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## MARKET OFFER FOR IKOR GMBH

Development of a business analysis to assess the usefulness of the Scaled Agile Framework for insurance companies

Neele Larissa Pengel

Internship report presented as partial requirement for obtaining the master's degree in Information Management

NOVA Information Management School Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa

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## MARKET OFFER FOR IKOR GMBH DEVELOPMENT OF A BUSINESS ANALYSIS TO ASSESS THE USEFULNESS OF THE SCALED AGILE FRAMEWORK FOR INSURANCE COMPANIES

by

Neele Larissa Pengel

Internship report presented as partial requirement for obtaining the Master's degree in Information Management, with a specialization in Information Systems and Technologies Management

Supervisor: Professor Vítor Duarte dos Santos, PhD

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## ABSTRACT

It has been known for years that agile methods have a major role to play in project management. Increasingly, frameworks for agile scaling are becoming more popular and widespread. The Scaled Agile Framework is one of them. It enjoys great popularity in many industries. Therefore, IKOR has considered that a market offer is needed that exactly fulfils this need for its customers. These are mainly insurance customers, who are still a few years behind the digital transformation compared to other industries.

In order to create a solution for this, IKOR decided that a market offer was needed that assessed whether SAFe was a useful framework for the insurance company to adopt and provided an assessment of how far along the insurance company was in adopting SAFe.

This internship report was prepared to fulfil and document this task. During the development of the market offer, SAFe, business analysis, and the implementation of workshops were dealt with from a theoretical as well as a practical point of view. The result was a business analysis in form of a questionnaire, a workshop concept for conducting the workshop with the client and a recommendation made to the client on the current status of his insurance.

After the exemplary implementation, the procedure and the results were evaluated and classified by experts. They gave additional advice on how to use and expand the market offer.

### **KEYWORDS**

IT Project Management; Insurance Company; SAFe; Consultancy; Agile Methodology, Lean Management

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## List of Abbreviations and Acronyms

| ACE   | Agile Center of Excellence           |
|-------|--------------------------------------|
| ART   | Agile Release Train                  |
| ASD   | Adaptive Software Development        |
| Cf    | Confer (Latin), compare              |
| DAD   | Disciplined Agile Delivery           |
| DSDM  | Dynamic Systems Development Method   |
| DSR   | Design Science Research              |
| FDD   | Feature Driven Development           |
| IKOR  | IKOR GmbH                            |
| ІТ    | Information Technology               |
| 11    | Interviewee 1                        |
| 12    | Interviewee 2                        |
| 13    | Interviewee 3                        |
| 14    | Interviewee 4                        |
| LD    | Lean Development                     |
| PI    | Product Increment                    |
| РМ    | Project Management                   |
| РМВОК | Project Management Body of Knowledge |
| ΡΜΙ   | Project Management Institute         |
| РО    | Product Owner                        |
| SAFe  | Scaled Agile Framework               |
| SM    | Scrum Master                         |
| WIP   | Work in progress                     |
| ХР    | Extreme Programming                  |

#### 1. INTRODUCTION

Today companies are putting more focus on efficiency and the rational use of their resources. They are keen to develop new approaches and strategies to improve their practices. One of those areas is project management (PM). PM is getting more and more importance and recognition in the scientific community due to its diffusion in business and academia. Different solutions are being researched to assist in improving the various practices of PM (de Andrade & Sadaoui, 2018).

There are different approaches to manage a project. One way is to apply agile methods. Over the last few years their popularity has increased (Alsaqaf et al., 2017). Recent studies that have focused on this have confirmed its efficacy for project success (Miller, 2020). Besides being confirmed in science, project success has also been evidenced in small physically separated teams. As a result, the agile way of working has been adapted to larger projects over time (Uludag et al., 2018). In the meantime, several different agile methods are used all over the world, this could explain why more than 20 different methods and types have been derived over time (Rasnacis & Berzisa, 2017). This broad distribution confirms the relevance of agile methods and reinforces the importance of dealing with them in a scientific context. PM methods intend to increase project success (Joslin & Müller, 2015; Špundak, 2014). Since projects are all different, it can be a hurdle to find the right method for each project. Not every method is equally suitable for every project and every sector (Charvat, 2003; Cockburn, 2005).

Both from a practical and an academic point of view, there is a growing interest in dealing with the introduction of agile scaling frameworks and supporting their introduction in organisations (Putta et al., 2021). One of those scaling agile methodologies is the Scaled Agile Framework (SAFe). This framework was initially released in the year 2011 and became the most popular framework within agile methodologies since then (Laanti & Kettunen, 2019). In recent years, SAFe has been adopted by various organizations to make agile scaling visible within enterprises. Nowadays, the popularity of SAFe is comparatively high. In the '15th annual state of agile report' from Digital.ai (2021), the popularity of SAFe was displayed once again. In comparison to the previous year, the popularity of SAFe has increased by another 2% to 37% in total. Compared to other agile methodologies it outperforms them. The second most popular agile scaling method with merely 9% is Scrum@Scale/Scrums of Scrums as shown in Figure 1.1.



Figure 1.1 - Frameworks used to scale agile. Adapted from Digital.ai, 2021

For companies, it could be an appealing alternative to implement SAFe in their companies and to according to it. Such methodologies help companies to optimize their performance (Dikert et al., 2016). Particularly companies in the insurance and investment industry are affected by these challenges. They find it difficult to improve the efficacy of the project culture within the organization and to establish and apply their PM approach (Lobasso, 2017). The insurance industry is experiencing many changes. It is going through a transitional phase in which it is adjusting to the changing needs and priorities of its customers. Alongside this, the insurance industry is learning how to implement the latest technologies and digitalize its processes. A new corporate culture is needed that creates new relationships between the different participants in the insurance market (Grigorieva et al., 2020). Currently, the global failure rate of information technology (IT) projects is around 65%. The unsuccessful implementation of IT projects harms the performance and profitability of insurance companies (Schnabl & Grechenig, 2020).

To prevent companies in the insurance industry from these negative impacts, IKOR GmbH (IKOR) aims to development a market offer to assess the usefulness of SAFe for insurance companies to determine in advance whether it is advisable for their customers to implement SAFe in their company.

#### **1.1. SCIENTIFIC CONTEXT**

IT and business should be continuously aligned on different levels. These levels include the strategic, tactical, and operational levels. Larger IT investments are usually managed via projects and project portfolios. This gives them a high status within the company (Schnabl & Grechenig, 2020). When selecting and implementing agile methods in IT companies, it is important to look at the company

and its employees. The methodology to be initiated depends on them and on the project types of each company (Rasnacis & Berzisa, 2017). Not all companies are able to implement an agile approach in their organisation. If it does not work properly, this approach can add more harm and jeopardise the benefits of agile methods than it benefits. Therefore, it is useful to assess the agility of a company in advance with an assessment tool (Telemaco et al., 2020) and it is advisable to have a standardized evaluation procedure that evaluates the different aspects and criteria for the respective agile method, in this work SAFe, and thus can provide information on determining whether it will prove to be beneficial for the company. The different evaluation criteria must be taken into account when adapting the methodology (Rasnacis & Berzisa, 2017).

There are not many scientific research contributions on the challenges and benefits of SAFe adoption (Putta et al., 2018). Nevertheless, it is reported that the major challenges are old organizational structures. These hamper the implementation of SAFe. On the other hand, the biggest success factor are transparency, collaboration, and cadence (Laanti & Kettunen, 2019). With an implementation check in advance, these parameters could be assessed and provide an illustrated overview of the current stage of implementation and in which specific fields companies still need to catch up. It turns out that despite the high usage rate, many companies have difficulties with the transformation (Laanti & Kettunen, 2019). The internship report aims to close this gap and to contribute to the research contributions which have not yet been so numerous (Uludag et al., 2018).

The research aims to contribute to progress in that area by developing a market offer for developing a business analysis to assess the usefulness of SAFe for insurance companies as well as an implementation concept to answer the business analysis. In the literature, the introduction of agile methods is considered in more detail (Dikert et al., 2016). Also, Theobald & Schmitt (Theobald & Schmitt, 2020) motivate and address positively future research in the field of agile projects and their organisational environment. In some following research contributions which were about the implementation of agile PM methods in different project teams have been produced in recent years (Rasnacis & Berzisa, 2017). According to Diebold et al. (2018), many of the existing frameworks for scaling Agile are not used. Most of the time, the selection of the framework is not done systematically but is suggested by consultants or selected based on their popularity. Well-founded decision-making aids are needed for the selection of an agile scaling framework. A comparison should be made at the practice level to make the best possible selection. To prevent this from being happen the usability check will be developed.

#### **1.2. ORGANIZATIONAL CONTEXT**

This internship report is the documentation of the work performed during the internship period from August 01, 2021, to January 31, 2022, at IKOR and refers to the main project worked on during this timeframe.

In 1997, IKOR Management- und Systemberatung GmbH was founded as an SAP consultancy in Münster. Over the years, IKOR has established further offices and subsidiaries. In addition to the original focus of developing SAP add-ons that fill the gaps in the SAP standard, IKOR specializes in optimizing and extending Guidewire solutions. In 2019, the first foreign location was opened in Serbia. Since then, other countries such as Austria, Poland, and the United Kingdom have been expanded (IKOR GmbH, n.d.-a).

As a technology consultancy and software vendor, IKOR accompanies the digital transformation of development and commercial banks, insurers, and the manufacturing industry. With more than 300 employees, IKOR carries out IT projects throughout Europe. This is done in cooperation with their customers and with individually suitable project management methods (IKOR GmbH, n.d.-b).

One of IKOR's departments is Project Excellence. It comprises four teams, Business and Process Analysis, Quality Management, and two Project Management teams. In one of the PM teams the internship is taking place. During the PM internship at IKOR different internal and external projects are worked on. IKOR's clients are mainly insurance and financial companies which face difficulties in having the right skills and knowledge in their organization to execute their planned projects and software changes. IKOR supports them in this process.

As one internal project IKOR intends to develop a market offer. This market offer will have two different artefacts. The first one is a business analysis to assess the usefulness of the Scaled Agile Framework for insurance companies. In which parameters can be used to determine whether a SAFe implementation is reasonable for a company. Besides the definition of parameters to check the reasonability, the second task is a workshop concept for the assessment of the respective issue desired. Based on this analysis, the result of the implementation check should be a score, which IKOR can use to define the SAFe advisability of their customers.

For IKOR, the creation of the market offer plays a major role, since many customers are in the insurance industry and carry out IT projects there. After successful completion of the internship as well as the development of the market offer, there is the possibility to adapt it to other agile methods. The same structure could be used for this, only the method-specific part would have to be adapted for the respective agile method. Furthermore, this analysis could also be adapted to many other industries. For this, only the industry-specific parameters would have to be adapted. With the successful completion of the internship, IKOR has a completed market offer for checking the usefulness of SAFe for their customers. This would enable them to provide their customers with a faster assessment and evaluation of SAFe advisability. They hope to be able to see immediately the areas where the company still needs to catch up. IKOR expects this to save costs and resources in the future.

It could also provide an easier way to transfer to other methodologies and industries, which can help other customers from other industries. The agile approach should be determined based on customer parameters. Is SAFe the right fit for the company?

#### **1.3.** GOALS OF THE INTERNSHIP AND OBJECTIVES

The goal of the internship is to create a market offer for IKOR. This market offer should a business analysis to assess the usefulness of the Scaled Agile Framework for insurance companies. Additionally, the aim is to determine a suitable implementation method for the business analysis.

To achieve this goal, the following intermediate objectives were defined:

- i. Study Project Management field, Agile Methodologies, and Lean Management.
- ii. Get to know SAFe better.

- iii. Support IKOR in their daily agile project work and learn how to develop a business analysis and a market offer
- iv. Identify and define the parameters which will be the bases for the assessment.
- v. Create a guideline for collecting the information needed from the customer.
- vi. Measure the score of the insurance company and decide if SAFe is the right fit for the company.

#### 2. METHODOLOGY

Different methodologies can be used as a framework for writing a scientific paper. In the development of the market proposal for IKOR and writing of the Internship Report, the Design Science Research (DSR) Methodology is followed which is a problem-solving paradigm. The origin of DSR of information systems research can be found in engineering sciences. The goal is to solve a specific problem. For this purpose, an IT artifact is created and evaluated in the context of companies and organizations. (Hevner et al., 2004; Hevner & Chatterjee, 2010).

Since a practical result is developed in this report, DSR is particularly suitable because being practiceoriented is one of its strengths. In order to comply with the rigor of science, different models for the procedure according to DSR are proposed in the literature (Hevner, 2007; Kuechler & Vaishnavi, 2008; March & Smith, 1995; Peffers et al., 2007). In this paper, the DSR according to Hevner is followed.

This Methodology follows a qualitative approach, rather than a quantitative one. Based on the requirements of the market proposition to be created and the related research question, the DSR is suitable for this report as the artefact would be a more efficient and effective problem solving in assessing insurance companies and their utility of SAFe.

"Design science research [...] is a research paradigm in which a designer answers questions relevant to human problems via the creation of innovative artifacts, thereby contributing new knowledge to the body of scientific evidence. The designed artifacts are both useful and fundamental in understanding that problem." (Hevner & Chatterjee, 2010).

DSR requires thorough guidelines and rules whose approach meets scientific standards. Hevner et al. (2007) have defined the following seven guidelines that must be followed when creating an artifact. These are followed in the report (cf. Table 2.1).

An artefact is something that is made by humans or is artificial. An artefact claims to improve a solution to a problem, to improve a obstacle or to provide a first solution to a challenge (Simon, 1996). There are different types of artefacts. These include constructs, models, instantiations, and methods. Methods are used to perform a task using a sequence of steps, such as a practice (March & Smith, 1995; Simon, 1996).

| Requirement   | Realization   |  |  |
|---|---|--|--|
| Guideline 1 – Design as an Artifact   |   |  |  |
| DSR aims to create a tangible result that<br>generates a practical value. Therefore, the<br>artefact must be a construct, model,<br>method, or instantiation. | The artefact created in this thesis is a construct. The required contents are described in chapters 4 and 5. These are the knowledge base (chapter 4), the underlying analysis (chapter 5.2) and its procedure model (chapter 5.3). |  |  |

Table 2.1 – Seven guidelines of Design Science Research; Requirements and Realization

| Guideline 2 – Problem Relevance   |   |  |  |  |
|---|---|--|--|--|
| The target of DSR is that the solution which<br>could be based on technology solves a<br>practical business problem.  | The problem relevance is presented in the introduction. In chapter 1.1 it is described which scientific gap will be closed with the creation of the artefact as well as in chapter 1.2 the reasons of the organisation are elaborated.  |  |  |  |
| Guideline 3 – Design Evaluation   |   |  |  |  |
| The utility, quality and effectiveness of the<br>artefact needs to be carefully demonstrated<br>through the use of carefully applied<br>evaluation methods          | The evaluation takes place through a demonstration. Demonstration is a part of the DSR steps according to (Peffers et al., 2007). The demonstration is then evaluated by several practitioners. Demonstration is provided in chapter 5.3, whereas evaluation is covered in chapter 5.4. |  |  |  |
| Guideline 4 – Research Contributions  |   |  |  |  |
| Apart from solving the practical problem,<br>the artefact also needs to contribute in a<br>commonly applicable way.   | The artefact aims to close the research gap<br>mentioned in chapter 1.1 and to contribute<br>to the scientific consideration of agile<br>scaling methods.   |  |  |  |
| Guideline 5 – Research Rigor  |   |  |  |  |
| During the development as well as the<br>evaluation of the artefact, the established<br>methods from science are to be applied in<br>the correct way.               | This requirement is fulfilled on the one<br>hand by means of international literature<br>and on the other hand by the prototypical<br>application of the artefact.  |  |  |  |
| Guideline 6 – Design as a Search Process  |   |  |  |  |
| With DSR, the result is incrementally<br>developed further in order to achieve the<br>requested state, considering the laws of the<br>problem-relevant environment. | The results of this work were developed in<br>practice within several months and<br>regularly discussed and improved with<br>different people. The individual<br>components were designed and developed<br>iteratively. This is referred to several times<br>in different chapters.     |  |  |  |
| Guideline 7 – Communication of Research   |   |  |  |  |
| The research results must be appropriately prepared for a technology-oriented and a management-oriented audience.   | In the chapters of this thesis, the research results are shown and described in detail to the addressed target groups.  |  |  |  |

#### 2.1. DESIGN SCIENCE RESEARCH

Based on the guidelines described previously, Hevner has defined DSR as an iterative process that connects an existing knowledge base with practice. This is represented by the three research cycles Relevance Cycle, Design Cycle and Rigor Cycle:

#### 1. Relevance Cycle

The Relevance Cycle refers to the application domain and its current opportunities and challenges. In a good DSR, the focus should be on the relevant questions, for which opportunities and problems within an application domain represent a good starting point. At the same time, the evaluation criteria for the artefacts to be removed can be derived from this. The scope is characterised by the interaction of people, organisational and technical systems aiming at a concrete achievement of results.

#### 2. Rigor Cycle

The Rigor Cycle provides the information that is required by the Design Cycle. This information might, for instance, derive from the knowledge base of previous projects. In addition, the Rigor Cycle ensures that the knowledge gained is communicated and incorporated into the artefact creation process.

#### 3. Design Cycle

The core process of a DSR project is the Design Cycle. In this cycle, the development of the artefact takes place. The artefact is supposed to meet the requirements of the scope of application. The Rigor Cycle supplies the appropriate methods and theories for the creation of the artefact (Hevner, 2007).

The methodology is suitable for the derivation and verification of artefacts and is graphically represented in Figure 2.1 where the three cycle view of DSR according to Hevner (2007) is illustrated graphically.



Figure 2.1 – A three cycle view of design science research. Retrieved from Hevner, 2007

The objectives of this work are achieved by first understanding the background of the company, its clients, as well as the requirements of the artefact and its evaluation. This is followed by a detailed study of PM, agile, lean, and SAFe. Following the theoretical understanding, data is then collected in practical work. After the market offer has been developed, it will be demonstrated by a customer of IKOR for its correctness and applicability and later evaluated by practitioners.

#### 2.2. APPLIED DESIGN SCIENCE RESEARCH

According to the first cycle, the Relevance Cycle, which looks at the environment in which the problem to be solved exists. The used methods in this cycle will be informal interviews with the employees as well as consulting the internal documents and some sort of field study method like observing the daily work by participating and working in different projects as a business analyst for IKOR. Getting insights into the environment will be done in cooperation with IKOR. A variety of staff members are made available to obtain the required data, relevant information and support by their knowledge and work experience. One part of these persons is mainly accountable for the transfer of practical knowledge about PM and agile methodologies. The data is collected on one hand through discussions with IKOR employees and on the other hand through participation in projects. This involves studying internal work instructions and research on SAFe, as well as conducting discussions and interviews with IKOR AG's customers. The typical challenges that insurance companies have with implementing SAFe are to be identified. As well as the definition of the requirements of the market offer.

In the second step, the Rigor Cycle. The knowledge base is built. This involves acquiring knowledge about the topics to be addressed and looking at theories and other artefacts (Hevner & Chatterjee, 2010). The aim is to expand the knowledge base for further research. As mentioned before there are two people accountable, the other person is responsible for the assistance regarding the data and the preparation of the thesis. The theoretical knowledge of the practical things learned during the relevance cycle is lined with the theoretical knowledge it will cover PM as well as its evolution and different traditional and agile methods. In addition, scaling agile is addressed and with that especially SAFe and its implementation.

In the Design Cycle, the artefact is created, demonstrated, and evaluated according to the criteria defined in the Relevance Cycle (Hevner & Chatterjee, 2010). Therefore, the theoretically gained knowledge is transferred to practical work and the market offer is developed based on specific parameters in relation to companies in the insurance industry. This market offer shall contain an assessment sheet for insurance companies. IKOR wishes to let the particular insurance answer this business assessment in a defined workshop tailored to IKORs' clients. Based on these parameters, it can then be checked whether SAFe is a good fit for the respective customer. By clustering the parameters into individual topic areas, IKOR can then illustrate to the customer in which areas there is still potential for improvement and in which they are on the right path for SAFe implementation. Within the different assessment areas, a score is then created to assist in the assessment. A decision matrix can then be created based on this score. This should simplify and further standardise the assessment for IKOR. In addition, a comprehensible presentation for the customer is already provided. As this involves the subjective perception of the employees and customers, to determine whether the assessment tool can simplify the process and increase transparency and

comprehensibility, surveys will be conducted at the end of the internship. This is graphically displayed in Figure 2.2.





#### 3. INSURANCE INDUSTRY

This chapter takes a closer look at IKOR's main customers and their industry. It will be identified what distinguishes the insurance industry, what the customer profile looks like and what challenges and opportunities can be found in the industry. This is considered to fulfil the requirements of the relevance cycle and to find out which specifics need to be considered when preparing the business analysis.

#### **3.1. CHARACTERIZATION**

According to Zweifel and Eisen (2003), there is no standard definition of insurance in the literature. They justify this with the fact that it originates from the economic practice and due to variety, no fixed definition is feasible. The purpose of insurance is to reduce the uncertainty and risks of possible future events (Schulenburg & Lohse, 2014; Zweifel & Eisen, 2003). For this purpose, the policyholder pays an insurance fee to the insurer (Farny, 2011). In return, the policyholder receives a guarantee that the insurer will make a payment in the event of an insured event (Altuntas & Uhl, 2016c).

The insurance industry is one of the highest-revenue industries in Germany. In 2020, it had fee income amounting to 221 billion euros. Furthermore, the German insurance industry is one of the largest insurance markets in the world and one of the leading reinsurance locations (Gesamtverband der Deutschen Versicherungswirtschaft e.V., 2021). In addition to its function as an industry, its function in society should not be underestimated. A developed national economy or modern society is almost inconceivable without private insurance coverage (Gesamtverband der Deutschen Versicherungswirtschaft e.V. GDV, n.d.).

The industrialization of insurance companies contributes to falling costs and thus increased competitiveness. Faster, more clearly structured processes and improved quality create a basis for greater customer satisfaction. As a result, insurance companies are better able to cope with high customer and regulatory requirements, increased competition, and uncertain capital markets. Technological progress is implemented promptly as part of industrialization (Altuntas & Uhl, 2016a). The Figure 3.1 shows the areas that are affected by digital transformation. These areas are described by examples.



# Figure 3.1 – Digital transformation in German insurance industry. Adapted from Gesamtverband der Deutschen Versicherungswirtschaft e.V., 2021

In addition to increasing digitalization, the drivers of the challenges facing the distribution industry include demographic change. These are followed by changes in customer behaviour and customer structure, increasing competition, constantly rising legal and regulatory requirements, steadily advancing technological progress, and the effects of developments in the capital market and economic environment. One major consequence is the need to increase the efficiency and profitability of the internal processes of insurance companies (Altuntas & Uhl, 2016b).

#### **3.2.** CUSTOMERS PROFILE

It is important to know the employee and company profiles before selecting a PM approach (Messnarz et al., 2012). In fact, this is so important because different business sectors have different characteristics. Profile analysis is a fundamental principle before developing best market practices (de Andrade & Sadaoui, 2018).

In Germany, the insurance industry's offerings can be divided into individual and social insurance (Nguyen & Romeike, 2013). Individual insurance is offered by private insurance companies and is concluded on an individual, single-contract basis (Altuntas & Uhl, 2016c). In this paper, private insurance companies are referred to when insurance companies are mentioned.

Many insurance companies are not yet far advanced in digitalisation and are in some cases still in the early stages of development (Lohse & Will, 2019). The insurance industry is generally not considered to be particularly modern and dynamic. In the meantime, however, it has begun to deal with these issues, because the core activities of insurance companies involve the handling and processing of information (Bitter & Uphues, 2017). In the insurance industry, these are intangible products whose value chain can be mapped completely digitally. The digitalisation of process automation is supported by IT investments within the industry (Tabarelli, 2019). According to Hofner et al. (2018), it seems that all insurance companies are on the way to agility. He attributes this to the fact that insurance companies have long decision-making processes with rigid structures and strong hierarchical thinking, and that the board of directors is the final professional authority.

#### **3.3. CHALLENGES AND OPPORTUNITIES**

Many companies in different industries and sectors are under pressure to change in order to remain competitive (Kohli & Melville, 2019; Weill & Woerner, 2015). With the adoption of agile methods, the aim was to achieve more flexibility and speed (Fitzgerald & Stol, 2017).

It was not until 2015 that insurers started to address the challenges (Bühler et al., 2019). At the same time, however, this also results in significant potential (Lohse & Will, 2019). Technological progress and the associated digitalisation require more agility and risk awareness on the part of property insurers. The focus should be on changes in customer behaviour and options in the digitalisation of the value chain. New technologies offer opportunities along the value chain (Kotalakidis et al., 2016). Digitalisation cannot be seen solely as a technical challenge. A modern and customer-centric organisation is also crucial. According to Kotalakidis et al. (2016), three things are important to achieve this. They are a new culture, new skills, and new tools. This includes a new understanding of leadership as well as more freedom for employees, but also the use of agile methods to further develop conventional hierarchies.

Working conditions in the insurance industry have changed in recent years due to the increasing intensity of work, which has led to a decline in job satisfaction among employees. This is mainly due to the high proportion of standardised activities because of digitalisation (Ahlers et al., 2018). According to Boes et al. (2016), the increase in performance and behavioural controls can be related to the use of new technologies to organise and increase efficiency.

An important point that is considered in optimisation efforts in insurance companies are processes. They start with the customer and are initiated by the customer and end with the fulfilment of the customer's needs. Care should be taken to ensure that process optimisation does not end at the company's boundaries but also encompasses customers and external services. The processes used should be lean so that waste can be avoided and cost-efficient processes can be maintained (Altuntas & Uhl, 2016b).

A central task of insurers is to create the highest possible benefit for their customers by solving their problems. From this perspective, customers also measure their satisfaction. Increasing this is the main task of an insurance company (Schmelzer & Sesselmann, 2013; Köhne & Ruf, 1995). It is important that the processes work and help to deliver the value proposition (Kosmider, 2008). The connection between the competitiveness of an insurance company and customer satisfaction is shown graphically in Figure 3.2. Here it is shown that the interplay between the competitiveness of an insurance company and the customer satisfaction is of great importance. Here it is shown that the interaction of customers, cost-effectiveness, and productivity as well as responsiveness and flexibility are the competitiveness of an insurance company.



Figure 3.2 – Advantages of Process Improvement. Adapted from Zairi, 2000

Another aspect of excellence for insurers is operational process excellence, which is to be achieved through industrialisation measures. Process optimisation focuses on the criteria of quality, costs, and customer processes. These are rationalisation measures. Industrialisation goes beyond this and increases productivity and flexibility. These advantages of process improvements are also used to strengthen competitiveness (Altuntas & Uhl, 2016b).

#### 4. THEORETICAL FRAMEWORK

The theoretical framework is an important basis for fulfilling the Rigor Cycle and thus in the creation of the artefact. This chapter explains and defines the topics that form the knowledge base of the thesis. The creation of the Theoretical Framework is about finding sufficient literature for the problem at hand, to answer the research question.

A set procedure was followed in the creation of the theoretical framework. Various search engines, online libraries and university libraries were used to search for suitable literature. Google Scholar, Scopus, Ebsco Host, IEEE Xplore Digital Library, ACM Digital Library, and the library of the Helmut Schmidt University of the Federal Armed Forces Hamburg were used. Mainly articles in professional journals were used, but also books, chapters from books, websites of organisations or slide sets and their workshop results from organisations served as sources.

The chapter or subchapter names of the present work were entered into the search engine. The first page of the search results was always searched for titles that sounded suitable. This search was then repeated, this time using synonyms for the titles. Finally, the last search run was started, in which Boolean operators were entered in addition to the titles. The procedure just described also applies to Helmut Schmidt University, as this library offers a digital listing of its literature on site, which can be used to search for matching titles. After selecting the literature, it is possible to see in which shelf the corresponding title can be found. The only difference is that randomly appealing titles on the shelves with the selected literature were also included. The described search was further restricted with some parameters. The literature should be available in English or German, it should preferably not be website sources if alternatives were found, and the literature should not have been published before 2017.

After the initial literature selection based on these criteria has been made, the respective abstract is read and assessed as to whether it could fit the internship report. After this has been done with all sources, the literature is cross-read, and the knowledge gained through the content is used.

Additional literature is obtained from the sources of the literature used. The references are searched for suitable titles. The following procedure is the same as for the previously selected literature. There is only one difference. The general search parameters are not applied. With this procedure, it can be assumed that a large part of the relevant literature has been found. The procedure just described is also summarized in Figure 4.1.





After a better understanding of the environment in the previous chapter, this chapter deals with the theoretical foundations. A deductive approach is taken and first the general basics are dealt with, until finally SAFe and its special features are dealt with.

#### 4.1. PROJECT MANAGEMENT

Both among professionals and in the Project Management Institute (PMI), project management is a manifesting theme (de Andrade & Sadaoui, 2018). According to Ward (2011) and Rooswati & Legowo (2018), PM is the application of knowledge and skills, tools and techniques to project activities. These are used to meet project requirements or stakeholder expectations and needs. It is important for every organization to reach project success (Amjad et al., 2018).

#### 4.1.1. Project Characteristics

To gain an understanding of project management, the definition of a project must be clarified. Finding a uniform definition for it is a complex task, as scientific definitions are very similar, but then differ again in some points. A project is a temporary organisation with the aim of obtaining a predefined result, and different resources are available to achieve this aim (Rodney Turner, 2006). The Project Management Institute (2017a) extended this definition a little further and specifies that the project outcome must be a specific and unique result that must be achieved within a certain time frame. Another point of agreement is that project characteristics depend on the environment of the project. The environment also includes the industry, the stakeholders and the company (Baccarini, 1996; Davis, 2014; Graham & Englund, 2019).

The criteria can be used to assess the success of the project. Usually, these criteria include the three points of Atkinson's triangle, Time, Cost, and Quality as in

Figure 4.2 and can be applied to all projects regardless of the type or size of the project (Atkinson, 1999). The three factors are interrelated. A project is considered successful if it is in scope, on time, cost effective, satisfies the clients and meets the main objective of the project (Schwalbe, 2015).



Figure 4.2 – Three dimensions of a project. Adapted from Atkinson, 1999

The dimensions proposed in the Project Management Body of Knowledge (PMBOK) include scope, risk, and resources in addition to the three already mentioned by Atkinson (PMI, 2008). The graphic representation of the triangle of constraints is thus extended as displayed in Figure 4.3 in the following way:



Figure 4.3 – Six dimensions of a project. Adapted from PMI, 2008

#### 4.1.2. Traditional Project Management

The traditional PM method is typified by expected and foreseeable project planning techniques designed to reach a defined and feasible range of goals (Gemino et al., 2021). Project management methods summarise the life cycles, activities, and roles of project management. Traditional methods are waterfall and plan oriented which follow a stage-gate or phased life cycle. Thereby, in the preliminary stage, the project is limited in time and other limitation and the termination conditions are known in advance (Lundin & Söderholm, 1995). Project management standards specify which methods and frameworks can be used for traditional projects. There is a positive correlation between the use of a PM methodology and the achievement of project success if the methods, such as techniques and tools, are comprehensive (Joslin & Müller, 2015). The goal is to complete the project within the characteristics (Špundak, 2014) those were presented in chapter 4.1.1 Project Characteristics.

The most traditional example of a traditional PM methodology is the waterfall method. It assumes that the project framework is manageable and predictable. Based on this, a mechanistic division of labour is used (Saynisch, 2010a). The focus of traditional PM is on planning. This should contribute significantly to ensuring the success of the project (Laufer et al., 2015).

The waterfall approach was first introduced in the 1970s by Winston Royce an American computer scientist and director at Lockheed Software Technology Center in Texas as an option to manage the increasing complexity of software development (Thomas & Fernández, 2008). Nevertheless, he used it as an example of a flawed development methodology (Royce, 1970). The basis of his method, however, dates to the 1950s and was introduced by Herbert Bennington (1987). The name of the waterfall method is due to its strong structuring and the transition from one phase to the next one in sequential order. These phases include initiation, planning, implementation, control, and closure as in shown Figure 4.4 (Thomas & Fernández, 2008). Following the phases facilitates the implementation of the PM throughout the cycle (de Andrade & Sadaoui, 2018). In the initial phases, the requirements are collected and analysed, and a solution design is created. This solution is then implemented and any issues that arise are resolved. The second phase of the project, the planning phase, sets the stage for the overall project work. The project scope and the definition of the requirements to fulfil the scope are set at the beginning (Thomas & Fernández, 2008). Special attention should be paid to the requirements definition, as nothing can be changed once the project has started. It is therefore important to gain a vivid idea of the scope of the project in advance (Piwowar-Sulej, 2021). This is followed by the execution phase, in which the actual work to achieve the project goals is started. At the end of the project, a formal closure takes place. During the control phase, any changes to the scope that arise are managed (Laufer et al., 2015).



Figure 4.4 – Traditional project management phases. Adapted from Thomas & Fernández, 2008

The division of work is intended to contribute to better planning and estimation (Laufer et al., 2015), as well as to improve quality, as errors can be identified and corrected early in the process before moving on to the next phase (James, 2016). The goal of optimisation and efficiency is achieved by following the project plan (Špundak, 2014; Stare, 2014). If it is not possible to define the requirements and specifications at the beginning of a project or if the project is in a state of change, the waterfall method is not suitable (Saynisch, 2010b). Subsequent changes to the requirements can have a negative impact on the schedule and costs. In addition to this criticism, the traditional approach is also considered bureaucratic and requires a lot of documentation (Pace, 2019).

Due to these difficulties, it is suggested that the organisation should use the methods that are best suited to the fulfilment of their project and mapped to their project types (Andersen, 2006). The traditional PM methods are mostly suitable for simple and short projects or projects with defined and set requirements. For projects which has an average change of resources, the traditional methods are also suitable due to their detailed documentation (Piwowar-Sulej, 2021). The main methods of traditional PM include the critical path, critical chain or Prince2 (Pace, 2019).

#### 4.1.3. Evolution of Project Management

Two different general approaches to project delivery are mentioned in the literature. One is the traditional way already presented, which is characterised by a high managerial component, and the modern way which is called agile, adaptive, dynamic or light (Berger & Beynon-Davies, 2009). Both make use of certain methods and techniques and follow different principles and guidelines (Špundak, 2014). The traditional methods include, for instance, Project Management Body of Knowledge (PMBOK) or Prince2 and the agile methods include methods like Scrum (Piwowar-Sulej, 2021).

In the 1980s, agile methods were introduced for the very first time in Japan in the product development industry (Goodpasture, 2016). Further approaches to software development were

introduced in the 1980s (Wallis, 1984). One of the models presented was Boehm's spiral model, which had a risk-driven approach to software development. This approach was supposed to be more adaptable compared to the document-driven waterfall model and the code-driven evolutionary development (B. W. Boehm, 1988). In the late 1980s came Rapid Iterative Production Prototyping (Buragga & Zaman, 2013). It was developed by the Du Pont Information Engineering Association. One of the managers of the Association, Scott Shultz, said: "What users tell you they want isn't always what they really want", with this statement the customer came more and more to the fore and a close cooperation became stronger (Margolis, 1988).

Then, in the 1990s, agile methods were used for the first time in the United States software industry. Jeff Sutherland and Ken Schwaber developed one of the pioneers of the agile method in the 1990s which was Scrum. Cockburn later developed another agile method called Crystal. A Decade of software development ended with a meeting of experts in Utah where the best working techniques were to be combined (Hohl et al., 2018).

In 2001, the term agile officially emerged and was defined by 17 experts. Among these experts were Sutherland, Schwaber and Cockburn. The agile manifesto was written at this meeting (Raharjo & Purwandari, 2020). The meeting of the IT representatives took place in Snowbird, Utah. Agile means that someone or something is able to react immediately and easily or has the ability to think quickly while being cognitively alert and attentive (Piwowar-Sulej, 2021). Most of what is now called agile also originated in the 1990s and came from Microsoft (Ebert & Paasivaara, 2017). Over time, the agile methodology has evolved into an approach to the software development process for risk mitigation and technology development (R. Green et al., 2010). Subsequently, it has become a mainstream approach over the course of the 21st century (Baskerville et al., 2011; Dingsøyr et al., 2012; Dybå & Dingsøyr, 2008; Špundak, 2014; Stavru, 2014). This is seen as the systematic and sequential approach in the traditional method has proved to be inappropriate over the years. Especially in software development, this approach has not been sufficient in projects to achieve project success (Berger & Beynon-Davies, 2009). As things stand, Agile is defined as a change-responsive mindset and view (Canty, 2015; Koch, 2005; Project Management Institute, 2017a).

Larman and Basili (2003) state that the beginning of agile PM can be traced back much earlier, to the 1930s. For them the introduction of the "plan-do-study-act" cycle is the initial point. To support this, they refer to the NASA Mercury project in which small iterations and test-first developments took place. This approach has similarities to present-day agile methods.

In PM, agile methods are sometimes contrasted with traditional methods. However, this comparison does not always do justice to the methods. Depending on the size, type, and scope of the project, it can make sense not to choose just one method (West, 2011). This suggests that determining the right method depends on different factors. This should be found to support the success of the project. Here, as already mentioned, the environment of the project, such as the organisation, should also be considered (Rush, 2020).

An agile project is three times more likely to succeed than a traditional project, according to a 2011 report by the Standish group's 2011 Chaos Report (Amjad et al., 2018). In the 2013 report, almost all agile projects are completed on budget, without errors and on time (Cline, 2015). Therefore, it can be concluded that it would make sense to expand the use of agile methods in the project. The use of these methods in project management could be due to a paradigm shift and increasing use of agile

methods (Coram & Bohner, 2005). They follow a different approach. On the one hand, in traditional projects the scope is predefined and the time and costs spent can be variable. Whereas in agile projects it is exactly the opposite. In agile projects, time and costs are defined in a preliminary stage and the scope of the project is aligned with these parameters (Ali et al., 2021).

#### 4.1.3.1. Agile Project Management

Those who want to develop software in a modern way and offer greater benefits in terms of meeting the needs of their users can use the agile approach (AXELOS Limited, 2015; Project Management Institute, 2017a). With the help of a study, a definitive description of the agile approach was identified (Project Management Institute, 2017a). Which states that it is a way of thinking and acting that is explained through values and advised by principles and it can be executed through many different practices (Raharjo & Purwandari, 2020). The use of the term agile applies to this mindset. It is characterised by high openness to change, as well as high flexibility to complex task management. This mindset extends not only to individual projects, but to entire organisations (Piwowar-Sulej, 2021). Agile PM was developed because over time weaknesses in traditional PM were identified that this approach was intended to improve (Špundak, 2014; Heeager et al., 2016). The biggest difference is that in agile PM, planning evolves continuously and is not planned in advance down to the smallest detail (Nicholls et al., 2015). In the software development industry, the number of companies using agile methods has increased significantly. Meanwhile, almost all organisations declare that they are agile to at least some extent and apply agile practices in their processes (Telemaco et al., 2020). After the original agile approach was developed for software development, it was later applied first to other IT projects and then later on a large scale to projects outside the IT sector such as in business (AXELOS Limited, 2015).

After the proclamation of the agile manifesto in 2001, which is discussed in more detail in the following chapter of this report, the philosophy has expanded to other business areas such as service delivery (Kowalkowski et al., 2012), business intelligence (Larson & Chang, 2016), or even general business processes (Graml et al., 2008). In the current version of the PMBOK Guide (Project Management Institute, 2017a) in conjunction with the companion book "The Agile Practice Guide", the spread of the techniques and their importance for PM is once again underlined and the growing importance of Agile in PM is recognised (Project Management Institute, 2017b).

The success rate of projects can be increased through an iterative planning technique using agile methods (Mann & Maurer, 2005). As the popularity of agile approach has increased, so has the scientific interest, some limitations of agile methods have also been recognised over time. It was observed that it was not possible to transfer these methods and apply them to large-scale projects as well, although they were considered the most effective and best-followed technique (Paasivaara et al., 2013). The advantages of agile over traditionally organised projects to increase the success rate can be illustrated as in the following. By following agile methods, costs can be improved by 29%, the schedule is improved by 71% on average. Performance is improved by 122% and quality by 75%. In addition to the project characteristics, a 70% improvement in customer satisfaction is also observed (Rico et al., 2009).

The main approach of agile PM is to define everything roughly. There is no concrete plan that is followed step by step. The work is divided into different sections and then distributed within the team (Piwowar-Sulej, 2021). At the beginning, the most important tasks are worked on, while the

increasingly unimportant ones follow. A detailed specification of the respective iteration products is created at the beginning of each iteration. In addition to the specification, the exact time schedule is also drawn up. These include the type of implementation, working hours, tasks, performers, etc. This outline may take into account current events, changes in the client's wishes, new findings or further proposals from the developers, as it may also take into account modifications to the initial requirements and assumptions (Stare, 2014). The entire project team, not just the formally appointed project manager, is accountable for executing the plan and carrying out all iterations (Piwowar-Sulej, 2021). The work and value of people in developing and creating a product is given a central role. It is to be acted upon and not just talked about. To make this possible, the methods and procedures are rather vaguely defined (Highsmith, 2001).

The core of agile PM methodology is the integration of the planning and execution phases. This allows an organisation to build a team that works on a topic and can react to changes in requirements by working collaboratively and prioritising work packages. This refers to the lowest level of a work breakdown structure. Agile methods, with their 'before' approach, try to achieve project goals quickly by executing tasks immediately and minimising the factors that lead to delay (Ali et al., 2021). When working with an agile approach, one starts by prioritising initial goals and basic deliverables. The defined project outcomes are gradually reviewed and defined in more concrete terms through an adaptive process. Another crucial approach of agile methods is that the responsibility of the project does not fall on one person but is shared among the whole team. In addition to the team members, the project stakeholders are also included in the formal and informal communication in the project. These project stakeholders can include, in particular, clients and sponsors (Aguanno, 2005; Drury-Grogan, 2014; J. Highsmith & Cockburn, 2001). Agile methods can also have a positive impact on various metrics that traditional PM cannot, such as job satisfaction (Tripp et al., 2016). Meanwhile, agile approaches are widely used and have proven that they can lead to improved project success (Conforto et al., 2014; Jorgensen, 2019; Serrador & Pinto, 2015).

The already mentioned recurring iterations are the basis of the agile PM methodology. The respective cycles contain different phases. These are planning, design, coding, and testing (Stare, 2014; Stettina & Hörz, 2015). These cycles then are repeated, again and again throughout the project until the end of the project. In each iteration there are teams which work together. Their goal is to deliver value to the client that is demonstrable (Stettina & Hörz, 2015). In the agile approach, the focus shifts from up-front planning and detailed documentation to a value-creating way of working that aims to deliver the final product according to the customer's requirements, avoiding nonmeaningful, non-value-creating work as much as possible (Dingsøyr et al., 2012; Leybourne, 2009). The Self-Organised Team is completely dedicated to only one project (Northern et al., 2010). The agile techniques were necessary to meet the demands and aspirations of the project managers to adapt their plans according to the demanding situations. The agile strategies were found to be more effective because their focus was on the problems of executing and managing projects in dynamic environments (Lindvall et al., 2002). Even though it is an agile approach that allows for more flexible planning, it should not be forgotten that the earlier phases of the project should also be taken into account. Flexibility simply means that the planning phase is not limited to a single point but is spread out over a cyclical process (Ali et al., 2021).

The measures used in the project are constantly adapted in the agile approach. The approaches of the respective PM method used should also be expressed in the organisational culture. This is

because the organisational structure in which projects are introduced does not lend itself to projects (Gray & Larson, 2011). If an organisation decides that it wants to use agile methods, significant changes are necessary. The traditional culture, the existing mindset as well as the project team itself must adapt to this change.

#### 4.1.3.2. Agile Manifesto

The so-called agile manifesto was written in February 2001. It says that in agile implementation there are four values and twelve principles that need to be observed (Dybå & Dingsøyr, 2008). The goal is to achieve interaction between different people that should take place through technology. Furthermore, interactions with the customer should also take place and their requirements should be negotiated. Finally, the plan should be modified and adapted based on the new findings. In agile PM, in contrast to the traditional approach, documentation is not the highest priority. This is to make it easier for project managers to work in an agile environment. The project managers are encouraged to react and document when needed (Ali et al., 2021).

The community has called for more flexible processes, which is why a group consisting of practitioners and consultants from the field of software development came together to define the agile manifesto (J. Highsmith & Cockburn, 2001). The basis of the manifesto are the values and principles that should be used to influence the software development community (Telemaco et al., 2020). In this paper, the manifesto will also serve as the basis for defining the term 'agile' and will be considered in the development of the artefact.

The agile manifesto emerged when the incidence of failed software development projects increased. These projects used to be built upon the waterfall model. The approach that did not work for software projects was to define the scope of the project before it started. By focusing on the goal defined in advance, this was made more difficult. By having each phase take place over a long period of time, it makes it difficult to review the results when the project is finished, and the software is introduced. A culture of communication and collaboration is not conducive to this way of working and has a negative impact on the success of the project (Piwowar-Sulej, 2021).

The agile philosophy includes all methods that support the values of the agile manifesto (J. Highsmith & Cockburn, 2001):

- 1. "Individuals and interactions before processes and tools.
- 2. Working software before extensive documentation.
- 3. Collaboration with the customer before contract negotiations.
- 4. Reacting to change before following a plan."

The twelve principles of the agile manifesto are as follows (Beck et al., 2001):

- 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-organising teams.
- 12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly."

The agile manifesto provides a framework for how people might work (Binder et al., 2014). The manifesto does not specify who should do the work. It only provides methods and frameworks that follow the values and principles. The different agile methods have their own rules, practices, and events. In general, however, all iterative and incremental development cycles promote self-organised teams and evolutionary product development (Miller, 2020).

#### 4.1.3.3. Benefits and Challenges of Agile

There are various advantages and disadvantages in the application of agile methods that need to be considered when selecting them for the company. In the following, different aspects are reviewed in this regard.

The advantages of agile methods include cost savings and rapid implementation of projects. The method is also flexible and offers the possibility to respond to changes (Stettina & Hörz, 2015). They are particularly suitable for projects with uncertainties, volatility, and risks (Jackson & Project Management Institute, 2012). It also offers the possibility of avoiding the bureaucratic overhead that is essential in traditional approaches (Stare, 2014). The main advantage of agile methods is the ability to respond to changing tasks and requirements (Alaa & Fitzgerald, 2013).

The disadvantages of agile methodology are related to the processes. Proponents do advertise the lightweight nature of this approach, as it eliminates documentation requirements. However, the agile approach is very process intensive. Following agile approaches requires robust and strict adherence to the processes prescribed by the method (Alaa & Fitzgerald, 2013). Self-organisation can become a challenge in practice as many managers are familiar with a command-and-control style (Augustine & Cuellar, 2006). This dichotomy can compromise efficiency and speed (Pace, 2019). The organisational structure should provide the opportunity for agile action. This is because this way of working can cause stress and chaos (Thillaisthanam, 2010). The possible changes in requirements may cause cost overruns and errors in rework (Conforto et al., 2014).

Agile offers several factors that are useful for project success. One is expanded test coverage, as well as reduced time and cost, a collaborative environment, customer satisfaction, improved self-esteem, and more maintainable code (Vijayasarathy & Turk, 2008).

According to Stankovic et al. (2013), Chow and Cao (2008) and Vijayasarathy & Turk (2008), the reasons for agile project failure can be divided into four categories. Organisation, people, processes, and technology are the dimensions that enable agile projects to fail:

- Inadequately defined project scope, requirements, planning or role of the customer.
- The use of inappropriate technologies and tools.
- The organisation has a traditional or political culture.
- The organisation is too large.
- There is resistance to the project from individual groups or people.
- Customer relations are poor.
- Senior management and management do not support the lack of logistical arrangements.
- Lack of skills in PM, teamwork, progress tracking mechanisms or application of correct agile practices.
- Lack of customer presence and communication.
- Lack of training and support from colleagues.
- Dependence on economic evaluation criteria.
- Organisational resistance to change.

In addition, agile development harbours other factors that can have a critical impact on project success. These include slow participant engagement, inappropriate mechanisms for rewarding individuals. Lack of detailed cost assessment, lack of focus on maintainability and infrastructure, and lack of customer involvement and management support are other issues to consider. The scope of a project can lead to difficulties when a fixed price has been set (Vijayasarathy & Turk, 2008). Expanding the scope triggers project failure. To reduce this risk, it is recommended to implement change control (Oktaba & Piattini, 2008). The non-linear structure can affect project success due to changes in scope (Unhelkar, 2013). Poor planning can lead to unwanted involvement of people and hence wastage of money on unwanted and undesirable functions that are outside the scope of the project (Smits, 2007). Another source of error is the improper conduct of iterations or planning meetings. This can happen when more and more items are added to the backlog (Schiel, 2012).

Short iterations, as well as continuous integration and test automation, should reduce the risks of software development through agile methods (Lunesu et al., 2021).

#### 4.2. AGILE METHODS

Since the formulation of the Agile Manifesto in 2001, agile software development methods have become well established in software development projects. These are continuously influenced by external factors. Changing requirements include changing customer demands, new legal regulations, or technological changes (Dybå & Dingsøyr, 2008; Kettunen, 2007). Since that time, researchers and practitioners have studied different agile methods in greater detail (Dingsøyr et al., 2012). Numerous agile methods and methodologies have been developed and presented (Lechler & Yang, 2017) and

within these, various agile practices (Gemino et al., 2021). However, these methods and practices can be unified by a basic conceptual structure referred to as the agile approach. Among the most important of these fundamentals is the ability to adapt to change and to divide the work into different iterations as the project progresses (Aguanno, 2005; B. Boehm, 2004; Shenhar et al., 2001). There is a seamless transition between principles and methods, methods include the different frameworks and practices.

With the adoption of agile practices, such as short iterations, frequent builds, and continuous deployment, both configuration and version management become challenging (Paasivaara & Lassenius, 2006). However, these practices can increase the translucency of the work-in-progress and enable stakeholders with a comprehensive overview of the current project progress (Paasivaara, 2004). Adopting an agile methodology, in contrast, can change the organisational culture within an organisation; therefore, to deploy agile practices in an environment of global software, developers should be given more sovereignty and should be empowered to make decisions (Razzak et al., 2018).

Agile is probably the most widely used approach for the rapid and responsive development of software. Agile frameworks such as Extreme Programming (XP) have gained acceptance in software development doctrines (Devedžić & Milenković, 2011; Mahnic, 2012).

The adoption of agile PM methods is widespread (Serrador & Pinto, 2015). PM tasks within agile projects, on the other hand, are not precisely defined, which can lead to potential confusion in practice (Hobbs & Petit, 2017; Noll et al., 2017; Taylor, 2016). The agile methods support with their different outcomes, processes, and artefacts. This offers projects the possibility to react to changes and to deliver their results in an iterative and incremental way. If agile methods are applied consistently and a project manager is excluded, the role of the project manager and some project management tasks could consequently become redundant. The publications contain contradictory explanations of the role of the project manager in agile projects. Furthermore, there is only limited explanation of how the roles of other project stakeholders are involved in project management activities way (Miller, 2020).

The best known and most widely used development and management methods are Scrum, Kanban, XP, and lean software development (Digital.ai & Shirokova et al., 2020). These are the projectoriented approaches and are well suited for use in small teams (Shirokova et al., 2020).

#### 4.2.1. Agile Development Methods

From the perspective of ISO 9000 and other standards, agile methods and procedures are only one way of implementing processes. If an organisation is to meet quality standards such as ISO 9000, it must demonstrate a continuous improvement process and an internal quality review process. With the introduction of Lean (Kanban) and Agile methods and procedures on the part of the Agile Center of Excellence (ACE) in numerous projects (Poth, 2016). In recent years, the pilot status of the few early adopters has disappeared. In order to meet the expectations of compliance with the established standard, the ACE must have a process for cyclical review of the current implementation of relevant quality management (Poth & Kottke, 2018).

Agile frameworks dominate in software development, which include methods such as Crystal, Dynamic Software Development Method (DSDM), Feature-Driven Development (FDD), Lean Software

Development, XP (Dybå & Dingsøyr, 2008; Stettina & Hörz, 2015). The main methods of agile PM include Kanban, Scrum and Lean Management (Pace, 2019). These are discussed in more detail in the following chapters 4.2.2, 4.2.3, and 4.2.4.

#### Adaptive Software Development

Adaptive software development (ASD) encompasses experience with rapid application development and the essential perspective of software development groupings viewed as diverse adaptive systems. Adaptive approaches are most appropriate when requirements are uncertain or volatile. This can happen as a result of business dynamics and rapidly evolving markets. Traditional methods have limited applicability in such unstable markets (J. A. Highsmith, 2000). ASD modelling is one of these adaptive approaches which provides a guidance framework to prevent projects from falling into disarray. The static life cycle Plan-Design-Build is replaced by the dynamic life cycle Speculate-Collaborate-Learn (Alnoukari et al., 2008). The concept of ASD offers possible solutions for the design of large-scale and highly complex systems and supports incremental and iterative development with continuous prototyping (Sadiq & Hassan, 2014) as illustrated in Figure 4.5.



Figure 4.5 – Dynamic Life Cycle of Adaptive Software Development. Prepared by the author

#### **Crystal Family**

The Crystal Method is one of the most common agile methods. It was evolved by Alistair Cockburn in the 1990s. This method is intended to counteract the frequently changing project conditions and characteristics. It covers a variety of available options, among which the most appropriate for the project can be selected (Abrahamsson et al., 2003; Cockburn, 1998, 2001). The focus is on the effectiveness and habitability of project safety tools (Moniruzzaman & Hossain, 2013).

The benefits of the crystal family include improving communication and collaboration across the project team, improving system performance and ultimately faster results as well as improving the development process. In this method, different colours are assigned to the different methods
according to their agility as displayed in Figure 4.6. Thereby, the order of the methods is from most agile to least agile (Abrahamsson et al., 2003).

There are different types, including Clear Crystal, Yellow Shining, Orange Crystal, and Red Crystal. The classification of colours depends on the project size and load. In all Crystal methods, specific roles, platform standards and lines should be followed (Butt, 2016). Crystal methods are open to all development practices, tools, and work products (Cockburn, 1998, 2001).

|                            |                            | Crystal Methodologies                    |         |          |          |           |
|----------------------------|----------------------------|--|---------|----------|----------|-----------|
|                            |                            | Clear                                    | Yellow  | Orange   | Red      | Maroon    |
| Criticality of the Project | Life (L)                   | L6                                       | L20     | L40      | L80      | L200      |
|                            | Essential Money (E)        | E6                                       | E20     | E40      | E80      | E200      |
|                            | Descretionary Money<br>(D) | D6                                       | D20     | D40      | D80      | D200      |
|                            | Comfort (C)                | C6                                       | C20     | C40      | C80      | C200      |
| ~                          |                            | 1 to 6                                   | 7 to 20 | 21 to 40 | 41 to 80 | 81 to 200 |
|                            |                            | Number of People involved in the Project |         |          |          |           |

Figure 4.6 – Crystal Methodologies. Adapted from Cockburn, 2005

# **Dynamic Systems Development Method**

DSDM is a method developed by a special British consortium (Noll & Atkinson, 2003; Schuh, 2001). It was first published in 1994. The basic idea of DSDM is that rather than setting the functionality of a product and then adjusting time and resources to achieve that functionality, it is better to set time and resources and then adjust the functionality accordingly. DSDM sets cost, quality and time at the outset (Choudhary & Rakesh, 2016).

The focus is on people, not tools. The goal is to fully understand an organisation's needs, develop software solutions that work, and deliver them as quickly as possible. DSDM delivers a framework of controlling elements and recommended approaches for efficient application development. DSDM has proven to be highly effective in developing maintainable systems that better meet business needs than those built with traditional lifecycles since its release in January 1995 (Stapleton, 1999).

DSDM is a modified version of the Pareto principle. According to the Pareto principle, 80% of a project's functionality is delivered 20% of the time in order to fully deliver 100% of the project. It is intentionally planned in such a way that the remaining 20 % of the functionalities are set aside for future iterations (Fahad et al., 2017).

DSDM supports multiple teams in a project and is more suitable when the number of team members is smaller. DSDM has 3 phases: pre-project, project life cycle, and post-project. The DSDM project life cycle in turn has five phases of its own which are illustrated in Figure 4.7, of which the first two are sequential and the other three are iterative and incremental (Aitken & Ilango, 2013). In the pre-project, the stakeholders of the project are identified, funding is determined, and commitment is confirmed (Strickland, 2011). In the project life cycle, the feasibility of the system development method is first assessed. In the foundation, the project resources are determined, the system architecture is outlined and the priorities for the system requirements are set. In the third phase of the project life cycle, exploration, the functional prototypes, and artefacts are developed. In engineering, the design prototype is created. Finally, implementation takes place. Here the systems are implemented, the users are trained, and the system is delivered. After the project life cycle is complete, the final phase of DSDM is project wrap-up. This is where it is ensured that the system works effectively in the operational environment. DSDM has an iterative nature and most of the time the project is not completed in one cycle as the product goes back to the previous phase and is refined in this way (Strickland, 2011).



Figure 4.7 – Dynamic Systems Development Method. Adapted from Jabeen et al., 2014

#### **Extreme Programming**

XP is a compilation of familiar procedures for software development. The aim of XP is to achieve successful software development despite imprecise or constantly changing software requirements. XP attempts to reduce the effort required to change requirements by performing several small development cycles instead of one long cycle (Choudhary & Rakesh, 2016). It was developed by Kent Beck (Beck & Andres, 2005) and includes several practices, of which pair programming is considered very important for ensuring coding quality (Müller & Padberg, 2003).

XP is not only the best known but probably the most controversial of the so-called agile software development methods. XP was developed as a simple concept for software development and

subsequently optimised. It is technology neutral in that it does not involve the use of a particular programming language, development tool, hardware/software platform or modelling paradigm. Rather, XP focuses on the way human programmers proceed and collaborate. This knowledge is used to make the programming process as effective as possible (Mišić, 2006). The four phases of XP are shown in Figure 4.8. The phases are planning, coding, design, and testing. The principal objective is to fulfil the client's demand as the specification emerges (Butt, 2016).



Figure 4.8 – Extreme programming. Adapted from Choudhary & Rakesh, 2016

# Feature Driven Development

FDD was initially applied in 1997 by Jeff De Luca in a large project. It is an agile software development approach that utilises short iterations to deliver working software. FDD is a strongly adaptable agile software development approach which focuses on quality in every phase. Since the term itself suggests, the feature is an essential part of this model. A feature is every valuable functionality that the end-user desires to have within the application. FDD focuses primarily on the designing and building phases. It often leads to tangible deliverables and provides information about the progress and status of the project (Abrahamsson, 2002).

FDD is the most object-oriented method among all agile methods. It is easy to use, its design and implementation are based on object-oriented components, and it is well suited for complex and large projects, architectural design and modelling (Moniruzzaman & Hossain, 2013).

Furthermore, FDD is a model-driven process with short iterations consisting of five basic activities. These activities are developing an overall model, creating a feature list, planning by features, designing by features, and building by features. The FDD approach combines iterative development with industry best practices. The specific mix of these components brings uniqueness to the FDD procedures for every instance. It emphasises quality aspects through the whole process and

incorporates frequency and tangibility of delivery as well as close supervision of the progress of the project (Choudhary & Rakesh, 2016).

# Lean Development

The term 'lean' was first publicly applied to a production management process and then to product development at MIT in the mid-1980s (Poppendieck & Cusumano, 2012). Lean development (LD) is a product development paradigm that focuses on creating value for the customer, eliminating waste, optimising value streams, empowering employees, and continuous improvement. Lean thinking has taken hold in many industries. It was first applied in the manufacturing industry with the clear goal of empowering teams, reducing waste, optimising workflows and, most importantly, keeping the market and customer needs as the primary basis for decision-making (Ebert et al., 2012).

With LD, the basic ideas of the Toyota product development system are applied to software development. They have been very successful with the change in their approach and have been able to significantly improve their software development processes (Poppendieck, 2007). Companies which want to follow Toyota's example face the challenge of developing a company-specific LD concept and devising suitable ways to implement it. However, the design principles, methods and tools must be adapted and not copied in LD, as Lean is above all a way of thinking that leads to tasks being carried out differently. To successfully introduce a LD concept, it is essential to take these framework conditions into account. Only when the challenges are properly managed and a suitable strategy for introduction is developed can the full potential be realised by the company (Dombrowski et al., 2015).

# 4.2.2. Scrum

In the winter of 1986, the joint article "The New Product Development Game" by Ikujiro Nonaka and Hirotaka Takeuchi was published in the Harvard Business Review. This was the first to present a new approach to project development. In the early 1990s, Ken Schwaber and Jeff Sutherland described and documented the new approach in detail and applied it successfully (Doronina & Doronina, 2018). In 1995, the term 'Scrum' was first introduced by Ken Schwaber (Misra et al., 2007). Scrum is a method used to manage information systems development with a focus on quality control of the development cycle. Along with managing software development projects, this approach is also applied by teams of software support staff and is an effective way to manage software development and maintenance (Doronina & Doronina, 2018). This approach was developed to overcome the problem of repetitive modifications of project specifications. The Scrum approach serves to simplify the project by providing a clear approach, documentation that is easy to update and a high level of mutual relationship between team members (Misra et al., 2007).

Scrum is one of the most popular agile methodologies and a process model of project management as it specifies a process that is carried out iteratively until a business owner declares the outcome complete. Scrum relies on small teams of practitioners who self-manage and organise themselves according to the processes prescribed by Scrum (Schwaber, 2009). Over time it has become the face of Agile and the terms are often used interchangeably. The reason for Scrum's popularity is that it allows the product owner (PO) to start a project without extensive pre-planning, and because it is also a methodology, the number of people using Scrum as a development technique has increased significantly since 2013. According to Srivastava et al. (2017) around 82% of their 5000 respondents are already using Scrum within their organisation and another 11% are piloting it.

Other focuses are on simplicity, flexibility, team coordination, customer engagement and some productivity lays. It focuses on a small team size that prioritises the backlogs to be considered for developments in the form of appropriate sprints until the product is delivered with continuous customer improvements and feedbacks (Kniberg, 2015). This involves a set of basic elements and rules, a kind of framework, on which the process is built. The main elements of the framework are Scrum teams as well as the associated roles, events, artefacts, and rules. Every element of the framework fulfils a particular utility and is an indispensable element for the effective use of Scrum. They are all described in the document Scrum Guide, created in 2009 by Ken Schwaber and Jeff Sutherland (Schwaber & Sutherland, 2017).

Scrum is one of the agile PM methods. Scrum consists of different Sprints. A Sprint is a time frame for all Scrum events, usually spanning two weeks to one month. Each sprint is guided by a sprint goal. There are four events in Scrum: Sprint Planning, Daily Scrum, Sprint Review, Sprint Retrospective. Each event in Scrum aims to review and adapt, which allows agility to come to life and follow the principles of continuous improvement (Shirokova et al., 2020). The daily scrum usually takes place at the same place and time of day, ideally during mornings. In Sprint Planning it will be planned what are the tasks which shall be fulfilled during the sprint. In the Sprint Retrospective, the team evaluates the last sprint. They elaborate on questions like, what went well during the sprint, what e.g., practice should we adapt and what wasn't so successful. It will be derived how they could stick to the good parts and what would be actions to resolve their current issues. The Sprint Review, which will be done at the end of a sprint. It is possible that stakeholders are part of it. The progress made is examined and develops the basis for the following sprint planning.

There is no formal role of a project manager. Scrum involves a Scrum Master (SM) role, that is helping the team to work towards their utmost level of excellence. In addition, the SM guards the team from distractions, both internal and external, and strives to fulfil the Scrum values. Ideally, a development team should be between three and nine people, excluding the SM and the PO. Scrum teams are self-organised, multi-functional and, collectively they have all the abilities required to deliver a product increment. Within the teams there is no formal structure of hierarchy. Scrum does not recognise job titles for any development team member, regardless of the work that each individual performs. Each team member chooses their own set of project tasks, depending on consensus, their individual talents, and other circumstances, e.g., availability of time. Those who participate in one team may not be engaged in different projects (Schwaber & Sutherland, 2017). Thus, Scrum comprises three basic roles. One is the PO who is the link between the development team and the customer. The aim of the PO is to maximise the value of the deliverables being developed and the effort of the whole team working together. One of the most important tools of the PO is the Product Backlog. The Product Backlog contains the necessary work items e.g., story, bug, task. The Product Backlog is prioritised according to urgency. The second role is the SM he is a servant leader. The SM's goal is to help the team maximise its effectiveness by removing obstacles, helping, training, and motivating the team, and supporting the PO. The third fundamental role is the development team, which consists of professionals who work directly on the product (Doronina & Doronina, 2018).

With Scrum, it is possible to meet demanding and dynamic challenges while realising high value products in a productive and creative way. Scrum is about a small team of people. Each team is both flexible and adaptive. According to the Scrum Guide, every team member should share the five Scrum values of courage, commitment, respect, focus, and openness (Shirokova et al., 2020). Scrum focuses on productivity through communication and planning, giving teams the freedom to discover ways to develop solutions. It also provides a more efficient process in case a fundamental change is needed. In addition, Scrum is most suitable for teams that can focus entirely on developing the project or a product (Kniberg, 2015). Other benefits include reducing costs due to constant communication and increasing quality by ensuring that all teams are aware of issues and changes (Srivastava et al., 2017).

Scrum is a framework designed to support the management and control process of software and product development, combining incremental and iterative approaches. Over the years, Scrum has become increasingly popular and has proven to be a useful framework. However, despite its widespread use, Scrum is not always the solution for every team which wants to become agile (Schwaber & Beedle, 2002).

Project management can be implemented based on various existing techniques. Scrum is a project development environment that does not demand a multi-page specification as in the standard model. (Doronina & Doronina, 2018).

The major differences between Scrum and other agile development methods according to (Srivastava et al., 2017) are summarized in Table 4.1.

| SCRUM   | OTHERS  |
|---|---|
|   | ASD   |
| The processes used are simple and complex at the same time.                                 | There is more complexity in the procedural structure.                                     |
|   | Crystal   |
| The user requirements strictly define development and planning. The traceability is better. | There is less consideration of user requirements and difficult traceability of work done. |
|   | DSDM  |
| There is better communication between team members.   | There is less communication between team members.   |
|   | FDD   |
| More effective communication between team members and less complexity.                      | Less communication between team members and more complex procedures.                      |

# Table 4.1 – Scrum compared to other methods

|   | Kanban  |  |  |
|---|---|--|--|
| It is more prescriptive and has a formal meeting structure. The roles and iterations are clearly defined. | It is less prescriptive and has no formal meetings. The roles and iterations are undefined. |  |  |
|   | ХР  |  |  |
| The productivity is top priority which leads to customer satisfaction and is more flexible.               | Is less flexible and production is not given much priority.                                 |  |  |

Scrum offers a tailored way of working for different projects with different requirements and has advantages such as flexible selection of requirements for sprints and no specific procedures to follow (Srivastava et al., 2017).

# 4.2.3. Kanban

Another agile project management method is Kanban. Kanban found its origin in the Japanese production management system. The basis of this method is the continuous workflow structure. This makes it possible to be flexible and to adapt quickly to changing priorities. With the help of Kanban, pending work is visualised and at the same time constrained in the process, thus maximising the efficiency of the flow (Shirokova et al., 2020).

David Anderson invented Kanban software development. Even before that, different teams used some of these approaches and practices. It was Anderson who finally put them together and described them as a whole. The term finds its origin in Japanese. 'Kan' means visible or visual. 'Ban' can mean card or board. It has become known through the Toyota Production System, whose basic principles are lean production, customer orientation and continuous improvement (Monden, 2012). This method was originally used by pinning cards on a physical board such as a chalkboard. This was then used to track progress and problems. In this process, the team's work pipeline is seen and managed (Saltz & Heckman, 2020).

According to Anderson (2010), Kanban is particularly suitable for projects with uncertain outcomes and provides an alternative framework for projects while focusing on minimising work progress. On the Kanban board, the individual work items are each organised on a card and are moved from one phase or column to the next depending on the status of the work (Shirokova et al., 2020), as shown in Figure 4.9. The individual columns for the workflows can be customised depending on the project. Commonly used ones include 'Planned', 'In progress', 'Checking', 'Blocked' and 'Done (Shirokova et al., 2020).



#### Figure 4.9 – Kanban Board. Prepared by the author

There are three key principles that provide a framework for how Kanban processes should be executed (Anderson, 2010):

1. Visualisation of the workflow.

The work is divided into different parts. For this, each element is recorded on a card. This card is then pinned to a wall. It does not matter whether this is a physical board or a computer-based virtual wall, as has become more common. Various columns are displayed on the wall. These visualise the current processing status of the respective task. Through this visualisation, the workflow can be displayed and the flow of work can be observed. The visualisation of the work should lead to improved communication and cooperation.

2. Limiting the progress of work

This is achieved by firstly explicitly focusing on the Work in Progress (WIP) and secondly by setting explicit limits for each column on the board i.e., the workflow status. The number of elements allowed per workflow status is limited. This is to decrease the total duration that a task takes to go along the complete path. In addition, the problems caused by switching tasks will be avoided, and greater flexibility will be achieved, as newly arising tasks can be prioritised accordingly.

3. Focus on workflow

The team's workflow can be smoothed as team-oriented guidelines are developed through the use of the WIP limit. In addition, it ensures that the team is focused on completing the work.

The structure of Kanban makes this approach particularly suitable for value stream teams. The main component in the daily meetings is the flow and the bottlenecks. This is to be able to meet the

expectation that board layouts and guidelines will be improved and evaluated (Poppendieck & Cusumano, 2012). With the help of Kanban, various key figures such as quality, lead time and productivity can be improved (Saltz & Heckman, 2020).

One advantage over Scrum is that Kanban does not specify a fixed duration for the execution of a task. This increases agility within the team (Ikonen et al., 2011; Saltz & Heckman, 2018). It has been demonstrated with empirical evidence that Kanban can increase project team members' engagement and control over project activities (Ikonen et al., 2011). This was confirmed in a study by Sjøberg, Johnsen and Solberg (2012). Kanban can even be more successful than Scrum in software development. Through process modelling and simulation to determine different impacts of Kanban, Anderson et al. (2012) found that team performance was significantly improved and that Kanban can guide the development of succeeding projects, and Kanban has shown significant advantages over other agile PM methods in the administration and coordination of a project plan.

In addition to these advantages, and due to the few predefined roles and rules, Kanban also provides a good framework for companies that want to start implementing Lean principles (Poppendieck & Cusumano, 2012).

# 4.2.4. Lean Management

Lean Management (LM) is a production philosophy which was invented by Toyota Motor Corporation. It was founded in the last century. LM strives to find better ways of working in processes and reduce unnecessary steps in the value chain to minimise the lead time. With this change in their working routine Toyota was able to put their focus on customer value for permanently improving processes. Besides that, Toyota gained a leading position in their industry. Today, Toyota Production System is well known for their invention in this area and their approach is now used in different industries worldwide (Schuh, 2001; Womack et al., 1992).

Lean management is the concept of eliminating waste, i.e., not adding value within a system. It is a systematic approach to enable the maximisation of customer value through continuous improvement. Since its introduction into Toyota production systems by Taiichi Ohno, Lean has attracted attention from both researchers and practitioners. In this concept, the essence is that non-value adding activities such as excessive processing, overproduction, unnecessary inventory and movement, product defects, waiting time and excessive transportation can be reduced by implementing a leaner process (Eroglu & Hofer, 2011; Ono, 2019; Shah & Ward, 2007).

Lean management is a holistic approach to lean methods, i.e., the strategic implementation as well as the consideration and integration of the corporate culture. Lean can also be linked to the management of a company, and thus lean can be used not only as a methodological tool to optimise the company's goals, but also as a corporate philosophy. This can be done in various areas of a company and is independent of industry and sector (Bertagnolli, 2020). With the take-up in other sectors, the lean idea gained further popularity. This insists on a multidimensional approach based on a variety of practices (Shah & Ward, 2007). These practices include human resource management, total productive management, and total quality management (Netland et al., 2015). To strive for improvement in the manufacturing process, all that is needed is a flow chart and a map of the current value stream, but to change the mindset, awareness of the benefits of lean solutions must be raised (Pearce & Pons, 2013).

Lean management is characterised by different design approaches. The literature presents different points of view. According to Graf-Götz and Glatz (2001) lean management is characterised by the following ten design approaches:

- Orientation of all activities towards the customer (customer orientation)
- Concentration on one's own strengths
- Optimisation of business processes
- Continuous improvement of quality (continuous improvement process, CIP)
- Internal customer orientation as a corporate mission statement
- Personal responsibility, empowerment, and teamwork
- Decentralised, customer-oriented structures
- Leadership is service to the employee
- Open information and feedback processes
- Attitude and culture change in the company (Kaikaku).

When successfully implemented, Lean can lead to improvements in quality, costs, overall company performance, productivity, and production processes. The symbolic progress achieved by lean techniques is learned by only a few organisations, as they are not able to facilitate the ongoing improvements. (Maqbool et al., 2019).

Lean is often described based on the following five core principles originating from the Japanese manufacturing industry (Womack & Jones, 1996):

- Define value from the customer's perspective
- Identify the value stream
- Get the work flowing (flow)
- Create the pull of the work
- Always strive for perfection (Kaizen)

# 4.3. SCALING AGILE

Since the beginning of their development, agile practices have been linked to software development. In the original thought, they were developed for small development teams working exclusively in one location (Fitzgerald & Stol, 2017). However, over the years, it has evolved that due to the digitisation efforts of companies, there is a need to use agile practices not exclusively in IT, but to adapt them to the whole organisation (Leffingwell, 2007; Reifer et al., 2003).

Over time, it has evolved so that agile teams have grown and not all team members are in the same place (Paasivaara et al., 2012). Due to the benefits that have come from using agile methods, there has been an attempt to scale them up to larger projects or organisations (Hossain et al., 2009; Putta et al., 2018). The first frameworks for scaling agile methods were proposed by various practitioners and consultants for this purpose (Putta et al., 2018). Based on various definitions, Torgeir Dingsoyr referred to the term 'large' in the context of projects as a team consisting of two or more teams (Garousi et al., 2018).

On 20-21 February 2003, the first workshop on scaling agile methods was held in Banff, Alberta, Canada. Thirty-five industry professionals using different agile methods met to discuss various issues and questions. The following questions were discussed (Reifer et al., 2003):

- "Scaling agile methods to very large projects with barely sufficient planning and architectural work up front.
- Using a federation of coordinated teams (each working internally as an agile team) when scaling agile ideas
- Applying agile methods to teams larger than a typical XP team
- Characterising the agile continuum through different project caricatures, ranging from typical collocated XP projects to large, multi-team, multi-year projects. The academic delegates shared their experiences and ideas on how to
- Use Agile practices, such as test-driven development and pair programming, as pedagogical tools in software engineering curricula
- Explore the effectiveness of Agile practices
- align Agile methods with architectural paradigms
- to use agile methods in research projects" (Reifer et al., 2003).

After just one day, a consensus was found on many points. They agreed that agile methods are suitable for small projects, but that they are not suitable for scaling up large projects. They noted that agile methods should be able to coexist with traditional methods. At the same time, agile methods should also be applicable to large projects without violating the principles of the Agile Manifesto (Reifer et al., 2003).

Since the application of agile methods in small projects and organisations has proven to be very successful, practitioners have tried to transfer this success to a larger project or organisational scale using the same methods (Dingsøyr et al., 2018).

The ideas of the Agile Manifesto have become more widespread and commercialised. The success of Agile and the scaling that came with it gave rise to new trends. However, many developers and managers are not aware of the variety of frameworks and methods, so Scrum is often the only thing used in Agile practice (Klünder et al., 2017).

In contrast to Torgeir Dingsoyr, Dikert et al. (2016) defined a software development organisation with six or more teams as large or when at least 50 team members are involved. These teams need to be coordinated over a longer period of time, as larger projects can often extend over a long period of time, hence (Digital.ai). As a result of this development, new frameworks have also emerged. Besides using the scaling principle, they are based on project-oriented methods (Shirokova et al., 2020).

In 2004, Boehm and Turner (2004) suggested that the software industry should aim to achieve agility and discipline. With the introduction of the agile manifesto, methods were developed that can achieve the goal of agility. However, these do not deliver discipline. Discipline is delivered by traditional methods whereas these do not provide agility (Nerur & Balijepally, 2007). Therefore, the next logical step seems to be to develop methods that combine and link traditional and agile approaches so that the best possible benefit can be derived from both approaches.

Current approaches to scaling agile methods aim to meet the actual needs of the organisation. Agile and lean practices are combined to achieve this goal (Ebert & Paasivaara, 2017). The ever-widening adoption of different agile methodologies has increased the pressure on larger organisations to become more agile, increasing the adoption of agile scaling frameworks as they are said to provide standard solutions to scale (Carroll & Conboy, 2020; Uludag et al., 2021).

All different approaches to agile scaling have their respective advantages and disadvantages (Alqudah & Razali, 2016). However, the focus of the established frameworks is not on how an agile mindset and its methods can be adopted in a team (Kalenda et al., 2018). The introduction of agile scaling frameworks can also lead to various problems. These can include a lack of flexibility, coordination problems or even communication problems (Conboy & Carroll, 2019). In addition, it can also lead to difficulties in team coordination (Paasivaara et al., 2012) give or self-organisation may be threatened by scaling agility (Moe et al., 2014).

To address the issues that arise when scaling agile approaches, various experts have promoted different agile scaling frameworks for instance Large Scale Scrum (LeSS) or SAFe (Carroll & Conboy, 2020; Dingsøyr et al., 2018; Uludag et al., 2021).

Scaling agile frameworks are based on project-oriented methods that use the scaling principle (Shirokova et al., 2020). These frameworks were created by consultants (Paasivaara, 2017). Most users make use of the most common and well-known scaled agile development frameworks. All these frameworks contain predefined workflow patterns and routines, which is supported by a change of tools (Conboy & Carroll, 2019). In most cases, the frameworks are based on Scrum, as well as its main elements the Scrum team and the associated roles, artefacts, rules, and events (Shirokova et al., 2020).

Twenty such frameworks have been identified by Uludag et al. (2017), of which the SAFe and Disciplined Agile Delivery (DAD) frameworks are among the more popular models (Paasivaara, 2017). DAD is human-centred and is differentiated by giving a hybrid agile approach to IT solution delivery that is learning-centred. The risk value lifecycle of DAD is business and goal oriented (Ambler & Lines, 2012).

SAFe emphasises risk mitigation. An example of this is the SAFe programme increment (PI) planning ceremony (Beecham et al., 2021). In this, risks and attachments are identified by the teams and the objectives of the PI are set. The importance of PI planning is underlined by the words "If you are not doing it [PI planning], you are not doing SAFe" (Beecham et al., 2021). Other widely used frameworks are Scrum-of-Scrums (SoS), Large Scale Scrum (LeSS), Spotify "model", Nexus (Shirokova et al., 2020).

# 4.3.1. Scaled Agile Framework

Dean Leffingwell first published SAFe in 2011. It is a continuously improving framework that is updated regularly. Currently, version 5 has been published in January 2020 (Leffingwell, 2021). SAFe leverages the extensive knowledge pool of systems thinking and lean product development while applying the power of Agile (Leffingwell, 2016). SAFe aims to provide a recipe for adopting Agile at the enterprise level (Paasivaara, 2017).

SAFe 5 is based on the seven core competencies of the Lean Enterprise, which are used to achieve a competitive advantage in the digital age (Figure 4.10). These include:

- 1. Lean-Agile Leadership: sustains and drives organisational change by motivating teams and individuals to realise their full potential.
- 2. Team and Technical Agility: Agile behaviour within the team is encouraged. As well as sound technical practices such as Agile Testing and Built in Quality.
- 3. Agile Product Delivery: using design thinking and condense orientation to build highperforming teams to deliver a continuous flow of valuable products.
- 4. Enterprise Solution Delivery: building and maintaining software applications, cyber-physical solutions, as well as networks.
- 5. Lean Portfolio Management: implementing the portfolio vision and strategy formulation.
- 6. Organisational Agility: lean and system-oriented approaches to aligning strategy to agile portfolio operations and investment funding
- 7. Continuous Learning Culture: Developing into a continuous learning organisation through the continuous enhancement of competence, knowledge, and performance.

When organisations master these seven core competencies, they can successfully adapt to volatile market conditions, new technologies and changing customer needs by bringing the necessary agility (Leffingwell, 2021).



Figure 4.10 – SAFe Overview – Seven Core Compegtencies. Retrieved from SCALED AGILE, INC, 2022

SAFe consists of four different levels, these levels build on nine core principles of the Lean-Agile culture. These principles are supported by continuous certification and training and are integrated into all levels. These three levels are, firstly, the Essential Level. Here, several agile teams work together according to a chosen agile method, such as Scrum. The goal of these teams is to deliver a collection of PI within approximately five sprints. Value streams are produced by these groups consisting of the agile teams. Within this level, there are only two organisational levels, namely team and programme. Secondly, there is the big solution. This level is introduced when it is a product that is developed by more than 150 people. Here, the value streams from the level below are combined into a solution. The third level is the portfolio level. This mainly includes the managers within an organisation. The employees involved in strategic planning and budgeting are affected by this level (Shirokova et al., 2020). The fourth level is the full level where all levels are represented, namely team, programme, large solution, and portfolio (Beecham et al., 2021; Knaster & Leffingwell, 2020; Leffingwell, 2016).

The Essential SAFe foundation is the easiest point of entry for implementing it. It is builds on the principles of Lean-Agile Leadership, Team and Technical Agility and Agile Product Delivery competencies. The organisational structure in which SAFe resides is also known as the Agile Release Train (ART). In this, Agile teams and key stakeholders engage in a purposeful and continuous problem-solving mission. The Essential SAFe includes both the Agile Team and the ART, as shown in Figure 4.11 (Knaster & Leffingwell, 2020).



#### Figure 4.11 – Essential SAFe. Retrieved from SCALED AGILE, INC, 2022

In the Large Solution configuration, the Enterprise Solution Delivery competency is added on top of the existing components. This supports in the development of the biggest and complex solutions, where several ARTs and suppliers are required. Nevertheless, portfolio-level considerations are not yet required here. This type of solution development is particularly typical in sectors such as the automotive industry and public administration. The focus here is not on portfolio governance, but on the big solution. The solution train organisational structure can be used to address major challenges.

Here, additional roles, artefacts, events, and coordination are required, as can also be seen in Figure 4.12 (Knaster & Leffingwell, 2020).



Figure 4.12 – Large SAFe. Retrieved from SCALED AGILE, INC, 2022

In the Portfolio SAFe configuration as in Figure 4.13, all the competences and practices it needs to enable full Business Agility are added. In Portfolio SAFE, two additional competencies are added to the three core competencies from Essential SAFe. These two competencies are Organizational Agility and Lean Portfolio Management. Organizational Agility extends Lean thinking and practices throughout the organisation, enabling strategic agility. Continuous Learning defines how learning, improvement and innovation are implemented within the organisation. Lean Portfolio Management is used to adapt the business strategy based on portfolio execution. Through one or more value streams, development is organised around the value stream. In addition to these competencies, Portfolio SAFe includes portfolio strategies and investment financing, lean governance, and agile portfolio operations (Knaster & Leffingwell, 2020; Tengstrand et al., 2021).



Figure 4.13 – Portfolio SAFe. Retrieved from SCALED AGILE, INC, 2022

The largest configuration, Full SAFe displayed in Figure 4.14, includes all seven core competencies required for business agility. This configuration is mainly applied in the largest companies in the world (Knaster & Leffingwell, 2020).





#### Figure 4.14 – Full SAFe. Retrieved from SCALED AGILE, INC, 2022

Practices such as Scrum with XP are used in the team levels. However, a use of Kanban is also not uncommon (Paasivaara, 2017). The collaboration is between the Scrum Master, the agile teams, and the PO. They deliver working systems biweekly and develop based on user and enabler stories (Leffingwell, 2016; Tengstrand et al., 2021).

On average, the ART consists of five to twelve teams, whose collaboration is coordinated by the Release Train Engineer. This is where the focus is on creating the artefacts such as roadmaps, features, and vision (Tengstrand et al., 2021).

The ART teams are responsible for defining, building, and testing the software within the iterations and releases. The coordination effort between the teams is reduced by team events such as backlog refinement, sprint planning and sprint review (Turetken et al., 2017). The release planning meeting after every five iterations is intended to prevent synchronisation problems of tasks. Teams, roles, and activities are organised around the ART (Leffingwell, 2016).

The three functions are the Release Train Engineer, he is the Chief Scrum Master for a Train. His role is to optimise the value flow through programme Kanban, Inspect & Adapt workshops, as well as PI planning. The Product Management is the internal representation of the customers and acts as a link between them and the PO. The system architect defines the non-functional requirements, the overall architecture and determines its main elements and subsystems. He is responsible for ensuring the successful execution of these (Razzak et al., 2018).

# 4.3.2. Benefits and Characteristics of the Scaled Agile Framework

SAFe is one of the leading frameworks in the field for Enterprise Agility (Knaster & Leffingwell, 2019). It is an interactive knowledge base that implements agile practices at the enterprise level (Shirokova et al., 2020) and consists of a set of different practices and principles designed to enable agile working throughout the organisation. Through this selection of tools and practices, SAFe can be configured differently and adapted to the needs of the organisation. There is an implementation roadmap to assist with implementation or transformation. The framework is suitable for medium sized companies of about 50 employees to large ones of several thousands (Knaster & Leffingwell, 2020; Tengstrand et al., 2021). At the most comprehensive level, there are guidelines for team, programme, value stream and portfolio (Tengstrand et al., 2021). This framework can be seen as a modular and scalable container for different already existing agile approaches. This flexibility allows SAFe to be adapted to different needs (Laanti, 2014). Although the framework is popular and widely used for these reasons, it is difficult to implement (Foo et al., 2020). The wide distribution and high number of teams makes collaboration and coordination challenging (Paasivaara, 2017). To facilitate this, a smooth entry into the agile world is provided. These provide patterns to facilitate the transition from a traditional to an agile environment (Beecham et al., 2021; Dybå & Dingsøyr, 2008).

SAFe has made it into different industries and sectors. In addition to manufacturing and software, it has also made its way into financial services (Laanti, 2014; Paasivaara, 2017; Pries-Heje & Krohn, 2017; Turetken et al., 2017). To be able to use Full SAFe, all areas of the organisation should work agilely, including supporting departments such as marketing and sales (Pries-Heje & Krohn, 2017).

In the last two decades, no clear role definitions have been presented in the classic agile toolkits. In SAFe, these are included, which managers partly find convenient. On the other hand, this can also be seen as too inflexible because too much is prescribed. This can make SAFe seem cumbersome and complex (Kalenda et al., 2018).

By SAFe's own admission, it offers some business benefits such as 20%-50% increase in productivity, - 50%+ increase in quality, -30%-75% faster time to market, -measurable increase in employee engagement and job satisfaction (Beecham et al., 2021; Paasivaara, 2017). SAFe users report that it leads to significant productivity and quality improvements (Laanti, 2014). This is confirmed by various international companies. They have noted considerable improvements in their productivity and quality with the introduction of SAFe (Razzak et al., 2018).

In order to implement a framework within a company, a certain basic building block must be laid in the minds of the employees. It must be recognised by the employees and management that it can be good to turn to something new and leave the old structures behind. The agile mindset is about creating transparency and striving for continuous improvement. In doing so, it is also okay to experiment and not have something work on the first try (Conboy & Carroll, 2019; Pries-Heje & Krohn, 2017).

One of the reasons given for adopting SAFe is to maintain competitiveness. The most commonly expected benefit is better collaboration and dependency management between teams. Other adoption reasons or benefits may include, instilling an agile way of thinking, meeting the demands of regulated environments, or breaking down silos and achieving technological expertise. Most of those interviewed by Putta et al. (2018) stated that the chosen framework met their expectations. However, with the introduction of SAFe, some positions as they are now found in the company may no longer be there. It may happen that some positions simply become obsolete. There are SAFe specific positions for this (Pries-Heje & Krohn, 2017).

There are also voices according to Ebert & Paasivaara (2017) that SAFe would lead to more bureaucracy and evolve into the new waterfall.

# 5. IKOR'S MARKET OFFER

Based on the insights gained from the practical experience and the theoretical knowledge from the previous chapters, it will be dealt with the elaboration and testing of the artefact. For this purpose, the assumptions are first summarised. This is followed by a proposal of what IKOR aspires to achieve with the market offer and what it should look like. Afterwards, the created market offer will be tested in an actual setting. After the practical test, both the artefact and the corresponding procedure are assessed and evaluated by experts.

A market offer is defined as a service that is offered. This means that a market offer in this work is not a market offer from the area of economics, but a service offer of a company, which is then sold to their customers. In other words, a compilation of one or more activities.

# 5.1. ASSUMPTIONS

The following assumptions serve to support and define the proposal. The assumptions are divided into two parts. On one side, the assumptions that are taken from the theoretical research, mainly according to the Relevance Cycle and the Rigor Cycle, and on the other side, the assumptions that are taken from the experiences gained during the internship.

The assumptions will also be used for defining the recommendations in 5.3.2.

#### Assumptions based on theoretical knowledge

#### Organisation

- The term 'large' in the context of projects as a team consisting of two or more teams (Garousi et al., 2018)
- A software development organisation with six or more teams is large or when at least 50 team members are involved (Dikert et al., 2016)

## Work Organisation

- In traditional projects the scope is predefined and the time and costs spent can be variable.
   Whereas, in agile projects, time and costs are defined in a preliminary stage and the scope of the project is aligned with these parameters (Ali et al., 2021)
- In addition to the team members, the project stakeholders are also included in the formal and informal communication in the project. These project stakeholders can include, in particular, clients, and sponsors (Aguanno, 2005; Drury-Grogan, 2014; J. Highsmith & Cockburn, 2001)
- The focus shifts from up-front planning and detailed documentation to a value-creating way
  of working that aims to deliver the final product according to the customer's requirements,
  avoiding non-meaningful, non-value-creating work as much as possible (Dingsøyr et al., 2012;
  Leybourne, 2009)
- The introduction of agile scaling frameworks can also lead to various problems. These can include a lack of flexibility, coordination problems or even communication problems (Conboy & Carroll, 2019)
- Agile can lead to difficulties in team coordination (Paasivaara et al., 2012)

# Agile knowledge

- Agile means that someone or something is able to move quickly and easily or has the ability to think quickly while being mentally alert and attentive (Piwowar-Sulej, 2021)
- Agile is defined as a change-responsive mindset and view (Canty, 2015; Koch, 2005; Project Management Institute, 2017a)
- It is characterised by high openness to change, as well as high flexibility to complex task management. This mindset extends not only to individual projects, but to entire organisations (Piwowar-Sulej, 2021)
- Agile and lean practices are combined to achieve scaling agile methods which aim to meet the actual needs of the organisation (Ebert & Paasivaara, 2017)
- Mostly, the frameworks are based on Scrum, as well as its main elements the Scrum team and the associated roles, artefacts, rules, and events (Shirokova et al., 2020)

# Culture

- The major challenges are old organizational structures which hamper the implementation of SAFe (Laanti & Kettunen, 2019)
- The entire project team and not exclusively the formally appointed project manager is responsible for executing the plan and carrying out the iterations (Piwowar-Sulej, 2021)

# Advantages and Business Benefits of SAFe

- The biggest success factors are transparency, collaboration, and cadence (Laanti & Kettunen, 2019)
- The advantages of agile methods include cost savings and rapid implementation of projects. The method is flexible and offers the possibility to respond to changes (Stettina & Hörz, 2015)
- Due to this wide range of tools and practices, SAFe can be configured in different ways and adapted to the needs of the organisation (Tengstrand et al, 2021).
- SAFe says it offers several business benefits, such as 20%-50% productivity improvement, more than 50% quality improvement, 30%-75% faster time to market, and a measurable increase in employee engagement and job satisfaction (Paasivaara, 2017 & Beecham et al., 2021).
- SAFe practitioners report that it leads to significant productivity and quality improvements (Laanti, 2014)

## Future & Vision

- By following agile methods, costs can be improved by 29%, the schedule is improved by 71% on average. Performance is improved by 122% and quality by 75%. In addition to the project characteristics, a 70% improvement in customer satisfaction is also observed (Rico et al., 2009).
- A continuously improving framework that is regularly updated. (Leffingwell et al., 2016).

## Assumptions based on the knowledge gained from the practical experience during the internship.

The survey was mainly built on information given by the theoretical knowledge i.e., the assumptions given in this chapter. The assumptions based on the knowledge gained from the practical experience during the internship where supportive to the theoretical information. It wasn't tried to create whole new categories for this purpose. The specifications and wider context were given by the experts.

# Organisation

• Amount of man days per Programm/project/organization should be relativly high

# Work Organisation

- Planning of different work packages should be needed
- Sharing current hurdels and problems which have to be faced
- Planning and organisation of managing exercises
- Communication and knwoledge sharing within the teams

## Agile knowledge

- Processes have to be defined and need appropriate methods and practices
- Knowledge sharing between the team members and leaders

## Culture

- To analyse a comapny it is important to know their leadership style
- A change management should be implemented before starting with a change
- Comitment of employees and their support is needed for a sucsessful change

## Advantages and Business Benefits of SAFe

- External representation can be an important factor in choosing a framework
- Release Cycles have to be defined and organized

# Future & Vision

- It can be helpful for the customer relationship to have transparent processes, as this creates more structure in work procedures
- Potential applicants are to be encouraged with a modern and familiar approach to organisation
- Developments of the current market should be considered to keep the competitiveness
- It should be tried to reach the vision
- Identification with vision is important for reaching it

# 5.2. PROPOSAL

This section describes how the market offer was created and what requirements were requested by IKOR. It also outlines the process by which the artefact was developed.

The market offer that IKOR was looking for consists of three parts. The first part is a business analysis, the aim of which is to determine the current situation of the insurance company. Based on this analysis, a recommendation can be made whether SAFe is suitable as an agile scaling method for the respective insurance company, or if there are additional changes that need to be made in the insurance company in order to attain this result. In addition to the business analysis, a workshop concept will also be designed for collecting the information, which includes the theoretical preparation of the workshop, as well as the creation of a presentation promoting and supporting the market offer. In addition to the assessment of the framework.

Since Insurance companies are still at the beginning of digitalization, it should initially be a marketing tool that motivates and encourages insurance companies to use agile approaches in their companies. IKOR seeks to acquire new potential customers and expand its portfolio of services.

IKOR expects that the final outcome will be an analysis of the current state of expertise on agile methods, an overview of the priorities within the insurance company and sufficient information to be able to assess whether SAFe is a suitable framework that fits the organization and aims of the customer or if an alternative scaling method should rather be looked at, assuming it is already feasible.

Within the Project Excellence department, employees work in small sprints following Scrum on topics that are to be used to expand the market offerings. One of these sprints will focus on the agile transformation of companies in the insurance sector. The analysis created in this work is supposed to form the groundwork on which the team is supposed to further develop the market offer, which they eventually want to work on.

This project seeks to develop a new approach to the evaluation of a company that relates to agile transformations within strongly traditionally organised companies, such as insurance companies. Multiple aspects should be included in the analysis and it should not follow a predefined standard.

The specification was not to focus exclusively on hard key facts, but also to include soft factors in the analysis. To achieve this objective, a small project team was set up to provide additional support. This team consisted of three additional employees. These staff members were all chosen for this particular project team for a specific role. Two of these people are certified experts in SAFe and agile transformations while one other member is a specialist in the field of workshop development and workshop methods.

Various aspects were to be considered in the analysis. Therefore, it was determined in which fields the advantages of such a framework could be found. The choice was made for the categories Organisation, Agile knowledge, Work Organisation, Culture, Advantages and Business Benefits of SAFe and Future & Vision. These are intended to cover as broad a spectrum as possible. For each of the six categories, questions were asked about the topic area. In order to make these questions more specific, so that the questioner and the respondent know what the questions refer to, additional sub-questions were formulated.

## **Business Analyse**

During the development of the business analysis, the first step was to look at what characteristics SAFe has and what advantages it brings. These were then divided into different topics and categories. It was also considered which areas could be of interest and relevance to insurance companies.

The questionnaire was drafted in several iterations. The questions were reviewed a total of three times before they were passed on for actual demonstration. During this process, each time the structure of the questionnaire changed significantly. This was due to the fact that repeatedly aspects were uncovered that were not completely applicable.

The first questionnaire was as the one described on the previous page with the different categories as well as questions and sub-questions. The idea was to hold a workshop in which different roles of the client were represented and they collectively worked on finding a satisfactory response. The questions were phrased as openly as possible, leaving a lot of room in answering them. In this first attempt it quickly became apparent that this was not to be the preferred approach, as no well-founded opinion could be formed on the basis of the statements made.

The questionnaire was modified and the sub-categorical questions were rephrased in such a way that they can be answered with either yes or no. The general division and structure of the survey remained unchanged insofar. The change to yes/no questions was to enable the questions to be presented in a comprehensible and calculable format. This was to prevent the results and recommendations from being justified on the basis of results that could not be measured. This questionnaire was tested on a client who volunteered for this purpose. The client is a global insurance company and is just at the beginning of their agile transformation. They were very willing to run through the questionnaire exemplarily. It soon became clear that there was still a need for refinement in the survey questions. There was more divergence between theory and practice than might have been anticipated originally. Among the difficulties was the fact that the recipients were not yet clearly identifiable and several questions and aspects could not be responded to with a simple yes or no.

In order to solve this, the assessment was adapted once again. For this time, descriptions were added to the respective sections, in which role and position the respondent should put him/herself in order to assess the question from the most appropriate point of view. Furthermore, the scaling was adjusted to enhance the variance of the responses for better validity of the results.

## Workshop

The workshops conducted by IKOR are organised according to a predefined process standard. Accordingly, since the business analysis is a market offer from IKOR, it is also adhered to. These components are also reflected in the procedural method for the business analysis of this work. Hence, they serve as a baseline for orientation in order to comply with the corporate design and corporate identity of IKOR.

## Workshop Concept

The concept of the workshop is subdivided into four different segments. These sections are definition, preparation, execution and postprocessing. In definition it is defined which participants are needed in the workshop, what time frame is given and what materials are needed to carry out the workshop. In preparation a checklist is provided with relevant points that should be carried out in preparing for the workshop. This is followed in execution by a specification of how the actual workshop is to be structured. The time planned for each part, the content of the topics and the respective moderator for the part are indicated. Lastly, in the postprocessing section, there is another checklist with tasks that should be carried out after the workshop.

#### **Definition:**

Participants:

### IKOR

- Moderator who also functions as the timekeeper
- Professional/SAFe expert
- Protocolar

#### *Requirements for the participants of the customer:*

• Should have knowledge about the Organization e.g., someone of the management or a transformation manager

#### Timeframe:

• 1 hour

#### Materials:

- Power Point Presentation
- Excel Questionnaire

#### **Preparation:**

Invitation is sent to all participants with agenda

Room is booked (online/offline)

Customer got the open questions in advance with invitation

Technical devices are working

#### **Execution:**

| Part  | Торіс                  | Content   | Time   | Presenter            |
|---|------------------------|---|--------|----------------------|
| Presentation<br>IKOR and<br>team<br>members | Presentation           | <ul> <li>IKOR</li> <li>Service Offerings</li> <li>Expertise</li> <li>Expert Team</li> </ul>   | 10 min | Moderator            |
| Goals                                       |                        | <ul> <li>Assess the current business<br/>state</li> <li>Find out if SAFe fits for the<br/>customer</li> <li>Implement SAFe/Find another<br/>agile framework</li> </ul>  | 5 min  | Moderator            |
| SAFe  | General<br>information | <ul> <li>This framework was initially<br/>released in the year 2011 and<br/>became the most popular<br/>framework within agile<br/>methodologies since then</li> <li>In recent years, SAFe has been<br/>adopted by various<br/>organizations to make agile</li> </ul> | 10 min | SAFe<br>Professional |

| Part       | Торіс                 | Content  | Time   | Presenter            |
|------------|-----------------------|--|--------|----------------------|
|            |                       | <ul> <li>scaling visible within<br/>enterprises.</li> <li>The second most popular<br/>scaling method with merely 9%<br/>is Scrum@Scale/Scrums of<br/>Scrums</li> </ul> |        |                      |
|            | Advantages            | <ul> <li>Optimize performance</li> <li>support large and distributed<br/>large organizations to scale<br/>agile</li> </ul>   | 5 min  | SAFe<br>Professional |
| Analysis   | Questionnaire         | <ul> <li>Get current state of the company</li> <li>Explaining how to answer survey</li> </ul>  | 20 min | Moderator            |
| Questions  | Customer<br>Questions | <ul> <li>Time for the client to ask their<br/>questions</li> </ul>   | 5 min  | Customer             |
| Next steps | Summary               | <ul> <li>Client has to fill out the survey</li> <li>IKOR will evaluate it and give recommendations</li> </ul>  | 5 min  | Moderator            |

#### Postprocessing:

- Provide the results and the protocol
- Perform the tasks discussed
- Schedule a follow up appointment if they want to implement SAFe

The presentation used will be found in the Appendix II – Workshop: PowerPoint Presentation. Please keep in mind, that there will be no personal data displayed about the people who were attending in this workshop and the respective slide in the power point document will be the cleared version. The presentation is divided into three parts. First, there are the general introduction slides about IKOR and the team that will work on the project in the following. The second part is the presentation of SAFe and its advantages. Finally, the different categories of the questionnaire are introduced before the presentation finishes and the structure and answering of the questionnaire is discussed.

## **5.3. DEMONSTRATION**

In the demonstration, the market offer is performed exemplarily. After the analysis had been finalised, it should be tested with a client. First of all, a suitable insurance company needs to be selected. After a suitable insurance company has been found and is interested in doing an analysis of their SAFe readiness, a meeting is scheduled for the analysis. The invitations are prepared according to the template in chapter 5.2. For this purpose, a short introduction to SAFe and IKOR was given to explain what SAFe is about and to highlight the most important advantages. In addition, IKOR introduces itself and gives the customer an insight into its work and fields of activity. This should also increase customer loyalty and trust. After the presentation, the analysis was sent to the client.

In the actual workshop, the concept, and benefits of SAFe will be presented. Afterwards, the analysis will be presented and explained how to answer it. The analysis is divided into different categories, each with five answer options. These are weighted at equal intervals. After the open questions were clarified and everything was presented, the appointment was over and the interviewees on the insurance side were given the opportunity to fill out and answer the questionnaire at their leisure. This method also gave them the opportunity to consult again. The person responsible in this demonstration on insurance site, was the person responsible for the digital transformation of the insurance company.

# 5.3.1. Customer/Client

The client is a global insurance company with locations in more than 130 countries. It was founded in the early 20th century. The focus is on the industrial insurance line of business.

The insurance company is currently looking at agile scaling methods and has agreed to support in this demonstration. This shall be applied in their locations in Germany.

An expert in digital transformation within the insurance company has been made available for the demonstration. He is actively involved in the transformation of the company and knows the relevant processes.

# 5.3.2. Recommendations

In the recommendations, the insurance answers from the questionnaire are examined, evaluated and interpreted. Based on the questionnaire responses, a decision is made as to what insights can be gained from the responses and what the recommendations would be in this regard.

## Organization

The current team size is manageable to oversee as they are comparably small teams with smaller projects. However, responsibilities are not fully defined and there are hurdles along the division of the teams.

## Work Organization

There is already a regular exchange on the workload, but there is still a lack of overview of the actual amount of work to be done and how it is to be documented or coordinated. The processes are not yet sufficiently coordinated.

The organisation of the management is partly better, but also in this regard there is still a potential for improvement, even if basic structures are existing.

It is desirable that these processes will be more clearly defined; so far this has not happened or only happened in parts.

## Agile Knowledge

A functioning knowledge transfer structure is already established.

Most employees are not familiar with agile methods nor have an agile mindset. However, some of them already have knowledge about Srcum and Kanban. An expansion of agility to other organisational areas is conceivable.

# Culture

The organisation's hierarchies are well aligned and there is also trust in the staff and their responsibilities.

The leadership style is currently very authoritarian, the proportion should still be high, but lower than it is now. Laissse-faire should increase significantly. A democratic leadership style is predominantly desired. So far, both have only been represented to a small extent.

The employees are basically interested in participating in improvements and have understood that these are important for competitiveness. The communication of this is still in need of improvement.

# Advantages and Business Benefits of Scaled Agile Framework

Positive expectations and attitudes towards the framework are given. It is important to have a good reputation among competitors and to be able to rely on using a framework that is already in widespread use.

For the insurance company surveyed, the business benefits achievable through SAFe were prioritised as follows:

- 1. reduce coordination effort
- 2. improve time-to-market
- 3. increase productivity of the company
- 4. reduce error rate

Complaint management can be further developed.

IT changes and planning are foreseen - better organisation and structure is needed.

## Future & Vision

The introduction of an agile framework could have a positive impact on customer relations in some areas. The use of SAFe can assist in attracting potential applicants, as they may be positively approached by a modern framework and thus a competitive company.

The pursuit of the vision has not been satisfactory so far and should be given a higher priority as well as being more widespread throughout the organization. It affects the daily work of the insurance company.

The responsibilities for certain tasks could be defined and specified more precisely. It could also provide a better overview of the existing workload. With the support of SAFe, these open points

could be addressed and resolved. Documentation and knowledge transfer processes can also be optimised. Those process optimisations are aplicable for the team itself as well as for the management.

An expansion about agile methods within the staff is also one of the points that must be addressed in order for an understanding to develop at all. It is not enough to simply teach and explain the SAFe framework or agile methods such as Scrum and Kanban. For successful change management, it is also important to convey the meaning behind why agile can be helpful for the company's future and for improving processes.

The previous structure and hierarchy provides a good foundation, which seems to be appropriate for the current processes and the trust in the employees is high. These are important prerequisites for a further distribution and transfer of responsibility to the employees in order to be able to introduce SAFe successfully. However, there will have to be a lot of cooperation from managers and also changes among staff in order to move further away from an authoritarian management style. This means new challenges for everyone. Nonetheless, there is a desire to distribute more responsibility. There seems to be trust in the staff, but it does not seem to have been implemented yet. Because the team size is manageable, it may not be necessary to use the full version of SAFe.

A basic positive attitude towards SAFe simplifies the implementation within the company. The most important point here is the reduction of coordination effort. This is reflected in the statements made so far. The second most important point is the improvement of time to market. The answers given so far clearly show that improvements are necessary here as well. The improvement of productivity and the reduction of the error rate is only third and fourth.

SAFe can also help with future IT implementations and have a positive impact there as well.

In the graphical evaluation in Daraus kann man schließen, dass sich SAFe für diese Versicerhung eigenen wird und viele Elemente darauf anwendbar sein werden. In weiteren Analysen und Gesprächen mit dme Kunden müssen nun eine genaue Roadmap für die weiteren Scritte und die Implementierung von SAFe definiert werden.

Figure 5.1 this is also shown graphically. The desired values of 100% are indicated as the target line as the outer grey border. The blue figures are the current status of the insurance. Here it is clear that the insurance company believes in the advantages and improvement possibilities of SAFe, as the highest values were achieved here. The lowest scores were achieved in the coordination and process-oriented categories. This score is consistent with the insurance company's desired areas of improvement.

Daraus kann man schließen, dass sich SAFe für diese Versicerhung eigenen wird und viele Elemente darauf anwendbar sein werden. In weiteren Analysen und Gesprächen mit dme Kunden müssen nun eine genaue Roadmap für die weiteren Scritte und die Implementierung von SAFe definiert werden.

Figure 5.1 – SAFe Readiness. Prepared by the author

From this, it can be deduced that SAFe will be suitable for this insurance and that many elements will be applicable to it. In further analyses and discussions with the customer, a precise roadmap for the further steps and the implementation of SAFe must now be defined.

# 5.4. EVALUATION

The purpose of the evaluation is to evaluate the results produced. The evaluation is undertaken with input from experts. In this case, they are identified as experts since all interviewees work as consultants. Additionally, all of whom hold a SAFe certification. Within the evaluation, the theoretical procedure and in particular the artefact developed is assessed on the one hand, and the execution of the demonstration on the other.

# 5.4.1. Evaluation Criteria

In order to carry out the evaluation, a PowerPoint Presentation is designed and will be found in Annex I – Evaluation: PowerPoint Presentation. The presentation is prepared to provide the respondents with an insight into the steps taken and to present the results achieved. The interviewees are given a brief introduction to the project and a presentation of the procedure. Afterwards, the interviewees are asked four questions rergarding the procedure and its results. These questions are also divided into these two areas. On the one hand, the general approach and the idea behind it is assessed. On the other hand, the demonstration itself is evaluated, how it was performed, and if it was reasonable and appropriate to adequately sample the artefact.

The questions are open and leave room for a variety of answers. This serves to ensure that the most wide-ranging and comprehensive answers are desired, providing as much input as possible.

The questions that should be answered to ensure a fully comprehensive evaluation are the following:

- 1. Do you think a market offer to assess the readiness for SAFe of an insurance company is a benefit for IKOR? If not, why do you believe it is not?
- 2. Is there anything that does not fit with the market offer presented? Please explain.
- 3. Do you think that the presented market offer can add value to IKOR's future activities? Please clarify why/why not.
- 4. Do you have any recommendations or suggestions on the proposed market offer for improvement?

## 5.4.2. Interviewees

## Interviewee 1 (I1)

Interviewee 1 is a manager at IKOR. She is female and between 40 and 50 years old. She has completed SAFe training and certification. She organises projects according to the SAFe model. Her management activity is in the field of project management. In addition to her management activities, she is still active in the project business. She has more than 20 years of project experience. She also has experience as a managing director. She is one of the responsible people for creating new market offers.

## Interviewee 2 (I2)

Interview Partner 2 is a consultant. He is between 20 and 30 years old and has also done SAFe certification and training. He works in project management and specialises in agile transformations among other things he also works on another market offering which is in a similar specialism. He has 5-10 years of project experience.

### Interviewee 3 (I3)

The third interviewee is also a consultant. He is between 30 and 40 years old and works as an agile coach. He has also completed SAFe certification and training and works in project management. His project experience is 5-10 years in different consultancies.

#### Interviewee 4 (I4)

Interviewee 4 is a Senior Consultant. He is between 30 and 40 years old and is a multi-project manager. He has a SAFe certification. His experience as a project manager is 5-10 years.

# 5.4.3. Data Collection

# Question 1: Do you think a market offer to assess the readiness for SAFe of an insurance company is a benefit for IKOR? If not, why do you believe it is not?

11: I think that the market offer can have a great benefit for IKOR because it is a good trigger to approach the customer in the first place and shows the knowledge of IKOR in the professionalism of the preparation. This is a good first step in approaching a customer with this topic. Then it is the case that if IKOR has a customer or market where we are not so strongly positioned, there is a great added value in learning a great deal about the customer through the questionnaire. How far along is in development, in digitalisation, how agile is a mindset? Even if the customer does not agree to work more specifically on the SAFe model with IKOR, how incredibly much knowledge can be generated, which we can then use to perhaps get other sales approaches or adapt to them. So, if an integration project has where IKOR maybe sees more than in their SAFe model, we have already gathered a lot of knowledge about how they are set up internally and how they work and can adapt the project plans and the approach and the sales impact to that. That's pretty good if it's the case that the customer wants to continue with us on this safe topic, it's the perfect basis for a kind of preanalysis and then to go into planning with the customer in a very concrete way, and by answering the questions he has revealed where he still has weaknesses, which is a good approach that is always a bit difficult, especially when you have new customers, to reach the point that he very honestly reveals where the need for action actually is, and he has become much clearer for himself by being presented with the result.

12: So basically, I would say yes, this can also be an opportunity for IKOR, if you do a readiness check, so to speak. As a first step, I think it can be a good way, but you have to challenge it again and again. I would say that, because it is an assessment of a person and I know from experience in other companies that they like to assess themselves better than they actually are.

13: In my opinion this would be a great advantage for IKOR because this is the entry point for transforming the customers with the customers.

I4: Yes, it brings added value because IKOR can develop further as a result. It could even trigger a change in the management level. SAFe is an answer to how you do things better and structure tasks. It could help to take the VUCA<sup>1</sup> world into account and fits the current zeitgeist. Issues that are

<sup>&</sup>lt;sup>1</sup> short for volatility, uncertainty, complexity, and ambiguity. VUCA describes characteristics of the modern world.

somehow decided today are no longer relevant tomorrow. You have so much information and so many problems. Where should you actually start? SAFe can be an answer to that.

# Question 2: Is there anything that does not fit with the market offer presented? Please explain.

11: So, I think that basically everything is fitting. What can happen when we apply this practically is that the SAFe framework is big and powerful. We will be able to land very well with it if we have clients who are playing with the idea anyway and who have a lot of large projects that they are implementing. For our big insurance clients or even other clients, it's perfect as it is and you can definitely use it that way. What you can certainly consider again in a second step are customers with whom you have to take smaller steps, for whom the SAFe framework is not so suitable in its entirety. In this case, you look at grading the package of measures a bit, i.e., offering less. There are still smaller insurance companies or small banks or so and whether you then put together a separate package so that it fits them better because it can be that they are a bit overwhelmed by a large catalogue of questions, but they do not yet deal with themselves so much organisationally.

I2: I think that many companies sometimes overestimate themselves or present themselves better than they actually are. That's why you have to look at how critically you approach things and I think it would make sense to start with this market offer and then see what responses you get. Based on all the responses and experiences, the readiness check can then be further expanded and adapted.

I3: From what you've shown me now, I don't see what's not coherent. It has to be presented to the client. For that you need a workshop concept. In the workshop concept, the things that are to be discussed must be recorded and the preparation and follow-up must be thought of. The procedure of just giving the questionnaire to the client and explaining the procedure to him, and then letting him fill it out himself at his leisure, also makes sense. No important step has been forgotten. No, so that fits.

I4: So, when I talk about a market offer, I know the client or my target market, my target client and I know the problems he has. I work and interact with this problem. I know: ok he wants to change from the waterfalls and from the old world to the new world and we have to somehow understand what it's all about and what his problems and difficulties are. In order to then prepare the market offer for that. For a market offer, I always find that somehow I need the user story and I believe that many are afraid of digitalisation because they don't yet know how it works and we simply have to stand there as IKOR and say 'Hey, you're afraid, no problem, we're changemakers, we can do it, we understand it, we know what it's all about' and then provide an answer to how it works and how it works in our market offer. And I think that's what has been done here.

# *Question 3: Do you think that the presented market offer can add value to IKOR's future activities? Please clarify why/why not.*

11: I am convinced that this will bring future benefits because we have a sophisticated, strategically well thought-out system for analysing the clients in their organisation, and not just in the open room. There are umpteen different possibilities, but rather they are specifically aligned with the SAFe Framework, which is very popular with our customers on the market. Not all of them use all the elements, but what you can already see is that many elements are being used again and IKOR has the chance to offer a complete package and a complete overview for the customer, which is also a

conscious decision: what do I use, what do I not use in the future? So I think if we start now and approach customers, we will also be able to generate organisational projects where we would support the customer to become more mature in the SAFe environment, to create the conditions and thus also to optimise processes, as the example also shows quite well, and through this I think we will also push other market offers that we can then bring in, simply because we will then be present at the customers for such organisational topics, and this has not yet been done so strongly.

I2: As a first step and a first basis, I think it can make sense, but then you have to talk to the people, because SAFe is also complex overall. For me, the questionnaire is a good start to get a rough indication and then to build on it and talk about the things concretely. I think there is a lot of room for interpretation. Perhaps in the follow-up interviews completely different things will come out. I think it can be useful as a starting point, for sure. Especially as a way to get in the door, so to speak, to say: Hey, this is SAFe and then to introduce the method, etc.

13: Yes, I think it is definitely a great added value for IKOR, because it allows us to see what our customers want or where their problems are, so that knowledge can be built up and we can see how much demand there is for the topic. So if somehow no one agrees with your market offer, you could theoretically assume that the topic is not so much in demand, which would be a clear answer that also offers added value and you can always build on that. That's why I think that would offer a lot of added value.

I4: Regarding the third question, I think there is a lot of potential and interest from the market perspective. I often see that not only insurance companies but also big corporations like BMW Daimler and so on are interested in it and less the classic software companies. So, I think that this framework could also help to take part in other industries as we're trying to get into the automotive industry. I am of the opinion that this is already a tremendous trend and SAFe is in demand as a framework. So, I agree with question three.

# Question 4: Do you have any recommendations or suggestions on the proposed market offer for improvement?

11: Actually, not now. I think the way it is now is perfect for the first impact. I would recommend, however, that when we have gained experience with the first 3-4 customers, that we then do additional lessons learned and sit down together to acquire the reactions of the customers, what comes out of it and then sharpen it up again.

12: So of course the questionnaire is, as I said, fine to make a fundamental classification. I think you have a workshop plan that you would then implement in order to talk to the people about the individual points again. But, a free text field that the person really writes what they mean by it or why they put it there, I think that's valuable again. You can really find out a lot more about where they stand and then, if you analyse it on the basis of that and look at which fields of action do they have? Probably in all of them, because nobody is perfect everywhere. Then you have to see where you start. I think it also offers added value.

13: Okay, so I have noticed, and I notice this more and more the more experience I have, that there are simply certain people who react negatively to the term SAFe. They say oh no SAFe, no way. There are also some in my current project and these kinds of situations happen more often. Then the

insurance companies have some kind of difficulties and then I suggest new methods and techniques and simply say: Hey, look here let's try this out and then we'll do it and it will improve the situation. These are methods from SAFe and in the end they feel overwhelmed by the complexity of SAFe. Which is of course understandable, if you don't deal with it intensively, then you simply don't understand what's going on. Some people see this as a starting point for criticism, saying that SAFe is bad or unnecessary. That's why it might be an idea to simply take out the word SAFe and call it scaled agility in the marketing, without naming a specific framework.

I4: Before, these opportunities were somehow not visible to IKOR, because they said they mainly do insurance, we somehow do public sector, and now they also have the opportunity to offer SAFe and project management in this target group and this target market, and thus to grow further and, with some adaptation of the market offer, to open up further markets.

# 5.5. DISCUSSION

In the discussion, the findings from the previous chapters are evaluated and compared. Here it is once again broken down what has been learned and how it should be dealt with.

Agile scaling supports companies in organising and optimising their processes. Organisational processes are equally considered. The entire insurance company is included and not only development departments.

Market offers at IKOR are individual service offerings that are designed to provide support to clients and give them the opportunity to develop in certain areas. In a market offer, the general procedure is defined and also the required materials are available. It serves to develop new topics and to win new customers in these or to make existing customers further offers to improve their products or organisation within the company. Market offers are used to try to enter new markets.

The interviewees from Chapter 5.4.2 were asked about this topic in Chapter 5.4.3 stating their opinion. Since all interviewees are employees of IKOR who all have several years of project experience and are partly responsible for the development of new market offers or have already been involved in it, their statements can be considered valid. In addition, all of them are also certified in SAFe.

The interviewees agreed that the creation of a market offering for the readiness assessment of SAFe can provide added value for insurance companies and support the transformation of customers (I3) as well as align with the current zeitgeist (I4). According to I1, this market proposition can contribute to approaching potential customers and connecting insurance companies with the topic of SAFe and scaled agility. By enabling a lot of information to be generated through the questionnaire, there are additional opportunities to engage with the customer and suggest further market offerings that are tailored to them. I2 notes, that when evaluating the questionnaire, it is important not to lose sight of the fact that these assessments are made by people and are self-assessments. It should always be kept in mind that they may not be made completely objectively when creating recommendations or roadmaps for SAFe implementation.

In response to the question of whether all the contents of the market offer were covered or if something was still missing in their opinion, the interviewees answered as follows. They agreed that it is appropriate at the current time and that everything has been thought of. No missing aspects or

topics were mentioned. What should be considered in the further course according to 11 and 12 is that, due to the size and complexity of SAFe, further and then also smaller versions of the questionnaire could be created later. There are many insurance companies in the German market that are not of such a big size that all the elements and methods from SAFe needs to be used. Furthermore, the questionnaire should be checked and updated regularly. Especially when the first enquiries and workshops have taken place with the customers. When practical test runs are undertaken, small details that still need to be improved can be identified. 11 also supports 12's statement on the first question that it is important to see to what extent the insurance companies have dealt with themselves and are therefore able to answer the questions comprehensively.

After the question of whether the market offer, as it has been presented, can represent added value for IKOR, the experts assessed as follows. I1 is sure that this is a sophisticated, strategically well-thought-out system for analysing customers. It can be used to give the client a comprehensive assessment of different areas. The other interviewees also see the potential for the market offering for IKOR. I3 also says that it can be used to show clients their weaknesses. Even if the market offer and the demand for it should not work, this would also offer added value because one would then get an assessment of the current situation on the market. I4 even goes beyond this and believes that the added value could be found not only in the insurance sector but also, for example, in the automotive sector. And the market offer carried out corresponds to the current trend.

The fourth and last question of the evaluation asked whether there was anything that could be improved in the market offer presented. All are of the opinion that no changes need to be made to the market offer at the present time. Nevertheless, they are all unanimous that there is still further potential to be tapped from this, such as an expansion to other sectors or frameworks. Another idea that came from I3 is to remove the word SAFe from the market offer in order not to scare off customers who may already have dealt with the framework a little bit because of its size and complexity.

All in all, the idea of the market offering was very well received. The focus of the interview participants was to a large extent already a few steps further on how the offer could be further expanded or could support in other areas. The answers to the individual questions were relatively brief, but nevertheless positive. The fact that so many ideas for further development and possibilities were suggested as to how the market offer could be used in addition is seen as positive and was also confirmed by the participants afterwards.

# 6. CONCLUSION

Finally, what has been achieved is looked at and evaluated once again and a small outlook is given on what should be looked at more closely in the future.

Several goals were pursued during the internship. Firstly, various internal tasks and projects were worked on, such as the development of internal topics and marketing campaigns for the company's internal knowledge database. In addition to these opportunities, I also had the chance to work on projects. One was an activity in the Project Management Office. In this, many basics about project management were taught. In the second part of the internship, the opportunity to participate in another project were given. In this project, the customer's AI-based cloud solution was migrated. For this, various workshops had to be planned and carried out. This allowed to use the theoretical and practical knowledge for the creation of the workshop concept. The customer's migration projects started with preliminary analyses of their customers to estimate the effort. This fitted thematically well with the analysis that was made in this work. All areas in which knowledge was needed were taught. Thus, the objectives mentioned in chapter 1.3 were fully met.

IKOR was satisfied with the work done. It fully met the desired requirements. The work done was so convincing that parts of it have already been used in other projects and a job offer as a business analyst was made. Even though the internship was originally planned and located in the area of project management, it quickly became clear that a position as a business analyst would be a better fit for the interests and skills of the intern. Since the requirements of the market offer geared towards both occupational groups, the placement was suitable all the same.

# 6.1. LIMITATIONS

The limitations refer to the aspects that might have somewhat limited the outcome of the work.

The time period in which the internship took place was limited to six months. This is a very short period of time to depict a complete DSR lifecycle. In order to be able to do justice to all steps, the scope of the artefact was set as sufficient but not extraordinarily high, since the internship also focused on collaboration in other projects as a further goal and only one third of the time scope of the Master's thesis was allocated. Therefore, only a test run with the current market offer has been carried out so far.

The interview partners interviewed all come from the same employer. As this is a specific market offer for IKOR, it was important that the interviewees are familiar with the requirements and working methods of IKOR. The entire business analysis and workshop concept are designed to meet IKOR's requirements. This is correct for the achievement of IKOR's project mandate, but it did not test whether a generally valid market offer was created that could also be used by other consultancies.

# **6.2.** RECOMMENDATIONS FOR FUTURE WORKS

In the future, a focus could be placed on different things. For one thing, the evaluation could also be carried out with external management consultants, who could make even more meaningful assessments of the general validity of the market offer. For another, further iterations could be

conducted to improve the business analysis and the workshop process. Indeed, during the internship it became clear that small improvements and changes always come out with each implementation.

Two other aspects that can be considered in the future is the further development of the analysis. With the work, the preliminary study was done. After that, if the analysis shows that SAFe is the appropriate framework, the logical consequence would be to plan the implementation. For this, SAFe already offers a roadmap of how the procedure should be. The following workshops still need to be planned and organised.

The other aspect is the adaptation of this analysis to other frameworks, so that if SAFe is not suitable, it is possible to look for an alternative proposal.

IKOR's employees, my colleagues, will work on little changes to improve the business analysis and to provide a more accurate assessment of the SAFe readiness. As I got a job offer, I'll help in this process with all my best intentions to make further improvements and to sell and use this market offer in future activities.
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## APPENDIX

## APPENDIX I – COMPLETED QUESTIONNAIRE

| _    | Question  |                         |                    | Scale            |                  |                            | Commer                 |
|------|---|-------------------------|--------------------|------------------|------------------|----------------------------|------------------------|
|      | Imagine being a leader in your insurance o  | company, coordinating n | nultiple teams wor | king together on | a programme o    | or major project that deli | vers end-to-end value. |
|      | Organisation  |                         |                    |                  |                  |                            |                        |
| .1.1 | How do you assess the current<br>organisation and structure of their<br>teams?            | 2                       |                    |                  |                  |                            |                        |
| 1    | How appropriate is the current team size to manage the teams?                             | very inapproriate       | inappropriate      | partly           | appropriate<br>X | very appropriate           |                        |
| 2    | How high is your desire for   | very low                | low                | medium           | high             | very high                  |                        |
|      | improvement in the organisation<br>of your teams?   |                         | x                  |                  |                  |                            |                        |
| 3    | What is your average team size?   | 0-999<br>X              | 1000-1999          | 2000-2999        | 3000-3999        | 4000-4999                  |                        |
| 4    | How high do you estimate the<br>hurdles that arise from spreading                         | very low                | low                | medium           | high             | very high                  |                        |
|      | your teams over several<br>departments and/or locations?                                  |                         |                    |                  | x                |                            |                        |
| 5    | To what extent is the distribution<br>of responsibilities clearly                         | not at all              | little             | partly<br>X      | mostly           | completely                 |                        |
| 6    | What is the total size of your<br>teams in man-days?                                      | 0,000-4,999<br><b>X</b> | 5,000-9,999        | 10,000-14,999    | 15,000-19,999    | > 20,000                   |                        |
|      | Work Organisation   |                         |                    |                  |                  |                            |                        |
| .2.1 | How would you describe the<br>planning and organisation of your<br>teams' work processes? |                         |                    |                  |                  |                            |                        |
| 1    | How regularly is there an   | never                   | sometimes          | often            | usually          | always                     |                        |
|      | of the work in the team?  |                         |                    |                  | x                |                            |                        |
| 2    | How much do you feel you have a   | not at all              | little             | partly           | mostly           | completely                 |                        |
|      | comprehensive overall view of the<br>work of all teams?                                   |                         | x                  |                  |                  |                            |                        |
| 3    | How satisfied are you with the  | very unsatisfied        | unsatisfied        | partly           | satisfied        | very satisfied             |                        |
|      | work?   |                         | x                  | 1<br>1<br>1<br>1 |                  |                            |                        |
| 4    | How satisfied are you of the  | not at all              | little             | partly           | mostly           | completely                 |                        |
|      | coordination of work between the teams?   |                         | x                  |                  |                  |                            |                        |
| 5    | How satisfied are you by the<br>coordination of your processes.                           | not at all              | little             | partly           | mostly           | completely                 |                        |
|      | are the upcoming steps planned<br>and predictable?  |                         | x                  | 1                |                  |                            |                        |

| 1.2.2 | How would you describe the<br>planning and organisation of your<br>management tasks?  |   | с                 |               |                    |                  |                  |
|-------|---|---|-------------------|---------------|--------------------|------------------|------------------|
| 1     | How would you characterise the<br>systematic structuring and<br>processing of your tasks?   |   | very inapproriate | inappropriate | partly<br>X        | appropriate      | very appropriate |
| 2     | How do you evaluate your<br>satisfaction with your current set<br>of organisational tools?  |   | very unsatisfied  | unsatisfied   | partly<br><b>X</b> | satisfied        | very satisfied   |
| 3     | To what extent do you use tools to<br>record the work processes, the<br>workload and the mood in the<br>team? E.g., planning your work<br>steps, retrospectives, demos, etc.? |   | not at all        | little        | partly<br>X        | mostly           | completely       |
| 1.2.3 | How are emerging challenges<br>dealt with in your teams?  |   |                   |               |                    |                  |                  |
| 1     | How important do you consider<br>sharing between teams about<br>current hurdles you are facing?   |   | not at all        | little        | partly             | mostly           | completely<br>X  |
| 2     | How satisfied are you with the<br>current process of sharing cross-<br>team knowledge and using it to<br>solve challenges?  |   | not at all        | little<br>X   | partly             | mostiy           | completely       |
| 3     | To what extent is the process for<br>sharing difficulties and finding<br>solutions clearly defined?   |   | not at all        | little        | partly<br>X        | mostly           | completely       |
| 4     | How do you rate the realization of the procedure by your team leads?  |   | very inapproriate | inappropriate | partly<br><b>X</b> | appropriate      | very appropriate |
| 1.3.1 | How would you describe your<br>current approach, practices and<br>actions in relation to managing<br>your agile knowledge?  |   |                   |               |                    |                  |                  |
| 1     | How appropriate do you consider<br>the methods and practices you<br>use in your daily work to manage<br>knowledge?  | _ | very inapproriate | inappropriate | partly             | appropriate<br>X | very appropriate |
| 2     | How do you rate the knowledge<br>sharing between your team<br>members?  |   | very inapproriate | inappropriate | partly<br>X        | appropriate      | very appropriate |
| 3     | How do you rate the knowledge<br>sharing between your team<br>members and your leaders?   |   | very inapproriate | inappropriate | partly             | appropriate<br>X | very appropriate |

Imagine you are in the management of the insurance company and you are asked to give an assessment of the current level of knowledge about Agile methods of your employees.

| Imagin | a you are in the management of the incuranc | a company and you ar | a acked to give a | n according to fit  | ha current lava      | of knowledge abo | rt Agila n | athods of  | Nour am | ployou |
|--------|---|----------------------|-------------------|---------------------|----------------------|------------------|------------|------------|---------|--------|
| imagin | e you are in the management of the insuranc | e company and you ar | e askeu to give a | in assessment of th | le current leve      | of knowledge abo | it Agne n  | lethous of | your em | pioyee |
|        | Agile Knowledge                             |                      |                   |                     |                      |                  |            |            |         |        |
|        | How would you describe the                  | 6                    |                   |                     |                      |                  |            |            |         |        |
| 2.1.1  | current Agile mentality in your             |                      |                   |                     |                      |                  |            |            |         |        |
|        | -   |                      |                   |                     |                      |                  |            |            |         |        |
| 1      | To what extent are your                     | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | employees in the teams familiar             |                      | x                 | į.                  |                      |                  |            |            |         |        |
|        | with agrie methods?                         |                      |                   | Ì.                  |                      |                  |            |            |         |        |
| 2      | How confident is your team with             | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | the Scrum approach?                         |                      |                   | ×                   |                      | , , ,            |            |            |         |        |
|        |   |                      |                   | 1                   |                      |                  |            |            |         |        |
| 3      | How confident is your team with             | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | Kanban approach?                            |                      |                   | X                   |                      |                  |            |            |         |        |
|        |   |                      |                   |                     |                      |                  |            |            |         |        |
| 4      | Rank how much an agile mindset              | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | is established in your insurance            |                      | ×                 | I.                  |                      |                  |            |            |         |        |
|        | company?                                    |                      | ~                 | l.                  |                      |                  |            |            |         |        |
| F      | Here interested are very in                 |                      | Little            | an at la            | mastly               | completely.      |            |            |         |        |
| 2      | now interested are you in                   | notatali             | nute              | partiy              | mostry               | completely       |            |            |         |        |
|        | entire organisation?                        |                      |                   | X                   |                      |                  |            |            |         |        |
|        | chare organisation:                         |                      |                   | 1                   |                      |                  |            |            |         |        |
| 6      | Should agile methods also be                | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | extended to the supporting                  |                      |                   | 1                   | ,                    | ,                |            |            |         |        |
|        | teams? (e.g., sales, marketing,             |                      |                   | X                   |                      |                  |            |            |         |        |
|        | etc.)                                       |                      |                   |                     |                      |                  |            |            |         |        |
|        | Culture                                     |                      |                   |                     |                      |                  |            |            |         |        |
|        | Give an assessment about the                |                      |                   |                     |                      |                  |            |            |         |        |
|        | culture, change management, and             |                      |                   |                     |                      |                  |            |            |         |        |
|        | leadership behaviour. What is the           |                      |                   |                     |                      |                  |            |            |         |        |
| 1 1 1  | hierarchy in your insurance                 |                      |                   |                     |                      |                  |            |            |         |        |
| 2.2.1  | merarchy in your insurance                  |                      |                   |                     |                      |                  |            |            |         |        |
| 1      | How do you assess the level of              | very low             | low               | medium              | high                 | very high        |            |            |         |        |
|        | responsibility of your staff, can           |                      |                   |                     |                      | very man         |            |            |         |        |
|        | they organise themselves?                   |                      |                   | X                   |                      |                  |            |            |         |        |
|        |   |                      |                   | I.                  |                      |                  |            |            |         |        |
| 2      | To what extent is there                     | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | decentralised decision-making               |                      |                   | 1                   |                      |                  |            |            |         |        |
|        | and is the process                          |                      |                   | X                   |                      |                  |            |            |         |        |
|        | understandable and known?                   |                      |                   | i.                  |                      |                  |            |            |         |        |
|        |   |                      |                   |                     |                      |                  |            |            |         |        |
| 3      | In your opinion, how appropriate            | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | are the hierarchical structures in          |                      |                   | 1                   | x                    |                  |            |            |         |        |
|        | your insurance company?                     |                      |                   | I<br>I              | Constant of Constant |                  |            |            |         |        |
| 4      | How do you assess the trust of              | very low             | low               | medium              | high                 | very high        |            |            |         |        |
| -      | your team leaders in their team             | 1011101              | 104               | Incoroni            | inen.                | ACIA HIGH        |            |            |         |        |
|        | members, do they hand over                  |                      |                   | I.                  | x                    |                  |            |            |         |        |
|        | sufficient responsibilities?                |                      |                   | I.                  |                      |                  |            |            |         |        |
|        |   |                      |                   | f.                  |                      |                  |            |            |         |        |
| 5      | Would you be in favour of a                 | not at all           | little            | partly              | mostly               | completely       |            |            |         |        |
|        | change in the leadership make if            |                      |                   | 1                   |                      |                  |            |            |         |        |

| improvement in your processes?     x       Given assessment of how the<br>distribution of leadership styles     very low     low     medium     high     very high       Authoritarian leadership     x     x     x       Paternalistic leadership     x     x       Laisser-faire leadership     x     x       Give an assessment of how you<br>would prefer the distribution of<br>leadership picks     x     x       Authoritarian leadership     x     x       Democratic leadership     x     x       Democratic leadership     x     x       Laisser-faire leadership     x     x       22.4     current change processes?     x       1     How do you assess the extent to<br>which your employees are equively in on tat all     inttle  | 5     | Would you be in favour of a<br>change in the leadership ranks if<br>this would lead to an | not at all | little | partly | mostly | completely |      |
|---|-------|---|------------|--------|--------|--------|------------|------|
| Give an assessment of how the<br>distribution of leadership styles     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Paternalistic leadership     X     X       Democratic leadership     X     X       Give an assessment of how you<br>would prefer the distribution of<br>leadership styles within your<br>sudd prefer the distribution of<br>leadership styles within your<br>leadership     very low     needium     high     very high       Authoritarian leadership     X     X     X     X       Authoritarian leadership     X     X     X       Paternalistic leadership     X     X     X       Democratic leadership     X     X     X       Authoritarian leadership     X     X     X       Democratic leadership     X     X     X       Laisset-faire leadership     X     X     X       Laisset-faire leadership     X     X     X       1     How do you assess you?     X     X       2.10     Low mether your<br>enployees records the the ange<br>processes?     not at all     little     partly       2     Do you ank whether your<br>enployees records the the ange<br>processes?     not at all     little     partly     completely       3     How do you assess the<br>witilin  |       | improvement in your processes?  |            |        | · ^    |        |            |      |
| distribution of leadership     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Paternalistic leadership     X     X       Laisser-faire leadership     X     X       Give an assessment of how you would peter the distribution of leadership is the distribution of leadership     X     X       Authoritarian leadership     X     X     X       Give an assessment of how you would peter the distribution of leadership     X     X       Paternalistic leadership     X     X       Democratic leadership     X     X       Democratic leadership     X     X       Democratic leadership     X     X       1     How would you assess your     X       2.2.4     current change processes?     not at all       1     How do you assess the extent to which your employees are informed asout current change processes?     not at all       2     Do you rank whether your employees to  |       | Give an assessment of how the   | 8.<br>     |        |        |        |            |      |
| 2.2.2     is within your insurance company:     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Democratic leadership     X     X       Laisser-faire leadership     X     X       Give an assessment of how you would prefer the distribution of leadership styles within your     X     X       2.3.3     insurance company:     very low     low     medium     high     very high       Authoritarian leadership     X     X     X     X       Democratic leadership     X     X     X       Paternalistic leadership     X     X     X       Democratic leadership     X     X     X       Democratic leadership     X     X     X       Laisset-fair leadership     X     X     X       Laisset-fair leadership     X     X     X       1     How would you assess your     X     X       2.2.4     current change processes?     not at all     little     partly     mostly     completely       1     How do you asses the extent to informed about current change processes?     not at all     little     partly     mostly     completely       3     How do you asses the witinfurgions of about current change pro  |       | distribution of leadership styles   |            |        |        |        |            |      |
| Authoritarian leadership     ivery low     low     medium     high     very high       Authoritarian leadership     X     X     X       Democratic leadership     X     X       Give an assessment of how you would prefer the distribution of leadership site within your     X     Image: Company:       Authoritarian leadership     X     Image: Company:     Very low     Iow       Authoritarian leadership     X     X     Image: Company:       Authoritarian leadership     Very low     Iow     medium     high     very high       Authoritarian leadership     X     X     Image: Company:     Very low     Iow       Authoritarian leadership     X     X     X     Image: Company:     Image: Company:       Authoritarian leadership     X     X     X     Image: Company:     Image: Company:       Authoritarian leadership     X     X     X     Image: Company:     Image: Company:       Authoritarian leadership     X     X     X     Image: Company:     Image: Company:       Authoritarian leadership     X     X     X     Image: Company:     Image: Company:       1     How do you assess your     Image: Company:     Image: Company:     X     Image: Company:       2     Do you rank whether   | 2.2.2 | is within your insurance company:   |            |        |        |        |            |      |
| Authoritarian leadership       X         Paternalistic leadership       X         Democratic leadership       X         Laissez-faire leadership       X         Give an assessment of how you would prefer the distribution of leadership styles within your       medium         2.2.3       insurance company.         Authoritarian leadership       X         Authoritarian leadership       X         Paternalistic leadership       X         Democratic leadership       X         Democratic leadership       X         Democratic leadership       X         Laissez-faire leadership       X         Laissez-faire leadership       X         1       How do you assess the extent to informed about current change processes?       not at all         2       Do you rank whether your employees are informed about current change processes?       not at all         2       Do you rank whether your employees to actively participate in change important for improving completely willingness of your employees to actively participate in change important for improving completes to actively participate in change important for improving completes of actively participate in change important for improving completes of actively participate in change important for improving completes of actively participate in change important for improving completes of actively participate in change imporecesses?       medium       high wery  | 1.12  |   | very low   | low    | medium | high   | very high  |      |
| Paternalistic leadership     X       Democratic leadership     X       Laissez-faire leadership vou<br>would prefer the distribution of<br>leadership types within your     X       2.3     insurance company.       Very low     low       Muthoritarian leadership     X       Authoritarian leadership     X       Paternalistic leadership     X       Laissez-faire leadership     X       1     How do you assess your       2.1     How do you assess the extentto       Informed about current change<br>processes?     not at all       1     How do you assess the extent to<br>animotrant for improving<br>competitiveness?       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?       3     How do you assess the<br>millingness of your employees to<br>actively participate in change<br>processes?   |       | Authoritarian leadership  |            |        | 1      |        | x          |      |
| Paternalistic leadership       X         Democratic leadership       X         Laisser-faire leadership       X         Give an assessment of how you would prefer the distribution of leadership styles within your       X         2.2.3       insurance company.         Authoritarian leadership       Y         Paternalistic leadership       X         Democratic leadership       X         Democratic leadership       X         Democratic leadership       X         Laisser-faire leadership       X         2.2.4       current change processes?         1       How do you assess your         2.2.5       not at all         Informed about current change processes?       X         2       Do you rank whether your employees to actively participate in change interversite       X         3       How do you assess the willingness of  |       |   |            |        |        |        |            |      |
| Democratic leadership     X       Laissez-faire leadership     X       Give an assessment of how you<br>would prefer the distribution of<br>leadership styles within your     X       2.2.3     insurance company;       Authoritarian leadership     very low       Authoritarian leadership     X       Paternalistic leadership     X       Democratic leadership     X       Laissez-faire leadership     X       Democratic leadership     X       Laissez-faire leadership     X       Laissez-faire leadership     X       1     How would you assess your       2.4     corrent change processes?       1     How do you assess the extent to<br>informed about current change<br>processes?     not at all       2     Do you rank whether your<br>employees recognise the change<br>inpotent for improving<br>competitiveness?     not at all       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium     high       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium     high       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium     high       4     Advantages and Business Benefitsof<br>socied Agile Famework     Very low <td< td=""><td></td><td>Paternalistic leadership</td><td></td><td></td><td>X</td><td></td><td></td><td></td></td<>  |       | Paternalistic leadership  |            |        | X      |        |            |      |
| Consister - Faire leadership     X       Laisser - faire leadership     X       Give an assessment of how you<br>would prefer the distribution of<br>leadership pilves within your     Image: Constraint of the set of                                       |       | Democratic leadership   |            | v      | -      |        |            |      |
| Laissez-faire leadership     X       Give an assessment of how you<br>would prefer the distribution of<br>leadership styles within your   |       |   |            | ^      | i.     |        |            |      |
| Give an assessment of how you would prefer the distribution of leadership styles within your        2.2.3 insurance company:     very low       Authoritarian leadership     X       Paternalistic leadership     X       Democratic leadership     X       Laissez-faire leadership     X       How would you assess your     X       2.4 current change processes?     not at all       1     How do you assess the extent to which your employees are informed about current change processes?       2     Do you rank whether your employees to are important for improving competitiveness?       3     How do you assess the willingness of your employees to actively participate in change processes?       3     How do you assess the willingness of your employees to actively participate in change processes?       3     How do you assess the sterits of science you illow       Classify your expectations of the 2.3.1     Yery low  |       | Laissez-faire leadership  |            | X      | 1      |        |            |      |
| would prefer the distribution of<br>leadership styles within your     very low     low     medium     high     very high       2.2.3     insurance company.     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Democratic leadership     X     X       Laisser-faire leadership     X     X       How would you assess your     X     X       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all     little     partly     mostly     completely       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       X     Very low     Iow     medium     high     very high     X       Classify your expectations of the<br>23.01     Classify your expectations of the     X     Iow  |       | Give an assessment of how you   | <i>8</i> . |        |        |        |            |      |
| 1     leadership styles within your     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Paternalistic leadership     X     X       Laissez-faire leadership     X     X       How would you assess your     X     X       2.2.4     current change processes?     Image: Completely mostly completely mostly completely       1     How do you assess the extent to which your employees are imported but current change processes?     not at all       2     Do you rank whether your employees are imported but current change processes?     not at all       3     How do you assess the extent to willingness of your employees to a simportant for improving competitiveness?     very low       3     How do you assess the extent or a simportant for improving competitiveness?     very low       3     How do you assess the change processes?     very low       4     Advantage and Business Benefits of Scaled Agile Framework.     X  |       | would prefer the distribution of  |            |        |        |        |            |      |
| 2.2.3     insurance company:     very low     low     medium     high     very high       Authoritarian leadership     paternalistic leadership     X     X     X       Democratic leadership     X     X     X       Laissez-faire leadership     X     X       How would you assess your     X     X       2.2.4     current change processes?     not at all     little       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all     little       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of<br>Scaled Agile Framework.     dow     medium     high     very high   |       | leadership styles within your   |            |        |        |        |            |      |
| Authoritarian leadership     very low     low     medium     high     very high       Authoritarian leadership     X     X     X       Democratic leadership     X     X       Laissez-faire leadership     X     X       How would you assess your     X     X       2.2.4     current change processes?     Image: complexity of the second   | 2.2.3 | insurance company:  |            |        |        |        |            |      |
| Authoritarian leadership     X       Paternalistic leadership     X       Democratic leadership     X       Laissez-faire leadership     X       Laissez-faire leadership     X       1     How Yoolu Qou assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium       4     Advantages and Business Benefits of<br>Scaled Agile Framework.     very low     medium     high  |       |   | very low   | low    | medium | high   | very high  |      |
| Patemalistic leadership     X       Democratic leadership     X       Laissez-faire leadership     X       How would you assess your     X       2.24     current change processes?       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low       4     Advantages and Business Benefits of<br>scaled Agile Framework.     very low   |       | Authoritarian leadership  |            |        |        | x      |            |      |
| Paternalistic leadership     X       Democratic leadership     X       Laissez-faire leadership     X       How would you assess your     X       2.2.4     current change processes?       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium     high     very high       4     Advantages and Business Benefits of<br>Scaled Agile Framework.     very low     is     is     is     is  |       |   |            |        |        |        |            |      |
| Democratic leadership     X       Laissez-faire leadership     X       How would you assess your     X       2.2.4     current change processes?       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     Iow       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     Iow       4     Advantages and Business Benefits of<br>Scaled Agile Framework.     x     iom   |       | Paternalistic leadership  |            |        | x      |        |            |      |
| Laissez-faire leadership     X       How would you assess your     X       2.2.4     current change processes?       1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all     little     partly     mostly     completely       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     medium     high     very high       Advantages and Business Benefits of<br>Scaled Agile Framework.     Classify your expectations of the<br>2.3.1     framework.     i     i  |       | Democratic leadership   |            |        | i i    |        | ×          |      |
| Laissez-faire leadership       X         How would you assess your       2.2.4         1       How do you assess the extent to which your employees are informed about current change processes?       not at all       little       partly       mostly       completely         2       Do you rank whether your employees are informed about current change processes?       not at all       little       partly       mostly       completely         2       Do you rank whether your employees recognise the change in the company structure as important for improving competitiveness?       not at all       little       partly       mostly       completely         3       How do you assess the willingness of your employees to actively participate in change processes?       very low       low       medium       high       very high         Advantages and Business Benefits of Scaled Agile Framework.       Classify your expectations of the       2.3.1       framework.       descent and the second actively participate in second actively are processes?   |       |   |            |        | ł      |        | ~          |      |
| How would you assess your     Image: comparison of the system       1     How do you assess the extent to which your employees are informed about current change processes?     not at all little     partly     mostly     completely       2     Do you rank whether your employees recognise the change in the company structure as important for improving competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the willingness of your employees to actively participate in change processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of Scaled Agile Framework.     Classify your expectations of the     2.3.1     framework.     dual  |       | Laissez-faire leadership  |            |        |        | X      |            |      |
| 2.2.4       current change processes?       not at all       little       partly       mostly       completely         1       How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?       not at all       little       partly       mostly       completely         2       Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?       not at all       little       partly       mostly       completely         3       How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?       very low       low       medium       high       very high         4       Advantages and Business Benefits of<br>Scaled Agile Framework.       Scaled Agile Framework       dual       dual <td></td> <td>How would you assess your</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td>   |       | How would you assess your   | 8          |        |        |        |            |      |
| 1     How do you assess the extent to<br>which your employees are<br>informed about current change<br>processes?     not at all     little     partly     mostly     completely       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of<br>Scaled Agile Framework.     Scaled Agile Framework     descaled Agile Framework     descaled Agile Framework     descaled Agile Framework   | 2.2.4 | current change processes?   |            |        |        |        |            |      |
| 1     How do you assess the extent to which your employees are informed about current change processes?     Ittle     partly     mostly     completely       2     Do you rank whether your employees recognise the change in the company structure as important for improving competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the willingness of your employees to actively participate in change processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of Scaled Agile Framework.     Classify your expectations of the     23.1     framework.     Ittle     Ittle     Ittle  |       |   |            |        | 1      |        |            |      |
| winth your employees are<br>informed about current change<br>processes?     x       2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of<br>Scaled Agite Framework.     Scaled Agite Framework     Image: Completely complete   | 1     | How do you assess the extent to   | not at all | little | partly | mostly | completely | <br> |
| 2     Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     not at all     little     partly     mostly     completely       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       4     Advantages and Business Benefits of<br>Scaled Agile Framework     Scaled Agile Framework   |       | which your employees are  |            |        |        |        |            |      |
| 2       Do you rank whether your<br>employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?       not at all       little       partly       mostly       completely         3       How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?       very low       low       medium       high       very high         4       Advantages and Business Benefits of<br>Scaled Agile Framework.       Scaled Agile Framework       Image: Completely mostly completely mostly completely         2.3.1       framework.       Image: Completely mostly completely mostly completely mostly completely   |       | processes?  |            |        | x      |        |            |      |
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| employees recognise the change<br>in the company structure as<br>important for improving<br>competitiveness?     X       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low       Advantages and Business Benefits of<br>Scaled Agile Framework     X       Classify your expectations of the<br>2.3.1     framework.   | 2     | Do you rank whether your  | not at all | little | partly | mostly | completely |      |
| in the company structure as<br>important for improving<br>competitiveness?     X       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     Iow       Advantages and Business Benefits of<br>Scaled Agile Framework     X       Classify your expectations of the<br>2.3.1     Image: Classify your expectations of the<br>Classify your expectations of the  |       | employees recognise the change  |            |        |        |        |            |      |
| important for improving<br>competitiveness?     x       3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       Advantages and Business Benefits of<br>Scaled Agile Framework     X     X     X       Classify your expectations of the<br>2.3.1     framework.     Image: Classify your expectations of the     Image: Classify your expectations of the  |       | in the company structure as   |            |        |        | v      |            |      |
| 3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       Advantages and Business Benefits of<br>Scaled Agile Framework     X       Classify your expectations of the<br>2.3.1     framework.  |       | important for improving   |            |        |        | ×      |            |      |
| 3     How do you assess the<br>willingness of your employees to<br>actively participate in change<br>processes?     very low     low     medium     high     very high       Advantages and Business Benefits of<br>Scaled Agile Framework     X       Classify your expectations of the<br>2.3.1     framework.  |       | competitiveness?  |            |        | i.     |        |            |      |
| 3     How do you assess the willingness of your employees to actively participate in change processes?     Very low low medium nigh very nigh       Advantages and Business Benefits of Scaled Agile Framework     X       Classify your expectations of the 2.3.1 framework.     Image: Classify your expectations of the state of  |       |   |            |        |        |        |            |      |
| actively participate in change<br>processes?     X       Advantages and Business Benefits of<br>Scaled Agile Framework        Classify your expectations of the<br>2.3.1 framework.   | 3     | How do you assess the   | very low   | Iow    | medium | nign   | very high  |      |
| Advantages and Business Benefits of<br>Scaled Agile Framework     Advantages and Business Benefits of<br>Scaled Agile Framework       Classify your expectations of the<br>2.3.1 framework.     Image: Classify your expectations of the<br>Classify your expectations of the Classify your expectations of t |       | actively participate in change  |            |        | 1      | v      |            |      |
| Advantages and Business Benefits of<br>Scaled Agile Framework<br>Classify your expectations of the<br>2.3.1 framework.  |       | processes?  | 0          |        | i.     | ^      |            |      |
| Scaled Agile Framework     Image: Classify your expectations of the       2.3.1     framework.  | 27.   | Advantages and Business Benefits of   | 27.<br>    |        |        |        |            |      |
| Classify your expectations of the 2.3.1 framework.  |       | Scaled Agile Framework  |            |        |        |        |            |      |
| 2.3.1 framework.  |       | Classify your expectations of the   | S          |        |        |        |            |      |
|   | 2.3.1 | framework.  |            |        |        |        |            |      |
|   |       |   |            |        | 1      |        |            |      |
| 1 How important is it to you to use a not at all little partly mostly completely  | 1     | How important is it to you to use a   | not at all | little | partly | mostly | completely |      |
| widely used framework? X  |       | widely used framework?  |            |        |        |        | X          |      |
| 2 Do you consider it advantageour pot at all little partly mostly completely  | 2     | Do you consider it advantageous   | not at all | little | narthy | mostly | completely |      |
| to use the same framework as  | 2     | to use the same framework as  | notatan    | intre  | partiy | mostry | completely |      |
| other insurance companies in  |       | other insurance companies in  |            |        | I<br>I |        |            |      |
|   |       |   | I.         |        | 1.     |        | I          |      |

| 2     | Do you consider it advantageous  | not at all       | little      | partly | mostly    | completely     |                          |
|-------|--|------------------|-------------|--------|-----------|----------------|--------------------------|
|       | to use the same framework as   |                  |             |        |           |                |                          |
|       | other insurance companies in   |                  |             | l<br>I |           |                |                          |
|       | order to be able to adopt best   |                  |             | l.     | x         |                |                          |
|       | practices to your company if   |                  |             | l<br>L |           |                |                          |
|       | necessary?   |                  |             |        |           |                |                          |
| 3     | Do you rate the importance of  | not at all       | little      | partly | mostly    | completely     |                          |
|       | having a flexible adaptable  |                  |             |        |           |                |                          |
|       | framework, depending on the  |                  |             | 1      |           |                |                          |
|       | current organisation of the  |                  |             | í.     | x         |                |                          |
|       | project/programme/portfolio/com  |                  |             | 1      |           |                |                          |
| 13    | pany?  |                  |             | <br>   |           |                |                          |
|       | Rank the Improvements  |                  |             |        |           |                |                          |
|       | priority Each number may only be   |                  |             |        |           |                |                          |
| 2.3.2 | assigned once.   |                  |             |        |           |                | 1 is the highes priority |
|       |  |                  |             | 1      |           |                |                          |
| 1     | Increase productivity of the   | 1                | 2           | 3      | 4         |                | f                        |
|       | company  |                  |             | X      |           |                |                          |
| 2     |  | 1                | 2           | 2      | 4         |                |                          |
| 2     | Reduce coordination effort   | ×                | 2           |        | -         |                |                          |
|       |  | ^                |             | l<br>L |           | 2.<br>         |                          |
| 3     | Improve time-to-market   | 1                | 2           | 3      | 4         |                |                          |
|       | improve time-to-market   |                  | x           |        |           |                |                          |
| 0.000 |  |                  |             | i<br>I |           |                |                          |
| 4     | - Reduce-error rate  | 1                | 2           | 3      | 4         |                |                          |
|       | Please give an assessment of your  |                  |             |        | ^         |                |                          |
| 2.3.3 | customer satisfaction.   |                  |             | 1      |           |                |                          |
|       |  |                  |             |        |           |                |                          |
| 1     | How do you rank the satisfaction   | very unsatisfied | unsatisfied | partly | satisfied | very satisfied |                          |
|       | of your customers in your  |                  |             | 1      | x         |                |                          |
|       | instrance:   |                  |             | l<br>I |           |                |                          |
| 2     | How successful do you rate the   | not at all       | little      | partly | mostly    | completely     | 2                        |
|       | clarification and resolution of  |                  |             |        |           |                |                          |
|       | complaints within your insurance   |                  | x           | l<br>L |           |                |                          |
|       | company?   |                  |             |        |           |                |                          |
|       | the frequency with which releases  |                  |             |        |           |                |                          |
|       | are put into production. How do  |                  |             |        |           |                |                          |
| 2.3.4 | you assess your development  |                  |             |        |           |                |                          |
|       | ACCESS TO A CONTRACTOR AND IN THE ADDRESS OF |                  |             | i<br>i |           |                |                          |
| 1     | How predictable do you consider  | not at all       | little      | partly | mostly    | completely     | 6.1                      |
|       | the duration of your release   |                  |             |        | x         |                |                          |
|       | cycles:  |                  |             | í<br>Í |           |                |                          |
| 2     | To what extent does the current  | not at all       | little      | partly | mostly    | completely     |                          |
|       | provision meet your needs?   |                  | X           |        |           |                |                          |
|       |  |                  | 100         |        |           |                |                          |
| 3     | Are there currently any major  | not at all       | little      | partly | mostly    | completely     | 10                       |
|       | changes planned in your IT?  |                  |             | l.     |           | X              |                          |
|       | Future & Vision  |                  |             |        |           |                |                          |

| 2.4.1 | Provide an assessment of your<br>insurance company's current<br>vision for the future.                          |                |             |             |                    |                 |      |
|-------|---|----------------|-------------|-------------|--------------------|-----------------|------|
| 1     | How much would the introduction<br>of an agile framework improve<br>your customer relations?                    | not at all     | little      | partly<br>X | mostly             | completely      |      |
| 2     | How much would the introduction<br>of an agile framework improve<br>your visibility to potential<br>candidates? | not at all     | little      | partly      | mostly<br><b>X</b> | completely      |      |
| 3     | How important is it for you to<br>keep up with the latest<br>technological developments in<br>the market?       | not at all     | little      | partly      | mostly             | completely<br>X |      |
| 2.4.2 | How would you rate your<br>corporate vision for your<br>insurance company?                                      |                |             |             |                    |                 |      |
| 1     | How satisfied are you with the<br>actions taken to achieve the<br>vision?                                       | <br>not at all | little<br>X | partly      | mostly             | completely      | <br> |
| 2     | In your view, is it necessary to<br>adapt your vision in order to be fit<br>for the future?                     | not at all     | little      | partly      | mostly             | completely      |      |
| 3     | How much do your employees<br>identify with the current vision?   | not at all     | little      | partly<br>X | mostly             | completely      |      |
| 4     | Do they evaluate how your vision<br>influences the daily work in your<br>company?                               | not at all     | little      | partly      | mostly<br>X        | completely      |      |

## APPENDIX II – WORKSHOP: POWERPOINT PRESENTATION



| PRESENTATION IKOR                                       |  |   | IKOR = -                                     |
|---|--|---|--|
| Key Figures   | Subsidiaries   | Strategy  | Market Sectors                               |
| More then 300 employees<br>32,5 Mio. € revenue 2020     | Germany - Hamburg, Cologne, Es<br>Austria - Vienna<br>Poland - Viarsaw<br>Serbia - Belgrade<br>United Kingdom - London | We help platim manufactures and users<br>occupy the digital interface to the customer to<br>acting as a pioneer for platform integration an<br>making their<br>business models and processes ready for<br>connection and the future." | to Insurances<br>by<br>d Public sector<br>or |
|   | Services   | overview - Consulting   |  |
| Insurance Expertise                                     | End-2-End<br>Process Competence  | Competence  | latform<br>olutions Data<br>Analytics        |
|   | We rely  | on strong partnerships  |  |
| Solera Audatex Au                                       | TOonline   | GUIDEWIRE<br>PARTNEECONNECT*<br>GouNding Ster   | BIPRE Versicherungsforen Leipzig             |
|   | Custome  | s (Insurances, Excerpt)   |  |
|   | er 🥝 HDI hannover re' 🔆  | erti signal iduna 🖗 Barmenia 🚛  |  |
| © KOR, Onbit I SAFe implementation 1 Utility Assessment |  |   | 2  |

PRESENTATION IKOR

Our Service Offerings (We can help you with)

IKOR = -

| Assurance<br>SAP-Versicherungs-<br>technologie<br>- Subledger Accounting<br>- Commissions Management<br>Payment Management<br>- Financial Integration<br>- S/4HANA | Application Lifecycle<br>Management<br>Betreuung und Entwicklung<br>von SAP-Applikationen<br>Operations Enterprise<br>Management  | Development Center<br>Nearshoring-Entwicklung<br>Java/Guidewire<br>Development<br>• SAP Development  | Finsure Integration<br>Guidewire-Technologie<br>Guidewire-Konfiguration<br>Guidewire-Integration<br>Umsysteme-Integration                       | Informationsfabrik<br>Data Analytics<br>Data Platforms<br>Artificial Intelligence<br>Analytic Solutions |
|--|---|--|---|---|
| Portals<br>End-to-End-Portallösungen<br>UX/Ul-Konzeption und<br>Design<br>• Frontend-Achitektur und<br>Development   | Products<br>SAP-Add-ons für Steuern,<br>Accounting und Zahlungs-<br>verkehr<br>Tax Solutions: SARA, VERA<br>Accounting Solutions:<br>IRMA, LISA<br>Payment Solution: ELZA | Project Excellence<br>Prozess-Know-how,<br>Methoden-Kompetenz,<br>Vorgehensmodelle<br>Project Management<br>• Test Excellence<br>• Requirements Management | Public Sector<br>Digitale End-to-End-<br>Förderprozesse<br>Implementation ABAKUS<br>Implementation Grantor<br>Process Automation<br>Integration | Jel.  |

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#### PRESENTATION IKOR

# Our expertise for your projects

#### IKOR ==





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#### PRESENTATION SAFE

### **SAFe Distribution in Comparison**

IKOR ==

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Digital.ai (2021). 15th State of Agile Report. Agile adoption accelerates across the enterprise. Retrieved 14 October 2021, from https://digital.ai/resourcecenter/nailyst-reports/state-of-agile-report ORM& All Network-Primi VOIN-Menter











## ANNEXES

#### **ANNEX I – EVALUATION: POWERPOINT PRESENTATION**





# Scientific Context | Research Gap

IMS

 Not many scientific research contributions on the challenges and benefits of SAFe adoption

Theobald & Schmitt (2020) motivate and address positively future research in the field of agile projects and their organisational environment

• The internship aims to contribute to progress in that area





