STRATEGIC ALIGNMENT OF INFORMATION TECHNOLOGY INITIATIVES...

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...IN A SCALED AGILE ENVIRONMENT

Abstract: Scaled Agile introduces challenges that confront organizations. One of these challenges is how initiatives are aligned with the organizational strategies in frameworks such as SAFe. Nineteen interviews were conducted within a case that has implemented a Scaled Agile framework. The purpose was to determine how this framework was implemented and to assess how information technology (IT) initiatives are aligned with corporate strategies. The results indicate that IT initiatives are aligned with the strategies but that two approaches are used. Future research will focus on benefits realization within a Scaled Agile environment.

Highlights

- We introduce the concept of initiative alignment within a Scaled Agile environment.
- Alignment with strategy follows a top-down and bottom-up approach.
- Strategic themes are used as a communication mechanism between the enterprise and the respective portfolios, especially during the product integration planning activities.
- Collaboration between IT and business is a key success factor..

1. INTRODUCTION

The advent of Agile had an immense influence on the way that software is developed, the development teams themselves, and the project management profession. Agile was originally designed for small teams, but the benefits of Agile are forcing organizations to adopt Agile enterprise-wide, which creates an entirely new set of problems and challenges (Rigby, Sutherland, & Noble, 2018).

One of these challenges is how to Scale Agile in a large organization that has multiple teams across the organization, often in multiple divisions and multiple locations. Various frameworks and models have been developed to address the problem of scaling (Ambler & Lines, 2016; Larman & Vodde, 2013; Scaled Agile Inc., 2018; Vaidya, 2014). Organizations have been adopting these frameworks and models to harvest the benefits of Agile and have seen improvements in the overall performance of the organization (Dikert, Paasivaara, & Lassenius, 2016).

One of the reasons why organizations embark on projects/initiatives is to implement the strategies (Morris & Jamieson, 2005). The overall management of all these projects/initiatives is traditionally done within a portfolio that aligns these projects/initiatives with the various strategies (Project Management Institute, 2017). A challenge created in a scaled Agile environment is how projects or initiatives should be managed in such a way that they contribute to the organizational vision and strategies.

Portfolio management, within the project management domain, is a well-defined discipline but is being challenged when organizations adopt Agile at scale (Hobbs & Petit, 2017a). This implies that traditional project portfolio management should also adapt to Agile portfolio management. This adaptation is recognized by the various scaled Agile frameworks and models, which have included a portfolio layer within their frameworks. This leads to the research question: **How are initiatives aligned with an organization's strategy in a Scaled Agile environment?**

This article follows the traditional layout. Firstly, the literature review covers the strategic alignment of projects through traditional project portfolio management, then Agile and its benefits, scaling Agile and the various frameworks and models, and concludes with Agile portfolio management. Secondly, the research methodology is discussed with a description of the case study itself. The remainder of the article focuses on the analysis of the interviews with a focus on how initiatives are aligned with the organizational strategy. The article concludes with a discussion of the results and suggestions for future work.

2 THEORETICAL BACKGROUND

2.1 Strategic alignment of projects through project portfolio management

It is widely accepted that projects are used to implement organizational strategies (Cooke-Davies, Crawford, & Lechler, 2009; Hermano & Martín-Cruz, 2016). Furthermore, the types of projects that are initiated and managed, depending on the main strategic focus of the organization (Cooke-Davies et al., 2009). Additionally, in terms of how effective strategies are formulated, it is of little or no value if these strategies are not balanced by effective implementation (Crawford, 2014). Crawford (2014) is of the opinion that strategy implementation per se has received less research attention than the formulation of strategies itself. Executives should realize that not all aspects of a strategy are implemented through programs and projects. Business-as-Usual (BAU) or operations are also part of strategy implementation (Crawford, 2014).

One of the important aspects of the strategic alignment of programs and projects is the strategic value that is created and released through this alignment. Since projects enable the successful delivery of long-term strategies, they should find ways to unleash strategic value through the alignment of programs and projects (Martinsuo, Gemünden, & Huemann, 2012) even when facing uncertainty in dynamic environments (Killen, Jugdev, Drouin, & Petit, 2012; Petit & Hobbs, 2010, 2012). This alignment is done through project portfolio management. Project portfolio management stems from financial portfolio management, whose origins can be traced to Modern Portfolio Theory (MPT).

One of the key concerns that an organization faces is to increase its profitability while reducing risk (Elton & Gruber, 1997). Markowitz (1991) formulated the Modern Portfolio Theory (MPT) to address this concern. The rationale of MPT focuses on diversification with the aim to reduce risk but not the complete elimination of risk itself (Rubinstein, 2002). Within MPT, the whole is greater than the sum of its parts, and this is achieved through diversification while reducing risk without necessarily changing the expected return of the portfolio (Rubinstein, 2002).

The appropriate utility function in MPT is a derived utility function that takes into account multiple periods (Elton & Gruber, 1997). During this multi-period, the focus should be on the mean and variance of the portfolio assets. Investors should consider how each security within a portfolio co-moved with all other securities within the same portfolio (Elton & Gruber, 1997). Mean-variance theory is the cornerstone of MPT (Elton & Gruber, 1997).

MPT also focuses on the associated portfolio risks, and the focus is not on a security's own risk but rather the contribution the security makes to the variance of the entire portfolio and its covariance with all the other securities in his portfolio (Rubinstein, 2002). The focus should be on diversification as it reduces uncertainty and associated risks (Markowitz, 1991).

MPT is now commonplace and the foundation of financial portfolio management. MPT is used to structure various portfolios and to measure their performance. MPT extended beyond that of financial portfolios and became the basis for project portfolio management (Rubinstein, 2002).

A project portfolio is a grouping of projects, programs, and other operational activities managed to achieve the organization's strategic objectives (Project Management Institute, 2017). IPMA's definition is similar, with the nuance that project portfolio risk should be minimized (International Project Management Association, 2015) while ISO 21504 defines it as: "a collection of portfolio components grouped together to facilitate their management to meet, in whole, or in part, an organization's strategic objectives" (p.1) (International Organization for Standardization (ISO), 2015). Project portfolio management per se is then the centralized management of a project portfolio to achieve the organization's strategic objectives (Project Management Institute, 2017). The alignment of programs and projects goes beyond pure alignment and strategy implementation. Organizations must identify and measure the strategic value that is unleashed through the implementation of strategically aligned programs and projects (Martinsuo & Killen, 2014). Within the portfolio, the strategic value should be used to balance the importance and range of strategies. This implies that strategic value will then be used to balance the portfolio to determine which programs and projects should be implemented to achieve the maximum financial as well as strategic value. It reflects the MPT principle that the value of the portfolio if more than the sum of the parts, taking into consideration synergies and dependencies.

Although projects are increasingly being undertaken to implement business strategy, it is not always that easy to determine whether these projects are contributing to the realization of strategic goals (Young & Grant, 2015). Organizations should have metrics and measurements in place to determine whether there is an improvement at the operational and project level (Young & Grant, 2015).

In an environment where most organizations are digitizing, the role of information systems projects is becoming more and more important. These projects should also be aligned to the strategies of the organization and the successful delivery of these projects, should then contribute to the realization of the organizational strategies. However, some studies claim that IS projects do not contribute to the realization of organizational strategies due to its low success rates (Serrador & Pinto, 2015). This saw the introduction of agile and scaling agile within organizations.

2.2 Agile Software Development

Software development projects are notorious for their low success rates when the traditional waterfall approach to delivering them is used (Flyvbjerg & Budzier, 2011; Marnewick, 2013; The Standish Group, 2013, 2014). The Manifesto for Agile Software Development was introduced as a possible solution to improve the success rates of software development projects (Agile Alliance, 2001). Agile software development follows an iterative process and more of a discovery-based approach rather than a linear process (Leffingwell, 2011). Conforto, Amaral, da Silva, Di Felippo, and Kamikawachi (2016) and Marnewick and Langerman (2018) summarise some of the key elements of Agile approaches:

- Customers are continuously involved throughout the development process as they evaluate the delivered product and provide feedback.
- The product is developed in increments and the customer specifies the requirements that must be included in each increment.
- Each team member is trusted to do their job to the best of their ability without any prescriptive processes.
- The product is changed as the customer dictates instead of following a formal plan. According to Serrador and Pinto (2015), less upfront planning is better as a more evolutionary or incremental approach is more efficient.
- The focus is on simplifying the development of the product as well as the process that is being followed.

Figure 1 provides a longitudinal view of the benefits of Agile as an approach to deliver software solutions and products.

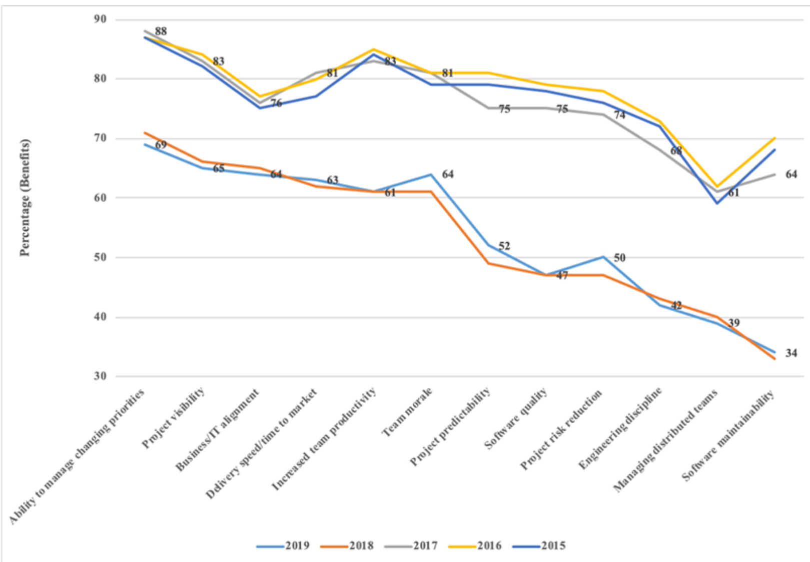

Figure 1. Benefits of Agile.

(Compilation based on VersionOne Inc. (2015); (VersionOne Inc., 2016, 2017, 2018, 2019)

Figure 1 summarizes the benefits identified by the participants of the VersionOne survey over the last five years. It shows that the top benefits of Agile are: the ability to manage changing priorities, project visibility and business/IT alignment. The positive benefits of adopting Agile lead to the increased adoption of Agile within organizations (Papadopoulos, 2015). Agile is no longer the exclusive domain of IT and software development, as the principles of Agile are applied throughout organizations even in non-IT initiatives (Conforto, Salum, Amaral, da Silva, & de Almeida, 2014). Nowadays, the question that organizations ask themselves is how to adopt and scale the principles of Agile to reap the benefits of Agile (Stojanov, Turetken, & Trienekens, 2015; Turetken, Stojanov, & Trienekens, 2017).

2.3 Scaling Agile

This led to the advent of scaling Agile within large organizations trying to replicate the benefits of Agile. The benefits of scaling Agile can be summarised as a 10 – 50% increase in more motivated employees, 30 – 75% faster time-to-market, 20 – 50% increase in productivity and 25 – 75% defect reduction (Dikert et al., 2016). Scaling Agile in large organizations needs to focus on architecture, inter-team coordination, portfolio management and scaling itself (Laanti, 2014).
However, there are challenges when scaling Agile in organizations and very little empirical research has been done on how to alleviate these challenges (Hobbs & Petit, 2017a, 2017b). Dikert et al. (2016) list nine challenges ranging from resistance to change and difficulty of implementing Agile within the organization to the problems associated with hierarchical management and organizational boundaries. These challenges are primarily focusing on change management and on how the deployment of agile is done. The main criticism against Agile is that it is applicable primarily to small teams rather than large organizations with several hundreds of development teams (Dingsøyr, Fægri, & Itkonen, 2014; Reifer, Maurer, & Erdogmus, 2003).

2.4 Scaled Agile Frameworks

A popular framework for scaling Agile within an organization is SAFe (Leffingwell, 2017). Stojanov et al. (2015, p. 446) claim that SAFe has "become an important choice for organizations that are in need of approaches for scaling agile development across the enterprise" (p.446). It divides an organization into four levels: portfolio, large solution, program and team. Each level comprises of its own artifacts, activities as well as roles and responsibilities (Leffingwell, 2017; Scaled Agile Inc., 2018; Vaidya, 2014). The four levels are linked to each other through strategic themes that cascade down to the team level through epics. Epics are major initiatives within a portfolio. They are linked to value streams and deliver value to the business. SAFe as a framework does not prescribe how it should be implemented. This is left to the organization itself. SAFe describes the best practices, various roles and artifacts that are required to implement the Agile principles at scale (Turetken et al., 2017).
With the SAFe environment, the concept of a project is replaced by an initiative. These initiatives should be derived from the strategic themes and might be part of an epic. They are implemented as normal sprints (the Scrum term for iterations). When a backlog is created, it rolls up into either the program's backlog or the portfolio's backlog. At most times, the process within the SAFe environment is the same as that of traditional alignment of projects with the organizational strategies. The major difference is that initiatives are implemented using Agile principles.
Other scaled agile models include Disciplined Agile Framework (Ambler & Lines, 2012), Large Scale Scrum (LeSS) (Larman & Vodde, 2014) and Nexus (Schwaber, 2018). It must be noted that all scaling Agile frameworks have been developed by practitioners and that SAFe and LeSS are the only two frameworks covering the concept of portfolio and portfolio management.

2.5 Agile Portfolio Management

Laanti and Kangas (2015) list seven benefits of adopting Agile portfolio management. They mention that the main benefit is the visibility of the entire portfolio. The entire organization is in a position to link the epics with the strategic themes and view the progress of these as well as the associated backlog of each portfolio (Stettina & Hörz, 2015). This is in line with traditional project portfolio management, where the focus is on the visibility of the project portfolio and the optimizing thereof (Project Management Institute, 2017).
Stettina and Hörz (2015) summarise the characteristics of a well-managed Agile portfolio as follows: (i) Executive commitment and the entire organization support the Agile journey and the implementation of scaled Agile, (ii) transparency across the entire value system from the strategic themes, through epics down to the teams, (iii) collaboration in the form of release planning and portfolio reviews and (iv) the entire focus of the Agile portfolio is on the teams. The presence of these characteristics contributes to improve the performance of the Agile portfolio and ultimately ensure organizational success (Goh, Pan, & Zuo, 2013).
SAFe has a portfolio level, as illustrated in **Figure 2**. The details of the portfolio level illustrate the principles, practices and roles that are required to build systems and solutions that realize the organizational strategies.
In a scaled Agile environment, a portfolio is perceived as a collection of programs, standalone projects and other initiatives undertaken to deliver certain capabilities or systems (Gill, 2015). In SAFe, the organization provides the strategies via strategic themes. These themes are used to guide the portfolio itself. The portfolio in turn is used to fund and nurture a set of development value streams.

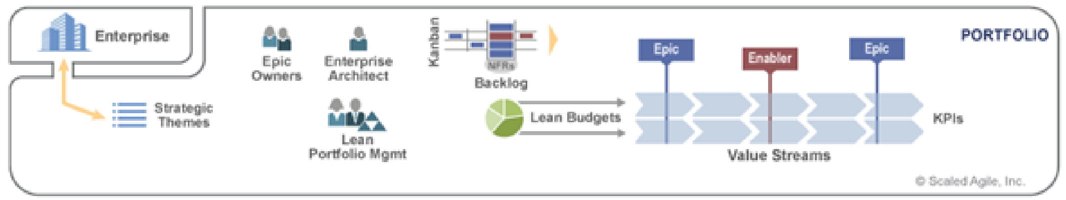

Figure 2: SAFe portfolio level (Reproduced with permission).

A value stream provides continuous value to the customer through various solutions (Leffingwell, 2015; Scaled Agile Inc., 2018). Various value streams are managed at the portfolio level where the organization's strategies are defined. Strategy as well as investment funding are defined for each of the value streams and their respective solutions. The portfolio level aligns the organizational strategy with portfolio execution around the flow of value through one or more value streams.
Although portfolio management is a well-defined discipline, it is being challenged when organizations adopt Agile at scale. In a scaled agile context, the notion of a project disappears to some extent because there is no longer a beginning and an end. The initiatives are managed as a continuous flow similar to a factory with continuous operations (Harvey & Aubry, 2018).
This article investigates the question **how are initiatives aligned with an organization's strategy in a Scaled Agile environment?** This required an investigation of how portfolios were established, how initiatives were planned, how the value was planned and measured. Since the portfolios no longer consisted of groups of projects/programs, the researchers wanted to understand how, in such a context, initiatives were launched, how their value was assessed, prioritized, and selected.

3 RESEARCH METHODOLOGY

A qualitative approach was used to answer the research question and a single case was investigated in detail. This approach seemed more appropriate, as the research was exploratory (Yin, 2017). A semi-structured interview guide was developed using the principles of SAFe. The semi-structured interview consisted of 11 questions focusing on portfolio management and how initiatives are derived and linked back to the organizational strategies. Cunningham (2008) and Kwok and Ku (2008) suggest semi-structured interviews as being an excellent way to gather detailed information. Interviewees are then given the opportunity to elaborate in a way that is not possible with other methods, but they are able to share information in their own words and from their own perspectives. See the questionnaire in **Appendix 1**.

3.1 Case Description

The implementation of SAFe was studied at the Bank , one of the largest African banking groups by assets with a long history in Africa. It is listed on the Johannesburg Stock Exchange (JSE). The financial institution is currently among the largest organizations in South Africa by market capitalization. It offers a wide range of banking and financial services in 20 countries in Africa. The company employs over 6 000 people in its IT department. It serves millions of personal customers with thousands of ATMs. The company embarked on the Agile journey in 2015 to accomplish the following:

1. Be closer to the business. This is achieved by shaping solutions with the business as well as co-creating software, replacing business specifications and feasibility assessments with prototypes.
2. Deliver products in weeks rather than years. The software should be developed faster and deliver a minimum viable product. Teams should experiment and fail often.
3. Build more usable/simple software. This is achieved through obsessively focusing on customer experience and reducing hurdles.
4. Adopt new technologies faster. The company should take full advantage of new technologies, e.g., A/B testing to optimize designs, click flow analyses to optimize a process, and analytics to predict customer behavior.

3.2 Interviews

Nineteen interviews were scheduled with various individuals within the Bank's Group IT division. In order to reduce bias, the researchers tried to cover the widest range of roles as possible to collect different perspectives on the same portfolio. The interviews were conducted by the researchers themselves. The interviewees comprised of four people from business itself who were direct customers of IT and ultimately the Agile process, two people from the Agile Portfolio Office, four portfolio project managers, the CFO of Group IT, two CIOs within Group IT, three Release Train Engineers, one COO and three Agile coaches. Appendix provides a summary of the 19 interviews.

3.3 Data Analysis

The interviews were transcribed and analyzed by two coders, for validation, using Atlas.ti. The results were analyzed and compared to the SAFe framework. The purpose was to determine how IT initiatives are aligned to the strategies within a scaled agile environment. A network diagram was constructed using the Network View Manager tool within Atlas.ti. The network diagram was created based on the codes and associations that were used during the coding process of the interviews.

4 RESULTS

4.1 Corporate and Portfolio Strategies

Group IT is a common function to the Bank and is a centralized unit offering expertise and development capability to approximately seven units/divisions, each with its own internal objectives, structure and portfolio. The executive committee of the Bank developed a five-year vision supported by a strategy composed of eight themes. Most of the themes were expressed in one to five words, but would affect all units, one way or another. Although these themes were considered very high level by some interviewees, they had the advantage of being simple to remember and easy to relate to. Surprisingly, most of the interviewees had internalized these themes and could easily list and refer back to them.

In most of the business units' cases, the portfolio strategy is aligned with the organizational strategy. "So, we get the strategy and vision directly from our business. And the business at the PI planning session, the business states the vision and strategy for the period ahead. How that particular Program Increment (PI) will be shaped is coming from the business. So, there is, it is heavily aligned to the organization strategy" (RTE-1). However, some business units do feel that although there is some alignment, it is still not yet 100% aligned. This can be attributed to the maturity of the business unit's SAFe journey. "Very far from any level of maturity, not because we do not have a strategy but our ability to actually be succinct, be at a data level clear that this is our execution maps to the strategy I guess is a constant challenge" (RTE-2).

4.2 Value Stream

Although the SAFe framework suggests that the themes are translated into value streams, the Bank acknowledged that the notion of value streams had not yet been deployed.

"Step one is somebody comes up with strategic themes and strategic objectives. You break it down and it flows down. When you go back this is then just the measurement of the bites that should eventually add up. You cannot from the top control and command the development because if you try and orchestrate this from the top, it just does not happen." (CIO-1)

Theory suggests that the organizational vision should be implemented through various strategies. In a scaled agile environment, this is done through themes instead of strategies. This is done in this instance but what is lacking, is the translation of these themes into value streams. The implication is that no value is attached to a specific theme, making it difficult to balance the portfolio.

4.3 Fixed Capacity

As per Figure 3, the components within the portfolio are driven by the budget and the capacity of each business unit.

"So, I have got a fixed capacity, effectively it will cost me X many millions for this team, they are there for the year. My job is therefore to help the guys optimize that capacity. So, it is a fixed capacity model" (BM-2).

Coach-2 compares fixed capacity with an airport runway: "Because think about it like a runway where a lot of airplanes need to land. They have only got X amount of capacity to do business readiness, to do testing, etcetera so they need to make sure when they prioritise work some work will come here that we will deploy then during the PI there, but they are also busy with some of their own things. So, there is a lot of trade-offs that needs to happen. How much can we actually do so things do not sit on the shelf" (Coach-2)

Using fixed capacity as way to prioritize features within an agile portfolio, implies that regular planning is required to continuously optimize the portfolio. This is done through program increment (PI) planning. According to SAFe (shown in **Figure 4**),

"Program Increment (PI) Planning is a cadence-based, face-to-face event that serves as the heartbeat of the Agile Release Train (ART), aligning all the teams on the ART to a shared mission and Vision" (Leffingwell, 2015).

4.4 Program Increment (PI) Planning

The Bank's PI planning is an activity taking two to three days and is a joint exercise involving people from both the business and the IT sides of the organization. During the PI planning session, the participants identify and prioritize the work to be done in the coming 10 to 12 weeks. The interviewees experienced the PI sessions as positive where the outcome is the alignment of all work with the organizational strategies.

"Then when we go to PI, based on what we saw come out of the pre-PI, I will prepare another set, a pack saying guys I have seen what you brought into pre-PI, these are the ones that I am interested in and the ones I am going to push the envelope on. So, when you go away, tell me how much work it is to do those as well, because they are

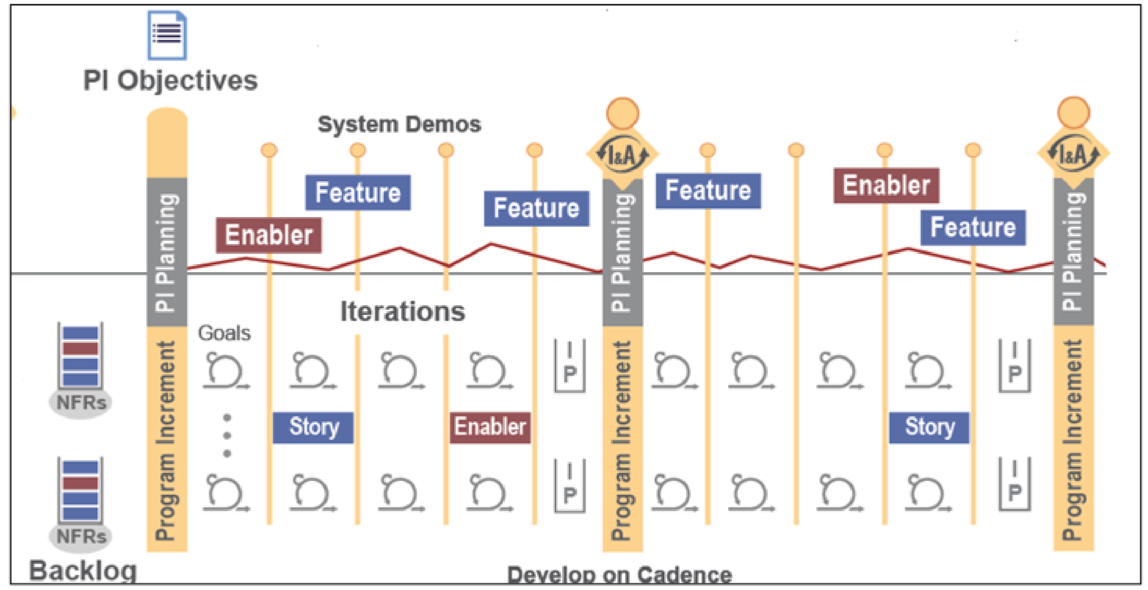

Figure 4: PI planning in SAFe (Reproduced with permission)

critical for the organization's strategy. The tactical ones I am prepared to look at x, y and z, because value comes from that for the organization. So, I have that conversation upfront with the team based on what I see. And when they come back there is obviously business objectives that have to come back with whatever they are planning to do in the PI and those business objectives should match what I have got in strategy." (BM-1)

Although the bank experiences the PI sessions as positive, there are still some challenges with regards to prioritization and over-commitment. "and I think we actually getting far better at prioritizing the right things per the PI.

But the level of that discussion and the things that we prioritize are typically at a low level. So I would argue on average, the conversations that a PI are mostly happening at a feature level" (APO-2) and "so if your question is can we deliver on what we are committed to at the moment, no we can't. But we are getting far better insight into unplanned work and understanding whether the unplanned work is because of instability and production, therefore you are doing a lot of fixes, etcetera" (APO-1).

Outcomes are a feature, a product or a group of features. In each PI, the business teams or the product teams define the outcomes that are expected in the coming period. Those outcomes will be of benefit to their business:

"If you break those outcomes down further, they would break up into features which would be broken down into many teams and that is really how it goes from strategic themes to outcomes to features. And the features were then executed by the feature teams." (PPM-2)

According to the interviewees, the PI planning process has matured significantly during the last 18 months. In particular, it was observed that the way people interact and engage in order to prioritize the features during the PI planning process has improved significantly over time. The conversations during PI planning are mostly at feature level and it was clear that the level of discussion and what is prioritized are typically at a low level.

As stated earlier, projects or initiatives should be aligned with organizational strategies. This alignment is normally achieved through portfolios and portfolio management. Given the responses from the interviewees, it can be deduced that strategic alignment is achieved through the PI sessions and that value is created because of this alignment. However, there are still some challenges that need to be addressed.

According to the model, all projects and initiatives would originate from the organizational strategies. In the Bank's case, new initiatives originated outside the value streams and agile portfolio, but they did not perceive this as an anomaly as these new initiatives aligned to the strategies of the organization.

4.5 Traceability Back to Strategy

Marnewick (2017) mentions an optimal portfolio is achieved through the continuous evaluation of the various components. This evaluation is based on the strategic alignment of the various components. In the SAFe environment, the various initiatives should be aligned to the strategies via the PI planning. In the case of the Bank, strategic alignment is done through a color-coding exercise.

Although the corporate strategies inform the business units' portfolio strategies through a top-down approach, there are some instances where a bottom-up approach is followed.

"Let me just say, so the reality is that - and I believe it is correct – that at team level as well as program level, work can come in from the side, you don't only have to accept work from strategic objectives. Because the reality is, given each of those program areas look after a functioning part of the business, there will be needs that arise at that level that don't always come from the top" (APO-1).

Given that each of the program areas looks after a functioning part of the business, needs arise at that level and are not cascaded down from the top. "We don't want the bosses saying what needs to be done, we want it to come more bottom-up which I would argue has been a conscious decision [...] So we don't have portfolio meetings" (BM-2).

Although the description of the Program Increment Planning process above might make it sound as if the strategy is cascaded down in the organization, this is not exactly how this is done in practice. The IT initiatives are linked back to strategy by defining the expected outcomes to be delivered in the next quarter for each PI.

Once features are identified and assessed by development teams during the PI planning, color coding occurs to map the features back to the strategic themes. The themes could be the corporate themes, but most often the business unit themes are used. These business unit themes have been defined, based on the corporate theme, but are specific to the business unit. Part of the outputs of the PI plan is a link between the work to be delivered and the objectives, which then translate to value, which translates to the business strategy map.

"So the, one of the biggest benefits out of this exercise was firstly the visibility of what was the backlog and what was planned for the PI, but because each of the features that were stuck on the wall were color-coded to strategic themes, to the strategy, by standing back and looking at the wall and just looking at the colors on the wall you could understand where was all the backlog like focused on. Was it compliance, or was it generic backlog where there is no strategic alignment, or you could literally by just looking at a wall have a view of where is your strategy getting delivered?" (PPM-2)

Traceability is therefore done bottom-up by mapping each feature with the associated color of the strategic theme. This provides excellent visibility across feature teams at the program level and offers opportunities for balancing between strategic themes. This is in line with Vara (2015) stating that strategic alignment and prioritization are fundamental techniques to achieve a successful portfolio.

Although the mapping back to the strategy using color codes is generally straightforward, there are occasionally cases where the mapping is not so obvious, for example, when some features might contribute to more than one strategic theme:

"There is great overlap between strategic theme A and B. So, all those are challenges for us to solve. So maybe that is one of the reasons why it is very difficult for us to actually get good linkage and trustworthy linkage" (APO-1)

The product owners have a key role in ensuring that there is constant alignment with the strategic themes. On the one hand, they work in very close collaboration with the business executives, but on the other they are present and active at every pre-PI and PI planning session. They state how a particular PI will be shaped and how it is aligned with the strategy.

"The product owner is responsible for making sure that there is constant alignment to the strategies. And because we have got such a close-knit with our business exec's, she is at our every PI, pre-PI, at our every PI. She states how this particular PI will be shaped and the product owners then are aligned with that. In this case they all report to her." (RTE-3)

4.6 Portfolio Balancing According to Strategic Themes

Prior to the PI planning exercise introduced with SAFe, there was no visibility across all the different feature teams at the program level to deliver portfolio outcomes. One of the main benefits of the PI planning exercise is the visibility of the backlog to be developed during the PI. The purpose of portfolio management is the optimal balance of all the respective components that forms part of the portfolio. The selection and continuous balancing of the various components contribute to the success of the portfolio (Marnewick, 2014).

Because each of the features displayed on the wall in the planning room is color coded in alignment with the strategic themes, it is possible to understand what the strategic focus of the PI will be just by standing back and looking at the wall and the colors. This is summarised in the following anecdote:

"And from the first time we actually had that view the Chief Executive looked at the wall and she said: 'but I would have expected a lot more yellow because digitization is what I am expecting. That is what is going to make the money. Why are you doing so much platform work here? Why is this not even generic one? Why is this scope not coming from the lab where the lab is actually where the work is actually being tested with customers and that is what they wanted?' So, through her just looking at this wall things were then adjusted to say we need to have more of digitization, more of it should be coming through in these teams. If any feature is put on the wall and it has not been through the lab, I am not going to prioritize it and there were some principles that were then laid out." (PPM-2)

4.7 Reporting at strategic theme level

The Bank's board of directors have instituted a subcommittee to oversee the delivery of IT. The portfolio management office must report to that subcommittee, for example on the outcomes of the IT investments. In the past, they reported on project performance. With the introduction of SAFe, they have now started to report on the strategic themes that the Bank has set. They can only do this by collecting the results of the PI deliveries linked back to the strategic themes.

"When we get there, my vision is that we would be able to through less burden to the teams, we can show, we can extract the vertical answer of the value being delivered. How many, how much of the features that we delivered fit client centricity? How did we advance client centricity? How did we advance cyber security? How did we advance digitization? And because of the verticals being aligned we can extract the enterprise answer in quite easy reporting standards. And we believe that that will be the next game changer in maturity when we to the group exco of the bank can report the strategic investment themes in IT. The executive management can then start assessing whether the strategic investment is in the right place. And you can start shifting investment to advance the strategy of the bank." (COO)

The Bank is now in the middle of a process where they are deploying a tool to associate the data for each initiative to the strategy to actually connect the two. In comparison, when they were in a project-based paradigm, it was extremely difficult to link project completion to the benefits.

"There are of course always business cases. However, business cases are always profitable. We never have a negative business case. But there were hundreds of projects alive, but you could never really connect this project to that strategy. And I think in this vehicle what we are aspiring to do is to get that match done and we think it is this year that we are going to get there." (COO)

SAFe per se does not mention reporting as an individual activity – it is assumed that reporting should take place. The PMI on the other hand, do have a specific activity called Performance Reporting and Analytics (Project Management Institute, 2017). This activity's purpose is to determine trends and patterns that can be used with portfolio decision making.

5 DISCUSSION

Stettina and Hörz (2015) as well as Goh et al. (2013) mentioned the benefits of a well-managed agile portfolio. It is evident from the results that the Bank are achieving these results. The Bank managed to gain executive commitment, there is transparency across the entire value system, there is a collaboration with regards to the PI planning and release trains and finally, the focus is on the teams themselves.

The first research question focuses on the measurement of value. Value is measured based on the various KPI metrics that are in place (Figure 3): "we do track, we know the bodies in the feature team, we know the cost of our feature team, we track actual spend against budget of a feature team. We historically have tracked the split between run and change and the way we have costed it, which we have not got rid of" (CFO). As per APO-1, determining and measuring the value is a long term process where "the measurement to metrics is something that we are also driving quite hard this year to be able to... or measure in, I guess a standardized manner across the portfolios but get far richer measurements out. We have to mature this prioritization and the ability to trade-off across portfolios and report the strategic lengths of what is happening."

The second research question focuses on the establishment of an agile portfolio. It is evident from the interviews that the portfolio is informed by the corporate strategies and that alignment between work (features) and portfolio strategies is done through PI planning. This provides the Bank with the opportunity to continuously assess its portfolios and ensuring that the strategies are achieved.

The third research question ponders about the impact of continuous delivery on the portfolio itself as well as strategy delivery. Although this research question was not explicitly answered by the interviewees, it can be deduced that the impact is positive. Although the continuous engagement (every 10 – 12 weeks) might be perceived as strenuous, the benefit is that the business units can immediately determine where they are under- or overperforming and adjust the portfolio accordingly. In a more traditional portfolio, the portfolio might be adjusted maybe once or twice a year. In a demanding environment where agility and continuous change is a given, the Bank is reaping the benefits of an agile portfolio that is continuously adjusted.

In conclusion, a comparison with the principles, practices and roles of SAFe highlighted that the Bank do have most of the principles, practices and roles in place. The analysis of the interviews highlight that the basics are in place such as strategic themes, PI planning, visibility of the portfolio and reporting on the progress of implementing the strategic themes. However, there are still some work to be done with regards to value streams and the planning of work across various portfolios.

The Bank do experience the benefits of a well-managed agile portfolio but can realize more benefits when the entire SAFe framework is implemented.

6 CONCLUSION

The article presents a case where scaling Agile is used as a way to implement IT initiatives. The main reason for scaling Agile is to reap the benefits of Agile at an organizational level. Various frameworks were presented, but the focus was on SAFe, which was the framework used as the reference for this study.

Answering the research question revealed interesting results. The results highlight that there is a high degree of alignment between the initiatives and the various strategies. However, not all the initiatives are derived in a traditional top-down manner from the strategies. Some initiatives are conceptualized at the business level and then retrofitted to the strategies. One aspect that is clear is that benefits tracking (and value stream management) are non-existent and that the Bank realizes this and is trying to put measures in place to address this weakness. Many of the interviewees at the Bank stated that they are reaping the benefits of scaling Agile in the organization. They felt that there was definitely an alignment between the Agile initiatives and the organizational strategies.

The major limitation of this study is the fact that only one case was investigated and that no cross-comparisons are currently possible. Such comparisons are intended in the next phase of the research program.

This research investigated the strategic alignment of IT initiatives within a Scaled Agile environment. There is abundant literature on how strategic alignment should be done in a conventional environment (Avison, Jones, Powell, & Wilson, 2004). However, little has been written on the applicability and success of scaling Agile as a way to align initiatives with strategies. This article ventures into this unknown and from the initial results, it is evident that SAFe can be used to align various initiatives with the organizational strategies. These results are only applicable to an Agile environment. Various case studies have been conducted on how organizations have implemented SAFe, but they were written from the practitioners' perspective. No empirical evidence is available on whether SAFe allows organizations to align initiatives with the strategies. This article provides some limited results that SAFe can be used for strategic alignment. It seems to indicate that organizations can adopt SAFe not just to get the benefits of agile, but also to align initiatives with strategies.

The results from the current study provide enough information to derive in-depth conclusions and a basis for future research. The current study provides insight into how a specific organization (the Bank) went about aligning their IT initiatives with the strategy in a scaled Agile environment. Future research will focus on the following three aspects:

1. The comparison of the case with other similar cases (financial institutions) in Europe and North America. This allows us to draw comparisons with regard to strategic alignment as well as the applicability of SAFe as a framework for strategic alignment.
2. The comparison of the financial cases with other cases from other industries such as IT service providers.
3. The comparison of cases using SAFe as a framework with other cases using any other framework to scale Agile.

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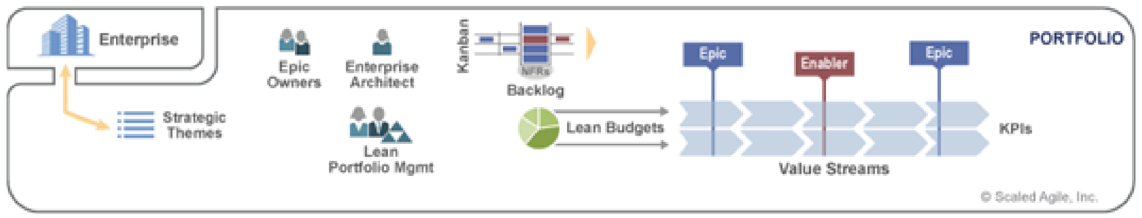
APPENDIX 1: INTERVIEW GUIDE



1. Describe the portfolio management process.
   a. Frequency of this process

2. How do you establish the **Strategic Themes** for the portfolio that guide it through the ever-changing business objectives of The Bank? Explain the process that you follow.

3. Lean Budgets: Lean budgeting allows fast and empowered decision-making.
   a. Who manages the budget? The process?
   b. Who controls the budget? The process?
   c. Who is accountable for the budget? How is accountability enforced?

4. How are the value streams identified? Process?

5. How are the KPI's determined for each value stream?
6. Explain the Portfolio Kanban process.
7. Describe the role of the Epic Owners.
8. Describe the role of the business architect.
9. Who are the members of the Lean Portfolio Management Team? What is the role of each of the members?
10. Describe the relationship between the portfolio, programs and development (projects).

11. How do you provide a constant flow of feedback from the portfolio back to the stakeholders? Specific focus on:
   a. The current state of the portfolio's solutions.
   b. Value stream key performance indicators (KPIs).
   c. Qualitative assessments of the current solution's fitness for purpose.
   d. Assessments of strengths, weaknesses, opportunities, and threats present across the portfolio.

APPENDIX 2: SUMMARY OF INTERVIEWS

Role	Identifier	Division	Duration
Agile project officer	APO-1	Group IT	00:58:44
Agile project officer	APO-2	Group IT	00:58:38
Business manager	BM-1	PBB	00:45:51
Business manager	BM-2	PBB	00:51:06
Business manager	BM-3	Cards, Payments, GSS, VAF	00:31:54
Business manager	BM-4	PBB	00:28:40
Chief information officer	CIO-1	Cards, Payments, GSS, VAF	00:59:58
Chief information officer	CIO-2	PBB	00:52:31
Coach	Coach-1	Group IT	00:36:02
Coach	Coach-2	CIB	00:46:59
Chief operating officer	COO	Group IT	00:40:46
Finance	CFO	Group IT	00:36:13
Project portfolio manager	PPM-1	Cards, Payments, GSS, VAF	00:51:11
Project portfolio manager	PPM-2	PBB	00:48:38
Project portfolio manager	PPM-3	CIB	00:55:26
Project portfolio manager	PPM-4	African Regions	00:51:58
Release Train Engineer	RTE-1	Cards, Payments, GSS, VAF	00:30:01
Release Train Engineer	RTE-2	Cards, Payments, GSS, VAF	00:36:37
Release Train Engineer	RTE-3	PBB	00:34:52
Total			**14:16:05**

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STRATEGIC ALIGNMENT OF INFORMATION TECHNOLOGY INITIATIVES IN A SCALED AGILE ENVIRONMENT