

Introducing Agility into Strategic Value Management of an OEM

Jonas Heimicke*

Karlsruhe Institute of Technology, Kaiserstraße 12, D-76131 Karlsruhe,
Germany
E-mail: jonas.heimicke@ipek.kit.edu

Yannick Reuter

E-mail: yannick.reuter@gmail.com

Johannes Müller

E-mail: johannes.mueller2@partner.kit.edu

Andy Grau

E-mail: grau.andy@icloud.com

Hendrik Sebastian

E-mail: hendrik.sebastian88@gmail.com

Univ.-Prof. Dr.-Ing. Dr. h. c. Albert Albers

E-mail: sekretariat@ipek.kit.edu

* Corresponding author

Abstract: Global trends such as e-mobility, digitalization, and sustainability pose major challenges to the automotive industry. Established brands are being put to the test and are required to find innovative solutions away from established core competencies. Due to a lack of internal knowledge about new technologies, external partners are often called in. It must be strategically determined which scopes are to be processed in-house or outsourced. To withstand the global transformation, internal process adjustments are required in strategic value management. Flexibility in decision-making plays a major role.

For this purpose, an agile methodology was developed based on the ASD - Agile Systems Design approach to methodically support the process of strategic decisions. The process for the strategic alignment of the vertical integration creates a sound basis for decision-making for top management and therefore helps to make a valid choice.

Keywords: Strategic Value Management; Agility applied; ASD - Agile Systems Design; Change management; Case Study; Vertical Integration; Strategic Partnership

1 Motivation

The automotive industry is undergoing a transformation characterized by high principle variation in key subsystems. The change follows global trends that are gaining importance due to increasing market and competitive pressure. Examples include the shift to locally emission-free drive concepts, autonomous driving but also decarbonization across the entire value chain (McKinsey&Company 2016). The performance and enthusiasm requirements according to Kano (Sauerwein 2000, p. 27-55) which ensure a purchase decision by the customer, are changing. In order to meet these requirements, collaboration models are coming more into focus than before (Dumitrescu et al. Fraunhofer IEM, p. 105). In order to be able to continue to operate successfully in this field in the long term, strategic decisions must be made with regard to the realization of technologies in the area of the aforementioned topics. The choice of technology source plays a central role here. But first it must be clarified which concrete technologies for the next vehicle generations have the potential to realize the relevant customer and user benefits and at the same time increase the supplier benefits (Albers, A., Heimicke, J., Walter, B., Basedow, G. N., Reiß, N., Heitger, N., Ott, S., Bursac, N. 2018). Looking into the future raises uncertainties, where according to Muschik's definition (2011) several results are possible. In addition, the situation described here takes place in a dynamic development environment where many employees and several areas of a company are affected. Concluding from the above, the design of change requires a methodical approach, a process solution that integrates all relevant stakeholders and thus enables decisions to be made from an overall corporate perspective. This is where *strategic value management* comes into play, coordinating the decisions described above between management and specialist departments and establishing a company-wide, consistent reference system (Albers et al. 2018).

Agile approaches in strategic project management help here in dealing with the dynamic development environment. The further development of *strategic value management* with a focus on the introduction of agile approaches is supported by a framework for building and introducing use case-specific agile process solutions, taking into account requirements from the development of physical products (Heimicke et al. 2021, pp. 619-624). On the one hand, a use case-specific process solution is to be developed and introduced, thus improving the existing process in *strategic value management*. On the other hand, this process improvement is to be used as a case study to further develop the framework for the development and introduction of agile process solutions in the processes of manufacturing companies.

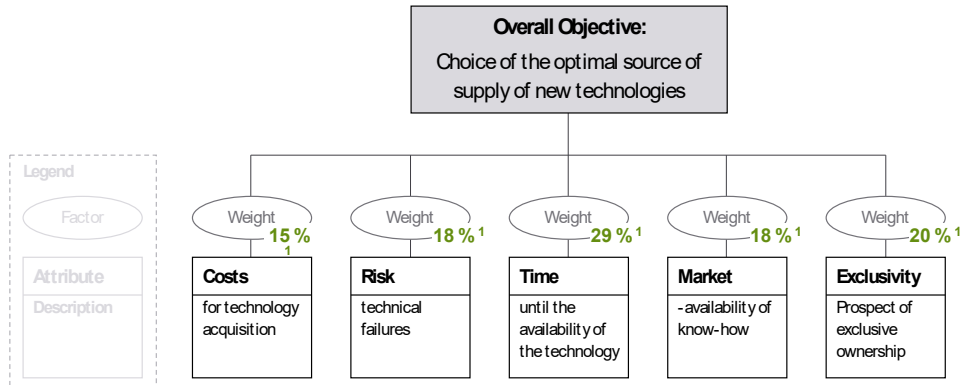
2 State of the Art

Approaches to support strategic value management

Strategic technology management subsumes those tasks of corporate management that concern the creation and control of technological and market-oriented success positions of a company (Brem 2012, p. 12).

The future orientation of a company with regard to the internal depth of value creation affects all areas of the company and must be based on objective criteria (Brem 2012, p.

66). This is where models such as the make-or-buy decisions in strategic technology management described by Brem (2012) or the in-house production or external procurement of new technology described by Hermes (1995) come into play. Both works focus on a structured process for identifying a suitable source of technology sourcing. Brem develops a scoring model for the evaluation of individual sources of supply, Hermes shows a multitude of criteria which can support the decision-making process.



¹) Empirically determined according to Hermes, individually adaptable

Figure 1: Selection of a suitable technology reference source according to Hermes (1995, p. 101)

Agile approaches in manufacturing companies

Product development in traditional manufacturing companies is usually stage-gate oriented and release-related (Schmidt et al. 2018). Waterfall process solutions have already been established for several decades (Cooper and Sommer 2016). Due to the addition of usage and business models over time and evolving baseline, performance, and enthusiasm characteristics, agility is becoming increasingly important in the development of mechatronic systems. Customer and user involvement is becoming more important, and the systematic handling of development risks is also gaining in significance (Albers et al. 2017). In addition, product developments are increasingly enriched with services and organized in so-called systems of systems. The complexity of validation is increasing accordingly (Jonas Heimicke et al. 2021).

Agility in the base describes a set of values, principles and practices that originate from hardware development (Takeuchi and Nonaka 1986) and have established themselves as common practice in software development (Heimicke et al. 2021). Agility was defined in the context of the Agile Manifesto. This is composed of the following four core values (Agile Manifesto, 2001):

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Process models such as Scrum or Design Thinking exist to realize these values. Both approaches are based on iterative procedures and flat hierarchical structures. Scrum offers a

framework for agile project development based on time-limited sprints. The participants of the project team have an equally high responsibility and are divided into Product Owner, Development Team and Scrum Master with different focus areas. Kick-off and review meetings are held for each work phase. A backlog is an essential component and serves as a continuous topic repository for the project. At the end of each sprint there are increments whose maturity level has not yet been determined at the beginning of the phase (Schwaber and Sutherland 2020). The design thinking method is based on creative collaboration (Meinel and Thienen 2016). The focus is on teamwork and communication in inspiring spaces. The environment provides the opportunity for early, continuous validation. However, challenges arise when introducing these approaches into hardware development (Goevert et al. 2019; Zimmermann et al. 2019). One of the core principles of agile approaches is the continuous realization and validation of functional partial results of products. In the software domain, this is possible, but not in the physical domain due to fundamental physical conditions (Schmidt et al. 2018). Nevertheless, some of the principles can be partially transferred to the development of mechatronic systems (Schmidt et al. 2017). The principles are introduced into the processes through methods and practices (Albers et al. 2020). The principles have different relevance depending on the use case (Heimicke et al. 2021). The focus is thus on an approach that promotes the realization of agile principles in line with the situation and requirements: ASD - Agile Systems Design. ASD is based on eight fundamental principles that support users in implementation (Albers et al. 2019). The principles are:

- *The developer is the center of product development*
- *Each product development process is unique and individual*
- *Agile, situation- and demand-oriented combination of structuring and flexible elements*
- *Each process element can be located in the system triple and each activity is based on the fundamental operators analysis and synthesis*
- *All activities in product engineering are to be understood as a problem-solving process. Each product is developed on the basis of references*
- *Product profiles, invention and business model form the necessary components of the innovation process*
- *Early and continuous validation serves the purpose of continuous comparison between the problem and its solution*
- *For a situation- and demand-oriented support in every development project, methods and processes must be scalable, fractal and adaptable*

Within the ASD it is possible to work on different levels. This narrows down the solution space and increases the quality of the results already in advance. In ASD - Agile Systems Design, the development follows the model of PGE - product-generation development according to Albers (2018) and thus agility is not implemented randomly, but systematically (see Figure 2).

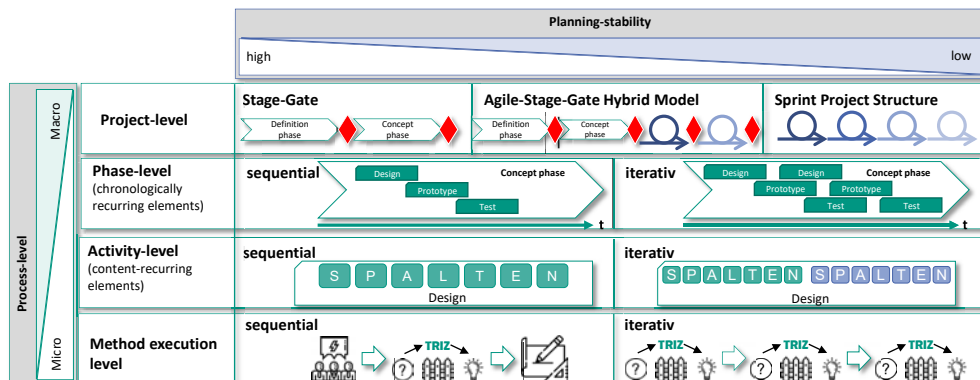


Figure 2 Project Levels according to ASD – Agile Systems Design to combine agile and process-oriented approaches (Albers et al. 2019)

Methodical introduction of agile elements into the company processes

In order to realize the principles of ASD-Agile Systems Design according to the situation and requirements by means of a suitable combination of agile and traditional process elements, Heimicke et al. (2020) present a problem-solving process for the use case-specific development and introduction of an agile-structured process solution. (Heimicke et al. 2021) The framework for the development and introduction of agile process solutions into the processes of producing companies helps on the one hand with the understanding and explication of the present situation. In addition, a use case-specific process solution consisting of agile and process-oriented approaches is developed that addresses both strategic and operational project levels. Furthermore, iterative work is supported and success is constantly measured for continuous improvement (Albers et al. 2016).

Specifically, when applying the ASD method, a situation analysis including problem delimitation is first performed with the involvement of all stakeholders (Albers et al. 2020). The image of the current state is called a specific method profile. Subsequently, an abstraction of the specific method profile is carried out in preparation for finding a solution. This is oriented along context levels and fields of action that map the area of improvement. From an existing catalog of 229 elements, 20 contents relevant for the use case are selected and the generic problem definition is documented. This is then used to calculate a use case-specific weighting of the basic principles. It can be seen which ASD principles have the greatest fit to the current situation (Albers et al. 2020).

To enable use case-specific access to the collection of methods provided within the framework for the development and introduction of agile process solutions into the processes of producing companies, suitable methodological elements and process models are recommended at the macro level by means of the algorithm according to Ng (2021).

On the basis of the recommended methodical elements of strategic and operational level the user selects now the elements most suitable for the process environment. The suitability is described by the calculated fit and a qualitative parameter that measures the potential for successful implementation. Subsequently, strategic and operational elements are linked to

a holistic process solution and iteratively introduced. This is followed by the continuous measurement of success by means of use-case-specific metrics.

This is followed by a success measurement according to Blessing and Chakrabati (2009, p. 184), which validates the application with regard to several dimensions. Figure 2 describes the phases of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies, including abstraction from specific initial situation into the generic.

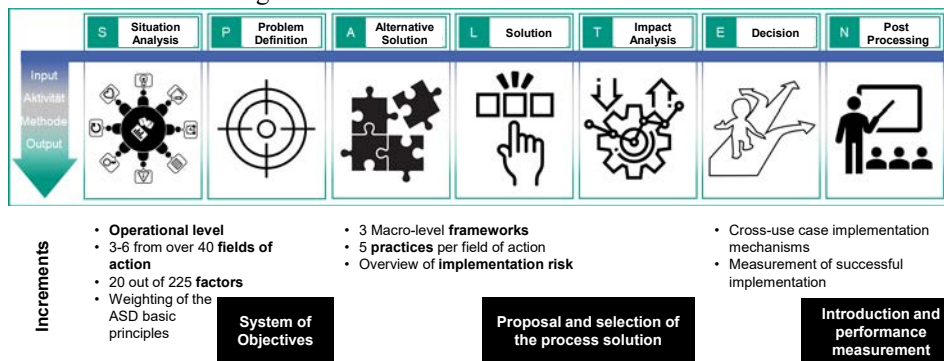


Figure 3: Flow Chart application

3 Research Profile

Aim of Research

To be able to react to the changes described in chapter one due to the changed priority of subsystems in the automotive industry and to position a company successfully in the long term, the strategic orientation of value creation through a structured process is essential. For this purpose, the actual process of *strategic value management* should first be understood in order to derive targeted improvement potentials. A framework for the development and introduction of agile process solutions in the processes of producing companies will support this. Furthermore, this will be validated with regard to success, applicability and usefulness. (Blessing and Chakrabarti 2009). The aim is to create a holistic process solution that combines agile and process-oriented elements to support the decision-making process in the *strategic value management* of a German OEM at the strategic and operational level. To achieve the objective, the following three research questions are answered:

Research question 1: What specific needs exist with regard to the preparation of a decision-making basis in the context of *strategic value management*?

Research question 2: What is the design of a holistic process solution that supports the decision preparation process in the context of strategic value creation?

Research question 3: What conclusions can be drawn about the applicability, success and support of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies in the context of the case study?

Research Methodology & Research Environment

The research questions are carried out in the department to which the responsibility of *strategic value management* of a German OEM in the automotive industry is attributed. The task of *strategic value management* is to organize the optimal depth of value creation for the automobile manufacturer in the future.

Three different roles are distinguished in *strategic value management*: The business office acts as a facilitator and enables the committee work to proceed on schedule. The specialist departments act as experts on the topic under discussion and contribute the necessary background knowledge. Area coordinators work hand in hand with the business owners and provide the interface to the committee work.

The procedure to answer the three research questions is structured using the DRM - Design Research Methodology (Blessing and Chakrabarti 2009) and is operationalized by the framework for developing and introducing agile process solutions into the processes of manufacturing companies.

In clarifying the object of research, the initial focus is on the literature review, which maps the state of research. The focus here is on identifying criteria that structure and justify the choice of a technology development form. The specification of these criteria in combination with the requirement of responsiveness results in the necessity of this work - the research gap. The next step is the analysis of the existing system and the requirements for the new process solution. Here, interviews and existing tasks are used to create a requirements sheet. The results of this answer research question one in the context of descriptive study I. The result of the subsequent prescriptive study is the process proposal, which - iteratively developed and piloted - rationally draws the target picture Make / Buy / Partnership and thus represents the basis for decision-making. Finally, in the context of the descriptive study II, the elaborated process solution is validated in the company. The validation of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies is also recorded with regard to the dimensions of application, success and expediency (Blessing and Chakrabarti 2009) are recorded. In the development of the process solution, a small-step and result-oriented approach is taken at the interface of strategic and operational elements.

4 Results

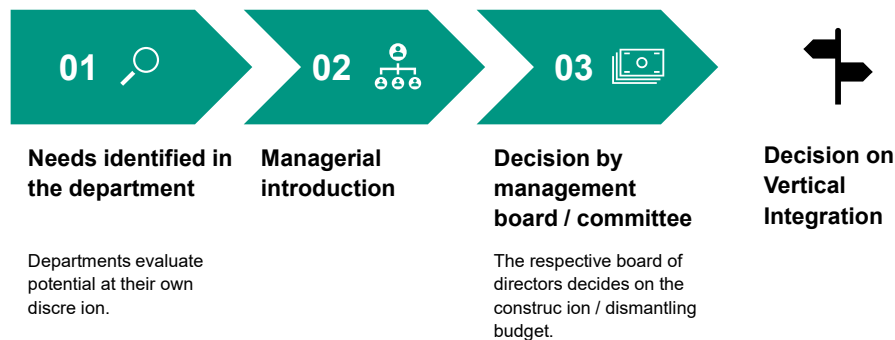
Status and potential for improvement in strategic value management

The reference system for *strategic value management* is described below. First, the stakeholders involved are discussed and then the existing process is described. The goal is to abstract the situation by means of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies to a generic level while identifying potential for improvement.

A closer look at all stakeholders reveals a division into provider, customer and user of the process improvement. The provider initially represents the office of the committee and is primarily responsible for the development of this process solution. The greatest benefit of a process solution to be developed from the provider's point of view is a reproducible

process with a clear definition of responsibilities and thus a reduction of redundant activities and rework, as well as a tool-supported procedure. The customer of this process solution is the company represented by the management. Well-founded, as well as coordinated templates serve the management later as a basis for decision-making. In the framework, users represent the business owners who align their day-to-day business according to directional decisions from the board. The business owners concerned work closely with the respective area coordinators on strategic decisions. The so-called area coordinators act as contact persons in the context of *strategic value management* and are trained as process owners. The most important added values of the process solution for a business owner are valid process-related framework conditions for the alignment of future projects as well as a defined process with templates and clear instructions for the development of a decision-making basis.

Up to now, make-or-buy decisions have largely been made internally (see Figure 3 for the actual process). For example, if a corresponding need is identified in the department itself (01), it is discussed with the manager whether it makes sense to create a new position (02). If the team agrees on the creation of a new position, the manager takes the need to the department's internal decision-making bodies to secure the budget (03). The decision made here is binding. One element to be preserved from this procedure is the flexibility to make decisions. One of the biggest problems of the IST process, however, is the lack of integration of different stakeholders.



Improvement potential:

Diversification of input source & involvement of cross-departmental stakeholders

Figure 4: Existing process solution (status quo)

This represents great potential for improvement for the strategically valid alignment of the company. In addition, the process for topic identification and evaluation of technology reference sources should be separated. This is where the panel and the process solution described below come into play.

The specific method profile (Figure 4) summarizes analysis results from the company. The division of provider, user, and customer is explained as well as the target process solution is specified. The method profile was developed in consultation with people from the company and forms the basis for the creation of the generic method profile.

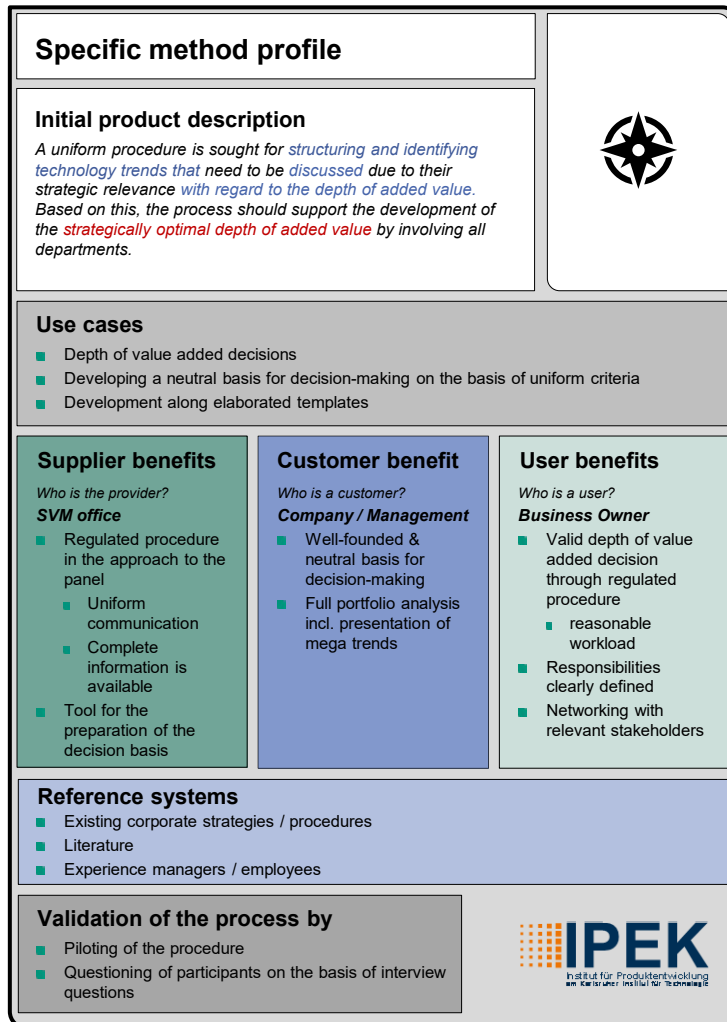


Figure 5: Specific method profile

Figure 5 shows the selected context levels, as well as fields of action and factors. The situation analysis based on the method profile was used to select the appropriate context levels, specifically the analysis of the stakeholders (provider, user and customer). It becomes clear that changes cannot be made to the individual, but much more to the remaining three context levels. Thus, the company, management and project levels are the focus of further consideration.

To determine the relevant fields of action, a pairwise comparison is carried out. The results are the main topics of individual thinking and working methods, cooperation and performance. The individual way of thinking and working should be particularly emphasized: This shows particular relevance with regard to the subsequent process solution. Templates and methods are valuable to support the process, but must allow the user a certain amount of leeway to implement their own procedures.

In order to select the factors, the areas of the pre-selected fields of action are first searched. In addition, a look is taken at the entire list in order not to overlook any factors that may still apply. The factors *top-down unity*, *iterative process design and continuous improvement of processes* are particularly applicable to the situation in the company of the case study and should therefore be emphasized. Specifically, this means that process solutions and outcomes are supported by the management concerned. In addition, a small-step process design is desired. The factors iterative process design and continuous improvement of processes fit this.

ASD principles are derived from the input sizes in descending order of priority. For this use case, the following order applies (selection of the top four):

- People are at the centre of product creation ($\approx 20\%$)
- Each process element can be located in the ZHO model and each activity is based on the basic operators of analysis and synthesis ($\approx 14\%$).
- Agile, situation- and demand-oriented combination of structuring and flexible elements ($\approx 13\%$)
- Early and continuous validation serves the continuous alignment between problem and its solution ($\approx 13\%$)

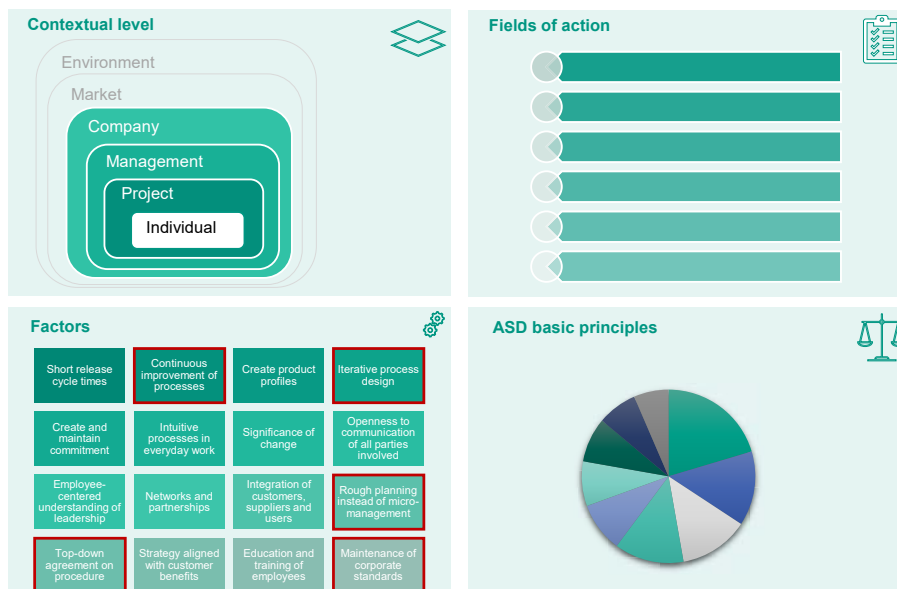


Figure 6: Generic Method profile

Agile process to support strategic value management

In the following, the generic method proposals of the framework for the development and introduction of agile process solutions into the processes of producing companies will be presented and their integration into the final process solution will be shown.

After selecting the corresponding context levels, fields of action and factors, the following results become apparent: The choice of the process model at the macro level falls on iPeM,

because here the greatest agreement emerges with regard to suitability in relation to the ASD principles (agreement approx. 83 %) as well as the fields of action (approx. 79 % fit). The top three results at the macro level also include the VDI2221 process model and the Agile-Stage-Gate by Cooper approach. However, the fit with regard to the ASD principles shows a delta of greater than 10 % compared to the iPeM.

Also evaluated are the generic method proposals. Particularly noteworthy is the method of *early incremental planning*. This distributes the number of topics to be dealt with evenly over the year, thus increasing the benefit for the provider, user and customer while at the same time enabling them to react to change. Incremental work leads to a higher value outcome. This is due to early feedback loops that are based on clear target images. Thus, iteration loops should be provided as agile elements in the final process solution. Furthermore, the *active participation of stakeholders* is attributed a major role, because as already mentioned, decision-making bases must be coordinated with all affected management levels. *Moderated workshops* are another method that should be used at the operational level.

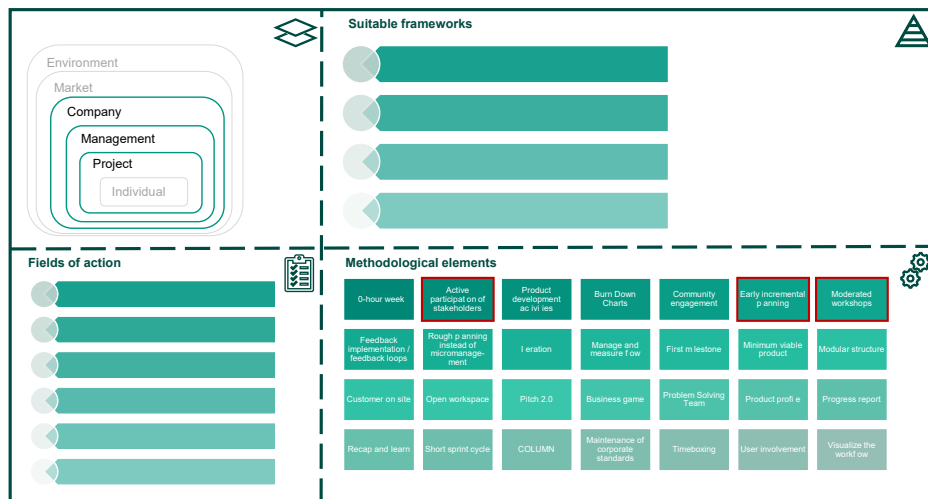


Figure 7: Methodology profile

In the use case, the process improvement was to be conceptualized on the one hand, but also implemented on the other. Therefore, the implementation of the process solution was designed and carried out. It should first be noted that the process solution is divided into two sub-steps. The first sub-step focuses on the identification of relevant technologies for discussion, after which the appropriate technology reference source is evaluated in sub-step two. A synonym for sub-step two is the development of a value creation strategy. The focus is now on the first part of the process solution for identifying relevant potential fields with regard to a discussion in the context of *strategic value management*. The process plan for the identification of relevant potential fields agrees on named points of criticism of the existing action system, involves all necessary stakeholders including management through the integration of the area coordinators and creates transparency in the topic reporting. The process is carried out on an annual basis and, in addition to ad hoc topic reports, serves to fill the committee agenda. The core element is a heat map in which the company's portfolio is recorded. The process solution shows a way of working with the heat map in the context of *strategic value management* and is based on individual activities

to which clear results and responsibilities are linked. Each activity is accompanied by a methodological proposal, which is intended to serve as a recommendation to the user. This is followed by the execution of the individual activities:

Check up-to-dateness of portfolio and expand if necessary

The process solution begins with a review of the portfolio. The portfolio is the central element in process step one and must first be built up or brought up to date. Activity one focuses on the complete mapping of the entire company portfolio with regard to several dimensions. The methodology for this activity is a template-supported reference system analysis.

Pre-prioritisation portfolio

This is followed by the first step of evaluating the portfolio. The first step is to look at existing references. These include corporate strategies of varying granularity. Also to be taken into account are trend-setting decisions from other management circles. Important for each pre-prioritization is the commenting of the source including the presentation of an argumentation. The frequency is planned to be at least once a year.

Bottom-up assessment

If the strategic relevance for discussion in the context of *strategic value management* cannot be determined for all topics during the pre-prioritization, an indication must be made by the area coordinators. Methodologically, this activity is supported by expert interviews with the various business owners. The basis for conducting interviews is a fact sheet with hypotheses on strategic relevance. This creates a uniform level of discussion. The bottom-up assessment is carried out on the basis of fixed guidelines that are laid down in the Relevance Assessment Template.

Discussion Top 20 potential fields

In order to consolidate the bottom-up assessment, a discussion is sought within the framework of the area coordinators. Pre-prioritizations, interview results are compiled, previously visualized in the portfolio and jointly checked for plausibility. Particularly important are the topics that are among the top 20 most relevant topics with regard to a discussion in *strategic value management*. With regard to one of the next steps - the alignment with management opinion - each of the top 20 topics must be provided with a well-founded argumentation. Disagreements between the areas that cannot be resolved must be recorded in the workshops moderated by the office.

Comparison with agenda memory

The aim of comparing the top 20 topics with the agenda memory is to enrich the evaluation with decisions of past committees. When creating the agenda memory, a distinction must always be made between committee decisions and orders for resubmission. The agenda memory works according to the burn-down chart method. Directional decisions on the top 20 topics are to be included in the argumentation for management submission.

Top-down assessment

The last step before the committee submission is the comparison with the management view. Here, the top 20 topics are presented to the management to be involved and evaluated with regard to two questions. The added value of a prior query of the management is the further condensation of relevant topics and avoidance of duplications with other

committees. The query is subject to the area coordinators, the consolidation of the results and finally the presentation in the committee is subject to the responsibility of the office.

After completion of all the above activities in sub-step one, the top relevant topics can be presented to the panel. A central profile, which is also prepared in slide format, serves as a basis for discussion. The aim of the committee is to adopt the relevant value creation strategies.

The process model presented is a reference process (Wilmsen et al. 2019) which is based on the experience of the experts in the use case. However, each user has the possibility to adapt the process to the specific circumstances, iteratively performing other activities.

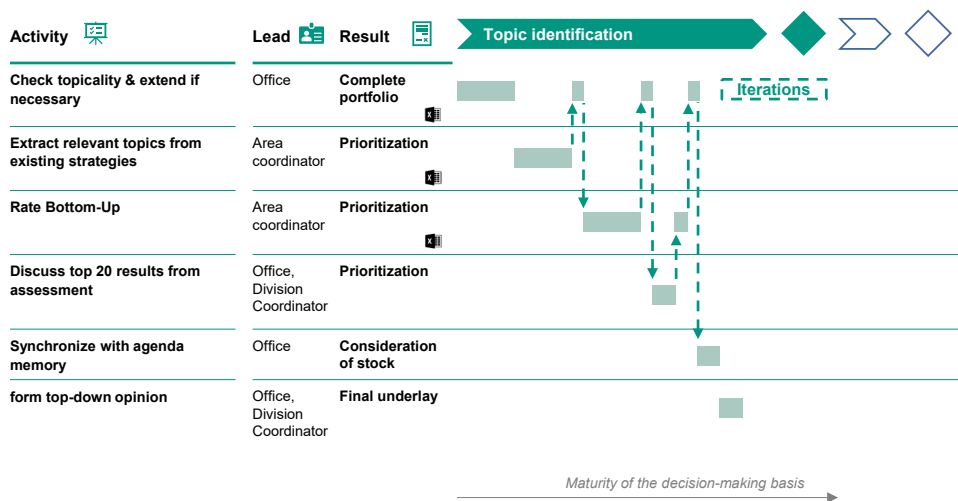


Figure 8: Process solution I

Building on step one, the relevant topics are now examined in greater depth. In the following, criteria that contribute to the decision-making process and the tool-supported procedure are examined in more detail. The flowchart for developing a value creation strategy supports the user, who does not necessarily have to have prior knowledge of the process. The focus is on the interaction between the area coordinator and the specialist department. The goal is to present an optimal technology reference source in the specific context for the company in a strategic context. The process does not focus on operational project decisions, rather it helps to develop strategic guard rails. The core element is a tool-supported procedure for the initial indication of suitable technology sources. As in step one, the process solution provides individual activities to which clear results and responsibilities are linked. Each activity is accompanied by a methodological proposal that is intended to serve as a recommendation to the user. At the end of each activity there is a result that provides a defined contribution to the increment of the decision preparation in the respective maturity level. This is followed by the execution of the individual activities.

Adopt inspection order and inform about it

Activity one and two can be combined and link directly to the outcome of process step one. The topics deemed relevant in the committee are adopted for the development of a value

creation strategy. The office informs the relevant business owner and area coordinators about this. This is done informally, but with reference to the committee minutes.

Specify inspection order

To continue working on the value creation strategy, a uniform basis for discussion must be created. This is supported by the test assignment template, in which guiding questions for the test assignment are collected based on the assessment of relevance. The template is filled in at a joint kick-off of all stakeholders (in particular with the presence of the department concerned). The office moderates.

Analysis of possible sources of technology

One of the core activities in this process step is the analysis of possible cooperation models. This is where criteria come into play that have been agreed in consultation with all areas and are based on the reference system mentioned in chapter four. A detailed description of the criteria follows. Methodically the procedure lives, in that first separately (specialist area and coordinators individually) is evaluated and these results in the following process step are consolidated. The consolidation must take place several times in order to guarantee the participants the possibility of consultation. The moderation of these workshops is the responsibility of the office.

Top-down vote

As was the case in process step one, the recommendation developed from the bottom up is secured from the top down before it is presented to the committee. The responsibility lies with the author of the strategy.

Panel presentation

The recommendation developed and agreed upon in process step two can now be presented to the committee. This is carried out by the department and moderated by the office. The presentation should be supported by an eight- to ten-page pitch deck including decision proposals.

The process model presented is a reference process (Wilmsen et al. 2019) which is based on the experience of the experts in the use case. However, each user has the possibility to adapt the process to the specific circumstances, iteratively performing other activities.

The process solution is already showing initial effects after cross-divisional discussions have been initiated. The iterative work sensitizes the discussion about strategic value creation.

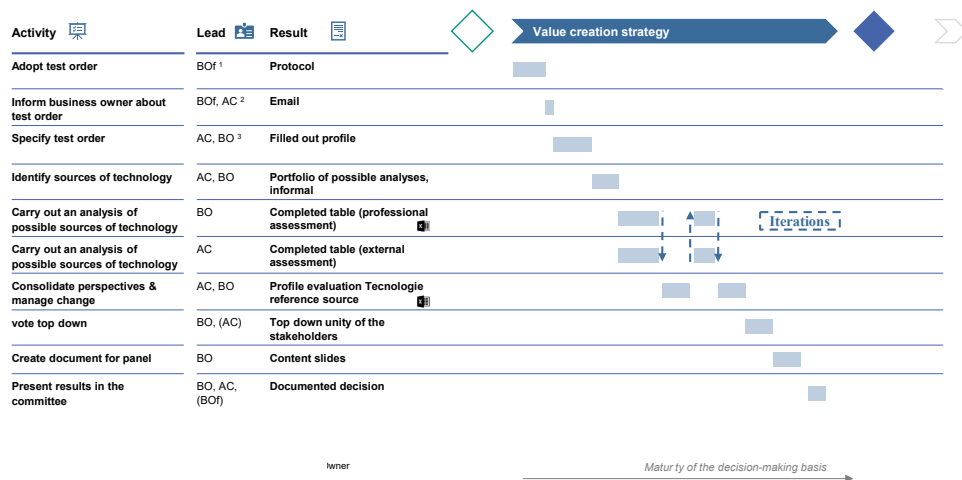


Figure 9: Process solution II

Insights regarding the framework for the development and introduction of agile process solutions into the processes of manufacturing companies

In the following, we will evaluate which improvements occur through the application of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies. It will also be illuminated where there is still potential for improvement. The evaluation is carried out according to Blessing and Chakrabati (2009) and assesses the application of the method according to the dimensions success, applicability and support measurement.

In general, it is apparent from the interviews that one of the greatest specific added values of using the framework for the development and introduction of agile process solutions in the processes of manufacturing companies is the improved networking between the departments in the company.

The provider, Manager Business Development, emphasizes in the interview that the process now helps to "keep an eye on the goal" and emphatically stresses how valuable it is to now work across departments. At the same time, however, he cites potential for optimization when it comes to acceptance of the process solution. "The application of the process solution could be more intuitive", he states during the interview and alludes to the multitude of recommended activities. This is also shown by the evaluation according to Blessing and Chakrabati (2009). The applicability dimension is only rated as good by two thirds, whereas the success criteria are rated as good by three quarters and the support measurement is rated as good by 100%. The very good results can also be attributed to the high degree of maturity of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies. Particularly in terms of situation analysis, problem delimitation and deriving generic method suggestions, the framework proves to be target-oriented, since the use case-specific objectives and optimization potentials can first be identified and selected together with decision-makers. The method implementation is based on the selected optimization potentials. Thus, the probability of a close implementation of a process improvement is significantly increased.

Suggestions for improvement in the application of the framework for the development and introduction of agile process solutions in the processes of manufacturing companies can be found in the area of abstracting a concrete problem into the generic. Further detailing of the context levels and fields of action would be helpful here in order to be able to describe the specific use case even more accurately in the generic.

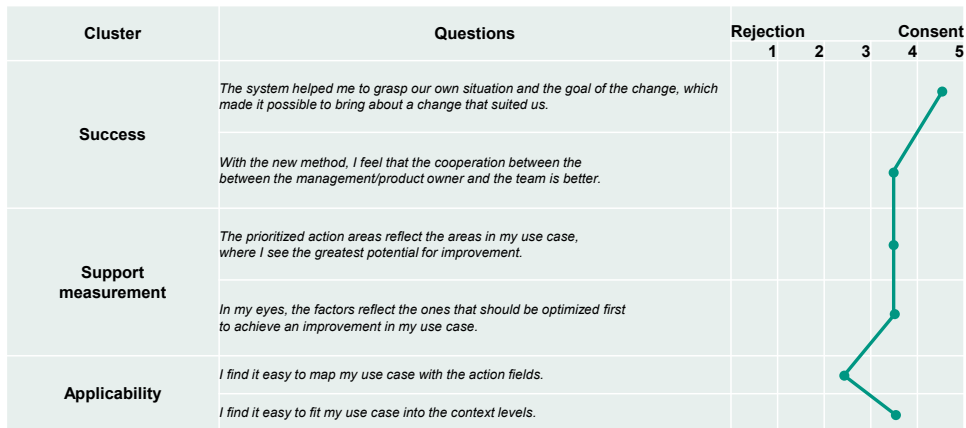


Figure 10: Validation framework by success, support and applicability

5 Discussion

The work is assigned to the research area of development methodology and management. The objective was to integrate agile approaches into a hierarchical environment. Agile methods from software development, such as Scrum, often fail because the prevailing environmental conditions are not considered. For this reason, this thesis focuses on the framework for the development and introduction of agile process solutions in the processes of manufacturing companies, with the goal of validating them in the context of the case study. The results of the work are first use case specific control variables. On a macro level, iPeM is recommended. In concrete terms, methodological elements such as the *active participation of stakeholders*, *early incremental planning* and *moderated workshops* for process design prove to be suitable for implementation. Another result of the work is the process for the development of an initial indication for strategic value creation. In this process, a two-part process was developed and piloted, taking into account the recommended variables, which first identifies relevant trends for discussion and then provides the company with information on a depth of value creation to be pursued. The increments of the process always serve as a well-founded decision-making basis for future steps. Within the scope of the case study, it was also determined that the framework for the development and introduction of agile process solutions into the processes of producing companies already demonstrates a high degree of maturity. There is little potential for optimization in the abstraction from specific to generic problems. However, it should be pointed out that the findings in this case study were obtained on the basis of subjective impressions (interview results) and without the influence of a control group. To ensure representative results, involved persons from all areas of the company and technical as well as business backgrounds were interviewed. However, each of the people involved belongs to the circle of process owners and has been part of the organization and active in the topic area for more

than half a year. This can lead to habit effects distorting the results of the evaluation of the framework. It is expressly pointed out to consider at least one further case study to obtain an objectified result regarding the maturity level of the framework for process improvement.

6 Conclusion and Outlook

Organizing strategic value creation to remain competitive in the future. This thesis was to be implemented during the case study. For this purpose, the objective was formulated to enrich the process model in *strategic value management* with agile elements. The requirements for the new process are divided into two main areas. On the one hand, it is necessary to develop a procedure for identifying strategically relevant content. This is used to decide which topics are relevant for discussion in the committee. Furthermore, a structure is created with which topics that have been ignored so far can also be discussed. The goal is the comprehensive analysis of value-creating activities in the company and their evaluation regarding a discussion in the committee.

The second focus is the evaluation of possible technology sources for the development of a value creation strategy for the company. The focus here is on the strategic alignment of the internal depth of value creation of a topic area. The depth of value creation can be influenced by the activities Make, Buy or Partner. The evaluation of the technology sources serves as the basis for the development of a value creation strategy and thus represents a part of the decision-making basis.

The situation analysis and problem delimitation for the identification of the use case-specific improvement potentials first results in the fact that the final process solution must proceed in two steps to obtain decision bases at the end of the process with regard to the relevance of a topic for discussion and a suitable value creation strategy. In the first step, to identify topics relevant for discussion, the creation of a portfolio is proposed. For this purpose, the filling and work with the portfolio is described procedurally. For topic two, two essential components for assessing technology reference sources already exist in the literature. Challenges in the advancing process design is the connection of existing systems with internal requirements.

The process solution for both focal points focuses on the integration of agile methodology, in particular iteration loops. The iterations in the first process step enable an evaluation supported by several stakeholders from different areas. The iterative approach creates room for alignment. The consolidation of multiple perspectives increases the maturity of the final solution and enables the entry of knowledge at multiple points in the process. The framework for the development and introduction of agile process solutions in the processes of manufacturing companies provides concrete support here with an overarching process model and agile method proposals tailored to requirements.

Through this process, strategic guardrails can be identified that add value to the provider, customer, and user. In the process model, the provider is the office. This benefits from regulated topic notification procedures, a reduced e-mail load due to the structure and can distribute topics evenly over the committee cycle in the year. The user, also called the business owner, is offered the advantage of receiving binding decisions along the way. The so-called customer, the company, represented by the management, benefits from making

decisions based on thoroughly coordinated templates. Through several iteration loops, the probability of making a sustainably correct decision increases.

In the future, process step two will be further developed in small steps and further integrated into the vehicle development process. Further real applications will be developed on the basis of the process and learnings from the application will be carefully integrated.

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