a management audience. And, as we show in the following paragraph, traditional designs of knowledge publications are questioned and revisited.

Academia uses new publishing formats for communicating knowledge to managerial practice

Does management research influence the thinking and practice of corporate managers? Well, it should, but many academics perceive this influence to be on the decline. Therefore, in the rigor-relevance debate, the scientific community started to reflect critically about the impact that their academic output has on managerial practice. For instance, in 2007 the 15th European Conference on Information Systems used “Relevant rigour – Rigorous relevance” as its motto.

It seems, we are now seeing follow-ups to this debate. More and more researchers are taking action by not only addressing relevant topics and problems in practice, but also by publishing their knowledge contributions in new formats that prove to reach their intended audience¹. Terms like *playbook*, *canvas*, *kit*, or *card set* characterize this movement. The designs of books that become bestsellers and get recognition by rewards are visually pleasing and

¹ Formats with already a long tradition are research-based journals that target management readers and that therefore follow specific design rules. MIS Quarterly Executive e.g. cuts out the reference section altogether, and prohibits or at least drastically shortens the research model as well as the research method sections. Also, headings are not formulated in an abstract way but as concrete statements of conclusions or recommendations.

often haptic. These formats show user-centric design patterns that clearly differ from those of traditional management books, while at the same time the content of these practice books is grounded in scientific research.

Among publications of this kind that inspire our proposed work are:

- Osterwalder's and Pigneur's handbook (2010) with the Business Model Canvas,
- Design Thinking books by Lewrik, Link, & Leifer (2018) and Uebernickel et al. (2015),
- Jane Hart's annual survey "Top Tools for Learning", and the website with the corresponding Directory of Learning & Performance Tools (<http://c4lpt.co.uk/directory-of-learning-performance-tools/>),
- Meet Up! Book by Eppler and Kernbach (2018) or
- Der Innovationskultur-Navigator, a set of 66 cards, by Gassmann et al. (2018).

Especially those works that present concrete practices serve us as blueprints for starting out with a first iteration of our planned collection of digital transformation management instruments.

CONCEPTUAL BACKGROUND AND RELATED LITERATURE

Who is responsible for digital transformation?

If we aspire to support organizations in enacting digital transformation, we need to ask who and what roles are responsible for digital transformation. According to the analysis of Solis (2019: 2), ownership for digital transformation is moving to the C-Suite and managed by cross-functional, collaborative groups, either as informal or formal committees. Their annual *State of Digital Transformation Report* has been tracking what C-suite roles are owning or sponsoring digital transformation initiatives. For 2018, Chief Information Officers (CIO) are cited as the most typical; also Chief Innovation, Chief Marketing, Chief Executive Officers, and the rather new role of the Chief Digital Officer (CDO).

The CDO is one of the fastest-growing C-level positions, and the role is a global phenomenon². Many regard it as a temporary position others however propose that CDOs might become the next CEOs (Singh, & Hess 2017: 2, 16). Solis (2019: 9) notes that the roles are combining over time as digital becomes the new norm. Singh and Hess (2017: 2, 3) describe the role of a CDO as *the company's digital transformation specialist who orchestrates the digital transformation of a company. Transformation is at the core of the CDO's role, not a responsibility in addition to others*, like often with other CxO positions. They also point out that CDOs have a wider role than heads of individual digital business units: *CDOs assume cross-department authority for digital initiatives and aim to transform the company as a whole*.

While C-suite roles lead digital transformation, it's management is in the hands of cross-functional, collaborative groups. Solis (2019: 11) reports that the vast majority of cross-functional committees (48%) are staffed by 8 or more full-time employees. Team sizes are trending higher as digital transformation becomes a holistic business endeavor.

But what exactly do CDOs and these committees do?

Tasks and activities to enact Digital Transformation

Analyst reports commonly poll managers for their current and planned digital transformation efforts or initiatives. Examples for such initiatives are "accelerating

² The CDO Club <http://cdoclub.com/> publishes a monthly update of newly hired CDOs. In Q4 of 2018, their headcount sums up to 47 managers. For Jan. & Feb. 19 they list 28 CDO appointments.

innovation", "modernizing IT infrastructure", "creating an omnichannel customer experience", "modernizing employee experience", "creating a culture of innovation", etc. (more see Fig. 6, Solis, 2019: 14). However, this does not tell us how the tasks within these initiatives are performed.

Some academic papers address this issue. Berghaus and Back (2017) studied the initiating activities that companies executed when they launched their digital transformation program formally. This resulted in 9 activities such as "improve digital channels", "adapt work practices", "develop digital strategy", "align transformation initiatives" etc. Singh and Hess (2017) offer insights into how the CDO role is performed; each of their case studies anecdotally mentions their tasks, e.g. "create a corporate program", "hold workshops, and be involved in town-hall-meetings", "focus on digital product development", etc. In their paper (Tumbas, Berente, & vom Brocke, 2017) about types of CDOs– *digital accelerators, digital marketers, and digital harmonizers* – the authors cover objectives and capabilities of these roles. Yet, in all these papers, we do not learn about the concrete "how": about the methods and tools the actors use to carry out their tasks. As first inroads into this research question, we developed a survey instrument to investigate what frameworks, methods and tools are applied by C-level managers in the context of digital transformation (Caro, 2019).

In order to provide a handbook with concrete methods and tools, we need a more detailed conceptual background. Our proposal is to use concepts and constructs from activity theory (Allen, Brown, Karanasios, & Norman, 2013; Engeström, Y., & Sannino, A. 2011) on the one hand, and from method engineering on the other hand (Gutzwiller, 1994). This will allow us to start out with the following understanding of terminology:

Actors/subjects/roles have responsibility for digital transformation, even if they carry different titles. They launch and lead *digital initiatives* to perform the different *tasks* by concrete *activities/practices*. Specific *methods* are available for these activities, some of which can be *tool* supported. Certain values/*mindsets* guide these activities/practices, as well as *principles and rules*. Additionally, a *time/maturity* aspect comes into play. Employing certain methods and tools effectively, requires prerequisites, perhaps minimum maturity stages in the digital transformation journey.

The idea of a management handbook for digital transformation methods and tools

Content artifact "book"

In the introduction, we have already mentioned books that serve as role models for design principles and patterns of our proposed collection of digital transformation methods and tools. Such books have characteristics like overview, hands-on, visual, haptic, and storytelling elements (Kernbach, 2018). Furthermore, some of these projects inspire to think beyond the printed matter artifact.

Community method artifact

While many know Osterwalder's and Pigneur's (2010) book on business model generation and the Business Model Canvas, hardly anybody knows how they created this book. The authors intricately forged a community model and process of writing the book, and they even found ways to monetize this participation, as described in a case study by Walter and Back (2010). Hence, we will develop another, accompanying artifact. It will be a method for establishing the community of contributors. We will draw inspiration from tactics that digital startups use to promote adoption. Regarding governance principles that foster participation and ensure quality, we expect to gain fruitful insights from Wikipedia research. As to

method components, a rich body of research about establishing and maintaining online communities exists. The *Community Fostering Reference Model* (Bretschneider, Hartmann, & Leimeister, 2018) provides a solid foundation for the instantiation of this artifact.

DESIGN RESEARCH METHODOLOGY AND RESEARCH DESIGN

Design research approach

Our main guideline in rigorously designing the two artefacts “book” and “community method” will be *Design Science Research* (Hevner, March, Park, & Ram, 2004). Peffers et al. (2007) propose a process model that is comprised of six activities (Fig. 1).

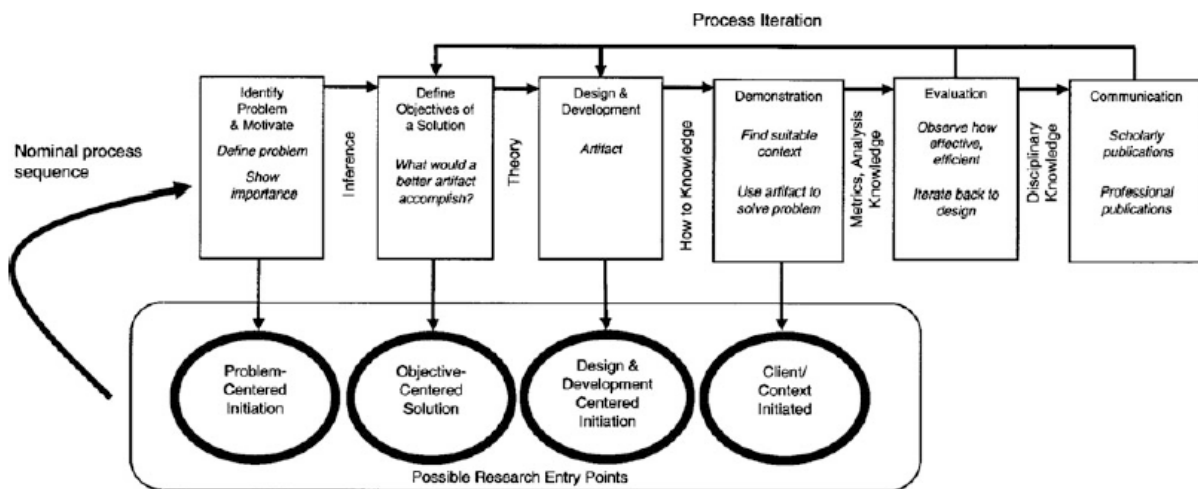


Fig. 1: Design Science Research Process Model (Peffers et al. 2007: 54)

Research steps

Design & Development

In the above sections, we already addressed the first two steps of Peffers’ et al. (2017) process model. We presented our motivation and revealed the perspective with which we will start out to identify the problems. A sketch with the objectives of the proposed solution is also given. Research in the coming months before the conference will deepen these findings by structured literature search and semi-structured stakeholder interviews. We want to find out what our target group, the C-suite managers, consider valuable when they learn about management methods and tools through artifacts of our study interest. We will dig deeper into the needs which are behind actions to buy, read and use such artifacts, and how to describe and measure the utility they create. This will probably include looking at the wider “ecosystem” of interlinked services that are needed to install practices and create an impact. The focus then will be on initiation, with the actual design and development in the third step. Our research team will derive meta-requirements and design patterns along solid design research practices. For the content artifact, it is feasible to do a usability study with a mock-up prototype. These qualitative and design research methods will challenge, sharpen or perhaps pivot our proposition that the coupled artifact - a “book” and an author community - could fulfil the desired goals.

Demonstration cycle 1 with a minimum viable content artifact

For demonstration in the fourth step, we need a minimum viable content artifact, meaning that it already is useful for subjects of the target group. Our idea is to use concepts, methods and tools for digital transformation initiatives that are under way in organizations that have already achieved a rather high level of maturity. We assume that our interviewees and test persons will be more experienced in digital transformation management than managers that have just embarked on their digital transformation journey, and thus will be more critical with their feedback, and more valuable in giving constructive impulses. According to our past observations and research, digital initiatives in mature companies are often forms of collaboration with the startup ecosystem. Solis (2019) shares this opinion when he interprets the respective results in their study. Of the companies surveyed in 2018, 36% created corporate venture capital branches to invest in funds and startups or acquired companies that could help them further innovate; and a notable 29% of companies reported having acquired startups and adding their founders and key employees to executive management ranks. Our already collected, research-grounded methods and tools cover a much wider spectrum of such activities including applicable methods and tools. E.g. a taxonomic framework for forms of collaboration with a startup ecosystem with 9 options and 8 dimensions, or a scorecard assessment and a KPI-dashboard for collaboration projects that digital business units run with startups.

Evaluation cycle 1 for the content artifact

The DigiEra conference call asks for contributions that “*encourage discussion and participation*”. We would be happy to take this literally and let the participants of the conference or of the track act as a focus group. We will prepare a format for a moderated oral and written structured discussion, and create a feedback instrument that serves as data based foundation for this first evaluation research step.

EXPECTED CONTRIBUTIONS TO RESEARCH AND PRACTICE

Contributions to Research and Further Research

The meta-requirements and design patterns of the artifacts themselves will be like validated propositions for having created artifacts that solve problems of researchers who seek to communicate their knowledge, and of practitioners who wish to find guidance for professionally managing digital transformation. These propositions lend themselves to further research, like theorizing and testing generalizability.

A follow-up research focus could be to design governance rules for maintaining the quality and actuality of the content artifact, to design growth methods and the concept of an ecosystem composed of services needed for effective knowledge transfer with measurable outcome. Certainly, many of the general research questions asked about Wikipedia or Open Source Software Communities can also be addressed using a project like this - if the initial manifestations turn out as a success.

Contributions to Practice

If our artifacts can find product-market-fit and scale, we will have achieved impact. In the case that we even find monetization, we will have created the stub of a business. In the best case, we generate transferable knowledge of pragmatic design principles and patterns for communicating research knowledge to inform management practices more effectively. This

would be a puzzle piece in the endeavor to heighten recognition of management research in practice.

Concluding Remarks and Limitations

The responsibilities associated with digital transformation have such a high level of complexity that our proposed goal is very ambitious. Digital transformation management is a topic in continuous evolution. Especially the content artifact will always be somewhat incomplete and in the state of flux. Addressing the proposed work with a community model in a collaborative way is on the one hand adding solution potential, on the other hand poses challenges.

We have only just begun our first structured research steps; even literature and conceptual foundations are not yet researched extensively and rigorously. If judged as a research paper, this article so far has rather eclectic evidence.

As engaged researchers we are biased. With submitting our planned work, we hope to raise interest in order to find researchers who join us in the scientific knowledge generation - with a more neutral perspective - in the context of this endeavor.

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