Eindhoven University of Technology

MASTER

How to transform organizations to the agile way-of-working

Drop, M.B.

Award date:
2017

Link to publication

Eindhoven, April 2017

How to Transform Organizations to the
Agile Way-of-Working

By M.B. Drop
Bsc in Economics and Business Economics
Student identity number 0920362

in partial fulfilment of the requirements for the degree of

Master of Science
in Innovation Management

University supervisors:
Prof.dr. A.G.L. Romme, TU/e, ITEM
dr. A.S.A. Bobelyn, TU/e, ITEM

Company supervisor:
Kido Koenig, Capgemini Consulting B.V.

Subject headings: Agile, agile way-of-working, transformation, change management

Acknowledgements

With this thesis I conclude my studies at Eindhoven University of Technology (TU/e). It marks the end of an exciting six years of academic programs that started with a Bachelor in Economics and Business Economics and a minor that qualified me as an economics teacher. During the second stage of these six years I continued to develop myself with the Master of Innovation Management, and as the icing on the cake a semester abroad to the Faculdade de Engenharia da Universidade do Porto. I am very thankful that the TU/e gave me the opportunity to further develop myself.

The best way to describe my experiences over the past year is rather cliché: A roller coaster ride. This ride would not have been possible without the help of certain people, who I would like to thank here. In the first place I would like to thank the people closely involved in this project, my first supervisor end mentor from the TU/e Sjoerd Romme, and my supervisor from Capgemini Kido Koenig. I would like to thank Sjoerd Romme in particularly for believing in me. Our meetings were always constructive and your arguments provided me with valuable insights and energy that enabled me to take the next step. I thank Kido Koenig for guiding me through the process at Capgemini. Despite your busy schedule you always found the time to sit together to provide me with critical and constructive feedback. I also want to thank Annelies Bobelyn for your academic criticism and support in the last phase of my project, as well as Anneke Zijlstra for giving me the opportunity to conduct my project at Capgemini Consulting.

During this project I was allowed to meet and speak with interesting people in and outside Capgemini. I want to thank them for the support and interest in my graduation project. These meetings allowed me to pursuit this topic and to find the right angles to tackle its challenges.

Last but not least I would like to thank the people that gave me the mental support to fulfill this project. I want to thank Jelle van Zaanen and Boy van Dijk for the time we spent together in the library, and at Capgemini. I will always remember the jokes we made, or the pizzas we ate at 'Mister Jacks' between library sessions. I want to thank Matt Neary for helping me improve my English skills. Finally, I would like to thank my family and friends. I would not have come this far without your support.

Milan Drop

Eindhoven, April 2017

Abstract

The ecosystems in which clients of Capgemini act are becoming increasingly complex and dynamic, due to the digitalizing world. Consequently, these client organizations have to react faster. Capgemini's change management consultants are thus looking for new ways of change management in which continuous change is embedded in the organization. After conducting several explorative interviews, we decided to explore the transformation to the agile way-of-working (AWW). This research project investigated the strategy that can be used to execute organization-wide transformations to the AWW. A systematic literature review was conducted to explore the challenges and success factors in organization-wide transformations. Additionally, multiple case studies were conducted to learn from the practical experience of managers that have guided an organization-wide transformation to the AWW. Drawing on the literature and the cases, a set of eleven practice-based and thirteen research-based design propositions were derived. Subsequently, a final set of eleven design propositions was created. These design propositions were then used to develop a tool that helps the consultants of Capgemini choose and implement the most appropriate strategy in any organization-wide transformation to the AWW.

Management summary

This study, commissioned by Capgemini Consulting, focused on exploring the most effective strategy that can be used to execute organization-wide transformations to the agile way-of-working (AWW). The purpose was to develop a tool based on a set of design propositions that are grounded in literature as well as in practice. The key research question is:

> Which transformation strategy can be used to become an agile organization?

Drawing on a literature review as well as case studies, we developed design propositions that were subsequently used to build a tool to help the consultants of Capgemini execute the most appropriate strategy in an organization-wide transformation to AWW.

Research methodology

In order to answer the research questions, the design oriented research approach was used. This approach tailored towards finding practical solutions for business problems, and the design propositions are presented following the CIMO logic. Three steps were undertaken to construct a final set of design propositions. First, a systematic literature review was conducted on four topics: An analysis of the change management literature, the assessing of Kotter's model on its accuracy, a description of the AWW, and the challenges and success factors opposed in transformations to the AWW. Subsequently, the research-based design propositions were derived from the information of the systematic literature review.

Second, three case studies were conducted to retrieve practical experience from managers that had guided an organization-wide transformation to the AWW. From this information the practice-based design propositions were derived. Finally, a final set of design propositions was formulated through a synthesis of the research-based and practice-based design propositions. This final set of design propositions was used to build the tool. Three iterations were executed in the development of the tool, including an alpha test for each iteration.

Results

The systematic literature review resulted in a clear overview of the change management process in transformations to the AWW. This information was used to derive thirteen research-based design propositions from literature. Furthermore, the analysis of the cases gave insight in the main problems and possible solutions relating to organization-wide transformations to the AWW, experienced by practitioners in the studied organizations. The eleven practice-based design propositions that were derived from the empirical data of the case studies illuminated practical solutions for transformations to the AWW. Finally, a final set of eleven design propositions was made that has proven to be effective in research as well as in practice, thereby creating design proposition that are generalizable over multiple contexts. This final set of design proposition effectively answers the main research question: *which transformation strategy can be used to become an agile organization?* The final set of design propositions, including the practice- and research-based design propositions are depicted in appendix 11.

With the final set of design propositions, a tool was designed to guide the employees of Capgemini Consulting in executing the most appropriate strategy in an organization-wide transformation to the (AWW). The Pyramid Principle was used in guiding the development process. After analyzing the design propositions with the pyramid principle, a structure with the following three pillars was created; *behavior, mindset*, and *structure.* The tool is presented in appendix 16.

Limitations and contributions

The main limitations of this study is threefold and concern: At first the use of 'an increase of the probability of success of the change program' as the overarching outcome in the design propositions. The success of a change program is hard to measure and therefore the validity of this outcome is difficult to test. Second, the sample size of the case studies is small with the empirical data of only two organizations. Third, the fact that the results of this study were produced solely by one researcher. This decreases the reliability of the study because possible biases in outcome that result from the perception of the researcher are not eliminated.

The main theoretical contributions of this study is fourfold and concern: At first an assessment of the model of Kotter on its accuracy in literature. Second, the structuring of the agile literature on challenges and success-factors in the transformation process. Third, the creation of eleven practice-based and thirteen research-based design propositions. Fourth and final, the synthesis of the practice- and research-based design propositions, whereby a final set of eleven design proposition was derived that is grounded in literature as well as in practice.

The main practical contributions of this study is fourfold and concern: At first, a tool that helps the consultants of Capgemini execute organization-wide transformations to the AWW. Second, the design and presentation of a webinar concerning the subject of organization-wide transformations to the AWW. Third, the organization of 'The Agile Event' that brought the leaders concerning this subject together and stimulated them to share their knowledge. Fourth and final, the initiating of a community of practice with the main objective of stimulating the inter-departmental sharing of knowledge related to organization-wide transformation to the AWW.

Table of Contents

List of tables and figures

1. Introduction

Consultants at the Executive Leadership and Change department of Capgemini Consulting are facing new challenges in executing their projects. These challenges are a result of increased dynamics within business ecosystems, created by information flows that become more apparent as a result of digitalization (McAfee et al., 2014). This creates a need for organizations to continuously change and adapt to market demand (Fieldman, 2000).

The available tools at Capgemini Consulting are not specially designed to deliver this form of transformation. The book Leading Digital (McAfee et al., 2014), written by several Capgemini consultants, addresses this issue and describes how an organization can change strategically to address the challenges of an increasingly digitized world. The main focus in the book is on the transformation of the business plan through the use of digital technologies to become "a firm that excels in digital and leadership capabilities" (McAfee et al., 2014, p.20). McAfee et al. (2014) refers to this state as a digital master.

However, consultants at the Dutch branch of Capgemini Consulting have noticed that the scope of the book is too narrow. In this respect they observed that to successfully address challenges related to increased dynamics of business ecosystem, more than only a digitalization of the organization is needed. The book by McAfee et al. (2014) does not provide information on how organizations can actually achieve a form of continuous change.

After extensive discussion with consultants of Capgemini Consulting I decided to focus on the strategies for organization-wide transformations to the agile way-of-working (AWW). The AWW is a description of work practices whose main objectives are to plan and execute projects. These practices are derived from the agile manifesto founded in 2001. The manifesto consists of four values and twelve principles. The former behave as norms which describe the requirements of agile work practices at a conceptual level. The latter are derived from these norms and act as rules of action which describe the behavior that is desired when using agile work practices in executing a project.

The most notable difference between the AWW and traditional project management is that in the latter approach, the process is centric and guided by the belief that variations are identifiable and eliminated by continually measuring and refining the process (Nerur et al., 2005). Communication inside a team is formal and made only when necessary. Most of the time this comes with documentation to secure the agreement, and if necessary this is appointed to a person responsible (Nerur et al., 2005; Conboy et al., 2011). On the other hand, agile teams are self-organizing bodies with collective decision power, creating higher engagement, more flexibility and extensive collaboration and communication. Furthermore, the agile approach deviates from the traditional approach with repeated short cycles of thought-action-reflection, which increases the self-learning ability of the team (Nerur et al., 2005). The characteristics of the AWW and the reasons why they create an organization that is able to continuously change is elaborated in chapter 3.3.

According to the consultants at Capgemini Consulting the AWW has the appropriate characteristics for organizations to continuously change. This view is confirmed by a survey conducted by Version One among 3.300 respondents. In their research, 87 percent answered that the ability to manage changing priorities got better after implementing a form of the AWW (Version One, 2016). Furthermore, the strategy for organization-wide transformations to the AWW is not discussed properly in the existing literature. This results in the following research question:

- Which transformation strategy can be used to become an agile organization?

The research question is solved by using a case-based approach embedded in design science methodology, and the deliverables of this study are:

- An in-depth view of the key challenges that organizations are experiencing with an emphasis on organization-wide implementation of the AWW.
- Insight into the challenges experienced by leadership during organization-wide implementation of the AWW.
- A set of (evidence-based) design propositions that depict effective transformation strategies in terms of conditions, generative mechanisms, actions/interventions and outcomes.
- A tool that is alpha tested.

To obtain the deliverables described above this study is structured as follows: Chapter 2 will cover the project approach. This includes a more elaborate introduction of the research problem and an explanation of the research methodology used in this study. In chapter 3 the theoretical context of this study is explained by conducting a systematic literature review about the change management needed in transformations to the AWW. Subsequently, research-based design propositions are extracted from the systematic literature review. Chapter 4 will explore multiple case studies conducted in profit and government organizations. With the empirical results of the multiple case studies the practice-based design propositions are derived. In chapter 5 the research-based and practice-based design propositions are synthesized into a final set of design propositions. In Chapter 6 these design propositions are used to design a tool that helps the consultants of Capgemini guide organization-wide transformations to the AWW. The main objective of the tool is to help consultants of Capgemini choose the appropriate strategy when transforming client organizations to the AWW. In chapter 7 the process of implementing the tool in Capgemini is described. Finally, the conclusions, contributions, limitations and directions of future research are given in chapter 8.

2. Project approach

In this chapter the research design is created to conduct this study. Since the research questions are only broadly formalized in the introduction, first the scope of the researched is narrowed down. Subsequently, the methodology that is used to execute this study, and the research plan and methods that are used for the execution of a systematic literature review and multiple case studies are explained. Finally, this chapter concludes with the methods that are used to ensure the quality criteria controllability, reliability and validity.

2.1 Problem statement

In this section a more elaborate explanation of the problem faced by the consultants at the Dutch branch of Capgemini Consulting is given. This explanation builds forth on the description given in the introduction and is divided into two parts. First, the method that is used to derive the final problem statement is described. Subsequently, a more in depth analysis of the problem statement is given that concludes with the main research question and two sub-questions.

2.1.1 Method for deriving the problem statement

To get an understanding of the challenges the Leadership and Change department of Capgemini Consulting is facing, twelve open ended interviews were conducted. To exclude possible biases arising from ideas that are department- or position dependent, persons from different departments and hierarchical levels were selected. After the interview a summary was made and sent back to the interviewee to verify whether the information corresponded with their thoughts. The information of the summarized interviews was used to construct a cause and effect diagram, in which the problems on the right are caused by the effects on the left. To define the final problem statement the cause and effect diagram was discussed with four interviewees and the company supervisor.

An overview of the different persons interviewed including their function is presented in appendix 1. Furthermore, a summary of the interviews is included in appendix 2, and the cause and effect diagram is presented in appendix 3. In the following section an in-depth analysis of the final problem statement is given.

2.1.2 Final problem statement

Most interviewees noted that the change process itself has changed over recent years. The biggest difference noted is that the process of change has speeded up. The ecosystems client organizations of Capgemini act in evolve faster due to the digitalizing world (McAfee et al., 2014). Consequently, client organizations of Capgemini Consulting have to react faster. This results in a demand by the change management consultants to act differently. A management consultant at the Executive Leadership and Change department stated that "a change process is not from a static point A to B anymore. Nowadays, we want to change a company from point A to a changeable organization". However, Capgemini's methods used to change the clients' organization is focused on static change, which creates a demand for new methods that are able to cope with continuous change.

The challenge of increasingly evolving ecosystems was addressed by the global Capgemini Consulting organization. Didier Bonnet, Senior Vice President of the digital transformation department of Capgemini Consulting did a conjoint research program with George Westerman and Andrew McAfee from the Massachusetts Institute of Technology (MIT). In their study they developed a method for companies to embrace the challenges of faster evolving ecosystem by digitalization. According to McAfee et al. (2014, p.12) a digital transformation is "the use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements, such as enhancing customer experience, streamlining operations or creating new business models".

The study of McAfee et al. (2014) has a pivotal role in understanding the new challenges. However, according to consultants of Capgemini Consulting the book does not address all issues created by faster evolving ecosystem. Especially an accurate description of how to lead the change is missing from the book. Furthermore, the consultants noted that as a consequence of increasingly evolving ecosystems, companies have to act faster. A solution for this is the use of digital tools. However, more solutions are needed to encounter the challenges created by faster evolving ecosystems.

Change as a continuous process was mentioned multiple times in the interviews. It refers to organizations that are constantly able to adapt to market demand (Fieldman, 2000). In the cause and effect diagram presented in appendix 2 'change as a continuous process' has a central position and thereby it can be defined as a fundamental property of the challenge encountered by the consultants of Capgemini.

A solution discussed by the consultants of Capgemini was the agile way-of-working (AWW). The fundamentals of the AWW are shorter project cycles, self-learning ability of the organization, and active user involvement, characteristics that result in more nimble and flexible organizations (Beck et al., 2001).

The challenge is that the characteristics of transformations to the AWW are notably different compared to common transformations governed by the Executive Leadership and Change department of Capgemini. The Consultants concluded that the literature which informed the transitional methods of Capgemini Consulting are probably still valid for traditionally more linear change programs, but do not sufficiently support organization-wide transformations to the AWW. Also it was noted that the realization of these principles becomes different as result of the dynamic ecosystems that many organizations are currently operating in.

This thesis project provides Capgemini with a framework that is useful to guide organization-wide transformations to the AWW. This results in the following research- and sub-questions:

> Which transformation strategy can be used to become an agile organization?

> - How can the current change management method of Capgemini Consulting be adapted to become more suitable for agile transformations?

Furthermore, a consultant of Capgemini stated that failures in the implementation of change programs are often caused by neglecting executive leadership in change management. This result in the following sub-question:

> - What should the role of executive leadership be in an organization-wide agile transformation?

In the following section, a description is given of the methodology used to answer the research- and sub-questions.

2.2 Method

In this section the methodology used to execute this study is explained. Firstly, a description of the design science methodology is given. A good explanation is needed as design science research is notably different compared to explanatory research, which is more common in the field of social sciences. Secondly, the method that was used to conduct the systematic literature review is given, followed by an explanation of the extraction of the research-based design propositions from the literature review. Thirdly, the method used to execute multiple case studies is given, followed by an explanation of the extraction of the practice-based design propositions from the observations in the

cases. To conclude this section, an explanation is given of the process for the synthesis of the research-based and practice-based design propositions in a final set of design propositions that is grounded in research as well as in practice.

2.2.1 Research method

The aim of this study was to find a solution for the problems encountered by Capgemini Consulting. The design oriented research approach was used, as this was developed to find practical solutions for business problems. Table 2.1 summarizes the biggest differences between explanatory research and the design oriented research approach.

	Explanatory research strategies	Design science research strategies
Driver	Theoretical problems	Field problems
Perspective	Observer	Actor
Objective	To understand, quest for truth (knowledge as an end)	To improve human conditions (knowledge as a means)
Interested	In the world that is	In the world that can be
Justification	On the basis of descriptive and explanatory validity	On the basis of descriptive and pragmatic validity
The iconic research product	The causal model	The design proposition

Table 2.1: Differences between explanatory research and design science research (Adapted from: Van Aken 2014).

In this study the regulative cycle described by Van Aken, Berends and Van Der Bij (2007) was applied. The regulative model cycle developed by Van Aken et al. (2007) contains the following five steps: Problem definition, diagnosis, design, intervention and evaluation. The main goal of the regulative cycle is to test whether a proposed solution is capable of solving the business problem. A summary of this process is depicted in figure 2.1.
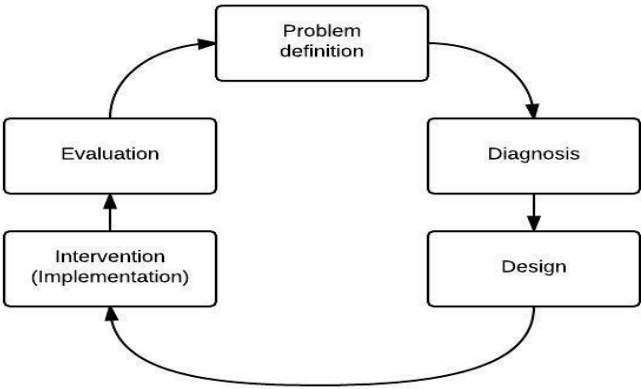
Figure 2.1: The regulative cycle (Based on: Van Aken et al., 2007, p.13).

The *problem definition* is the initial problem agreed by the researcher, the company supervisor, and the university supervisor. To help the researcher identify potential underlying causes from the initial problem statement communicated by the company, the problem definition needs to be derived from a problem mess or a cause and effect diagram (Van Aken et al., 2007). The *diagnosis phase* analyses the problem at a deeper level, and specific knowledge on the context and nature of the problem is created.

The *design* is the most important step in this research. In the design phase an actual design is developed to cope with the problem stated in the problem definition. For the development of a design, Van Aken et al. (2007) suggests the use of field tested and grounded theory rules also called design propositions. The design propositions in this study are designed by incorporating the CIMO format developed by Denyer, Tranfield and Van Aken (2008). CIMO represents context, intervention, mechanism and outcome, and enables the author to derive an intervention (I) that results in a certain outcome (O) through mechanism (M) in context (C) (Denyer et al., 2008).

For the construction of design propositions the method of Van Burg et al. (2008) was applied. The purpose of the method is the development of design propositions that are grounded in practice as well as in scientific literature. Figure 2.2 depicts a visual summary of the method of Van Burg et al. (2008), and it visualizes how research is developing in an iterative circle, constructing design propositions that are the link between scientific knowledge and practice.

Figure 2.2 Schematic overview of the research design (Based on: Van Burg et al., 2008, p.3).

In the *intervention* phase the proposed solutions from the design phase are actually implemented in the organization and *evaluated* if they produce the desired outcome. The adjustments made, create changes in the problem mess and subsequently the problem definition. Hereby the regulative cycle is back to where it all started.

Figure 2.3 is a schematic representation of the construction of this study. This is a synthesis of the regulative model cycle of Van Aken et al. (2007) and the design proposition cycle of Van Burg et al. (2008). In the following section a description is given on the methods used to execute this study.
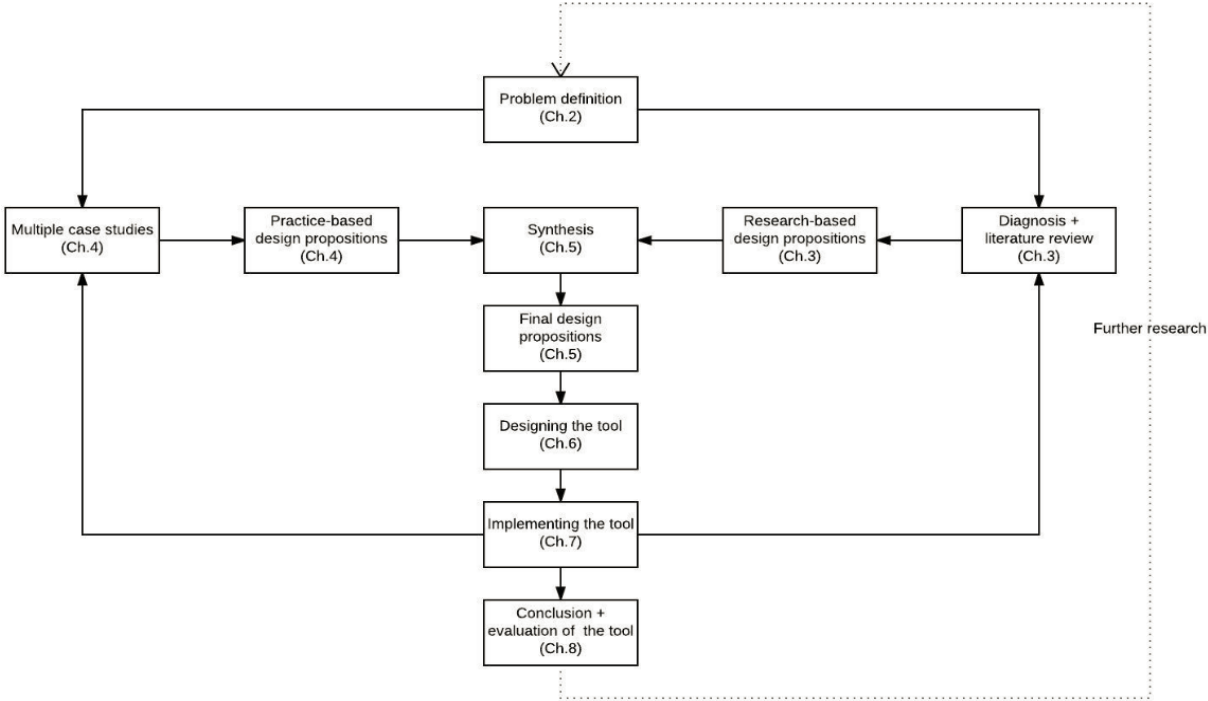
Figure 2.3: Schematic representation of the construction of this study.

2.2.2 Systematic literature review

The objective for a systematic literature review is twofold. Firstly, the systematic literature review enables the analyses of the problem at a deeper level, positioning it at the *diagnosis phase* of the regulative cycle of Van Aken et al. (2007). Secondly, the systematic literature review enables the construction of research-based design propositions derived from research findings. This is the execution of the right side of the model of Van Burg et al. (2008), as depicted in figure 2.2, and thereby the literature review can be positioned at the *design phase* of the regulative cycle of Van Aken et al. (2007). The scope of the review was initially set to gather sources in the literature on change management, digital transformation and agile organizations.

Certain search strings depicted in table 2.2 were used in ABInform, Google Scholar, and Web of Science to gather sources. The titles of the articles retrieved from the search commands were observed and when an article was classified as interesting the abstract was studied. If applicable this was imported into a database and sorted on subject using Mendeley. Following this, the introduction and conclusion of all articles selected were studied and when relevant the complete article was read and coded. Additionally, literature mentioned in the interviews and literature found through the snowball technique were retrieved and selected on relevancy with the same method described above.

Search String	Search Engine	#Results	#Potential Articles	#Selected Articles
(Change Management) And (Digital Transformation)	Web Of Science	111	6	2
(Organizational transformation) And (Digital)	Web Of Science	82	12	1
(Change Management) And (Digital Transformation)	AbInform	60.319	3	2
(Organizational transformation) And (Digital)	AbInform	25.408	32	4
Holacracy	Web of Science	2	2	2
Holacracy	AbInform	149	2	1
Adaptive organization	Web of science	0	0	0
Adaptive organization	AbInform	84.010	16	2
Adaptive organization	Google Scholar	2.610.000	0	0
(adaptive organization) And (literature review)	AbInform	35908	12	2
(Change management) And (literature review)	AbInform	333.646	6	0
(adaptive organization) And (literature review)	Web Of Science	173	5	0
(Change management) And (literature review)	Web Of Science	36	4	1
(adaptive organization) And (literature review)	Google Scholar	1.200.000	14	0
(Change management) And (literature review)	Google Scholar	3.640.000	21	2
Kotter leading change	Google Scholar	33.300	1	1
(Kotter) And (Validation)	AbInform	0	0	0
(Kotter) And (Validation)	Web Of Science	1.730	9	3
(Kotter) And (Validation)	Google Scholar	1.110	4	2
Agile manifesto	Google	493.000	1	1
Agile	Abi inform	127.241	12	1
Agile Change management	Abi inform	47	15	5
(ING) And (AGILE)	LEXISNEXIS	5	4	1
(Agile) And (Literature Review)	Web of Science	194	15	3
(Agile) And (Systematic review)	Web Of Science	83	3	0
Agile +Systematic review	Google Scholar	56.700	44	3
Management challenges in implementing Agile	Google Scholar	88.800	2	1

Table 2.2: Search strings used for the execution of the systematic literature review.

Research-based design propositions

The research-based design propositions were derived from the literature study, using the CIMO logic by Denyer et al. (2008). For the construction of one CIMO proposition multiple sources of literature

were needed. In chapter 3.5 a more elaborate explanation of the CIMO logic is given. This includes an explanation of the extraction process of the research-based design propositions from the literature review.

2.2.3 Multiple case studies

For the deduction of the practice-based design proposition three case studies were conducted. The main objective of the case studies is to get insight in the challenges and success factors opposed by practitioners in organization-wide transformations to the AWW. This is the execution of the left side of the model of Van Burg et al. (2008) as depicted in figure 2.2, and thereby positioning it at the *design phase* of the regulative cycle of Van Aken et al. (2007).

Blumberg (2008) argues that semi-structured interviews are best for the development of empirical data. The format of multiple case studies is used to enable the comparability between similar events, and therefore benefits from a semi-structured approach. For this reason the interviews were conducted along a case study protocol that is described in appendix 4. In the following section an explanation of the extraction of the practice-based design propositions from the gathered data of the case studies is given.

Practice-based design propositions

The derivation of practice-based design propositions was done after Plsek, Bibby and Whitby (2007). In this method, a science based approach for the extraction of tacit knowledge in design rules of practitioners is developed and tested. The design propositions underlie existing processes of organizational change and quality improvement. Plsek et al. (2007) describe four ways to extract the design propositions out of the knowledge of practitioners:

1. Reviewing written documentation of change programs in order to extract design rules.
2. Convening groups of change experts and asking them to describe what they do, or see themselves as doing, in the form of design rules.
3. Listening to stories of change efforts told by change leaders, operational managers, and frontline staff and then extracting design rules off-line (e.g., via review of transcripts or notes).
4. Posing hypothetical scenarios to those experienced in organizational change, asking them to 'think aloud' about how they would approach the situation, and then extracting design rules offline.

In this study, method 1, 3 and 4 were used. An explanation of the used methods, including their strong and weak points and why they are used complementary to each other, is given in the remainder of this section.

Written documentation

When using written documentation, the design propositions are synthesized from the written change program. According to Plesk et al. (2007), extracting and creating design propositions with the use of written documentation is fairly easy and fast to accomplish. However, when extracting design propositions with written documentation, the constructed design propositions could be faulty. This bias is caused by a differentiation between the written change program and the actual implemented change program. This is a phenomena that is widely observed and results from the different purposes of written and implemented change programs. The purpose of a written change program is to sell the program at the start to those who should engage in it. As a result of this, written change programs often omit some of the negative aspects and emphasize the positive aspects of the change (Plsek et al., 2007).

Therefore, in general it seems that written documentation is a valuable addition to the other methods.

However, if the written program differs from the implemented program, written documentation is not desirable to use on its own.

Off-line extraction of change programs

With offline extraction, semi structured interviews are used to synthesize the information of the change program from the practitioner. To be able to extract the design propositions from the interviews, transcriptions are made and information from them that could be used to construct design propositions ismarked.

Subsequently, the design propositions are extracted in a twofold way. First, the design propositions are formed solely from every marked part in the transcription. Second, the marked parts are clustered on their interventions, and from here the design propositions are synthesized. The second approach allows the creation of design propositions which describe the phenomenon at a higher level of generality.

Off-line extraction of hypothetical change program scenarios

With the last approach, hypothetical scenarios are developed by the change practitioners. Similar to the previous approach, the design propositions are synthesized in a twofold way. The primary advantage of this method is the possibility to use hypothetical scenarios. However, this also creates limitations for this method. As it is a hypothetical scenario, the design rule proposed cannot be grounded in practice due to the fact that it is not tested in a practical environment. For an appropriate grounding, the design rule needs to be applied in practice to test whether the proposed design rule is effective (Plsek et al., 2007).

2.2.4 Synthesis

The practice- and research-based design propositions were both derived using CIMO logic. This characteristic created the possibility to cluster and compare the propositions with each other. Design propositions that are identified in literature as well as in practice increase the validity of interventions in organization-wide transformations to the AWW, while single practice- or research-based design propositions only enhance the understanding of the scientific or practice side.

The synthesis is done based on the study of Van Burg et al. (2008). The design propositions were grouped to see if there was any overlap in the interventions suggested. If this was the case, overlapping elements in the two design propositions could be synthesized into one proposition, causing it to be grounded in literature as well as in practice.

2.3 Quality criteria for research

Finally, this chapter concludes with the methods that were used to ensure the quality of this study. The most important criteria in research are controllability, reliability and validity (Aken et al., 2007; Yin, 1994). The next section gives an overview of these criteria.

2.3.1 Controllability

Controllability refers to which extent the method of the research is described. A good measurement for controllability is the reproducibility of the study by an external party. In this study, the controllability is increased by clearly documenting the research methodology, the data extraction and data analysis methods in chapter 2.

2.3.2 Reliability

Reliability, describes the accuracy of the results. In qualitative research there is always a risk of possible biases and influences from the interpretation of the researcher. These biases can be divided in cold and hot biases. Hot biases refer to the influence of interests, motivations, and emotions of the

researcher on the results. Cold biases refer to the subjective influences that have a cognitive origin and have no personal motivation (Van Aken et al., 2007). An example of a cold bias is the tendency of people to agree with sources that support their beliefs (Weick, 1995).

In this study, cold- and hot biases were eliminated in a twofold way, and the objective of these techniques were to minimize the researcher's influence on the results. First, the cases were executed along a case study protocol, depicted in appendix 4. A case study protocol is used to get standardization in the research project and therefore a higher reliability (Ying, 1994). Second, the technique of triangulation was used to increase reliability. With triangulation, one acquires the same information via different instruments (Ying, 1994). In this study, the practice-based design propositions were derived in a threefold way: Written documentation, off-line extraction of change programs, and off-line extraction of hypothetical change program scenarios, as was described earlier in this chapter.

2.3.3 Validity

According to Yin (1994), validity is the end product of reliability and consists of three aspects; construct validity, internal validity and external validity. Validity measures if the knowledge that should be acquired concerning the problem statement is also developed.

Construct validity is the degree to which extent an instrument is measuring what it was to intend to measure (De Groot, 1969). For example, an instrument that has as its intention to measure job satisfaction, but only asks for the attitude of employees towards management, has a low construct validity (Van Aken et al., 2007). The use of multiple instruments can enhance construct validity, as one instrument may be unable to cover all elements of a concept.

Internal validity refers both to the adequacy and the completeness of suggested relationships. Internal validity can be increased by viewing a certain problem from different angles (Van Aken et al., 2007).

 In this study, internal- and construct validity are improved by the use of triangulation, as earlier described in the section about reliability. By using multiple instruments, the correctness of the instruments is tested and the construct validity is increased. The internal validity is increased by conducting the cases at multiple organizations. Hereby it is tested if certain relationships occur in different environments.

Finally, external validity concerns the generalizability of this study and is less important in business problem solving projects (Van Aken et al., 2007). However, an internal pilot alpha testing was used to increase more generalizability and thereby external validity.

Conclusion of chapter

By addressing the research method used for this study, this chapter provides insight in how the research questions and deliverables in chapter 1 and 2 will be addressed. The development of design propositions as means of the key building blocks in designing a tool to solve the above mentioned business problem plays a central role in this study. Therefore, chapter 3 will present a systematic literature review followed by the research-based design propositions for organization-wide transformations to the AWW.

3. Theoretical background

This chapter addresses the theoretical background and has five topics: An analysis of the change management literature, an assessment of the model of Kotter (1996) on its accuracy, a description of the agile way-of-working (AWW), the challenges and success factors in transformations to the AWW, and the derivation of the research-based design propositions from the systematic literature review.

First, an in depth analysis of the existing change management literature is made for a proper interpretation of this study and a right positioning in the existing body of research. Second, the model of Kotter is assessed on its accuracy in scientific literature. The change management method of Capgemini is closely related to the eight step model of Kotter and a confirmation of the accuracy of Kotter's model indirectly confirms the accuracy of the current change management model of Capgemini. Third, a description of the AWW is given to familiarize the reader with the concept. In practice the term agile is subject to inflation and a brief overview of the history and genesis of the AWW helps understand the design propositions in the subsequent section. Fourth, an overview of the challenges and successes opposed in an agile transformation is given. These challenges and success are generated as input for the research-based design propositions. Finally, the research-based design propositions are derived using the CIMO logic, which serve as the building blocks for the developed tool in chapter 6. The main objective of the tool is helping consultants at Capgemini define a transformation strategy for the implementation of the AWW.

3.1 Analysis of the change management literature

In this section an in depth analysis of the change management literature is given. First, the definitions of 'change management' and 'transformation' are explained. These can differ among the literature and for a proper interpretation of this study a clear definition is needed. Subsequently, this study is positioned in the existing body of research by structuring the change management literature and characterizing the main methods used to guide change programs.

3.1.1 Definition of change management

In literature no common definition for *change management* is used, therefore a synthesis of multiple definitions was made. According to Moran and Brightman (2001, p.66) *change management* is "a process of continuously renewing organizational direction, structure, and capabilities to serve the ever changing need of external and internal customers." This definition is commonly used across the literature but too abstract for practitioners (Parker et al., 2012). Therefore Parker et al. (2012, p.4) argues that *change management* should focus more on process management and proposes the following definition: "*Change management* is the utilization of processes to control an organizational change effort". In addition Bouckenlooghe (2010) states that the human aspect in change is mostly forgotten and therefore argues that readiness for change, resistance to change, cynicism about organizational change, commitment to change, openness to change, acceptance of change, coping with change, and adjustment to change are the key constructs that should define change management literature.

The definition of *change management* used in this study is a synthesis of the definitions described above and state: The process of continuously renewing organizational direction, structure, and capabilities to serve the ever changing need of external and internal customers, taking into account the human factors implied in this process.

3.1.2 Definition of transformation and the difference with change management

Change management is the actual process of renewing an organizational setting. For example, an organization plans to move from a certain state (A) to another state (B). The change entails the effort

needed to make this movement. Subsequently, *transformation* denotes the actual movement that is made to move from A to B (Todnem, 2005).

To summarize: *Transformation* is the movement from a certain state A to another state B and *change management* is the actual effort needed to succeed in this movement. In the following section an overview of the change management literature in history is given.

3.1.3 Overview of change management literature in history

The change management literature is multidisciplinary and covers multiple research areas in sociology, psychology, industrial engineering, engineering management, and management and leadership (Al-Haddad & Kotnour, 2015). A summarization of the change management literature in the different disciplines can be found in appendix 5.

Besides breaking down the change management literature in different research areas, categorization can also be made from the various functions described in the change management literature; change type, change enabler, change method, and change outcome (Al-Haddad & Kotnour, 2015). A taxonomy with the different functions of the change management literature is depicted in figure 3.1.
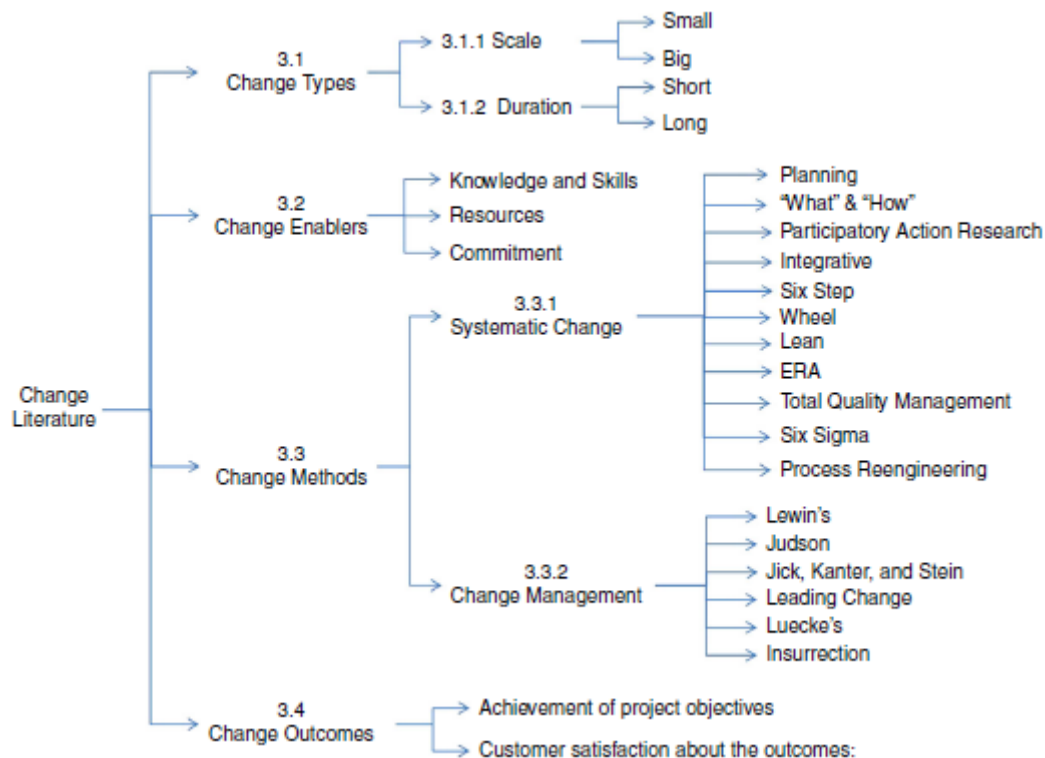
Figure 3.1: Taxonomy of the change management literature (Based on: Al-Haddad & Kotnour, 2015, p.242).

Change types describe the form of the change program and is divided further in scale and duration. Change scale implies the actual degree of change that is needed for the desired outcome. Boyd (2009) argues that the chances of success for small change programs is larger. In large scale change the involvement of all stakeholders is necessary, and requires strong visionary leadership. On the other hand, small scale change does not require strong visionary leadership and less organizational resources. This view is confirmed by Al-Haddad and Kotnour (2015) who state that the chances of success for small change programs is larger due to the easier evaluation and subsequent adaptability of small programs.

Duration describes the length of the change program and is divided in short and long. In literature

there is no consensus about what is more successful. According to some scholars, long change programs enable the involvement of all stakeholders and therefore create a positive influence in their perspective of the change (Shields, 1999). However, on the other hand scholars argue that short change programs help to keep stakeholders' attention on the program due to the pace of constant renewal (Berwick, 1998).

Change enablers describe the critical factors that affect the success in change programs (Chruciel & Field, 2006). Enablers are important for the planning of change programs. In a systematic literature review, Kotnour (2011) identified the three most important change enablers; commitment, resources, and knowledge and skills.

The first enabler is commitment. When planning a change program it is important that the program has commitment from the senior level of the organization. According to Sink et al. (1995), change programs without commitment of senior management are doomed to fail.

The second enabler is monetary resources. Change programs with larger monetary resources have a greater chance of succeeding (Kotnour, 2011). Resources are needed for the training and coaching of involved stakeholders. Also, large monetary resources enables the defending of the change program from possible setbacks (Sink et al., 1995).

Finally, knowledge and skills of the employees are important indicators of the success of a change program. A review of the knowledge and skills of the stakeholders and subsequent adaption of the change program with these knowledge and skills taken into account, will increase the chances of success (Al-Haddad & Kotnour, 2015).

Change methods are roadmaps used by change practitioners to execute a change process. Change methods can be divided into two categories; systemic- and change management methods. Systematic methods entail a process in which there are start/stop moments and discussion points (Zook, 2007). Well known methods include Six Sigma, Lean Thinking, or Total Quality Management (Zook, 2007). Change management methods are more conceptual and operate at a higher strategic level. The main purpose of these methods is to help change managers develop transformation programs (Zook, 2007). Well known methods include the Leading Change method (Kotter, 1996) and the Insurrection method (Hamel, 2000). An overview of common systematic- and change management methods adapted from Al-Haddad and Kotnour (2015) is presented in appendix 6.

In the existing literature, no consensus was found on particular systematic- or change management methods that outperformed others. A possible explanation for this is that the popularity of these models is dependent on the moment of time the relevant research took place. This view is shared by Abrahamamson (1996), who states that certain management theories are 'in fashion'. He urges change agents to not just follow the fashions, but dare to intervene and explain to stakeholders why another theory is more appropriate.

The last goal of change management research is to measure the outcome of the change. The outcome is measured at the end of the program and thereby it is a good performance indicator for evaluating the change program (Nicholas and Steyn, 2008). Al-Haddad and Kotnour (2015) identified that change outcomes are measured in a twofold way. First, 'the achievement of the project objectives' measures hard data, like staying within budget or finishing the project inside the target duration. Second, 'customer satisfaction about the outcome' measures the soft part of the change, which makes it a lot harder to define. An example of 'customer satisfaction about the outcome' is measuring if the change did meet or exceed the expectation of the sponsors and stakeholders involved in the program.

3.2 Assessing Kotter's model

Capgemini Consulting developed their own change management method. The method, named the People Transformation Model is presented in figure 3.2 and is developed from the eight step model of Kotter (Kotter, 1996). In table 3.1 an overview of the similarity of the different models is presented.
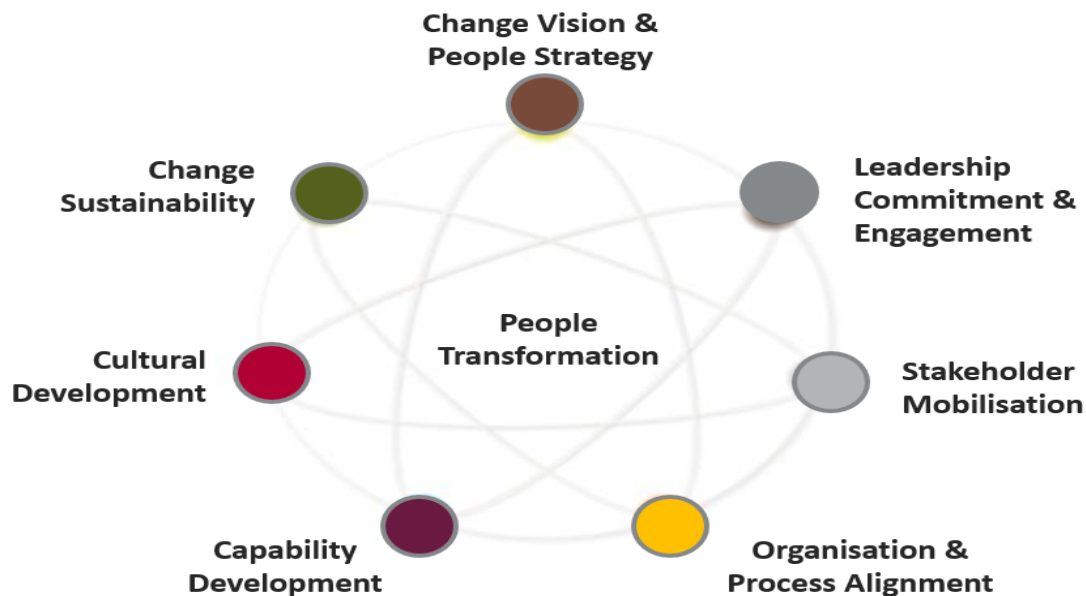
Figure 3.2 People transformation model (Based on: Capgemini Consulting, 2015, p.26).

In this section, Kotter's leading change program is researched in the literature to assess Capgemini's model on its accuracy. As was explained in chapter two, one of the research questions is: *How can the current change management method of Capgemini Consulting be adapted to become more suitable for agile transformations?* To define what needs to change on the model, it need to be assessed on its accuracy in the literature first. For practical reasons it was decided to assess Kotter's model instead of the People Transformation Model of Capgemini. An elaborate description of the people transformation model is missing. The only information available is a slide deck, and most knowledge of the model is tacitly embedded in the organization. On the other hand, the steps and generative mechanisms of the leading change model of Kotter are extensive described in the similarly named book. This makes it a lot easier to define the properties and generative mechanisms of which it is constructed. Therefore it was chosen to assess the leading change model of Kotter on its accuracy, instead of the people transformation model.

Kotter argues that in successful cases of change management, programs progress through a series of phases (steps), and that for a successful implementation of the change program no steps can be skipped. According to Kotter, skipping steps only creates the illusion of speed and never results in satisfying results. In the following paragraphs the different steps of Kotter's model are individually assessed on their accuracy in the scientific literature.

Establishing a sense of urgency (step 1)

Step one in the model of Kotter is creating a sense of urgency. This means that at least 75% of the company's' management has to be convinced of the proposed change (Kotter, 1996). A sense of urgency can be accomplished in different ways. One example given by Kotter is of a CEO that deliberately manufactures the biggest accounting loss in the organization's history. This was done to increase the outside pressure from the shareholders on the organization and thereby create a sense of urgency for the organizations management that change was needed.

Step	8 Step Model of Kotter	People Transformation Model
1	Establishing a sense of urgency	Leadership commitment and engagement
2	Creating a guiding coalition	Stakeholder mobilization
3	Developing a vision and strategy	Change vision and people strategy
4	Communicating the change vision	Leadership commitment and engagement
5	Empowering employees for broad based action	Organization and process alignment
		Capability development
6	Generating short term wins	Change sustainability
7	Consolidating gains and producing more change	Cultural development
8	Anchoring new approaches in the culture	Change sustainability

Table 3.1 Comparison of Kotter and the people transformation model.

The first step of Kotter's model is recognized in the literature as an essential aspect of the change process. Jansen (2004) argues similarly that change is progressing when employees are discussing the change in question. Here it does not matter if the discussion is positive or negative. Also Buchenan et al. (2005, p.41) confirms the view of Kotter and concludes in his study that "the timing, pacing, and sequencing of events can either support or jeopardize sustainability of change". To create a sense of urgency an appropriate speed of change is necessary. Change that is delayed can cause a lack of visibility in the results and reduce the sense of urgency. Change that runs too fast may cause a lack of time to adapt and creates imitative fatigue, which encourages decay (Buchenan et al., 2005).

Creating a guiding coalition (step 2)

Step two in the model of Kotter describes the need of a guiding coalition. The coalition needs to obtain four characteristics (Kotter, 1996). The coalition needs to have enough power to encounter an attack from a potential coalition formed in opposition to the proposed change. The coalition needs to have sufficient expertise about the involved subjects so that informed decisions are made. The coalition needs to be well respected by other stakeholder in the organization, so that the decisions they make are taken seriously. Finally the group need enough proven leaders to guide the change.

In the literature, a guiding coalition is seen as an essential step in the change process. Lines (2007) concludes in his research that change programs guided by change leaders with high level of power and expertise have more chance to succeed. Similarly, Self et al. (2007) argues that change initiatives supported by the leadership of the organization have more chance to succeed. These statements are a confirmation of two of the four characteristics of a guiding coalition from Kotter. Furthermore, Cunningham and Kempling (2009) conducted research into the specific importance of a guiding coalition and concluded that a guiding coalition has an important role in assisting the change process. However, in contradiction to Kotter's statement that no concession can be made in consecutive steps in the model, Sidorko (2008) argues that multiple guiding coalitions with specific characteristics are demanded in different stages of the change to support the program. This would be a violation of Kotter's statement and therefore step 2 of the model is only partly recognized in the existing literature.

Developing a vision and strategy (step 3)

A vision is needed for change program to succeed (step 3). This statement is broadly verified by the change management literature and seems even more important than Kotter stated (Paper et al., 2001; Cole et al., 2006; Szabla, 2007, Whelan-Berry & Sommerville, 2010).

In their literature review about change enablers, Whelan-Berry and Sommerville (2010) concluded that having a clear vision is one of the major drivers in the change process and that further research is

necessary to exploit the potential of a good vision in the change process. To cite the researcher: "Establishing the change vision is a key part of the organizational change process, and the process of establishing the vision and what is most important in the visioning process needs to be more fully understood in research and related practice. Once established, an accepted vision becomes a change driver, which prior research clearly supports can facilitate the ongoing change process (p.189)." Szabla (2007) conducted a survey study and concluded that there is a significant relationship between the perception of planned organizational change leadership strategy and the response to change along cognitive, emotional and intentional dimensions. In the study, the perception of planned organizational change strategy is explained as a vision communicated by the change leaders.

Communicating the change vision (step 4)

Step four in the model of Kotter describes that the vision created in step 3 needs to be communicated to the entire organization. Kotter (1996) argues that a transformation is impossible unless hundreds or thousands of people are willing to help.

Step four is verified in the literature as necessary in the change process. Nelissen and Van Selm (2008) researched the correlation between the response of survivors from an organizational restructuring and the role of senior management. They found that the most significant correlation was between employee satisfaction and management communication. Similar results were found by Frahm and Brown (2007), who concluded that communication during organizational change has a positive effect on employee's receptivity towards the change. Dansereau and Markham (1987) attempt to explain the potential underlying mechanism of step 4 by stating that the memory and emotional intention of people can increase by constantly repeating the same message.

Empowering employees for broad based action (step 5)

Kotter states that after communicating a vision, people need to act according this vision. Employees should be empowered to accomplish this, which is something that can be initialized by four enablers; structure, skills, systems and supervisors. Structure refers to the hierarchical basis of the company. Skills are defined by the training employees receive, which help to create a sense of ownership for the employees in the transformation process. According to Kotter a sense of ownerships results in engagement to the program. Systems refer to the different support functions in an organization that have to transform in a change program. For example, all too often HR systems with the wrong incentives stay in place and cause a resistance in the desired outcome of the transformation. The final enabler, supervisors, concerns managers that often do not support or are cognitive not able to support the change, resulting in a lack of engagement by the employees (Kotter, 1996).

Klidas et al. (2007), investigated the mechanism behind empowerment of employees in a case study considering the staff of sixteen luxury hotels in Europe. He concluded that there is a significant correlation between the empowerment of employees and training, performance related rewards, empowering management style, and organizational culture. The first three are directly related to the enablers of skills, systems and supervisors, and organizational culture is partly related to structure. Additionally, Pinheiro (2010) concluded in his study that organizational change cannot occur without empowering employees involved in the change.

The sources from Klidas (2007) and Pinheiro (2010) confirm the necessity of empowering employees and partly confirm the enablers by which this is done, making step 5 of the model of Kotter relevant.

Generating short term wins (step 6)

Step 6 in the model of Kotter argues that the creation of short term wins is critical. Short term wins are a mechanism to keep the employee engagement high in the transformation process. This view is

supported by Pietersen (2002, p.37), who states in his multiple case study that, "a number of early victories, even if they are small, create self-confidence and the belief that bigger successes are possible. This belief builds a psychological momentum that sustains the effort needed for large-scale, long-term change." This view is understated by Ford et al. (2008) who after conducting a case study on the merger of two hotels, concluded that for the success of a change program, proof of success is needed. This proof of success is sought in the interim-evaluations of the change process and needs to be communicated with the rest of the organization. Finally, and as described in the previous chapter, Berwick (1998) argues that short change programs help to keep stakeholder attention on the program because of the pace of constant renewal in small programs. In this context short change programs can be seen as providing short term wins to the organization, therefore step six of the model of Kotter is accurate.

Consolidating gains and producing more change (step 7)

Step 7 in the model of Kotter warns for declaring victory too soon. In step 6 Kotter emphasises the importance of short term wins, however celebrating overall success too early is dangerous, as the embedding of change programs can take years. For example, in a program that was executed by Kotter the biggest change happened after five years, three years after the first short term win was celebrated.

Consolidating change and producing more change is often described in the literature as change based momentum. According to Jansen (2004, p.278), "change-based momentum incorporates the prescriptions of transformational change agents, where momentum is described as a dynamic force whose presence or absence determines the ultimate success of a transformation". Furthermore, change based momentum can initially be created by *"attaining a critical mass of accumulating support"* (Jansen, 2004, p.281). This view is confirmed by Pfeifer et al. (2005) who gives an example of P3 GmbH, a company that planned an introduction to the German telecom market. The first success was produced by publishing a study in which they evaluated and compared the brand name of large telecom provider, as seen by the customer. This was done with the same method as they had used in evaluating large brands in the automotive market. The results of the study were published in major German newspapers to attract the interest of potential clients and at the same time show the competence of P3 GmbH. This first success gave them enough momentum to introduce the organization in the German telecom market. The studies of Jansen (2004) and Pfeifer (2005) are a confirmation of the accuracy of step 7 of the model of Kotter.

Anchoring new approaches in the culture (step 8)

Step 8, the final step of the change model of Kotter considers anchoring the change in the corporation's culture. For institutionalization the new change in corporates' culture, Kotter (1996, p.145) cites two factors. Firstly, showing employees how the new approaches, behaviors and attitudes have helped improve performance, and secondly, ensuring that the next generation of management personifies the new approach. This view is supported by Massey and Williams (2006), who concluded that a change structure incorporating mentoring and training is required to sustain change.

This view is further substantiated by Buchanan (2003), who conducted a literature review on how change can be sustained. He concluded that six factors can influence the sustainability of the change; organizational, cultural, political, individual, managerial, and leadership. The managerial factor denotes the second factor of the 8th step of Kotter's model, 'change of management attitude that is necessary to sustain the change'. Furthermore, Buchenan et al. (2003) argue that showing the results of the change to the organization is crucial for sustaining the change in the corporate culture, and hereby confirms the first factor of the 8th step of Kotter's model.

The studies of Buchanan et al. (2003) and Massey and Williams (2006) state that anchoring new

approaches in the culture are an important step in changing an organization. They thereby conclude that showing employees how the new approaches, behaviors, and attitudes have helped improve performance, and ensuring that the next generation of management personifies the new approach, are important mechanisms in this process. Therefore the last step of the 8 step model of Kotter is found relevant in literature.

Conclusion and further research considering Capgemini's change management approach
From the literature review above the conclusion is derived that Kotter's model is accurate for the design of change programs. The subsequent conclusion is that consultants at Capgemini can use their change management method for the development of change programs, as the principles behind the method are embedded in the 8 step model of Kotter.

However, the problems encountered by Capgemini Consulting depicted in chapter 2 do not align with this conclusion. A demand for the development of a new tool would be unnecessary if the current method is still found accurate in literature. The explanation for this is that the review above only relates to the 'what to do in a change program' question and not the 'how to this in a change prorgam' question. A close look at the cause and effect diagram in appendix 2 reveals that a majority of the nodes are practice-based and thus referring to the 'how to do this in a change program' question. To answer this question the following section will describe the success and failures occurring in agile transformations. These were sourced through a literature review concerning this topic. Agile was chosen as the methodology as its characteristics have proven to increase organizational mobility (Kiron et Al., 2016), which aligns with the main objective of this study to find a solution on how an organization can embed organizational change.

To familiarize the reader with the subject, first an introduction of the AWW is given, followed by a description of the differences between the AWW and traditional project management. Finally, the success and failures found in the literature review are summarized and described.

3.3 Agile
In this section the characteristics of the AWW are described. To start with, an explanation of the emergence of the AWW is given to familiarize the reader with the underlying ideas and motives behind the emergence of the agile phenomenon. Following this, the emergence of the AWW in industries other than software development is described. Paragraph 3 describes the difference between agile on the organization level and team level. Paragraph 4 describes the difference between the AWW and traditional project management. Finally, the challenges and success factors found in the literature that concern the implementation of the AWW are summarized in paragraph 5.

3.3.1 History of the agile way-of-working, from software development to business
The fundamentals of the AWW originated from the software development industry (Beck et al., 2001) and its characteristics were first documented in the Agile Manifesto of 2001 (Beck et al., 2001). The Agile Manifesto was the end product of a gathering of representatives of SCRUM, DSDM, Adaptive Software Development, Crystal, Feature Driven Development, Pragmatic Programming, and others supporters for an alternative to heavy weight linear software development (Beck et al., 2001). According to Cockburn and Highsmith (2001), the fast technology changes in software created an increased turbulence in business environments. This created a demand for project management approaches that enabled changes in running projects to withstand the competition in fast moving markets. Traditional project management practices like Prince 2 or Waterfall could not cope with this demand and the agile manifesto was created. The sentence below is extracted from the agile manifesto and represents one of its fundamental themes:

In order to succeed in the new economy, to move aggressively into the era of e-business, e-commerce, and the web, companies have to rid themselves of their Dilbert manifestations of make-work and arcane policies. This freedom from the inanities of corporate life attracts proponents of Agile Methodologies, and scares the begeebers (you can't use the word 'shit' in a professional paper) out of traditionalists. Quite frankly, the Agile approaches scare corporate bureaucrats— at least those that are happy pushing process for process' sake versus trying to do the best for the 'customer' and deliver something timely and tangible and 'as promised'—because they run out of places to hide. (Beck et al., 2001, p.1).

The agile manifesto is built on four *values* and twelve *principles*. The *values* are norms and describe the requirements of the AWW at a conceptual level. The *principles* are rules of action derived from the values and describes the behavior that is desired when executing a project with the AWW. The *values* are:

Individuals and interactions over processes and tools.
Working software over comprehensive documentation.
Customer collaboration over contract negotiation.
Responding to change over following a plan (Beck et al., 2001, p.5).

The *principle*s are:
1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity--the art of maximizing the amount of work not done--is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly (Beck et al., 2001, p.5).

The *principles* and *values* described in the agile manifesto are not new. The basis of the agile manifesto is 'Iterative and incremental software development', something that was first described by a programmer at IBM named Gerald M. Weinberg in 1957 (Larman & Basili, 2003). The first academic reference considering iterative and incremental software development was a report named 'iterative Multi-Level Modeling - a methodology for computer system design', published in 1968 (Zurcher & Randell, 1968). Subsequently, other methods that were characterized by short iteration cycles or more customer involvement were developed. Examples of methodologies are EVO in 1985, rapid Iterative Production Prototyping (RIPP) in 1988, and Rapid Application Development (RAD) in 1991. RAD even formed the basis of DSDM, an agile method still in use today (Abbas et al., 2008).

As can be concluded from this section, the *principles* and *values* behind the agile manifesto were not new. However, the bundling of these *principles* was novel and according to Abbas et al. (2008), the success of the AWW is validated by the success of its initial deployment. In the early 2000's digitalization was in full speed, creating a demand for new software development approaches that could cope with rapidly changing technology and subsequently changing market demand, something which the AWW proved able to do (Abbas et al., 2008).

3.3.2 The agile way-of-working goes beyond software development
After the success of the AWW in software development, organizations started to implement agile practices in other departments. The agile practices were adapted to suit the specific needs of these departments, which resulted in vast increases of agile practices and an inflation of the term 'agile'. Nowadays, it is an umbrella term with differing definitions across the literature. Nonetheless, most studies support the notion that the AWW is iterative, self-organizing, incremental and emergent. All characteristics that help increase the maneuverability of an organization (Abbas et al., 2007; Cockburn & Highsmith, 2001; Larman, 2004; Cohen et al., 2004).

To get a further understanding of the AWW, Wendler (2013) investigated 28 agile frameworks in manufacturing, software development, organization and workforce. In the 28 frameworks Wendler (2013) identified 33 'agile' related concepts and made a connection map in which the concepts that had any relation with each other are linked. Five clusters appeared, however not one framework covered all the clusters. This result understates the lack of consensus considering agile in the scientific literature (Wendler, 2013). The connection map of Wendler is presented in figure 3.3.
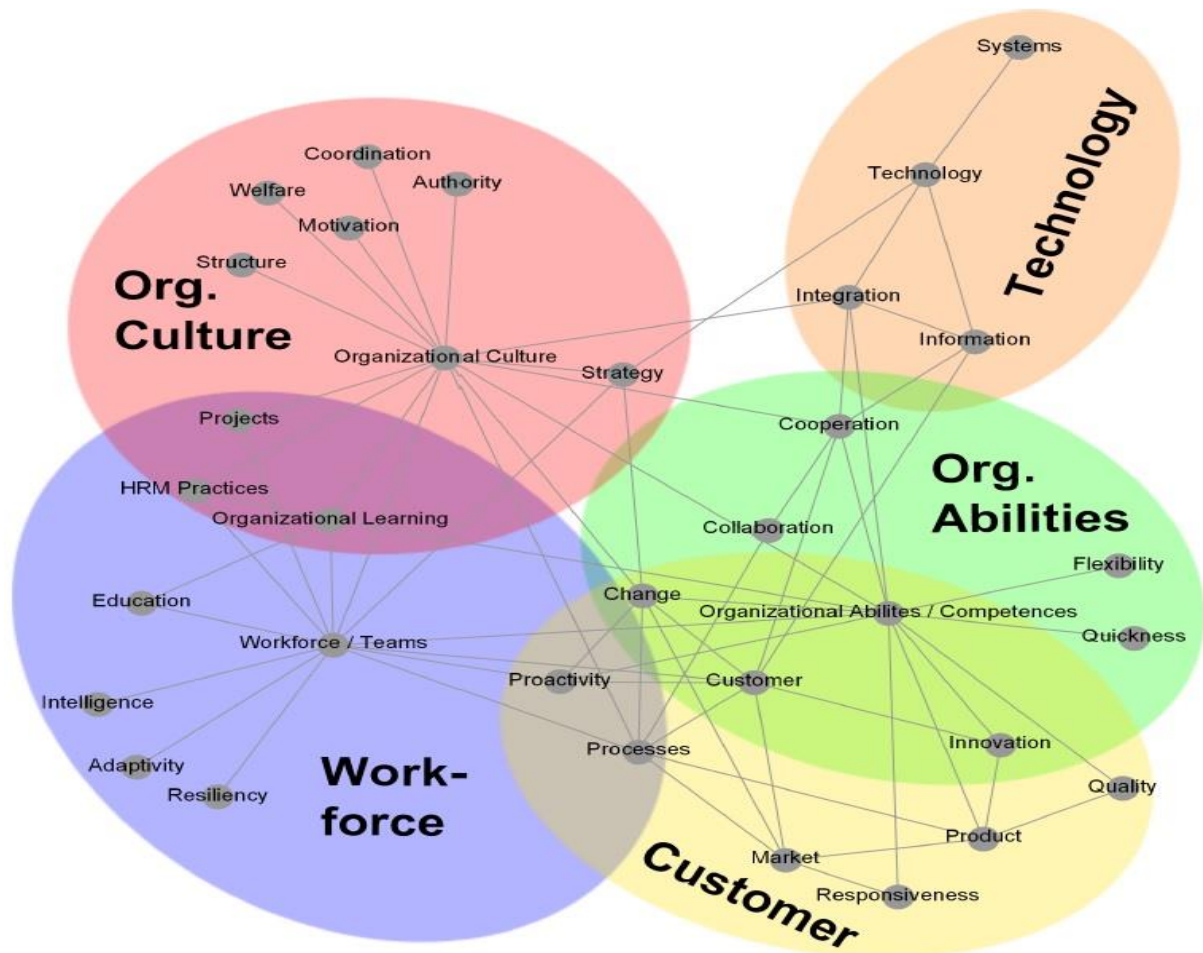

Figure 3.3 Interdependencies of agile concepts (Based on: Wendler, 2013, p.1171).

20

3.3.3 Team level and organization level

In this study a distinction is made between agile at the team- and organization level. The team level considers the day to day operations of the AWW. The execution of tasks on the team level is done by the use of an agile practice, for example Scrum, Kanban or Extreme programming (Agile Alliance, 2017).

The agile approaches were originally developed for the team level and therefore cannot be scaled one by one to the organization level. To overcome this challenge, several models were developed to scale the AWW to the entire organization. Well known frameworks are Scrum Nexus, Large Scale Scrum (LeSS), Scaled Agile Framework (SAFe), Disciplined Agile Delivery, and the Spotify model. Ganguly et al. (2009, p.12) state that agile at the organization level results in "an effective integration of response ability and knowledge management in order to rapidly, efficiently and accurately adapt to any unexpected (or unpredictable) change in both proactive and reactive business / customer needs and opportunities without compromising with the cost or the quality of the product / process".

The following section explains the main difference between agile and traditional teams, followed by a comparison between traditional and agile organizations. When transforming to an agile organization, a transformation at the team level is a necessity. However, agile teams can co-exist with traditional teams in non-agile organizations.

3.3.4 Difference between the agile way-of-working and traditional project management teams

In the traditional approach, the process is centric and guided by the belief that variations are identifiable and eliminated by continually measuring and refining the process (Nerur et al., 2005). The communication inside a team is formal and only done when necessary. Most of the time this comes with documentation to secure the agreement, and if necessary appointed to a person that is responsible for the agreement (Nerur et al., 2005., Conboy et al., 2011). On the other hand, agile teams are self-organizing bodies with collective decision power, creating higher engagement, more flexibility and extensive collaboration and communication. Furthermore, the agile approach deviates from the traditional approach with repeated short cycles of thought-action-reflection, increasing the self-learning ability of the team (Nerur et al., 2005)

Table 3.2 summarizes the major differences between agile and linear project management. The table is based on the study 'challenges of migrating to agile methodologies', conducted by Nerur et al. (2005).

3.3.5 Agile organizations

There is a common understanding that an agile transformation results in an organization with happier, more engaged and eventually more productive people (Conboy et al., 2011). At the start, agile transformations were mostly driven by a bottom-up approach. The incentives to work agile came primarily from the team members directly affected by it (Conboy et al., 2011). However, the success of agile was such that organizations tried to implement it in a top-down manner (Nerur, 2005). However, the environment of agile organizations significantly differs from organizations using traditional project management approaches and this created new challenges (Schuh, 2004).

In the next section, a summary is given of the challenges and success factors that often occur in organization-wide agile implementation. This was done by conducting a systematic literature study on the subject. The main weaknesses of this method is that the scope of previously published research was mainly limited to software development. The trend of agile implementation across all departments is fairly new.

This should be taken into account when reading the challenges and success factors. For the final design proposition validation of the literature study was sought by conducting case studies in organization that tend to implement agile in other than only the software department.

Project Component	Traditional	Agile
Fundamental Assumption	Systems are fully specifiable, predictable, and can be build through meticulous and extensive planning.	High-quality, adaptive products can be developed by small teams using the principles of continuous design improvement and testing based on rapid feedback and change
Control	Process centric	People centric
Management Style	Command and control	Leadership and collaboration
Knowledge Management	Explicit	Tacit
Role Assignment	Individual - favors specialization	Self-organizing teams - encourages role interchangeability
Communication	Formal and only when necessary	Informal and continuous
Customer's Involvement	Important, usually only at the analysis of the project	Critical and continuous
Project Cycle	Guided by tasks or activities	Guided by product features
Development Model	Life cycle model (Waterfall, Spiral, or some variation)	The evolutionary-delivery model
Desired Organization Form/Structure	Mechanistic (bureaucratic with high formalization)	Organic (flexible and participative encouraging cooperative social action)
Technology	No restriction	Favors object-oriented technology
Team Location	Predominantly distributed	Predominantly collocated
Team Size	Often greater than ten	Usually less than ten
Continuous Learning	Not frequently encouraged	Embraced
Management Culture	Command and Control	Responsive
Team Participation	Not compulsory	Necessary
Project Planning	Up-front	Continuous
Feedback Mechanism	Not easily obtainable	Usually numerous available
Documentation	Substantial	Minimal

Table 3.2: Contrasting differences between traditional and agile approaches (Adapted from: Nerur et al., 2005).

3.4 Challenges and success factors

In this section an overview of the challenges and success factors that often occur in an agile transformation is given. These challenges and success are generated as input for the research-based design propositions, and a distinction is made between organization level and team

3.4.1 Challenges at organization level

This sub-section describes the challenges found in the academic literature on organization-wide agile implementation at the organization level

Change resistance

When a top-down approach is used, it is possible that the reasons driving the change are not understood well. When this happens, a skepticism against the new way-of-working can be created which causes resistance towards the change (O'connor, 2010; Abdelnour-Nocera & Sharp, 2008). Spayd (2003) argues that an agile implementation can never be driven entirely from the top-down. Due to the collaboration oriented approach of the AWW a grass-root buy in is needed.

Alternatively, when the AWW emerges via the bottom-up, it is likely that the process gets stuck at the middle management level. This is especially the case when middle management does not support the new way-of-working (Dikert et al. 2016).

Middle management
When moving to the AWW, a switch of thinking is needed throughout the entire organization. This is especially hard for middle management, whose role is less clear, or sometimes does not even exist anymore when switching to the AWW. This is a result of the organizational structure that usually becomes flatter when transforming to an agile organization (Dikert et al., 2016; Lee, 2008; Moe et al., 2014; Ranganath, 2011).

Lack of investment
Investments in the change are monetary investments that enables a fluid transformation. Investments can be further divided into three critical factors: training, coaching, and the rearrangement of office spacing. Training refers to teaching the individual people agile principles and values that should be incorporated into their work. Coaching denotes the actual support supplied to teams when using agile practices (Dikert et al., 2016). When agile coaches are used who are not appropriately qualified, there is a risk that incorrect information is passed on, resulting in agile teams that do not function in the desired way (Silva & Doss, 2007).

Another important challenge is the lack of investment in the rearrangement of the office spacing to make it supportive for the AWW (Dikert et al., 2016). Certain agile practices, such as daily stand up meetings, become a lot harder when teams are unable to be physically together in the same room (Lewis & Nehir, 2007).

A misunderstanding of the principles behind agile concepts
When implementing agile in an organization, it is important that the principles incorporated within the agile manifesto are understood and followed. In numerous cases however, agile practices are carried out without understanding the principles behind them (Bang, 2007). This can result in the dismissing of agile values in day-to-day practices (Lewis and Neher, 2007; Vlaanderen et al. 2012; Schatsz & Abdelshafi 2006; Smith & Riliet, 2008). Schatsz & Abdelshafi (2006) give an example of this by describing how certain teams in an organization 'present' unfinished work, ignoring the principle of 'only demonstrating finished components', and that this resulted in backlogs filled with bugs. Another example is given by Smith & Riliet (2011), who studied an organization in which the AWW was seen simply as a novel project management tool. The agile transformation process failed, as the people who had to work with it did not see the motives behind the introduction of the AWW.

Lack of guidance from literature
According to multiple sources there is a lack of guidance within existing literature for scaling the agile practices to an organization-wide level. A particular lack of literature is found in scaling agile practices across multiple departments with differing disciplines (Federoff & Courage, 2009; Farrow & Greene, 2008; Hajjdiab et al., 2012). A problem that emerges from this is that organizations tend to develop unique models that suit their specific needs. However, this can lead to dismissing some of the essential principles of the AWW, which subsequently results in a poorly customized agile approach (Hajjdiab et al., 2012).

Organizational boundaries
When transforming the organization to support the AWW, internal silos can form a challenge. As agile is based on a multidisciplinary way-of-working, agile teams often contain people from different departments (Benefield, 2008; Maples, 2009; Rodriquez et al., 2012; Schnitter & Mackert, 2011;

O'Connor, 2010; Beavers, 2007; Cloke, 2007). Cloke (2007) conducted a case study at Yahoo Music, and describes how organizational boundaries can create certain tensions. People got enthusiastic about scrumming and working department-independent. Yet people were judged on department driven incentives, which created a conflict in interests. As senior management acknowledged this challenge at Yahoo, a two phase approach was developed to change the organizational structure. In phase one, multidisciplinary teams were built on certain services like business analytics and data systems. Every team had to justify any backlog to a scrum master. Before this, team members had to justify their work directly to a manager located outside the team. In phase two, which was still in progress at the moment of writing, Yahoo tries to decrease the department interdependencies by architecting teams that developed just one specific product. This included virtual teams when people from different geographically located departments were needed (Cloke, 2007).

Integrating non-development functions
The integration of non-development functions was found difficult by a study of Dikert et al. (2016). This observation is confirmed in other sources (Abdelnour-Nocera & Sharp, 2008; Beavers, 2007; Benfield, 2008; O'Connor, 2010). Different literature emphasises different organizational functions, however some prominently featured departments are *marketing*, *user experience* and *human resources*.

For the *marketing* department it is hard to make good campaigns. The preparation of a *marketing* campaign takes on average around three months (Benfield, 2008). When using traditional development methods, product requirements are set at the start, but this is not possible when using agile. As a result of agile's short iterative cycles, product requirements evolve overtime and thereby make it harder for the *marketing* department to develop supporting campaigns (Beavers, 2007). Another observed resistance from the *marketing* department came from their lack of understanding of agile teams' creation of user stories. The *marketing* department did not see the purpose of these user stories, perceiving them as fulfilling the same purpose as marketing requirement documents (Abdelnour-Nocera & Sharp, 2008).

The *user experience* department experiences problems that are similar to those of the marketing department. As a result of the short iteration cycles their time to generate feedback is similar to the average sprint duration of a team, which on average is two weeks. This forces them to redesign their work approach in a manner that supports the agile teams. An example of achieving this is by intensifying the amount of meetings planned with the agile teams (Federof & Courage, 2009).

Finally, the role of *Human Resources (HR)* should change. For a successful agile implementation there should be the understanding that the team performance is more important than the individual (O'connor, 2010; Atlas, 2009). This should be translated in the criteria *HR* department judge their human resources on. In traditional organizations the incentives people are predominantly judged on are individually driven, which in an agile organization can create a conflict in interest between the team and the individual. Atlas (2009) describes one case of a person who, despite being of great benefit to the team, had a negative feedback meeting with his manager because his dedication to the team decreased his individual performance. This consequently decreased his motivation and engagement (Atlas, 2009).

3.4.2 Challenges at team level
This sub-section describes the challenges found in the academic literature on organization-wide agile implementation on the team level.

Coordination challenges in multi-team level environment

One of the main challenges described in the literature is the coordination of multiple agile teams. Inter-team dependencies can occur as a result of scaling agile practices. Especially a lack of communication and coordination leads to difficulty in managing and coordinating the inter-team dependencies of large projects (Moore & Spens, 2008; Laanti, 2008; Lewis & Neher, 2007; Chung & Drumond, 2009; Cloke, 2007). The lack of communication and coordination results in a situation where nobody possesses the entire perspective of a project, so often a quality project overview is missing (Farow & Greene, 2008; Moore & Spence, 2008). As a result, an environment is created in which the responsibilities of the different teams are unclear. This can lead to teams that do the same work (Beaver, 2007; Lee, 2008), which disengages the members of the team who now are less eager to collaborate with other teams. (Rodriquez et al., 2012; Moore & Spens, 2008; Ranganath, 2011; Moe et al., 2014).

Hansen and Baggessen (2009) explain in their paper how the internal focus of an agile practice (SCRUM), creates teams that are fully focused on their internal processes and forget the external environment. As multiple teams were working on the same project, there was a certain interdependency of the delivered work between the different teams. However, as the focus of most of the teams was largely internal, the work delivered often did not match the expectations of the other teams, which created distrust between the different teams. This view is further reinforced by Berczuk and Lv (2010), who identified how the synchronization between team goals and product goals could be problematic. This primarily occurred when teams focused too much on internal goals, creating strong boundaries and decreasing inter-team collaboration.

Finally, geographical dispersion can be a problem for team collaboration. The research of Moe et al. (2014) revealed that teams who are geographically dispersed are less likely to collaborate in comparison to teams who are physically proximate. This view is also shared by several other scholars, who describe that challenges in collaborating and communicating for agile organizations often occurs as a result of geographical dispersion (Moe et al. 2014; Lewis & Neher, 2007; Hansen & Baggesen, 2009).

Different approaches in an agile organization.

When a team is using the AWW their work practices tend to evolve overtime. This on itself is not a challenge. However, the work practices between teams can sometimes be diverged so far that employees need additional training when transferring to other teams. This increases the transformation costs and decreases the mobility of employees in the organization (O'connor, 2010).

For this reason organizations need to make a trade off. On one view, it is not desirable to over-formalize agile practices because one of the key principles of agile is people over process. However, in order to create a certain form of synergy, some formalization is necessary. The key is to create clear boundaries in which the team can evolve its work practices. Hereby teams keep a certain form of autonomy and avoid a decrease in internal organizational mobility (Ryan and Scudiere, 2008).

Another challenge described by Dikert et al. (2016) is the simultaneous use of traditional (Waterfall) and agile methods in the transformation phase. In one case, Dikert et al. (2016) describes how the different methods of agile and waterfall are mutually exclusive, and concluded that conflicts could occur when both methods were executed in parallel. The conflict between the methods results from the different planning strategies of traditional and agile methods. In agile, the work is divided into short sprints, while the traditional method crystallizes requirements at the start of the project.

Managing requirements

Agile organizations use high and low level requirements to execute projects. High level requirements

align with the strategy of the organization, and low level requirements are pieces of workload that are executed by the teams.

A main challenge revealed in the literature concerns translating these high level requirements into workload 'chunks' that are manageable for individual teams (Abdelnocera & Sharp, 2007; Chung & Dummond, 2009; Cloke, 2007). For example, Gat (2006) explains that mismanagement of requirements occurs because of the difference between long and short term planning. Backlogs are typically filled with a short term planning, which is contrary to high level requirements that are typically designed to support the long term strategic planning. Another clarification is given by Sekitoleko (2014), who explains that during the translation of high to low level requirements tasks are assigned to different teams. This creates interdependencies between the teams necessitating that the backlogs of individual teams need to be re-prioritized. This in turn creates extra managerial work and a challenge in translating the high-end requirements (Sekitoleko, 2014). DSDM is a program that takes these challenge into account. However, most organizations that scale agile to an organization level use scrum instead of DSDM (Dikert et al., 2016).

Change in mindset of the management

For senior and top management an important challenge is present in changing their mindset. In the majority of traditional organizations, maximizing shareholder value is the most important subject. This needs to change when transforming to an agile organization (Denning, 2015). For a successful implementation of the AWW, senior management need to support the values incorporated by the agile manifesto. This requires a shift in the main objectives of most managers. According to Denning (2015), the goal of managers needs to change from maximizing shareholder value to delighting the customer. Figure 3.4 shows the mindset switch needed from the leadership to successfully transform to an agile organization.

A common misconception made is that delighting the customer decreases the profit stream of the organization in the long term. However, organizations like Google and Apple have consumer centric strategies and are also highly profitable. Denning (2015) concludes that profit is still made as a 'result' of the executed strategy rather than as its 'main objective'.
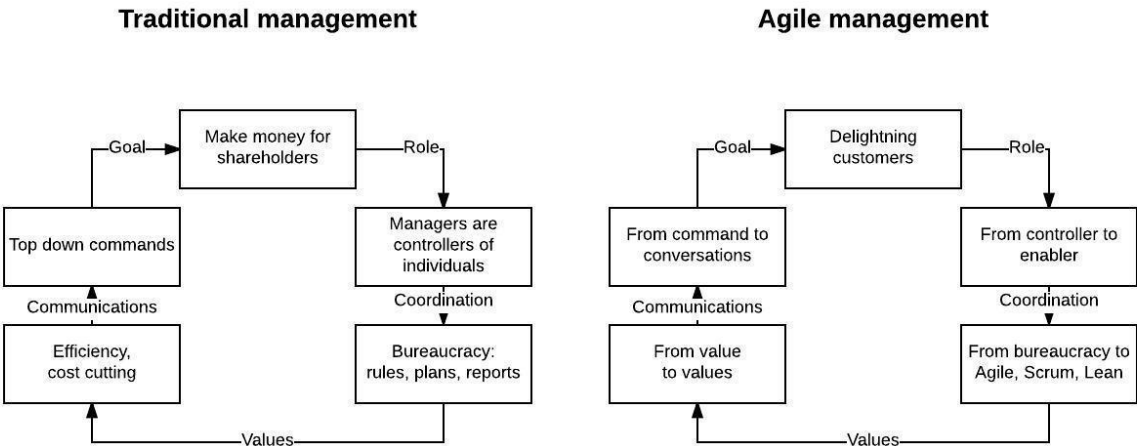

Figure 3.4: The shift to agility (Based on: Denning, 2015, p.3).

The existing literature also revealed several success factors that speed up and enhance the transformation process to an agile organization. Similar to the previous section, a deviation is made between organization and team level. To start with, an explanation of the success factors in

organization-wide transformation to the AWW at organization level is given, followed by the success factors recognized at the team level.

3.4.3 Success factors at organization level

This sub-section describes the success factors found in the academic literature on organization-wide agile implementation on the organization level.

Commitment to change

Management support is described as a necessity for a successful transformation to the AWW. This is substantiated by a survey conducted under 3.880 agile practitioners compiled in the state of the agile report. In the survey, 38% of the respondents indicated that a lack of management support jeopardized the implementation of the AWW in their organization. (Version One, 2016).

Furthermore, commitment to change is widely accepted in the literature as an important factor in the transformation to an agile organization (Nuottila et al., 2016; Nerur et al., 2005; Pitkänen, 2015; Spayd, 2003; Denning, 2015). In this context, it is important to communicate that the change is non-negotiable and occurs for a reason (Dikert, 2015). This view is confirmed by Spayd (2003), who argues that it is unlikely for the change to succeed if the executive leadership does not put their reputation on the line for the accomplishment of the change. When doing this, a clear signal from the change sponsor is given that the change is needed and urgent (Spayd, 2003).

Change leadership

The use of change leaders is identified as a success factor in the literature (Atlas, 2009; Nerur, 2005; Cloke, 2007; Maples, 2009; Cowan, 2011; Goos & Melisse, 2008). The change is not necessarily governed by the leadership of the organization. Atlas (2009), explains via a case study how the change was led by a roll-out team created with representatives embedded throughout the entire organization. Because multiple departments of the organization were represented in the roll-out team, different departments could identify themselves with certain persons inside the team and this minimized resistance to the change. Another way to minimize cross-department resistance can be accomplished by creating a change team composed of people outside the organization. An example for this is given by Cowan (2011) who describes how people from outside the organization do not have inter-departmental cultural baggage and thus can fully focus on the transformation to an agile organization.

Choosing and customizing the agile approach

When adopting an agile approach it is important to consider a methodology that supports organizational needs and dynamics (Lewis & Neher, 2007). According to Lewis & Neher (2007), incorporating a framework that is closely aligned with the values and capabilities of the organization makes it is easier to transform to an agile organization. (Lewis & Neher, 2007).

Another important factor is synchronizing the practices of the teams to a certain benchmark (Evans, 2008; Brown, 2011; Farrow & Greene, 2008; Ryan & Scudiere, 2008). This is needed for several reasons. First, with similar work practices it becomes easier to relocate people from team to team (Farrow & Greene, 2008). Furthermore, the use of similar work practices enables better performance evaluation of the different teams by utilizing peer to peer reviewing (Ryan & Scudiere, 2008).

However, multiple studies conclude that restricting the approaches of teams inside a certain benchmark does not imply that these teams are not allowed to evolve and adapt their work practices over time. One of the key aspects of an agile organization is the ability to change when the relevant demands. To keep teams operating inside a certain benchmark, small incremental steps that evolve continuously are needed. (Long & Starr, 2008; Maples, 2009; Federoff & Courage, 2009). The values from the agile manifesto should always be respected and taken into account when changing work

practice. Hiring an agile purist to guide this process can, for this reason, be very helpful (Maples, 2009).

Piloting

Different sources in the literature understate that starting a pilot at the initiating phase of the transformation has an accelerating effect (Chung & Drummond, 2009; Brown, 2011; Cloke, 2007; Silva & Doss, 2007; Ranganath, 2011; Schnitter & Mackert, 2011). The two main goals for starting a pilot are finding the most well suited 'work practice', and 'proving the concept'. As described previously in 'choosing and customizing the agile approach', it is important to find an agile method that is consistent with the corporate values. Within a single pilot, different methods can be tested and adapted to the particular needs of the organization. Furthermore, when a particular method is chosen and customized to the specific needs of the organization, a pilot gives valuable feedback on how the transformation should be guided with the rest of the organization (Schnitter & Mackert, 2011).

Secondly, a pilot provides valuable insights into the benefits of the chosen AWW method. For example, shorter delivery time or more engaged employees. This example helps decrease the resistance against the opposed change (Brown, 2011), something that was described as a major challenge in the previous chapter. The results of the pilot should be shared publicly with the entire organization to increase transparency and further decrease the resistance against the change (Ranganath, 2011).

Communicate and be transparent about the change

According to the scientific literature, it is important to communicate clearly about the change in a transformation to the AWW. This should be done in a twofold way. First, the goal of the change should be communicated. This clarifies the objectives of the transformation and lowers uncertainty about the change (Smith & Rilliet, 2011). Second, communication of the success of the AWW helps engage people that are involved in the transformation. Communicating successes gets people enthusiastic about the change and accelerates the transformation process (Mencke, 2008; Seffernick, 2007; Prokhorenko, 2012). This success factor is related to step 4 and 5 of Kotter's model and a confirmation that the model is of practical relevance to transformations to the AWW.

Mindset and alignment

Mindset and alignment is seen as an important success factor. In particular, the importance of incorporating the values from the agile manifesto in the organization is described in the literature (Dikert et al., 2016). The most common way to achieve this is through the use of 'agile communities' (Evans, 2008; Silva & Doss, 2007; Atlas, 2009). The naming of these communities differs between organizations and another common name is scrum master meeting. Paasivaara et al. (2014) studied the transformation to the AWW of Ericsson and described how the communities of practice were a major success factor for grounding the 'agile values' in their corporate values. This was done by social events that were organized by the community of practice and via regular meetings of agile believers, consisting of members from the community of practice that helped to embed the agile values correctly inside the organization. This is further confirmed by Atlas (2009), who studied the transformation of Amazon. He concluded that Scrum communities contributed vast value to the reinforcement of scrum adoption and thereby aided the success of the overall transformation.

3.4.4 Success factors at team level

This sub-section describes the success factors found in the academic literature on organization-wide agile implementation on the team level.

Training and coaching

As was previously described in the chapter about the challenges, a lack of investment in training and coaching could jeopardize the agile transformation. However, by incorporating training and coaching

effectively this can be turned around into a success-factor. It is important here to distinguish between the difference between training and coaching. Training is executed before the transformation and coaching denotes the on-the-job tutoring in a learning-by-doing manner.

Training has as its main objective to familiarize stakeholders with the AWW. Training creates an initial understanding of the agile methods, which in turn will help to implement the AWW (Cowan, 2011; O'Connor, 2010; Mencke, 2008). However, this is not the only reason why training is important. Seffernick (2007) describes how training can help increase the enthusiasm for the AWW. People that were skeptical about agile principles at the start could have totally changed their minds after a training in which user stories are shared and in-depth analysis of the agile principles and values is provided (Seffernick, 2007).

Coaching is of great value in changing the stakeholders' mindset to incorporate the agile values (Atlas, 2009; Bennefield, 2008; Rodriquez et al., 2013; O'Connor, 2010; Schatz & Abdelhafi, 2005; Chung & Drummond, 2009). Furthermore, coaching is important to the process of developing organization specific work practices that align with the agile principles and values (Chung & Drummond, 2009).

The coaching role should be assigned to internal as well as external individuals. Internal coaches have good knowledge about their firms' organizational values and can help align these to the agile principles and values (Bennefield, 2008). Alternatively, external coaches have a better overview of the organization as they are not biased by a certain organizational culture, and therefore have an impartial view of the organization (Schatz & Abdelhafi, 2005). The combination of internal and external coaches thereby makes a strong combination of the unbiased view and extensive knowhow of the organization.

Capable product owner

The role of the product owner is very important for the proper management of the requirements. In the previous chapter it was explained how the translation of high to low level requirements created a challenge for the AWW. A strong product owner can help solve this problem (Paasivaara et al., 2014; Hansen & Baggesen 2009). According to Paasivaara et al. (2014), the role of the product owner is often underestimated and thereby creates problems in requirements management. Certain ways to improve the role of the product owner include additional training, coaching, and starting a team for the product owners in which they can discuss their challenges (Paasivaara et al., 2014).

Furthermore, Hansen and Baggesen (2009) describe the importance of the role of the product owner in smoothing the collaboration between the different stakeholders. This is something Sekitoleko (2014) pointed out as a particular challenge in translating high level requirements to low level requirement in the previous chapter. According to Hansen and Baggessen (2009), organizations that understand the importance of the product owner cope better with this challenge.

In the following section a summary of the study 'people over process: Key challenges in agile development' from Conboy, Coyle, Wang and Pikkarainen (2011) is added to this study as a valuable addition for the derivation of the research-based design propositions from literature.

3.5 Summary of the study of Conboy, Coyle, Wang, and Pikkarainen

Empirical studies in the field of agile transformations are scarce, especially studies that identify challenges relating to the soft skills in transformations to the AWW. Therefore, this study is a valuable addition to the systematic literature review and helps increase the empirical grounding of the research-based design proposition. In the study of Conboy et al. (2011) 10 major challenges were found followed by the identification of the solution direction for these challenges. A summary of the study is displayed in table 3.3.

Nr.	Problem/ challenge	Reason	Nr. of cases	Solution
1	Developer fear caused by transparency of skill deficiencies.	Daily stand up meetings and story- and whiteboards makes developers' shortcoming very visible.	17	Create environment to feel safe
2	The need for developers to be a master of all trades.	Finding staff with multiple competences is hard. Furthermore, appropriate training to increase multiple competences of employees was found difficult.	17	A Balance need to be found between 'master of all trades' and 'master of none'
3	Increased reliance on social skills	Agile practices such as co-location, an on-site customer, stand up meetings, retrospectives and pair programming were all commonly cited examples that increase social interaction, thus heightening the need for; social, communication and presentation skills.	15	Social skill training and documentation to facilitate communication.
4	Customer facing aspect	Employees revealing confidential or company sensitive information.	8	Social skill training and documentation to facilitate better communication.
5	A lack of business knowledge among developers.	IT developers do not know the business side, which results in customers disengagement and indifference created by the perception that the team has no knowledge about the business.	12	Training the employees in topics related to the business domain and recruiting staff with IT and Business knowledge.
6	The need to understand and learn values and principles of agile, not just the practices.	Organizations implemented agile on paper, however the ultimate goals of agility were not achieved (intangible combination of staff personality, management style, cultural issues and other factors).	10	Continuous hands on training. In addition coaching can complement training, however the effect of coaching can also be obtained by swapping staff across agile teams. This ensures cross team observation and validation of agile practices. Furthermore, periodically assessing the agility of a team using an assessment framework can help increase the understandability of the agile principles and values.
7	Lack of developer motivation to use agile methods.	A perception that process innovations like adopting agile are viewed as overly onerous, complex and time consuming. This was found more prominent in companies where agile methods were adopted in a top-down manner.	5	The sharing of agile 'success stories' provided encouragement and belief.
8	Implications of devolved decision-making	People were picking tasks that they should not have. Devolved decision-making also creates the challenge that project managers do not know what their new role is. Furthermore, also manager anxiety of losing power was observed.	unkno wn	Democratic voting system to ensure everybody has an input in a decision. Changing the project managers' role to become facilitating instead of controlling.
9	The need for agile-compliant performance evaluation	Across the seventeen cases studies, it was found that while agile methods advocate people interaction, collaboration, mentoring, teamwork and transferring knowledge, there are many issues associated with the performance evaluation of these activities.	17	Developing team-based performance evaluation with indicators tuned to agile attributes instead of individual performance evaluation.
10	Lack of agile-specific recruitment policies and suitably trained IT graduates.	Due to a lack of agile-specific recruitment policies, most companies found it difficult to find the right people needed for agile development.	unkno wn	Develop specific recruiting practices tailored for agile methods.

Table 3.3 Challenges in agile transformations (Adapted from: Conboy et al., 2011).

So far this chapter presented an in-depth study in three topics. First, a description of the change management literature in general was given. Second, the model of Kotter was assessed on its accuracy in scientific literature. Third, a description of the AWW was given, followed by an overview of the in literature identified challenges and successes that are opposed in transformations to the AWW. This theoretical chapter concludes with the derivation of the research-based design propositions from the literature review.

3.6 Research-based design propositions

In this section I define the research-based design propositions. I do this for two reasons. First, to provide practitioners with a guideline in the challenges and success factors of an organization-wide agile transformation, and second, to utilize them as building blocks in the development of the tool in chapter 6. These research-based design propositions were developed based on the extensive systematic literature review, as presented above.

The derivation of the design propositions from the literature review was done with the use of the CIMO logic described in chapter 2. In the CIMO logic the context (C) denotes the internal and external surrounding factors, including the nature of the human factors that influence behavioral change. The context of all design propositions is more or less identical. The influence of digitalization and globalization drives organizations to act and move fast. They must continuously change and adapt to market demand to stay relevant (McAfee et al., 2014). Different techniques can be used to make the organization more nimble. However, in this study the focus is on implementing the AWW, as these practices have proven to increase the mobility of organizations (Kiron et Al., 2016). The Intervention (I) relates to instruments that managers have at their disposal to influence behavior. The mechanism (M) indicates why a certain intervention generates the specific outcome in the described context in terms of the underlying economic, social, or psychological theories. Finally, the outcome (O) is the intended result of a certain intervention in a specific context (Denyer et al., 2008).

In the remainder of this section, thirteen research-based design propositions are presented. First the proposition is given, followed by an explanation of the context, intervention, mechanism and outcome, which is based on the literature review.

Research-based design proposition 1

> *If an organization wants to become agile **(C)**, it must choose the right transformation design to the AWW by incorporating the change enablers resources, knowledge and skills, and commitment **(I)** to minimize the problems regarding misalignment and internal resistance **(M)**, in order to increase the probability of success of the change program **(O)**.*

This design proposition is solely derived from the change management literature. As is described previously, Chruciel and Field (2006) conclude that the chance of success for a change program increases when the design of the program incorporates change enablers. The use of change enablers decreases the chance of misalignment and internal resistance. In a systematic literature review, Al-Haddad and Kotnour (2015) identified the following change enablers that have the largest influence on the successful outcome of a change program: Knowledge and skills, resources, and commitment. An in-depth analysis of these three enablers is given in chapter 3.3.

Research-based design proposition 2

> *If an organization wants to become agile **(C)**, an AWW pilot should be used **(I)** to prove the concept and minimize resistance to the change, and find an agile practice that supports the corporate needs and dynamics **(M)**, in order to increase the probability of success of the chance program **(O)**.*

A major challenge described in the previous chapter was the occurrence of change resistance. A paradox was evident here, a top-down approach would create a skepticism against the new way-of-working and consequently generate resistance against the change. Alternatively, a bottom-up approach also generated resistance due to the hierarchy shift demanded by the AWW (Dikert et al., 2016). The resistance can be minimized for the bottom up approach as well as the top-down approach by proving the concept of the AWW within a pilot stage (Ranganath, 2011; Cloke, 2007; Brown, 2011)

Furthermore, when adopting an agile approach it is important to consider a methodology that supports organizational needs and dynamics (Lewis & Neher, 2007). According to Lewis and Neher (2007), incorporating a framework that is closely aligned with the values and capabilities of the organization makes it easier to transform to the AWW. In a pilot, different methods can be tested and adapted to the particular needs of an organization. When a particular method is chosen and customized to the specific needs of the organization, a pilot gives valuable feedback on how the transformation should be guided with the rest of the organization (Schnitter & Mackert, 2011).

Research-based design proposition 3

> *If an organization wants to become agile **(C)**, extensive training and coaching with internal as well as external coaches should be supplied to all people involved in the transformation **(I)**, which reduces the likelihood of a misunderstanding of the agile concepts, decreases the fear caused by skill deficiencies, and copes with the increased reliance on social skills as a result of the AWW **(M)**, in order to increase the probability of success of the chance program **(O)**.*

A misunderstanding of the agile concepts leads to incorrect execution of practice (Bang, 2008). This result in lower performance of an organization that can cause an increase in resistance to the proposed change (Seffernick, 2007). A solution for this is training and coaching. Certain agile related practices, like daily standups meetings and story- and whiteboards, make developers shortcomings visible, and coaching is needed to deal with this. The appointed coaches should be a mixture of internal and external people. Internal coaches have a good knowhow about the organizational values and can help to align these to agile principles and values (Bennefield; 2008). External coaches have a better overview of the organization because they are not biased by certain mindsets and therefore possess a more impartial view of the organization (Schatz & Abdelhafi, 2005). Finally, the collaborative work approach of agile increases the reliance on social skills of the employees. Training and coaching can help increase the social capabilities of the employees to cope with this increased reliance of social skills. (Conboy et al. 2011).

Research-based design proposition 4

> *If an organization wants to become agile **(C)** the incentives people and departments are exposed to need to change from a primarily individual assessment to a primarily team assessment **(I)**, which decreases organizational boundaries and increases the collaboration between employees **(M)**, in order to increase the probability of success of the change program **(O)**.*

Organizational boundaries were identified as one of the major challenges in the literature review (Benefield, 2008; Maples, 2009; Rodriquez et al., 2012; Schnitter & Mackert, 2011; O'Connor, 2010;

Beavers, 2007; Cloke, 2007). In agile organizations, teams that consist of people from multiple disciplines and departments are desirable (Benefield, 2008). However, this often create a conflict between the individual performance incentives of the departments and the interests of the multidisciplinary teams. This conflict can result in lower levels of collaborative working, which is undesirable in the AWW (Cloke, 2007). To support the multidisciplinary teams, the incentives that the different departments are assessed on have to change in order to enable collaborative working.

To further increase the collaboration of employees in the teams, incentives that individuals are assessed on have to change. In most traditional organizations, the performance of employees is primarily individually assessed. To increase collaboration a primary team based assessment is desirable (O'Connor, 2011; Atlas, 2009). This view is substantiated by Klidas et al. (2007) who found a correlation between performance rewards and engagement in organizational change. A conflict between these performance rewards and the proposed objectives of the AWW will therefore jeopardize the change to an agile organization.

Research-based design proposition 5

> *If an organization wants to become agile **(C)**, the responsibility of the change should be with a roll-out team made up of representatives from all departments involved **(I)**, which helps to overcome organizational boundaries **(M)** and therefore increases the probability of success of the change program **(O)**.*

Within the change management literature, strong leadership is identified as an important factor for succeeding in a transformation. Especially in large-scale change, the involvement of all stakeholders is necessary and requires strong visionary leadership (Boyd, 2009). Furthermore, change initiatives that are supported by the leadership of the organization have more chance to succeed (Self et al., 2007).

This view is further substantiated by the agile literature in which change leadership is often denoted as an important success factor in agile transformations (Atlas, 2009; Nerur, 2005; Cloke, 2007; Maples, 2009; Cowan, 2011; Goos & Melisse, 2008). However, in contrast with the change management literature, Atlas (2009) concluded that an agile transformation can best be guided by a roll-out team that has representatives of all departments involved in the change. A representation of all departments in the roll-out team will minimize the resistance against the change as the departments can identify themselves with certain persons inside the team.

Resource-based design proposition 6

> *If an organization wants to become agile **(C)** the role of a product owner should be taken seriously and a framework like DSDM, Safe or LeSS should be implemented **(I)**, which helps managing the interdependencies between the teams and translating high level requirements into low level requirements **(M)**, in order to increase the probability of success of the change program **(O)**.*

As is described in the literature review, scaling agile practices creates inter-team dependencies. A lack of communication and coordination leads to difficulties in managing and coordinating these inter-team dependencies (Moore & Spens, 2008; Laanti, 2008; Lewis & Neher, 2007; Chung & Drumond, 2009; Cloke, 2007). Furthermore, scaling agile practices requires a translation from high- to low level requirements, something that was identified as a challenge in literature (Abdelnocera & Sharp, 2007; Chung & Dummond, 2009; Cloke, 2007).

To minimize these challenges, the role of the product owner should be taken seriously. In the literature it is described that the role of a product owner is often underestimated and that a strong product

owner is often capable of helping solve the problem that concerns requirement management (Paasivaara et al., 2014; Hansen & Baggesen 2009). Furthermore, scaled agile frameworks can also help manage team interdependencies and requirement management, as these frameworks are specially designed to solve these challenges (Dikert et al., 2016).

Research-based design proposition 7

If an organization wants to become agile **(C)**, *the rate of meetings with non-development functions has to increase* **(I)**, *which helps coping with the evolutionary approach of the AWW* **(M)**, *in order to increase the probability of success of the change program* **(O)**.

A challenge described in the literature review is the integration of non-development functions by the AWW. This becomes harder as a result of the evolutionary approach used in agile practices (Abdelnour-Nocera & Sharp, 2008; Beavers, 2007; Benfield, 2008; O'Connor, 2010). In the waterfall approach, most of the projects details are crystallized at the beginning of the project. This differs from an evolutionary approach wherein the final details of the projects can change as time progresses. One example is the marketing department, who needs an average of three months to prepare a campaign. This becomes a lot harder when the requirements of the program change over time (Benfield, 2008). This forces the non-development departments to redesign their work approach in a manner that supports the agile teams. The literature advises that these departments intensify the amount of meetings with agile teams in order to cope with the possible changes in project requirements (Federof & Courage, 2009).

Research-based design proposition 8

If an organization wants to become agile **(C)** *the leadership needs to make a role switch from command and control to supporting and enabling* **(I)**, *which gives the teams the discretion to make their own decisions and create more client intimacy, organizational nimbleness and reduce the time-to-market* **(M)**, *in order to increase the probability of success of the change program* **(O)**.

The main objective of the manager should change in order to foster the agile implementation. In the old practices, the main objective of the manager was to make money for shareholders. When an organization wants to incorporate agile values, the main objective of the manager needs to shift to delighting the customer. The style of leadership must as a consequence become more enabling and supportive rather than commanding and controlling. This will enable teams to gather market information from a bottom-up approach instead of a top-down approach in which information flows are redirected from the market to the manager before arriving to the teams (Denning, 2015). Furthermore, a more enabling management style will shorten the discussion path, as the decisions that need approval from the manager are reduced. This greater team-autonomy created by the enabling management style increases the organizational nimbleness and reduces the time-to-market (Szetela & Mentel, 2016).

Research-based design proposition 9

If an organization wants to become agile **(C)**, *sustained commitment to the change from the leadership is crucial* **(I)** *to give a clear signal as change sponsor that the change is needed* **(M)**, *in order to increase the probability of success of the change program* **(O)**.

According to the agile research, commitment to change is an important enabler in successfully transforming to the AWW (Nuottila et al., 2016; Nerur et al., 2005; Pitkänen, 2015; Spayd, 2013; Denning, 2015). This is substantiated by the change management literature, in which commitment to change is seen as an important enabler in successful change programs (Kotnour, 2011). Sink et al.

(1995) explains the mechanism of commitment to change in regard to its relationship to successful change programs. By committing to the change, the leadership puts their reputation on the line with regards to the success of the program. This gives a clear signal to the rest of the organization that the change is needed and urgent (Sink, 1995).

Research-based design proposition 10

> *If an organization wants to become agile **(C)**, the agile practices of the teams need to stay within a standardized framework **(I)**, which makes it easier to compare the performances of the different teams and relocate people from one team to another **(M)**, in order to increase the probability of success of the change program **(O)**.*

It is important to synchronize various team practices in a certain standardized framework (Evans, 2008; Brown, 2011; Farrow & Greene, 2008; Ryan & Scudiere, 2008). Synchronizing practices in a standardized framework makes it easier to relocate people from team to team (Farrow & Greene, 2008). Additionally, it enables the synchronization of peer-to-peer reviewing practices between teams, which results in better performance evaluations of the teams (Ryan & Scudiere, 2008). To keep the teams operating in a certain standardized framework, only small incremental steps should be taken. Agile values should always be respected and taken into account when changing the work practices (Long & Starr, 2009; Maples, 2009; Federoff & Courage, 2009). Hiring an agile purist to guide this process helps to do this (Maples, 2009).

Research-based design proposition 11

> *If an organization wants to become agile **(C)**, clear communication of the change is needed **(I)**, which takes away uncertainty and engages the people involved in the transformation **(M)**, in order to increase the probability of success of the chance program **(O)**.*

The change management literature describes a correlation between the response of survivors from an organizational restructuring and the role of senior management. Here the most significant correlation is between employee satisfaction and management communication (Nelissen & Van Selm, 2008). Frahm and Brown (2007) concluded that clear communication during organizational change has a positive effect on employee receptivity towards the change. The possible underlying mechanism of this phenomenon is described by Dansereau and Markham (1987), who state that the memory and emotional intention of people can increase by constantly repeating the same message.

Research-based design proposition 12

> *If an organization wants to become agile **(C)**, a community of practice is needed **(I)**, which helps incorporating the agile principles and values in the corporate culture **(M)**, in order to increase the probability of success of the change program **(O)**.*

Communities of practice are identified as an important success factor in the probability of success for agile transformation programs. They are of particular effectiveness in grounding the agile principles in the corporate culture (Evans, 2008; Silva & Doss, 2007; Atlas, 2009). This is substantiated by the change management literature in which communities of practices are seen as an important instrument in organizational learning. Communities of practice have an important role in the creating and exchanging of stories (Brown & Duguid 1991). This underlies the findings in the literature review that the organization of social events by the community of practice, as well as the regular meeting of agile believers, helps embed the agile values in the corporate culture (atlas, 2009).

Research-based design proposition 13

> *If an organization wants to become agile **(C)**, the office space need to be rearranged to create the ability for employees to sit together and have physical plan boards in close proximity of them **(I)**, which supports collaborative work practices and team communication **(M)**, in order to increase the probability of success of the change program **(O)**.*

In the literature review, a lack of investment in the rearrangement of the office spacing was identified as a challenge in agile transformations. Certain agile practices, like daily stand up meetings, become a lot harder when the ability to physically sit together in the same room is absent (Lewis & Nehir, 2007). Furthermore, the rearrangement of the office space fosters collaborative working, an important demand in properly executing agile practices. The mechanism behind this proposition is explained by Harrison and Dourish (1996), who argue that the notion of the 'space we act within' facilitates and structures interaction between employees. In their paper they describe different factors of the 'office space' that can help foster collaborative working in the 'office place'. This is an important intervention, collaborative working is one of the pillars of the AWW and needs to be supported.

Conclusion of chapter

The analysis in this chapter described an overview in the change management process in transformations to the AWW, and concluded with a derivation of thirteen research-based design propositions. The abovementioned design propositions were solely derived from scientific literature, and therefore make sense from a theoretical view. To validate if the design propositions are relevant outside the scope of scientific literature, insights from practical situations is needed. Therefore, the next chapter will focus on multiple case studies to research transformations to the AWW from a practical perspective.

4. Multiple case studies

As described in chapter 2, three cases were studied in two organizations to increase the understanding of organization-wide transformations to the agile way-of-working (AWW) in a practical setting. The final goal of this chapter is the deduction of practice-based design propositions, the key building blocks for the tool in chapter 6. Therefore this chapter is structured as follows: At first an explanation of the different case organizations is provided, followed by an explanation of the cross-case analysis, and concluded with an analysis of the cases and the construction of the practice-based design propositions.

4.1 Cases

Out of two organizations a total of three cases were selected, in order to carry out the case studies. To support the analysis in the following section, first a description of the characteristics of the different case-organizations is given. In addition, table 4.1 depicts an overview of the most important characteristics of these cases.

4.1.1 Alpha

Alpha is a major company in the financial sector with 5.400 employees operating in two divisions (Alpha A and Alpha B) across multiple countries. Alpha A focuses on small- and medium size enterprises (SME), whereas Alpha B offers core activities and services to governments, institutions and corporate clients. Both divisions are involved in a 'change program', transforming from 'PRINCE2 project management' to the AWW.

During the change program Alpha encountered several problems. For example, as an agile organization, Alpha must shift from a controlling to a more responsive management style (Conboy et al., 2011). However, in the highly regulated financial industry, Alpha is being supervised by multiple authorities that impose control regimes on the company and prohibit new management style. The current case was initiated to detail Alpha's problems and explore possible solutions.

Alpha A

In Alpha A the transformation was driven top-down and initiated by the senior management of the organization. The main objectives for Alpha A to transform to the AWW were increased client intimacy, an integration of the business and IT departments, and a change in corporate culture in favor of collaborative working.

The transformation started in 2011 with the IT department, which transformed its work approach from the traditional waterfall approach to scrum practices. Following this transition, in 2013 the development and operations departments were merged in an integrated Development and Operations (DevOps) organization. Subsequently, the business department reorganized in 2015, transforming from a traditional matrix organization to an agile organization. For the change of the organogram of the organization the Spotify model was used for inspiration. Finally, after finishing the organizational structure and work practices change, the IT and business departments were merged into one organization.

Alpha B

Alpha B's objectives for the transformation equaled Alpha A's, but its approach was more gradual. The discussion of Alpha B to transform more gradually was insisted by the importance of a thorough relationship with its customers. In Alpha A, this was of lesser importance and therefore the opportunity rose to use a more disruptive strategy, as the impact of errors was smaller. The more gradual approach of Alpha B was mainly utilized in the business department, this to ensure that client relationships that are mainly embedded in the business department are not jeopardized by the transformation. The other steps were executed in nearly the same manner as Alpha A, and the transformation started in

2011 with a work approach shift at the IT department from traditional waterfall to scrum. Following this, in 2013 the Development and Operations departments were merged in a DevOps organization. The integration of the business and IT departments is still in progress at the moment of writing, and as explained above differs significantly from Alpha A. In practice the more gradual approach in Alpha B means that the practitioners are free to choose either the old project management approach or the AWW. The idea behind this strategy is that the AWW will prove its effectiveness and Alpha B will gradually transform to an agile organization.

4.1.2 Beta

Beta is a government institution with a supportive function in the educational system in the Netherlands. The four main objectives for Beta to transform to the AWW were improvements in 'delivery performance', 'nimbleness of the organization', 'client centricity' and 'the quality of the delivered work'.

The transformation started in 2011 with the development of six Information Supply Chains (ISC's). In the two years that followed, the roles and processes in the different ISC's were harmonized into uniform roles. Hereafter, a taskforce was created. The main objective set was to explore the AWW and in which manner these work practices could help accomplish its four main objectives, with regards to the transformation. Subsequently, in 2015, a new taskforce was created after several agile work practices were found suitable for the accomplishment of the appointed objectives. This taskforce, named the 'agility team', had as main purpose the development of a new organizational design that incorporated the agile practices. The agility team launched five different pilots to test and evaluate agile work practices. When assessed as 'suitable', the practices were implemented within the organization. The ultimate goal of the agility team is the development of a blueprint that details the transformation to an agile organization. This also includes the support functions 'HR' and 'compliance and control', and this process is still in progress at the moment of writing this study.

CHARACTERISTICS:	Alpha A	Alpha B	Beta
Industry	Finance	Finance	Government
Fte	2.300	3.100	1.968
Target customer	B2C	B2B	B2C
Start of the transformation	2011	2011	2015
Budgeting strategy	Fixed	Semi-fixed	Fixed
Changed recruitment strategy	Yes	Unknown	Yes
Reorganization	Yes	No	No
Support from leadership to implement in entire organization	Yes	No	No
Pilot	Yes	No	No
Initial starting point	Top-down	Bottom-up	Bottom-up
Gradually introduced	In waves	Yes	Yes
Rearrangement of the office spacing	Yes	Not yet	Yes
Change of employee evaluation criteria	Yes	No	Yes
Work practice in certain benchmark	Yes	No	Semi
Use of framework	Yes	Not yet	Yes

Table 4.1 Case characteristics.

4.2 Cross-case analysis

The results of a cross-case analysis of division A and B in company alpha can provide valuable insights with respect to the question of what elements of the transformation strategy favor a transformation to an agile organization. These valuable insights are created as a result of the similarity between the two different cases like organizational culture and values. However, division A and B are two individually operating entities that both use a different strategy to transform to an agile organization.

The cross-case analysis between Alpha A and Alpha B generates valuable insights in the strategy. To ensure generalizability of the results, Beta was included in the research. The organizational structure and culture does deviate significantly between Alpha and Beta. If a certain intervention is successful in both organizations it can be an indication that this intervention has a general validity. As explained in chapter 2, a semi-structured interview approach was used to eliminate possible researcher biases. The interview protocol designed for the semi-structured interviews is depicted in appendix 4.

4.3 Practice-based design propositions

The practice-based design propositions were derived using the methods of Plsek et al. (2007) and Denyer et al. (2008), explained in Chapter 2. First, Plsek et al. (2007) provide a guideline in extracting the appropriate information from the semi-structured interviews. Plsek et al. (2007) explain in their paper how the use of coding can help to distill data from interviews. After the data was extracted from the interview transcriptions shown in appendix 7, the design propositions were developed by the use of the CIMO logic explained by Denyer et al. (2008). This process was completed for all cases separately, creating a unique set of design propositions emerging from each case, which are presented in appendix 8.

Subsequently, based on the design propositions created from the individual interviews general practice-based design proposition were synthesized. In the method used, the individual specific design propositions were compared and similarities amongst them were identified. In this case, it was assumed that a claim of generality could be made when a similarity was found between design propositions emerging from two or more interviews. This resulted in the synthesis of the practice-based design propositions, and the transcripts from the interviews of every design proposition are shown in appendix 9.

Practice-based design proposition 1

> *If an organization wants to become more nimble **(C)**, it can adapt a work practice that incorporates the twelve principles and four values of the agile manifesto **(I)**, which serves to decrease organizational boundaries and increase employee collaboration, team autonomy and the self-learning ability of the organization **(M)**, in order to create more client intimacy, organizational nimbleness and reduce the time-to-market **(O)**.*

Organizations are struggling to keep up with the new demands of their clients and customers in the 21st century. As a result of the digitalization, the transparency in the market has increased. This has a direct effect on the client-supplier relationship. The impatience of the client has increased, as the opportunity to get the demanded product or service somewhere else has become much easier. This creates a certain pressure on the client-supplier relationship, and the supplier needs to be able to respond quickly on changing client demands (McAfee et al., 2014).

This also translates to the financial sector, as according to Alpha A the digitalization of the financial sector has changed the market conditions. In the pre-digitalized era most competition came from organizations similarly to Alpha A. However, a new sort of competitor has appeared in the last decade.

These organizations, called FinTechs, use new technologies and innovations to create a high adaptability for market demands. Alpha A, as a traditional financial institution, could not cope with this development and change was required. The AWW was chosen, as this method had proven to be successful in other organizations by increasing client intimacy, organizational nimbleness and faster time to market. Famous organizations that use the AWW are Spotify, Yahoo, eBay and Netflix (Denning, 2015). In fact, the method designed by Spotify was copied and implemented by Alpha A.

The main objectives of Alpha B and Beta to transform to the AWW were similarly to Alpha A. To cite the head of the transformation program at Beta: *"We moved to this new building five years ago. One of the main objectives was to become more nimble. Organizations have to become more nimble and be able to respond faster to client demands. This applies not merely to commercial organizations, also Beta had as instruction from the Ministry of Education to respond more effectively on the changing needs of their customers."*

Following the cases, it may be conclude that organizations become nimbler, increase 'client intimacy' and decrease 'time to market'. The mechanism behind this is twofold. Firstly, in the AWW less decisions need approval from higher hierarchical levels, resulting in shorter and faster discussion paths. An example of this phenomenon can be found in Alpha A, which reduced its number of hierarchical layers form seven to three. Secondly, the collaboration within the organization has increased after the implementation of the AWW, an effect that was mentioned in all three cases. Particularly, the integration of business and IT was highlighted. With the integration of the IT- and business departments, two individual departments were merged in multidisciplinary teams, which resulted in increased collaboration.

Practice-based design proposition 2

> *If an organization wants to become agile **(C)** it has to replace the project-dependent budgeting strategy into a fixed one **(I)**, which keeps teams together and focused on tasks that deliver value **(M)**, in order to realize the primary goals of increased nimbleness, shorter time-to-market and more client intimacy **(O)**.*

A major difference at the AWW is the budgeting strategy. Traditional project management often refers to the golden triangle, depicted in figure 4.1. In the golden triangle scope, time and costs are the exogenous variables which determine the endogenous variable project quality (Drury-Grogan, 2014). When transforming to the AWW this causality is no longer related. In agile work practices tasks are assigned to a fixed team, and that team determines the budget. In contrast to traditional project management it is no longer common to set up teams for every specific project. Instead with the AWW, projects are assigned to existing teams. An interviewee in the Beta case explained: *"Control noticed that the way of financing we had was not suitable for agile projects. Financing a tester, a builder and an administrator end to end was noticed to be different compared to financing a fixed team with T-shaped professionals."* In Alpha A, a similar transition was made and individually projects were not budgeted anymore. Instead, the budget was determined by the number of staff in the fixed teams.

Figure 4.1

Whereas in traditional project management extra budget would have been assigned to underestimated projects or projects that were rapidly approaching their deadline. With the AWW the prioritization of the different projects has changed. Since the agile work practices were introduced, no extra budget can be assigned to individual projects. Nonetheless, there are still instruments that can

be used when a project is behind schedule or when the scope is bigger than foreseen. With agile work practices the prioritizing of the projects can be modified. According an interviewee in Alpha A, additional teams can be assigned to projects when a certain level of priority has been reached.

In Alpha B a more hybrid form of budgeting was chosen. This was done by the use of change government documents, an interim for a fixed budget. In a change government document a certain amount of budget is allocated for a number of general tasks that demand execution. The change government document is revised every quarter for the approval of new budget. However, as an interviewee in Alpha B identified, this creates undesired uncertainty. When the budgets is reassigned every three months it is unsure whether the teams will stay in place in the same structure.

In Alpha A and Beta the shift in budgeting was already made at the moment of the case interviews. However, when discussing the findings of this research at a Lead Scaled Agile Framework (SAFe) training, one particular thing drew my attention. The SAFe training is designed for the people that have a leading role in the transformation of an organization built on the Scaled Agile Framework (SAFe). At first sight, I did not value design proposition 2 as difficult to implement. However, especially this particular proposition created discussion in my presentation. I noticed that a certain alteration in the mindset of the management was required to implement proposition 2. Budgeting is perceived as one of the main instruments of controlling the organization in traditional project management. Taking this out of the manager's hands would mean taking away one of his most important tools of controlling projects. My advice would be to use a pilot that proves the advantages of a fixed budget in an agile organization, something that is further discussed later.

Practice-based design proposition 3

> *If an organization wants to become agile **(C)** different qualities of employees gain importance and a change in recruitment policies and specific training is demanded **(I)**, which ensures that employees have the right qualities **(M)**, in order to increase the probability of success of the change program **(O)**.*

Agile organizations require different qualities of their employees. The two most notable differences with traditional project management are the need for T-shaped professionals and the intensification of teamwork. These characteristics require different qualities from employees that can be acquired in two ways. The organization can change its recruitment strategy to hire people with the right capabilities, and it can train the people that are already employed by the organization. Both options are observed in the cases.

From the three cases, Alpha A put the most emphasis on the first option. To quote an interviewee in Alpha A: "An announcement was made that the reorganization will be started and further information will be supplied. So what happened was that 600 people had to apply for 400 jobs. This was done on the basis of assessments. From this assessment was concluded whether you were qualified or not". One of the main subjects in the assessment was to test if people were suitable for the cultural switch that had to be made. To test if people could function in the new desired culture, a list with desirable and non-desirable behavior was made. This list is presented in appendix 10.

Alpha A was the only company that reorganized the entire organization. When this approach was discussed with an interviewee in Beta, the response was that it possibly created some good outcomes. According to an interviewee, in this way the resistance against the change is possibly lower, as people who do not have the right capabilities to work in the new organization are laid off. Additionally an interviewee in Alpha A noticed that when people have to apply to new jobs, general resistance against the change is minimized. This resulted from the effect that no change in work was required, but a

completely new position was taken in. However, at Beta this approach was not suitable. Beta stated that it is a government institution and that such progressive approaches are not accepted. To cope with the new capabilities that are demanded from the employees, Beta did change the recruitment criteria for new employees to become more suitable for the new required capabilities.

The second approach to increase the right capabilities in the organization is training. This was used in all three case organizations. In Beta, employees had to do an assessment to determine their capability level. With the results of this assessment, the appropriate training for the individual employee was selected and the specific capabilities that were needed for the AWW were increased.

> *If an organization wants to become agile (C) coaching is required (I), which teaches the employees that daring to ask and trial and error are common values in an agile organization, and thereby create an open culture that amplifies the self-learning ability and internal collaboration of the teams (M), in order to increase the probability of success of the change program (O).*

In the previous design proposition an explanation is given about why training is needed in order to increase the probability of success of an agile transformation. Next to training, on the job coaching is also important for the succes of an agile transformation. The main objective of coaching is supporting the cultural switch to a more open culture, creating a culture in which people are comfortable to give feedback to each other. One of the major aspects of agile working noted by several interviewees was the continuous improvement of the different teams. To accelerate this process, people need to feel confident enough to show their weaknesses. Therefore a culture is needed in which people are open and honest to each other. However, in the case organizations, the old culture focused more on employees their strong points, which resulted in a culture that is competitive instead of collaborative.

Furthermore, the AWW has as an effect that the work processes of individuals get more transparent. The work 'done' is discussed daily in the stand-up meetings, showing precisely what the strong points and weaknesses are of individual employees. This transparency demands a 'safe' environment and an organizational culture that allows employees to make mistakes.

This safe culture is of great importance to succeed in an agile transformation. This is best described by a quote from an interviewee at Alpha B: "You will move from an entire top-down structure to a much more open and transparent structure, which also makes the way-of-working different for the people. Your mistakes are much more visible, you will work with storyboards and if you do not deliver for two weeks you will see it right away. In the old project management approach you could still cover it up, if you did not deliver." To support the coaching, Beta developed the Beta Culture manifest, an aggregation of the agile manifesto included with some cultural points found important by Beta. This manifest was used as a tool to support the coaches at Beta.

> *If an organization wants to become agile (C) the transformation needs to be executed in an iterative way (I), which enables adjustments in the transformation program and proves the concept (M), in order to increase the probability of success of the change program (O).*

The transformation to an agile organization demands an iterative introduction. This could be concluded from all cases. An iterative introduction has several benefits over an instant introduction. When the program has commenced, an iterative introduction allows management to make changes to the parts of the program that are not performing well. These adjustments from learning by doing will increase the chances of success of the agile transformation. Furthermore, an iterative introduction

allows the organization to get used to the work practices of the AWW. This is necessary as the AWW has major impacts on the daily practices of employees. Finally, in Beta the introduction of large transformation programs has caused failure in the past. This created the need for a different strategy of large transformation programs.

The iterative strategy used by Beta was experienced as satisfactory. Similar arguments were given in the cases of Alpha A and Alpha B. In Alpha A an interviewee stated that: "It was just impossible to introduce the AWW instantly in the organization, especially after the organization was reduced from 600 to 400 people. The strategy of introducing the AWW from department to department, finishing with the staff functions was experienced as a success". Interviews with Alpha B showed that the iterative strategy helped employees accustom slowly to the new work practices, resulting in a decrease in resistance against the change.

Practice-based design proposition 6

> *If an organization wants to become agile **(C)** it needs to invest in the rearrangement of the office spacing **(I)**, which creates the ability for employees to sit together and have physical brown papers in close proximity of them, and thereby support collaborative work practices and team communication **(M)**, in order to increase the probability of success of the change program **(O)**.*

The redesign of the office space is important for the success of an agile transformation, as is described later in this paragraph. One of the pillars in the AWW is the collaboration in multidisciplinary teams. To foster this team collaboration, adjustments in the interior of the office spacing are necessary. Often this is overseen, but before the decision is made to transform to the AWW it should be considered that this can be a very costly undertaking.

In the case of Beta, the office was rented from an external party who had to confirm a redesign of the interior. This was harder than expected, Beta had not taken into account that with a rearrangement of the writing desks problems could appear with the designed air stream in the building. Alpha A did redesign its entire office to make it supportive for the AWW. Similarly, Alpha B will relocate to an office that is supportive for the AWW in 2018, as their current office could not be rebuild to an AWW supportive office.

Office buildings are often designed to support flex working. The flex work office is mostly characterized by uniformity. For example the writing desks are uniform and can be used randomly by all employees. Also most flex work offices are characterized by a no paper policy. These two characteristics in particular are prohibitive for team collaboration as required by the AWW.

To support the AWW, the office interior has to change. Teams need to have the possibility to work together, as sitting together fosters the direct communication, and results in a better collaboration. Another important aspect in the AWW are the so-called 'brown papers'. Brown papers are physical plan boards, used for various purposes, from the strategic level to user story planning at the team level. The teams need to have the possibility to physically use the brown papers in close proximity of their workspaces.

Physical brown papers help the employees to discuss adjustments face to face when these are required. An interviewee in Alpha A stated that adjustments on the brown-paper are only allowed when everybody involved in that decision physically attended the meeting. After the adjustment was approved by democratic voting, a change was made on the brown paper. If brown papers were to be digitalized, it would be harder to force employees to make the decision in physical attendance of each other, increasing chances that old non favorable behavior like intensive mailing or calling will prevail.

43

> *If an organization wants to become agile (C) the evaluation of employees has to change from a primarily individual assessment to a primarily team-based assessment (I), which motivates the employees to contribute to teamwork that results in increased collaboration between them (M), in order to increase the probability of success of the change program (O).*

In an agile organization the focus is shifting from individual performance to team performance. Practice-based design proposition 3 describes how certain capabilities of employees are trained to enhance this collaboration. However, the evaluation criteria employees are assessed on can help foster the collaboration as well.

The evaluation criteria are often based on traditional project management, and the performance of the employees is measured by individual KPIs. An interviewee in Beta gave an example of an employee doing extensive work for the team. Nonetheless, he received a bad work evaluation, instigated by his personal KPI's that suffered under the unmeasured work he delivered for the team. The work engagement of this particularly employee was reduced. Additionally, the bad work evaluation supported him to show personal performance over team performance, a non-desirable work behavior for the AWW.

To address this issue, the evaluation criteria on which employees are judged have to change. In Alpha A the entire financial aspect is taken out of the performance evaluation. Employees are solely evaluated on behavior that is desirable for the AWW that is captured in de new cultural code, which is described in appendix 10. In this code the desirable and non-desirable individual behavior is described, and emphasizes on what behaviour fosters team collaboration.

In Beta a similar approach was used, citing an interviewee: "It has been indicated with the observation that HR also has to change. If an individual only does his individual work they will never become a team. So your contributions to the team should be assessed." In an addition employees are also evaluated on the Beta Culture Manifest, a tool developed by Beta to support coaching of teams.

Practice-based design proposition 8

> *If an organization wants to become agile (C) the leadership approach has to change from commander and controller to enabler and supporter (I), which gives the teams the discretion to make their own decisions and create more client intimacy, organizational nimbleness and reduce the time-to-market (M), in order to increase the probability of success of the change program (O).*

In an agile organization teams need to become more autonomous. This autonomy is one of the key pillars of the AWW. The autonomy helps reaching certain desired goals by an agile transformation.

An Interviewee in Alpha A stated that the team autonomy helps to engage employees: "I think few people like it to be directed and told what they need to do, compared to deciding together what we think is important. It generates more satisfaction at work." Other benefits of more team autonomy stated by Beta are an increase of nimbleness of the organization, and a reduced time to market. These two results are created by the lower managerial slack in teams with more autonomy. When teams can make their own decisions, less time is wasted by waiting on the approval by someone placed higher in the organization.

However, this change in management style is hard, as in a traditional organization the leadership used to have a commanding and controlling role in project management. In the case of Beta an interviewee stated that the hardest challenge at the moment is the change in mindset needed by the management.

The interviewee said: "At a certain moment the statement was made to introduce the program organization-wide. Nonetheless that does not mean you are there from a top-down perspective. Perhaps the biggest cultural change has to be made in those layers." If the leadership is not able to change their role, the desired outcomes of the AWW will not be accomplished. For example, the time to market will not be decreased as teams still have to wait on managerial approval. The nimbleness will not be increased as the manager is still deciding which tasks will be executed and thus the potential creativity of the team is not used. Finally, the team will become disillusioned and create resistance against the opposed change in response to the not-fulfilled promise of more team autonomy.

To help managers transform their mindset, proof of concept is needed. This can be achieved in different ways. Beta started with a pilot to prove that the organization was still delivering the desired results with less control of the leadership. At Alpha A, most of the top managers were replaced, and in this way old behavior could not be showed. Also the iterative approach proposed in design proposition 5 helps to prove the concept as is explained. This also applies to the leadership that needs proof that the new style of management is desirable in an agile organization.

Practice-based design proposition 9

> *If an organization wants to become agile **(C)** support from leadership is needed **(I)** as they have the ability to make the strategic decisions needed, and can signal to the rest of the organization that there is no way back **(M)**, in order to increase the probability of success of the change program **(O)**.*

Support from leadership is a necessity in the advancement of an agile transformation. This can especially be concluded after a cross-case analysis on this topic between Alpha A and Alpha B. The observation was made that the change program was more successful in Alpha A than in Alpha B. Further research showed that the level of support from leadership was the main point of difference between Alpha A and B. The decision to integrate the IT and business department at Alpha A, could only be made as a result of the support the senior management had given to the transformation to the AWW. Also, the change in budgeting strategy explained in practice-based design proposition 2 is a decision that needs to be made by the leadership of the organization. To make the agile transformation a success, both decisions are of great importance. In Beta a similar pattern was observed. In the start of the change program only minor management support resulted in a budget that was insufficient to support the change. An interviewee from Beta said: "The pilot we have done actually started bottom-up. Now we have moved so far bottom-up that top-down should take over, and it all comes together." Additionally the interviewee stated: "We had support, but not for an organization-wide program that provided in money and training budget. No, we had the permission to start change from the bottom-up."

Nonetheless, Beta now lacks the necessary level of management support to further advance in the transformation program. To fully become an agile organization IT and Business have to be integrated. However, the senior leadership of Beta is not ready to take this final step. In practice this means that there are still two teams, budgeted from two different departments. A situation that is not desirable in an agile organization.

Another important role of the senior leadership is communicating that the change is necessary. In Alpha A, every Friday a representative of senior management gave a speech over the progress of the transformation program on a soapbox. According to an interviewee in Alpha A this helped to engage the employees who were actively involved in the transformation.

To generate more support from the leadership, Beta used a pilot to prove that the AWW had beneficial

results for the organization, resulting in reduced time to market and an increased client intimacy. This advice was also given in design proposition 8 and 5. By using a gradual implementation of the AWW, support from all layers in the organization can be generated, and a pilot can generate the support needed before the implementation is started.

From the observations in Beta and Alpha A the conclusion is made that for the succeeding of an agile transformation senior management support is necessary.

Practice-based design proposition 10

> *If an organization wants to become agile **(C)** the work practices need to be kept in a certain benchmark **(I)** to enable alignment between the teams which results in increased organizational performance **(M)**, in order to increase the probability of success of the change program **(O)**.*

The cases at Alpha B and Beta showed that for certain aspects in the agile organization, alignment is needed to get the desired result. In Beta, teams could autonomously decide how they executed their day-to-day practices. Teams could use their preferred agile practice, like extreme programming, Kanban, Scrum or a customized methodology designed to the preferences of the particular teams. However, the different methodologies created problems in reviewing the teams. To state an interviewee in Beta: "Teams were to a far extent allowed to decide the 'what' and 'how'. However, we discovered that it became very hard form an audit, compliance and finance point of view. From this perspective it is surely beneficial that there is a certain connection between the teams. You can only compare apples with apples."

In Alpha B a challenge occurred that can be attributed to the same cause. In the agile transformation, Alpha B had to change to a software system that supported the AWW. Instead of choosing one system, as had been done by Alpha A, Alpha B decided that teams could decide by themselves what system was used for a certain task, leading to three different systems being implemented. The old system, Clarity, for budgeting, Jira for backlog management and 'Service Now', an overarching system that has to replace Jira and Clarity. Additionally, Jira does not have one standard format, instead teams can decide themselves how to process the information. As a result, the transformation to 'Service Now', the desirable solution for alignment of Alpha B and Alpha A, has become very costly. An interviewee in Alpha B stated: "It is going to be a very costly operation as the information from 'Jira' needs to be transferred to 'Service Now', as teams have used 'Jira' differently."

A possible solution to the alignment problems is being explored by Beta. This company had recognized the challenge prior to the agile transformation and with a pilot program Beta is testing which system best suits their work practices. When the right system is found it will gradually be implemented in the organization to enable adjustments when necessary.

Practice-based design proposition 11

> *If an organization wants to become agile **(C)** it can adapt an existing agile model **(I)**, which reduces the time and effort spent on experimenting with AWW **(M)**, in order to increase the probability of success of the change program **(O)**.*

Both the transformations of Alpha A and Beta show that the companies used already existing models to design their transformation program. Beta combined different models, cherry picking the parts that best suited their operations, whilst Alpha A chose to adopt the Spotify model.

The use of already existing models is preferred, because it prevents the organization having to invent its own practices for the change program. Numerous practice cases of well-known models are available

46

online and Beta and Alpha A could take valuable lessons from these cases before starting their own implementation. Furthermore, there are several training programs available that are explicitly designed for these models.

Conclusion of chapter

The analysis in this chapter gave insight in the main problems relating to organization-wide transformations to the AWW that were experienced by practitioners in the studied organizations. These practice-based design propositions shed light upon practical solutions for transformations to the AWW. However, the abovementioned principles were solely derived from statements of the interviews and written documentation of the case organizations. To increase the validity and generalizability of these propositions, a comparison with the research-based design propositions depicted in chapter 3 is needed. Therefore, the next chapter will derive a set of propositions that are a combination of the research- and practice-based propositions, to define a set of propositions that have proven to be effective in research as well as in practice.

5. Synthesis of the design propositions

In this chapter the final set of design propositions is presented. Following Van Burg et al. (2008), a final set of design propositions was derived by conducting a synthesis of the research-based and practice-based design propositions. This was done in order to answer the question: *Which strategy can be used to transform to an agile organization?* The final set of design propositions will be used as building blocks for the developed tool in chapter 6, which has as main objective helping the consultants at Capgemini guide organization-wide transformations to the agile way-of-working (AWW). Table 5.1 visualizes the first step of the comparison and provides an overview of the relationship between practice-based and research-based design propositions. Intersections that are marked grey indicate a partial overlap in intervention or mechanism of the propositions. The context is similar for all propositions and states, 'an organization wants to become agile'. Subsequently, the outcome is similar for all design propositions and states, 'to increase the probability of success of the change program'.

The final set of design propositions is depicted in table 5.2. The actual process of constructing the final set of design propositions, by following the method of Van Burg et al. (2008), was explained in chapter 2 and is demonstrated in appendix 11. Research-based design propositions 7 and 12, as well as practices-based design proposition 2, did not overlap with any other propositions. For this reason they are left out of the final set of design propositions.

	rbdp 1	rbdp 2	rbdp 3	rbdp 4	rbdp 5	rbdp 6	rbdp 7	rbdp 8	rbdp 9	rbdp 10	rbdp 11	rbdp 12	rbdp 13
pbdp 1	X												
pbdp 2													
pbdp 3			X										
pbdp 4			X										
pbdp 5		X											
pbdp 6													X
pbdp 7				X									
pbdp 8								X					
pbdp 9		X			X				X				
pbdp 10		X								X	X		
pbdp 11						X							

Table 5.1 Comparison of research-based and practice-based design propositions.

FDP	If an organization wants to become agile, the following *Interventions* are helpful…..	in order to increase the probability of success via the following *Mechanisms*…..	which are embedded in the following *Underlying Theories*
1	The organization must choose the right design by incorporating the change enablers; resources, 'knowledge and skills', and commitment, while also taking into respect the agile principles and values.	The change enablers will minimize the likelihood of transition problems regarding misalignment and internal resistance.	Change enablers increase the success of the change program (Chruciel & Field, 2006) Identified change enablers: Knowledge and skills, resources, and commitment. (Al-Haddad & Kotnour, 2015)

2	A change in recruitment policies is needed. Extensive training is needed.	To ensure that the employees have the right qualities that can cope with the increased reliance on social skills. To avoid the likelihood of a misunderstanding of the agile concepts, and following a possible resistance resulting from lower organizational performance due to a misunderstanding of agile concepts.	Social capability theory (Conboy et al., 2011) Organizational learning theory (Schatz & Abdelhafi, 2005) Knowledge theories (Bennefield, 2008)
3	Coaching from internal as well as external coaches is needed.	To decrease the fear caused by transparency of skill deficiencies To learn that trial and error are common values in agile organizations.	Organizational learning theory (Schatz & Abdelhafi, 2005) Social capability theory (Conboy et al., 2011)
4	A gradual implementation or a pilot is needed.	To enable adjustments in the transformation program that support corporate dynamics. To prove the concept which minimizes the likelihood of transition problems regarding resistance against the change.	Organizational culture theory (Lewis & Neher, 2007) Piloting to proof the concept (Ranganath, 2011; Cloke, 2007)
5	A rearrangement of the office space is needed.	To create the ability for employees to sit together and have physical brown papers in close proximity of them, which supports collaborative work practices and team communication.	Collaborative workspace theory (Harrison & Dourish, 1996)
6	The incentives that people and departments are reviewed on need to change from a primary individual assessment to a primary team assessment.	To decrease organizational boundaries To increase the collaboration between employees	A positive correlation between performance rewards and engagement in organizational change (Klidas et al., 2007)
7	The leadership approach has to change from commander and controller to enabler and supporter.	To give the teams the discretion to make their own decisions and create more client intimacy, organizational nimbleness, and reduce the time-to-market.	greater team-autonomy created by the enabling management style increases the organizational nimbleness and reduces the time-to-market (Szetela & Mentel, 2016)

8	A pilot should be used.	To prove the concept and gain the support of the leadership, as they have the ability to make the strategic decisions needed, and can signal to the rest of the organization that there is no way back.	Organizational culture theory (Lewis & Neher, 2007) Piloting to proof the concept (Ranganath, 2011; Cloke, 2007)
9	The responsibility of the change should be supported by a roll-out team with leaders from all departments involved.	This will help overcome organizational boundaries. Enables that the strategic decisions needed are taken. Is a clear signal to the rest of the organization that there is no way back.	Leadership Theory (Boyd, 2009) By committing to the change, the leadership puts their reputation on the line with regards to the success of the change program. This gives a clear signal to the rest of the organization that the change is needed and urgent (Sink et al., 1995)
10	The agile practices of the teams need to stay in a certain benchmark. A pilot can be used to find agile practices that support the corporate needs and dynamics.	To make it easier to compare performance from different teams. To make it easier to relocate people from one team to another.	Organizational culture theory (Lewis & Neher, 2007) Synchronizing practices makes it easier to relocate people (Ryan & Scudiere, 2008) Synchronizing practices enables peer to peer reviewing (Farrow & Greene, 2008)
11	A framework can be implemented.	To reduce the time spent on experimenting with the AWW, especially in managing interdependencies between the teams and translating high level requirement to low level requirements.	Knowledge management theory (Vera & Crossan, 2003)

Table 5.2: Overview of the final design propositions.

Conclusion of chapter

This chapter presented a final set of design propositions that has proven to be effective in research as well as in practice, and thereby is generalizable over multiple contexts. In the following chapter these design propositions will be used as building blocks for the design of a tool that helps the consultants at Capgemini guide organization-wide transformations to the AWW.

6. Designing a tool

This chapter describes the design of a tool that helps the employees of Capgemini Consulting execute the most appropriate strategy in an organization-wide transformation to the agile way-of-working (AWW). The problem-solving method of Van Aken et al. (2007), as outlined in chapter 2, was applied to develop the tool. In this method, certain boundaries are set to ensure that the proposed solution aligns with the challenges facing the organization. In the business problem-solving method of Van Aken et al. (2007), these boundaries are indicated as design requirements.

After the design requirements are set, possible solutions for the challenge can be sought out. The first important source for idea solutions is the scientific literature, covered by the systematic literature review, and subsequently the research-based design propositions. A second source are the case studies and related practice-based design propositions. As described in the previous chapter, the practice-based and research-based design propositions were combined in a final set of design proposition that form the basis of the tool. The final source of ideas is the client organization (Van Aken et al., 2007). As problems have usually been around for some time, various stakeholders in the organization may already have ideas about solving them (Van Aken et al., 2007). For this reason, the researcher of this study was employed by the client organization to ensure a proper idea transformation from the stakeholders.

In this chapter an explanation of the design requirements is given, followed by the first, second, and third iteration of the development of the tool that aims to help the employees of Capgemini Consulting execute the most appropriate strategy in an organization-wide transformation to the AWW.

6.1 Design requirements

The design requirements are divided into functional requirements, user requirements, boundary conditions, and design restrictions. The functional requirements are the main objectives of the tool that has to be developed (Van Aken et al., 2007). A synthesis of the research questions, which capture the main objectives of this study, will form the basis of the functional requirements. The user requirements are specific requirements from the viewpoint of the user. The boundary conditions have to be met unconditionally, and an example is that when developing a freezer it has to be supportive with 220V. Finally, the design restrictions denote the preferred solution space of the tool.

The design requirements were defined during a brainstorm session with the most important stakeholders of this research project and state:

Functional requirements
- The design should help the employees of Capgemini Consulting execute the most appropriate strategy in an organization-wide transformation to the agile way-of-working (AWW).
- The design should help to define the role of executive leadership in an organization-wide transformation to the AWW.

User requirements
- The design should be user friendly.
- The design should be properly embedded in scientific literature.
- The design must be presentable to client companies when necessary.

Boundary conditions.
- The design should incorporate theory from the change management literature to support transformations to the AWW.

Design restrictions
- The design should build on the principles behind the people transformation model of Capgemini Consulting.
- The design should be cost-neutral, i.e. not require excessive effort from the employees of Capgemini Consulting.

6.2 Development of the tool (first iteration)

This section describes the development of the tool. First, an explanation is given on how the research results were validated, followed by a description of the development of the first prototype of the tool.

6.2.1 Validation of the research results

The first step in the development of the tool was the validation of the results found in the literature and practice. This was done by presenting the challenges and success factors extracted from the literature review, followed by the first set of design propositions derived from these factors to attendees of a leading SAFe training. The leading SAFe training was chosen as it is a certification program for executives, managers and agile change agents responsible for leading a Lean-Agile change initiative in a large enterprise (Scaled Agile, 2017). This audiences synchronizes with the target audience for the tool and therefore was appropriate for the validation of the research results.

The first impression of the attendees was that the research results were a valuable addition to the training, and that they could help in designing and executing a change program for an organization-wide transformation to the AWW. Several attendees noted that the leading SAFe training only advocates limited attention to the transformation question. In the entire training, only 15 minutes was reserved for discussion on how the SAFe framework could be implemented, with only the model of Kotter being used.

The practitioners indicated that they needed more guidance than only Kotter's model to execute a good implementation of the SAFe framework. This was a first clear signal that the development of a tool could help consultants of Capgemini guide agile transformations. In addition, the attendees of the training concluded that the research results of this study are a useful increment in the design and execution of an agile transformation.

6.2.2 Designing the first prototype

The challenge was raised to develop a tool with the final set of design principles derived in the previous chapter. In this section, an explanation is given of the process that was executed to develop a first prototype of a tool that helps the employees of Capgemini Consulting execute the most appropriate strategy in an organization-wide transformation to the AWW.

Session with first supervisor of Capgemini

The first step was to conduct a feedback session concerning the design of the tool with the supervisor of this project, where different ways of designing a tool with the use of the design propositions were discussed. The final conclusion was that in agile transformations particularly, *habit*, *structure*, and *mindset* are important, and that this is a key distinction compared to most other transformation programs. In figure 6.1 a picture of the first feedback session is presented.

Figure 6.1: Representation of the first feedback session at Capgemini.

Lunch and learn

Following the feedback session with the supervisor, the results of the study were discussed at a 'lunch and learn' session. A lunch and learn is a monthly event in which approximately 20 representatives of the capability unit, for whom this research was conducted, come together and discuss a specific topic. A presentation of the major research findings of this study were given at this session, followed by the posing of a question on the best possible way this information could be embedded in a tool for helping client organizations guide agile transformations. The question was discussed in an interactive session in which all representatives could propose and discuss different solutions. A small summary, which is presented in appendix 12, was posted on the organization's intranet and sent to all members of the capability unit. Multiple ideas were discussed and the most common outcomes were: Make a cartoon, link the final set of design propositions to an assessment, develop a webinar, and create a website in which the results are embedded.

Interviews with several consultants in the organization to define a possible redesign

After the lunch and learn, five interviews were conducted with possible future users of the tool, as well as experts in the field of knowledge sharing. The main objective of these interviews were to discuss and expand upon the ideas generated, at both the lunch and learn and the feedback session with the project supervisor. A list of the person's interviewed is presented in table 6.1 and includes their departments and functions. In the following section, the seven methods which gained the most attention in the interviews are discussed. The methods are the opening of a KM 3.0, the development of a Corporate Open Online Course (COOC), the development of a cartoon, the development of an infographic, the development of an interactive PowerPoint, the development of a model incorporating the pyramid principle and the use of Visionwaves.

Knowledge management 3.0 (KM 3.0) is the internal learning environment of Capgemini, where employees can discuss and follow training programs on various subjects. A KM 3.0 also acts as a community of practice, enabled by a forum in which participants can share knowledge and ask questions to one another. A possible design of the tool could be the embedding of this study's findings in the development of a KM 3.0.

Person	Function	Division
Ben Kooistra	Scaling agile coach	Apps 2
Jonas van Wees	Senior Consultant	Consulting
Alinda Diepeveen	Knowledge, learning and development manager	Consulting
Ronald Teeuw	Managing consultant	Consulting
Cor Polling	Managing consultant	Consulting

Table 6.1: Interviews for the ideation generating phase.

A Corporate Opening Online Course (COOC) is closely aligned to KM 3.0. The largest difference is that a COOC lacks a forum to enable interaction. The most common form of a COOC is a (set of) video lecture(s) recorded in advance. This enables a COOC to be sold as a full package to client organizations.

The development of a cartoon was mentioned multiple times. In the current change management practices of Capgemini, cartoons are often used to clarify objectives and goals. The easy multiplication of cartoons makes them a perfect instrument for the distribution of information. However, one challenge is that I cannot develop a cartoon and the involvement of an external cartoon designer is needed. Cartoon designers are expensive and thereby a violation of the design restriction that the development of the tool is cost neutral. Therefore this solution is not possible.

An infographic is a visual representation of information and closely aligned to the idea of using a cartoon. The difference is that while an infographic is a static representation of information on a canvas, a cartoon is information represented in a chronological story (Smiciklas, 2012). Well-developed infographics are great information transferors and like cartoons can be easily multiplied. This makes them suitable as a possible solution for the tool and several ideas for possible designs were discussed in the interviews.

The development of an interactive PowerPoint can serve as a substitute for the website mentioned in the lunch and learn. I have no previous experience with building a website, and several interviewees mentioned an interactive PowerPoint as a good alternative. An interactive PowerPoint shares many characteristics with a website, for example, the possibility to navigate between different pages via different buttons. Another advantage of an interactive PowerPoint is that it is easily adaptable by consultants to contribute to the specific needs of the client organization. Saving the PowerPoint as a read only pdf in which all slides are hidden, with the exception of the navigation slide, reproduces the concept of a website in pdf format. A disadvantage of this method is the distribution. When updates are made to the tool, a certain form of coordination is needed to substitute the old- for the new version.

The pyramid principle is a method that helps with ordering and presenting information. It was first developed by Barbara Minto who worked at the consulting firm McKinsey and Company. The model structures information in a pyramid form. According to Minto (2009), the information in the pyramid needs to be mutually exclusive in order for the information to be best rendered by our brains (Minto, 2009).

Visionwaves is an enterprise operational intelligence software package that makes use of business intelligence to monitor organizational processes. Ben Kooistra advised developing a dashboard that runs in Visionwaves in which the design propositions found in this research are embedded. Ben has guided multiple organization-wide agile transformations, and in most of the cases visionwaves software was used to monitor organizational performance. By developing a dashboard in this system, the people that are most likely to need the information are directly confronted with it.

In a meeting with the university supervisor, the different possibilities described above were discussed. In addition to the other possibilities, the supervisor advised to design a canvas. As examples he gave the 'business model canvas' of Osterwalder and Pigneur (2010) and the 'change canvas' of Olffen, Visser and Maas (2016).

Decision about the strategy to use for the development of the first prototype of the tool

A last session with the supervisor of Capgemini was held to decide which of the described solution directions above needs to be incorporated in the first prototype of the tool. The design requirements were the leading instruments in making these decisions. The pyramid principle in combination with the change canvas were chosen as the major inspiration sources for the development of the first prototype, as these align best with the design requirements.

Development of the first prototype of the tool

In appendix 13, the first prototype of the tool is presented. The design propositions were analyzed with the use of the pyramid principle. It was defined that the themes *structure*, *habit*, and *mindset* divide the design proposition in mutually exclusive fragments. In this perspective, *habit* is the behavior exhibited in an agile organization, such as performing daily standup meetings at Scrum, an agile practice. *Mindset* is the change in cultural values needed to obtain the desired results of an agile organization. An example of a desirable agile *mindset* is 'daring to make mistakes', and subsequently 'admit' them. Finally, *structure* refers to the organizational changes that are needed to support the AWW (*habit* and *mindset*). Examples include the change in HR incentives needed to support teamwork, and the rearrangement of the office space to support face-to-face contact and collaborative working.

Following this, the categorized design propositions were presented on an A3 canvas, drawing inspiration from the business model canvas and change canvas. In addition, the question why agile was added to the canvas to force the users of it, by answering this question, to create a vision for the proposed change to the AWW, a crucial step in the people transformation model of Capgemini.

6.3 Development of the tool (second iteration)

After the development of the first prototype, the challenge arose to test and validate it. In this section, an explanation is given of the process executed in order to gain feedback and design a second prototype of the tool.

6.3.1 Testing the first prototype

To validate the first prototype, the tool was presented at a company visit at Alpha with the SAFe training group, and during an interactive workshop feedback was gained from the practitioners. A representation of this session is depicted in figure 6.2

The primary feedback of the group was that the tool was not yet applicable in a practical setting. The general conclusion was that the canvas had some interesting findings for increasing the awareness about certain topics in the transformation to the AWW, but that overall it was too conceptual. Another important point of feedback was that the amount of information on the canvas was excessive. According to one attendee at the session, all problems related to agile transformations are presented on one canvas without any underlying explanation. He concluded that users of the canvas would be overwhelmed by the amount of information presented on it.

There was also positive feedback from the attendees, who felt the strongest point of the canvas is its structure. The practitioners agreed that the pillars of *habit*, *mindset*, and *structure* are a good categorization for the interventions that are needed to guide the change process to an agile

organization. Furthermore, the addition of the challenges and success factors (from the literature) on the canvas were pointed out as good awareness creators. According to one attendee at the meeting, knowing what the key points are that need to be discussed with the stakeholders is of great value at the start of a transformation program.

Figure 6.2: Workshop to gain feedback from the SAFe training group.

Additionally, multiple informal interviews were conducted at the meeting with the SAFe group at Alpha, to gain insights into how the prototype should be redesigned for the improved second prototype. The most important finding was that an addition of the exact difference between the AWW and traditional project management would be a valuable addition. Nowadays, even some consultants do not know the exact difference, and an overview will help consultants better explain the characteristics of a transformation to the AWW to their client organizations.

6.3.2 The development of the second prototype

The feedback described in the previous section was processed into the second prototype, which is presented in appendix 14. The main differences with the first prototype are a format change from a canvas to an interactive PowerPoint, and the addition of an extra slide with the differences between the AWW and traditional project management. This format change incorporated the feedback that the amount of information on the canvas was excessive and could be overwhelming to its users. The primary slide of the interactive PowerPoint only contains five bulbs. The accelerators and challenges, the agile way-of-working, structure, habit, and mindset. By clicking on these bulbs, users can view the underlying information on different pages. Furthermore, an extra slide with the main differences between the AWW and traditional project management was added, as requested in the informal feedback sessions.

6.3.3 Webinar for the validation of the ideas

For a further validation of the structure of the tool, a webinar was presented to 250 viewers from inside Capgemini as well as outside the organization. After an extensive explanation of the model, the viewers were asked if the model would help them guide agile transformations. Suggestions or tips regarding the model could be sent to me. The general conclusion of this feedback was that the model with the three pillars, *structure, habit*, and *mindset*, are a good way to explain the most important subjects in a transformation to the AWW.

6.4 Development of the tool (third iteration)

After the development of the second prototype, the main objective of the third iteration was to test the practical applicability of the tool. A presentation was given at Alpha and the tool was sent to seven consultants of Capgemini that are involved in agile transformation programs for client organizations. In this section an explanation is given of the process that was executed in order to get feedback on the practical applicability of the second prototype, and subsequently the development of the third prototype.

6.4.1 Presentation of the second prototype at Alpha

The tool was presented to one of the interviewees from the case study of chapter 4. It was the first time this person had seen the tool, and he was positively surprised by the result that was already delivered. His feedback was that while the basis of the tool was solid, for real practical usability it needed further development. The major conclusion was that the interventions stated in the tool needed a more elaborate explanation. In conceptual form they were clear but for implementation they need further explanation. Furthermore, the interviewee stated that for the discussion on which interventions to use, an assessment was needed. Using the metaphor of a thermometer, the interviewee explained that the temperature regarding the *structure*, *habit,* and *mindset* of the organization needs to be measured before a decision can be taken on which interventions are needed.

6.4.2 Tool and questionnaire sent to seven consultants of Capgemini

To further explore the practical applicability of the tool a questionnaire was developed and sent with the tool to gather insight from the consultants at Capgemini. In table 6.2, a summary is presented of the consultants, their function, and the division they are employed in. The first two questions were used to test the practical applicability of the tool and stated: One, are the layout (structure) and context of the tool clear? Two, is the tool operable? If no, why not? If yes, in which situation would you personal use the tool?

Furthermore, two questions were developed to generate new input and stated: Do you miss something in the tool and/or would you change something? And, are the three pillars structure, habit and mindset clear or is structure work process and mindset clearer? If both are unclear what would you advise? The answers of the questionnaire are presented in appendix 15. In the following section a synthesis of the answers is given, followed by a third prototype of the tool.

Person	Function	Division
Erik Staffeleu	Head of Transformation Program Management (TPM)	Consulting
Sam Gertsen	Senior consultant (TPM)	Consulting
Meral Akgun	Managing consultant (TPM)	Consulting
Ben Kooistra	Scaling agile coach	Apps 2
Kars Brouwers	Managing consultant	Apps 2
Pieter de Beijer	Agile trainer	Acadamy
Michiel Penraad	Agile transformation consultant	Acadamy

Table 6.2: Consultants to which the questionnaire was sent.

Are the layout (structure) and context of the tool clear?

In table 6.3 the overall answer direction of the different persons is given. The conclusion was that the context of the tool is not well defined yet. To quote one consultant: "I know what you are doing, but for a neutral reader the context of the tool is not clear yet. It will help if you give an explanation of what you mean with 'agile change', and subsequently an introduction with the purpose of the tool." The positive reactions could possibly be explained by the close involvement of these people in the development of the tool. These people already knew the context and needed no extra explanation in

order to operate the model.

Another common point of feedback was that some elements appeared multiple times in the tool. For example, starting a pilot was described in *habit* as well as in *mindset*. A consultant concluded that this had a negative effect on the understandability of the tool and advised to either give an explanation why it is mentioned multiple times, or only mention it in one block, thereby simplifying the tool.

Furthermore, the argument was given that the tool was too conceptual and that this decreases the understandability. A high conceptualization level was chosen to enable the tool to be applicable in multiple situations.

Name	Erik Staffeleu	Sam Gertsen	Meral Akgun	Ben Kooistra	Kars Brouwers	Pieter de Beijer	Michiel Penraad
Is the context of the tool clear?							

Table 6.3: Overall answer direction to the question, is the context of the tool clear.

Is the tool operable?

From the question 'is the tool operable' could be concluded that the tool in its current form is operable and helps to create awareness about the agile transformation. However, the tool appears not to support the primary goal it was developed for, which is helping consultants choose the appropriate strategy for an agile transformation. Multiple consultants concluded that the information in the tool are valuable additions to their current 'toolbox', but the tool itself lacks a process. A process can help evaluate the 'as is' situation and choose the appropriate strategy for a certain case. Certain interventions can be coupled to process outcomes and specify the strategic decisions in specific cases. To cite Michiel Penraad; " I think you will score more points with a kind of problem solving tool, which navigates you through all sort of questions, giving an explanation of what each step is, what is *habit*, what is *structure*.'" The overall answer direction of the persons is given in table 6.4

Name	Erik Staffeleu	Sam Gertsen	Meral Akgun	Ben Kooistra	Kars Brouwers	Pieter de Beijer	Michiel Penraad
Is the tool operable							

Table 6.4: Overall answer direction to the question, is the tool operable.

Do you miss something in the tool and/or would you change something?

The opinion on what is missing differs between the respondents. However, one point was specifically mentioned multiple times. 'The tool is too general and more specific knowledge is needed for it to be applicable in a practical situations'. Here a trade-off is needed. Making the tool more specific means it cannot be used across multiple industries, yet if it is too general it has no practical use at all. Other points that were mentioned multiple times were the absence of an 'as-is' situation and a general house style.

Are the three pillars structure, habit and mindset clear or is structure work process and mindset clearer? If both are unclear what would you advise?

In the answer to this question no consensus was found. Therefore I chose to not change the three pillars, *structure, mindset and habit*. This was further substantiated by the outcome of the webinar in which positive feedback was received on the current structure of the tool.

6.4.3 The development of the third prototype

In appendix 16 the third prototype is presented. In the third tool the feedback that is described in the previous section was processed. The main differences with the second tool are the inclusion of an introduction to the tool, a general house style, the change of habit in behavior, an example assessment for *structure*, *mindset*, and *behavior*, and the addition of the original agile principles and values as well as the business principles derived from these.

Based on the results of the questionnaire it was concluded that the context of the tool was not clear. To better define the context, four extra slides were added with information about the situation, complications, and an explanation of the three pillars *habit*, *mindset*, and *behavior*. A link to the webinar was also included where a further and more in-depth analysis of the three pillars is given. Furthermore, to achieve a general and clear overview of the interactive PowerPoint, the general house style of Capgemini Consulting was implemented. A consultant stated that with the addition of a general house style it is possible to directly present the tool to client organizations, which increases the practical applicability. Finally, the word *habit* was changed for *behavior*. According to the supervisor at Capgemini, this term better explains the definition meant for the pillar.

In terms of the practical applicability, the feedback revealed that an 'as is' situation is needed in order to define which interventions are needed. To respond to this request, an individual assessment is added for the three pillars. It should be noted that the assessment is still in the initiating phase and that for a proper validation a field test is necessary. Furthermore, in the third prototype of the tool the interventions are explained at a more specific level to increase the practical applicability. Every intervention is explained on a separate slide in this prototype. Through the use of field testing, and the tacit knowledge of the consultants, the interventions can be specified further in a following iteration.

Finally, the principles and values from the agile manifesto were included. With the inclusion of these values and principles it becomes apparent where the agile work practices are derived from. As an extra addition, the agile business values derived from the original values, were added in order to specify that the AWW is not only operable in the software development industry.

Conclusion of chapter

In this chapter the development of the tool was explained. A total of three iteration phases were executed to develop a tool that was, according the supervisor at Capgemini, mature enough to be implemented in the organization. In the regulative cycle of Van Aken et al. (2007), the implementation phase is the final step in completing the cycle. The next chapter will address this phase by explaining the steps that were undertaken to introduce the tool in the organization.

7. Implementing the tool

According to Van Aken et al. (2007), the implementation phase is often not executed by the student as the process of implementation can take months. However, this research nonetheless acts as the first step in implementation. In this chapter I will explain which steps are taken to increase the likelihood that the tool will be used in the future.

In the business problems described by Van Aken et al. (2007), the main objective is implementing a possible redesign in the organization. This study however, describes a general tool that was developed to help consultants guide agile transformations. The major difference is that the stakeholders are not forced to use it but only have to use it if they prefer to do so. This difference posits a different way of looking at the problem than Van Aken et al. (2007) advocates. In his book Van Aken et al. (2007) argues that an analysis of the differences between the old and new situation is needed (Delta Analysis). However, this does not apply in this study. The developed tool is just an extra instrument that the consultant can- or cannot use. Therefore, the major objectives of this change plan is to find somebody that wants to take the ownership of the tool, and convincing the consultants that the tool helps by guiding transformations to the agile way-of-working (AWW). In the following section the steps that were undertaken to achieve these goals are described. These steps were holding an 'agile event' and the creation of a KM 3.0

7.1 The Agile Event

An event called 'The Agile Event' was held to gain support for the tool, and find a way for the ownership to transfer from me to people within the organization. The TCP model of Tichy (1983) was used to guide the organizing of The Agile Event. This model explains that the organizational change process should be managed in three intertwined interventions: The *technical intervention*, the *political intervention*, and the *cultural intervention*.

The *technical intervention* is the actual intervention. For this study this is the deployment of the tool. The *formal intervention* is the formal order and does not apply in this case as the consultants are not forced to use the tool. Finally, the *cultural intervention* is the participation of the stakeholders, and was applied in this study by organizing The Agile Event. According to Tichy (1983) it is important to gain support from the stakeholders that can violate your change program. In The Agile Event multiple capability leaders across all departments of the organization were invited in an attempt to gain their support, as they represent stakeholders who could violate the tool. To define who needed to be invited at The Agile Event, a stakeholder analysis was made with the supervisor of Capgemini. A total of 40 people were invited from which 32 actually attended the event. A list of the attendees including their function and departments is depicted in appendix 17.

The Agile Event began with an introduction of the tool and an explanation of the research methodology (design science methodology) used to construct the tool, as shown in figure 7.1. Following this, three capability leaders of the different business units of Capgemini presented their initial reaction to the tool. The reactions were part of the *cultural intervention* strategy of the TCP model and were initiated to increase the credibility about the tool to other attendees at The Agile Event. The PowerPoint slides used for the plenary part of The Agile Event are presented appendix 18.

Figure 7.1: The presentation of the tool to Capgemini employees.

As shown in figure 7.1, after the plenary part of the event a workshop was held to get answers on the three following questions:

1. How does the tool becomes ours?
2. What can we add to the method and lessons learned (interventions)?
3. Action: How can we do this together?

The feedback retrieved from the workshop is presented in appendix 18. The first question was designed to find a new owner for the tool. I will leave the organization after this project and for the integration of the tool in the organization a new owner is needed. The second question was designed to further develop the tool. This session was well suited for this goal because 32 practitioners of AWW transformations sat together, and hereby a lot of knowledge considering this subject was in the same room. Finally, the objective of the last question was to initiate a community of practice. The literature review revealed that a community of practice helps in incorporating the change into the organization by the use of social event (Atlas, 2009). The existence of such a community of practice has also proven to help ground change in the organization by driving discussions about the subject (Paasivaara et al., 2004). The following section will give an elaborate explanation of the initiating of a community of practice in the form of a KM 3.0.

Figure 7.2: The workshop at The Agile Event.

7.2 The Initiating of a community of practice.

As explained in this chapter, the initiating of a community of practice helps in incorporating the change into the organization by the use of social events (Atlas, 2009) Furthermore, they are of particular effectiveness in grounding the agile principles in the corporate culture (Evans, 2008; Silva & Doss, 2007; Atlas, 2009). The last question in the workshop was specially designed to get feedback for the initiating of a community of practice.

The format in which the community of practice is established is a Knowldege Management 3.0 (KM 3.0), as explained in chapter 6. The reason for this is twofold. First, a KM 3.0 was mentioned as a possible solution in the exploring phase for the first design of a tool, and second, in the workshop at The Agile Event a KM 3.0 was mentioned multiple times as a good format for a community of practice. Attendees at the workshop mentioned that a KM 3.0 helps overcome boundaries between the business units in Capgemini, especially when the ownership of the KM 3.0 is given to multiple people from different business units.

To obey the advice of the workshop, the ownership of the KM 3.0 is given to different people of the major business units in Capgemini, Sam Gertsen from Consulting, Ben Kooistra from Apps 2, and Pieter de Beijer from the Academy. In addition to the developed tool also other content related to agile transformations from the business units is shared on the KM 3.0. Furthermore, the three owners of the KM 3.0 are now discussing how they can share knowledge between the business units in The Netherlands on strategies that can be executed in organization-wide transformations to the AWW.

Conclusion of chapter

This chapter presented the implementation phase, and is the second-to-last step of the regulative cycle of Van Aken (2007). This was done through the organization of 'The Agile Event', and the creation of a community of practice in the form of a KM 3.0. In the preceding chapters the problem definition, diagnosis and design phases of the regulative cycle were presented. The last step in the regulative cycle of Van Aken, the evaluation phase, is not executed in this study due to the time constraints of a master thesis project. In the next chapter the conclusions, limitations, directions for further research and practical and theoretical contributions of this study are discussed.

8. Conclusions, limitations, directions for future research and contributions

This study presents extensive research in an organization-wide transformation to the agile way-of-working (AWW). This final chapter presents the main conclusions, limitations, and directions for future research. As such, this chapter concludes the overall report with contributions to academics as well as practitioners in the field of organization-wide transformations to the AWW.

8.1 Conclusion

The study was inspired by the attempt to increase understanding of the strategies needed to transform organizations to the AWW, by incorporating the combined insights of both academics and experts from the field. By building on previous insights from the literature and including the practical experience of managers in organizations, the following research questions were drafted:

> Which transformation strategy can be used to become an agile organization?

- What should the role of executive leadership be in an organization-wide agile transformation?
- How can the current change management method of Capgemini Consulting be adapted to become more suitable for agile transformations?

The result of answering this research question is four-fold. Firstly, the main research question was answered with the eleven design propositions, which are grounded in both literature and practice. Secondly, it can be concluded that the role of executive leadership in transformation to the AWW has to change from a strategy of command and control to one of enabling and supporting. This will increase the probability of success of the change program. Thirdly, the model of Capgemini was found to be accurate for the design of change programs. The model of Kotter (1996) was assessed on its accuracy, and for all eight steps evidence was found regarding their relevance in the design of change programs. As shown in table 3.1 from chapter 3, it was concluded that the model of Capgemini is closely related to the model of Kotter (1996). The subsequent conclusion therefore is that the model of Capgemini is relevant to use for the design of change programs. However, the problems encountered by Capgemini Consulting depicted in chapter 2 do not align with this conclusion. A demand for the development of a new tool would be unnecessary if the current method can be found accurate in literature. The explanation for this is that the 'people transformation model' of Capgemini only advocates what needs to be done in a change program, but does not explain how these steps should be executed. A close look at the cause and effect diagram in appendix 2 reveals that a majority of the nodes are practice-based and thus refer to challenges that are related to the question of how particular steps should be executed in the change process. Fourth and finally, the design propositions are the product of this research question and fulfill the goal in this study to design a tool.

In parallel to answering the research questions, this study aimed to design a tool with the main objective of helping employees of Capgemini Consulting execute the most appropriate strategy in an organization-wide transformation to the AWW.

The tool was designed using the design propositions constructed by answering the main research question: *Which transformation strategy can be used to become an agile organization?* In developing the tool the Pyramid Principle of Barbara Minto (2009) was used. After analyzing the design propositions using the pyramid principle, it was chosen to use a structure with three pillars; *behavior, mindset* and *structure.* In total, three iterations were made in designing the final tool. From the final alpha testing, it was concluded that the structure of the tool is clear and helps to explain how client

organizations can guide a transformation to the AWW. It was further concluded from the alpha testing phase that the tool is practically applicable and salable to client organizations of Capgemini.

8.2 Limitations and directions for further research

One of the main concerns of the study was the use of 'an increase of the probability of success of the change program' as the overarching outcome in the design propositions. As explained in chapter 3, the success of change programs is hard to measure. Furthermore, different perceptions in definition can occur between researchers and practitioners. With the final set of eleven design propositions, and the tool designed from these, it was suggested that the probability of success of change programs relating to organization-wide transformations to the AWW are enhanced. However, the only grounded evidence that would support this suggestion would be that revealed in an alpha test. To further validate the research results, the final design propositions as well as the tool need to be tested in practice.

Furthermore, a general limitation lies in the fact that empirical data from only two organizations was used in this research project. This might decrease the generality of the design propositions. Therefore, the design propositions need to be tested within other organizations to increase their validity. Also, the results of this study were produced solely by one researcher. This decreases the reliability of the study because possible biases in outcome, resulting from the perception of the researcher are not eliminated. For example, the code strings from the interviews are not checked by another party, which can result in a possible bias in outcome via the single perception of the researcher.

Finally, only the design propositions relating to the structure of the organization are presented in a prioritized way in the tool. Although some suggestions were made in the cases, no direct evidence was found that one proposition was preferred over the other. Future research could investigate which design propositions contribute the most in specific phases of the change program.

8.3 Contributions

In the following section the main contributions of this study are discussed. A separation is made between theoretical and practical contributions. The theoretical contributions explain how this study contributes to the research fields of change management and the AWW. The practical contributions explain in which order this study contributes to the organization it was conducted in, Capgemini.

8.3.1 Theoretical contributions

The main theoretical contribution of this study is four-fold: An assessment of the model of Kotter (1996) on its accuracy in literature, structuring the agile literature on challenges and success factors in the transformation process, deriving a set of eleven practice-based and thirteen research-based design propositions, and a synthesis of the practice- and research-based design proposition whereby a final set of eleven design proposition was derived that is grounded in literature as well as in practice.

The model of Kotter was assessed on its accuracy for the first time by searching for its underlying mechanisms. This was done by identifying the underlying mechanism in the steps of Kotter's model, and subsequently searching for empirical evidence of these mechanisms. For example, step four of Kotter's model, 'communicating the change vision', was assessed as accurate by the study of Nelissen and Van Selm (2008), who studied the relation between the responses of survivors of an organizational restructuring and the role of senior management. They found that the most significant correlation was between employee satisfaction and management communication.

Furthermore, a contribution of this study concerns the structuring of the AWW literature that is related to change management. The literature was categorized into eleven challenges and nine success

factors. These were re-written into thirteen research-based design propositions by utilizing CIMO (context, intervention, mechanism, and outcome) logic. The context (C) denotes the internal and external surrounding factors, including the nature of the human factors that influence behavioral change. The intervention (I) relates to instruments that managers have at their disposal to influence behavior. The mechanism (M) indicates why a particular intervention gives a specific outcome in a particular described context, such as the underlying economic, social or psychological theories. The outcome (O) is the intended result of a certain intervention in a specific context. The main contribution of this CIMO logic is that not only a certain intervention is advocated, but also it explains which underlying theory justifies that these interventions will result in the desired outcome. In the same way, eleven practice-based design propositions relating to change management in the AWW are derived from empirical data of multiple case studies. Subsequently, the research-based and practice-based design propositions were paired on their interventions and mechanisms. A final set of eleven design propositions grounded in literature as well as in practice was then derived. This final set of design propositions can be used to plan and execute transformation programs that are designed for an organization-wide transformation to the AWW.

8.3.2 Practical contributions

The main practical contribution of this study is four-fold, and divided into tangible and intangible contributions. The tangible contributions are the tool and the webinar, and the intangible the bringing together of different departments inside Capgemini around the subject of the AWW, and the founding of a community of practice that is related to the AWW.

From the final set of design propositions a tool was designed that is able to help employees of Capgemini Consulting execute organization-wide transformations to the AWW. A final alpha test was conducted to conclude that that the tool is practically applicable. This is understated by the fact that the tool was used in a winning bid for a transformation program to the AWW for a client organization. Furthermore, a live webinar concerning the subject of organization-wide transformation to the AWW was designed and presented. This webinar was viewed by 250 people. Afterwards, the webinar was posted on YouTube where at the moment of writing it had an additional 290 views.

Alongside the tangible, this study also delivered two intangible contributions. In my research I discovered that the different departments of Capgemini were not sharing their knowledge on organization-wide transformations to the AWW, amongst each other. Through the organizing of The Agile Event I brought the leaders concerning this subject together and stimulated them to share their knowledge. Furthermore, I initiated a community of practice with the main objective of stimulating the inter-departmental sharing of knowledge related to organization-wide transformation to the AWW.

References:

Abbas, N., Gravell, A. M., & Wills, G. B. (2008). Historical roots of agile methods: Where did "Agile thinking" come from? *Lecture Notes in Business Information Processing*, *9 LNBIP*, 94–103.

Abdelnour-Nocera, J., & Sharp, H. (2008). Adopting agile in a large organisation. In *International Conference on Agile Processes and Extreme Programming in Software Engineering* (pp. 42-52). Springer Berlin Heidelberg.

Abrahamson, E. (1996). Management fashion. *Academy of management review*, *21*(1), 254-285.

Agile Alliance. (2017, 14 February). Subway Map to Agile Practices. *Agile Alliance.* Retrieved from: https://www.agilealliance.org/agile101/subway-map-to-agile-practices/.

Van Aken (2014). a Learning and Design Strategy for Research in Complex Settings With a High Human Agency Impact. *Researchgate.Net*.

Van Aken, J., Berends, H. & Van Der Bij, H., (2007). *Problem Solving in Organizations: A Methodological Handbook for Business Students* 1st ed., Cambridge: Cambridge University Press.

Al-Haddad, S., & Kotnour, T. (2015). Integrating the organizational change literature: a model for successful change. *Journal of Organizational Change Management*, *28*(2), 262–234.

Atlas, A. (2009, August). Accidental adoption: The story of scrum at amazon.com. In *IEEE: Agile Conference, 2009. AGILE'09.* (pp. 135-140).

Bang, T.J (2007). Introducing agile methods into a project organization. In Proceedings of the 8th international Conference on Agile Processes in Software Engineering and Extreme Programming, XP'07, pages 203–207, Berlin: Springer-Verlag.

Beavers, P. A. (2007). Managing a Large" Agile" Software Engineering Organization. In *Agile Conference IEEE: (AGILE), 2007* (pp. 296-303).

Beck, K., Beedle, M., Bennekum, A. van, Cockburn, A., Cunningham, W., Fowler, M., … Thomas, D. (2001). Manifesto for Agile Software Development. Retrieved November 3, 2016, from http://agilemanifesto.org/

Benefield, G. (2008). Rolling out agile in a large enterprise. In *IEEE: Hawaii International Conference on System Sciences, Proceedings of the 41st Annual* (pp. 461-461).

Berczuk, S., & Lv, Y. (2010). We're All in This Together. *IEEE Software*, *27*(6).

Berwick, D.M. (1998), "Developing and testing changes in delivery of care", Annals of Internal Medicine, Vol. 128 No. 8, pp. 651-656.

Blumberg, B. (2008). *Business Research Methods.* Berkshire: McGraw-Hill Education.

Bouckenooghe, D. (2010). Positioning Change Recipients' Attitudes Toward Change in the Organizational Change Literature. *The Journal of Applied Behavioral Science*, *46*(4), 500.

Boyd, N. (2009), "Implementing large-scale organization development and change in the states", Public Administration Quarterly, Vol. 33 No. 2, pp. 233-269

Brown, A. W. (2011). A case study in agile-at-scale delivery. *Lecture Notes in Business Information Processing*, *77 LNBIP*, 266–281.

Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization science*, *2*(1), 40-57.

Buchanan, D., Fitzgerald, L., Ketley, D., Gollop, R., Jones, J. L., Lamont, S. S., ... & Whitby, E. (2005). No going back: A review of the literature on sustaining organizational change. *International Journal of Management Reviews*, *7*(3), 189-205.

Van Burg, E., Romme, A. G. L., Gilsing, V. A., & Reymen, I. M. M. J. (2008). Creating university spin-offs: A science-based design perspective. *Journal of Product Innovation Management*, *25*(2), 114–128.

Capgemini Consulting (2015). CDC – Change Management Fundementals (PowerPoint slides).

Chrusciel, D. and Field, D.W. (2006), "Success factors in dealing with significant change in an organization", Business Process Management Journal, Vol. 12 No. 4, pp. 503-516.

Chung, M. W., & Drummond, B. (2009). Agile at yahoo! from the trenches. In *Agile Conference, 2009. IEEE: AGILE'09.* (pp. 113-118).

Cloke, G. (2007). GET YOUR AGILE FREAK ON! Agile Adoption at Yahoo ! Music Agile Adoption within Yahoo! Music.

Cockburn A. and Highsmith J. (2001). "Agile Software Development: The Business of Innovation." Computer 34(9): 120-127.

Cohen D., Lindvall M. and Costa P. (2004). "An Introduction to Agile Methods." Advances in Computers: 1-66.

Cole, M.S., Harris, S.G. and Bernerth, J.B. (2006), "Exploring the implications of vision, appropriateness, and execution of organizational change", Leadership & Organization Development Journal, Vol. 27 No. 5, pp. 352-67.

Conboy, K., Coyle, S., Wang, X., & Pikkarainen, M. (2011). People over process: Key challenges in agile development. *IEEE Software*, *28*(4), 48.

Cowan, C. L. (2011). When the VP is a scrum master, you hit the ground running. In *IEEE: Agile Conference (AGILE), 2011* (pp. 279-283).

Cunningham, J.B. and Kempling, J.S. (2009), "Implementing change in public sector organizations", Management Decision, Vol. 47 No. 2, pp. 330-44.

Dansereau, F. and Markham, S.E. (1987), "Superior-subordinate communication: multiple levels of analysis", in Jablin, F.M., Putnam, L.L., Roberts, K.H. and Porter, L.W. (Eds), Handbook of Organizational Communication: An Interdisciplinary Perspective, Sage, Beverly Hills, CA, pp. 343-88.

Denning, S. (2015). How to Make the Whole Organization Agile. *Strategy & Leadership*, *43*(6), 10–17.

Denyer, D., Tranfield, D., & Van Aken, J. E. (2008). Developing design propositions through research synthesis. *Organization Studies*, *29*(3), 393–413.

Dikert, K., Paasivaara, M., & Lassenius, C. (2016). Challenges and success factors for large-scale agile transformations: A systematic literature review. *Journal of Systems and Software*, *119*, 87–108.

Drury-Grogan, M. L. (2014). Performance on agile teams: Relating iteration objectives and critical decisions to project management success factors. *Information and Software Technology*, *56*(5), 506–515.

Evans, M. (2008). The FrAgile Organisation. In *IEEE: Agile, 2008. AGILE'08. Conference* (pp. 181-185).

Farrow, A., & Greene, S. (2008). Fast & predictable a lightweight release framework promotes agility through rhythm and flow. In *IEEE: Agile, 2008. AGILE'08. Conference* (pp. 224-228).

Federoff, M., & Courage, C. (2009). Successful user experience in an agile enterprise environment. In *Symposium on Human Interface* (pp. 233-242). Springer Berlin Heidelberg.

Feldman, M. S. (2000). Organizational routines as a source of continuous change. *Organization science*, *11*(6), 611-629.

Ford, R., Heisler, W. and McCreary, W. (2008), "Leading change with the 5-p model: 'complexing' the swan and Dolphin hotels at Walt Disney world", Cornell Hospitality Quarterly, Vol. 49 No. 2, pp. 191-205.

Frahm, J. and Brown, K. (2007), "First steps: linking change communication to change receptivity", Journal of Organizational Change, Vol. 20 No. 3, pp. 370-87.

Ganguly, A., Nilchiani, R., & Farr, J. V. (2009). Evaluating agility in corporate enterprises. *International*

Journal of Production Economics, *118*(2), 410–423.

Gat, I. (2006, July). How BMC is scaling agile development. In *IEEE*: *AGILE 2006 (AGILE'06)* (pp. 6-12).

Goos, J., & Melisse, A. (2008). An Ericsson example of enterprise class agility. In *Agile 2008 Conference*.

De Groot, A. D. 1969. *Methodology: Foundations of Inference and Research in the Behavioral Sciences*. Den Haag: Mouton.

Hajjdiab, H., Taleb, A. S., & Ali, J. (2012). An industrial case study for scrum adoption. *Journal of Software*, *7*(1), 237-242.

Hamel, G. (2000), Leading the Revolution, Harvard Business School Press, Boston, MA.

Hansen, M. T., & Baggesen, H. (2009). From CMMI and isolation to Scrum, Agile, Lean and collaboration. In *IEEE*: *Agile Conference, 2009. AGILE'09.* (pp. 283-288).

Harrison, S., & Dourish, P. (1996). Re-placing space. *Proceedings of the 1996 ACM Conference on Computer Supported Cooperative Work - CSCW '96*, *7*, 67–76.

Jansen, K. J. (2004). From persistence to pursuit: A longitudinal examination of momentum during the early stages of strategic change. *Organization Science*, *15*(3), 276-294.

Kiron, D., Kane, G. C., Palmer, D., Phillips, A. N., & Buckley, N. (2016). Aligning the Organization for its Digital Future. *MIT Sloan Management Review*, *58*(1).

Klidas, A., Berg, P. T. Van Den, & Wilderom, C. P. M. (2007). Managing employee empowerment in luxury hotels in Europe. *International Journal of Service Industry Management*, *18*(1), 70–88.

Kotnour, T. (2011), "An emerging theory of enterprise transformations", Journal of Enterprise Transformation, Vol. 1 No. 1, pp. 48-70.

Kotter, J.P. (1996), *Leading Change*. Harvard Business School Press, Boston, MA

Laanti, M. (2008). Implementing program model with agile principles in a large software development organization. In *2008 32nd Annual IEEE International Computer Software and Applications Conference* (pp. 1383-1391).

Larman C. (2004). Agile and Iterative Development: A Manager's Guide. C. Alistair and H. Jim, Pearson Education, Inc.

Larman, C., & Basili, V. R. (2003). Iterative and incremental developments. a brief history. *Computer*, *36*(6), 47–56.

Lee, E. C. (2008). Forming to performing: Transitioning large-scale project into agile. In *Agile 2008 Conference*.

Lewis, J., & Neher, K. (2007). Over the waterfall in a barrel - MSIT adventures in scrum. *Proceedings - AGILE 2007*, 389–394.

Lines, R. (2007), "Using power to install strategy: the relationships between expert power, position power, influence tactics and implementation success", Journal of Change Management, Vol. 7 No. 2, pp. 143-70.

Linstead, S. and Chan, A. (1994), "The sting of organization: command, reciprocity and change management". Journal of Organizational Change Management, Vol. 7 No. 5, pp. 4-19.

Long, K., & Starr, D. (2008, August). Agile supports improved culture and quality for healthwise. In *IEEE*: *Agile, 2008. AGILE'08. Conference* (pp. 160-165).

Maples, C. (2009). Enterprise agile transformation: The two-year wall. In *IEEE*: *Agile Conference, 2009. AGILE'09.* (pp. 90-95).

Massey, L., & Williams, S. (2006). Implementing change: the perspective of NHS change agents. *Leadership & Organization Development Journal*, *27*(8), 667-681.

McAffee, A., Westerman, G., and Bonnet, D., (2014). *Leading Digital: Turning Technology into Business Transformation*. Boston, MA: Harvard Business Review Press.

Mencke, R. (2008). A Product Manager's Guide to Surviving the Big Bang Approach to Agile Transitions. In *IEEE*: *Agile, 2008. AGILE'08. Conference* (pp. 407-412).

Moe, N. B., Šmite, D., Šāblis, A., Börjesson, A. L., & Andréasson, P. (2014). Networking in a large-scale distributed agile project. In *Proceedings of the 8th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement* (p. 12).

Moore, E., & Spens, J. (2008). Scaling agile: Finding your agile tribe. In *IEEE*: *Agile, 2008. AGILE'08. Conference* (pp. 121-124).

Moran, J.W. and Brightman, B.K. (2001), "Leading organizational change", Career Development International, Vol. 6 No. 2, pp. 111-118.

Minto, B. (2009). *The pyramid principle: logic in writing and thinking*. Boston, MA: Pearson Education.

Nelissen, P. and van Selm, M. (2008), "Surviving organizational change: how management communication helps balance mixed feelings", Corporate Communications: An International Journal, Vol. 13 No. 3, pp. 306-18.

Nerur, S., Mahapatra, R., & Mangalaraj, G. (2005). Challenges of Migrating to Agile Methodologies. *Communications of the ACM*, *48*(2), 72–78.

Nicholas, J.M. and Steyn, H. (2008), *Project Management for Business, Engineering, and Technology: Principles and Practice*. Burlington, MA: Elsevier Butterworth Heinemann.

Nuottila, J., Aaltonen, K., & Kujala, J. (2016). Challenges of adopting agile methods in a public organization. *International Journal of Information Systems and Project Management*, *4*(3), 65–85.

O'Connor, C. P. (2010). Letters from the edge of an agile transition. *Proceedings of the ACM International Conference Companion on Object Oriented Programming Systems Languages and Applications Companion, SPLASH '10*, 79–84.

Van Olffen, W., Visser, W., Maas, R. (2016). CHANGE CANVAS denkmodel voor diepgaande verandering. *Unpublished.*

Osterwalder, A., & Pigneur, Y. (2010). Business model canvas. *Self published.*

Paasivaara, M., Behm, B., Lassenius, C., & Hallikainen, M. (2014). Towards rapid releases in large-scale XaaS development at Ericsson: A case study. *Proceedings - 2014 IEEE 9th International Conference on Global Software Engineering, ICGSE 2014*, 16–25.

Paper, D.J., Rodger, J.A. and Pendharkar, P.C. (2001), "A BPR case study at Honeywell", Business Process Management Journal, Vol. 7 No. 2, pp. 85-99.

Parker, D., Charlton, J., Ribeiro, A., & Pathak, R. D. (2013). Integration of project-based management and change management. *International Journal of Productivity and Performance Management*, *62*(5), 534–544

Pfeifer, T., Schmitt, R., & Voigt, T. (2005). Managing change: quality-oriented design of strategic change processes. *The TQM Magazine*, *17*(4), 297–308.

Pietersen, W. (2002), "The Mark Twain dilemma: the theory and practice of change leadership", The Journal of Business Strategy, Vol. 23 No. 5, pp. 32-7.

Pinheiro, R. E. (2010). Organizational change and employee empowerment---a grounded theory study in lean manufacturing integration into a traditional factory environment (Doctoral dissertation, Capella University).

Pitkänen, A. (2015). Agile Transformation: A case study.

Plsek, P., Bibby, J., & Whitby, E. (2007). Practical methods for extracting explicit design rules grounded in the experience of organizational managers. *The Journal of Applied Behavioral Science*, *43*(1), 153-170.

Prokhorenko, S. (2012, August). Skiing and boxing: Coaching product and enterprise teams. In *IEEE*: *Agile Conference (AGILE), 2012* (pp. 191-196).

Ranganath, P. (2011). Elevating Teams from 'Doing' Agile to 'Being' and 'Living' Agile. In *AGILE* (pp. 187-194).

Reymen, I., (2014). Design Science Methodology Lecture 4: Methodological cycles: Data collection and analysis. Presentation Design Science Methodology.

Rodríguez, P., Mikkonen, K., Kuvaja, P., Oivo, M., & Garbajosa, J. (2013). Building lean thinking in a telecom software development organization: strengths and challenges. In *ACM: Proceedings of the 2013 International Conference on Software and System Process* (pp. 98-107).

Rodríguez, P., Markkula, J., Oivo, M., & Turula, K. (2012). Survey on agile and lean usage in Finnish software industry. In *Proceedings of the ACM-IEEE international symposium on Empirical software engineering and measurement* (pp. 139-148).

Ryan Jr, J. J., & Scudiere, R. (2008, August). The price of agile is eternal vigilance. In *IEEE: Agile, 2008. AGILE'08. Conference* (pp. 125-128).

Scaled Agile. (2017, March 10). Leading SAFe 4.0 with SA Certification. Retrieved from http://www.scaledagile.com/leading-safe/

Schatz, B., & Abdelshafi, I. (2006). The agile marathon. In *AGILE 2006 (AGILE'06)* (pp. 8-16).

Schnitter, J., & Mackert, O. (2011). Large-Scale Agile Software Development at SAP AG. *Communications in Computer and Information Science*, *230*, 209–220.

Schuh, P. (2004). Integrating Agile Development in the Real World, Charles River Media Inc.

Seffernick, T. R. (2007, August). Enabling Agile in a Large Organization Our Journey Down the Yellow Brick Road. In *AGILE* (pp. 200-206).

Sekitoleko, N., Evbota, F., Knauss, E., Sandberg, A., Chaudron, M., & Olsson, H. H. (2014, May). Technical dependency challenges in large-scale agile software development. In *International Conference on Agile Software Development* (pp. 46-61).

Self, D. R., Armenakis, A. A., & Schraeder, M. (2007). Organizational change content, process, and context: A simultaneous analysis of employee reactions. *Journal of change management*, *7*(2), 211-229.

Shields, J.L. (1999), "Transforming organizations", Information Knowledge Systems Management, *1*(2), 105-110.

Sidorko, P. E. (2008). Transforming library and higher education support services: can change models help? *Library Management*, *29*(4/5), 307-318.

Silva, K., & Doss, C. (2007). The growth of an agile coach community at a fortune 200 company. *Proceedings - AGILE 2007*, 225–228.

Sink, D.S., Johnston, C.S. and Morris, W.T. (1995), By What Method? Are You, Developing the Knowledge and Skills to Lead Large-Scale Quality, Norcross, GA: Industrial Engineering and Management Press, Institute of Industrial Engineers.

Smiciklas, M. (2012). The Power of Infographics: Using Pictures to Communicate and Connect with Your Audience. *The power of infographics*.

Smits, H., & Rilliet, K. (2011). Agile experience report: Transition and complexity at cisco voice technology group. In *IEEE: Agile Conference (AGILE), 2011* (pp. 274-278).

Spayd, M. K. (2003). Evolving agile in the enterprise: Implementing XP on a grand scale. *Proceedings of the Agile Development Conference, ADC 2003*, 60–70.

Van Strien, P. (1997) 'Towards a methodology of psychological practice: The regulative cycle'. *Theory & Psychology* 7(5): 683-700.

Szabla, D. (2007), "A multidimensional view of resistance to organizational change: exploring cognitive, emotional, and intentional responses to planned change across perceived change leadership strategies", Human Resource Development Quarterly, Vol. 18 No. 4, pp. 525-58.

Szetela, B., & Mentel, G. (2016). May the sharing economy create a new wave of globalization?

Tichy, N. M. 1983 Managing Strategic Change: Technical, Political and Cultural Dynamics. Chichester: Wiley International.

Todnem By, R. (2005). Organisational change management: A critical review. *Journal of change management*, *5*(4), 369-380.

Vera, D., & Crossan, M. (2003). Organizational learning and knowledge management: Toward an integrative framework.

Version One (2016). The 10th Annual State of Agile Report. Retrieved from http://stateofagile.versionone.com/.

Vlaanderen, K., van Stijn, P., Brinkkemper, S., & van de Weerd, I. (2012, June). Growing into agility: process implementation paths for scrum. In *International Conference on Product Focused Software Process Improvement* (pp. 116-130). Springer Berlin Heidelberg.

Weick, K. E. 1995. *Sensemaking in Organizations*. London: Sage Publications

Wendler, R. (2013). The Structure of Agility from Different Perspectives. *… Science and Information Systems (FedCSIS), 2013 …*, 1165–1172.

Whelan-Berry, K. ., & Somerville, K. A. (2010). Linking Change Drivers and the Organizational Change Process: A Review and Synthesis. *Journal of Change Management*, *10*(2), 175–193.

Yin, R. K. 1994. *Case Study Research: Design and Methods*. Thousand Oaks: Sage Publications (second edition).

Zook, C. (2007), "Finding your next CORE business", Harvard Business Review, Vol. 85 No. 4, pp. 66-75.

Zurcher, F. W., & Randell, B. (1968, August). Iterative multi-level modelling. A methodology for computer system design. In *IFIP Congress (2)* (pp. 867-871).