

# **Improving Synergies through Kaizen Events**

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## Preface

This report was made by Morten Brinch Sørensen studying M. Sc. in International Technology Management 3<sup>rd</sup> and 4<sup>th</sup> semester at Aalborg University, Denmark. This report was developed in collaboration with VIKING life-saving equipment, Esbjerg, Denmark. First of all I would like to thank everyone from Viking who was involved in this project, for their time and cooperation. Secondly I would especially like to thank Torben Hansen Bredthauer, employee at Viking, for assisting with this project, and making it possible to get case study data from Viking.

Furthermore I would like to thank Sami Farooq for being my university supervisor for this project.

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Morten Brinch Sørensen

## Abstract

This report describes the development of a kaizen event synergy framework. The background for the development was partly the task given by Viking life-saving equipment and partly the use of synergy in today's business environment in order to get competitive advantage. The framework was developed on basis on a literature review. The framework introduces the concept of using continuous improvement with kaizen events in order to focus synergy level improvements. It furthermore takes into consideration the needed continuous improvement support that is needed in order to sustain continuous improvement and the kaizen events. The framework was used in a case study in order to estimate its usability and effect for an organization.

The findings have shown that from the literature it was possible to construct a framework with a high potential of increasing synergy levels. The case study also showed that the constructed framework had a good potential for increasing synergies.

### **Keywords:**

Continuous Improvement, Continuous Improvement Support, Kaizen, Kaizen Events, Kaizen Event Support, Synergy

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## List of Abbreviations and Definitions

Viking life-saving equipment – Viking  
Continuous improvement - CI  
Small and medium sized enterprises - SME's  
Value-enhanced collaborative working - VECW

### Definition Continuous Improvement or Kaizen

- Bicheno (Bicheno 2004) “Kaizen is the Japanese word for continuous improvement and it is central to lean operations”.

### Definition Kaizen Event

- Van et al (Van et al. 2010) “A kaizen event is “a focused and structured improvement project, using a dedicated cross-functional team to improve a targeted work area, with specific goals, in an accelerated timeframe”.

### Definition Synergy

- Christensen (Becker-Christensen 2006) “The effect or synergism = synergy effect”.

### Definition Synergism

- Christensen (Becker-Christensen 2006) “Interaction between two or more forces will provide greater impact than just the sum of individual forces”.

### Definition Collaboration

- Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) “A positive form of working in association with others for some form of mutual benefit”.

### Definition Assessment

- Christensen (Becker-Christensen 2006) “Consider something about value, quality or size of something”.

## Chapter 1

### Introduction

#### 1.1 Introduction

The background for this project is based on a task given by Viking life-saving equipment (Viking). The task involved introducing and working with lean and continuous improvements (CI). However at a very early point it was realized that implementing, driving and sustaining lean and CI would prove difficult within an organization were the departments seemed to work very separately with a low level of interactions between many of the departments.

The best and most obvious example would be from the introduction sessions for new employees to the different departments were the manager of marketing Elizabeth Pöckel made the following statement;

“Technical Department! That’s the departments in the other building on the other side of the big hallway, but we never have anything to do with them in our daily work!”

The statement, however unintentional it probably was, showed to be more accurate than anticipated. The challenge was not only to work with lean and CI, which on an early stage can be more than difficult with such a separated organization, but also to work with the area of making the organization work better together and thereby making improved internal collaboration and/or synergy.

The literature within the field pointed towards the direction of using, the lean tool, kaizen events for driving the CI against synergy improvements. Kaye (Kaye, Anderson 1999) highlights the importance of using CI, by taking a qualitative point of view;

“Approaches to quality have evolved significantly since the beginning of this century. Four major quality eras have been identified; Inspection, statistical quality control, quality assurance and strategic quality management. The strategic quality management approach however, is still inadequate to meet today’s rapidly changing business environment characterized by uncertainty and unpredictability. To meet these challenges, a fifth quality era – competitive continuous improvement – has been identified. For an organization to achieve flexibility, responsiveness and the ability to adapt quickly to changes within its environment, the implementation of a sound strategy for continuous improvement is essential”.

CI is indeed important in order to stay competitive in today’s business environment. The importance of kaizen events in relation to using CI is described by Van et al (Van et al. 2010); “With the increased use of lean work system practices in recent years, many organizations are using kaizen events to rapidly introduce change and to create a culture of continual improvement”.

Kaizen events can potentially be used as a lean and CI tool to introduce changes, which potentially could include changes to the synergy area as well. The importance of synergy is stated by Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007); “In today’s global economy, companies are trying to re-invent their businesses and maintain their competitive advantage through collaboration. Despite the fact that collaboration has significant benefits, earlier studies also identified a high failure rate”.

Collaboration is essential in order to achieve synergy or synergistic effects and with a high failure rate, collaboration seems to be difficult to achieve. Cohen (Cohen, Bailey 1997) clarifies the importance of group effectiveness which you can associate with kaizen events and good collaboration; “The management and academic press increasingly emphasizes the importance of teams for organizational success in the modern economy”.

Teams will affect general company tasks and processes, as long as kaizen events are using teams efficiently, teams will have a strong impact on kaizen events long term. Another aspect which is important when using CI and kaizen events, in order to improve certain organizational areas, is the support function. The support function is important in order to both sustain the process itself but also the changes made from the kaizen event process.

The literature and Viking was leading the project theme in the direction of how you actively and effectively can drive CI, through kaizen events, with the direction and focus of improving synergy levels. What is new to the existing literature is the approach of combining CI and Synergy to determine if this will be an effective way of improving synergies.

## 1.2 Research Objectives

The main research objectives can be described;

- To develop a usable framework that can increase synergy levels, within an organization, through a kaizen event, based on relevant literature
- To investigate and analyze the frameworks usability and effect through a case study at Viking
- To demonstrate, evaluate and discuss the practical usability of the framework and synergy influence on organizations competitiveness.

## 1.3 Research Questions

The main research questions relates to the objectives and explanation in the introduction;

- How can a framework increase synergy levels, within an organization, through a kaizen event?
- How usable and effective will the framework be in an organization?
- How will the framework, by use of synergy, influence organizational competitiveness?

## **1.4 Scope of Research**

The scope of the research is to develop a framework that will help increase company synergy levels and thereby increase the collaboration between divisions internal in an organization. Furthermore it is to review the literature to identify good practice, problems and gaps in relation. Lastly it is to test the framework as a case study for the company Viking with analysis of the findings and evaluations and discussions of the results.

## **1.5 Research Process**

The research process involved developing a kaizen event synergy framework by reviewing existing literature within the fields of continuous improvement, synergy, kaizen events and continuous improvement support. Furthermore other relevant areas were investigated in order to see if they would have relevance for the framework being developed. The framework was used in a case study at the company Viking, where interviews with experts were conducted in order to get an expert evaluation of the framework.

## Chapter 2

### Literature Review

#### 2.1 Introduction

The chapter will make a literature review of continuous improvement, kaizen event, Continuous improvement support, and synergy. It will evaluate some of the shortcomings of the literature and finally make a conclusion. The focus is based on the task given by Viking combined with the discoveries made at the company, see chapter 1 for further explanation.

#### 2.2 Continuous Improvement and Kaizen

Bicheno (Bicheno 2004) defines kaizen as being the Japanese word for continuous improvement and it is central to lean operations. The word kaizen, originates from Maasaki Imai. According to Bicheno (Bicheno 2004) kaizen or CI can be classified in five different improvement types; passive incremental, passive breakthrough, enforced incremental, enforced breakthrough and blitz. See Figure 1.

	Passive (Reactive)	Enforced (Proactive)
Incremental (Point Kaizen)	1	3 
Breakthrough (Flow Kaizen)	2	4

**Figure 1 - A classification of improvement types (Bicheno)**

Bicheno (Bicheno 2004) argues that passive incremental is passive or left to chance. It may also be termed “reactive”. A reaction takes place in response to a crisis. By contrast, enforced improvements are proactive. Crises can be engineered for the pressure to be kept on.

Bicheno (Bicheno 2004) states that; “There is, or should be, a place for all five types in every organization. Adopting lean manufacturing does not mean ignoring other forms of improvement to concentrate on kaizen and blitz. Passive approaches are a useful supplement and should continue. However, if all improvements are of the passive, reactive type the company may well slip behind.

### **2.2.1 Passive Incremental**

Passive Incremental improvements can be the suggestion scheme with or without rewards, and with or without team emphasis. A team based passive incremental improvement example is the quality circle. According to Bicheno (Bicheno 2004) non-acknowledgement and non-recognition have probably been the major reason for suggestions schemes producing poor results and being abandoned.

### **2.2.2 Passive Breakthrough**

Passive Breakthroughs normally springs from traditional industrial engineering projects and work study projects, particularly if the initiative is left to the Industrial Engineering of work study department Bicheno (Bicheno 2004). According to Bicheno (Bicheno 2004) passive breakthroughs have probably been the greatest source of productivity improvement over the past 100 years. It is described by Bicheno (Bicheno 2004) as being the classic improvement method by industrial engineering and stated that it has been around for many years.

### **2.2.3 Enforced Incremental**

Enforced Incremental is driven waste elimination and thereby not only left to chance of operator initiative. Examples of drivers could be response analysis, line stop, inventory withdrawal, waste checklist and the stage 1, stage 2 cycle. It is about setting up a culture that drives improvement, which constantly opens up new opportunities for another improvement activity Bicheno (Bicheno 2004).

### **2.2.4 Enforced Breakthrough**

Enforced Breakthroughs can be industrial engineering activities, for example initiated by management or by crisis. It is driven by active value stream current and future state mapping which generally target the complete value stream and followed up by action review cycles and an action plan or master schedule Bicheno (Bicheno 2004).

### **2.2.5 Blitz**

Blitz or kaizen events are a combination of Enforced Incremental and Enforced Breakthrough. It is breakthrough because typical blitz events achieve between 25% and 70% improvements within either a week or within a month at most. On the other hand it is incremental because blitz events typically relates to small areas so it is typically more point kaizen (local area) than flow kaizen (full value stream). It is enforced because the expectations and opportunities are in place Bicheno (Bicheno 2004). According to Bicheno (Bicheno 2004) blitz events are not necessarily continuous improvement if you see it as an isolated event. But blitz events should be repeated in the same area at regular intervals. Product change, priority change, people change and technology improvement.

Though the classifications are good to have in mind and usable in order to classify ones operations, the literature does not identify what is needed to achieve excellence in each area or in more areas at the same time. Furthermore it does not state either if it is at all possible to master them all at the same time.

## 2.3 Kaizen Events

Montabon’s (Montabon 2005) definition of a kaizen event; “Kaizen events are essentially well-structured, multi-day problem solving sessions involving a cross-functional team, who is empowered to use experimentation as they see fit to derive a solution(Montabon 2005)”.

Van et al’s (Van et al. 2010) definition of a kaizen event; “A kaizen event is a focused and structured improvement project, using a dedicated cross-functional team to improve a targeted work area, with specific goals, in an accelerated timeframe”. The two definitions are similar in many points and Van et al (Van et al. 2010) has been set for the standard definition for this report.

First and foremost CI, lean and kaizen events are performed by organizations with groups and individual people so it is important to categorize the different way of working in order to find the best work approach according to improving synergy levels.

### 2.3.1 Kaizen Events Groups

Bicheno (Bicheno 2004) explains that the hierarchy of kaizen or lean improvements needs to be organized into five levels. The organization needs to use most if not all levels in order to aspire towards lean. Bicheno (Bicheno 2004) furthermore suggest to have a lean promotion office or something similar to promote lean and the changes and as a minimum use 1 to 2% of the workforce full time during major implementations and hereafter 0,5 to 1%. Lastly he states that the existence of a lean promotion office is an indication to the organizations commitment to lean.

<b>The Hierarchy of Improvements</b>
<b>Level 1: The Individual</b>
<b>Level 2: The Work Team or Mini Point Kaizen</b>
<b>Level 3 Kaizen Blitz Group or Point Kaizen</b>
<b>Level 4: Value Stream Improvements: Flow Kaizen Groups</b>
<b>Level 5: Supply Chain Kaizen Groups</b>

**Figure 2 - The hierarchy of improvements (Bicheno)**

#### **Level 1: The Individual**

Level one, the individual, were individual employee’s needs to be recognized as being experts of their own process. They need to have the knowledge to understand their own processes in the big picture of organizational processes (wider value stream) and why their own process is important and necessary. The “know why” or underlying philosophy is the most important stage of learning and understanding. Hence Bicheno (Bicheno 2004) states that improvements and sustainability starts with the individual at the workplace.

The team leaders are important as they can encourage, facilitate and recognize individual achievements. Furthermore they can bring individual improvements to the attention of others. Individual “thank you” notes could be examples and carry much weight.

Examples of work; waste reduction, work piece orientation, inventory and tool location, work sequence, ergonomics and/or pokayoke.

### **Level 2: The Work Team or Mini Point Kaizen**

Level two, the work team, consists of groups or teams, which work in a cell or on a line segment. If they undertake an improvement workshop it will affect their collective work area. The initiatives may be done regularly as a part of team meetings, but can also be conducted on 1-2 day workshop. Recognition is crucial, so the team needs to present its results to a wider audience Bicheno {{23 Bicheno,John 2004}}.

Examples of work; work flows, cell layout, line rebalance, 5S, Footprinting and/or cell level quality.

### **Level 3: Kaizen Blitz Group or Point Kaizen**

Level three, the kaizen blitz group, is work carried out in the local area. The event is often between 3-5 days and involves people from outside of the local area. The events usually address more complex issues. Unlike level 2 improvement teams this group forms for a specific purpose or problem to solve for an event. After the event the group disbands Bicheno {{23 Bicheno,John 2004}}.

Examples of work; substantial layout change, the implementation of a single pacemaker-based scheduling system together with runner route and integrating manufacturing and information flows.

### **Level 4: Value Stream Improvements: Flow Kaizen Groups**

Level four, the flow kaizen groups, is work carried out across a full internal value stream. The time duration is between weeks and 3 months and with the purpose of creating future state maps and an action plan. The groups does usually not work full time but on and off the project. There will therefore be project managers assigned and sometimes with assistance from consultants. The group would be a multi-disciplinary group, working with a complete process or value stream and across several areas and functions Bicheno {{23 Bicheno,John 2004}}.

Examples of work; process issues, system issues and organizational issues.

### **Level 5: Supply Chain Kaizen Groups**

Level five, the supply chain kaizen groups, are similar to flow kaizen groups but are focused toward the supply chain. They involve part time representatives from each participating organization. A project manager from the initiating organization is appointed and consultants are usually involved.

Examples of work; A full supply chain value stream map for all the involved organizations would typically be the centerpiece in order to get the whole picture “seeing the whole”.

Bicheno {{23 Bicheno,John 2004}} pinpoints the distinction between “teams” and “teamwork”. “Teams refer to small groups of people working together towards some common purpose. Teamwork refers to an environment in the larger organization that creates and sustains relationships of trust, support, respect, interdependence and collaboration”.

The statement goes on to conclude that; “It is relatively easy to establish a team, but to establish an environment for teamworking is a lot more difficult”.

The connection of establishing an environment for teamworking in relation to creating synergy within an organization is therefore crucial and like in 1.1 Introduction it can once more be concluded that collaboration and synergy is not easy to achieve.

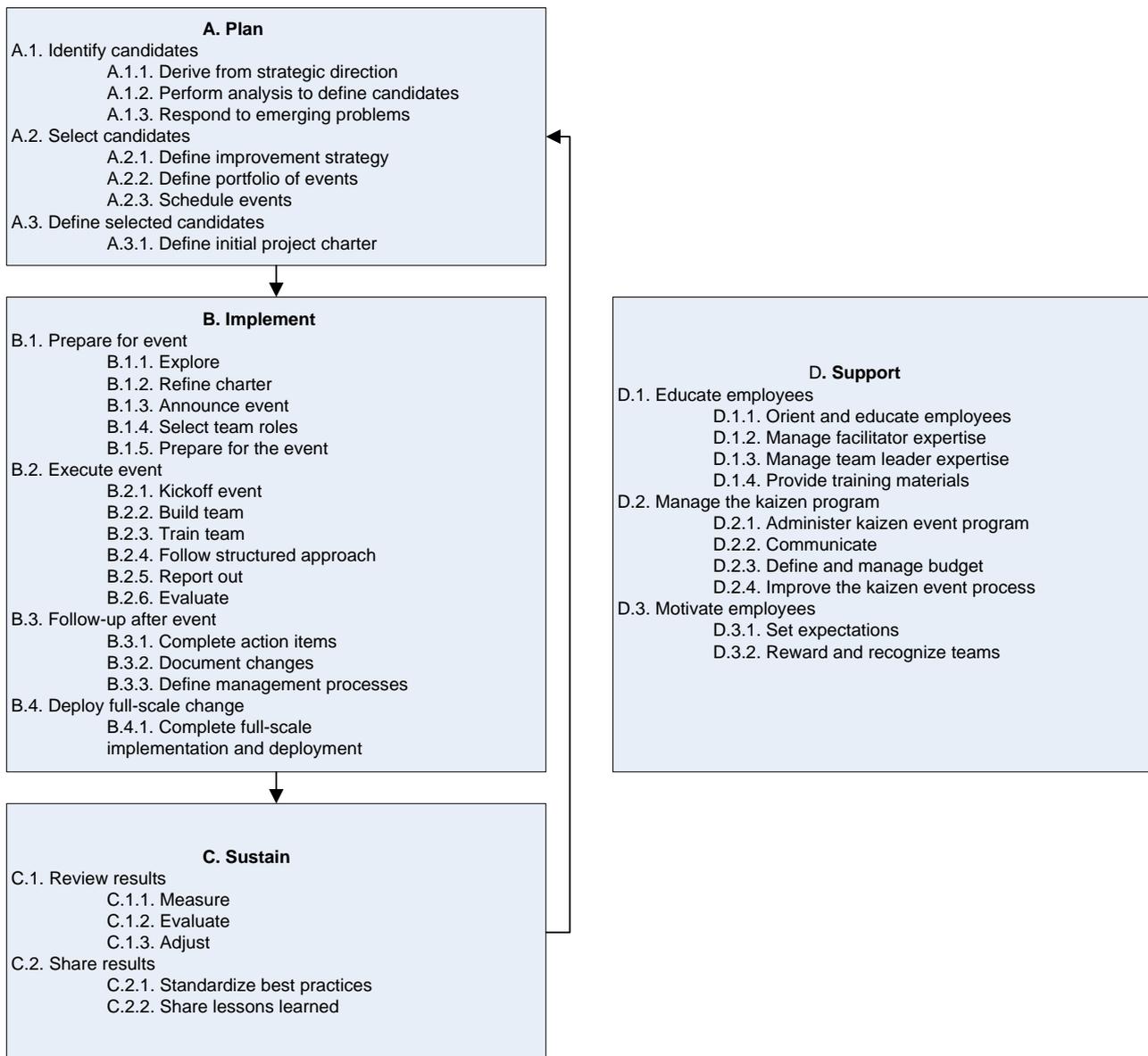
The classification of the different group levels have made it possible to look into how kaizen events are used. From Bicheno's (Bicheno, John 2004) description of task examples in the different group levels you might get the idea that it is mainly used in relation to production and supply chain management except for level four which indicates changes to organizational systems. The relation to production and supply chain management is backed up by Van et al (Van et al. 2010) who states; "Kaizen events often are associated with lean production".

However Montabon (Montabon 2005) states that; "Kaizen events appear to be a very popular tool for problem solving and continuous improvement. While many might think this technique as being exclusive to the shop floor, it can be used successfully for back office processes". This statement indicates that kaizen event can be used to make improvements in all part of the organization, no matter which group level you are working with. It furthermore indicates that kaizen events do not only relate to lean production improvements.

But using kaizen events is not without problems, and organizations have been struggling in order to become successful with conducting kaizen events. Van et al (Van et al. 2010) describes the problems in relation to kaizen events; "Organizations lack systematic, research-based guidance on how to best design and implement Kaizen event improvement programs and how to best assess results".

Van et al (Van et al. 2010) suggests a framework for conducting kaizen events. The framework is based on four areas; plan, implement, sustain and support. Furthermore it is constructed so it can be self assessed, in order to improve specific topics and in order to improve itself. The article of Van et al (Van et al. 2010) concludes that; "Use of the framework as a design and assessment tool appeared to make the kaizen events program more effective in the case study organization". The framework can be found in figure 3.

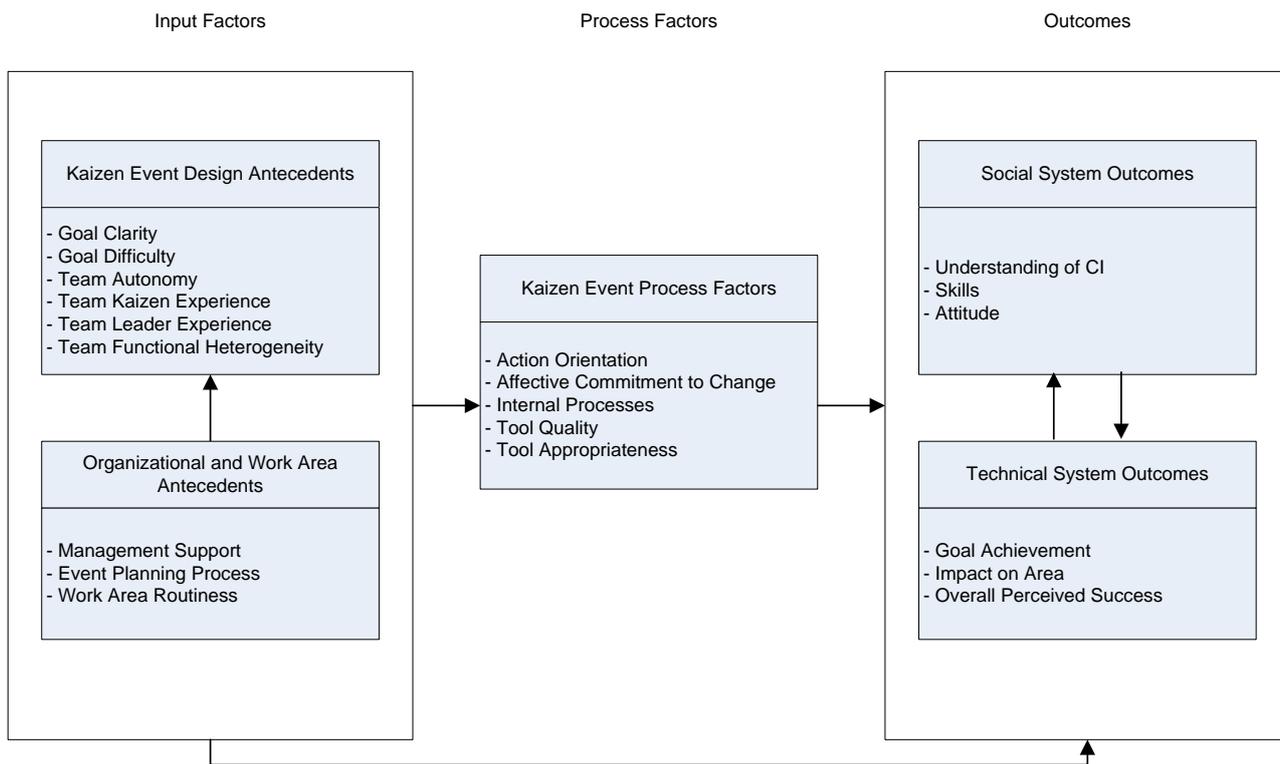
## Improving Synergies through Kaizen Events



**Figure 3 - Kaizen event program framework (Van et al)**

Farris et al (Farris et al. 2009) has made a kaizen event research framework that has three steps; input factors, process factors and outcomes. Some of the key finding of this framework was that organizations should seek to maintain a high level of positive internal team dynamics, to motivate employees, maintain strong and visible management support. The research framework can be found in figure 4.

## Improving Synergies through Kaizen Events



**Figure 4 - Kaizen event research model (Farris et al)**

The framework of Farris et al (Farris et al. 2009) seems to agree with Van et al (Van et al. 2010) that there are 3 steps of a kaizen event, they also put in a support area during the first step. Though the framework seems to be sub divided differently the overall steps seems to be generic.

Though it is possible to find frameworks for kaizen events within the literature, there seem to be no framework that provides a solution of finding focus areas. How to find direction for the right topics for a kaizen event usually is connected to a lot of tools that can be used and focused on improving the kaizen event itself or general lean topics with associated tools.

## 2.4 Continuous Improvement and Kaizen Event Support

Kaizen event frameworks from the literature agree that kaizen events need support. Furthermore the frameworks agree that management is a support area that is important, but beside that they seem a little inconsistent of what is actually needed as support.

In fact there seems to be a gap in the literature when it comes to kaizen event support, because the literature does not explain which CI experience level the organization need in order for the frameworks mentioned support areas to be sufficient for sustaining CI, both for the organization and for the kaizen events.

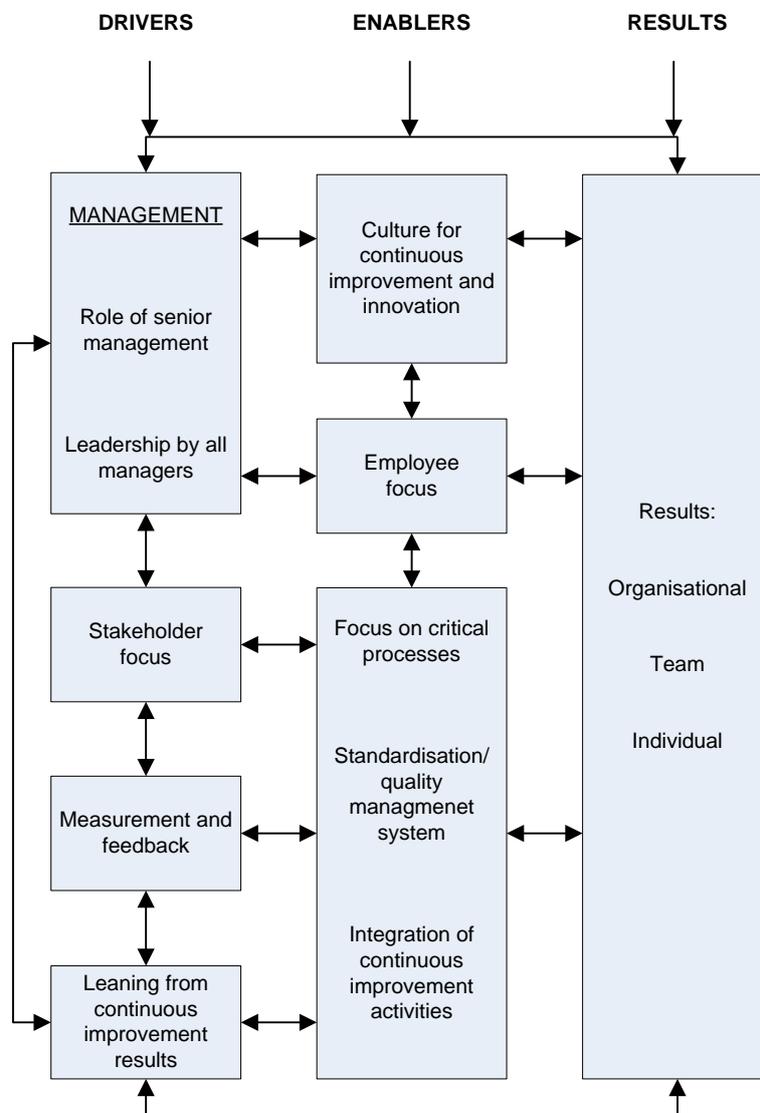
It is highly unlikely that an organization can sustain kaizen events, including the support for kaizen events, if there is no overall support within the organization for CI. So for all organizations no matter the level of CI experience the support should be sufficient in order to achieve and sustain CI.

Improving Synergies through Kaizen Events

Kaye (Kaye, Anderson 1999) explains: “Even where organizations are using self-assessment techniques and employing other positive approaches to quality management, they are failing to sustain continuous improvement in the longer term”.

Kaye (Kaye, Anderson 1999) regard self-assessment models like the European Business Excellence Model and the Malcom Baldrige National Quality Award as holistic models, but state that they do not sufficiently emphasize the factors which will generate and keep the improvement momentum going. According to Kaye (Kaye, Anderson 1999) the business excellence model has been found lacking in respect of “drivers”.

Kaye (Kaye, Anderson 1999) made a model based on ten essential key criteria and supporting elements of best practice as a planned and integrated approach for achieving continuous improvements in an organization. The ten key criteria are illustrated in figure 5.



**Figure 5 - Continuous improvement model (Kaye et al)**

The CI model covers the support areas mentioned in the kaizen event frameworks, but furthermore the model covers additional areas because it covers the whole organization support for CI. Kaye (Kaye, Anderson 1999) states; “The role of management, particular senior management, is seen as a fundamental driver together with stakeholder focus, measurement and feedback and learning from results. It is these drivers that will ensure that continuous improvement is not only achieved but sustained over time. The drivers are the energy force within the model and if they are lacking, no matter how well the other criteria within the model have been addressed, there will be no long-term improvements”.

Kaye (Kaye, Anderson 1999) argues that; “The enablers within the model are the foundations that must be in place if continuous improvement is to be achieved or commenced. The results should be viewed in terms of organizational, team and individual performance. A full description of the 10 key areas can be found in Appendix E.

Strengths and weaknesses in connection with the CI model to achieve continuous improvement was identified by Kaye (Kaye, Anderson 1999) and are illustrated beneath;

#### Strengths or good practice

- Evidence of senior management leadership and direction setting, availability to staff, recognition of successes;
- Customer and stakeholder focus;
- Development of a culture for continuous improvement and communications
- Employee involvement
- Use of improvement teams
- Training and development and use of Investors in People standard
- Focus on processes and the constructive use of self-assessment techniques
- Measurement and feedback

#### Weaknesses

- Lack of identification of critical success factors
- Lack of understanding of the concepts of quality and continuous improvement by some managers and employees
- Insufficient integration of continuous improvement activities
- Existence of a “blame culture” when mistakes occur which may inhibit innovation
- Reliance on quick fixes” and fire fighting
- Low level of employee empowerment
- Lack of non-financial performance measures in some organizations

Source: Kaye (Kaye, Anderson 1999)

Rich (Rich, Bateman 2003) seems to support the fact that there are enablers for CI but also clarifies that there are inhibitors which could relate to the identified weaknesses. Rich (Rich, Bateman 2003) states that change agents and champions can easily identify specific inhibitors in their own company, but has difficulties formulating the enablers. They often relate the enablers to changing the culture, but with lack of specific processes to change the culture, it indicates that they do not know what to do to change the culture. Change agents and champions in general finds it complex to sustain process improvement programs.

It seems that the literature distinguish between support for kaizen events and general organization support for sustaining CI within the organization. However this separation could prove to be fatal in connection with running and sustaining kaizen events, because you do not know which level of general organizational CI support is required, in order to reach the required level needed for sustaining the kaizen events.

## 2.5 Organizational Synergy

The general definition of synergy is: The effect or synergism = synergy effect (Becker-Christensen 2006) and the definition of synergism is: Interaction between two or more forces will provide greater impact than just the sum of individual forces (Becker-Christensen 2006). In other words with synergy you achieve something extra like for example  $1+1=3$  or  $2+2=5$ .

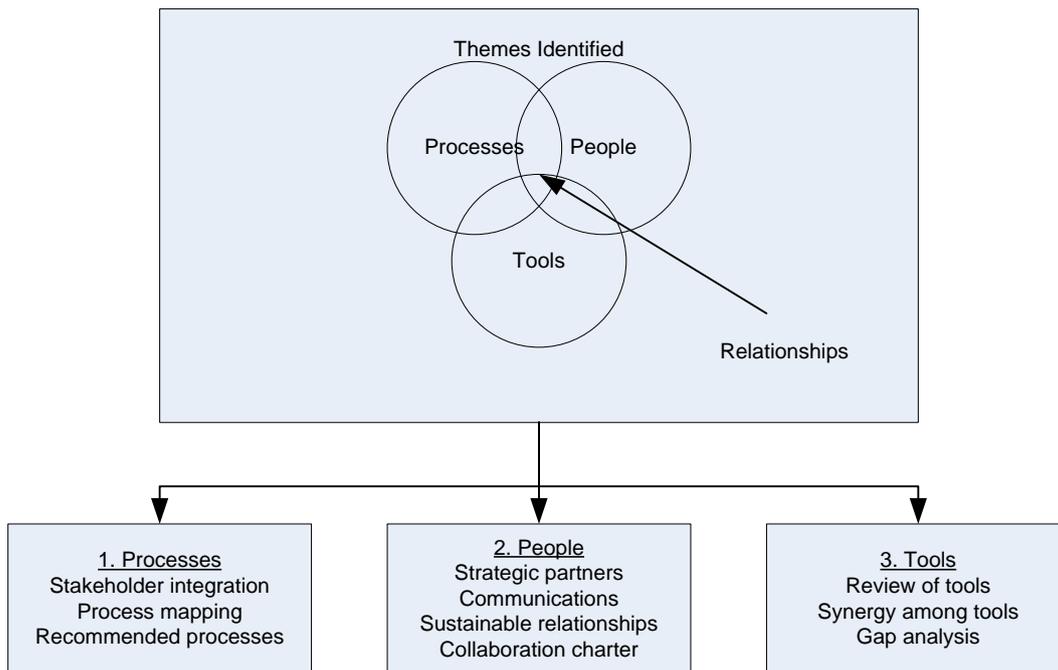
One synergy context is collaboration. The definition of collaboration is: “A positive form of working in association with others for some form of mutual benefit” Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007). To achieve synergy no matter which area you are working with, some kind of collaboration would assumedly be required due to the fact that you have at least two forces that interact. If you look at it from the opposite perspective you could argue that if you did not use collaboration and had a negative way of working in association with others, then you would most likely not have a greater impact than the sum of individual forces, and you would therefore not achieve synergy.

According to Ficery (Ficery, Herd & Pursche 2007) the term synergy is almost always used loosely. The article states, that it gives acquires a host of problems as they use synergy to justify the deal. But they are most likely expecting increased cash flows and not actual synergies. Lastly it is emphasized that synergies only can be realized after a deal is consummated. Ficery (Ficery, Herd & Pursche 2007) continues with rethinking synergy capture in a financially perspective; “At the same time, synergy expectations often are not monetized; they are usually described as intangible benefits such as access to new markets, skills or even culture. It is critical to realize that while these benefits may be valuable, they should not be included in synergy calculations unless they can be translated into dollar”.

Ficery (Ficery, Herd & Pursche 2007) the crux point is: “Paying a premium for “synergistic value” is not the same as paying for a sure thing; it is about paying for an opportunity. For while some synergies will be relatively easy to capture, others will be more difficult and in some cases impossible to identify, locate and put a price on”.

To promote collaborative efforts and understand failure between particular small and medium sized enterprises (SME's) Gohil (Gohil et al. 2011) suggest the framework, value-enhanced collaborative working (VECW), seen in figure 6. In the framework there are three main areas; processes, people and tools. The framework aim toward a structured approach to agree common goals, share risks and rewards, provide faster and clearer communications and information transparency between collaborating stakeholders.

Improving Synergies through Kaizen Events



**Figure 6 - Value-enhanced collaborative working (Gohil)**

Ensign (Ensign 1998) emphasizes the importance of having horizontal strategies, by having objectives that coordinate activities and develop programs that encourage the sharing of resources and skills. “An understanding of the horizontal organization helps to emphasize the organizational structure and processes are significant in developing interrelationships with the potential to reach the goals of synergy and competitive advantage. Corporate strategy must move beyond the idea that the primary way of creating synergy is the combination of related businesses (by buying and selling businesses)”. The article also highlights the need for assessing strategy synergy. Fai Pun (Kit 2004) looks at strategy process more internally with making of a manufacturing strategy that ensures internal synergy within the firm. The article addresses the need for a dynamic strategy process that relies significantly on the maturity levels of the management leadership, employee involvement, organizational culture and most important link to implementation.

Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) looks at synergy in relation to managing synergy in collaborative enterprises, more specifically why they fail and how failure can be avoided. A synergy model is used to assess readiness for collaboration, see figure 7. The model suggest that there are four main areas for assessing synergy; strategic, operational, cultural and commercial synergy. To collaborate successfully with other companies a minimum average maturity level of 4 is required on all areas, except commercial synergy where a minimum average maturity level of 5 is required in order to collaborate successfully. To get in depth knowledge on the scoring of the levels see appendix B.

## Improving Synergies through Kaizen Events

Assessing Strategic Synergy					
	Maturity level				
Assesment criteria	1	2	3	4	5
<p><b>Strategic synergy. Part 1 : Self-awareness</b></p> <ul style="list-style-type: none"> <li>• Awareness of global political, economy, social and technological forces that affect the competitiveness of the organisation.</li> <li>• Global awareness of competitors, suppliers, new-entrants, substitutes, customers.</li> <li>• Understanding of company's strengths, weaknesses, opportunities and threats with respect to the PEST and competitive forces above.</li> <li>• Clear understanding of the core competencies of the organisation which are difficult to replicate.</li> <li>• Clarity and focus of the value proposition.</li> </ul> <p><b>Strategic synergy. Part 2 : Collective-awareness</b></p> <ul style="list-style-type: none"> <li>• Clear and specific views on what a company wants to get out of the collaboration.</li> <li>• Clear recognition of the competencies that the company is bringing to the partnership.</li> <li>• Clear understanding of the competencies and capabilities partners are bringing to the partnership</li> <li>• Clear understanding of the new value that will be generated through the collaboration.</li>   <li>• Clear views on how the new-gains and risks should be shared between the partners.</li> <li>• Unanimous understanding and agreement by each partner on: Other partner's objectives; partners' contributions; new value proposition; gain sharing.</li> </ul>					

Assessing Operational Synergy					
	Maturity level				
Assesment criteria	1	2	3	4	5
<p><b>Operational synergy. Part 1 : Internal Processes</b></p> <ul style="list-style-type: none"> <li>• A clearly defined/articulated process that enables the management to manage the performance of the internal business and support processes in line with the strategic objectives of the business.</li> <li>• Clearly defined business processes for the key business processes of the enterprise, e.g. generate demand, develop product, fulfil order, support product.</li> <li>• Clearly defined processes for the internal support systems, e.g. HRD and M, quality systems, IT systems, financial and risk management systems and processes.</li> </ul> <p><b>Operational synergy. Part 2 : Cross-enterprise Processes</b></p> <ul style="list-style-type: none"> <li>• A clearly defined continuous process that facilitates strategic conversation to take place between partners ensuring that decisions are unanimous, explicit, unambiguous and locally meaningful.</li> <li>• A process that provides visibility into the performance of the collaborative enterprise. This means that some partners should be able to look into the performance of other partners' processes where appropriate.</li> <li>• Clearly defined business processes across the collaborative enterprise, crossing the boundaries of each partner enterprise.</li> <li>• Cross enterprise team working.</li> </ul>					

Assessing Cultural Synergy					
	Maturity level				
Assesment criteria	1	2	3	4	5
<p><b>Cultural Synergy</b></p> <ul style="list-style-type: none"> <li>• Management culture and lifestyle: Level of compatibility of senior management culture and behaviour between the partners.</li> <li>• Trust and commitment: The level of trust and commitment at senior management levels between partner organisations.</li> <li>• Operational culture: Level of compatibility of operational culture and behaviour between.</li>   <li>• Management agility/responsiveness; Capability and flexibility for rapid change of processes, responsibilities, structures, etc., between partners.</li> <li>• Risk sharing: Level of risk partners are prepared to share.</li> <li>• Systems sharing: The level of systems the partners are prepared to share.</li> <li>• Information sharing: The level of information the partners are prepared to share... e.g. V high, IP, market intelligence; Med, commercial and performance data; Low, training, suppliers.</li> </ul>					

Assessing Commercial Synergy					
	Maturity level				
Assesment criteria	1	2	3	4	5
<p><b>Commercial Synergy</b></p> <ul style="list-style-type: none"> <li>• Commercial robustness: The clarity and transparency of the financial position of each partner.</li> <li>• Risk prevention: the availability, clarity and robustness of a risk management strategy.</li> <li>• IPR agreements: The availability of IPR agreements.</li> <li>• Financing/funding: The clarity and transparency of financing/funding arrangements to all partners.</li> <li>• Gain share agreement: The availability, clarity and transparency of an agreement on how the gains are to be shared.</li> </ul>					

**Figure 7 - The synergy model (Bititci et al)**

Though this model is made to assess the organization's own readiness toward collaboration with other organizations, it can most likely also be used to assess internally between divisions assessing

themselves against other divisions. A revised internal version has been made for later use with the intention of finding synergy focus areas from the assessment, it can be found in Appendix F.

Ficery (Ficery, Kristin 2007) outlines some very interesting points especially the point that synergy can be seen as an opportunity, but it is also interesting that Ficery (Ficery, Herd & Pursche 2007) states that the term synergy is used loosely and then connects the term with evaluations for acquisitions and explain why these evaluations for revenue often fails. Financial synergy is though an important factor which also can be seen in the framework by Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007), where it is assessed as commercial synergy.

The framework of Gohil (Gohil et al. 2011) has many similarities with factors to the Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) framework. There seem to be agreement that strategy and culture/people are important areas, further more processes and tools which can be related to both process systems and cultural systems. Gohil (Gohil et al. 2011) points to the direction that especially tools or systems seems to be a problem for sharing between SME's, hence policies should be made in order to overcome problems and the framework can be used as guidelines.

To sum up it seems like synergy is a term that is used on various levels like acquisitions, collaborative enterprises, cultures and strategy. However it seems that evaluations are made between two different organizations as being the two external forces interacting. It seems that most literature is neglecting the fact that an organization internally can be lacking synergy as well. In fact if you are not aware that you are lacking synergy internally, the work for achieving it externally could potentially be more difficult.

This idea is backed up by the article of Ensign (Ensign 1998) which states; "Synergy is not simply a phenomenon that occurs at the corporate level – between whole business units – but is best viewed as resulting from specific instances of resource or activity sharing between segments/portions of different business units".

Ficery (Ficery, Herd & Pursche 2007) mentions six different failures for not capturing synergy;

1. Defining synergies too narrowly or too broadly
2. Missing the window of opportunity
3. Incorrect or insufficient use of incentives
4. Not having the right people involved in synergy capture
5. Mismatch between culture and systems
6. Using the wrong process

Among the potential failures for achieving synergy Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) mentions eight different areas.

1. Lack of commitment by one or more of the partners
2. Failure to identify a common ground
3. Unrealistic objectives of partners
4. Failure to fulfil objectives and needs of partners
5. Failure to focus on customers needs
6. Focusing on individual short-term benefits rather than focusing on long—term benefits collectively
7. Unfair distribution of benefits due to ignorance of each others competencies and contribution
8. Absence of an operational system to manage the collaborative enterprise

The literature does not seem to addresses internal synergy as much as external synergy. Furthermore the literature mentions a lot about assessing synergy and moving toward the opportunities, but when it comes to real actions and tools that can actually improve synergy the literature seems to be short. For this report a lean and kaizen event approach is taken, but maybe there are other approaches as well for increasing synergy levels, ideas could be integrated IT platforms, or business systems that emphasises cross organizational team work.

## 2.6 Conclusion

By looking into the categorization of continuous improvement the area of focus for the kaizen event synergy framework is blitz improvement. It is blitz improvements because the focus is on driving or enforcing both incremental and breakthrough improvements though kaizen (blitz) events, with the overall goal of improving synergy levels.

	Passive (Reactive)	Enforced (Proactive)
Incremental (Point Kaizen)	1	
Breakthrough (Flow Kaizen)	2	

**Figure 8 - A classification of improvement types with choice (Bicheno)**

Bicheno (Bicheno 2004) emphasizes that blitz events should be both proactive and frequent. Furthermore it is important when starting to focus on blitz not to ignore passive types as they are a useful supplement.

For the kaizen events it seems generic that they consist of four phases with three steps; a pre kaizen event or planning phase, a kaizen event or actual implement phase, a post kaizen event or sustain phase and a support area phase that is not a step of the kaizen event.

Improving Synergies through Kaizen Events

The groups needed for the kaizen events will mainly be level 3-5 as the priority is to improve synergy levels and many of the levels are at higher organizational levels that are changed. However some kind of involvement of level 1-2 will be needed as well as in the end it is the work groups and individual workers that are implementing changes and giving good ideas for changes as well. It will most likely be difficult to improve synergies and collaboration between two divisions to achieve mutual benefits if both divisions including all staff is not involved, which seems to fit well with lean principles.



**Figure 9 - The hierarchy of improvements with choice (Bicheno)**

The kaizen event should be run as efficient as possible in order to deliver the best results, which leads to the relevance of the CI organizational support in order to sustain CI and the kaizen events within the organization and furthermore increase the efficiency and thereby better results long-term.

Within the CI support area it can be concluded that top management along with the other drivers are the key to sustain and make CI work long-term. “An organization is determined by its management, i.e. those at the top” (Kaye, Anderson 1999). Achieving CI is far from easy so it is essential that there is a robust framework (Kaye, Anderson 1999). Furthermore Kaye (Kaye, Anderson 1999) states: “Continuous improvement requires continuous management but senior managers have still to learn the importance of their role in ceaselessly driving the improvement cause”.

It can in relation be concluded that identifying inhibitors as well as the enablers of local and company-wide improvements are becoming increasingly important and critical, as the competitive environment continues to demand more from manufacturing organizations (Rich, Bateman 2003).

There are weakness factors or inhibitors that can be identified and related to Viking as being some of the main challenges upfront for setting up a good CI support. First of all there is a lack of top management commitment and involvement; this is best backed up by the effortless tries to set up meetings with top managers in order to talk about lean and CI. There is an existence of a “blame culture” when mistakes occur which may inhibit innovation. This seemed much anchored in the culture especially between divisions. Reliance on “quick fixes” and “fire fighting” was easy to see due to even small problems as to find extra space for inventory became quick fixes and was moved around several times when space was needed. Lastly there was a low level of employee empowerment, as I experienced a centralization of power. These areas will be good to have in mind

when going through the case study analysis in chapter 6, as they could have an influence on the case study results.

Rich (Rich, Bateman 2003) concludes; “The most successful companies have identified enablers that specifically counter their inhibitors, especially in the area of resources. There is also a large range of inhibitors and enablers that relate to each company’s unique situation. Therefore it is difficult to provide generic advice that companies can use to cover all of their sustainability issues. The key factor for companies appears to be the ability to identify the enablers that are an issue for a particular activity and to develop enablers to counter these inhibitors.”

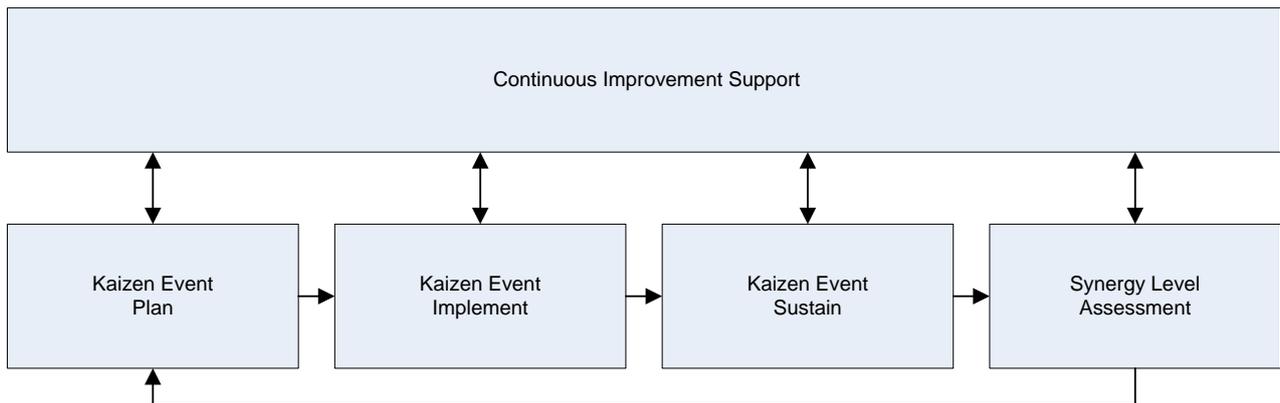
According to Ficery (Ficery, Herd & Pursche 2007); “Synergies do not magically materialize. By definition, they are possibilities, not certainties. In practice, it takes work and commitment to identify and capture maximum value from synergies. They must be rigorously targeted, pursued and tracked by the right people, the right systems, the right process, and at the right time. Only then do synergy opportunities become real benefits”.

The findings for Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) synergy model was that;

- In order to collaborate successfully a maturity level of 4 or 5 would need to be achieved by each participating organization.
- All of the participating organizations were short of the required maturity levels with most averaging at levels 2 and 3.
- Companies who have already collaborated successfully are likely to have higher maturity levels.
- The format of the audit tool is considered to be usable and results can be obtained quite quickly.
- All participants have considered the self-assessment exercise a useful activity with the results helping to focus on the key issues each enterprise needs to address, in order to be ready to collaborate. Thus, it is a useful tool for formulating development plans.
- The synergy model and the audit tool, whilst being valid, would require further trials and amendments in order to prove its completeness.

Finally it is very important to remember that synergy comes at many levels within and outside of an organization (Ensign 1998); “Synergy is not simply a phenomenon that occurs at the corporate level – between whole business units – but is best viewed as resulting from specific instances of resource or activity sharing between segments/portions of different business units”.

The kaizen event synergy framework is based on several frameworks that seem to fit well into the aim of improving synergies. The kaizen event is mainly based on the framework by Van et al (Van et al. 2010) because the framework concludes that it increases the efficiency of kaizen events, and therefore this framework has been the main inspiration for the kaizen event synergy framework. The CI support has mainly been inspired by Kaye’s (Kaye, Anderson 1999) ten key factor model, which ensures that all factors are involved in relation to sustaining CI support on an organizational level. The Synergy area has mainly been inspired by Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) synergy assessment model, which was proven to being able to find synergy areas for improvement.



**Figure 10 - Kaizen event synergy framework**

The final framework has been constructed with the following layout, see figure 10, and will be explained in details in chapter 4. The model will furthermore be the foundation for the case study in chapter 5 and 6.

## Chapter 3

### Research Methodology

#### 3.1 Introduction

This chapter is a description of the research methodology used for this project. The chapter begins with a description on why the case study approach has been selected followed by a description of the research design method and reliability and validity, and the chapter is ended with a conclusion.

#### 3.2 Research Methodology

According to Yin (Yin 2009) there are 5 different research methods, which should be evaluated before choosing the method, see table 1 below. Furthermore Yin (Yin 2009) distinguishes each method between exploratory, descriptive and explanatory.

Method	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival Analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case Study	How, why?	No	Yes

Table 1 - Choice of research methodology (Yin)

The case study is of specific interest because it focuses on contemporary events where control of behavioral events is not existing. One of the most frequently encountered definition of a case study is; "The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result" Yin (Yin 2009).

However a more technical definition exists which defines a case study Yin (Yin 2009);

1. A case study is an empirical inquiry that
  - a. Investigate a contemporary phenomenon in depth and within its real-life context, especially when
  - b. The boundaries between phenomenon and context are not clearly evident.

2. The case study inquiry
  - a. Copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result
  - b. Relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result
  - c. Benefits from the prior development of theoretical propositions to guide data

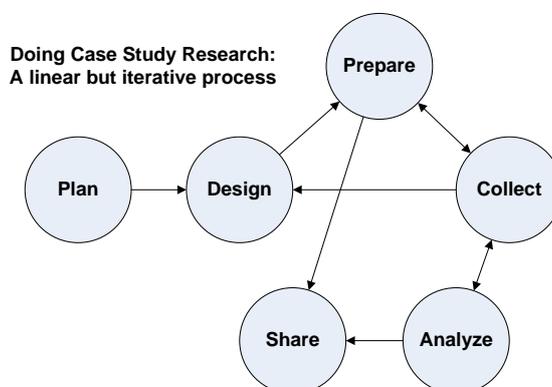
This report is based on a case study with a mix between an interview and a survey. The research is based on a qualitative approach based on qualitative guidance of respondents. It is a case study because it is based on why and how and it is a contemporary event with interviews of experts with knowledge of similar systems. Furthermore there is no control of the events or interviews, opposite experiments were the investigator can manipulate behaviour directly, precisely and systematically. Furthermore the report is an explanatory case study since it is a new framework which aims to test a new approach.

The choice of a case study research methodology is described according to Yin (Yin 2009); “There is no formula, but your choice depends in large part on your research question(s). The more that your questions seek to explain some present circumstance (e.g. “how” and “why” some social phenomenon works), the more that the case study method will be relevant. The method also is relevant the more that your questions require an extensive and in-depth description of some social phenomenon.”

The case study is conducted at the company Viking, from which personal knowledge have been obtained through months working at the company. The company has never implemented and sustained lean. So there is no historical data on lean, continuous improvement, kaizen events and synergy work.

### 3.3 Research Design

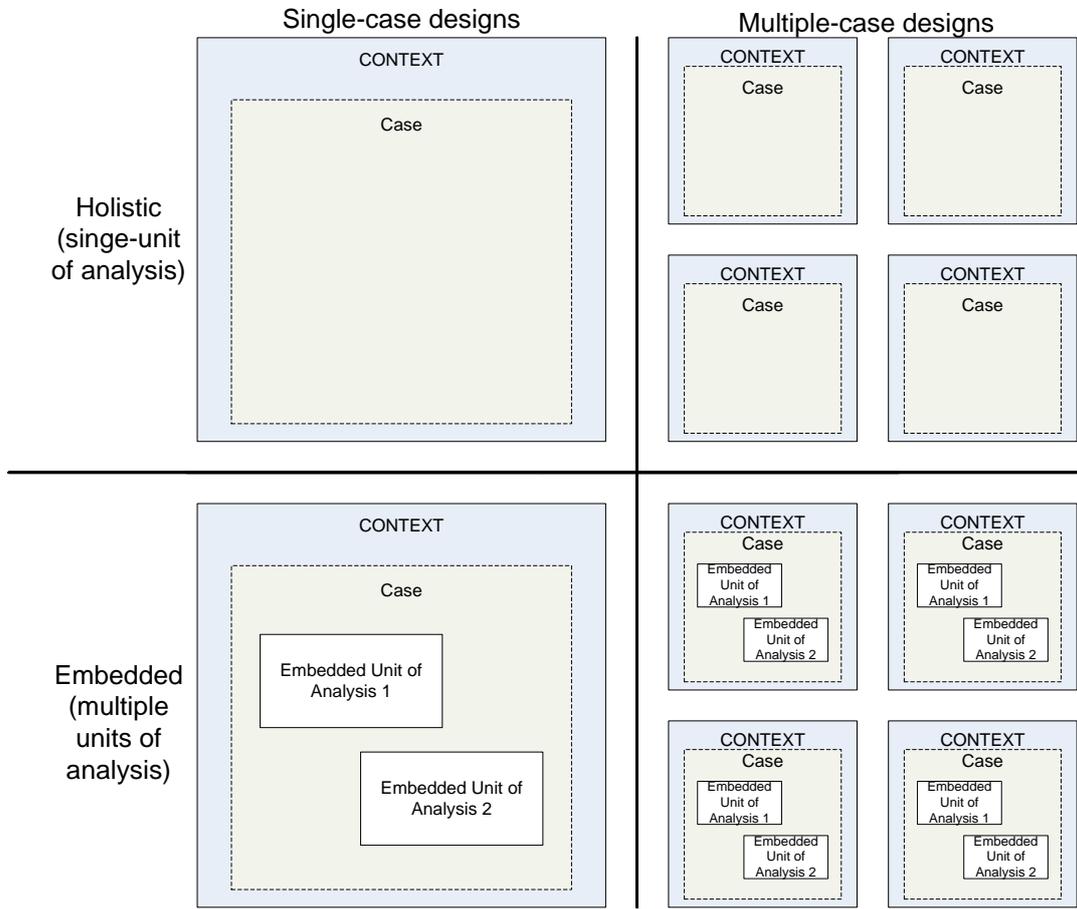
The research design follows the model of Yin (Yin 2009) see figure 11. According to Yin (Yin 2009) you should, by choosing the design, make sure you have sufficient access to the potential data. Therefore the design should choose the case that will most likely illuminate the research question.



**Figure 11 - Research design (Yin)**

The basic types of case study designs can be seen in figure 12; the case study in this report is a single case study, due to only one organization/context has been used for the case study.

### Basic Types of Designs for Case Studies



**Figure 12 - Basic types of designs for case studies (Yin)**

### 3.4 Reliability and Validity

The quality of the research design has according to Yin (Yin 2009) four main areas; construct validity, internal validity, external validity and reliability.

Tests	Case study tactic	Phase of research in which tactic occurs
Construct validity	<ul style="list-style-type: none"> <li>• Use multiple sources of evidence</li> <li>• Establish chain of evidence</li> <li>• Have key informants review draft case study report</li> </ul>	Data collection Data collection Composition
Internal validity	<ul style="list-style-type: none"> <li>• Do pattern matching</li> <li>• Do explanation building</li> <li>• Address rival explanations</li> <li>• Use logic models</li> </ul>	Data analysis Data analysis Data analysis Data analysis
External Validity	<ul style="list-style-type: none"> <li>• Use theory in single-case studies</li> <li>• Use replication logic in multiple-case studies</li> </ul>	Research design Research design
Reliability	<ul style="list-style-type: none"> <li>• Use case study protocol</li> <li>• Develop case study database</li> </ul>	Data collection Data collection

Table 2 - Reliability and validity (Yin)

For this case study the four areas has been identified the following way;

Construct validity – To some extend a chain of evidence has been made

Internal validity – To investigate rival explanations

External validity – By using theory in single case study

Reliability – None, no protocols were made, but description of the interview and survey with abbreviations was made in order to increase uniformity

In connection with the preparation before the data collection, the case study company was given, but a preparation of finding the right respondents was conducted. Furthermore the setup of the survey and interview was done with descriptions and abbreviations to minimize uncertainties of the respondents. Furthermore the respondents were given information's about disclosure and confidentiality. A more in depth explanation on how the participants were selected can be found in chapter 5.

The data collection was based on interviews, in fact it was based on both in depth interview and were expert insight was gained and formal survey were quantitative data was gathered. According to Yin (Yin 2009) there are two types of strengths in connection with doing interviews; Targeted-focuses directly on case study topics and insightful-provides inferences and explanations. However there are also four types of weaknesses; Bias due to poorly articulated questions, response bias, inaccuracies due to poor recall and reflexivity-interviewee gives what interviewer wants to hear.

### 3.5 Conclusion

The report has been made according to case study. The research design is made according to Yin (Yin 2009) and it is a single case design. The original though was to make the case study by using multiple sources of evidence with both doing a kaizen event and interviews. However this was not possible due to lack of resources at Viking. The case study was then conducted as interviews and survey in relation. However the work has been aimed toward giving the highest possible reliability and validity. Measures taken has been using research theory, exploring rival explanations and to the best capability making a chain of evidence.

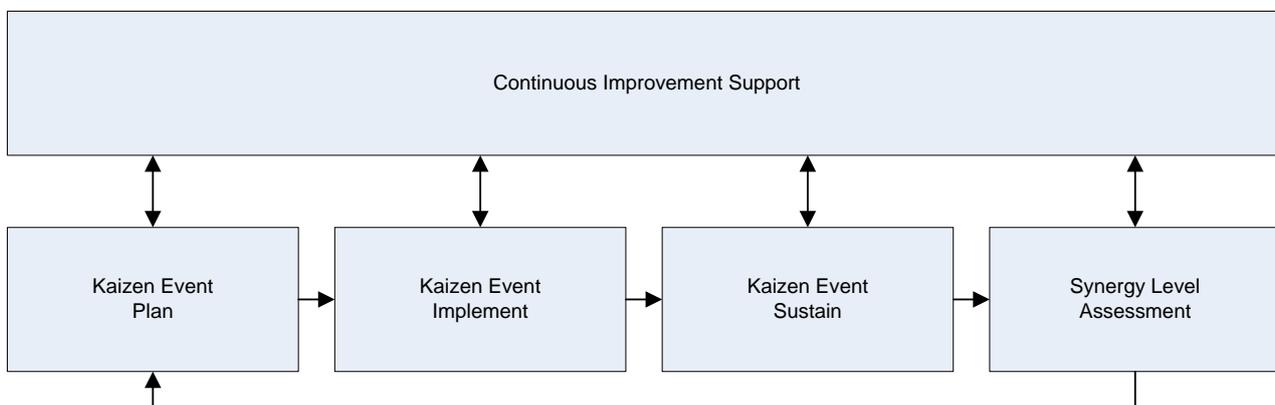
## Chapter 4

### Kaizen Event Synergy Framework

#### 4.1 Introduction

The chapter examines the framework developed on basis of the literature in chapter 2. It will describe each step of the framework and explain how it works in depth.

#### 4.2 Kaizen Event Synergy Framework



**Figure 13 - Kaizen event synergy framework**

The framework is a four step model with an overall support area. Before starting the first step a pre-synergy assessment is recommended in order to set the focus area for the first kaizen event.

The first step is planning the kaizen event 1, the second step is implementing or conducting the kaizen event 1 and the third step is sustaining the results from kaizen event 1.

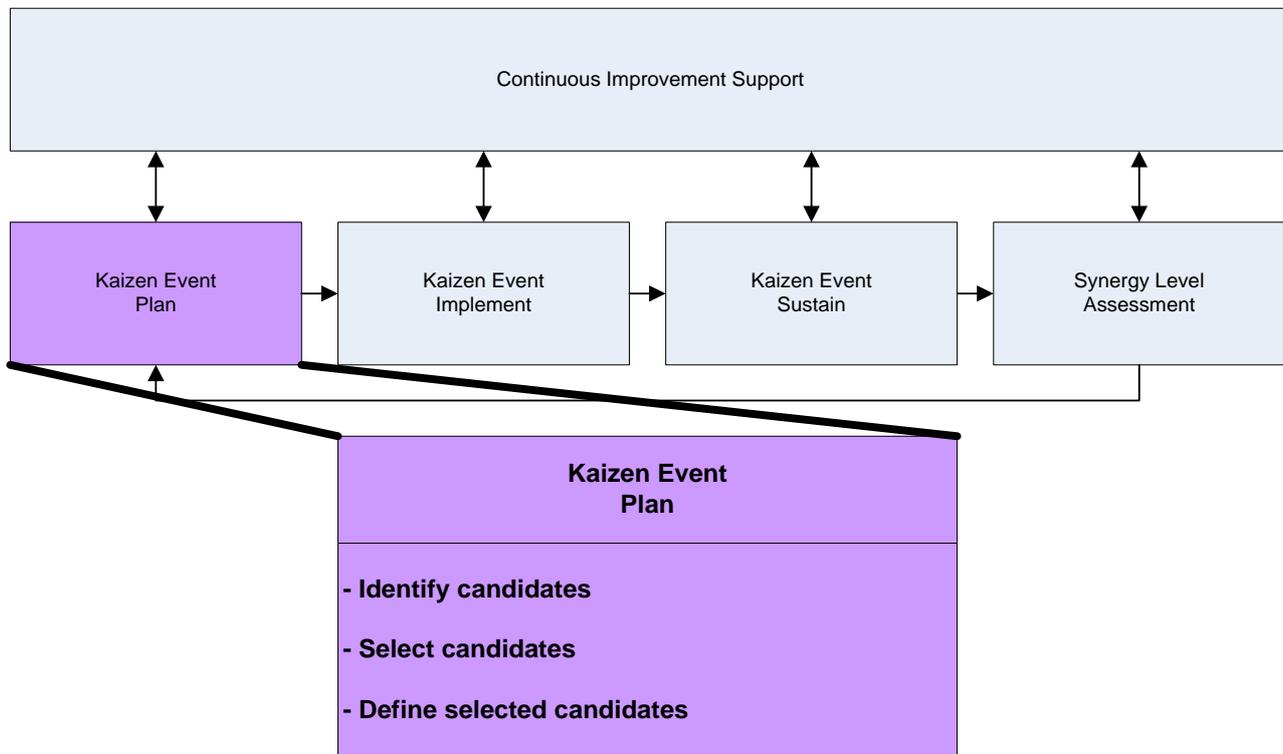
The fourth step is making a synergy assessment 1 after kaizen event 1. After finishing synergy assessment 1 the four steps repeats themselves.

The improvements will be known, through the changes to synergy assessment 1 and new focus areas can be set as target focus for kaizen event 2.

The four steps can then be run over and over which in the end should preferably result in more efficient kaizen events, optimized processes and higher levels of synergy for the company.

The support area is a support area for continuous improvement at an organizational level and it will provide the needed support for all four steps along the way. The CI support area is needed in order to run the four steps, it will furthermore have an effect on sustaining the framework process, sustaining the new changes implemented and the efficiency with which the four steps are run.

### 4.3 Kaizen Event Plan



**Figure 14 - Kaizen event synergy framework - plan**

The first step of the framework is to plan the kaizen event. According to (Van et al. 2010) the planning phase consists of three areas upfront to the kaizen event. These three areas include 1. Identify candidates, 2. Select candidates and 3. Define selected candidates. Furthermore these three areas consists of subareas that are important in order to become able to increase kaizen event performances and thereby also important in being able to conduct efficient kaizen events.

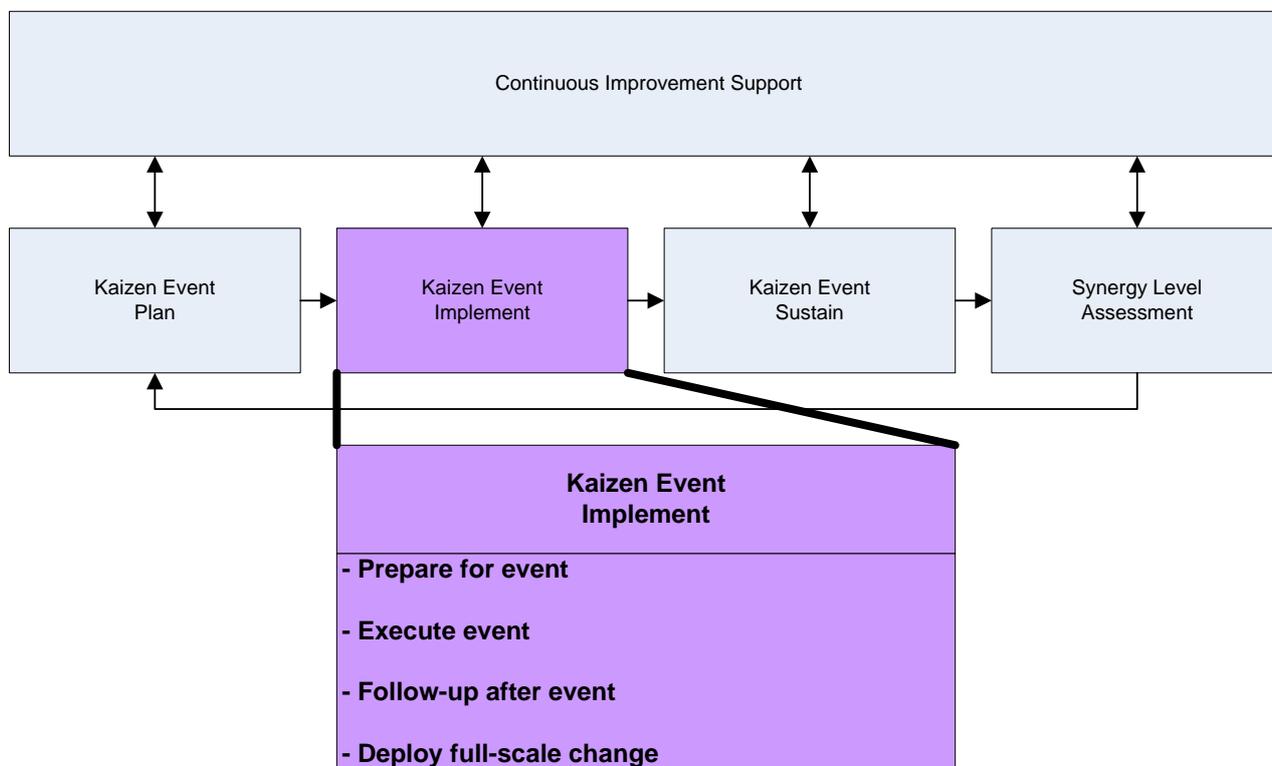
The candidates for the event have to be identified and it includes important subareas such as; Deriving from a strategic direction, performing an analysis to define the candidates and make sure that it responds to emerging problems.

The selection of the candidates includes the important subarea; defining an improvement strategy, defining a portfolio of events and scheduling of these events.

The defining of the selected candidates includes the subarea of defining an initial project charter.

Overall the planning phase makes sure that the long term direction is set both strategically and project scheduling wise. It makes sure that the right candidates are chosen and that there is a portfolio of projects that has the right candidates and future direction.

## 4.4 Kaizen Event Implement



**Figure 15 - Kaizen event synergy framework - implement**

The second step of the framework is to implement the kaizen event. According to (Van et al. 2010) the implementation phase consists of four areas upfront, while executing and after the kaizen event. These four areas include 1. Prepare for event, 2. Execute event, 3. Follow-up after event and 4. Deploy full-scale change. Furthermore these four areas consists of subareas that are important in order to become able to increase kaizen event performances and thereby also important in being able to conduct efficient kaizen events.

The preparations for the event includes the important subareas; Explore, refine the charter, announce the event, select the team roles and prepare for the event.

The execution of the event includes the important subareas; kicking off the event, build the team and train the team. Furthermore you need to follow a structured approach, report out to relevant parties and evaluate the kaizen event.

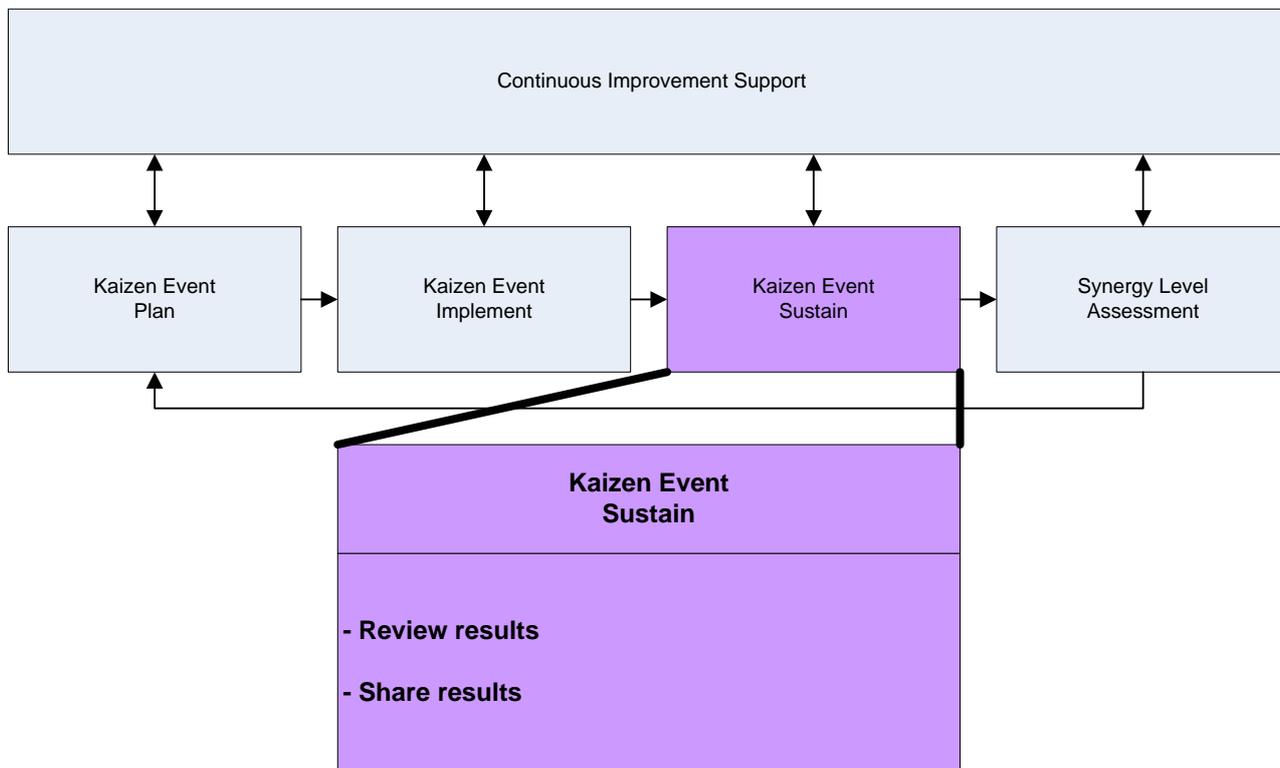
After the event a follow up is needed and it includes important subareas such as; completing the action items and documenting the changes. Thirdly defining management processes has to be conducted in connection to the changes.

Lastly a full-scale deployment is needed and it includes the subarea of; Completing the full-scale implementation and deployment.

The implementation phase makes sure the long term planning and scheduling is adjusted when exploring before the actual event. It furthermore makes sure that the event is properly conducted with the right and trained team in place. The phase also includes a structure approach along with an evaluation and reporting out to interested parties to ensure the efficiency of the event. Lastly after

the event it follows up with documentation and action items, it also makes sure to fit management processes before completing the full scale changes.

## 4.5 Kaizen Event Sustain



**Figure 16 - Kaizen event synergy framework - sustain**

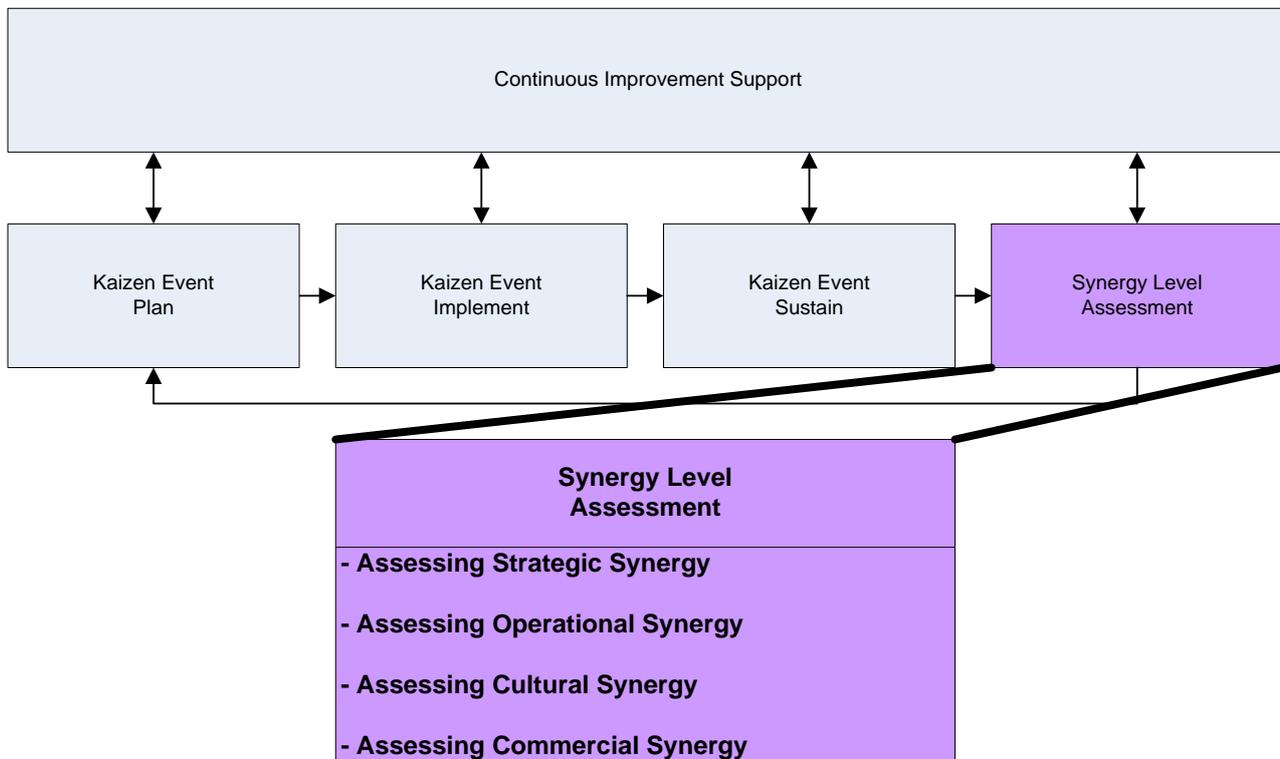
The third step of the framework is to sustain the changes from the kaizen event. According to (Van et al. 2010) the sustain phase consist of two areas after the kaizen event. These two areas include 1. Review results and 2. Share results. Furthermore these two areas consists of subareas that are important in order to become able to increase kaizen event performances and thereby also important in being able to conduct efficient kaizen events.

The reviewing of the results after the event includes the subareas; measuring the results, evaluating the results and adjusting the results.

After reviewing the results the results should be shared in order to cover the subareas; standardizing the best practices and sharing the lessons learned.

The sustain phase handles the results after the kaizen event. In order to sustain the results properly the results have to be measured, evaluated and adjusted. When sharing the results to other parties it is important to make sure to standardize the best practices and share the lessons learned within the organization.

## 4.6 Synergy Level Assessment



**Figure 17 - Kaizen event synergy framework - synergy assessment**

The fourth step of the framework is to conduct a synergy assessment in order to determine the synergy levels. According to (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) the synergy assessment phase consists of four assessment areas which has to be assessed after the changes from the kaizen event has been sustained. These four areas includes 1. Assessing strategic synergy, 2. Assessing operational synergy, 3. Assessing cultural synergy and 4. Assessing commercial synergy. All four areas consist of specific criteria's, in relation to the area, which is assessed by employees, the scores are then evaluated in order to find areas for improvement.

To get an overview of the synergy assessment areas and criteria's see figure X page X. The process of the assessment along with the score levels is explained in appendix B.

The strategic synergy assessment consists of two sections. The first part is self awareness which implies to understand one's own strategic and operational environment. The second part is collective awareness which implies to understand one's collaborative partner(s) objectives and expectations. Furthermore to become aware what each party is going to contribute to the collaboration, as well as the new value proposition due to the collaboration.

The operational synergy assessment likewise consists of two sections. The first part is the self awareness of internal operational processes. The second part is the level of cross party processes in order to coordinate the business processes beyond the individual boundaries.

The cultural synergy assessment focuses on organizational and people related compatibility of each party.

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The commercial synergy assessment focuses on clarity and robustness of commercial arrangements for all parties involved in the collaboration. It makes sure that each party is aware of the other parties and that agreements concerning, risks, intellectual property rights and gain sharing, have been made.

The synergy level assessment phase is about getting the most accurate levels of synergy from employees in order to make improvements in specific low areas which become target areas. The assessment focuses on areas and criteria that can affect the overall synergy level of the company but it doesn't tell you how to improve the area(s).

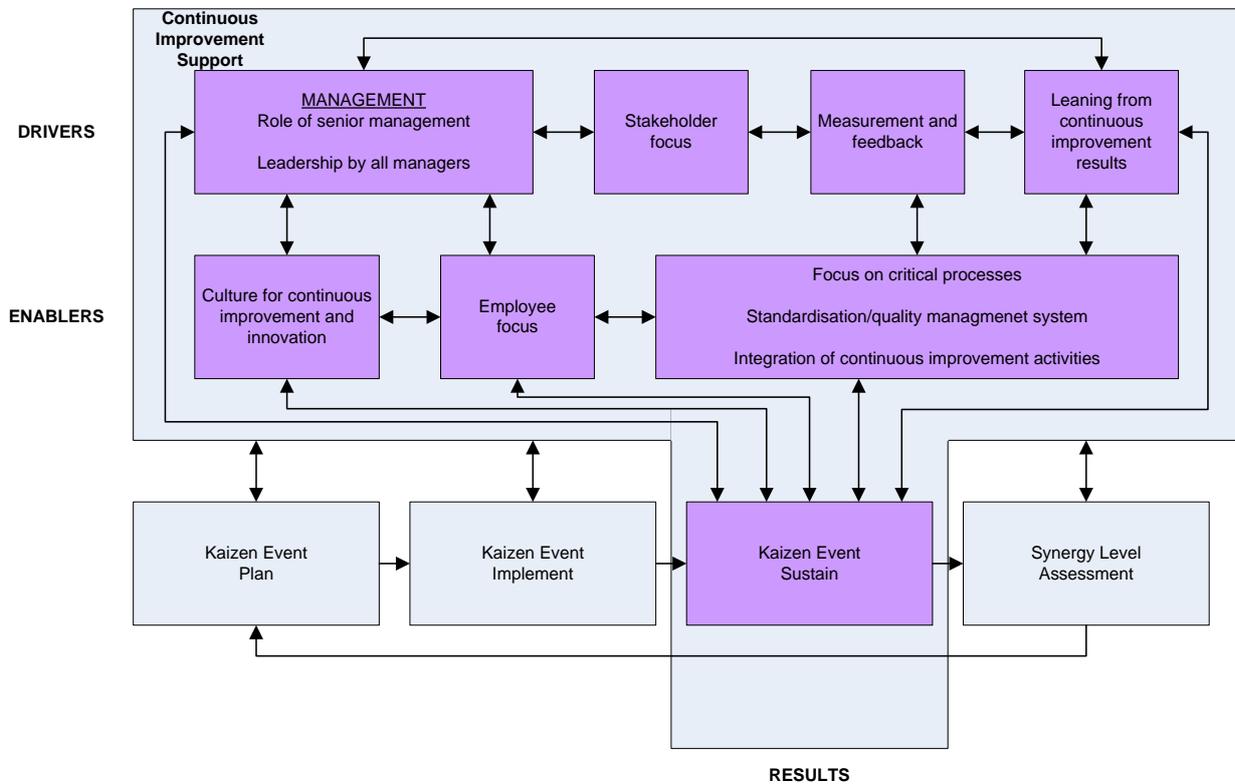
According to (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) the strategic synergy ensures that participating parties have a common ground and that individual objectives and expectations are understood and are consistent with competencies and contribution of each party, as well as the additional value and competitive advantage to be delivered through the collaboration.

The operational synergy ensures that each party's internal management processes and difficulties are understood and resolved, and that customer focused operational systems extend across organizational boundaries.

The cultural synergy ensures that the mindset, organizational culture and management styles are compatible between partners and there is a sufficient level of trust and commitment in place.

The commercial synergy ensures that the short and long term expectations, benefits and risks are understood and appropriate agreements have been put in place with regards to distribution of risks, as well as benefits arising from collaboration.

## 4.7 Continuous Improvement Support



**Figure 18 - Kaizen event synergy framework - CI support**

The overall support area for the framework is the overall organizational support for CI in general and therefore also the four steps of the model that includes the kaizen event. According to (Van et al. 2010) the support phase for a kaizen event consists of three areas that supports before, during and after the kaizen event. These three areas include 1. Educate employees, 2. Manage the kaizen program and 3. Motivate employees. Furthermore these three areas consists of subareas that are important in order to become able to increase kaizen event performances and thereby also important in being able to conduct efficient kaizen events.

The support of educating employees for the kaizen events includes the subareas; Orient and educate employees, manage facilitator expertise, manage team leader expertise and provide training materials.

The support of managing the kaizen program includes the subareas; Administer kaizen event program, communicate, define and manage budget and improve the kaizen event process.

The support of motivating employees includes the subareas; Set expectations and reward and recognize teams.

The support phase handles the support of the kaizen event. It makes sure that the right knowledge is in place among participating employees, facilitators and management through education expertise and training materials. Furthermore it ensures that employees are kept motivated through rewards and recognition. It emphasizes the importance of the management during the process both for improvements, budgets and communication.

However as explained in the literature review 2.4, CI support is much broader than only for kaizen events. According to (Kaye, Anderson 1999) there are five drivers and five enablers that all leads toward achieving the results with CI.

1. Driver - Senior management commitment and involvement
2. Driver - Leadership and active commitment by all managers
3. Driver - Stakeholder focus
4. Driver - Measurement and feedback systems
5. Driver - The learning organization
6. Enabler - Culture of continuous improvement
7. Enabler - Focusing on employees
8. Enabler - Focus on critical processes
9. Enabler - Quality management systems
10. Enabler - Integration of continuous improvement

It is of course important to pinpoint that the three support areas for running effective kaizen matches number 2. Driver - Leadership and active commitment by all managers and number 7. Enabler - Focusing on employees. But these ten steps are the overall organizational support needed in order to sustain CI on an organizational level.

The CI support phase is about getting the best organizational support in order to sustain CI in general and the kaizen events. It is furthermore about having the best and most efficient support in order to get the best possible synergy improvement results from the kaizen events. The support focuses on driving and enabling CI within the whole organization and thereby for the kaizen events.

The drivers ensure that CI is being driven within the organization. In these five steps the senior management has a very central role in communicating strategic aims like vision, mission and critical success factors. It is important that these factors are united and aligned between all senior managers, e.g. how successes are defined and recognized. It is furthermore important that all senior managers are committed to making CI work and that there is a clear understanding of the senior managers roles.

For the general leadership, which means all managers at all levels, it is just as important that they are all committed to making CI work. For the middle managers it is furthermore important that they obtain the skills necessary to exercise and achieve the strategic aims of the senior management (Kaye, Anderson 1999).

Stakeholder focus is a driver using customers, shareholders, employees and suppliers needs and expectations for strategic aims both short and long term. It is important to keep getting the feedback and being updated. Another driver is the measurement and feedback systems, in order to identify improvement potential. The potential can be identified through internal audit systems, quality systems, process flowcharts, cross functional teams, self assessment models and feedback systems such as customer complaints, management and staff surveys.

The last driver is the learning organization, which is about sharing experiences. This can be executed through sharing projects, communication and learning through training or possible internal benchmarking systems across divisions (Kaye, Anderson 1999).

The enablers are factors that ensure or enable CI to happen within the organization. Central for the enablers is the culture for continuous improvement, where the culture can encourage the communication to be open, increasing staff awareness and understanding, increasing knowledge of quality concepts, learning from mistakes and get a preventive approach to errors. The next enabler is the focusing on employees which is about involving employees, empowering employees, establishing team work and improvement teams and developing and training employees (Kaye, Anderson 1999).

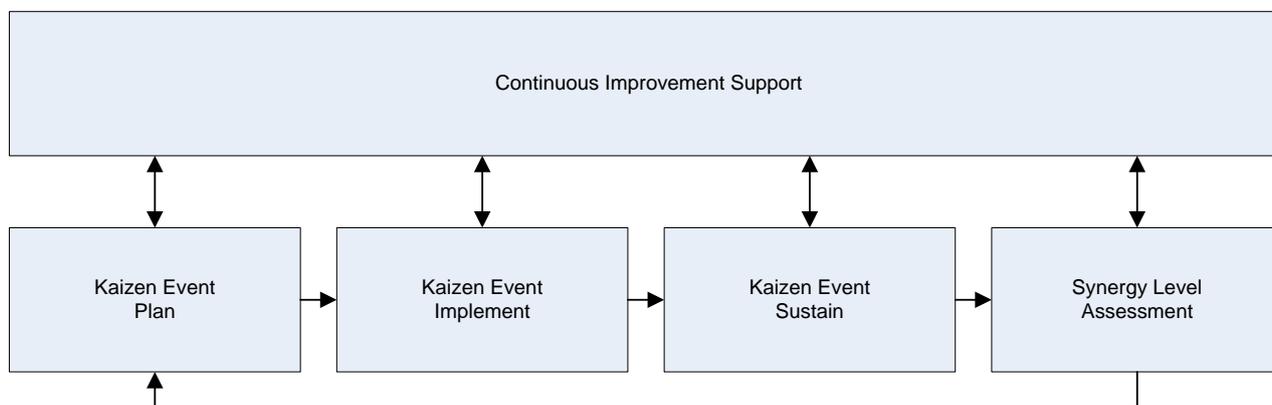
The enabler focus on critical processes is about identifying and documenting major business processes and thereby focuses on the right processes. The self-assessment models can be used in this regard, in order to keep evaluating and measuring and improving efficiency and effectiveness of all processes.

The quality management system should be included for having a standardized documented quality management system that should be used in connection with regular internal, independent and external assessments or audits with advice on how to continually improve.

The last enabler is the integration of continuous improvement activities, which is about integrating continuous improvement activities across boundaries and at all levels of the organization. Again the self-assessment models can be used (Kaye, Anderson 1999).

The full explanation of elements of best practice for the ten steps in the support phase can be found in Appendix E.

## 4.8 Conclusion



**Figure 19 - Kaizen event synergy framework**

The kaizen event synergy framework has been constructed in accordance with recognized literature from the review in chapter 2. The articles of Van et al, Kaye et al and Bititci et al state that they have successfully improved the efficiency of the processes within CI support, kaizen events and synergy levels, thereby potentially ensuring efficiency and long term improvements of synergy levels for an organization.

## Chapter 5

### Case Study

#### 5.1 Introduction

The chapter presents the case study based on interviews and survey conducted at Viking. It is based on qualitative interviews and survey with carefully selected participants in order to get the most precise evaluation of the framework and its usability. To get a cross divisional pallet of people, the participants has been sampled going from manufacturing into more administrative functions.

Viking is a large sized global manufacturer of life saving equipment mainly for offshore purposes. The main office is located in Esbjerg, Denmark. Viking was established in 1960 and the company currently employees around 1300 people worldwide on 52 locations. It has manufacturing locations in Denmark, USA and Thailand, alongside sales offices and 270 service stations worldwide.

Divisional wise Viking is relatively old firm and lean and lean concepts like CI is relatively at an early stage to the company. The company seems to be very divided or separated on a divisional level. The company can best described like a machine metaphor according to Gereth Morgan's organizational metaphors (Cameron, Green 2010), which means that labor is divided into specific roles, management is in control and there should be employee discipline. Especially in relation to synergy Cameron et al (Cameron, Green 2010) states; "teams represent no more than the summation of individual efforts." The statement seems to fit well with the description of the company, in the introduction 1.1.

At first the general idea was to make an actual kaizen event in order to make synergy assessment before and after the event including interview of the participant in order to measure how they perceived the event and how they could see the affection on the synergy levels. However these plans had to be changed since Viking did not have the resources for making a kaizen event. Another approach was taken and interviews and surveys were set up in order to use expert evaluations of the framework.

#### 5.2 The Interview

The interview was conducted as a qualitative interview, with guided answers and with further possibilities for expressing feelings and opinions about the question. The Interview questions and setup can be found in appendix A. It was conducted with six respondents which I carefully selected on the background from working in Viking. The respondents were selected mainly on two factors. The first factor was departmental and divisional diversity which I needed in order to measure the synergy levels in the survey. I was aiming for a high level of diversity which means peoples relation was going from a high relation to manufacturing to a high relation to administration.

The second factor was process diversity and process knowledge which I needed for the interview and establishing expert opinions about the framework. I was aiming for a high level of process diversity and high level-expert process knowledge. The interview question and setup can be found in Appendix A.

### 5.3 The Survey

The survey was conducted with the same people as for the interview. For the survey divisional diversity was the main factor in order to get responses from different divisions that can be compared. The survey setup contained guidance on how to fill out the questionnaire and how to give the scores and do the evaluation of the questions. In the survey it was emphasized that it was okay not to answer questions if the knowledge of the area was insufficient, the reason being that a non answer is better than a wrong score answer which could result in misleading results. The survey questions and setup can be found in Appendix B.

### 5.4 Conclusion

The Interview and surveys was conducted as planned. The results to the interview and survey can be found in Appendix C and D. The answers to the personal respondent evaluation can be found in the beginning of Appendix C and D and can be seen below.

Questionnaire Participant Name	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Department	Engineer MES-Engineering	Manager Business Processes	Manager Production and Logistics	Production Foreman	Production Worker	Manager RAFT-Engineering	
Person Nr	1	2	3	4	5	6	
<b>Questionnaire for evaluating the Personal Skills</b>							
How long have you been working in your company?	20	5	9	6	17	1	
Which division do you currently work in according to current organizational placement?	Administration – with high relation to Manufacturing	Administration – with low relation to Manufacturing	Administration – with high relation to Manufacturing	Manufacturing	Manufacturing	Administration – with high relation to Manufacturing	
Which Processes does your current job mainly relate too?	Administrative and Manufacturing processes	Administrative processes	Administrative and Manufacturing processes	Manufacturing processes	Manufacturing processes	Administrative and Manufacturing processes	
How would you characterize your personal knowledge of processes in your company?	High/Expert	High/Expert	Medium (admin expert, manu low)	Medium	High/Expert	Medium	
What do you think of the current processes in your company?	Medium	Medium	Medium	Medium	Medium	Medium	
How often are you involved with activities that are changing your own division’s processes?	Monthly	Weekly	Daily	Yearly	Weekly	Monthly	
How often are you involved with activities that are changing other division’s processes?	Yearly	Daily	Weekly	Yearly	Yearly	Yearly	
How often are you involved with activities that are performed in order to increase synergies?	Yearly	Weekly	Weekly	Yearly	Yearly	Yearly	

**Table 3 - Interview and survey personal data**

From the respondent’s personal questions, they all evaluate their process levels in Viking they all agreed it was at a medium level. The manufacturing and administration with high relation to manufacturing, are in general rarely engaged in activities that changing other divisions processes or activities that should increase synergies. This statement exclude one respondent but there might be a

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natural reason since the respondent is the manager of production and logistic and is therefore a natural linkage between manufacturing and administration. If you look at administration with low relation to manufacturing the activities are higher, though this is only one respondent in focus. In general when it comes to activities that are changing the respondents own divisions processes the picture is very different from person to person.

## Chapter 6

### Case Study Analysis

This chapter will outline and analyze the findings from the interview and survey. Finally it will conclude the main findings of the case study.

#### 6.1 The Interview

The interview questions will be presented throughout the chapter in order to give a better overview of the interview results. The results of the interview can be found in Appendix C.

The overall purpose of the kaizen event synergy framework is to improve synergy levels in an organization. The purpose of the interview is, by using expert opinions and knowledge, to clarify the following objectives;

1. The kaizen event synergy framework is important to the organization.
2. The kaizen event synergy framework can be used by the organization.
3. The kaizen event synergy framework can improve the synergy in the organization.
4. Increased synergy levels can help to improve processes and sustain the results through a kaizen event with synergetic effect.

The first objective is to clarify the importance of the framework.

<b>Framework Importance</b>	
How important do you consider it to be, that your company focuses its process continuous improvement activities to improve processes most efficiently?	Almost all respondents agreed that this was very important. THB said that it is very important to discover inefficient processes. KTJ said that it was important in order to stay ahead in the competition with competitors.
How important do you consider it to be, that your company increases its synergy levels to improve collaboration between divisions?	Almost all respondents agreed that this was very important. JTK said that resources seemed to be the key problem. KYH said that globalization seemed to be the key problem.
How important do you consider it to be, that your company has a focused efficient system (for example a framework) that ensures high synergy levels?	All respondents agreed that this was important. JTK said that standards are good but hard to sustain.

**Table 4 - Framework Importance**

The answers indicate that having a focus in order for continuous improvement activities to be most efficient is regarded very important. It was regarded very important to improve synergy and thereby

collaboration. It is furthermore regarded important that there is a system in place in order to ensure high synergy levels.

<b>Your company and the framework – Framework Usability</b>	
To which degree do you believe the kaizen event synergy framework can be used by your company to improve poor collaboration between divisions?	The main part of the respondents was in the area of high to very high. THB said that the top management could use it, but that it would take a lot of practice-experience. JTK said that focus and pro-activity is important. KYH said that sustainability is important. KTJ said it will be hard but good for avoiding problems.
To which degree do you believe the kaizen event synergy framework can be used by your company to efficiently find focus areas for continuous improvement?	Almost all respondents agreed that this was high. THB said it will help increase the knowledge level. JTK said it has to be tested first.
To which degree do you believe the kaizen event synergy framework can be used by your company to increase the efficiency, by improving and sustaining processes due to focus areas?	Almost all respondents agreed that this was high. PEA said that it depends on management and resources. JTK said we need priorities and we are forced to seek them out.
Which level do you believe the risk factor to be, in relation to using the kaizen event synergy framework?	The main part of the respondents was in the area of high but also indifferent and low was answered. THB said difficult to implement when you have a culture of firefighting. JTK said it will be difficult to involve everyone, and it has to be integrated in the whole organization. KYH said it will require top management commitment for success. KTJ said if you do not stick to the system it will not succeed. OSH said probably low in relation to the possible yield.

**Table 5 - Framework usability**

The answers indicate that the kaizen event synergy framework, to a high degree, is expected to improve collaboration. Furthermore the kaizen event synergy framework is, to a high degree, expected to find focus areas for CI and that the focus area can be used to increase efficiencies. Lastly the risk of implementing and using the kaizen event synergy framework was by most expected to be high but there were overall mixed opinions about the risk associated to the framework.

<b>The framework – Synergy Improvements</b>	
How important do you consider synergy levels to be for continuous improvement?	Almost all respondents agreed that this was important. THB said it can help to unite the company's processes. JTK said that it will be important first to focus on CI and then later on Synergy.
To which degree do you believe it is right to use a system (for example a framework) with continuous improvements for improving synergy levels?	The respondents were mixed between high and indifferent. JTK said a system is important for the long term perspective. OSH said it is not the system that is key but management, although the system will be helpful in order to sustain CI.
How important do you believe it is that your company are able to find critical focus areas upfront for kaizen events?	The main part of the respondents was in the area of important to very important. THB said you need a burning platform. JTK said it is important in order to avoid confusion between divisions. KYH said it will be important also to look at areas that are functioning efficient as well. OSH said this is in general very important.
To which degree do you believe that a low company synergy can be improved by using the assessment tool to determine that it is low and set the focus on improving it?	The respondents were mixed between high and indifferent. THB said the higher the cultural change is the higher level of change management is needed. JTK said it has to be tested. OSH said that something more specific for each division is needed in relation.
Strategy – clarity and focus of the value proposition – maturity level 1 (Unpredictable or does not exist) at your company. To which degree do you consider this statement to be true?	The respondents were very mixed between low, indifferent, high and very high.
If it is a critical focus area for continuous improvements to which degree do you think it would be possible to improve with help from the framework	Almost all respondents agreed that this was high. THB said it all depends on the commitment and change management. JTK said it will be require many resources. OSH said depends on the management, but a focus is good.
If strategy – Clarity and focus of the value proposition – improved to maturity level 4 (Requirements well understood and competently applied). To which degree do you think it could help improve operational culture: Level of	Almost all respondents agreed that this was high. KYH said knowledge in each area will be connected. OSH said can help to increase the knowledge,

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compatibility of operational culture and behaviour between – maturity level 1 (Unpredictable or does not exist)?	but communication will be important according to where the problem is.
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Table 6 - Synergy improvements

The answers indicate that synergy levels are important for CI and half of the respondents expected that a system with CI to a high degree can improve synergy levels. It was considered important for organizations to find focus areas upfront to a kaizen event and half of the respondents expected to a high degree that the assessment tool could help find the focus area and thereby improve the synergy levels. Furthermore it was expected, to a high degree, that a low organizational synergy could be improved by the kaizen event synergy framework. Lastly it was expected, to a high degree, that an improved synergy level could improve another synergy level.

<b>The framework – Synergy Improvements = better Kaizen Event results</b>	
How important do you consider it to be that kaizen events become more effective, which would mean that they run faster and with better results?	The respondents agreed that this was important to very important. THB said that it is more important to focus on the startup phase. JTK said this is very important in order to keep assigning resources. KYH said the standard has to be efficient. KTJ said if people cannot see the effect they will lose interest, needs visible effect.
If operational synergy – cross enterprise team working – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factors build team and train team more effective?	The respondents agreed that this was high to very high.
If cultural synergy - information sharing: The level of information that divisions are prepared to share – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factor communicate more effective?	All respondents agreed that this was high. KYH said a standard way will move some things.
If cultural synergy – Management culture and style: Level of compatibility of senior management culture and behaviour between the divisions – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factor Define management processes more effective?	The respondents were mixed between high, very high and indifferent. THB said it can help to break down silos.
If question 2,3 and 4 all improved together to which extend do you think it will create a synergetic effect (1+1=3) on future kaizen	The respondents were mixed between high, very high and indifferent. THB said that if it improves the process of

events and thereby further improve the results achieved ?	taking the best decisions you will get better flow and results. JTK said it will be hard to measure, it will have an effect but sounds very theoretical. OSH said very dependent on problem focus.
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Table 7 - Synergy improvements

The answers indicate that it was considered important to improve efficiencies of kaizen events. It was expected, to a high degree, that an improved synergy area would improve kaizen event areas as well. Lastly it was considered, to a high degree that more improved areas would create an synergistic effect within the kaizen events.

## 6.2 The Survey

The survey is mainly based on a score model, so the main findings are based upon areas in general. The results of the survey can be found in Appendix D.

I have highlighted the main findings from the survey. Though I do not neglect that some questions in particular can seem of very high important to a particular company, I have chosen to present a broader view on the results.

Synergy Assessment	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Strategic Part 1 - Self Awareness - Average Score	3,40	3,60	3,20	1,40	2,00	3,00	2,77
Strategic Part 1 - Selv Awareness - Questions Answered	5/5	5/5	5/5	5/5	5/5	5/5	
Strategic Part 2 - Collective Awareness - Average Score	3,33		2,67	1,60	2,00	2,33	2,39
Strategic Part 2 - Collective Awareness - Questions Answered	6/6	0/0	6/6	5/6	6/6	6/6	
Operational Part 1 - Internal Processes - Average Score	4,00	5,00	2,67	2,00	3,00	3,33	3,33
Operational Part 1 - Internal Processes - Questions Answered	3/3	3/3	3/3	3/3	2/3	3/3	
Operational Part 2 - Cross Divisional Processes - Average Score	3,75	5,00	2,25	1,67	3,00	2,50	3,03
Operational Part 2 - Cross Divisional Processes - Questions Answered	4/4	1/4	4/4	3/4	3/4	4/4	
Cultural - Average Score	2,71	4,00	2,57	2,14	2,20	3,00	2,77
Cultural - Questions Answered	7/7	3/7	7/7	7/7	5/7	7/7	
Commercial - Average Score	2,40		2,20	2,50	1,50	2,20	2,16
Commercial - Questions Answered	5/5	0/5	5/5	4/5	2/5	5/5	
Total Average Score	3,27	4,40	2,59	1,88	2,28	2,73	2,86
Total Questions Answered	30/30	12/30	30/30	27/30	24/30	30/30	

Table 8 - Synergy assessment - survey overview

According to (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) the strategic synergy ensures that participating parties have a common ground and that individual objectives and expectations are understood and are consistent with competencies and contribution of each party , as well as the additional value and competitive advantage to be delivered through the collaboration.

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The operational synergy ensures that each party's internal management processes and difficulties are understood and resolved, and that customer focused operational systems extend across organizational boundaries.

The cultural synergy ensures that the mindset, organizational culture and management styles are compatible between partners and there is a sufficient level of trust and commitment in place.

The commercial synergy ensures that the short and long term expectations, benefits and risks are understood and appropriate agreements have been put in place with regards to distribution of risks, as well as benefits arising from collaboration.

Overall the survey results shows that the more the respondent is associated with administration the better average synergy score they give the company and opposite the closer relation to manufacturing the lower the average synergy score. It is a clear indicator that there are inconsistencies between divisions self assessment of synergy levels.

Both self and collective awareness are higher in the administrative functions. One could suspect that certain collective synergy levels are communicated better within administrative functions, which makes the employee believe that the collective area is performed well by the company, but if other divisions are perceiving the same area at a much lower level it indicates that there are problems and that the area is not performed as well within the company overall as the administrative people perceive.

This could furthermore lead to the suspicion that the self awareness might be better scored within the administrative functions than might actually be the actual picture. This would be challenged if the kaizen event synergy framework was actually run through in order to improve certain areas, then the administrative areas would be challenged to perform in order make the high scores reliable.

About the survey in general the respondents said that it was difficult to answer many of the questions. The difficulties mainly related to lack of experience in paying attentions to the synergy levels, which then made it hard to evaluate the current score level. But many of the respondents was of the believe that with the knowledge of the need to answer such a survey on a regular basis and the knowledge of the questions, which they then could pay attention too, they would be able to score the levels much better. Put in another way the respondents asked for more experience in order to better be able to score the levels.

There were no real indications on which relations between numbers of questions answered compared to experience within the company or divisional related placement in the company. Further surveys will be needed in order to get more clear indications

### **6.3 Conclusion**

The respondents found it important to have a system that ensures an efficient continuous improvement process with a focus area in order to improve synergy levels. The kaizen event synergy framework is a system that should preferably achieve those factors that are considered important by the respondents. The respondents also highlighted that synergy though important have key problems in achieving and that system for achieving synergy will be hard to sustain.

The respondents found that the kaizen event synergy framework can improve organizational collaboration. Furthermore it can be used to find a focus area for CI and thereby increase

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efficiencies. The risks of using the framework were of mixed opinions. The respondents also highlighted that the framework would need to be tested, and that management, total employee involvement and experience would be needed.

The respondents found that synergy is important to CI and that it is important to find synergy focus areas. Furthermore the kaizen event synergy framework can improve a synergy level, and that the improved synergy level would improve another synergy level. The respondents also highlighted that management are important in connection with the synergy levels.

The respondents found that it is important to improve the efficiency of kaizen event. Furthermore an improved synergy area can improve the efficiency of the kaizen event. Lastly improved synergy levels can improve kaizen event factors and create synergistic effect within the kaizen event. The respondents also highlighted that the framework’s cultural synergy level could help break down silos within Viking.

The survey concluded that there were big differences between the divisions/respondents average scores the differences was as big as 1,88 to 4,40. In general the survey can be very good for finding an area that are scored low and then set it up as a focus area for a kaizen event in order to improve it. It could either be an area that was particular important to one or more divisions but also a general average area for all cross-divisions scores. For the current survey conducted the 3 lowest score areas of 2,00 in average was;

Synergy Assessment	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross Aaverage
Do you have an unanimous understanding and agreement by each division on: Other division’s objectives; divison’s contributions; new value proposition; gain sharing?	2		3		1	2	2,00
Financing/funding: What is the clarity and transparency of financing/funding arrangements to all divisions?	2		2	2		2	2,00
Gain share agreement: What is the availability, clarity and transparency of an agreement on how the gains are to be shared?	2		2	2	2	2	2,00

Table 9 - Synergy assessment - focus areas identified

This is a good way of finding focus areas upfront to a kaizen event in order to improve the right synergy levels. If more respondents were included in the survey the picture of where the company has it weaknesses will only be more accurate.

## Chapter 7

### Discussion and Conclusion

The final discussion and conclusion will outline the key findings from this study and furthermore discuss the relevance to real life organizations and the gaps of the literature and gaps between real life and the literature.

#### 7.1 Discussion

Overall the validity of the interview results could be discussed to some extent. Though they are expert evaluations that state the framework will increase synergy levels, the statements can be put into doubt due to the fact that Viking doesn't seem to perform very well synergy wise. Maybe the respondents are biased due to the wish of performing better synergy wise. Further research would be needed in order to establish a conclusion to this possibility. Additionally it could be questioned if the framework would actually increase synergies in an organization that is at a very early stage to lean. One of the main reasons could be because they might not have the CI support to back the kaizen event up.

It can furthermore be questioned if it is enough to only assess the synergy levels and measure the improvements of only synergies. It should be questioned if the kaizen events and CI support also needs to be assessed in order to keep track of the performance. Furthermore it could help explain lack of results on the synergy levels, if the two other areas are not performing well. Though it is only the synergy level that has been made as a self-assessment in this framework, it can only be recommended to make self-assessments on the kaizen event and CI support as well. It is important in order to keep track and measure the process and thereby secure that the process is run at the most efficient level as possible. It could potentially avoid getting only medium results through a bad run kaizen event, but with no knowledge of it since the synergy level makes small improvements.

The whole idea of using the synergy assessment could be questioned as well due to the fact that the synergy assessment was made to compare enterprises against each other externally. Though much of the evaluation is internally some the evaluations are also against the collaboration which they already had started. One could imagine that the picture internally is much more complex, especially because you would engage much more employees, as the original assessment were only made on a few key collaboration employees that had to agree to one level for the whole company. However the importance of looking at the internal levels should not be neglected due to the fact that; "Synergy is not simply a phenomenon that occurs at the corporate level – between whole business units – but is best viewed as resulting from specific instances of resource or activity sharing between segments/portions of different business units" (Ensign 1998).

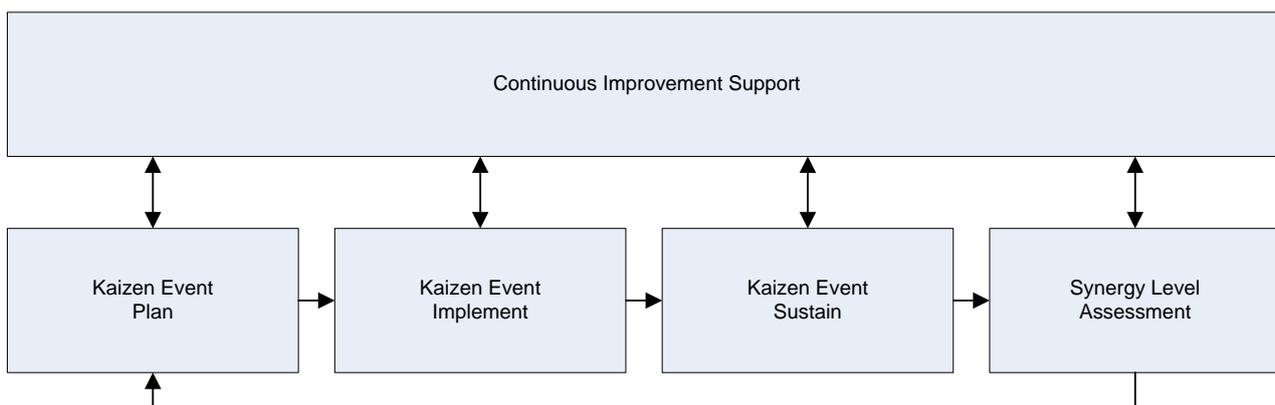
In general it is very relevant to discuss the actual increased organizational competitiveness by increasing organizational synergy levels. The exact way of measuring increased competitiveness in relation to synergy can be challenging; "Activities and resources of different business units cannot be merely brought together but must be properly combined" (Ensign 1998). Ensign (Ensign 1998) states further; "For a given business unit, some resources and activities may be worth sharing while others may not be. Further, whether a resource or activity creates value through collaboration is

dependent on the business unit for which the sharing is being considered. That is business units must be looked at relative to one another when exploring if interrelationships will lead to the creation or destruction of value”. So it is the determination of which resources and activities that should be shared with which business unit that is the problem. Solving this problem could hold the key to achieve real competitiveness with use of synergy.

There are some areas for further investigations. First of all it should be further investigated how the actual kaizen event would perform and how they will affect synergy levels. Secondly it should be further investigated how experiences affects the synergy assessment, you could name it an assessment of the synergy assessment performance. Thirdly it should be investigated how CI support companies that uses the framework, but are at completely different stages of lean.

Regarding improvement to the reliability and validity, it could be further investigated to increase the reliability of the data with a more thoroughly documented standard protocol or database setup, for assessing and improving synergies. Furthermore use of multi case designs should be used in order to evaluate more than one organization and thereby evaluate if there are tendencies among different organizations.

## 7.2 Conclusion



**Figure 20 - Kaizen event synergy framework**

The kaizen event synergy framework is based on several frameworks that seem to fit well into the aim of improving synergies. The kaizen event is mainly based on the framework by Van et al (Van et al. 2010) because the framework concludes that it increases the efficiency of kaizen events, and therefore this framework has been the main inspiration for the kaizen event synergy framework. The CI support has mainly been inspired by Kaye’s (Kaye, Anderson 1999) ten key factor model, which ensures that all factors are involved in relation to sustaining CI support on an organizational level. The Synergy area has mainly been inspired by Bititci et al (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007) synergy assessment model, which was proven to being able to find synergy areas for improvement.

The kaizen event synergy framework can from the case study at Viking be concluded to be both usable and effective for an organization. By a survey at Viking it can be concluded that the synergy assessment was capable of finding synergy levels that with an average score was low and therefore a good target and focus area to improve. The respondents found the synergy assessment difficult to

score, but was optimistic that with more experience it would become easier and the scores would become more accurate.

From the interview it can be concluded that the respondents stated that factors, such as focus area, process efficiency and using a system, for the kaizen event synergy framework to be important. Furthermore they stated that the kaizen event synergy framework can improve synergy levels. Lastly it was stated as well that the synergy levels will improve other synergy levels, as well as they will improve kaizen events and create synergies within the kaizen events. The respondents also highlighted that the framework's cultural synergy level could help break down silos within Viking, which is really a statement that backs up the statements of the framework improving synergy levels.

From the discussion about increased organizational competitiveness by increasing organizational synergy levels, the following has been concluded. The exact way of measuring increased competitiveness in relation to synergy can be challenging; "Activities and resources of different business units cannot be merely brought together but must be properly combined" (Ensign 1998). Ensign (Ensign 1998) states further; "For a given business unit, some resources and activities may be worth sharing while others may not be. Further, whether a resource or activity creates value through collaboration is dependent on the business unit for which the sharing is being considered. That is business units must be looked at relative to one another when exploring if interrelationships will lead to the creation or destruction of value". So it is the determination of which resources and activities that should be shared with which business unit that is the problem. However complicated the synergies might be to achieve and take advantage off, there is no doubt that if implemented successfully it will give the organization a good advantage. Ensign (Ensign 1998) cites Porter for the following statement; "One way to achieve competitive advantage is to coordinate activities between units.

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## 9 Appendices

### Appendix A

#### Personal Introductory Interview

Definition of Synergistic: Interaction between two or more forces will provide greater impact than just the sum of individual forces. (Politikens Nudansk Ordbog)

Definition of Synergy: The effect or synergistic = synergy effect (Politikens Nudansk Ordbog)

Definition of Collaboration: A positive form of working in association with others for some form of mutual benefit. (U. Bititci et al)

Definition of a Process: A set of actions that lead to something being changed or developed, it can be a sequence or an approach. (Politikens Nudansk Ordbog)

Definition Processes: an arrangement of resources that produces some mixture of goods and services. (Slack, Chambers and Johnston)

Definition of a Division: A part of a larger company or organisation which represents a financially and managerial relatively independent unit. (Politikens Nudansk Ordbog)

(Example of divisions in Viking; Commercial/Sale, Regions, Global Marketing, Finance, IT, HR, Business Process, Business Development, Quality, Sourcing, Shipping, Production and Logistics, Research and Development, MES and RAFT Engineering and PPE).

#### Interview Objectives

1. To establish the personal function of the person being interviewed
2. To establish the personal area of process knowledge
3. To establish personal activity level of process and continuous improvement
4. To establish personal activity level of synergy

#### Questions

1. How long have you been working in your company

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- a. Years
2. Which division do you currently work in according to current organizational placement?
  - a. Manufacturing
  - b. Administration – with high relation to Manufacturing (e.g. technical dep.)
  - c. Administration – with low relation to Manufacturing
3. Which Processes does your current job mainly relate too?
  - a. Administrative processes
  - b. Administrative and Manufacturing processes
  - c. Manufacturing processes
4. How would you characterize you personal knowledge of processes in your company?
  - a. High/Expert
  - b. Medium
  - c. Low/Novice
5. What do you think of the current processes in your company?
  - a. Good
  - b. Medium
  - c. Bad
6. How often are you involved with activities that are changing your own division's processes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Yearly
7. How often are you involved with activities that are changing other division's processes?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Yearly
8. How often are you involved with activities that are performed in order to increase synergies?  
(e.g. team work activities, communication activities, strategy activities, process activities, cultural activities or commercial activities)
  - a. Daily
  - b. Weekly

- c. Monthly
- d. Yearly

### Interview for evaluating the framework

#### Interview Objectives

The purpose of the Framework is to improve synergy levels in the company.

- The kaizen event synergy framework is important to the company.
- The kaizen event synergy framework can be used by the company.
- The kaizen event synergy framework can improve the synergy in the company.
- Increased synergy levels can help to improve processes and sustain the results through a kaizen event with synergetic effect.

#### Your company and the framework – Framework Importance

1. How important do you consider it to be, that your company focuses its process continuous improvement activities to improve processes most efficiently?

- a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

2. How important do you consider it to be, that your company increases its synergy levels to improve collaboration between divisions?

- a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

3. How important do you consider it to be, that your company has a focused efficient system (for example a framework) that ensures high synergy levels?

- a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

#### Your company and the framework – Framework Usability

1. To which degree do you believe the kaizen event synergy framework can be used by your company to improve poor collaboration between divisions?

- a Very High       b High       c Indifferent   
d Low       e Very Low

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2. To which degree do you believe the kaizen event synergy framework can be used by your company to efficiently find focus areas for continuous improvement?

a Very High       b High       c Indifferent   
d Low       e Very Low

3. To which degree do you believe the kaizen event synergy framework can be used by your company to increase the efficiency, by improving and sustaining processes due to focus areas?

a Very High       b High       c Indifferent   
d Low       e Very Low

4. Which level do you believe the risk factor to be, in relation to using the kaizen event synergy framework?

a Very High       b High       c Indifferent   
d Low       e Very Low

**The framework – Synergy Improvements**

1. How important do you consider synergy levels to be for continuous improvement?

a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

2. To which degree do you believe it is right to use a system (for example a framework) with continuous improvements for improving synergy levels?

a Very High       b High       c Indifferent   
d Low       e Very Low

3. How important do you believe it is that your company are able to find critical focus areas upfront for kaizen events?

a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

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4. To which degree do you believe that a low company synergy can be improved by using the assessment tool to determine that it is low and set the focus on improving it?

a Very High       b High       c Indifferent   
d Low       e Very Low

5. Strategy – clarity and focus of the value proposition – maturity level 1 (Unpredictable or does not exist) at your company. To which degree do you consider this statement to be true?

a Very High       b High       c Indifferent   
d Low       e Very Low

6. If it is a critical focus area for continuous improvements to which degree do you think it would be possible to improve with help from the framework

a Very High       b High       c Indifferent   
d Low       e Very Low

7. If strategy – Clarity and focus of the value proposition – improved to maturity level 4 (Requirements well understood and competently applied). To which degree do you think it could help improve operational culture: Level of compatibility of operational culture and behaviour between – maturity level 1 (Unpredictable or does not exist)?

a Very High       b High       c Indifferent   
d Low       e Very Low

**The framework – Synergy Improvements = better Kaizen Event results**

1. How important do you consider it to be that kaizen events become more effective, which would mean that they run faster and with better results?

a Very Important       b Important       c Indifferent   
d Less Important       e Not Important

2. If operational synergy – cross enterprise team working – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factors build team and train team more effective?

a Very High       b High       c Indifferent   
d Low       e Very Low

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3. If cultural synergy - information sharing: The level of information that divisions are prepared to share – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factor communicate more effective?

a Very High       b High       c Indifferent   
d Low       e Very Low

4. If cultural synergy – Management culture and style: Level of compatibility of senior management culture and behaviour between the divisions – improved from maturity level 1 to 5 (Fully competent and able to demonstrate leadership). To which degree do you think it could help make the kaizen event factor Define management processes more effective?

a Very High       b High       c Indifferent   
d Low       e Very Low

5. If question 2,3 and 4 all improved together to which extend do you think it will create a synergetic effect (1+1=3) on future kaizen events and thereby further improve the results achieved ?

a Very High       b High       c Indifferent   
d Low       e Very Low

## Appendix B

### Questionnaire for Establishing the Current level of Synergy

Definition of Synergistic: Interaction between two or more forces will provide greater impact than just the sum of individual forces(Becker-Christensen 2006).

Definition of Synergy: The effect or synergistic = synergy effect. (Becker-Christensen 2006)

Definition of Collaboration: A positive form of working in association with others for some form of mutual benefit. (Bicheno 2004, Bititci and Turner and Mackay and Kearney and Parung and Walters 2007)

Definition of a Process: A set of actions that lead to something being changed or developed, it can be a sequence or an approach. (Becker-Christensen 2006)

Definition Processes: an arrangement of resources that produces some mixture of goods and services. (Slack, Chambers & Johnston 2004)

Definition of a Division: A part of a larger company or organisation which represents a financially and managerial relatively independent unit. (Becker-Christensen 2006)

(Example of divisions in Viking; Commercial/Sale, Regions, Global Marketing, Finance, IT, HR, Business Process, Business Development, Quality, Sourcing, Shipping, Production and Logistics, Research and Development, MES and RAFT Engineering and PPE).

Score Definition 1-5 (Bititci and Turner and Mackay and Kearney and Parung and Walters 2007)

- 1- **Initial.** Unpredictable or does not exist.
- 2- **Embryonic.** Basic understanding of requirements but not able to apply.
- 3- **Defined.** Basic understanding of requirements and with a basic ability to apply.
- 4- **Standardised.** Requirements well understood and competently applied.
- 5- **Optimising.** Fully competent and able to demonstrate leadership.

Explanation of 4 areas of evaluation (U. Bititci et al)

1. **Strategic Synergy.** To ensure that the divisions have a common ground and that their individual objectives and expectations are understood and are consistent with competencies and contributions of each division, as well as the additional value and competitive advantage to be delivered through the collaboration.
2. **Operational Synergy.** To ensure that each division's internal management processes and difficulties are understood and resolved, and that customer focused operational systems extend across organisational boundaries.
3. **Cultural Synergy.** To ensure that the mindset, organisational culture and management styles are compatible between divisions and there is a sufficient level of trust and commitment in place.
4. **Commercial Synergy.** To ensure that the short and long term expectations, benefits and risks are understood and appropriate agreements have been put in place with regards to distribution of risks, as well as benefits arising from collaboration.

When answering the questions, it is from a personal and divisional perspective.

Some of the questions you might not have knowledge about, it is okay to either skip the question or to mark it by intuition. Please consider the question well before answering.

### Assessing Strategic Synergy

#### Strategic synergy. Part 1 : Self-awareness

1. Do you have awareness of global political, economy, social and technological forces that affect the competitiveness of the organisation?  
1       2       3       4       5
2. Do you have global awareness of competitors, suppliers, new-entrants, substitutes, customers?  
1       2       3       4       5
3. Do you have an understanding of your company's strengths, weaknesses, opportunities and threats with respect to the PEST (political, economy, social and technological) and competitive forces above?

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1       2       3       4       5

4. Do you have a clear understanding of the core competencies of the organisation which are difficult to replicate?

1       2       3       4       5

5. Do you have clarity and focus of the value proposition?

1       2       3       4       5

**Strategic synergy. Part 2 : Collective-awareness between divisions**

1. Do you have clear and specific views on what your division wants to get out of the collaboration?

1       2       3       4       5

2. Do you have a clear recognition of the competencies that your division is bringing to the partnership?

1       2       3       4       5

3. Do you have a clear understanding of the competencies and capabilities divisions are bringing to the partnership?

1       2       3       4       5

4. Do you have a clear understanding of the new value that will be generated through the collaboration?

1       2       3       4       5

5. Do you have clear views on how the new-gains and risks should be shared between the divisions?

1       2       3       4       5

6. Do you have an unanimous understanding and agreement by each division on: Other division's objectives; division's contributions; new value proposition; gain sharing?

1       2       3       4       5

**Assessing Operational Synergy**

**Operational synergy. Part 1 : Internal Processes**

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1. Do you have a clearly defined/articulated process that enables the management to manage the performance of the internal business and support processes in line with the strategic objectives of the business?  
1  2  3  4  5
2. Do you have clearly defined business processes for the key business processes of the enterprise, e.g. generate demand, develop product, fulfil order, support product?  
1  2  3  4  5
3. Do you have clearly defined processes for the internal support systems, e.g. HRD (Human Resource Development) and M, quality systems, IT systems, financial and risk management systems and processes?  
1  2  3  4  5

**Operational synergy. Part 2 : Cross-divisional Processes**

1. Do you have a clearly defined continuous process that facilitates strategic conversation to take place between divisions ensuring that decisions are unanimous, explicit, unambiguous and locally meaningful?  
1  2  3  4  5
2. Do you have a process that provides visibility into the performance of the collaborative enterprise. This means that some divisions should be able to look into the performance of other divisions' processes where appropriate?  
1  2  3  4  5
3. Do you have clearly defined business processes across the collaborative enterprise, crossing the boundaries of each division?  
1  2  3  4  5
4. Do you have cross enterprise team working?  
1  2  3  4  5

**Assessing Cultural Synergy**

**Cultural Synergy**

1. Management culture and lifestyle: What is the level of compatibility of senior management culture and behaviour between the divisions?  
1  2  3  4  5

2. Trust and commitment: What is the level of trust and commitment at senior management levels between divisions?

1       2       3       4       5

3. Operational culture: What is the level of compatibility of operational culture and behaviour between?

1       2       3       4       5

4. Management agility/responsiveness; What is the capability and flexibility for rapid change of processes, responsibilities, structures, etc., between divisions?

1       2       3       4       5

5. Risk sharing: What is the level of risk divisions are prepared to share?

1       2       3       4       5

6. Systems sharing: What is the level of systems the divisions are prepared to share?

1       2       3       4       5

7. Information sharing: What is the level of information the divisions are prepared to share...? e.g. V high, IP, market intelligence; Med, commercial and performance data; Low, training, suppliers.

1       2       3       4       5

### Assessing Commercial Synergy

#### Commercial Synergy

1. Commercial robustness: What is the clarity and transparency of the financial position of each division?

1       2       3       4       5

2. Risk prevention: What is the availability, clarity and robustness of a risk management strategy?

1       2       3       4       5

3. IPR (Intellectual Property Rights) agreements: What is the availability of IPR agreements?

1       2       3       4       5

4. Financing/funding: What is the clarity and transparency of financing/funding arrangements to all divisions?

1       2       3       4       5

5. Gain share agreement: What is the availability, clarity and transparency of an agreement on how the gains are to be shared?

1

2

3

4

5

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### Appendix C

Interview Participant Name	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen
Department	Engineer MES-Engineering	Manager Business Processes	Manager Production and Logistics	Production Foreman	Production Worker	Manager RAFT-Engineering
Person Nr	1	2	3	4	5	6
<b>Interview for evaluating the Personal Skills</b>						
How long have you been working in your company?	20	5	9	6	17	1
Which division do you currently work in according to current organizational placement?	Administration – with high relation to Manufacturing	Administration – with low relation to Manufacturing	Administration – with high relation to Manufacturing	Manufacturing	Manufacturing	Administration – with high relation to Manufacturing
Which Processes does your current job mainly relate too?	Administrative and Manufacturing processes	Administrative processes	Administrative and Manufacturing processes	Manufacturing processes	Manufacturing processes	Administrative and Manufacturing processes
How would you characterize you personal knowledge of processes in your company?	High/Expert	High/Expert	Medium (admin expert, manu low)	Medium	High/Expert	Medium
What do you think of the current processes in your company?	Medium	Medium	Medium	Medium	Medium	Medium
How often are you involved with activities that are changing your own division’s processes?	Monthly	Weekly	Daily	Yearly	Weekly	Monthly
How often are you involved with activities that are changing other division’s processes?	Yearly	Daily	Weekly	Yearly	Yearly	Yearly
How often are you involved with activities that are performed in order to increase synergies?	Yearly	Weekly	Weekly	Yearly	Yearly	Yearly
<b>Interview for evaluating the framework</b>						
<b>Framework Importance</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>
How important do you consider it to be, that your company focuses its process continuous improvement activities to improve processes most efficiently?	Very Important	Very Important	Very Important	Important	Very Important	Very Important
How important do you consider it to be, that your company increases its synergy levels to improve collaboration between divisions?	Important	Important	Important	Important	Very Important	Important
How important do you consider it to be, that your company has a focused efficient system (for example a framework) that ensures high synergy levels?	Important	Important	Important	Important	Important	Important

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<b>Your company and the framework – Framework Usability</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>
To which degree do you believe the kaizen event synergy framework can be used by your company to improve poor collaboration between divisions?	Indifferent	Very High	High	Very High	High	High
To which degree do you believe the kaizen event synergy framework can be used by your company to efficiently find focus areas for continuous improvement?	High	Very High	High	High	High	Indifferent
To which degree do you believe the kaizen event synergy framework can be used by your company to increase the efficiency, by improving and sustaining processes due to focus areas?	High	High	Very High	Very High	High	High
Which level do you believe the risk factor to be, in relation to using the kaizen event synergy framework?	Low	High	High/Indifferent	High	High	Indifferent
<b>The framework – Synergy Improvements</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>
How important do you consider synergy levels to be for continuous improvement?	Very Important	Important	Important	Important	Indifferent	Important
To which degree do you believe it is right to use a system (for example a framework) with continuous improvements for improving synergy levels?	Indifferent	High	High	Indifferent	Indifferent	High
How important do you believe it is that your company are able to find critical synergy focus areas upfront for kaizen events?	Important	Indifferent	Very Important	Very Important	Important	Important
To which degree do you believe that a low company synergy can be improved by using the synergy assessment tool to determine that it is low and set the focus on improving it?	High	High	High	Indifferent	Indifferent	Indifferent
Strategy – clarity and focus of the value proposition – maturity level 1 (Unpredictable or does not exist) at your company. To which degree do you consider this statement to be true?	High	Indifferent	Very High	Very High	Low	Indifferent
If this synergy is a critical focus area for continuous improvements to which degree do you think it would be possible to improve it, by using the kaizen event synergy framework?	High	High	High	High	Indifferent	High
If the strategy – clarity and focus of the value proposition – improved to maturity level 4. To which degree do you think it could help improve operational culture: Level of compatibility of operational culture and behaviour between – maturity level 1?	High	Very High	High	High	High	High

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The framework – Synergy Improvements - better kaizen event results – synergistic effect	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen
How important do you consider it to be that kaizen events become more effective, which would mean that they run faster and with better results?	Very Important	Very Important	Important	Very Important	Important	Very Important
If operational synergy – cross enterprise team working – improved from maturity level 1 to 5. To which degree do you think it could help make the kaizen event factors build team and train team more effective?	High	High	Very High	Very High	Very High	High
If cultural synergy - information sharing: The level of information that divisions are prepared to share – improved from maturity level 1 to 5. To which degree do you think it could help make the kaizen event factor communicate more effective?	High	High	High	High	High	High
If cultural synergy – Management culture and style: Level of compatibility of senior management culture and behaviour between the divisions – improved from maturity level 1 to 5. To which degree do you think it could help make the kaizen event factor Defi	High	Indifferent	Very High	Very High	High	High
If question 2,3 and 4 all improved together to which extend do you think it will create a synergetic effect (1+1=3) on future kaizen events and thereby further improve the results achieved ?	High	High	Very High	Very High	High	Indifferent

Improving Synergies through Kaizen Events

## Appendix D

Questionnaire Participant Name	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Department	Engineer MES-Engineering	Manager Business Processes	Manager Production and Logistics	Production Foreman	Production Worker	Manager RAFT-Engineering	
Person Nr	1	2	3	4	5	6	
<b>Questionnaire for evaluating the Personal Skills</b>							
How long have you been working in your company?	20	5	9	6	17	1	
Which division do you currently work in according to current organizational placement?	Administration – with high relation to Manufacturing	Administration – with low relation to Manufacturing	Administration – with high relation to Manufacturing	Manufacturing	Manufacturing	Administration – with high relation to Manufacturing	
Which Processes does your current job mainly relate too?	Administrative and Manufacturing processes	Administrative processes	Administrative and Manufacturing processes	Manufacturing processes	Manufacturing processes	Administrative and Manufacturing processes	
How would you characterize your personal knowledge of processes in your company?	High/Expert	High/Expert	Medium (admin expert, manu low)	Medium	High/Expert	Medium	
What do you think of the current processes in your company?	Medium	Medium	Medium	Medium	Medium	Medium	
How often are you involved with activities that are changing your own division's processes?	Monthly	Weekly	Daily	Yearly	Weekly	Monthly	
How often are you involved with activities that are changing other division's processes?	Yearly	Daily	Weekly	Yearly	Yearly	Yearly	
How often are you involved with activities that are performed in order to increase synergies?	Yearly	Weekly	Weekly	Yearly	Yearly	Yearly	
<b>Assessing Strategic Synergy</b>							
<b>Strategic synergy. Part 1 : Self-awareness</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>	<b>Cross AVERAGE</b>
Do you have awareness of global political, economy, social and technological forces that affect the competitiveness of the organisation?	3	3	3	1	3	3	2,67
Do you have global awareness of competitors, suppliers, new-entrants, substitutes, customers?	3	3	3	1	1	4	2,50
Do you have an understanding of your company's strengths, weaknesses, opportunities and threats with respect to the PEST (political, economy, social and technological) and competitive forces above?	4	4	4	2	2	3	3,17
Do you have a clear understanding of the core competencies of the organisation which are difficult to replicate?	3	4	3	2	2	3	2,83
Do you have clarity and focus of the value proposition?	4	4	3	1	2	2	2,67
<b>Strategic Part 1 - Average Score</b>	<b>3,4</b>	<b>3,6</b>	<b>3,2</b>	<b>1,4</b>	<b>2</b>	<b>3</b>	<b>2,77</b>
<b>Strategic Part 1 - Questions Answered</b>	<b>5/5</b>	<b>5/5</b>	<b>5/5</b>	<b>5/5</b>	<b>5/5</b>	<b>5/5</b>	

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Strategic synergy. Part 2 : Collective-awareness between divisions	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Do you have clear and specific views on what your division wants to get out of the collaboration?	4		3	2	3	2	2,80
Do you have a clear recognition of the competencies that your division is bringing to the partnership?	3		3	2	3	3	2,80
Do you have a clear understanding of the competencies and capabilities divisions are bringing to the partnership?	3		3	1	2	3	2,40
Do you have a clear understanding of the new value that will be generated through the collaboration?	4		2	2	1	2	2,20
Do you have clear views on how the new-gains and risks should be shared between the divisions?	4		2	1	2	2	2,20
Do you have an unanimous understanding and agreement by each division on: Other division's objectives; division's contributions; new value proposition; gain sharing?	2		3		1	2	2,00
<b>Strategic Part 2 - Average Score</b>	<b>3,33</b>		<b>2,67</b>	<b>1,60</b>	<b>2,00</b>	<b>2,33</b>	<b>2,39</b>
<b>Strategic Part 2 - Questions Answered</b>	<b>6/6</b>	<b>0/0</b>	<b>6/6</b>	<b>5/6</b>	<b>6/6</b>	<b>6/6</b>	
<b>Assessing Operational Synergy</b>							
Operational synergy. Part 1 : Internal Processes	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Do you have a clearly defined/articulated process that enables the management to manage the performance of the internal business and support processes in line with the strategic objectives of the business?	4	5	3	2		3	3,40
Do you have clearly defined business processes for the key business processes of the enterprise, e.g. generate demand, develop product, fulfil order, support product?	4	5	3	2	3	3	3,33
Do you have clearly defined processes for the internal support systems, e.g. HRD (Human Resource Development) and M, quality systems, IT systems, financial and risk management systems and processes?	4	5	2	2	3	4	3,33
<b>Operational Part 1 - Average Score</b>	<b>4,00</b>	<b>5,00</b>	<b>2,67</b>	<b>2,00</b>	<b>3,00</b>	<b>3,33</b>	<b>3,33</b>
<b>Op. Part 1 - Questions Answered</b>	<b>3/3</b>	<b>3/3</b>	<b>3/3</b>	<b>3/3</b>	<b>2/3</b>	<b>3/3</b>	
Operational synergy. Part 2 : Cross-divisional Processes	Poul Erik Andersen	Kristian Yde Havgaard	Torben H Bredthauer	Ole S. Hansen	Kenneth T. Johansen	Jesper T. Kristensen	Cross AVERAGE
Do you have a clearly defined continuous process that facilitates strategic conversation to take place between divisions ensuring that decisions are unanimous, explicit, unambiguous and locally meaningful?	4		3	2	3	2	2,80
Do you have a process that provides visibility into the performance of the collaborative enterprise. This means that some divisions should be able to look into the performance of other divisions' processes where appropriate?	3		2			2	2,33
Do you have clearly defined business processes across the collaborative enterprise, crossing the boundaries of each division?	4		2	1	3	3	2,60
Do you have cross enterprise team working?	4	5	2	2	3	3	3,17
<b>Operational Part 2 - Average Score</b>	<b>3,75</b>	<b>5,00</b>	<b>2,25</b>	<b>1,67</b>	<b>3,00</b>	<b>2,50</b>	<b>3,03</b>
<b>Op. Part 2 - Questions Answered</b>	<b>4/4</b>	<b>1/4</b>	<b>4/4</b>	<b>3/4</b>	<b>3/4</b>	<b>4/4</b>	

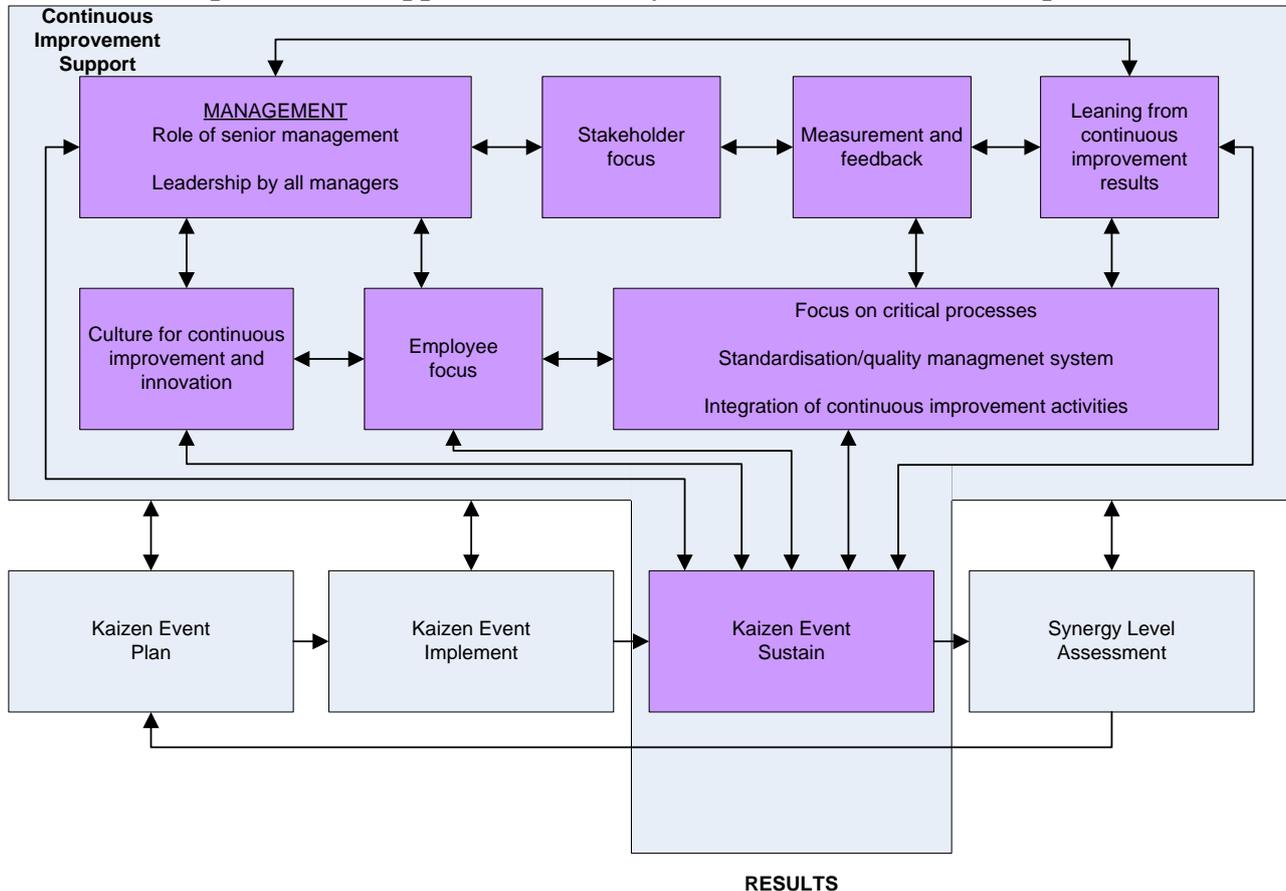


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<b>Assessing Cultural Synergy</b>							
<b>Cultural Synergy</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>	<b>Cross AVERAGE</b>
Management culture and lifestyle: What is the level of compatibility of senior management culture and behaviour between the divisions?	3	4	2	1	1	3	2,33
Trust and commitment: What is the level of trust and commitment at senior management levels between divisions?	2	4	2	2		3	2,60
Operational culture: What is the level of compatibility of operational culture and behaviour between?	2		3	2	3	3	2,60
Management agility/responsiveness; What is the capability and flexibility for rapid change of processes, responsibilities, structures, etc., between divisions?	3		3	3	2	2	2,60
Risk sharing: What is the level of risk divisions are prepared to share?	2		2	2		3	2,25
Systems sharing: What is the level of systems the divisions are prepared to share?	3	4	3	3	3	3	3,17
Information sharing: What is the level of information the divisions are prepared to share...? e.g. V high, IP, market intelligence; Med, commercial and performance data; Low, training, suppliers.	4		3	2	2	4	3,00
<b>Cultural - Average Score</b>	<b>2,71</b>	<b>4,00</b>	<b>2,57</b>	<b>2,14</b>	<b>2,20</b>	<b>3,00</b>	<b>2,77</b>
<b>Cultural - Questions Answered</b>	<b>7/7</b>	<b>3/7</b>	<b>7/7</b>	<b>7/7</b>	<b>5/7</b>	<b>7/7</b>	
<b>Assessing Commercial Synergy</b>							
<b>Commercial Synergy</b>	<b>Poul Erik Andersen</b>	<b>Kristian Yde Havgaard</b>	<b>Torben H Bredthauer</b>	<b>Ole S. Hansen</b>	<b>Kenneth T. Johansen</b>	<b>Jesper T. Kristensen</b>	<b>Cross AVERAGE</b>
Commercial robustness: What is the clarity and transparency of the financial position of each division?	2		3	3		1	2,25
Risk prevention: What is the availability, clarity and robustness of a risk management strategy?	3		2	3		3	2,75
IPR (Intellectual Property Rights) agreements: What is the availability of IPR agreements?	3		2		1	3	2,25
Financing/funding: What is the clarity and transparency of financing/funding arrangements to all divisions?	2		2	2		2	2,00
Gain share agreement: What is the availability, clarity and transparency of an agreement on how the gains are to be shared?	2		2	2	2	2	2,00
<b>Commercial - Average Score</b>	<b>2,40</b>		<b>2,20</b>	<b>2,50</b>	<b>1,50</b>	<b>2,20</b>	<b>2,16</b>
<b>Commercial - Questions Answered</b>	<b>5/5</b>	<b>0/5</b>	<b>5/5</b>	<b>4/5</b>	<b>2/5</b>	<b>5/5</b>	
<b>Total Average Score</b>	<b>3,27</b>	<b>4,40</b>	<b>2,59</b>	<b>1,88</b>	<b>2,28</b>	<b>2,73</b>	<b>2,86</b>
<b>Total Questions Answered</b>	<b>30/30</b>	<b>12/30</b>	<b>30/30</b>	<b>27/30</b>	<b>24/30</b>	<b>30/30</b>	

## Appendix E

### Continuous Improvement Support - The ten key criteria – Elements of best practice



#### 1. Senior management commitment and involvement

- 1.1. Senior management should, in consultation with other managers and staff, establish a vision and mission statements for the organization which clearly identify the long term aims and purpose of the business/service
- 1.2. Appropriate business objectives and associated critical success factors should be identified which link to the vision, mission and business plans
- 1.3. Effective communication mechanisms to inform, raise awareness and involve staff in the aims of the organization should be established (Links to 5.3)
- 1.4. Business objectives should be cascaded and linked into individual staff work objectives (for example, using the Investors in People standard) (Links to 4.1)
- 1.5. Timely review points should be planned for revisiting the vision, mission statements, business plans and objectives, individual objectives to modify or re-energize as appropriate and demonstrate/ensure /ensure constancy of purpose (Links 3.4)
- 1.6. An appropriate quality policy which includes a commitment to continuous improvement should be implemented and published

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- 1.7. Senior management should demonstrate its commitment and involvement to quality and continuous improvement by regularly being available to speak to staff through: operating an “open door” policy, walking the floor and holding briefing and feedback meetings.
- 1.8. Senior management commitment should be demonstrated through their acting on issues raised by staff, or which they themselves identify, which lead to improvements in quality or the working environment
- 1.9. Mechanisms should be established in order to identify “successes” at organizational, team and individual levels
- 1.10. Mechanisms should be established for recognizing, communicating and where appropriate rewarding, successes

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### 2. Leadership and active commitment demonstrated by all managers

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- 2.1. The awareness of all managers should be raised, and training provided where appropriate , as to the relevance and importance of quality and continuous improvement within their particular organizational context (Links to 5.1)
- 2.2. All managers should be fully aware of the long term strategies of the organization (see 1.1,1.2 and 1.4 above) and have appropriate measurable objectives for achievement for themselves and their teams
- 2.3. The skills needed by managers to equip them to cope within the rapidly changing business environment and adopt the appropriate style of management of employees (e.g. coaching) should be assessed. Appropriate management development programmes should be considered

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### 3. Stakeholder focus

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- 3.1. The organization’s major stakeholders should be identified, e.g.
  - Customers
  - Shareholders
  - Employees
  - Suppliers, etc.
- 3.2. Mechanisms should be established to identify and keep up-to-date with the changing needs and expectations of stakeholders (e.g. through regular contacts and meetings, surveys, feedback from employees/field staff, etc.)
- 3.3. Mechanisms should be established to regularly review the level of stakeholders’ satisfaction (particularly customers and employees)
- 3.4. The organization’s long and short term strategies (vision, mission, critical success factors, operational objectives, etc.) should be regularly reviewed, and modified as necessary, in the light of feedback from stakeholders (particularly customers) (Links to 1.5)

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### 4. Integration of continuous improvement

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- 4.1. The organization’s strategic aims and objectives should be used to identify and prioritize continuous improvement activities across the whole organization, across functional boundaries and at all levels (Links to 1.4)
- 4.2. Self-assessment techniques using a recognized model (e.g. the European business excellence model or Baldrige Award criteria) should be considered to help identify improvement areas across the organization and promote a holistic approach to continuous improvement (Links tot 7.7 and 9.9)

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## 5. Culture for continuous improvement

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- 5.1. All employees should be made aware (at induction and subsequent training as appropriate) of the general concepts of quality as it applies to them and their particular organization's context (Links to 2,1)
- 5.2. Managers should continuously reinforce the culture for continuous improvement by regularly checking and raising the awareness and understanding of employees
- 5.3. Effective communication systems should be established to ensure that appropriate and timely information flows vertically (top down and bottom up) and horizontally at all levels. Consideration should be given to:
  - Information audits
  - Employee surveys
  - Employee newsletters
  - Use of e-mail
  - Use of improvement teams
  - Staff briefing meetings
  - Staff review and appraisal systems (Links to 1.3)
- 5.4. Multi-disciplinary teams should be established as required to focus on quality improvement issues (Links to 6.1 and 6.6)

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## 6. Focusing on employees

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- 6.1. Management should continually encourage staff to actively participate in identifying improvements and making changes by promoting this:
  - At staff development/appraisal meetings
  - Through the ideas system
  - Through the use of project teams and focus groups
  - Through training (Links to 5.4 and 6.6)
- 6.2. Employees should be actively asked for their ideas and contributions (Links to 5.2)
- 6.3. All employees should have the opportunity, if they wish, to participate in improvement activities from time to time (e.g. through improvement teams, project work and training)
- 6.4. An effective, two-way, staff development appraisal system should be established
- 6.5. Consideration should be given to job swapping, secondments, work shadowing, etc. for employees to learn the roles of others and gain greater understanding of how their own roles fit into the organization
- 6.6. The effectiveness of all teams established (permanent and ad hoc) should be reviewed, e.g. terms of reference, objectives, team membership and interaction, achievement of objectives. Facilitators should be used where appropriate to give guidance and motivation as appropriate (Links to 5.4 and 6.1)
- 6.7. Potential "barriers" and other blockages should be identified and eliminated to promote co-operation and team working between all employees (including management). Such barriers may be hierarchical, functional, geographical, personality clashes
- 6.8. A mechanism should be established to identify and regularly review training and development needs to all staff. Use of the Investors in People standard is recommended for this purpose.

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## 7. Focus on critical processes

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- 7.1. All major business processes should be identified and documented (using flow charts or process mapping techniques)
- 7.2. The following should be identified for each process:
  - An owner
  - All employees involved
  - Process customers
  - Process suppliers
  - Activities
  - Resources
  - Performance indicators
  - Measurement mechanisms
  - Feedback mechanisms
  - Review points
- 7.3. Processes should be regularly reviewed to identify their contribution to the achievement of the organization's aims, objectives and critical success factors. The critical processes should be identified (Links to 9.1)
- 7.4. The needs and expectations of all those involved in the process should be identified (e.g. process customers and suppliers)
- 7.5. "Best practice" should be identified (internally or externally) against which to benchmark the processes
- 7.6. All non-value adding activities should be identified and eliminated
- 7.7. Self-assessment techniques (e.g. European business excellence model or Baldrige Award criteria) should be used to promote a holistic view of the organization against which to continuously measure and improve the efficiency and effectiveness of all processes (Links to 4.3 and 9.9)

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## 8. Quality management systems

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- 8.1. Best business practice should be standardized in a documented quality management system which also meet the requirements of BS EN ISO 9000
- 8.2. The quality management system should be kept simple with the avoidance of unnecessary bureaucracy, overcomplicated procedures and excessive paperwork. It should be flexible and appropriate to the needs of the organization
- 8.3. Registration for the quality management system with a reputable UKAS accredited certification body is recommended in order to benefit from regular external and independent assessments and advice on how to continually improve

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## 9. Measurement and feedback systems

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- 9.1. Appropriate performance indicators which relate to all critical success factors and business processes at organizational, team and individual levels, should be identified and regularly reviewed (Links to 7.3)
- 9.2. Regular and timely measurement of performance against the performance indicators (see 9.1) should be carried out
- 9.3. All appropriate management and employees should be made aware of the results of measurements to encourage on-going improvement
- 9.4. Too much focus on just financial indicators should be avoided
- 9.5. Performance trends should be identified and appropriate action taken

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- 9.6. Successes, as well as poor results, should be highlighted and fed back to employees
- 9.7. A proactive approach to identifying problems should be taken to avoid reliance on customer complaints and inspection systems (e.g. improved internal auditing systems)
- 9.8. Internal auditing should identify and highlight best practices as well as nonconformity
- 9.9. Self-assessment techniques should be used (Links to 4.2 and 7.7)

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### 10. The leaning organization

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- 10.1. Regular briefings should be held to enable both management and employees to share experiences and progress on projects, best practices, successes and failures
- 10.2. The outcomes from training courses and other developmental experiences of employees should be evaluated and fed back
- 10.3. Benchmarking techniques (internal and external) should be used to compare the organization's activities against other departments'/organizations' best practices
- 10.4. Organizational and individual learning should be actively promoted

Source: (Kaye, Anderson 1999)

## Appendix F

### The synergy assessment framework adjusted to my framework

Assessing Strategic Synergy					
Assesment criteria	Maturity level				
	1	2	3	4	5
<p><b>Strategic synergy. Part 1 : Self-awareness</b></p> <ul style="list-style-type: none"> <li>• Awareness of global political, economy, social and technological forces that affect the competitiveness of the organisation.</li> <li>• Global awareness of competitors, suppliers, new-entrants, substitutes, customers.</li> <li>• Understanding of company's strengths, weaknesses, opportunities and threats with respect to the PEST and competitive forces above.</li> <li>• Clear understanding of the core competencies of the organisation which are difficult to replicate.</li> <li>• Clarity and focus of the value proposition.</li> </ul> <p><b>Strategic synergy. Part 2 : Collective-awareness between divisions</b></p> <ul style="list-style-type: none"> <li>• Clear and specific views on what your division wants to get out of the collaboration.</li> <li>• Clear recognition of the competencies that your division is bringing to the partnership.</li> <li>• Clear understanding of the competencies and capabilities divisions are bringing to the partnership</li> <li>• Clear understanding of the new value that will be generated through the collaboration.</li> <li>• Clear views on how the new-gains and risks should be shared between the divisions.</li> <li>• Unanimous understanding and agreement by each division on: Other division's objectives; divisions' contributions; new value proposition; gain sharing.</li> </ul>					

Assessing Operational Synergy					
Assesment criteria	Maturity level				
	1	2	3	4	5
<p><b>Operational synergy. Part 1 : Internal Processes</b></p> <ul style="list-style-type: none"> <li>• A clearly defined/articulated process that enables the management to manage the performance of the internal business and support processes in line with the strategic objectives of the business.</li> <li>• Clearly defined business processes for the key business processes of the enterprise, e.g. generate demand, develop product, fulfil order, support product.</li> <li>• Clearly defined processes for the internal support systems, e.g. HRD and M, quality systems, IT systems, financial and risk management systems and processes.</li> </ul> <p><b>Operational synergy. Part 2 : Cross-divisional Processes</b></p> <ul style="list-style-type: none"> <li>• A clearly defined continuous process that facilitates strategic conversation to take place between divisions ensuring that decisions are unanimous, explicit, unambiguous and locally meaningful.</li> <li>• A process that provides visibility into the performance of the collaborative enterprise. This means that some divisions should be able to look into the performance of other divisions' processes where appropriate.</li> <li>• Clearly defined business processes across the collaborative enterprise, crossing the boundaries of each division.</li> <li>• Cross enterprise team working.</li> </ul>					

Assessing Cultural Synergy					
Assesment criteria	Maturity level				
	1	2	3	4	5
<p><b>Cultural Synergy</b></p> <ul style="list-style-type: none"> <li>• Management culture and lifestyle: Level of compatibility of senior management culture and behaviour between the divisions.</li> <li>• Trust and commitment: The level of trust and commitment at senior management levels between divisions.</li> <li>• Operational culture: Level of compatibility of operational culture and behaviour between.</li> <li>• Management agility/responsiveness; Capability and flexibility for rapid change of processes, responsibilities, structures, etc., between divisions.</li> <li>• Risk sharing: Level of risk divisions are prepared to share.</li> <li>• Systems sharing: The level of systems the divisions are prepared to share.</li> <li>• Information sharing: The level of information the divisions are prepared to share... e.g. V high, IP, market intelligence; Med, commercial and performance data; Low, training, suppliers.</li> </ul>					

Assessing Commercial Synergy					
Assesment criteria	Maturity level				
	1	2	3	4	5
<p><b>Commercial Synergy</b></p> <ul style="list-style-type: none"> <li>• Commercial robustness: The clarity and transparency of the financial position of each division.</li> <li>• Risk prevention: the availability, clarity and robustness of a risk management strategy.</li> <li>• IPR agreements: The availability of IPR agreements.</li> <li>• Financing/funding: The clarity and transparency of financing/funding arrangements to all divisions.</li> <li>• Gain share agreement: The availability, clarity and transparency of an agreement on how the gains are to be shared.</li> </ul>					