Quality
Meeting expectations - constantly improving
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Executive Summary
This report provides an analysis of the state of quality and quality culture, as well as a discussion on how to achieve a desired level of quality and quality culture in Aker Subsea. Through interviews, this project has collected various statements from employees in Aker Subsea regarding quality and quality culture. The interviews was then analysed and discussed on a theoretical foundation which consisted of: (1) What is quality, (2) How to achieve desired quality: Total Quality Management, Lean and Six Sigma, (3) Organisational Culture, (4) Cultural communication, (5) Organisational Knowledge Creation Theory and (6) Sensemaking.

Our analysis identified several challenges that the quality and quality culture in Aker Subsea face, and possible implementations that can be made to achieve desired quality and quality culture.

These five main categories have been named: Communication, Culture, Workforce, Time and Systems and Procedures. Under each of these categories we have listed the challenges and possible implementations, and further these challenges and possible implementations have been discussed under their respective categories. In short, our discussion ends up with the following suggestions:

1. Culture: Aker Subsea could expand quality- and cultural awareness the way they have succeeded with their HSE-implementation. At the same time, management should be clear on how things should be done – and why. A common understanding between management and employees on why things are done a certain way, will contribute to a beneficial quality culture.
2. Communication: Aker Subsea would benefit from an increased focus on training their employees in communication. Also, both the quality and quality culture in Aker Subsea will be positively affected by increased communication and cooperation between departments.
3. Workforce: Focus on more empowerment among the employees, as well as on training on development, contributing to a more unified culture.
4. Time: Quality should be put on top of the meeting agenda to ensure that time does not interfere with reviewing quality readings and measurements.
5. System and Procedures: Lessons Learned can be a great tool for sharing knowledge; however, it needs to be made less cumbersome and more deeply rooted. One suggestion can be to engage employees whose only work assignments are to maintain Lessons Learned and secure for its use.

Aker Subsea is well on its way, both with systems and strategies on how to achieve its goal of becoming a frontrunner on quality in the subsea business. This report both confirms current work done on quality and quality culture, and indicates how to take the next step.
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Introduction

In 2010, Aker Subsea’s quality reputation was not as expected. They received more negative than positive feedback from their customers, and they seemed not to have a clear understanding of their own quality challenges. The emphasis on searching for long term solutions and continuous improvements did not have the appropriate focus.

Further on, the overarching goal for Aker Subsea is to be the frontrunner for quality in the subsea business. To achieve this Quality Management (QM) was lifted to a strategic level in 2011, and they were given a global QM strategy. This means that they now have local plans established reflecting the overall strategy.

This was the context of the situation in which Aker Subsea found itself when we received the project mandate. With this in mind, interesting questions could be formulated. Aker Subsea had a quality strategy and several systems to secure quality. However, how can they align their people and teams with the overarching goal of being a frontrunner in quality? Do the employees have a common understanding of quality as a concept? How can Aker Subsea create a quality-focused culture? And last, but not least – how can they improve the quality mindsets of their employees?

The purpose of this project is to provide an analysis of Aker Subsea by trying to answer these questions. One essential purpose of this report is to provide Aker Subsea with a perspective on their quality challenges, by combining theory and qualitative methodology and combine them into something that Aker Subsea can implement into their own quality campaign currently being undertaken.

We start by introducing our content of theory. Secondly we present the methodological approach; further an overview will show the findings from the interviews. We then discuss the findings from our analysis before presenting a final conclusion with suggestions for further possible implementations that can help achieve the desired quality.
Theoretical foundations

What is quality?
Defining quality can be troublesome, and a number of efforts to do so have been made by both theorists and practitioners. This report is in short based on two definitions by Reeves and Bednar (1994) where the first state that:

“Quality can be defined as value, conformance to specifications, conformance to requirements, fitness for use, loss avoidance, and meeting and/or exceeding customers’ expectations.”

At the same time, the fact that Aker Subsea produces products based on specifications made by their customers and where these specifications vary from customer to customer, this second definition of quality seems to be of great importance to Aker Subsea:

“Quality is whatever the customers say it is, and the quality of a particular product or service is whatever the customer perceives it to be” (Reeves & Bednar, 1994).

Based on the importance of customer specifications in Aker Subsea’s production and their expressed focus on both products and processes, we assume that the concept of quality for Aker Subsea comprises the two definitions.

How to achieve desired quality?

In accordance with the concept of quality this project assumes is suitable for Aker Subsea, the desired quality would then be to produce products that has value, conform to specifications and requirements and are well fitted for use. The desired quality would also be to avoid any form off “loss” in the production, which means that ideally Aker Subsea should have no errors in their production. And last, but not least, quality is connected to the satisfaction of customers, which means that the desired quality is to complete customer satisfaction.

There are many systems and procedures present in Aker Subsea to secure the quality that is wished for. Serving as examples of implemented quality systems, SAP, myPerformance and Lessons Learned can be mentioned. Also, one of the important aspects of the recent strategically reorganisation of the organisational structure, was to tackle the quality challenges they faced. Global owners for every type of product that Aker Subsea produces was here introduced as a new part of the organisational structure.

An overarching goal for Aker Subsea is to be the frontrunner of quality in the subsea business. However, their customers have reported a lack of satisfaction concerning continuous delays as well as equipment with errors. Also, breaches in quality are costing Aker Subsea a substantial amount of money. So how can they become a frontrunner? Reaching the desirable quality requires a firm grasp on how to manage quality and avoid quality problems.

Theories like TQM, lean and six sigma can shed light on the managing of quality and can be used to discuss how Aker Subsea can ensure their quality. Both lean and six sigma are simple and clear roadmaps recommended for companies which have decided to achieve the best quality in their business. These roadmaps are not possible to adopt without the right company culture characterised by the core principles of TQM.
Total quality management (TQM)

TQM is an integrated management philosophy and a set of practices that emphasise continuous improvement, meeting customer requirements, reducing rework, long range thinking, increased employee involvement and teamwork, process redesign, competitive benchmarking, team-based problem solving, constant measurement of result, and closer relationships with suppliers (Shah & Ward, 2007).

The simple objective of TQM is: *Do the right things right the first time, every time.* There are three fundamental tenets of TQM, where the first one is the upper management leadership of quality. The second one is, continuous education on quality for all, and the last one is, an annual plan for quality improvement and cost reduction (Basu, 2011).

We can illustrate the principles of TQM with a model made by Kanji (1996). This pyramid model is based on the proposition that to achieve high customer satisfaction (delight the customer), the organisation have to improve continuously all aspect of its operation (continuous improvement); this can only be achieved through leadership by making decision on objective evidence of what is actually happening (management by fact) and by involving all employees in quality improvement activities (people-based management), leading ultimately to business excellence (Kanji & Yui, 1997:420).
Lean

Lean as a form of quality management consists of several principles. We have chosen to focus on some of principles that we see as the most relevant for this project.

Lean’s most distinguishing principle is the relentless pursuit of waste. Waste is everything that does not add value to the product. The philosophy is that every failure to meet the unique requirements of a client is waste. To attain high quality productivity, all parts and products need to be fault-free from the beginning. All practices used to attain quality products in lean are aimed at reaching the overarching principle of zero defects. One of these practices is that quality assurance is the responsibility of everyone. Another practice is that instead of inspecting manufactured parts after a potential problem has occurred; the manufacturing process is kept under control to prevent defects from occurring in the first place (Åhlström, 1998).

In lean, responsibility and authority are consistently pushed down to the lowest levels of the organisation, and every member is expected to make intellectual contributions on process improvements. This is why an important part of lean is empowerment.

Lean is based on vertical information systems, which are simple systems relying on direct information flows to the relevant decision-makers. These allow for rapid feedback and corrective action. The information also enables the multifunctional teams to perform according to the organisation’s goals, which reduces the need for managers to micromanage processes (Åhlström, 1998).

Six Sigma

Six sigma focuses on measuring product/service quality, reducing variation and driving process improvements and reducing costs. It uses a set of statistical and management tools that can make leaps in improvement. The Six sigma process has a failure rate of 3.4 parts per million (PPM) or 99.99966% defect-free product. It uses a complicated approach to problem solving called DMAIC, which stands for Define, Measure, Analyse, Improve and Control (Dedhia, 2005). Poor quality costs often amount to 20-30 % of a company’s revenue. The methodologies to achieve Six sigma should be built around the customer’s needs. It indicates that a project in an organisation has to recognise the performance gap it is facing, by going through the DMAIC steps before attempting a solution (Dedhia, 2005).

Both lean and six sigma require an organisational culture to work properly, and in the next section theory on culture will be presented.
Organisational culture

There are numerous definitions of organisational culture, however, it is beneficial to choose one definition that, the project may base its analysis and discussion on. It will in this respect be appropriate to make use of Edgar Schein’s (1990) definition:

“Culture can then be defined as (a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems” (Schein, 1990:111).

This definition consists of many central features, which makes this definition a classical reference point when it comes to organisational culture.

Further, Martin (2002:55) states that “Manifestations of culture include rituals, stories, humour, jargon, physical arrangements, and practices.” These explicit manifestations can be used to both analyse an existing culture and to create a desired culture. Together, these two theoretical viewpoints compose the cultural foundation on which the project has been carried out.

A coherent culture?

When mapping culture in an organisation, Martin (2002) mentions three perspectives one can utilise to understand organisational culture, namely the integration perspective, the differentiation perspective and the fragmentation perspective.

The integration perspective focuses on consensus through the organisation, where all organisational members share the same culture. The differentiation perspective focuses on subculture and consensus within these subcultures. Within these subcultures, all is more or less clear. Ambiguity and vagueness happens only between subcultures. This means that meaning can vary from subculture to subculture, with each subculture or subgroup to defining what to do. Within any given organisation, a subculture can be one type of workers, for instance management. In the society as a whole, one can spot differences between the working class and aristocracy – both as subcultures within the society (Bourdieu, 1995). Often seen as conflicting subcultures, it is important to note that subcultures exists both with and without people being aware of it, and it is a wrongful assumption to assume that subcultures are hostile towards each other. Still, as we will show later in the report, subcultures can have different understandings about what might be the same word, custom or action. The fragmentation perspective sees the relationship between members as unsystematic and inconsistent. There is a great deal of ambiguity at the core of the culture (Martin, 2002).

That being said, cultural members have to be able to communicate with each other, and for that we need a theory and an explanation on the phenomenon of communication, especially communication between different nationalities and cultures.
Cultural communication

Communication is an important part of any culture. To share something, you have to communicate it, and this is – in essence – what communication is all about. Spreading an intended message to one or many intended receivers.

When talking about communication, the norm is to separate intracultural and intercultural communication, though the lines between the two are constantly sliding in the modern global environment. Intracultural communication means the agents share more or less the same language, religion and political ideologies. The agents are in essence, similar.

In the intercultural communication, these thoughts tend to be further apart, and an agent from India and Norway would communicate on an intercultural level. In both intra and intercultural communication, we interpret and misinterpret each other’s signals, body language, words, signs and behaviour (Dahl, 2001).

What’s apparent is the fact that miscommunication can happen within the intercultural sphere, but also easily within the intracultural sphere, even though this isn’t at widespread as when the native languages are not the same. Failure to communicate needs to be acknowledged as a universal problem, not just between for instance India and Norway.

It is reasonable to assume that when working in the same organisation towards the same goal, that is quality – the employees from different parts of the world are not too concerned with showing off their cultural differences. Rather, one can assume they tend not to think about it, because the process of work takes first seat in an organisation driven by the urge to produce quality, win contracts etc.

We will then define intercultural communication as a process involving exchange and interpretation of signs and messages between people representing different cultural communities so different that their attribution of meaning is influenced by their culture (Dahl, 2001).

To understand communication through this definition, we need to introduce the cultural filter model. Main points in the model (see appendix 1) includes the fact that intended meaning is only apparent for the sender, that sent messages are coded through the senders cultural filter, that receivers message will be decoded through the receivers cultural filter and that the receivers meaning is not necessarily the same as the senders meaning (Dahl, 2001). It is important to note that this can occur between two people sharing the same language as well as different languages. Different cultures and languages only make the matters more complicated.

The realities we often see as objective are more often subjectively constructed than we like to think. Stereotypes often do not represent real life – and with this in mind, we can see that miscommunication and confusion is easy to come by (Dahl, 2001).

With an established model for understanding communication, we can then proceed to introduce a theory for understanding how organisations learn and transfer knowledge, courtesy of the organisational knowledge creation theory.
Organisational Knowledge Creation Theory (OKCT) is the process of making available and amplifying knowledge created by individuals as well as connecting it with an organisation’s knowledge system (Nonaka et. al, 2006).

Knowledge is embodied in the individuals, and is therefore history dependent, context sensitive and aimed at problem definition. An essential aspect of OKCT relies on how to overcome the fragile transmission of knowledge between individuals in the organisation. In OKCT knowledge is, firstly, justified true belief, since it is individualistic. The justification therefor hinges on unique viewpoints, personal sensibility and experience. Secondly, knowledge is also the capacity to define a situation and act accordingly. Thirdly knowledge can be seen as consisting of both explicit aspects, such as language and documentation, and tacit aspects such as skills and experience (Nonaka et. al, 2006).

Knowledge Conversion

By interacting and sharing explicit and tacit knowledge with others, the individual improves the capacity to define a situation or a problem, and apply this knowledge so as to act and solve the given problem. This conversion process can be identified through a four-stage process, called the SECI-model. The purpose of socialization is to share tacit knowledge among individuals. Externalization focuses on articulating tacit knowledge into explicit concepts. Combination aims to combing distinctive entities of explicit knowledge, while Internalization stresses upon embodying explicit knowledge into tacit knowledge.

In knowledge conversion, personal and subjective knowledge is validated and connected with others knowledge. Particular and tentative knowledge created from an individual’s values and experiences is shared and justified by other members of the organisation (Nonaka et. al, 2006).

The whole concept of “knowledge conversion” raises two significant considerations. First of all we have the knowledge system to which it contributes, and second the important role of social justification. The knowledge system captures the organisation’s global learning.
It is embedded in organisation’s vision, outlining the fields of development, and the organisational culture that orients individuals’ actions, mindsets and choices. The second consideration mentioned, reflects on the importance of social justification. Knowledge is embodied, particular and oriented towards problem definitions at the inception. For an individual, the justification of beliefs can often be automatic and instant, but the expansion of knowledge in the organisation through conversion makes it a social process. Due to the differences between individual’s personal interests and investments, knowledge creation is highly fragile and individual knowledge therefore fails to benefit others in the organisation and vica versa. This is often called the flip side of social justification. Consequently organisation’s knowledge system maintenance requires an infrastructure, which includes information systems, archives and different procedures. Due to the complexity of these organisational infrastructures it is increasingly expensive, but it is still prerequisite for an organisation’s innovation. Social justification should therefore be understood as a mechanism by which the organisation trades off innovation against cost containment in knowledge creation (Nonaka et. al, 2006).

Conditions and Ba in the organisation
An essential purpose of OKCT is to identify conditions enabling knowledge creation in order to develop innovation and learning. As outlined above, organisational knowledge creation is dependent on context. The context upon this creation is ba, or “space” (Nonaka and Konno, 1998). Ba is a shared space for developing relationships. It can either be a physical, virtual or mental space, but the common aspects of all three, is that they have knowledge embedded in them. To participate in ba means to become engaged in knowledge creation, dialogue, adapt to and shape practices, and transcend one’s own limited perspective (Nonaka et. al, 2006).

There are several characteristics in ba, which is suited for the conversion of knowledge (Nonaka and Konno, 1998). These are as following: In the originating ba, organisational members meet face-to-face, share feelings, emotions and experiences. It represents the socialization among individuals. Second we have the interacting ba, which support the externalization in the SECI-model. Through dialogue, their skills are probed, analysed and converted into common terms and concepts. The cyber ba represents a place of interaction in the virtual world. Combining explicit new knowledge with existing information and knowledge serves to create explicit knowledge throughout the organisation. At last we have the exercising ba, which supports the individual’s internalisation of explicit knowledge. Training with instructors and other members to stress and establish patterns of behaviour are among the key elements in this view. The awareness of a ba’s specific characteristics and their support, enable successful knowledge creation (Nonaka et. al, 2006).
Leadership

The essence of leadership in OKCT is to promote the SECI-process. Therefore it is not only the top-managers, but also the middle managers that matter in this case. Therefore, by interpreting and supporting the knowledge vision, middle managers promote organisational knowledge by enabling all four modes of knowledge conversion. Their most important contribution is the externalization of knowledge in the *ba*. Leadership is about *enabling* knowledge creation – not directing and controlling it (Nonaka et. al, 2006).

To illustrate the above-mentioned statements, Karl Weick (1979) can be at help. The organisation is in a state of becoming and moving among cycles of sense-giving from the top and sense-making in the middle, through the sense-giving in the middle and sense-making at the top (Nonaka et. al, 2006).

Sensemaking in organisations

Ring & Rands (1989) define sensemaking as “a process in which individuals develop cognitive maps of their environment in term of an understanding to a mutual activity.” (Weick 1995: 4).

Sackman (1991) and Feldman (1989), argues that the concept of sensemaking refers to mechanism that organisational members use to attribute meanings, interpreting, believing, and acting that are typically used in a cultural setting (Weick, 1995: 5). The nature of sensemaking therefore refers to a cognitive process in a situation where people make sense of the event in question. The phrase “frame of reference” means some kind of pre-set framework into which people put their experienced stimuli and this enables them to understand and explain the events they encounter. Every employee will have a unique frame of reference based on their previous experiences.

Sensemaking imposes “mental processes” on how to organise coordinated actions between organisational affairs like feedback, messages and communication. The more advanced these systems of organisational affairs are thought to be, the more likely are people to discredit the things that are put through. This can be exemplified by management in an organisation trying to communicate the importance of something throughout the organisation. If the situation in which the communication occurs is extremely complicated and ambiguous, the employees are more likely to not get the importance that the management are trying to communicate. A situation can be complex and ambiguous because of the number of layers the message has to run through, and also uncertainty are more likely to occur when the people trying to communicate a message are significantly different from their intended receivers. Employees working in the lower levels of an organisation make sense of management’s message based on their frame of reference, however since management’s frame of reference are unlike the ones of the lower employees, they will not make sense of the message in the same way. Since the texts of authorities are often abstract and compact, they need interpretation to be made useful to the practitioners. Sensemaking is thus akin to theology, interpreting the possible relevance for here-and-now from ancient texts (Weick, 1995).
**Method**

The information that this report is based on was generated by group interviews and individual interviews. A qualitative approach was chosen to carry out this project because of Aker Subsea’s wish to receive a deeper understanding of the underlying causes for quality issues and how to better implement and follow through a quality culture. In which in-depth, semi-structured interviews are especially favourable to obtain rich data and a deep understanding of the relevant issues.

In-depth interviews involve conducting intensive individual interviews with a number of respondents to explore their perspectives on a particular idea, program, or situation (Kvale, 2008). In this case, we explored the concept of quality and quality culture within Aker Subsea, both how these topics are perceived today and how they can be changed to fit the organisation’s goals for the future.

Both individual interviews and group interviews were carried out in a semi-structured fashion, and each interview lasted for about one hour. For an overview of the interview guide see appendix 2. The interview guide’s design was based on the project’s purpose and goals. The chosen themes in the interview guide were “Quality”, “Culture”, “Communication” and “Change”, where the questions under each theme were theoretically grounded. The interview guide also included basic questions regarding their position, their work tasks and how long they have worked in Aker Subsea.

In the first main part of the interview guide, under the theme “Quality”, we examined the informant’s understanding of quality as a concept, their perception of the state of quality and focus on quality in Aker Subsea. The second part of the guide consisted of questions regarding “Culture”, where we examined the informant’s perceptions of concepts like culture and quality culture. We also explored their perception of the quality culture presently existing in Aker Subsea. The third theme, which was “Communication”, focused on questions that revolve around the communication within departments, between departments and locations, within projects and also external communication between Aker Subsea and their business partners, like subcontractors. “Change” is the fourth and last theme in the interview guide. Here we asked questions regarding what changes that could help Aker Subsea achieve greater quality. Also questions were asked concerning how Aker Subsea can build a desired culture for quality and get their employees to align with Aker Subsea’s quality goals.

We interviewed a total of 33 informants, where 21 of these participated in group interviews and the other 12 participated in individual interviews. The informants were from various parts of the organisation; they belonged to different projects and to a variety of departments within Subsea. The informants were partly chosen by us and partly recommended by other employees that know the organisation better than us. However, all informants have been strategically chosen based on their position and affiliation to departments and/or projects. We have interviewed employees from the Åsgard project specifically, because of the unique emphasis on quality that exists in this project. Also, the informants have been chosen based on achieving good vertical and horizontal representation.

On one hand, the fact that the topic was both interesting and useful for the informants, and that the interview guide did not contain any especially personal questions, we justifiably expected
sincere answers. On the other hand the interviews touched subjects that were related to their work and their relationship with Aker Subsea, which may have caused and a small amount of concern when referring to the state of their employer. However, the informants were well informed of their complete anonymity and the fact that Aker Subsea took the initiative for this project, which we expected would give the informants an understanding of Aker Subsea’s wish to obtain as much revealing information as possible. It can be useful to mention that the informants did not prepare for the interviews in advance. They were only given a short summary the topics that the interview would deal with.

Also, numeric and verbal representations of Aker Subsea’s processes and organisation have been analysed and taken into account, this to achieve a better understanding of our findings from the interviews and also to help us better understand Aker Subsea as an organisation.

To analyse the data collected by interviewing we compared all the interviews and looked for similarities and differences in light of the informant’s position in Aker Subsea. Also we wanted to explore the existing culture for quality in Aker Subsea, so we compiled the reports that regarded culture and analysed. We divided much of our analysis into challenges and solutions. We searched for more general issues that affect the quality in Aker Subsea, and focused much of our attention on mapping the solutions the informants suggested.

The analysis of the data we have acquired have been completed with HyperRESEARCH, where we found several themes that we see fit to explain some of the quality challenges Subsea face. Also the analysis equipped us with several examples of opportunities for Subsea to achieve a well-functioning quality culture.

Findings from the interviews
The conducted interviews have given us the following findings, on which we base our further discussion on.

The understanding of quality
When asking about what quality was and the perception of the quality in Aker Subsea, most of our informants explained the strong link between quality and delivering what was wanted and needed by the customer. The strong emphasis on quality being “good enough” for the customer became apparent, and this was something shared by almost all of the informants. Some informants also mentioned that quality is producing error free products and doing things right the first time. Here only the operators differed. They were more focused on explaining that quality was good in general – and better than other firms they had previously been working for.
Quality goals 2012
When talking about the quality goals for 2012, most of the employees had a good understanding of these, but not all the informants could refer to the goals there and then. A good understanding here refers to the fact that almost all of the informants knew what was expected of them and where to find information about what was expected. However, the “Quality Policy” was less frequently reported to be known or known where to be found by our informants.

Quality Culture
Regarding the quality culture, once again there were a lot of similar answers. "Doing your best" comes back as an important characteristic of a good quality culture, and at the same time, “care about what you do”. One informant mentions documentation and procedures as part of the culture. Another mentions common practice – “doing the same things”. In general, our informants shared the understanding that it presently was a good culture for quality, even though there was some deviance – exemplified by someone claiming shortcuts were sometimes used. Everybody reported noticing increased focus on quality the last year.

An interesting notion is the operators claiming almost having a shock when they started working for Aker Subsea because the focus on quality and quality culture was so much stronger than the last place of work.

Challenges and possible solutions
The analysis of this report will focus on what we consider to be the most important challenges and possible implementations extracted from the interviews. Here it is important to stress that all the challenges and solutions reported below are the product of our informants. To make these thoughts and suggestions as clear as possible, we have combined both challenges and solutions into five main themes, which are: Culture, communication, workforce, time and systems and procedures.

Culture
Challenges:

1. One informant mentions a lack of final documentation, and insists on this being a problem both in Texas and Brazil and in the UK and Aberdeen.

2. Problems have been noted referring to employees forgetting to sign for their work and sometimes even deliberately fail to do so either because they do not see the importance of signing, or due to time pressure takes shortcuts.

3. There are reports regarding problems with the understanding of what is going to happen in the following stages in the process/value chain concerning projects and production.
Solutions:

1. From a designer: Let us join the whole course of the projects. Instead of just drawing, let us get feedback from the work shop, so we know what works and what does not.
2. We need to substantiate and explain why it is important to follow rules and routines. Why do we want to follow them, and what do we gain from following them? Instead of going around putting out fires, we need to get it right the first time and explain what is happening.
3. There has to be a focus in management to communicate quality, they have to signal the raised focus on quality through process and content, and pass information on to the rest of the organisation. Management has to be even more visible than they are now. They should set long-term goals like “we’re going to be x good with quality in 2020”. These goals should be somewhat vague, but still doable.
4. Look at the newest and best projects and learn from what has been done here, like Åsgard. Also many of the informants mentioned that the work done on creating a good HSE-culture had showed good effects, and that doing something similar regarding quality might be fruitful.
5. Having a quality day, where everyone is included. Could help raise awareness about quality and quality issues.

Communication

Challenges:

1. In a meeting between employees from India, Sweden and Norway communication can suffer. If one or several of the involved in addition has a hard time speaking English then we really have problems, and there will be uncertainty regarding what is really being communicated. Indians interpret words and sentences differently from Norwegians.
2. Several of our Norwegian informants in these interviews mention India as a challenge. Engineers in Norway claiming people in Pune being late with their tasks while the people in Pune claiming they were waiting for someone else to produce or accomplish something before they could continue on with their work. A transfer of responsibility between cultures and locations, as well as communication-issues between different nations even while speaking English.
3. The communication links between departments are not as clean-cut as they are made out to be. Our informants on the operator side clearly stated problems being heard when trying to communicate with engineers through their superiors. It has also been mentioned that communication between the different stages of a project are lacking or random. One informant stated that some engineers involve the employees in testing at an early stage - others do not involve them at all.
4. One informant talks about formulations and orders through subcontractors being too “rounded” – alas not concrete enough.

Solutions:
1. Employees could attend courses in communication. This could help understand communication better. You can learn a lot. It is vital with common understanding, and quality is an important within a communication context.
2. Having representatives from Subsea at subcontractors is a great way of checking if quality is where it should be without having to travel there now and then, and this would improve the communication by the representative being a “bridge” between Aker Subsea and the subcontractor.

Workforce
Challenges:
1. Several informants point out the fact that many well performing engineers often “disappear” up into the system. That is, too many engineers climb the career ladder within Aker Subsea and end up doing personnel work rather than engineer work.
2. Many new employees into the organisation results in a lost focus for the more experienced employees on their original tasks, they are held too busy with helping the new employees.

Solutions:
1. Make it more attractive and possible for an engineer to keep working as an engineer without too much responsibility for other personnel.
2. When talking about learning, we should also follow up both new employees and old ones regarding myPerformance and SAP-training. Split the courses with 50% new employees and 50% old, and get a dialogue going about what’s happening system-wise.
3. Within an organisation with a focus on a quality culture, we should focus on understand what quality is, talk about it, measure it and save money while enhancing quality. Here we should give more people mandate to make decisions where it counts – let more people make decisions and distribute ownership. A shared “we” lifting quality.
4. It is vital to get more training in Lessons learned – but we also want this to be followed up by more training along the way. At the same time, it is important that every employee receives training regarding quality. The Subsea Quality policy, standards and procedures needs to be further implemented. This means that our employees needs to understand our quality focus, understand our values and communication.
5. Regarding training, we need more than just e-learning. Meetings where we discuss for instance quality, like the group interview we were exposed to during now is a good example of something that can raise quality awareness.
**Time**

**Challenges:**
1. Some informants point out that when it gets hectic, they all naturally start to focus on their own tasks, and others needing input from them, or them needing input from others just is not possible any more. This is not something that happens consciously, it is just a product of time-issues.
2. Some informants mention the fact that because of a lack of time, the reviewing of quality measurements and quality issues can be neglected or postponed.

**Solutions:**
1. One informant suggested that quality could be put at the top of the agenda in meetings. In this way Aker Subsea will secure that quality is not neglected.

**Systems and Procedures**

**Challenges:**
1. We have a lot of procedures, and not everyone uses these because of the complexity of them or because they seem unnecessary.
2. Sometimes it seems easier to make new procedures rather than looking for the old one. Many procedures aren’t working today because they are out-dated. One informant calls them “pre-SAP routines”. You can’t do your job efficiently with the out-dated routines, even though you are supposed to – and drilled to follow routines within the Aker Subsea system.
3. Some questions the relationship between Aker Subsea and their subcontractors. They wonder if Aker Subsea should be more up front and require more, that is - explain and demand consequences if deliveries are not good enough or too late.
4. Lessons Learned comes back as a source of frustration. It is not implemented well enough, not used enough and not enough people understand how it works and how to use it efficiently.

**Solutions:**
1. We need people exclusively managing Lessons Learned, and they have to have a responsibility regarding knowing what’s in the database and keeping it tidy and searchable.
2. We should have a separate day where the administration could run Lessons Learned talks and contribute with each other to make the database better.
3. We should produce input to Lessons Learned while doing a project to be sure problems we run into don’t happen again. Lessons Learned should also be implemented on lower levels of the organisation. Everyone should use it. Also, we have to implement Lessons Learned before the project starts as well as accept that it is too late to start checking Lessons Learned in the middle of a project or worse, at the very end.
4. We need to get our parts delivered quicker from subcontractors. Some parts have a long delivery time – and if we don’t get them in time, the whole project will be delayed.
Discussion

Culture

Concerning the culture in Aker Subsea we have made several interesting discoveries on its present state and how to achieve a desirable culture for quality in the future. Culture is here highly linked to creating a collective mindset which is shared by all employees.

One important notion is the existence of an unfortunate organisational culture, where some employees seem to either forget to sign for their work or even worse, deliberately fail to do so. The fact that such unfortunate actions are present can be seen in light of sensemaking. Weick (1995) points out that the employees in an organisation will have different mindsets dependent on where in the organisation they belong. Further, these varieties of mindsets result in different goals, which in turn affect the understanding of quality and quality issues. In context, this means that Aker Subsea’s management might have a mindset focusing on strategic and long-term thinking concerning quality, whereas employees further down in the system who work under the pressure of time and delivery, have their minds set on more practical and local tasks and deadlines. A problem may then occur when the logic of top-management is defined by rules, tools and procedures, which the subordinated employees understand in a different way than what was intended by the management. For instance, this can be how the Aker Subsea’s management want their employees to use Lessons Learned more frequently. Management expect that a more frequent utilisation of Lessons Learned will help keep the quality on a desirable level, however, designers who’s goals are not aligned with those of the management’s, do not make sense of the utilisation of Lessons Learned in the same way that management do. Designers and other employees may then only consider Lessons Learned as a diversion from their more important tasks and therefore also more or less time consuming. In other words: what is important for management is not necessarily what employees further down in the system consider to be important. Employees failing to sign for their work cause a lack of control concerning who are responsible for the occurrence of potential problems. If Aker Subsea had a more complete overview of who completed each task it would be easier to give feedback to employees, thus preventing the employees of doing the same mistake over again.

One informant also mentions a lack of final documentation, and insists on this being a problem both in Texas and Brazil and in the UK and Aberdeen. The fact that this seems to be a problem on both sides of the Atlantic Ocean, may indicate that quality issues concerning this unfortunate organisational culture problem is not something connected to national cultures, rather it must be considered as a part of the existing organisational culture in Aker Subsea. An unfortunate culture where employees fail to follow rules, procedures or guidelines will naturally have consequences for quality. One informant states that Aker Subsea needs to substantiate and explain why it is important to follow rules and routines. Management should therefore focus on explaining why they wish these rules and routines are followed, and what Aker Subsea can gain if they are followed. This could potentially help align the management’s mindset with the mindsets of their employees, which in turn might contribute to a desirable state of quality and quality culture.
Several of our informants stated that clear communication from top-management could benefit the understanding of quality issues and help create a unison regarding quality in the organisation. In many ways the management in Aker Subsea has already started doing this by implementing the KPI-barometer and through myPerformance. It is important that these systems are well implemented all the way down through the organisation, so that the goals are aligned both vertically and horizontally in Aker Subsea. This effort might reflect a direction for Subsea in how to create a “quality mindset” which enables people to respond with fewer errors. This could increase the chances of reaching a desirable quality culture in the organisation.

Numerous informants reported that some quality issues arise due to a lack of understanding of what is going to happen in the next stage of a project, what the needed requirements for following tasks are, and how other departments function and base their work on. One informant states specifically that there has to be a greater understanding of quality and a feeling of responsibility for the organisation as a whole. In TQM quality is seen as every employee’s responsibility, and achieving a more holistic sense of responsibility among the employees will in this connection help improve the overall quality. Another informant mentions the importance of a sense of responsibility regarding internal “hand-overs”. A deeper understanding of how other departments and functions in Aker Subsea work, their connection and the challenges they create for one another, could possibly lead to a greater sense of responsibility. In turn, this can help create a more collective mindset by expanding the frames in which they make sense of the events they come across. Knowledge is embodied in the individuals, and is therefore history dependent and context sensitive. Knowledge can be seen as consisting of both explicit aspects such as language and documentation, and tacit knowledge such as skills and experience. To achieve a shared quality culture and mindset in Aker Subsea it becomes suitable to stress the importance of interacting and sharing explicit and tacit knowledge with others. This can be considered as an effort to improve the individual’s capacity to both define situations and challenges. Naturally, one can assume that by sharing knowledge and experiences a mutual quality culture and a holistic concern for quality can arise. One of our informants clearly points out that he wishes to see the bigger picture, not just sit at his desk and draw. With this in mind one can see importance of bringing people together and create space, in accordance to OKCT, where they can interact and align themselves with each other.

Nearly all the informants mention the successfulness of the work done regarding HSE and how well it has been implemented. Many of them suggest doing something similar regarding quality as well. In light of Martin’s (2002) statement on how culture manifests itself, one can see the importance of putting quality on the agenda, talking about quality in various situations, i.e. meetings, and develop artefacts that visualise the quality focus. Artefacts similar to the HSE posters that are found in every room can be created concerning quality as well, quality can be put at the top of the meeting agenda and one can get employees to talk about quality and challenges. One informant suggests that Aker Subsea could arrange for a “quality day”, where one could generate attention on quality in the employees through devoting an entire day to quality. In exam-
ple, one can have seminars exploring Lessons Learned or groups working on cases concerning quality and so on.

The idea is that the above mentioned actions in turn can lead to a beneficial quality culture. Many of these actions have already been carried out by management, and we support the work done so far to raise awareness to quality, and we believe that this can lead to results comparable with the results gained by the work done on HSE. Also the focus on quality we have observed in the Åsgard project can be used for comparison. Here there is a distinct focus on quality that seems to express itself through the employees working on this project – in that sense the implementation of the quality focus in this project can be seen as something more or less successful, thus making it a suitable item for comparison as to how a desired quality focus can be implemented throughout the entire organisation.

However, when trying to create a beneficial and unified organisational culture in a global organisation like Aker Subsea, one have to be aware of the fact that national cultures can create challenges. Believing that Aker Subsea’s office in Brazil can be run in the same fashion as the offices at Fornebu or Tranby can be troublesome. The national cultures existing in the different countries that Aker Subsea has offices in, will in one way or another affect the organisational culture in each office. A challenge for Aker Subsea is thus trying to create a collective mindset comprising many different cultural and professional identities around the world at the same time.

The fact that Aker Subsea is continuously hiring a substantial number of new employees each month both in Norway and globally can be a source for challenges concerning quality culture and the creation of a quality mindset. As a new employee it could take a considerably amount of time before he or she may consider the organisational culture as their own. It is therefore important to integrate the new employees properly and thoroughly when they enter the organisation. Aker Subsea should thus try to implement the quality focus into the mindsets of the new employees as soon as possible, so that they learn both how to interpret and express themselves in the organisation’s own vernacular. The individuals act not only on behalf of the organisation in the usual agency sense, but also as the organisation when he or she embodies the value, belief, and goals of the collectivity. Both old and new employees need values, priorities, and clarity about preferences to help them be clearer about which quality issues and consequences matter and how important they are. Clarity on values exemplifies what is important in previous experiences, which finally gives some sense to what these previous experiences mean (Weick, 1995). This could especially help new employees to better understand the complexity they will face when entering the organisation and the importance of quality in Aker Subsea, thus helping the new employees create a quality mindset which is aligned with that of the management’s. Weick & Roberts (1993) argues that if the organisation is more observant towards the learning processes and give the newcomers more time, they might learn the style of responding and incorporate it into their definition of who they are in the system. Hence, we put forward a recommendation to place great emphasis on quality in the training and introduction that new employees take part in – “In Aker Subsea we talk about quality!”
Communication

As already mentioned in the theory chapter, communication is both the key and a challenge. Communication can be seen in connection with culture, especially the basic assumptions shared within a culture.

As seen in the analysis, we registered several challenges and possible solutions concerning communication. Here, Aker Subsea could be more forward and consistent when negotiating and doing business with their subcontractors, in addition to clearly specify what is needed and what consequences are if the needs are not met. At the same time, Aker Subsea can work on being more specific and on-point when it comes to creating contracts with subcontractors. Contracts with possibilities for assumption should be reviewed and rewritten. One informant also mentioned having Aker Subsea representatives stationed at subcontractors to constantly follow their work to establish a bridgehead for further communication, and make an effort to spread Aker Subsea’s culture to their subcontractors to ensure a common understanding about communication and in turn – culture.

When addressing issues with workers from other nationalities than Norway, we come to the core of the cultural filter model. There has to be a better understanding of different cultures and interpretations when communicating. Being aware of these issues and addressing them are important to prevent confusion. Doing further research on how much context is needed for different participants within communication could be important. In connection to this, we found several concerns regarding communication with India, a country where English is an established language but the pronunciation and cultural understanding could be a challenge. In these situations, once again, each communicator has to be aware of the cultural filter they apply. It is also vitally important to ask, for instance: “Do I understand you correctly when you say that…” This can prevent confusion, even though it could be time consuming. Aker Subsea could also work on finding employees especially fit for understanding several cultures at once. They could act in the same way as some Aker Subsea employees are stationed at subcontractors, but instead of checking the quality of the subcontracted product, they work with establishing shared meaning between the communicating agents.

It is important to note that sadly there is no quick solution to an intracultural communication challenge, but it can be addressed through training and a shared understanding – a culture – for being aware of different cultures. Working on the pattern of basic assumptions shared by everyone in Aker Subsea is important to create a shared quality culture in Aker Subsea.

Connected to the previous notion on India, one informant presented a hypothetical but known case where someone in Norway would claim someone in India was not doing their job, while the person in India claimed they were waiting for someone else to approve what they were currently working on, or to add something to it. This can again be traced to understanding and working on a shared culture and apply the cultural filter, or better yet, reverse the filter knowledge. Be proactive and aware of the fact that the person you are communicating with interprets your messages through his cultural filter. Knowing this will make it easier for the participants to
understand thoughts and responses. For instance, knowing that in Brazil, 12:00 often mean 12:30, could simplify the communication, and is a vital part of sharing basic assumptions within a culture.

Some informants say that information between departments and people in different stages within a project are lacking or random. This can be the communication between designing and testing or between the shop floor operator and engineers. Somewhere there seems to be a complete lack of interaction and other places the communication seems to be random. If there is none or random communication between departments and locations the employees will never learn from each other and it will be harder to improve if you can’t really be sure what causes problems for others. One could therefore say that some existing issues concerning communication internally in Aker Subsea may affect quality by not being present or being random. Once again, communication – or the lack of communication presents itself as an issue, an issue Aker Subsea have to take seriously. This proves that also intracultural communication could be a focus point for Aker Solutions. Here we can draw on a principle from lean, stating that communication has to flow directly from top to bottom without obstructions. Simple, vertical communication is key in lean, and is something Aker Subsea should investigate as a goal for the future.

Intracultural communication issues like the one stated above can also affect and shed light on the different subcultures in Aker Subsea and how they do, or do not communicate. The best example here is information from one informant saying it is challenging to be heard and to communicate with engineers when you are an operator. This illustrates both cultural differences, but also intracultural organisation communication. Added to this is the knowledge we draw from another informant, stating that it often seems that information created high up in the system does not travel all the way down. This can again be tied to the fact that all the engineers we interviewed seem to have a good understanding of quality as a concept, while the operators we interviewed only stated that quality was good – rather than explaining what it was or how it was perceived as good.

The project group suggests that when it comes to learning programs for the new employees, they could be told that: “In Aker Subsea, we talk about quality”. This could be a great introduction to the focus on quality, something that Aker Subsea is serious about. This can be seen in connection with the statements from our group informants claiming that the interviews they participated in catalysed a quality mentality. Communicating the importance of quality in various settings is a vital factor when trying to achieve a common sense of quality culture.

Lastly, what we believe to be of great importance to Aker Subsea is the suggestion we got from one informant about creating a “general communications course”. This is a valid contribution to every communication issue in Aker Subsea, and a suggestion and solution that could increase awareness on all the communication problems listed, both intra- and intercultural, as well as ensure even higher quality throughout the organisation while focusing on communication. Considering Schein’s (1990) definition of culture, it is important to have a that pattern of basic assumptions secured when working in an organisation focusing on a shared culture for quality.
Communication and language can be both an obstacle, but also an enabler for further cooperation both internally in Aker Subsea but also with their subcontractors.

**Workforce**

When talking about workforce, we refer to challenges regarding the employees of Aker Subsea. Examples can be experience, learning and empowerment.

One informant claimed to have several good ideas for possible ways of dealing with a number of problems; however he said that he did not have the mandate to implement any of these ideas, communicating a lack of empowerment. Empowering the employees could result in a greater ownership to both product and processes, which may lead to greater quality. Empowerment could also have additional effects like an increase in innovation and knowledge creation within Aker Subsea. Empowerment and partnerships are the foundation on which TQM and its related principles, concepts and techniques are built on. More and more traditional management activities must gradually be delegated to ordinary employees together with the necessary authority capability (education and training) to plan, check and improve these activities (eliminate waste) to benefit of themselves and the company. The employees must be given both the freedom to plan and to decide, and the capability to take this responsibility.

In addition to empowerment and mandate, several informants have pointed out the importance of individuals that has worked at Aker Subsea for a longer period of time share their experience and knowledge with new employees. The informants claim that one could follow up both new employees and old ones regarding myPerformance and SAP-training, and get a dialogue going on what is happening system-wise. This can develop synergy on both parts and can be an advantage for Aker Subsea. To do this in the most suitable way is to create sustainable systems and procedures, such as Lesson Learned or some form of seminars where the “old” and “new” come together.

Some informants mention issues with subcontractors, both concerning delivery time and a lack of satisfaction with the overall cooperation. One solution to this might be to have representatives from Aker Subsea located at subcontractors. Of course, it is unrealistic to be represented at every subcontractor, however being represented at the most important of them could potentially lead to several benefits. For instance the possible improvements in communication mentioned earlier in the communication discussion. This could again be connected to the idea of reducing the number of subcontractors Aker Subsea currently is working with. Having a smaller number of subcontractors could help keep a sense of control and it could also improve the overall cooperation between Aker Subsea and subcontractors, thus possibly improve the quality. Having representatives from Aker Subsea present at subcontractors would reduce the need for time consuming travel, and the freed up time could be spent doing other important tasks. Reducing the number of subcontractors can limit quality errors because you get a better overview and knowledge over where all the parts the company use is coming from, as well as limit the exponential error rate which is a key element in Six sigma.
Several informants point out the fact that many well performing engineers often “disappear” up into the system. That is, too many engineers climb the career ladder within Aker Subsea and end up doing personnel work rather than engineer work. With many new employees coming in to the organisation combined with the fact that a number of experienced employees are “lost to the system” may cause quality issues connected to utilising and transferring knowledge and experience. Obviously there is a need for people performing personnel work, and in many cases it is necessary that they have knowledge and experience regarding the work that their subordinates perform. However, to help keep employees and to keep knowledge processes at a desirable level, Aker Subsea would benefit from paying extra attention to alternative internal career paths. One version of this type of career path already exists in Aker Subsea, namely the “technical” one, however, our informants seem to still consider this not to be enough. If all employees find something desirable among the career paths offered by Aker Subsea, the turnover rate might be reduced, which in turn will help retain knowledge and experience. Also, keeping experienced and well performing employees in close contact with new and inexperienced employees will help create a good environment for knowledge transfer and creation, which naturally could have possible effects on quality.

For Aker Subsea, our informants report back that many challenges revolve around the relationship between newcomers and experts, and the effects of socialization and experience. This is a important relationship, because it would make sense that the inexperienced will start asking questions regarding how to act and talk in a group or department. When the experienced try to answer these questions, they might be exposed to a form of resocialization where they have to remind themselves of things they might have forgotten (Weick & Roberts, 1993). At the same time the newcomers need to receive extensive training before they start working, not five weeks after they have started working. They also need to be taught more than just what is going on with their role in the firm – they need to see the bigger picture. The challenge of achieving a single quality mindset in Aker Subsea is not the result of uncertainty or ignorance, but ambiguity and confusion. A finding in our interviews is that newcomers find themselves thrown into on-going situations and have to make do with only the current e-learning system to make sense of what is happening. The feeling of order and clarity is important to them, and an increased focus on training and integrating the new employees can help decrease ambiguity and uncertainty. The employees in Aker Subsea need to understand the importance of quality, something that can be difficult when exposed to only e-learning when entering the organisation. Several of the groups we interviewed stated that a group discussion about quality contributed to an increased focus on the subject of quality. By coming from several departments and professions, they claimed to experience a broader understanding of how tasks and departments are connected. Both the informants and the authors of this report suspect that efforts like this can raise quality awareness.
Time

Time is a phenomenon that Aker Subsea, like every other organisation, is in short of. Time and challenges connected to time can be hard to do something about, however time should still be regarded as an item for discussion. We have assembled and discussed some problems and solutions regarding time.

Some informants state that when it gets hectic, people start to focus on their own tasks, when at the same time other may need input on their work or other cooperating actions may be needed. This causes a lack of sharing concerning knowledge and experiences, which in turn may result in subpar quality. It has been said that this is not something that happens consciously, but they see it as a product of time-issues.

When connected to theory about OKCT, we can trace the removal of ba to this problem. When time becomes an issue and delivery becomes the focus point, the exchange of information and knowledge stop being a focus point. Middle management will here be an important factor for the recreation of ba. Middle managements job will then be to ensure that communication and knowledge is flowing, even though this can be a challenging task, torn between sharing knowledge and delivery on time. To do both might not be possible, but is still vital for Aker Subsea in the long run.

Added to the time issues is a comment from two informants about the review of quality measurements being both neglected and postponed due to a lack of time. It is clear that the priority for many of Aker Subsea's employees and departments is delivering on time. Hence, their time is spent more on contributing to delivery rather than expressing what happens when they are not able to deliver on time, or deliver something with a quality that is less than what their customers wanted.

A solution from one informant is to have quality put on top of the agenda in meetings, similar to how HSE has been a focus point in meetings. In doing this and having a clear quality agenda, the informant suggested that it would be harder to neglect quality as a topic, and that quality could achieve the same focus as HSE has previously had for Aker Subsea.

A last solution on time issues comes from operators claiming that long lead items need to be delivered quicker. When one or several parts of a construction are delayed, the whole project can be delayed. The informants mentioned that they sometimes have to wait for months on parts, which result in many half finished construction being put on hold. An essential principle of lean is that the production shall run as smoothly as possible, with no “waste”. The fact that production is set on hold because one have to wait on parts it a clear breach of this principle. This is all about planning and planning ahead. Aker Subsea could investigate their routines on the delivery of long lead items to prevent expensive quality breaches caused by late deliveries. When something is delayed, it does not cater to the wishes and requirements set by Aker Subsea’s customers, which can be considered as poor quality based on the definitions of quality this project is based on.
Systems and procedures

Systems and procedures will here be discussed, where lessons learned is an important focus point, as well as the state of other systems and procedures.

Findings show that Lessons Learned comes back as a source of frustration for many of our informants. There are several conditions pointed out. The lack of implementation, usability, understanding, and how Lessons Learned can be an efficient system. Lessons Learned has a great potential to be an excellent tool for managing and transferring knowledge within Aker Subsea, even though there are challenges reported regarding the system. Lessons Learned can be considered to be a cyber ba (space) according to the organisational knowledge creation theory by Nonaka et al. (2006). Lessons Learned can be treated as a virtual space for knowledge creation and sharing within Aker Solutions. To maintain Aker Subsea’s knowledge system requires an infrastructure that includes information systems, archives and different procedures. This is prerequisite for the organisations innovation. However, as many of the informants have mentioned, the system presently seems to be too complicated and randomly utilised.

Informants have stressed that one have to be quicker to document errors that have occurred in a project while the project is still running, not after it is done. This can be an advantage for other members at Aker Subsea, if implemented properly. This aspect can be traced back to the importance of knowledge conversion, where organisational knowledge creation is the process of making available and amplifying knowledge created by individuals as well as connecting it with the organisation’s knowledge system.

One informant suggested having several employees exclusively managing Lessons Learned. These employees would then be responsible for maintaining an overview of its content and new contributions, making sure relevant information reaches the employees it may concern and helping to implement the system thoroughly in the organisation. Making Lessons Learned easier to utilise, improving the system and getting the entire organisation to participate could contribute to the learning processes in Aker Subsea, thus also improving the overall quality. Having at least one employee working full time with Lessons Learned in each project can be traced back to the notion of documenting input in to Lessons Learned during projects not after they are finished. These employees could be responsible for securing documentation both from the projects in to the system, and out from the system to the projects. They should also have to cross-communicate between projects to ensure that a quality problem in one project would not be reproduced in another project.

In addition to the above-mentioned statements, informants has come up with a proposal where some suggest that Aker Subsea could have a separate day where the management could run Lessons Learned meetings/seminars and cooperate with the employees to make the database better.

Another consideration is the fact that both top and middle-management could use different types of ba, or shared space, more consequently. One important aspect of OKCT is the importance of middle-management and the fact that they have to enable space for knowledge conversion and transfer. This, of course, has to be done on a day to day basis, but also the
proposed “Lessons Learned day”, where quality is on the agenda, can be considered to be a ba
where the employees can interact and share knowledge. Management is here all about enabling
knowledge creation – not directing and controlling it - and it is of great significance that both top
and middle management in Aker Subsea is consequent on this matter.

Some informants claims that some of the procedures and routines presently existing in
Aker Subsea are “pre-SAP”, this means that they are out-dated an unnecessary. The only advice
here is to perform a review and an evaluation of the existing routines and procedures.

In addition to this discussion spanning across the five categories, we would like to condense
them into three possible explanations for Aker Subsea’s quality challenges, named “stream and
river”, “time” and the “making sense of culture” explanation.

**Further discussion**

“Streams and river”

Could Aker Subsea’s challenge be that problems shift between processes, management and
subgroups? Why is the quality not almost perfect if only one or two minor problems are reported
in each subgroup? The problem could be that each of the subgroups thinks that only their minor
problems are unproblematic. What happens then is the fact that many “streams of problems”
result in one large “river of quality issues”. For each event happening, there is another unforeseen
event happening as well – something that can be linked to the original Six Sigma-theory de-
scribed earlier. What about implementing some sort of zero-error policy or goal for Aker Subsea.
Accept no garbage in the tiny streams, thus cleaning the river.

“Time”

Employees and management in Aker Subsea has the competence and willpower to work with
quality, but might not have the time and possibility to efficiently learn and develop ways of coping
with quality issues. We can draw heavily on Lessons Learned here, and the fact that during our
interviews, we saw a lot of hesitation and critique of the system – a system that on paper looks
like a fool proof system for preventing the same errors from happening again. The organisation
is brimming with great suggestions regarding quality improvement and measurements regarding
quality and quality work. What Aker Subsea can do to improve the utilisation of Lessons Learned
is to focus on training and development connected to this system. However, they have to un-
derstand that even though they might have both the tools, the willpower and desire to improve
quality, there might be long term time issues, like time, preventing Aker Subsea from instantly
performing a “qualitative leap”.

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-25-
“Making sense of culture”

Is Lessons Learned making sense for every user of the system in Aker Subsea? What can seem to be the same term means different things for different persons (Weick, 1995).

This explanation on quality issues can be exemplified with a finding from our interviews. When our informants were asked about quality in general, the engineers answered something like “delivering on time, on cost, and with sufficient strength” for instance. The only ones not answering like this were our informants working as operators. They answered that quality was “good”, rather than describing how it was good – or what it was besides good. Their answers projected a different understanding than what we were asking for – and a difference in understanding the concept of quality. There seemed to be a cultural difference in understanding quality, but at the same time there could be less communication about what quality is in the manufacturing plant compared to the design- and engineering-section of Aker Subsea. To explain, one could draw upon Bourdieu (1995) on how different social classes describe art and music. While it is true that both the working class and the aristocrats can identify great art or music, when asked to describe why something is great, the working class will more often just claim that it is good rather than focus on contexts such as time period, brushwork, colour, composition, instrument composition and similar methods of analysis (Bourdieu, 1995). In short, the same piece of art or music means different things although it is, in essence, the same.
Conclusion

In this report, we have identified five key categories where we have inserted important challenges and possible implementations from our informants. We have extrapolated several interesting findings which are the following:

Regarding culture, the most important for Aker Subsea is to continue developing quality and cultural awareness as they have succeeded with their HSE-implementation. They also have to focus on their new employees even more, and ensure their understanding of the whole Aker Subsea system as well as the shared responsibility for quality and quality culture. At the same time, management should be clear on how things should be done – and why. A common understanding between management and employees on why things are done a certain way, will contribute to a beneficial quality culture.

When it comes to communication, Aker Subsea would benefit from an increased focus on training their employees in communication. Also, both the quality and quality culture in Aker Subsea will be positively affected by increased communication and cooperation between departments.

Workforce can be summed up by shedding light on the need for more empowerment among the employees and sensemaking concerning following rules and learning. Feedback on how new employees could benefit by learning from more experienced employees was suggested, and try to work together on establishing a shared culture within every employee. This could also be implemented in subcontractors by having representatives from Aker Subsea stationed at the most important subcontractors.

Time is always limited, but the suggestion about putting quality on top of the agenda and first in every meeting could contribute to a better awareness of quality through creating a quality culture, and at the same time ensure that time does not interfere with reviewing quality readings and measurements. At the same time, middle management needs to ensure learning even when time is limited and everyone is focusing on their own work.

Systems and procedures is the last of the main points, and focuses on using and contributing to Lessons Learned. Having a dedicated team to manage the system could benefit the whole organisation, by securing that Lessons Learned is utilised, thus also securing a continuous sharing of knowledge and experience.

Aker Subsea has done a great job implementing their HSE initiative, and has started out great on their quality campaign. The system and the strategy are present; it is just a matter of being more effective in its usage and to create a shared responsibility for quality throughout the organisation. Implementations such as the KPI-barometer and the development of a Supplier Qualification System (SQiS) tell us that Aker Subsea is on the right track. The culture is nearly there, with seemingly everyone pulling for the same goal – having the best quality in the business. Aker Subsea should strive to achieve quality in every step.
References


Appendix

Appendix 1 - Cultural filter communication model

Appendix 2 - Interview guide

Interview guide

Introduction questions:
• What is your position?
• Within Subsea, what is your unit/product line/department?
• Who do you report to?
• And who reports to you?
• How long have you been working in Subsea?

Quality and Culture
• What comes to mind when I say quality?
• What is your perception of quality in Subsea?
• What comes to mind when I say quality culture?
• Are there any similarities within Subsea on how quality is perceived and practiced?
• How do you perceive the focus on quality in Subsea?
  ○ What kind of focus have you noticed?
  ○ Are you aware of your unit’s quality targets for 2012?
• Do you know of any training/courses regarding quality?
  ○ Have you taken any?
• Do you believe that Subsea has a culture for quality?
• How do you contribute to the quality culture?
• Are there any specific rules/guidelines that define how you should perform to achieve quality, and are these guidelines relevant?
  ○ Are you aware of Aker Solutions’ “Quality Policy”
• Do you think people follow these rules/guidelines?
  ○ What are the rules/guidelines that people most frequently fail to follow?
  ○ What do you think are the main reasons that people fail to follow rules/guidelines?
• Do you talk about quality in your department?
• Does your manager address quality issues?
• Do you often talk with your colleagues about quality?

Challenges and Communication
• In your point of view, what are the biggest challenges that Subsea face regarding quality?
• How do you communicate with your subordinates regarding quality?
• How do you receive information on quality issues that are related to your work?
  ○ What do you do with this information?
• Can you describe how the communication/information flows in a project?

Change
• What changes have you noticed regarding quality and work on quality the last years?
• Propositions – how Subsea can improve their quality?
  ○ What can you do to improve Subsea’s quality?
  ○ What changes do you think the organisation can do to help you improve the quality in Subsea?
• Employee’s opportunities to make a difference. When it comes to work on improving the quality, do you have the opportunity to participate?