MS Thesis
Environmental and Natural Resources

ISO 21500:
How project management standard can contribute to a consultancy firm in Iceland

Lára Kristín Kristinsdóttr

Eðvald Möller

June 2014

HÁSKÓLI ÍSLANDS

ISO 21500:

How project management standard can contribute to a consultancy firm in Iceland

Lára Kristín Kristinsdóttir

Final thesis for MS-degree in Environmental and Natural Resources

Eðvald Möller

Faculty of Business

School of Social Science at University of Iceland

June 2014

ISO 21500: How project management standard can benefit a
consultancy firm in Iceland.

This thesis is 30 ETC for a final project at MS in

Environmental and Natural Resources from the department of Business,
School of Social Science at University of Iceland.

Foreword

This research is a part of a final work towards a Master's degree in Environmental and Natural Resources from the faculty of Business Administration at the University of Iceland. The objective of the thesis is to examine how ISO 21500 standard can benefit a consultancy company in Iceland.

The reason why I decided to write about ISO 21500 was because of my interest in project management and businesses in regards to renewable energy in Iceland. I contacted several energy companies to see what was considered to be wanting in these industries today and the answer was ISO 21500. During the time of writing this thesis I have learned a great deal about project management and how it can be incorporated into organizations. This has led me to the point of getting an IPMA level D certification.

The supervisor for this research was Eðvald Möller, who is adjunct by the Business department of the University of Iceland. He knows that this would not have been possible without his help. There are also many others who I would like to sincerely thank though I may not be able to list everyone, but I want to name a few. I want to thank my friend Guðlaug Hermannsdóttir for reading over my thesis and giving me helpful comments and making my thesis flow even better. I also want to thank Kamil for his support and company during the writing of this thesis. Additionally, I want to thank the participants for their valuable time and for participating in my research and everyone at the consultancy company where my interviews were conducted. Next I would like to thank Miles Shepherd, Jouko Vaskimo and Óðinn Albertsson for all their valuable information and contribution to my thesis. Lastly, I want to thank my beautiful son for all his patients and love during the process of this thesis.

Abstract

The objective of the dissertation is to see how ISO 21500 can benefit a consultancy firm in Iceland that has already been certified for several ISO standards. To answer this question a qualitative research was conducted to see how employees from a certain company worked with processes in regards to the projects they were partaking in and what views they had concerning their environment and management. The aim was to see how the employees viewed processes like documentation, risk management and other important factors, what they thought could be improved and what they believed was an obstacle in achieving a more optimum way of working. This was done to understand how the situation was before applying ISO 21500 to the company and to see if there would be any benefits of incorporating the standard. The results show that the standard can benefit companies even though they have several other ISO certifications. One of the greatest benefits for this company was common process for all projects where employees and managers synchronize their work and minimize shortcomings. The second benefit was better management of communication and documentation where stable and stronger processes were needed. The third benefit was the possibility of increased solidarity where clearer boundaries and expectations were set in place for a better teamwork. The last benefit that will be mentioned, even though there are great many more, is quality. The standard gives the company the opportunity to evaluate the kinds of work procedures they want to incorporate and what kind of quality they would want their customers to receive.

Table of Contents

Table of Figures

Terms and Definitions

- ➤ Activity: identified component of work within a schedule that is required to be undertaken to complete a project.

- ➤ Application area: category of projects that generally have a common focus related to a product, customer or sector.

- ➤ Baseline: reference basis for comparison against which project performance is monitored and controlled.

- ➤ Change request: documentation that defines a proposed alteration to the project.

- ➤ Configuration management: application of procedures to control, correlate and maintain documentation, specifications and physical attributes.

- ➤ Control: comparison of actual performance with planned performance, analysing variances and taking appropriate corrective and preventive action as needed.

- ➤ Corrective action: direction and activity for modifying the performance of work to bring performance in line with the plan.

- ➤ Critical path: sequence of activities that determine the earliest possible completion date for the project of phase.

- ➤ Lag: attribute applied to a logical relationship to delay the start or end of an activity.

- ➤ Lead: attribute applied to a logical relationship to advance the start or end of an activity

- ➤ Prevention action: direction and activity for modifying the work, in order to avoid or reduce potential deviations in performance from the plan.

- ➤ Project life cycle: defined set of phases from the start to the end of the project.

- ➤ Risk register: record of identified risks, including results of analysis and planned responses.

- ➤ Stakeholder: person, group or organization that has interests in or can affect, be affected by, or perceive itself to be affected by, any aspect of the project.

- ➤ Tender: document in the form of an offer or statement of bid to supply a product, service or result, usually in response to an invitation or request.

- ➤ Work breakdown structure dictionary: document that describes each component in the work breakdown structure.

1 Introduction

In 2012 the International Standard Organization (ISO) created a new standard for project management. The standard was created to improve the quality of projects that are conducted within organizations and businesses all over the globe. It is considered that companies are more project-driven than before and with the pressure to improve and outperform on the marketplace, failed or successful projects can have the ultimate saying for a company. What ISO 21500 aims to achieve is a standardized language for project management – an international standard that is also applicable for more customized projects. It is a guideline for organizations so they can be more in control of their processes, have a better overview, and be used as a reference for the organization's code of working.

The thesis will strive to answer the question:

➢ How can ISO 21500 benefit a consultancy firm in Iceland

To do so the thesis explains first how project management has become so popular, what the role of ISO has been over the years, and why they have decided to make a project management standard. Next ISO 21500 will be explained in detail, including all the processes, concepts and subject groups, followed by a comparison of ISO 21500 to other standards. After that a brief summary of the consultancy company that was used for qualitative research will be made. The thesis will then describe the research methods used (literature data as well as qualitative research) and explain its validation and reliability. The results are then brought forward in seven subchapters followed by discussion about how the literature can complement the data found in the qualitative study. Finally, the thesis concludes with the findings of the study, observing its limitations and what might further be studied.

2 Background

Project management is becoming increasingly popular among organizations today since more organizations have become increasingly project orientated with every year. As a result, "One-fifth of the world's GDP, or more than $12 trillion, will be spent on projects each year in the decade 2010-2020" (Stellingwerf & Zandhuis, 2013). Involved in these projects are people working with complex processes and concepts that are often hard to understand. With the increased demand and pressure the International Standard Organization (ISO) decided to publish a project management standard to make those processes and concepts clearer and make it possible for organizations to work together on projects in different countries with better efficiency.

2.1 What is project management?

Project management, unlike other sectors like marketing, accounting or strategic analysis, has a limited history – that is to say, few historians have studied projects as a specific activity (Garel, 2012). The reason may be that projects have always been a part of organized human activity and it is often hard to distinguish between the creations of the artist and the trial and error of developing new projects. The history books are full of complex and unique projects that have been undertaken by hundreds of people with limited time and scope. Nevertheless, the problem for scholars in project management is that these contributions provide empirical data but are not oriented toward the specific analysis of project management and project organizing, therefore giving little or no knowledge of the process these projects went through. According to Söderlund and Lenfle (2011), the lack of historical knowledge raises several problems. The existing data is biased toward the US military and space projects and therefore little is known about influential projects from other parts of the world. The lack of history makes it difficult to understand the roots of project management and the evolution of current management practices. It is problematic because it is important that we understand how we have produced the communication, information, transportation, and defence system that structure our world and shape the way we live our lives (Hughes, 2011).

In the 1930s, project management became rationalized without creating a management model. There has also been some mentioning of projects in history but mostly in the analysis of techniques, engineering and in history of firms. Up until the

1950s, project management broke away from other forms of activity and became identified as a field of its own (Garel, 2012). In 1959, Paul Gaddis published an article on the project manager in the Harvard Business Review that is considered to be the oldest explicit reference to project management (Garel, 2012). It was the beginning of the field of project management that shifted away from engineers to other fields of work and in the 1960s developed from an individual experience and occasional successes to standardized era of rationalization. In the 1980s the need for more structure in the field arose since the literature covered variety of topics such as risk analysis, project leadership, investment planning, and human resources management. It was the time of the second generation of operational research devoted to computer applications and expert systems for project planning since most people had started to use computers in their daily work-life (Packendorff, 1995) Due to growing technology, project management had been in much demand because of the complexity of projects and organizations.

As a result, associations like Project Management Institution (PMI) and International Project Management Association (IPMA) became known for their standardization of project management and conducted certification programs for project managers. A wave of interest in project management brought upon different journals such as *Project Management Journal* and *International Journal of Project Management*, as well as meetings, conferences and events. But what revolutionized the industry was the Project Management Body of Knowledge (PMBOK®) that was born as an initiative by the Project Management Institute. The PMBOK® handbook was divided into eight headings: scope management, quality management, time management, cost management, risk management, human resources management, contract/procurement management, and communication management (PMI Standards Committee, 1987). This was the beginning of structural project management that could be standardized over different organizations in different countries.

Today, most project management literature (P. Morris & Hough, 1988; P. W. G. Morris, 2013; Packendorff, 1995; PMI Standards Committee, 1987) usually defines project as: a unique once-in-a-lifetime task, with a set date of delivery, subjected to one or several performance goals and consisting of number of complex and/or

interdependent activities. Project management is then to control all of these aspects and since the field has grown so extensively there becomes a fragmentation of what project management actually is all about. Project management covers a lot of ground since there are numerous theories that evolve around the subject, creating the need to master various combinations of discipline to become good at project management. Over the years, the emphasis of what project management is has shifted and according to Kolltveit, Karlsen, & Grønhaug (2007) there are six project perspectives. First of all, there is: the task perspective which focuses on the project that should be delivered within a budget and time and emphasizes project scope, targets, results, and planning and control. Then there is the leadership perspective which focuses on the human processes where the main issues involve leadership, communication, process, organizational change, and team organization. The third perspective is the system perspective, where the key issues are elements of systems, boundaries and dynamics. The next is the stakeholder perspective and how important the relationship is between the stakeholders and the project for the project to be successful. The forth perspective is the transaction cost perspective where the project can be considered an economic transaction, with a main focus on the transaction cost, production cost, and governance structure. The last perspective is the business perspective, where the focus is on the project investment and benefits. According to the ISO 21500 standard the main emphasis points for project managers are: integration, stakeholders, scope, resources, time cost, risk, quality, procurement, and communication. These points will be explained in more detail below.

2.2 The history of ISO

ISO was established in London in 1946 from the union of two organizations: ISA (International Federation of the National Standardizing Associations) and UNSCC (United Nations Standards Coordinating Committee) (Latimer, 1997). ISA was more of a European standard that was considered a "metric" organization, and therefore the UK and the US never participated in their work because they were more "inch" orientated. ISA was established in 1926 and run by Mr Huber-Ruf, a Swiss engineer who attempted to keep ISA going after the war broke out in 1939. However, after international communication ended, ISA was forced to close down. UNSCC, on the other hand, was

established by the United States, Great Britain and Canada after World War II in 1945 to bring the benefits of standardization for the work of reconstruction. UNSCC wanted to create a new global international standardizing body and wanted to join forces with ISA because of their experience and knowledge. In London from 14-26th of October 1946 twenty-five countries were represented by 65 delegates to establish the International Standard Organization: ISO.

Today, ISO is a non-governmental, independent organization made up of members from the national standards bodies of 164 countries ("Structure and governance," n.d.). ISO is located in Geneva, Switzerland where operations at the Central Secretariat are directed by the Secretary General. ISO has a General Assembly where the ultimate authority of the work of ISO takes place. There is also the ISO council that takes care of most governance issues and is made up of 20 member bodies, the ISO Officers and the Chairs of Policy Development Committees. These committees provide guidance and management of specific issues: CASCO provides guidance of conformity assessments, COPOLCO provides guidance of consumer issues, DEVCO provides guidance of matters related to developing countries, and Council Standing Committees advice on financial and strategic matters. All this would not run without members. There are three member categories where each enjoys different level of access and influence over the ISO system ("Structure and governance," n.d.). The full members influence ISO standards development while correspondent members observe the development of the ISO standard and strategy. A subscriber member can only keep up-to-date on ISO's work but cannot participate in it. When there is a need for a new standard a panel of experts within the ISO technical committee comes together to discuss and negotiate a draft standard. ISO does not decide when to develop a new standard but responds to consumers, stakeholders and businesses requests. When the draft has been developed it is shared with ISO members who comment and vote on it. If consensus is reached the ISO standard goes back to the technical committee for further editing ("Standards Development," n.d.). Currently, ISO has over 19.500 international standards covering almost all aspect of technology and business.

3 ISO 21500

ISO 21500 is a project management standard from the International Standard Organization (ISO) and its purpose is to provide guidance for organizations on concepts and processes of project management that can positively affect the performance of projects. This is not the first time ISO develops a project management standard because in 1997 the ISO 10006 was developed as *Quality Management Systems – Guidelines for Quality Management in Projects* (Gasik, 2012). Nevertheless, the standard never gained popularity equal to the ISO 9000 series nor other project management standards like PMBOK® Guide or Prince® 2. Even though there are several other organizations like International Project Management Association, Global Project Management Forum, Global Working Groups, and Operational Level Coordination Initiative, there is still the need for one universal standard in project management. The numbers of organizations involved in making project management guidelines only shows how increasingly important project management has become and underlines the need for an effective standard by the world's leading standardization organization: ISO.

In 2006, the British Standard Institute initiated the creation of ISO 21500 as the new project management standard for ISO. At the time ISO realized the demand for a new standard in project management so the preparation began by creating work item ISO/PC 236 (Gasik, 2012). To develop the standard, over one hundred experts in project management from 31 countries got involved to integrate the knowledge from reputable representatives in project management profession from all over the world. To co-ordinate the process was Miles Shepherd, Chair of the ISO project committee. ISO has over 190 members, of which not all are active, and about 40 delegations that are formally attached to the committee. This was considered quite the challenge according to Mr. Shepherd since there were countries that did not participate, like China and India, but also because it is hard to agree on one international standard when there are so many different opinions and cultural differences.

3.1 Why ISO 21500?

There is an increasing pressure for companies to improve and to outperform on the marketplace and with the hard competition companies seek different ways to get the ultimate edge to keep their businesses going. According to the Anderson Economic

Group study commissioned by the Project Management Institute, "over 24.4 million employees were participating in projects in 11 major economies in 2006. By 2016, this demand will exist to support 32.6 million employees in the same countries"(Elizabeth Gasiorowski Denis, 2012). One of the ways to improve a company is to take up an ISO standard that organizes and defines the structure of the business. It has been shown that companies that implement the ISO 9000 standard for example have the quality system that ensures that the company has the capability to provide quality goods and services to their customers (Douglas, Kirk, Brennan, & Ingram, 1999).

One of the reasons why the ISO 21500 standard was developed is because companies are constantly looking for answers to how some projects are successful while others are not. Projects within organizations has gained increasingly more attention within the past decade as Boltanski and Chiapello (1999) suggested that the "projective city" is an integral part of our modern capitalist ideology. What ISO 21500 wants to purposefully do is to make a standard that is both international but can also be applied to more customized projects. It is to best make practice for organizations to handle their projects so they can be more successful but also to make them more in control of their processes. To make that happen the ISO 21500 creates a project management standard for stakeholders in project environments so they can speak the same language and work together for the greater purpose of the project, thus improving communication. This is one of the fundamental reasons why projects fail and therefore ISO 21500 strives to become the key reference for future development in the profession of project management. Another reason why projects fail is because structured fundamental knowledge and good practices are not put into use. When organizations consistently apply fundamental project management and good practice approach they do not only show better project performance in terms of lower costs and shorter delivery times, but they also demonstrate higher levels of customer satisfaction (Stellingwerf & Zandhuis, 2013). The demand for ISO standards is far from diminishing and ISO 21500 can give organizations and companies from whatever size or industry the opportunity to build an effective structure for the possibility of further success and better deliverance of their projects.

4   The structure of ISO 21500

The content of ISO 21500 standard (2012) is grouped into 4 main chapters. The first chapter talks about the scope of the standard and explains who can benefit from using it. Furthermore, it provides a high-level description of concepts and processes that are considered a form of good practice in project management. The second chapter contains 16 terms and definitions that are not properly defined by the Oxford English Dictionary or in the standard list of ISO definitions (see Terms and Definition). The reason for a whole chapter of definitions is that it is considered important that everyone speaks the same language for the project to be successful. The third chapter is focused on project management concepts and shows how project management concepts relate to each other and describe the environment in which projects are performed. The fourth and last chapter is about the project management processes. The standard recommends that the processes are used for the whole project and/or individual phases. This chapter gives the project manager the opportunity to tailor the standard to his/her organization and use the appropriate processes that apply to each phase. The standard puts most of its focus on chapter three on project management concepts and chapter four on project management processes and the following chapters will go deeper into their meaning and explanations.

4.1   Project Management Concepts

This chapter in the standard describes the key concepts which play an important role during the execution of most projects and it also describes environments in which projects are performed. The key concepts are:

- Project;
- Project management;
- Project environment;
- Project governance;
- Stakeholders and project organization;
- Organizational strategy and projects;
- Projects and operations;
- Competence of project personnel;
- Project life cycle;
- Project constraints;
- Relationship between project management concepts and processes.
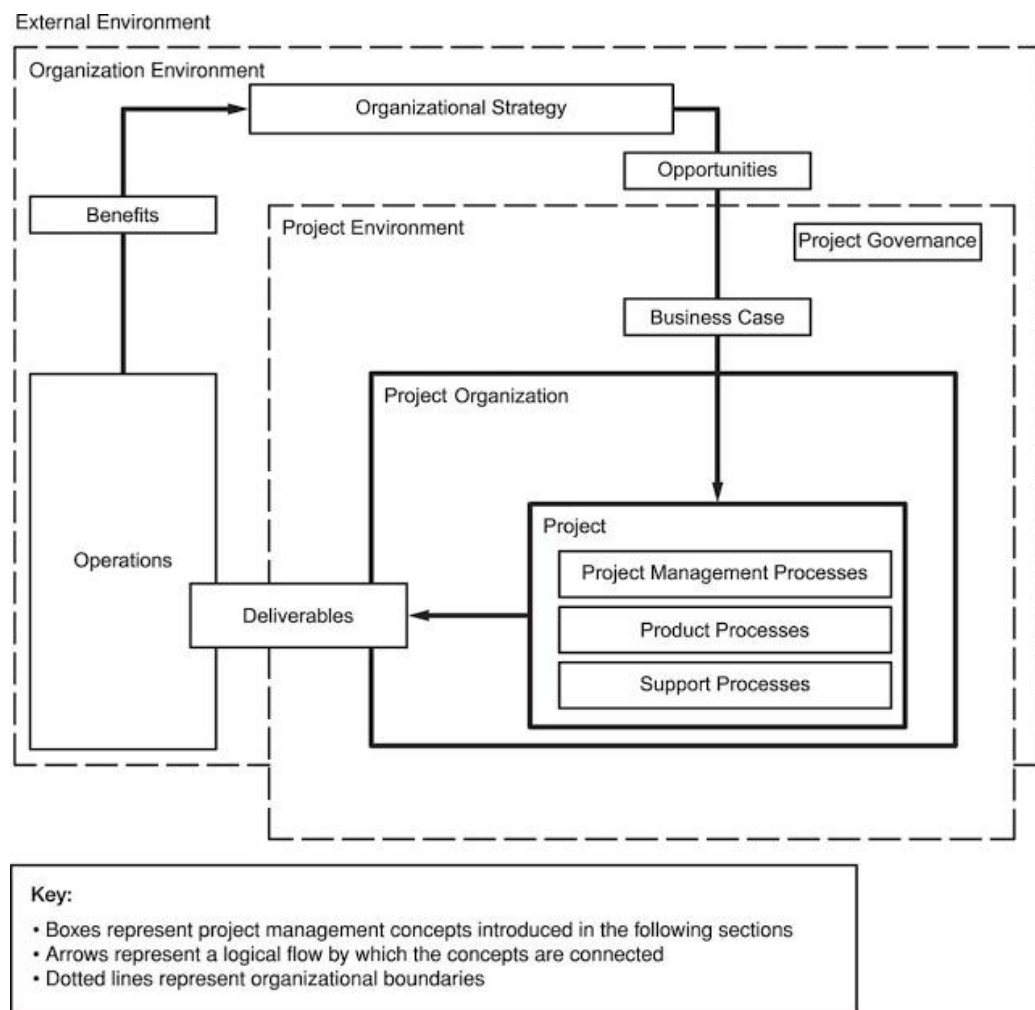
Figure 1 Project management concepts in organizations and other sponsor entities

To clearly understand Figure 1 it is good to break it down and look at each concept in relation to smaller sections of the image. A *Project* is the heart of project management; subsequently it is necessary to define what constitutes a project. By the business
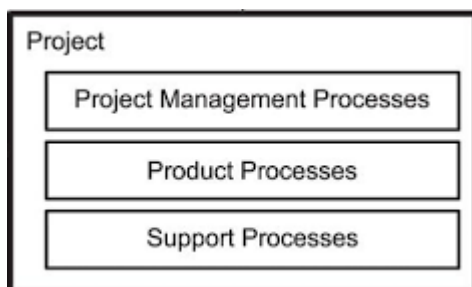
Figure 2 Concepts in regards to project

dictionary it is defined as "planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations." According to the standard, "project consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates." The standard also mentions that

although many projects may be similar, each project is unique since they are influenced by several factors. Therefore, the standard divides the project into three different processes. To manage the project the organization needs *Project management,* which is the application of methods, tools, techniques, and competencies to manage a project. Examples of project management methods would be: risk management, creation of scope, leadership techniques, and the ability to control changes. These are only a few examples of general project management but the standard dedicates a chapter to this subject to emphasize the importance of this section. It should be noted that the standard does not suggest which methods or tools to use; it only states what processes are needed. The project m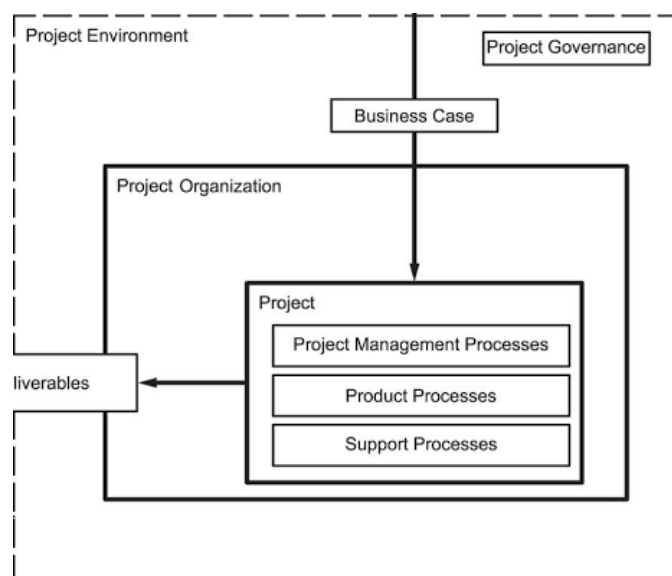anagement processes are viewed from two different perspectives: as process groups from the management perspective of a project or as subject groups from the perspective of a specific theme of the project management practice (which will be discussed in more detail below). The other two processes in a project are *Support processes*, which provide valuable support to product and project management processes in such disciplines as logistics, finance, accounting and safety, and *Product processes, which* relate to non-project management processes that concern the product, such as its development.

Project environment may impact project performance and success. All projects operate within a specific environment and there are outside forces that come into play when managing projects. These outside factors include cultural and social environment where language and customs can affect the project. International and political environment also plays a significant role in how projects evolve; so does physical environment since team members might be located in different

Figure 3 Concepts in regards to project environment

countries and time zones and communication can become an issue with separated team members. What the standards deems important is that factors outside the organizational boundary should be considered, as well as factors inside the organizational boundary, such as strategy, technology, and project management maturity. Another concept that is important is *project governance,* which is the framework by which an organization is directed and controlled to ensure that the project is aligned with the organization's objectives and to guarantee that major stakeholders are provided with the needed information. Project governance helps make sure that a project is executed according to the standard of the organization the project is aligned with in order to ensure corporate strategy through its business case.
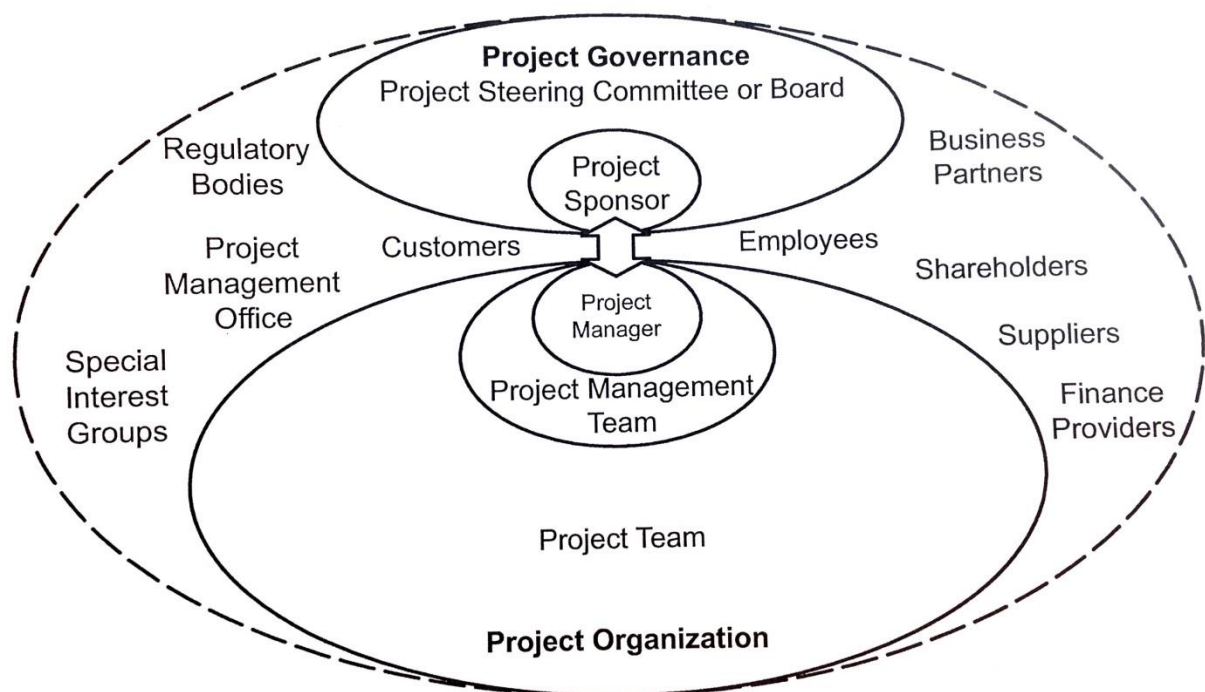
Figure 4 Project Stakeholders

Governance keeps all project activities ethical and above board, and also creates accountability. A project governance structure will help define a project reporting system and as a result it provides a logical and repeatable framework that outlines specific roles and responsibilities for everyone involved in the project. Another concept is the roles and responsibilities of the *stakeholders and project organization*. Figure 4 above shows how the project team, committee, customers, and employees interrelate in regards to the project. Therefore, the roles and responsibilities of stakeholders

should be defined and communicated based on the organization and project goals and should look something like figure 4.

To start managing a project, the organization needs to tailor it so it is based on their mission, vision or policy, as well as factors outside the organizational boundary, and that is what the standard means by *organizational strategies*. Developing an organizational strategy is crucial since organizational needs evolve over time and to meet its objectives it is necessary to assess in detail what needs to be
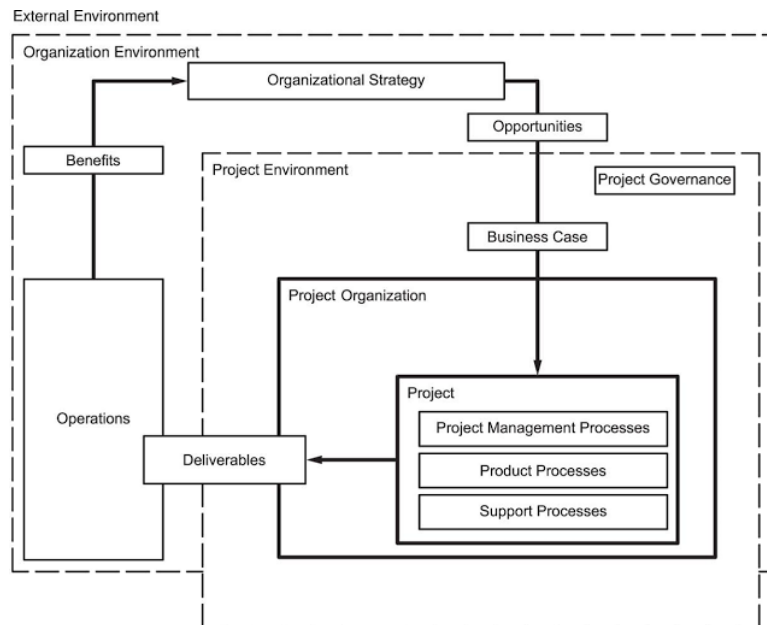
Figure 5 Overview of project management concepts and their relationships

done. Therefore, evaluating and defining the present state to the target state is optimal in order to state what is required for the desired changes to take place. That said, each project, how small or big, is important since it moves the organization one step closer to its ideal goal. All projects are centred on value creation so it up to the organization to create opportunities that are then evaluated and selected. Here is a visual example of value creation framework that goes from strategy, to opportunity, to projects, to benefits:
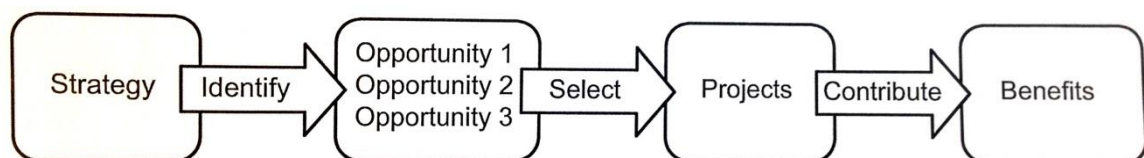
Figure 6 Example of a value creation framework

When the organization has fully sculptured its organizational strategy it can identify the opportunities that will lead the organization to its ideal goal. After picking out the

appropriate opportunity a project is made that fulfils the goals of the organization. Therefore, when the project has been completed it contributes the benefits the organization sought out in the beginning with its organizational strategy. As a result, each project has a bigger purpose for the organization as it defines the path the organization is heading.

The concepts that will be discussed below are mentioned in the standard and although they are not shown on figure 1, they are still considered important to the standard itself since they shed further light on project management. The standard differentiates between project and operations since the work can either be categorized as operations or project. *Project and operations* are defined by the organization's work to achieve specific goals but the difference between the two is as follows:

➢ Operations are performed by relatively stable teams through ongoing and repetitive processes and are focused on sustaining the organization.

➢ Projects are performed by temporary teams, are non-repetitive, and provide unique deliverables.

The next concept that is introduced is the *competencies of project personnel,* which should develop competencies in project management principles and processes in order to achieve project objectives and goals. These can be categorized into, but are not limited to, the following:

➢ Technical competencies, for delivering projects in a structured way, including the project management terminology, concepts and processes defined in the standard;

➢ Behavioural competencies, associated with personal relationships inside the defined boundaries of the project;

➢ Contextual competencies, related to the management of the project inside the organizational and external environment.

Project life cycle is a logical sequence of phases that projects are usually organized into that has a start and an end. In order to manage the project efficiently during the entire project life cycle, a set of activities should be performed in each phase. The next concept is *project constraints* that are defined as anything that limits a system in reaching its goal. Typical constraints are often: time, cost, and scope but other constraints may be: risk exposure, safety of personnel, or legislative requirements. The

last concept is *the relationship between project management concepts and processes,* which will be discussed in the next chapter. Figure 8 below shows how all of these concepts relate to each other and gives a visual idea of how the organizational environment is structured.

4.2 Project management processes

The standard recommends that the processes should be used during the whole project, for individual phases, or both. These processes should work with any organization and play a great role in shaping the project management structure of the organization. It requires significant coordination to align and connect the processes appropriately but the processes do not need to be applied uniformly on all projects or all project phases. As a result, the standard can be tailored to what the organization deems appropriate to accomplish in accordance to its policy or goal.

Figure 7 Deming circle

The processes are viewed from two different perspectives: as process groups from the management perspective of a project, or as subject groups from the perspective of a specific theme or process group (Stellingwerf & Zandhuis, 2013). The five process groups are: initiating, planning, implementing, controlling, and closing. These process groups are based on the Deming circle (Plan-Do-Check-Act), which is well known for its iterative four-step management method used in businesses for the control and continuous improvement of processes and products. Then the 39 processes are divided into ten subject groups: integration, stakeholders, scope, resources, time, cost, risk, quality, procurement, and communication. The five process groups and the ten subject groups align together in a table that can be seen in figure 8.

Subject groups	Process groups				
	Initiating	Planning	Implementing	Controlling	Closing
Integration	4.3.2 Develop project charter	4.3.3 Develop project plans	4.3.4 Direct project work	4.3.5 Control project work 4.3.6 Control changes	4.3.7 Close project phase or project 4.3.8 Collect lessons learned
Stakeholder	4.3.9 Identify stakeholders		4.3.10 Manage stakeholders		
Scope		4.3.11 Define scope 4.3.12 Create work breakdown structure 4.3.13 Define activities		4.3.14 Control scope	
Resource	4.3.15 Establish project team	4.3.16 Estimate resources 4.3.17 Define project organization	4.3.18 Develop project team	4.3.19 Control resources 4.3.20 Manage project team	
Time		4.3.21 Sequence activities 4.3.22 Estimate activity durations 4.3.23 Develop schedule		4.3.24 Control schedule	
Cost		4.3.25 Estimate costs 4.3.26 Develop budget		4.3.27 Control costs	
Risk		4.3.28 Identify risks 4.3.29 Assess risks	4.3.30 Treat risks	4.3.31 Control risks	
Quality		4.3.32 Plan quality	4.3.33 Perform quality assurance	4.3.34 Perform quality control	
Procurement		4.3.35 Plan procurements	4.3.36 Select suppliers	4.3.37 Administer procurements	
Communication		4.3.38 Plan communications	4.3.39 Distribute information	4.3.40 Manage communications	

Figure 8 Project management processes cross-referenced

These process groups and subject groups are then applicable to any phase or project but these processes then need to be defined in terms of purpose, description and in primary inputs and outputs.

4.3 Process group interaction

This perspective shows what processes should be focused on in each phase of the project. It is rather organized by time frame where one can see which processes should begin with and end. The perspective focuses more in detail on the five process group interrelationship (see image below). To start any project there needs to be:

The initiating process group, where a project is defined and its objectives made clear. In this group the project manager needs authorization to start the project where a project charter is developed, stakeholders identified, and a project team established.

The planning process group, where information is gathered to establish a baseline in how to manage, measure, and control the project. This includes: developing project plans, defining the scope and activities, and creating work-breakdown structure. This is the most extensive process group because there needs to be an estimation of time, cost, and risk. Additionally, there needs to be a plan of quality, procurements, and communications.
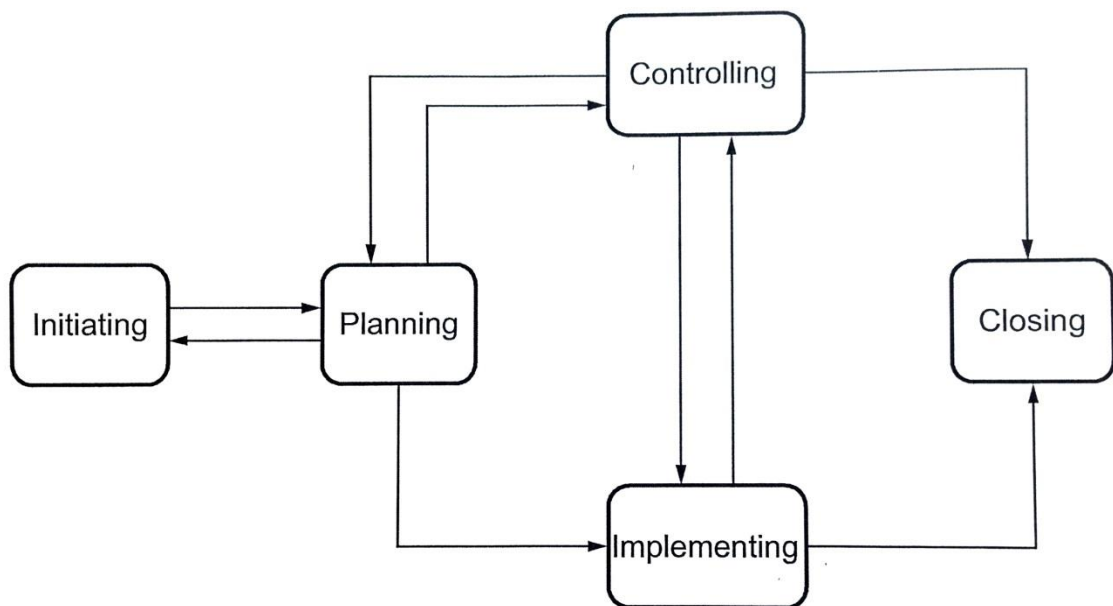

Figure 9 Process groups interactions

The implementing process group, which performs the project management activities in order to work according with the project plans. This includes: directing project work, managing stakeholders, and developing a project team. It also includes treating risk, performing quality assurance, selecting suppliers, and distributing information.

The controlling process group, monitors, measures, and controls project performance according to the project plan. This is a process group where measures may be taken to prevent or correct actions in order to achieve project objectives. The emphasis here is on controlling, whether it is project work, changes, or scope. This also includes controlling resources, cost, risk, and quality, managing the project team, communications, and schedule, performing quality control, and administering procurement.

The closing process group is the last process group that is used to formally close a project. It is here the project is reviewed and a project phase, or an entire project, is closed. It is also where lessons learned are collected and implemented as necessary.

4.4   Subject group

The subject group perspective is considered to be project management themed according to the ISO 21500 pocket guide and that perspective is chosen in order to provide a better understanding of the content of the standard.

The first subject group is *Integration* and is about planning the work and working the plan. It covers the start and finish of the project and everything in between. It covers initiating, planning, implementing, controlling, and closing, and integrates the processes from all the other subject groups. There are seven integration subject group processes in total:

Integration	4.3.2 Develop project charter	4.3.3 Develop project plans	4.3.4 Direct project work	4.3.5 Control project work 4.3.6 Control changes	4.3.7 Close project phase or project 4.3.8 Collect lessons learned

> ➢ *Develop project charter*: authorizing the project manager to start the project or phase;

> ➢ *Develop project plans*: compiling the overall plan, which can be categorized into the project management plan (describing how the project will be organized and controlled) and project plan (an output based description defining the baselines for scope, cost, time, etc., which will be updated throughout the project);

> ➢ *Direct project work*: managing the performance of the work as defined in the project plans;

- *Control project work*: managing the project's progress and performance compared to the plan and evaluating in order to improve current work;

- *Control changes*: structuring the way in which the project deals with change requests and how changes are managed to the plan and to the deliverables;

- *Close project phase or project*: completing all activities to close a phase or the project;

- *Collect lessons learned*: generating and documenting key positive and negative performances during the project in order to act as a useful reference for planning future project phases or other projects.

The second subject group is *Stakeholders* and this subject group includes steps necessary to identify the people, groups, or organizations that could have an effect on, or be affected by, the project. The importance is to be aware that stakeholders are a part of every project and they can be impacted by or can impact the project in a favourable or less favourable way. There are two processes in this subject group:

Stakeholder	4.3.9 Identify stakeholders		4.3.10 Manage stakeholders		

- *Identify stakeholders*: determining the individuals, groups, or organizations that come into contact with the project, and documents relevant information regarding their interest and involvement;

- *Manage stakeholders*: giving appropriate understanding and attention to stakeholders' needs and expectations. "If you don't manage your stakeholders they will manage you, resulting in reactive management, instead of project management!"(Stellingwerf & Zandhuis, 2013).

The third subject group is *Scope,* which is the answer to the 'what' question: what 'product' would the project deliver and what intermediate results need to be produced to get the 'end product'. The scope subject group covers all processes required to define and control the work that is needed and not needed to deliver the project results. The processes are:

Scope		4.3.11 Define scope 4.3.12 Create work breakdown structure 4.3.13 Define activities		4.3.14 Control scope	

- ➢ *Define the scope*: achieving clarity of the project scope, including objectives, deliverables, requirements and boundaries, by defining the end state of the project;

- ➢ *Create work breakdown structure*: providing a framework for dividing and subdividing the project into smaller, more manageable components;

- ➢ *Define activities*: identifying, defining and documenting all the activities that should be in the schedule and performed. As a result, you get an overview of the tasks required to create the detailed project plan for implementing, controlling, and closing components of the WSB;

- ➢ *Control scope*: observing the status of the project scope and controlling changes (maximizing positive and minimizing negative) to the Scope baseline.

Scope is one of the crucial factors when starting any project and it is recommended in all project management handbooks, the reason being that it is important to define what the project should consists of, what to exclude, and where the boundaries are. According to a study done on success of projects, the evidence showed that decisions made about the scope of a project have a real effect on projects performance. Thus, the scope has a strong positive effect on the length of the planning stage and, consequently, the amount of man hours spent on a project (Clark, 1989). Another study found that the critical success factor for the multi-million dollar company Monsanto was thanks to the work done on the scope of their projects (Sumner, 1999). It is considered extremely effective for project managers because it gives the project a clear goal and a work-break-down structure that is easier to follow and communicate to others.

The fourth subject group is *Resources,* which are about getting the right people to lead, manage, and contribute their skills to the project while obtaining the materials, facilities, infrastructure, etc. These people are called 'the project team' and it is beneficial to have the team assigned and available as early as possible. The number of team members might change throughout the course of the project, depending on the task and the work to be done. The role of the project manager is to consider factors such as skills and expertise when selecting team members since different personalities and group dynamics are important as the projects are typically performed in a changing environment. The processes for resource subject group are six:

Resource	4.3.15 Establish project team	4.3.16 Estimate resources	4.3.18 Develop project team	4.3.19 Control resources	
		4.3.17 Define project organization		4.3.20 Manage project team	

➢ *Establish project team*: obtaining the resources necessary to establish the project team;

➢ *Estimate resources*: determining the resources needed for each activity in the activity list. They may include people, facilities, equipment, materials, infrastructure and tools;

➢ *Define project organization*: making sure that there is commitments from all the parties involved in the project and identify all team members who are directly involved in the project work. This also includes defining the roles, responsibilities and authorities that are relevant to the project;

➢ *Develop project team*: establishing the project's ground rules of preferred and acceptable behaviour, continuously improving the team performance, interaction and motivation, and minimizing misunderstanding and conflicts;

➢ *Control resources*: ensuring that the resources required to undertake the project work are available and assigned in the manner necessary in order to meet the project requirements. Conflicts may arise due to unavoidable circumstances such as weather, equipment failure, or technical problems. Identifying such shortages should be established with procedures to facilitate the reallocation of resources;

➢ *Manage project team*: optimizing team performance, providing feedback, resolving issues, encouraging communication, and coordinating changes in order to achieve project success.

The fifth subject group is *Time*, which focuses on all the necessary steps to manage the timely completion of the project. Time management seeks to estimate activity duration and develop schedule to determine feasible delivery dates, milestones or end dates, taking all known constraints into account. Time management is sometimes seen as the core discipline of project management and various popular software tools are available which primarily focus on the time management aspects. The time subject group covers four processes:

Time		4.3.21 Sequence activities 4.3.22 Estimate activity durations 4.3.23 Develop schedule		4.3.24 Control schedule	

➢ *Sequence activities*: identifying and documenting the logical relationship between project activities, providing a network diagram, and identifying the critical path;

➢ *Estimate activity durations*: estimating the required time to complete each activity in the project, including the time needed for administrative processing and approval. It also requires making a periodic re-estimates and updates forecasting against the baseline;

➢ *Develop schedule*: calculating the start and end times of the project activities and establishing the overall project schedule baseline, subsequently schedule updates and measurement of progress;

➢ *Control schedule*: monitoring schedule variances by determining the current status of the project schedule and comparing it to the approved baseline schedule, and taking appropriate actions to avoid adverse schedule impacts.

Cost is the sixth subject group and it is typically one of the key constraints of any project. The cost subject group is therefore all about defining the budget and managing the actual project cost within the approved budget. The cost subject group contains three processes:

Cost		4.3.25 Estimate costs 4.3.26 Develop budget		4.3.27 Control costs	

➢ *Estimate costs*: estimating the costs needed to complete each project activity and the project as a whole. This is about estimating the cost in terms of unit of labour hours or number of equipment hours and use learning curves when a project includes a number of repetitive activities. To deal with risk and uncertainties a reserves or contingency estimates need to be added to the project cost estimates and clearly identified;

➢ *Develop budget*: distributing the project's budget to the appropriate levels of the work breakdown structure;

➢ *Control cost*: monitoring cost variances and taking appropriate action.

The seventh subject group is *Risk*. All projects have some kind of a risk factor and this subject group is to address the unknown situations and consequences of project changes. Project risks are future uncertainties that may affect the projects' results and if the project management team neglects risk management, it will be constantly faced with unforeseen threats or loss of opportunities. Risk management is also about trying to minimize the impact of potential threats on project results, which is usually everything that could cause a project to be delayed, be more expensive, or be delivered with less quality. Risk management can on the other hand be about trying to maximize the impact of potential opportunities – factors that could help achieve the project results faster, cheaper and with better quality. The risk subject group has four processes:

Risk		4.3.28 Identify risks 4.3.29 Assess risks	4.3.30 Treat risks	4.3.31 Control risks	

> ➢ *Identify risks*: determining potential risk events and their characteristics that, if they occur, may have a positive or negative impact on the project objectives;

> ➢ *Assess risks*: measuring and prioritizing the risk for further action, based on estimating the probability of occurrence of each risk and the corresponding impact on the project objectives;

> ➢ *Treat risks*: developing options and determine actions to enhance opportunities and reduce threats to project objectives;

> ➢ *Control risks*: minimizing disruption to the project in the case of threats, and ensuring maximum optimization of the project objectives in the case of opportunities, by determining whether the risk responses are completed and whether they have the desired effect.

Risk management processes have little value if they are performed only once, say at the beginning of the project. Constant evaluation is necessary to really harvest the full benefits of risk management (Stellingwerf & Zandhuis, 2013).

The eighth subject group is *Quality*, which supports the project in order to achieve the quality of its objectives. The quality subject groups are three:

Quality		4.3.32 Plan quality	4.3.33 Perform quality assurance	4.3.34 Perform quality control	

> ➢ *Plan quality*: gathering all the quality requirements and deciding what standards will be applicable to the project;

> ➢ *Perform quality assurance*: auditing the quality requirements and application of the quality standards by reviewing the quality control measurements;

> ➢ *Perform quality control*: executing the quality control activities to measure performance and recommend changes if needed.

"Failure to meet the project's quality requirements will have a strong negative impact on project performance and the delivery of its expected result. This underlies the importance of quality management" (Stellingwerf & Zandhuis, 2013).

The ninth subject group is *Procurement* and it is crucial one since most projects need products, services or resources from outside the project team and there will be the need to purchase them. In complex projects, specialists are frequently needed who are 'not-available-in-house" and it is often not the best option to have a fixed price contract

for every project. Therefore, a more specific arrangement may be required when the supplier's creativity is needed. To deal with these situations effectively, one should apply project procurement management. The procurement subject group consists of three processes:

Procurement		4.3.35 Plan procurements	4.3.36 Select suppliers	4.3.37 Administer procurements	

- ➢ *Plan procurement*: recording purchasing decisions and identifying the approach and the potential suppliers;

- ➢ *Select suppliers*: evaluating the supplier responses, selecting a supplier, and signing the contract;

- ➢ *Administer procurement*: managing the relationship with the supplier, monitoring the supplier's contract performance, and making adjustments if needed including the completion of the contract life cycle for each procured item.

The guidebook also mentions that, "Since purchasing a product or a service always implies a legally binding agreement between buyer and supplier, you are advised to cover this in a formal contract" (Stellingwerf & Zandhuis, 2013).

The last subject group is *Communication*. It is considered crucial to the success of a project that communications are effective as it creates bridges between diverse stakeholders and connects various cultural and organizational backgrounds and different levels of expertise. Project managers spend most of their time communicating to ensure that all participants are on the same page. The communication subject group has three processes:

Communication		4.3.38 Plan communications	4.3.39 Distribute information	4.3.40 Manage communications	

- ➢ *Plan communication*: determining the information and communication needs of the stakeholder in a communication plan;

- ➢ *Distribute information*: making the required information available to project stakeholders as defined by the communications plan and responding to unexpected, ad-hoc requests for information;

- ➢ *Manage communication*: ensuring that the communication needs of the project stakeholders are satisfied and resolving communication issues if applicable.

4.5 The comparison of ISO 21500 to PMBOK® and PRINCE2®

There is a fundamental difference between ISO 21500, PMBOK® and PRINCE2®. ISO 21500 can be seen more as an overarching standard that works as a blueprint for project management. It is considered a framework for a common language and shows what needs to be done rather than how you should do it, while other project management frameworks like PMBOK®, IPMA, ICB and APM BOK provide more in-depth guidelines on how to do projects. On the other hand, PRINCE2® is a certain methodology defining how standards are applied effectively in specific situations. Therefore, the basic hierarchy is:

- ➢ ISO 21500: overall framework

- ➢ PMBOK® guide and APM Bok: expanded frameworks with more in-depth guidelines

- ➢ PRINCE2®: methodology in specific situations

Even though ISO 21500 and PMBOK® are fundamentally different in terms of what they stand for they are inherently similar since the glossary of the ISO standard was based on the PMBOK® 3rd edition. In the process of making ISO 21500 there was a need for input from representatives from all around the world. After a long negotiating process, seven country representatives made a presentation of what they would like the new ISO standard to look like and since PMBOK® was something that project managers were familiar with, it was decided to create an ISO standard that would have the qualities of PMBOK® (Monkhause & Kamel, n.d.). Nevertheless, the representatives wanted an international standard that was also sufficiently flexible to allow for specific national standards to be developed.

Both ISO 21500 and PMBOK® 5th edition are divided into three project management topics: stages, topics, and processes. PMBOK® has 5 process groups, 10 subject groups and 49 processes whereas ISO 21500 has 5 process groups, 10 subject groups but 39 processes. The project management topics are very similar in both standards but one of the significant differences is that the ISO standard is 47 pages long while PMBOK® guides are more than 450 pages, so ISO 21500 is the equivalent of one chapter in PMBOK® (chapter 4). The ISO standard is limited to the introduction of the processes, as well as their inputs and outputs, while the PMBOK® describes the project management

processes and their inputs and outputs in more detail, as well as the associated tools and techniques (Labriet, n.d.). Another difference is that the ISO standard is considered to have more of a cascade approach; that is to say, it is easier to check relations between issues, objectives, policies, and rules while at the same time see if they are consistent with each other. The PMBOK® on the other hand is considered to have more of an iterative approach. Iterative and incremental approach requires the project manager to consider each iteration or cycle as a separate project, to be managed in the context of the final deliverable (Labriet, n.d.). The other key difference is that ISO has introduced a subject group in the knowledge area that is dedicated to Stakeholder Management, which is not in PMBOK®, and a process called Collect Lessons Learned. While ISO has introduced new features, the PMBOK® has more processes than ISO, which can add more detail and depth for the project. What is also interesting is that both ISO 21500 and PMBOK® 5th edition were published around the same time – the final version of ISO 21500 was published in September 2012 and PMBOK® 5th edition in January 2013. These are all minor differences between the standards and should not be looked at negatively since there is an advantage for this: project manager and associates who are familiar with one or the other standard can now speak the same language and work together to make projects more successful.

The comparison of PRINCE2® 2009 edition to ISO 21500 is legitimate even though they serve fundamentally different roles. A Dutch Special Interest Group (SIG) with experienced PRINCE2® practitioners concluded that the PRINCE2® processes are perfectly covered in ISO 21500. This could be expected, since all popular sources for project management are based on similar practices where other framework and methodologies are added value to the project management standard (Berniz, 2013). Nevertheless, Mr. Jouko Vaskimo, the Finnish delegate for the creation of the ISO 21500, stated: "Why didn't we pick out stuff from PRINCE2®… and the answer is easy PRINCE2® never released their material to us so we couldn't use it." Even though that is the case, the ISO 21500 processes have a very good match with the PRINCE2® processes and themes since they cover the same activities even though the names of the processes/themes may differ. There is only one process in ISO 21500 that is not covered in PRINCE2® and that is select suppliers, but PRINCE2® also does not deal with procurement as the ISO standard does (Stellingwerf & Zandhuis, 2013). As a result,

PMBOK®, PRINCE2®, ICB, etc., become complementary sources rather than competitive sources since ISO 21500 was not developed to be a method, a body of knowledge (e.g. PMBOK® or APM BOK), a model (e.g. P3M3, OPM3 or IPMA Delta), or a baseline (e.g. ICB) (Berniz, 2013). Rather, it was created to be an international framework that can support other methods and models to make project management more efficient and successful.

5   The consultancy company

The company that is used for the research is a privately owned consultancy company located in the capital of Iceland, Reykjavík. It was founded in 2008 and focuses on developing high enthalpy geothermal resources for utility scale power production. The founders of the company have been involved with the development of over 3000 MW of geothermal projects in over 30 countries and were responsible for over a quarter of the world's geothermal power development over the previous four years. The company's main headquarters are in Reykjavík but they are currently active in a number of other countries such as Rwanda, India, Mexico, the Caribbean, and Saudi Arabia and have offices in New York, Addis Ababa in Ethiopia, and Papua New Guinea. Their expertise covers all areas of geothermal development since the key members of the company have been evolved in all aspects of Icelandic geothermal power development in the past 40 years. The consultancy company has also been verified with a quality management system by ISO 9001, and an environmental managing system and occupational health and safety systems by ISO 14001 and OHSAS 18001. Furthermore, the company has implemented a standard on social responsibility and social accountability by ISO 26000 and SA 8000.

The company has an organisation chart to explain the division in the company (see figure 10). The company is still relatively small at the moment so at the office in Iceland there are six members on the board of directors, who are also the owners, and about nine employees. In other offices there are about four or five employees who support the regional directors to find opportunities in geothermal development. There are four committees: investment committee, audit committee, remuneration committee, and management committee. There are three to four members in each committee, which only include owners. Below the board of directors is the Chief Executive Officer (CEO) and below that position is the Chief Operating Officer (COO). Under the COO are three departments: the business development, the project development and consulting department and marketing department, and in each of these departments are further divisions. There is corporate governance, or chief of staff, then corporate and project finance division, then geoscience, engineering, quality, and finally the HSE & CSR division. Since the company is seeking projects around the world there are also three

regional directors: Middle East and Africa, Americas, and Asia and Pacific. What the company intends to do is to incorporate ISO 21500 for their project management and see what changes it may involve.
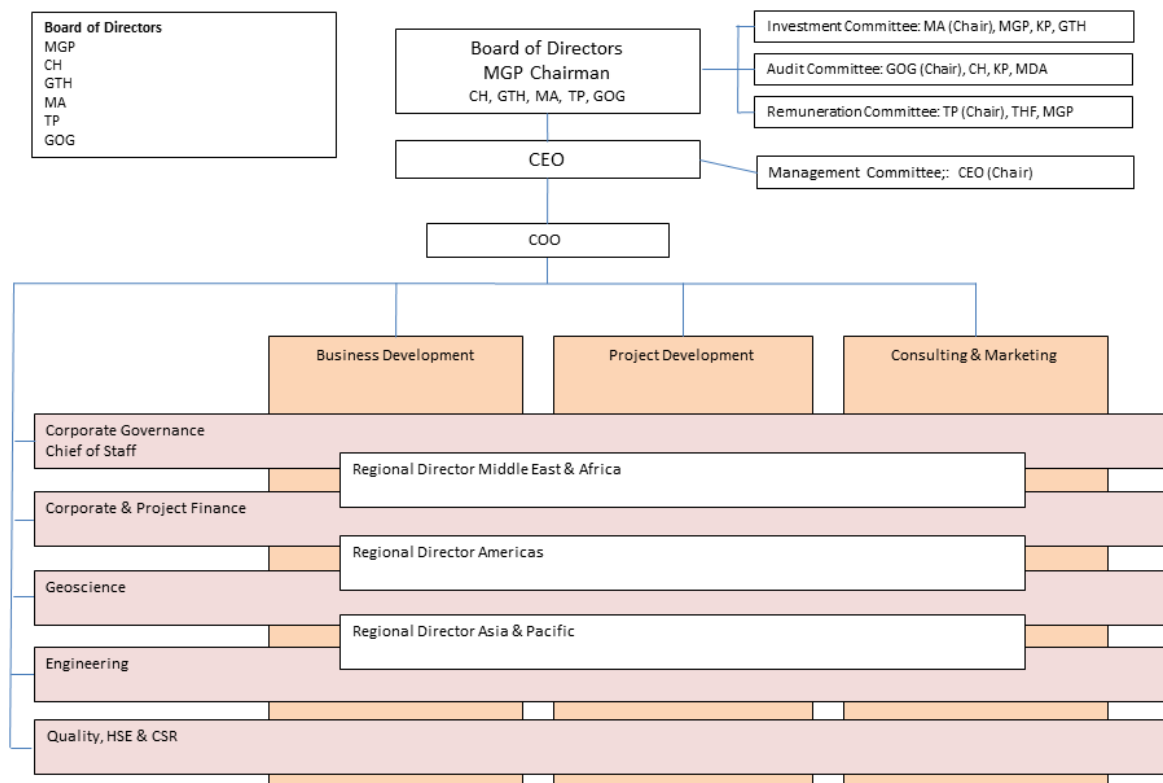
Figure 10 Organizational chart

5.1 Environment

One of the reasons why this company is one of the leading geothermal development companies on an international level is because of the location of the company. Iceland is located in an active volcanic zone, where the Eurasian and the North American tectonic plates meet. As a result, the country has more than 10 active volcanoes where one of the recent eruptions was Eyjafjallajökull in 2010 (*Iceland Geothermal Energy Market Report*, 2010). Where there is a lot of volcanic activity there is the potential to harvest geothermal energy in a clean and effective way. Geothermal energy is energy

that is derived from the heat of the earth. The hot water that is extracted is either from shallow ground few miles beneath the Earth's surface, or down from deeper extreme high temperatures of molten rock called magma ("Geothermal Energy," n.d.). The rain water can sometimes seep down through geological fault lines and become super-heated by the hot rocks below, and every now and then this water can rise back to the surface in the form of hot springs or geysers. Other times the hot water becomes trapped below the surface, creating a geothermal reservoir (V. Ryan, 2009).

Geothermal energy is used to produce electricity by drilling wells into the geothermal reservoir and use the steam that arises from the hot water to drive turbines that produces electricity. If the water is not hot enough to produce steam it can be used to heat homes and businesses (V. Ryan, 2009). Because of weather conditions and location, Icelanders have had a long history with geothermal energy and been forced to seek out affordable energy to heat houses all year round. Today, geothermal energy represents more than 60% of the primary energy supply in the country and is considered to save more than USD 460 million by using geothermal energy instead of oil every year (Ketilsson, 2009). Iceland has become a pioneer in geothermal development, not only relative to its size but also in absolute terms. In the ranking of countries utilising geothermal energy for direct use, Iceland ranks number four overall, with around 6,800 GWh/ year of thermal use (*Iceland Geothermal Energy Market Report*, 2010). Since the first geothermal heating was established in 1908 and until today, Iceland has graduated more than 400 professionals in this industry, heated 90% of all homes in Iceland, and is ranked number one in the 2010 Environmental Performance Index (EPI) by the University of Yale (*Iceland Geothermal Energy Market Report*, 2010). In this environment, the company has sought out the geologists, geochemists, geophysicists and reservoir engineers in the field to create a company that works on research and development on geothermal areas for energy production in developing countries. The company has become one of the leading consultants in the area of geothermal performance.

6 Research Methods

This chapter will explore the methods that were conducted to gain the knowledge from interviews, literature and focus groups to support the thesis. It extends on why qualitative research was made instead quantitative research, and finally touches upon confidentiality and liability. The question that was sought to answer was:

- How can ISO 21500 benefit an Icelandic consultancy company

6.1 Knowledge Research

One of the main difficulties in knowledge research on ISO 21500 is that there is very limited literature on the subject. The standard was published in 2012 and currently there are no academic journals that have focused on it primarily. The same problem was found with published books, where the only book available on ISO 21500 was the pocket guide on ISO 21500 which is a practical guide to assist in quickly understanding the purpose, background, and key elements of the standard (Stellingwerf & Zandhuis, 2013). To compensate for this fact, it was decided to interview Miles Shepherd, who is the Chairman of the ISO project committee, and Jouko Vaskimo, who is the Finnish Delegate for the ISO 21500 standard. This gave an incredible insight of how the standard was made, how the process evolved, and what the future of the standard will likely be. To gain more information, it was intended to interview other companies that have incorporated the standard into their organization. Since the Icelandic council of Standardization is not allowed to inform who has bought the standard it became incredibly difficult to gain knowledge of Icelandic companies that had incorporated the standard. The same problem was found with foreign companies since there is no written data on which company has bought the standard, or any information on the World Wide Web for that matter. In the end, the Project Management Association of Iceland informed me that one consultancy company in Iceland was incorporating the standard and I was able to speak with one of the project managers on how the progress was developing.

6.2 Literature

To gain more information on the history of project management, the International Organization of Standardization, and the comparison of ISO to other standards I used

academic journals, articles and other materials to gain deeper understanding of how ISO 21500 fits into our current history and why there has become such a demand for an international project management standard. What was the most useful material in this thesis was the standard itself, which has detailed description on how concepts and processes are useful when performing projects in any organization (International Standard, 2012). Other forms of material were websites, forums, slideshows, and pamphlets. Around fifty academic journals and other materials were read to get the insight for this thesis and these are cited in the bibliography.

6.3 Methodology

To understand how the standard can be used as a tool to assist organizations and companies in improving their project management methods it was decided that a case study was needed. A consultancy company that had previously sought much interest in incorporating the standard was used as a case to illustrate the difference the standard could make if used accordingly. A qualitative research was conducted to understand how the company was currently managing their projects, what problems they were facing in regards to project management, and what changes they expected from the new standard. The interviews were semi-structured (Newton, 2010) so a list of questions was made to cover specific topics but the interviewee had a great deal of leeway in how to reply. Questions were not followed exactly as had been written beforehand and some questions were dismissed while other questions were added to gain further information if needed. Nevertheless, by and large all the topics were covered and similar wording was used from interviewee to interviewee. The purpose of using a semi-structured interview was to have the interview more flexible and to put more emphasis on the thoughts of the interviewee rather than further explaining what was considered irrelevant.

The focus group for the research was the employees of the consultancy company. There were six employees interviewed out of fourteen that are located in Reykjavík. The sampling was in accordance with convenience sampling, that is, based on who was located in Reykjavik at the time and who had the time to participate in the interviews. There were two participants that were sought out especially for the interview and those were the quality manager and one particular project manager. The research questions

were around 24 and open ended so the interviewee had the chance to openly talk about the subject. All the interviews were held at the company's conference rooms where it was considered to be the least distraction for the interviewee and where they would feel comfortable while the interview was taking place. The interviews took place on 24th of October, 29th of October, 8th of November, and three on the 12th of November. The lengths of the interviews were from 48 minutes to 76 minutes. The average length was around one hour.

6.4 Qualitative research

The reason why qualitative, and not quantitative, research was conducted was because quantitative research tends to use data to compare different entities and usually is made to prove or disprove a hypothesis. Qualitative research, on the other hand, focuses more on the interviewee's point of view and tends to respond to the direction in which the interviewees take the interview and perhaps adjust the emphasis on the whole research (Nuttall, Shankar, & Beverland, 2011). It was believed that the data needed for the research had to be more personalized and rich in detail since the workplace was considered fairly small, and with all the interviewees knowing each other quite well it was believed that a personal interview where participants could open up to discuss the topics in more detail and in confidentiality was more appropriate than generating answers from a survey. Nutall et al. (2011) say, regardless of what methods are used, that qualitative research strives for a deep and often contextual and emotional understanding of people's motivations and desires. This was deemed necessary to gain the information that was needed. However, some researchers have criticized this research method for the lack of generalization since it is considered hard to apply the researcher's outcome to some other fields because of its distinctiveness. What we have to keep in mind is that "the trouble with generalizations is that they don't apply to particulars" (Lincoln & Guba, 1990).

6.5 Data processing and analysing

All the interviews were recorded on an iPhone with the permission of the interviewees before each interview. The interviewees were informed about the reasons of the interview and the main themes of the questions. All participants were also informed about the background of the researcher and how long the interview would take. A

decision was made to conduct the interviews in Icelandic so that the participants would feel freer in their speech, even though all of them were fluent in English. As a result, the interviews had to be translated from Icelandic to English and the wording might be little bit different but there was a great emphasis on keeping the original meaning and wording as close to what the participant intended as possible. When all the interviews had been transcribed, a certain process took place where the data was interpreted and analysed. During this phase, the researcher compiled the data into sections or groups of information that are also known as themes or codes (Turner, 2010). How researchers formulate themes and codes can vary but in this research participants were six in total so they were randomly given numbers from P1 to P6 and kept their number throughout the analysis. The answers were read over and over again with the aim of using open coding, which looks for and notes interesting themes. From there it was possible to roughly categorize the main ideas of each question and all the questions were then given a number from one to six where several questions got the letter A or B. At this stage, some questions were grouped together and in some places the answers could belong to two or three themes. It was up to the researches to decide how to group the answers so it represented the interviewee the best. What shall also be noted is that it was up to the researcher to decide what was thought relevant for the thesis and what was not, since the transcribed text in its entirety was not considered suitable for the thesis.

The questions were divided into three categories to reflect the research question of the thesis. First there was the background of the interviewee to see how long he/she had been working at the company, what experience he/she previously had, and how they would describe the workplace in their own words. The second category was to gain knowledge of how the participants were currently managing projects. It was important to see how they viewed the structure of the company, how work was broken down for a project, how the communication was conducted, and where documents were kept. Other topics included how time and cost were managed and if there was any change in management structure. The third category was to see if they had any expectations in regards to ISO 21500 and what changes they would expect to see if ISO 21500 was used as a guide for the company. At the end of each interview the tape recorder was turned

off and the interviewer then asked if there was any further information that would be useful for the research.

6.6 Validation and Reliability

From the beginning to the end of the research, it is of most importance that the researcher maintains neutrality to insure the quality of the research and that it represents the opinions of its participants truthfully. While conducting the interviews, the researcher had a notebook that was used to write down comments and ideas and to reflect how the mood, responses, and reactions of the participants were. These notes were then read over to ensure that the answers corresponded with the ideas that were written down. During the interviews it was considered important that the interviewee was clear on what was being asked and if in doubt the researcher was willing to clarify and further explain. On the other hand, if the researcher was unfamiliar with the topic that was being addressed by the interviewee, further questions were asked to gain more insight into the topic. It was also considered relevant to conceal the identity of the participant so the participants could express themselves more about the topic and in that way put more emphasis on what was said rather than who said what. What has to be noted is that we are all human beings and our environment is constantly changing and so is the perception and interpretation of the interviewee. The analysis is interpreted by the researcher in a way that reflects the interviewer's world views and how the data is represented and can therefore not be considered the absolute truth (Attride-Stirling, 2001; Bryman & Bryman, 2006; Denzin & Lincoln, 2005; Nuttall et al., 2011). What also needs to be mentioned is that there are certain limitations to the research since only one company was surveyed for the thesis since limited information are about other companies who intend to incorporate this standard.

Next chapter is about the results of the research. The codes were divided into the following seven themes:

1. Company's background and environment
2. Structure and processes
3. Documentation
4. Risk management
5. Cost and time management
6. Project management

7. Expectations and roadblocks

It was considered important to go over all notes to see if there would be any changes to the themes, organization, or comments. The final draft was not finished until all the documents had been viewed and analysed. Below is the final result of the research and everything that was considered important for the thesis.

7   Results

In this chapter findings from the interviews will be presented where the main emphasis is presented in seven sub-chapters. First of all, the company's background and environment will be discussed, which includes how the company started and how the work environment is experienced by the participants. Next, the company's structure and processes are discussed in order to gain information on what the overall framework is within the company. Thirdly, documentation will be looked at to understand how documents are kept and organized. After that follows a discussion on how risk management is handled, followed with a chapter on cost and time management. The sixth chapter is on project management where various concepts in project management are examined, and finally the last chapter is on expectations and roadblocks.

7.1 Company's background and environment

To gain a better understanding of the history of the company and the people working there, several questions were asked about their background, what they do in the company, and how they describe the office. The background of the company and the description was considered relevant while information about each employee was not.

Before 2008, the company had one main investor that was the backbone of the company but after the economic crash in October 2008 the investor backed out leaving the company in a very difficult situation. After that, the company survived by taking on more and more projects in consulting, which Participant P5 describes as *"eating up the time that we can work on our own projects but it also was our main provider"*. So the first year was mostly spent searching for projects and business development since *"we did not have the money to pay for our own projects",* explains Participant P5. Currently, consulting is the biggest provider for the company, where the investors *"invest in the company and put the money into it while we do the work",* according to Participant P4. At the time being, there is pressure to keep providing consultancy for other projects even though what the firm really wants to do is develop their own projects from scratch to harness power. The company has come a long way since 2008. They have moved offices, opened up branches in different countries, and set up the ISO 9001 standard in 2010, and a year later in the offices in Atlanta and New York. In 2012, ISO 14001 and ISO

18001 were set in place and as a result the company saw dramatic changes in couple of years.

The question of how the participants would describe the workplace was asked and there was a general consensus that the workplace was quite dynamic and a room to do great work. Participant P6 describes it as "*an open space where there are no walls and we really like it but then there are enough of meeting rooms so we do not disturb others who are working.*" Since a lot of the employees travel extensively, it is considered to be a very international workplace and Participant P5 mentions that, "*the more we are out of the office the better we do*". What was mentioned in all of the interviews was that employees are experts in their field and Participant P2 also noted that, "*people are very independent.*" He further describes them as men who "*build on their own experience in how they work.*" The workplace was considered to be rather competitive: a place where you make your own environment and "*make the job description that suits you best*", according to Participant P1. He continues by saying that it gives employees a degree of freedom to work in a way that suits them best but "*if you cannot stand on your own two feet or have the initiative to take projects into your own hands… you will not thrive here.*" This kind of environment can be quite challenging and competitive when it is up to the employee to grasp the opportunities.

7.2 Structure and processes

Structures and processes are the foundation of the company. Structure is the boundaries or framework that connects other activities together and it can either be fixed (permanent) or changed only occasionally or slowly. Within the structure are processes that are defined as "set of interrelated or interacting activities, which transforms inputs into outputs" (International Standard Organization, 2008). This means that there is a certain way of working that is aligned with objectives and scope and should be designed to add value to the organization. To gain an understanding of this, a question was asked how the participant would describe the processes within the structure of the company.

All of the participants had an idea how the overall structure of the company was and how the processes fitted into their work. Participant P2 explains the process of how a project becomes a reality:

There is a long time of planning and selling ideas before a project is born. After that there is only one project manager that manages the project and gets the knowledge of the project. The project manager needs to be organized, have an overview, and take care of the finances as well. Sometimes there is a need for a consultant outside the company so that person is hired temporarily and all of this needs to be considered in the budget. We also have a lot of outside projects that we consult for other companies or organizations. Then one person is in control of communication with the buyer and employs people for the project. Other than that, people work rather independently.

Additionally, there is another factor to their work as he notes that: *"We have employers that we call district managers since they go abroad to find the opportunities and do the first contracts. Nevertheless, we try to use the manpower extensively for their knowledge and then we hire outside contractors."* There is also a bookkeeper and a financial team that plays a big role in how the company is run which was discussed in detail in chapter 5 about the consultancy company.

When the company was at its developing stages things were different then they are today. Participant P 5 described the early days like this: *"When we started the company, everyone was doing everything. I remember the point when we stopped that and started to do what we are trained specifically to do."* The company has grown bigger today and has sets of processes and a structure that has been written down in accordance to ISO 9001, as Participant P2 states:

We do have a structure of quality and we try to maintain it but it has to be ready to grow to manage projects. We also have ISO standards that are of course a management tool. It is a management tool to maintain the quality of work and processes that set the minimum requirements that are needed. We do adjust as well and people should use these management tools and not let the standards control us but rather use the standard as a management tool.

Participant P2 goes on to explain that the company is expanding even more and going through changes in the next couple of months that might lead to updates on the current structure and processes, but at the moment he considers the processes to be fine since they need to be flexible as the company is still so small, as he explains:

We do have a structure but it is very flexible. This is a very small workplace and might be a disadvantage because workplaces with 50 to 100 employees do usually have stronger structure. Some think it is really good but others think it is a shame; it depends on the personality. But I think the workplace

will change drastically in the next couple of months since we will probably have more employees and then we will have to have a stronger structure for certain processes. This still works since there is still so much closeness but it will not work when there are many more employees. The company is organised and has a structure but at the same time very flexible.

Participant P5 agrees that the processes are good the way they are since, the processes where made by them in the first place, and are already ingrained in their daily work. He states that:

> We have processes for how we do our projects from A to Z, but maybe we do not sit with the written processes in front of us when we go through it since we have been doing this for such a long time. We can decide which processes we need and which are not necessary. We have the structure and we add or delete processes that are relevant. Each project is tailored after its needs.

On the other hand there are others, who believe, like Participant P2, that: *"We use certain tools but maybe less than we could."* Still others believe that they know the processes quite well but believe that too much flexibility can be a problem, therefore there is a need for a stronger structure, like Participant P5 states with examples:

> It could be more structured. Sometimes certain individuals are not informed enough when it comes to delegating employers to certain projects. When you work here you need to be flexible with processes because it is often so unclear which projects come up and when work can begin. The problem is that there is no time schedule or overview of when project managers need the geoscientists to work on a project. It is very uncertain how long it is between projects and which project is due next.

Participant P1 also believes there is need for a stronger structure since he states that: *"I don't think there is much structure, since people do what is needed but there is some rough structure since we have a science team, financial team and management team but I do not know what everyone does exactly in the company."* After reviewing all the answers there are definitely different views from participant to participant about the structure and processes of the company, which leads to discrepancy.

7.3 Communication

Communication is really crucial when running big and complex projects but it is also important to make clear who is involved in which project and through what medium the communication should take place. The main point the participants made was that communication could be improved and where it was mostly lacking was between employees and managers, within projects, and when employees are abroad.

When asked if communications could be improved, Participant P1 says: *"… it would be very good if employees would be informed about the latest decisions the management has made. The managers know much more about where the company is heading but they tend to forget the rest of the company."* This problem is something that Participant P5 agrees on but states that communication could improve, for example: *"If we get new investors or something like that we could inform the rest of the employees better. We have been very careful about it since we do not want to announce something that falls through."* This is therefore something that both employees and managers are aware of, as Participant P5 also goes on to describe: *"Sometimes the project managers go ahead and start a new project without informing the rest of the group but it can also be criticized that the management does not always have an overview of all the projects that are taking place."* Participant P1 agrees with this statement since he believes it is unclear what is expected of the employees because of blurred communication, and of this he had this to say:*"One of the things that has been a problem is that managers say they are not informed enough about projects but then there is no obligation on their behalf to inform back to the employee. It needs to be clear what information managers want and when they want it."* This is clearly something that can be improved but Participant P4 describes it as more of a character difference because *"there are different personalities that work here and different styles of work. Some push things ahead without informing others while some are very focused on doing a great job but on the expense of budgets."* Whatever the reason for this difference, there is a recognized lack of communication between high-level managers and other employees.

What participants also addressed was that communication in the project team was lacking or disorganized. Participant P1 says that *"communication connected to projects*

could be better and is exactly what I think is missing." He goes on to say that, *"it needs to be defined who is involved with each project so it is more manageable to communicate to the right people instead of communication to everyone… that can be annoying."* Another problem he states is that:

> Sometimes I am in the communication circle for a certain project and then at other times I am not but I am still part of the project team. People do not do it intentionally, rather they just forget and all of a sudden it is hard to get the information that is needed.

Participant P7 agrees by saying that *"communication is different depending on the person since there have been problems when working in a group, because some employees send information to certain individuals but forget to send the information to all the participants who are involved."* He also states: *"I think companies should be transparent, in that I mean people should not be afraid to document and communicate a decision that they have made even though it may not have been the right decision."* The way Participant P6 deals with this kind of communication in projects is by sending e-mails to more people than less. He says:

> Everything is through e-mail but sometimes people forget to inform others. My rule is to have as many people as possible in cc when I e-mail even though it can be intolerable, but cc means that you do not have to do anything and everyone gets the information.

Participant P2 disagrees with this tactic because *"you do not always need to know what everyone else is doing."* He does though agree that communication can always improve but what stands in the way is that:

> People are so different; some people want to know everything and are grumpy if they are not informed even though it does not involve their projects. Then there are others who are happy to know what concerns them but do not need to know what others are up to. It is just different personalities.

But there are grave consequences from this outlook since there are people who are in the project team who are not informed and then there are others who get a lot of e-mail that have nothing to do with their projects. The communication within the team is crucial for the team to function properly and to be capable to deal with problems and

opportunities when they arise. Participant P1 had an example of this miscommunication problem that he has experienced:

> Sometimes we are all fighting in the same soup… I might start a project but then I have taken all the resources away from someone else. As a result, I will have to give that up and find new resources from outside but I did not anticipate that in my financial estimation. Then there is an extra cost because there is poor communication and then because the budget is too big the project does not work out. That is why communications need to be better!

Understandably, employees are frustrated with poor communication but it seems to not only resonate with communication within projects but elsewhere as well.

Communication is believed to be a serious problem when participants are abroad working on projects and when Participant P6 was asked how the communication was he laughed and said: *"All I know is that it is verbal."* He further states that: *"I would like to see more formal work meetings and status updates"*. Nevertheless he mentions that SharePoint is not being used because it is easier to walk the three steps to talk to the next person to communicate rather than documenting everything. *"But I realize that it becomes a problem when people are not at the office."* That is exactly what other participants agreed upon: when they were not at the office it was harder to know what was going on in the company. Participant P6 agrees: *"I experience the need for a better communication a little bit when I am abroad. Our way to communicate is to talk here in the coffee room but then when I am not there I am a little bit out in the cold."* He goes on to explain that it is not only when they are abroad but also when they might be communicating with two other companies on the same project when it gets hard because *"when you have people working in three different time zones on one project, how are they to be informed about the progress?"* This is clearly something that needs to be looked into better. Participant P1 says: *"When we are abroad we do not get any real information on what is happening at the office since official meetings are not documented."* He further states that:

> I really want project management meetings. It does not matter how often they are held, but they need to go over the projects that are in process. But since people are here, they believe they are so close because this is such a small workplace and as a result it is concluded that it is not necessary.

Participant P3 was asked if he believed that communication was good at the office and he said that he had concerns because *"I am not informed that well. I think the communication is good enough for me to do my job. But it is not enough for me to follow what is happening or for getting an overview of things. There is a need for communication flow so everybody knows what others are doing – some kind of a network."* All participants agreed that communication was something that needed to be looked well into and improved in some way or another.

7.4 Documentation

Several questions were asked about documentation to gain an insight into how documents are kept, how documents are categorized, and if there is something that could be improved in regards to documentation. There is a common hard drive that is called the c-drive, or s-drive, that stands for common drive, or "sameiginlegt" drive. In this drive most documents are kept and it is what most participants use but a problem arises when participants travel abroad since it becomes increasingly difficult to keep documents centralized, as Participant P6 describes: *"Documents are kept rather loosely. We have projects that are divided after countries but when we travel it is not like that; we usually save our work on our computers or on an external drive."* At the end of discussing this topic he says: *"But the best way is to search in e-mails after documents."* Participant P2 also uses the c-drive that everyone has access to but also notes, "*We can have access from outside the workplace through the computer but then we have the same problem when we go to places like Africa. The Internet connection is really bad so people save the documents they need before they leave and update them when they get back."* Participant P1 agrees that when travelling abroad to work, the c-drive is a barrier to keep the documents organized in one place since *"it is rather slow if you have a bad Internet connection. That is why people have troubles keeping their documents centralized because they save their documents on their computers instead of using a common drive like SharePoint to work on."*

Since the common c-drive does not work so well when employers are working abroad, they have resulted to trying different options to keep their documents organized. Participant P1 *"works a lot on a common software called Dropbox."* But he keeps on saying that *"there are a lot of employees that work on their computers so there*

is one battle that needs to be fought because people keep their files too much on their computers and forget to save them on the c-drive.

Participant P2 agrees and says Dropbox has its advantages but it also has flaws:

> We have also been using other software like Dropbox. It works like a database for projects and that is really clever but they say it is not really safe because it is too open. The advantage is that even if you have a lousy Internet connection you can upload the newest documents over-night if you leave your computer on all night.

Participant P2 deems it important, like many other participants, to have a common documentation system and he says we *"don't really have it… We have categorized our documents by projects. We do not have a certain categorization for them, which is not good and is something we need to look into."* Participant P4 agrees that there are different documentation systems going on (mainly the c-drive) but what they have tried to establish is to primarily use a different system, as he states: *"Today we have a common hard drive that we save our documents on but we have been slowly trying to move it into SharePoint."*

SharePoint is a software from Microsoft that is used by organizations to create a website that is a secured place to store, organize, share, and access information from almost any device. All that is needed is a web browser such as Internet Explorer, Chrome, or Firefox. Participants have a variety of different opinions on this software and when asked about if they use it, they have mixed feelings. Participant P1 says: *"Yes I am starting to do so more now. I am going to try to use it more for my next project and put all my information on SharePoint."* Participant P2 also says that *"SharePoint is a powerful information and data base software and we are trying to put all our documents on SharePoint and try to use it."* All participants have had some kind of a problem with it even though some like it more than others. Participant P5 states: *"I have used SharePoint and I like it very much. I have missed out quite a lot. I was on some meeting about how to use the documentation system that was just being set up and I am a little bit lost at the moment. It is not easy to incorporate it into our work even though some have really tried to."* Others have used it but in a very limited way. Participant P6 talked about that: *"I use SharePoint for flight requests and other*

information, for example lost password for the inner web and such. But I can never remember where I am so I always use the search features to look for the forms I need".

All the participants also had some negative outlook on SharePoint, whether it was because they have not had training on it or because they have had problems with it when working abroad. Participant P2 explains why he is not using SharePoint as much as he wants and what he resorts to using instead:

> No, we are trying to do that more than we used to. I have used it too little. The problem is that if you do not have a good wireless connection like in Africa then it is too heavy to operate. To log in on SharePoint in Iceland is alright but it is too much when you are often in places that cannot open up the library documents that you need. In the end you just save the files you need for the project on an external hard drive. This can be so tiring.

The participant is still reluctant to use SharePoint in Iceland because a lot of his work is done abroad and switching to two systems is considered time consuming. But there are others who believe that people just need training to start using SharePoint so they can benefit from using it, like Participant P3 notes by saying:

> There are very few employees that use SharePoint. I do not doubt that it is a good system but people need training to use it and a change of way of thinking and to be receptive for it. If this is going to be usable for the company, the benefits should outweigh the cost for the operation of the company, and then the employees need to participate in it. It is really good for the company to have many different standards but we can do better in project management. I think people don't know if they are coming or going.

Others believe the software is not for them, like Participant P6, who when asked whether he used SharePoint he laughed and replied: *"No that is not possible. I see SharePoint as something that new employers could use to get informed."* Yet others do not particularly use it because of lack of time, like Participant P3, who notes: *"No I do not. All the projects are in there and probably cost analysis for those projects. I have not had time to look at it. I have enough to do."* Participant P5 states that all the employees have their style of working and when incorporating something new it becomes difficult because *"here there are many kings that have their opinions."* One of the reasons SharePoint was not working, according to participant P5, was because of how small the work place is: *"It is easier to walk these three steps to talk to the next person about work when you are in the same office."*

Other problems in regards to documentation were how to save and share documents, as Participant P5 states:

> When you are working on some big project you get a lot of information, like maps and reports, but there is no system for how to distribute the information. So once I was just sitting on a lot of information without thinking, when I and another employee went on a big meeting with our clients and they started to ask if we had used all the information they had given us and my employee answered that he never received it. Then I had the whole thing without knowing that he did not receive them as well. There are things that could definitely improve.

Participant P6 mentions that there needs to be a middle ground in regards to how much information you share with your colleagues since you neither want to share everything, nor have it be too restrictive. Sometimes there are sensitive documents that people would not want everyone to see but most of the time the reason the projects are not documented properly is because they are considered too small. He mentions: *"Sometimes you have something that is sensitive and you do not want everyone to know about it and then you can restrict access if you have a good documentation system."* But he also says that, *"money controls how much you document in projects"* because *"no one wants to know if you buy trivial stuff abroad"*. He goes on to explain that the bigger the project, the larger the need for more documentation, but mostly things are talked about rather than documented in smaller projects.

When the participants were asked if they had any suggestions for improvement in regards to documentation they had various ideas. Many felt they did not have the time to look more into their ideas while others were more pessimistic that new software or new tools would cost too much and that other employees would not be open for the idea of learning a new work procedure. Participant P6 said: *"It would be good to have a website where you ask for a form and submit your documents and they are saved in an archive. Some kind of electronic case handling but we have not reached that level except with our flight requests."* While asking him more about documentation he was asked if he thought it would be too much work to document all meetings even for smaller projects, and he replied: *"No I do not think so. People Men just get used to it. It is the kind of work procedure that you do without thinking."* Others had different ideas, like Participant P1 who thought:

It would be good if we could make a folder on our desktop that would automatically save the document somewhere else where everyone could view it. It would be good to have documents that are not physically saved on your computer but somewhere else, like a cloud, but you can always open up the document through a link.

Documentation was overall considered to be something the company needed to focus more on and a reliable, centralized documentation that everybody used was considered essential. Currently they were looking into using SharePoint more and they felt there was a need to teach employers better how to use it. However, the views toward SharePoint are considered to be quite mixed.

7.5 Risk Management

Questions were asked about risk management since it is considered crucial in project management to identify, assess, treat, and control risk. The questions that were asked were how participant estimated risk, if they followed it through, and how accurate they were. In the end, participants were asked if there was anything they would like to improve in this subject. Participant P4 explains how this risk management process is conducted*:*

When we start a project we have a form that we fill in and analyse the project as a whole. There is country risk, reservoir, finance, technology etc. Either we accept the risk or we allocate it. But if the risk analysis shows some red zones then we do something about it. We do follow this.

Participant P2 also explains that risk analysis is done for projects that are more like a system than a standard:

We have an Excel sheet that we use to analysis risk in projects. We have a framework of all the risks that need to be estimated. We have done rather passable risk analysis but maybe not in detail. Then we estimate from project and financial stand point and then country risk. It is a certain process that we have often been through. This is not a standard but a system that we use.

Other participants stated that risk analysis was often quite an unclear process that they were sometimes not particularly involved with. It was often stated that risk analysis was done when working for a different company on a consulting project since the company demanded it but risk analysis was a rather loose term when it came to the projects of

the company. Participant P1 stated: *"There is a risk analysing document. I have used it twice but that is the only time I think they have been used. Well maybe I am exaggerating but there have been risk analysis that we have had to fill in when doing risk analysis for other companies when we have been consulting."* On the other hand, Participant P6 states that: *"We do very little analysing here, almost none."*

Participants were asked if risk analysis was done in the first place would they follow it through the projects' life cycle and update it. There was a unanimous agreement that if it was done it was usually done in the beginning stages. Participant P2 says: *"We have often done risk analysis for projects that we have consulted but we have never followed it through and estimated it regularly."* He goes on to mention that the reason is *"because the projects evolve very slowly. Now, on the other hand, projects are going full speed so we need to make these analyses and follow them through."* He further explains that, *"now we have a very rough estimate and then we have the financial team to make a financial risk and we have not made it mandatory to follow it through to the end. But that needs to be done!"* Participant P1 agrees and mentions that it has been done maybe once or twice before, like he says:

> There have been no processes or it has never been a high priority to go over it again to update it. Well maybe I exaggerate; we have done it maybe once or twice before. We did it and went over the risk analysis with the buyer and as a result the analysis was updated and some comments were made.

Participants were either not involved in this process or the process is considered to be done mostly for other consulting projects than their own. The reasons mentioned were either that the projects evolved slowly or the projects were considered to be quite small. All the participants that are involved in risk management believe that there is a need to have a firmer process in this regard and to follow the risk analysis through the projects' life cycle.

7.6   Cost and time management

Cost and time management is considered to be interrelated since the duration of the task correlates with the cost. Questions were asked about cost management and time management separately but participants considered it to be almost the same question

because of its connection. When asked about how time is estimated, Participant P6 describes it as something like this:

> We always try to have a fixed time on outside consulting projects. But when we take on big projects where there needs to be drilling involved we often have it so 2% of the projects is management fee plus the cost to have people men working on it. We know somewhat that 10% of the price of a borehole is management, supervision, etc.

He further explains that:

> The time is estimated in days. For one current project we estimate that there is one month on the ground. Then we have to have certain work done in 30 days. We do not know how much it will be but sometimes we set down a fixed price. Then the outcome is decided by how quickly we can finish the job.

Other participants, like Participant P1, describe the document for time analysis to be a very *"lively sheet. It changes with the information that we receive of certain work structures. The estimates are pretty good or as good as they get."* The management of time and cost is considered to be quite different from the discussions about risk management. But as mentioned above, when asked about time and cost management participants felt the procedure to be the same, as Participant P2 says: *"From the same method as cost. People know how long something takes so it corresponds with the cost."* When participants were asked about cost management and how they do cost analysis, Participant P2 explains it as a process that goes something like this:

> We do them first and foremost by benchmarking. We know and gain information about cost by certain work processes. We try to find the information by asking the companies that make the products what we need and get a rough estimate of cost. Then we look at older contracts that we have had and try to make a database about these numbers. That is how we estimate new projects. We know somewhat how much certain things cost in different work processes and that is what we base our planning on. They come from everywhere, from here and abroad and of course from the producer as well.

Cost analysis and management is not done by everyone in the company but other employees contribute their knowledge when it is needed, like Participant P5 answers when asked if he participates in time management planning:

Yes I do that. We sit down and schedule the time frame and we discuss it, and sometimes we change the time we start the project. We ask ourselves when certain processes should be done and how long they should take and what people men want to get out of this.

To gain a better understanding, a question was asked if the cost and time estimates were always by the plan. Most participants agreed that it is incredibly accurate and their work processes were pretty straightforward. Participant P1 says:

Surprisingly well. There was an estimate that was done two years ago for a project that I was working on and it was only a couple of percentages off. The reason might also be that we are very careful when we estimate cost and time, maybe appropriately careful and appropriately bold. I think we are pretty good at this.

Participant P4 agrees by saying that cost and time estimates go by the plan *"most of the time",* while Participant P2 says it is rather accurate but minor differences can play a big part as he replies to the question: *"Somewhat, some costs increase more rapidly or decrease. It can be difficult sometimes because it can be connected to certain areas. There might be much more expensive to do one thing in America than in Africa or in Asia."* One participant had an interesting outlook on cost and time schedule. When Participant P5 was asked if he knew the time schedule and the budget in his projects, he replied *"I don't know",* and when he was asked if he wanted to know, he answered *"I would want to know if I was outside the budget or time but otherwise I do not want to know."* A follow up question was asked, if he did get to know if he was outside the budget or time and he replied *"probably. It has never happened."* When estimates do not go by a plan it is often considered to be an outside factor that could not have been anticipated, like Participant P4 explains: *"It is usually the third party that is not doing its job. At one point we did our job but the company was not satisfied with the department that hired our services. It had nothing to do with us but it was a contract that the department made with us that the company was not happy with."*

In the light of the fact that most time and cost analysis go relatively after plan a question was asked if the cost and time analysis was updated as the project evolves. Participant P2 explains: *"We estimate and update the plan when we start a project and the more we learn and do public contracts a new price is given and then we update our plan. Usually we try to make our cost estimates rather flexible so we have some leeway*

to work with." The plan is updated but at the same time rather flexible. The time and cost planning is in the hands of project managers and the financial team which is said to be *"the document that is mostly on schedule",* according to Participant P1. He also states that project managers *"have to be responsible for their projects' budget and time plan and cannot expect someone else to do it. They have to estimate it themselves if they want to look at the budget daily and update it or once a week or once a month."* Participant P3 also claims that project managers can ask the financial team for updates on their spending if they want but it depends on the project how closely you have to monitor the time and cost. He states that, *"Development projects are big but few so you do not have to be nervous each week about the cost except with consulting projects but there you have to monitor the cost more closely."* As a result, time and cost analysis is somewhat on schedule and updated regularly by the employees who are responsible for them. What is also noteworthy are the opinions of those who are not responsible for the analysis and how one participant did not want to be informed about the process at all even though it might concern him.

7.7 Project Management

Project management consists of many processes and certain practices that make it more likely for projects to be successful. For this paper certain processes were picked out from the standard and participants asked how or if they did have any of those processes. Participants were asked if scope was performed before a project was taken on, if they do work-breakdown structure for their projects, how they handle suppliers, if they do Lessons Learned, and if they have a process for changes.

When participants were asked if they did scope for projects there were different views. Participant P2 says, *"yes every time",* and Participant P1 agrees by explaining:

> It is done in most cases; there are certain projects that demand it because there is some kind of an application process. In our projects people know the scope. There has been an outline of scope for investment profiles that are used for investors who are interested in knowing more about their projects, and in that way I say we make scope for our projects. Whether the scope is a part of or has the same outline or structure between projects is a different questions. That is on the other hand not so. This is a rather loose

terminology in the sense that we make one scope for one company but a different scope for another company that might look completely different.

Not everyone agreed on this topic and Participant P6 stated that: *"No we have not incorporated that too much, the reason being that the projects are so small. It is kind of over the top to do it."*

Subsequent question was asked to understand other parts of management in projects and to see if participants did work-breakdown structure before projects were taken on. Participants believed that a work-breakdown structure was not done in all projects, especially the smaller ones, but for bigger projects they were done. P2 says: *"It all depends on the project, all the way to the details."* Participant P1 agrees but explains further by saying:

> Yes we do that with the time scheduling. After the cost analysis is done the time plan is established because there are a lot of connections between these two, that is to say how much something costs to how long the process takes. Then we do a work-breakdown structure. We do it in most projects though not in all of them. Maybe not in the smaller projects but that should be done too. But I do not think the management committee has all the work-breakdown structure for all the projects so they can see the overview of all the projects.

The next question was to see if the company had any suppliers and how they were dealt with. Not all of the participants were asked this question depending on in regards to their involvement in the company. Participant P2 mentions that suppliers are usually consultants that are hired into the company:

> We usually do not hire any suppliers unless it goes through a certain process that one of our employers performs. We do revaluation yearly on our suppliers and that works just fine. They get plus and minuses and a grade. This is first and foremost consultants that we hire. This is all documented in our quality system.

Participant P4, on the other hand, mentions that it is not just consultants that are considered as suppliers; there are other services they seek in different countries that are recorded in their quality system and it is categorized by country of where the services are needed, as he explains:

Yes, those are the people we trade with. It could be any service. It depends on what country we are working with since suppliers can be the hotels, equipment that we need, insurance and this and that. Then every year we evaluate the suppliers, or after each project, and decide if we want to trade with them again and give them a grade.

Another question was asked to see if the participants kept documents on lessons learned. This can be beneficial in order to learn what has gone well and what has been an obstacle in the life cycle of the project. When asked about this there were different views and opinions. Participant P4 says: *"Yes we call them post mortem. After each project we fill out a post mortem."* While Participant P2 agrees that they have done post mortem, he believes the projects need to be bigger for that kind of a process. He states: *"No not really. We have done it and we have tried to do it at the end of each project. What went well and what was difficult but I think an employee takes care of that. But we have couple of those. The projects need to be big to do that. But we have done it!"* Another participant says there are no lessons learned written down but they have meetings that go over topics that need to be discussed that would fall into lessons learned. Participant P6 describes the process as: *"It is mostly just meetings. We have a meeting once a week, on Friday mornings. There we talk about this and that. In that way our database is literally just in the meeting room. And then partly in our e-mails but that can be posted on too many people or too few."* When asked if post mortems or lessons learned were viewed before they start a new project the answer was always "no" or as Participant P4 said: *"People remember this mostly."* In the end of this topic a question was asked if they thought it could benefit the company to make these lessons learned and Participant P6 answered:

Yes probably. I cannot answer what the benefits would be. Our business idea has not started yet but it is about to; then we could have us survive with all kinds of this and that [meaning processes]. Then it is usually easiest to have as few employees as possible with you in that because you need to deliver something to a buyer and they have to pay for it. Then it is too much overkill to make the perfect system where everyone knows everything. Either the buyer for the projects has to pay for it or I will have to work longer hours to set it up in the system. Then I do not have the patience to do it.

He remarks that there might be benefits to having a lessons learned and a better quality structure but because he believes there is a lot of additional work that needs to be done

to keep up that quality structure, he deems it better to have as few employees as possible working with him since the buyer has to pay for all that extra work. It could be interpreted that he does not see the benefits of it for smaller projects since there is little patience for it.

The last question was in regards to change management and if they have any processes connected with changes. The participants all agreed that change was something that could be better within the company and many agreed that it was important that everyone was informed in the light of changes. It was also considered important that everyone would know the course of the company. Participant P2 answered the question like this:

> This is such a small company. It is done alright but I think we could be better. People should inform others more about changes that have been done. It is good to have everyone informed about changes. There have not been many changes here. It is very important that everyone is on board when changes take place and know where they lead and where they will be tomorrow.

Participant P1 notes that if the company had been more aware of changes and reviewed its processes more, they would have benefited immensely from it:

> In regards to changes, I think that before there was a major change in the structure of the company, people did not fully realize how profitable consulting was. If managers had been more informed and had had better communication flow then I think that realization would have happened earlier. If there had been meetings about the course the company was taking, then they would have realized better where they were heading and known earlier if there was maybe a better way or different emphasis for them.

Other participants believed that there was no real need for processes or protocols when it came to changes, like Participant P4 explains: *"We have a process for changes in our own projects, but no formal sheets since we have not needed it. If there is something that we need then we will do it."* Others did not know if they had any processes, as Participant P1 says: *"I do not really know. I think they just happen. They are allowed to come and go."* The reason for this might be that usually other companies that hire their services do these processes themselves, or like Participant P4 explains: *"Because we will be the consulters and then someone else takes care of the change-forms and keep it*

together." Many believed that since the company was so small, changes are really easy to adjust to and Participant P3 agrees to that by saying: *"The employees adjust really well to changes."*

Couple of participants used an example of how changes might improve the way they were dealt with. Participant P5 and Participant P1 mentioned the day when two employees resigned. Participant P5 describes it: *"There have been two men that resigned. They just left and I did not know it until the day they left. There was a cake and I had no idea what the cake was for until I asked and someone told me. There were many displeased that the owners should not have organized this better, which is correct.*" Participant P1 agrees and says:

> There used to be two employees that quit not that long ago to work on other projects. Those are changes that were handled badly in my opinion. It was not announced until the day they quit. So it came to many as a surprise and it was not possible to give them the farewell we wanted to give them. It did not happen until later when one of them had been working at another place for some time, we called him back to have a farewell party.

The work of the newly resigned employees was delegated to different people and *"other staff member that left is still kind of working the same job that he used to but now as an outside consultant. And it has of course cost a lot of money to do it that way, maybe it is better to hire someone else to do his work",* explains Participant P1. Change management seems to be something that employees are worried about and feel there is *"need for a better information flow in the company. Everyone needs to be informed what and where the company is going"*, says Participant P3, which Participant P1 agrees with when he says: *"[change management]… I think that is a terminology that is little used here in this office."*

7.8 Expectations and roadblocks

One of the last questions that the participants were asked was whether they had any expectations in regards to incorporating a new project management standard. All of the participants had some idea of what they would like to improve in regards to projects, processes, and communication. Some had new ideas while others just wanted to improve the current processes. Participant P6 states:

My expectations would be to have a database (an electronic system handling) but something simple, some kind of framework software that would be possible to put in documents and have an overview what others are doing. At least, the coffee room method stops working when people are working all around the world in different time zones.

He continues by saying:

Instead of everyone pressuring the project manager about all the information that is needed, the project manager can put all his information into a database (electric handling system) and the employers decide how much they want to know. The project manager makes sure the information is there but it depends on each and every one how much they want to know.

He further notes that when this central database would be up and running they could also have documented meeting where projects would be discussed, that would result in *"fewer worries. It is clear when a project stops and why it stops, where and with whom and what is possible to do about it. That is very elegant."*

Participant P5 wants to improve current processes and have a system that has a better overview of their projects. He says he wants *"some kind of an umbrella that keeps together all our projects and puts them into one system, that is to say, put our projects into even better use and I know from my own experience that no project evolves like they were originally planned."* He further explains:

... 5 days here and there and sometimes a drilling should take 60 days but they take 120 days so everything is constantly changing so we need to be flexible. If a project changes it has an impact on the other projects as well in regards to resources and working together. What would be good is to have certain processes that could help with these changes and help project managers to work together.

Participant P4 also wants to improve the current system and wants to update SharePoint and other processes. His expectations would be *"good to see status reports. Information about the statuses of projects and register the projects into SharePoint and visually see the history."* He also wants to *"update the processes and add what is needed to our processes."* He mentions that it would be good to get SharePoint updated and started but *"there is a time and a place for everything."* What is missing is the time to

work on these things but in the end he also mentions *"and then some Scrum system so it looks better."*

Participant P2 wants to improve current processes but also has ideas about software that could be of use for the company. He answers by saying:

> Yes it could improve our communication paths within each project. We have tried it through our quality system but our information stream is mostly through e-mail. But I know there is software where you set up the project and it automatically distributes information and documents are kept central and all information is distributed to the right people that need it.

He further states that what he expects is *"more disciplined work first and foremost and a good structure and more significant information."* Participant P3 has a different emphasis but wants to achieve the same: better quality and better overview. His expectations *"…would be a better overview for each project. More visibility in projects and better categorized. As a result there would be better quality."* Participant P2 also goes on to say why the company needs a project management standard and how it can be of value to them:

> This standard is what we need: a project management system. I think it is logical to follow a standard that is built upon experiences of others that are more knowledgeable in the field. But of course I think we should follow the standard and fulfil its requirements. The standard is somewhat of a test and it touches upon all the aspects that you need to consider. If you follow it you are relatively set in how to do certain things, document them and inform others about them. That is the benefit of the standard. Then you can execute it in a different way in your set-up.

The last participant describes that there needs to be more of an emphasis on team building, where everyone works together and communicates better and where there was a better centralized database to look up processes if in doubt. Participant P1 explains:

> I think the key to this is communication and participation of everyone and there is more emphasis on trying to have everyone on board and do this together. Since there are two formations, those who manage and those who are employees, we do feel it. Even though the management is very liberal and because it is so, it makes the others feel more alone.

He further adds that he thinks it would be *"really good if the communications between departments and people in here was better and to have more discussions about projects and processes etc. It would also be good to have a management meeting for all the staff once a year."* At the end of the discussion of this topic, what he would like to see new in the company is:

> …some kinds of a database or guidebook so employees can, if they have any problems, look things up. There would be some standard forms and methodology so everyone would work by the same method. I do not expect people to change their style of working, but rather those who are interested can get information and it has been introduced to everyone that there is a set of processes that are possible to work by if people want.

There are expectations and then there are roadblocks. When asked if there was anything standing in the way of achieving these expectations, participants were not all so optimistic. From past failures to current attitude, participants felt that it was a challenge to change the company either because they felt they themselves could not change or they felt others would not be receptive to it. Participant P3 explains a previous experience on software set up and how they are not optimistic about setting up a new one:

> All these softwares are really stylish but they cost a lot, especially things that connect to computers. All these information systems that need some specialist to set them up charge 50 thousand krona per hour. We have gone through this before and we got someone from abroad to set up a computer system. It was extremely expensive.

He further explains that the age of the employers could be a problem:

> The average age here is rather high. Young people today have different way of working so everyone needs to be up to date on the newest development. Just setting up a time registering system has been a big deal, where you register the time you work into a system on your computer. Anyway, we are not going into this… but of course we need to develop when we grow bigger… we just have to.

In the end of this topic he mentions that, *"it is really elegant to take up this standard but then people have to be ready to work by it and learn it… that is it."*

The participants all mention that there is little time and extra work is definitely not welcome. Participant P6 explains his point of view in regards to incorporating a new standard:

> Yes when the projects are big then that might work but as I say everything that helps me I use. When I have a 100-hour project somewhere for 2 weeks then I don't intend to spend one week setting the system up that is just too expensive. This does not work unless it helps me. If I do not see it saving me time then I don't do it.

Most participants feel they do not have the time, like Participant P6 explains, that everyone is working so much that it is hard to incorporate something new. He says: *"They all try to get away from it since everyone is so busy. But as soon as employees realize that it helps and reduces work, like now we have a nice system in regards to our flight requests. Things might improve and lessen the workload in the long term."* The reason for this outlook is what Participant P1 suggests: *"I think people are a little bit scared of bureaucracy and that this [the standard] would turn into that but I think you don't have to look at it that way since you do this kind of work anyway, just ineffectively and spend more money and time with mistakes."*

Another road block that is mentioned is that there is never the time for the employers to set up a project management system, as Participant P1 describes: *"I think it would be good to have someone to take care of this in some kind of process meetings. Introduce the processes and explain what the point is and how we can save money and time."* This could be solved but what other participants point out is that even if a system was in place, not everyone would follow it. Participant P5 point out: *"Yes but people are so different. It does not matter what tools I get into my hands, that just does not change me."* He goes on to say that everyone is so independent and so fixed in how they work that *"this standard is attacking a certain kingdom where each and every one is a king."*

The last question that was asked was to see what an ideal company would look like to the participant by asking: If their company was perfect, how it would look like. Almost all the participants answered that there is no perfect company, which is quite interesting coming from most of the participants. Participant P4 says: *"In my opinion a company is never perfect. If you want to fix something or update then you do it. It is*

never perfect but there is always a room for improvement." It can be understood that this is a small company and if they intend to improve something they can. Other participant had more specific goals, like Participant P5 *"would increase the scientific work, since that is what I like the best."* Participant P6 would *"like to utilize 100 megawatts per year"* and *"to make my own megawatts but not megawatts for someone else."* Participant P2 mentions a different point of view and would want *"more fun projects, happier employees and a good salary."* Participant P3 additionally wants to be better informed of the general direction of the company. He says: *"I would want to know more what our future is and where we are heading."* With that comment he believes that *"people will participate more"* when they know what the company is aiming for and what they want to accomplish. These are all doable goals that can be achieved and being a small company can have its benefits since all the participants believed that the company could improve and that they create the future they wanted to see in the company.

8 Discussion

In this chapter the findings will be analysed and it discussed what they might mean for the company at hand as well as other companies seeking to implement ISO 21500. First of all, the company's environment, structure and processes will be examined, followed with a discussion of how they can be improved and how the standard might benefit the company. Next, documentation will be looked deeper into and what documentation system might become of assistance to them will be considered. After that, risk management will be discussed in regards to how to improve that area by assessing risk more regularly and for all projects. The fourth topic is about project management and how certain processes in project management such as scope and lessons learned can be improved with the quality of the project. The final topic covers expectations and roadblocks and how this shapes the way the company moves forward and what decisions will be made in the future.

8.1 Company's environment, structure and processes

There is a lot of potential in running a very effective company even though it is young and relatively small in scale. With a staff of fewer than 20 people it is easier to change working habits than changing a large-scale organization with over 100 staff members. One of the indicators that the company is up and coming is that many participants agreed that they are required to do a lot of different kinds of work and various tasks. This could improve the group dynamic but it can also leave employees shattered and confused regarding what is overall expected of them. This is something that many participants expected would change since the company is growing quite rapidly but it emphasizes a great need for more of a refined structure to keep things in order and to have clearer framework for employees to work within.

What is crucial for a company that is expanding its work and hiring new employees is a solid structure and clearer processes. Since the company has already incorporated ISO 9000 it might be considered to set it up on the Internet only visible to employees. Other companies as well as municipalities like Kópavogsbær (http://gaedahandbok.kopavogur.is/Ghb_efnisyfirlit.htm) have put their entire quality system online, some visible to the public while others only to the company. The advantages of this set up is that everyone is familiar with the interface and employees

can always look up efficiently the process of what is expected of them instead of 'figuring it out' or asking constantly what is expected of them. It was agreed by all participants that the workplace was to be rather dynamic so not everyone is available to talk things over when questions arise. In that way, having an online quality system, like ISO 21500, can diminish uncertainty and give employees more confidence when partaking in projects.

What could also improve the company's quality are more informed job descriptions and more structured and collaborated ways of distributing work because if employees need to fight for their job and grab opportunities it becomes very ineffective and futile. Many participants talk about the structure needing to be flexible. That is quite right when a company is still expanding and has relatively few employees that share the responsibility. Nevertheless, there is a difference between unclear and vague structure and clear and flexible structure. If the work procedure needs to be bent then that is acceptable as long as employee and managers are aware of it, and if the procedures can be changed in accordance to the projects if needed. Things do not need to be vague and unclear for the structure to be flexible and effective.

The office space is open and spacious enough for the amount of employees working there and participants agreed that it was convenient for the kind of work they do. Employees rely on closeness for communication and often rely on informal meetings and chat in the cafeteria to discuss work and projects. What might be useful is some visualization around the office. Some participants agreed that a board visual to everyone could be placed where employees could see the current projects that are being worked on and at which stage each project is. This could also be converted to a different medium like computer software where each and every one opens up a window and visually sees what other employees are doing and what is expected of them in accordance with the project. There are advantages and disadvantages of having such a small work place. The advantage is that the workplace is rather personal and every member is quite easily available for a chat, but the downside of having a small work space is that most participants felt that word-of-mouth was the main way of communication but it is not always the most effective way of storing and sharing data.

8.2 Communication

The standard devotes one whole subject group to communication only. It is important to plan how the communication flow is going to be, what information is going to be distributed, and who should be informed. Furthermore, all of this needs to be managed to ensure that all communications are done by a certain standard to satisfy project stakeholders as well as resolving communication problems if they arise. In regards to the participants, they agreed that communication was something that could be greatly improved. The topics were organized according to how information between managers and employees was conducted, how communications in projects were directed, and how communication was ensured while employees were abroad.

According to the participants, the main problem with communication was the information flow between managers and employees. It was considered hard to know what managers expected of employees and, moreover, managers had a lack of overview of all the projects in process. What needs to be put in place is a system where managers request certain information of employees, in head of time, so employees can update and inform managers of each project. In that way, managers would have an overview of all the projects in a more systematic way. Managers would also have to share information when management decisions are made and a good way to incorporate that would be to document management meetings and give regular feedback to employees about their work.

Another issue addressed by participants was communication in project teams. There is not a certain structure of who is informed or how this should be distributed in the project team, which could also be traced to a lack of scope in the project. Nevertheless, many participants felt it hard to distribute information and were often uncertain about how much information should be shared. Some shared little or nothing while others shared too much information to too many people. It was considered a character trait that was hard to address and that it should not be up to each and every one how much information should be shared. Rather, there should be a standard way of sharing information so employees do not feel confused or uncomfortable in their way of communicating.

The third problem was communicating while working abroad. Most employees had difficulties with this aspect of communication since most employees travelled 3-6 months a year. The participants therefore had limited or no information on what is happening at the headquarters while abroad. This leaves employees unsure of the progress at home and leaves them feeling like they are working independently, not as a team. This can easily be solved by holding meetings regularly where they are documented and saved on a documentation system that is available to all employees no matter where they are located. This could also come in the form of an active news website on the inner web where news, updates and information would be easily accessible. This way there is no need to e-mail everyone and each and every person can decide how much they want to be informed so all the responsibility does not fall on the person documenting the meetings.

There are also several software ideas out there that might benefit a company that has difficulties sharing, viewing, and planning projects so every employee is aware of each project's process. Below are some ideas:

1. Hansoft – An agile ALM (Application Lifecycle Management) tool and a PPM (Product Portfolio and Program Management). It is used in industries like Electronics, Aerospace, Game Development, Telecom, and Cloud services and is used by the Icelandic multiplayer game company CCP. Members at all levels in organizations sized from less than 10 to many 1000s use Hansoft to do Scrum and tailor agile methods, Kanban, collaborative Gantt scheduling, defect tracking, news feed, chat, document management, external party collaboration, long term planning, real-time reporting, workload, and portfolio analysis, among other things.

   The software can be found on https://www.hansoft.com

2. Trello – A free project management application that is web-based. It can be used on the computer, iPad, or phone. It is a Kanban style of managing projects, which originally came from Toyota in the 1980s to supply chain management. Projects are represented by *boards*, which contain *lists* (corresponding to task lists). Lists contain *cards* (corresponding to tasks). Cards are supposed to progress from one list to the next (via drag-and-drop), for instance mirroring the flow of a feature from idea to implementation. Users can be assigned to cards. Users and boards can be grouped into *organizations*.

   The software can be found on https://trello.com

3. Redbooth - A social collaboration tool with online project management, which was voted the best online project collaboration software for project managers, contractors, freelancers, and teams. It consists of conversations, task lists, pages, and file storage and makes it possible to share ideas, files, images, and

video. What is also important is that communication options are e-mails, mobiles and other interfaces that are easily accessible.

The software can be found on https://redbooth.com

4. Projecturf – A web-based project management app that helps individuals and businesses to manage projects, people, and tasks. The project's size does not matter but once the project is created you can add team members to the project and use several features and functions to create and manage tasks. It is possible to keep up-to-date on all projects and store everything in one place that is always accessible, secured and backed up. Projecturf uses the highest level of security available on all accounts all the time.

The software can be found on https://projecturf.com

Other software such as Apollo, Basecamp, Huddle, Lighthouse, and many more software solutions could assist the company in organizing and delegating work between employees but it is up to the company itself to choose what they believe is most suitable for them and their own culture. These software solutions could also solve the problems for more visual structure and make the information flow between managers and employees clearer. The possibilities could be endless regarding how projects can be executed and delivered.

8.3 Documentation

Documentation is one of the keys to running a good company. It is important to have a centralized documentation system where data and documents can be kept safe. It is also important for further referencing and when documents need to be shared with other colleagues or customers. One of the problems the participants described was the way documentation was done because documents were found on different computers and not saved on the common drive. There was also confusion regarding how much to share and if everyone involved got the documents that were available. Participants also described that they were worried about over sharing since some documents were felt to be too trivial to be shared so documentation for smaller projects was often limited or non-existent. When participants travelled abroad it was impossible to save the documents on the centralized system so they tended to save them on their computers and forget to update and store them when they got back to the office. That can only

mean that the centralized system has some but rather limited information on what everyone is doing and how projects are evolving. It would therefore be quite difficult and time consuming to find where documents are located since they can be scattered on different hard drives. This creates confusion and makes it problematic to keep up the quality the company wants to ensure. One of the ways to solve the problem would be incorporating the ISO 21500 standard to get the documentation system in order and properly set up the process for storing and sharing data. This way, the company can continue working effortlessly in other parts of their projects without worrying about documentation failure along the line.

SharePoint is something that most participants had some experience with but overall there seemed to be a negative outlook with its mode of working. It is a Microsoft software that can both be used to store, organize, share, and access information. It has great potential to solve the company's problem with documentation but it was considered to be too complicated, too time consuming, or not working properly. A big problem could just be the outlook regarding the software: some participants might have had a bad experience with it or not enough training to be able to work properly with it. It would therefore be beneficial if staff would either seek training outside the company to learn to use SharePoint or a consultant would come to the company to go over the important features of the software. This is something that the company would have to fully devote themselves to or incorporate new ways of working.

The participants were using some forms of different documentation systems so they could have an overview of their own documents. It is about time, when this becomes a serious issue and drastic changes are needed in order for them to continue their everyday routine. There are endless opportunities today in regards to documentation systems and storage.

Here are some ideas just to name few:

1. Dropbox – A file hosting service that offers cloud storage, file synchronization, and client software. It is possible to save and store files, photos, docs, and videos from anywhere around the world and you can view this from any computer, phone, or tablet. One of the benefits is that you can share your data with just about anyone and it is really easy to learn and use. The downside is that Dropbox has been criticized for not being safe enough for primary storage or with sensitive data since the company has access to files and there has been a case of computer hacking to access files.

The software can be found on https://www.dropbox.com

2. Google Drive – A file storage and synchronization service provided by Google. It is possible to share and store documents from anywhere around the world, which can be viewed on almost any device. What is a great advantage is that Google Docs is housed on Google Drive and is a free, data storage service that allows users to create and edit documents online while collaborating in real-time with other users. The downside is that Google Drive is only free for data storage up to 10 GB but the prices increase in accordance to how much data storage is needed.

   The software can be found on https://www.drive.google.com

3. IDEGA – An Icelandic software company that has supplied software solutions to governments and municipalities for the past 10 years. Its main components are: building forms, portal designs, interactive case log, and registry, customizing my pages, and creating documentation solutions. The software can also be customized for each and every company so it maximizes its potential.

   The software can be found on https://www.idega.is

The company will have to decide what documentation system they would like to install and all employees and supervisors need to use that system for the company wholeheartedly, otherwise exceptions will undermine the whole process and the company will be back to where it is now. It does not really matter which system will be used because it is about finding what suits each and every company best and since the standard will not recommend any, the company will have to figure out what is best for their culture and standard.

What really needs to be considered is the outlook towards new systems and storage solutions since many felt they would cost too much, be too time consuming to learn, and that other employees would be quite negative towards using them. This is not a matter of trivial ideas; it is something that is crucial for the company in order to move forward, to tackle big projects, and to work together as a team. If this will be ignored it will be hard to keep up quality in any other section of the company.

8.4 Risk management

Risk management is something that all companies are concerned with since it is often the evaluation of risk that determines whether a project is taken on or not. It is also strongly related to money, time, and the future of the company. At the company, risk management is done by a few individuals who do the assessment but it is not done for

all projects. A participant boldly stated that he might have done it for two projects since there is not much pressure to hand in risk assessment reports to managers. Therefore it might be said that it is used sparingly and when it is done it is at the beginning of the project and not followed through. What is needed is a mandatory risk process for every project that is taken on whether the project is small or big. It would become an expected process that every project manager would have to do for its project or assign to specific employees to handle. Therefore, it would give a clearer picture of all potential risks and give managers a better overview of the progress of each project.

The company has two different types of risks: the risks of their own projects and the risks for other companies they consult. When risk is estimated for other companies it is done through their software or through a risk document that needs to be filled out scrupulously. It is an obligatory part of the project's process but that outlook is not always the case for the company's own projects. What could be the cause of this is their risk document, or the need to inform project managers on how to estimate risk and following it through. What could be a beneficial way of continuously estimating risk is for supervisors to request risk updates every couple of days/weeks/months depending on each project. It would benefit the company immensely to have a process that would systematically make clear when and how to treat risk and control it throughout the project. Risk is something that should be updated on the same basis as cost and time management. If done simultaneously, employees and supervisors will have a better overview of current status of the project, be able to treat risk more efficiently, and have projects followed by a more accurate time schedule than before.

8.5   Cost and time management

Cost and time is something that most companies consider precious. It is something that is limited and has to be delegated wisely and with great care. One of the ways to be more efficient with these resources it to; estimate them, develop a schedule and budget, and control them throughout the project. Participants stated that the time scheduling and managing is quite a lively sheet. It is updated regularly and is the responsibility of the project manager of each project. The project manager may not know all the information that is needed so other professionals and employees help by contributing their knowledge of cost and time. Most participants thought that this

process was relatively stable and reliable since cost and time plans were usually followed through. It has to be noted though that participants believed that most analysis reports were rough estimates that had more leeway for change. It would be outstanding if reports would be analysed with more precision and maybe in that way could be done simultaneously with risk analysis. At the time, projects are big but few according to an interviewee but this might not be the case in the next couple of years. As of today, it is possible to keep updated with cost and time but when the projects grow both in scale and time it is of most importance to have the estimates, schedule, and control of this process as precise and actual as possible. What the ISO 21500 standard recommends organizations to do is estimating costs in terms of unit of labour per hour or number of equipment hours. It also takes into account the cost of possible risk and how the distributed work can be broken down into appropriate level for the project's budget. The consultancy company at hand does follow those principles but what it is lacking is a stable process procedure for all projects and more visibility so everyone in the project team will know how the project progresses both in time and budget.

8.6   Project management

There are many processes that make up project management. It was not possible to take each and every process into account when asking participants about the way they manage projects. Nevertheless, one of the things that are considered crucial for projects to succeed and to project development is the project's scope. Scope has its own subject group in the standard and is often considered to be the foundation of projects. It is where the project is defined and work is broken down in a more structural way and the activities clearly organized in accordance to the project. What the standard also suggests is that the scope needs to be controlled, that is to say, it needs to be monitored so the project does not incorporate activities that are irrelevant or that it trails off from the original scope.

The scale and size of the project seems to have significant influence on how much it is documented, developed, and if there are any processes in project management. Participants often considered it irrelevant to do scope when the projects were too small

in scale while others did scope all the way to the details. It can be interpreted that it is mostly up to each and every one how they would estimate the project or if it was even done in the first place. Mostly participants felt that it was over the top to incorporate any extra work and had little patience to do paperwork or document projects they considered minor. This view is understandable but for a company to strive for overall quality and not just quality of bigger projects it is more suitable that all projects get the same treatment. There should not be a different quality or documentation system when it comes to projects since even though they are smaller in scale they should be deemed as important. Scope should be considered mandatory and a natural process when taking a part in a project. It is not something that takes a lot of time to do and is often more useful than time consuming. It gives everyone involved a clearer picture of the project and what is relevant and what is not. Often participants were stressed out about being flexible in their projects but scope does not stand in the way of flexibility since it can be controlled and changed with time if that is what is agreed upon.

Change management is addressed in the ISO 21500 standard in the integration subject group as part of dealing with change request and manage changes according to accepted plan. It is also undeniable part of running a company since all companies go through some changes. Change management was something that participants believed was necessary in the light of an incident where two staff members left the company, but no one was aware of their resignation until the day they left. It made many wonder how changes in the company were being handled. It could also be said that this incident is the result of poor communication but changes are a delicate topic that needs to be handled with care. Most people do not like sudden changes and would always want to be aware in advance if there are changes in the company, be it in regards of structure or staff. Changes regarding projects are a part of protocols of other companies that the company does consulting for, where employees fill in forms for changes. Nevertheless, the same protocol does not exist for their projects. This is clearly something that they could look better into and see if this process is something that could improve change management for them in the future.

8.7 Expectations and roadblocks

When incorporating any standard or making any changes there will be certain roadblocks and expectations. There were several roadblocks mentioned in the survey, for example the size of the company, as it gets in the way of proper communication and documentation system. It was considered better to walk the couple of steps to communicate than incorporating a proper system. Another roadblock was past experiences with software development. They are considered expensive and hard to maintain since the company is still so small in scale. The other problem is that the average age is rather high and not everyone is perceptive to changes or willing to learn new techniques. Another obstacle was time. Time is something that participants did not have enough of to perform these "extra" tasks that are connected to documentation or project management. Additional difficulty was that projects were often not big enough to deserve a standard treatment and that there was too much leeway for different personalities since they got away with different work procedures. The typical constraints in all projects are considered to be time, cost and scope. The reason being, one has to consider the time available to complete the project, the funding available and all the work that must be done to produce the project's end results. These are all hard to meet. This is all that needs to be considered and reviewed if the ISO 21500 standard is to be implemented.

The participants had several expectations in regards to the standard, such as better structure and processes, clearer communication, a systematic documentation system, and improvement on certain management styles. There were also several other expectations discussed in the results but what matters is that the voices of the employees and managers are heard. Knowing your expectations is a really good way of knowing what you want. It is about finding where you want your company to head and ISO 21500 will help you get there. It does so by laying out the framework for the work that you want to do. The standard, on the other hand, does not guarantee that you will have a company running efficiently just by purchasing the product. It works more on the terms that the more work that is put into it, the more is gained. It is not a question of what the standard will give the company; it is more about what the company wants to

achieve with the standard. The employees and the managers need to contribute for this to work; otherwise there is no point in incorporating it. The standard also makes it clear that for it to work not only selected few can keep the quality of the company running. Everyone needs to participate in it and they need to know exactly why they are doing it. The transition time might be uncomfortable for some time but the potential is gigantic.

9   Conclusion

The benefits ISO 21500 can bring to an organization are several folds. One of the main benefits is setting out a common process for all projects where employees and managers synchronize their work and minimize shortcomings. The second benefit for this particular company would be if communication and documentation was managed with more care and with necessary resources available. The standard would as a result, pave the way for stronger and more stable documentation and communication processes. The third benefit the standard could bring is; solidarity between workers and employees, since if used wisely it can create clearer boundaries of what is expected of everyone and stronger ties in regards to working as a team. The last benefit that will be mentioned, even though there are great many more, is quality. Quality is something that every company needs to address since it is what the company stands for. The standard will give the company the opportunity to evaluate what kinds of work procedures they want to incorporate and how they will incorporate that quality into the minds of the employees and managers.

One of the benefits ISO 21500 can bring to a consultancy company in Iceland is that it does not discriminate between projects. All projects have to go through the same processes and procedures since quality are not only expected within bigger projects but with all projects the company produces. There was an underlying thread with almost all participants that projects were too small for; scope, risk management or other processes and they were also too small to document clearly. Nevertheless, what was also mentioned was that only few projects were big enough to go through this necessary processes and structure. It would therefore be beneficially for the company to start documenting and setting up all the processes for all projects so when bigger projects are tackled they fall into a natural way of processing. Processes and structure does not mean more bureaucracy, just in the same way that flight requests were not considered any longer to be 'overload' since it reduces chaos and gives employees and managers information of the whereabouts of everyone who is abroad. Processes are there for a reason, not to make unnecessary changes or making it difficult for the employees to do their work. It is the opposite that is true, making it easier for the employee to do their work instead of worrying about things that are slipping away from

them. The standard therefore adjusts the way of working so it is possible to ensure quality for all projects but also give employees and managers the room to focus on the bigger picture than unnecessary mishaps.

To make a good company even better, it is crucial to look at the foundation the company is built upon. The standard creates that opportunity to magnify and analyse all the work procedures and how they function. Some procedures will not need to be improved therefore it is beneficial to focus on areas that need more attention than others and it is quite crucial that those areas get the attention that is required. If companies have a weak process in any area of their business, what needs to be done is to analyse why that is the case and make more detailed and comprehensive processes to eliminate any uncertainty. With this particular case, communication and documentation processes need more thorough and detailed processes to function as effectively as possible. It is quite uncomfortable for everyone, when communication and documentation depends on the mood and temperament of each and every employee and manager. It leaves these two systems with shattered personality disorder where documents and information are hard to find and often impossible to communicate. What the company needs to ask themselves is how they are going to keep all this valuable information that employees create? Most of the documents are on employee's computers and most of the processes are done by memory by the employees. It cannot be viewed as a maintainable way of working since employees will more than likely leave the company with all the valuable information as well. Therefore the owners will have limited knowledge base left in the company, have longer transition period for new employees to start working for them, as well as, uncertainty what information has left the company in the first place. With the incorporation of ISO 21500 this would be prevented by better processes where communication and documentation will be planned, managed and information will have certain distribution channels. As a result, it will keep valuable information at hand and give employees clearer and more easily available work procedures to work with.

Another benefit for the company by incorporation ISO 21500 would be the creation of common and clearer framework which could possibly results into solidary among workers. It gives a structured way of working and quite detailed set up on how to work

with it. Currently, the working environment is very competitive between employees where they need to grasp every opportunity and assume they get the resources for their projects. If ISO 21500 was incorporated there would be a more solid structure, organized priorities and well defined processes that would limit stress, uncertainty and give employees and managers more freedom and ease to work on their projects and work together to ensure everyone has projects to work on. According to the participants, there are also two formations at work, where there is a division between those who are managers or the owners of the company and those who are employees. This is quite common among companies but in a work place where managers are 1/3 of the company the difference can become obvious and create tension between the two coalitions. Participants described the effect as making "others feel more alone" and it creates "a certain kingdom where each and every one is a king" which is not how companies run effectively today. The standard does not intend to "attack" the kingdom in any shape of form but it does create a pathway where managers and employees can; work together, have clearer boundaries and form work procedures that will make it more capable for the company to work towards a common goal. As a result it will give the company an ultimate edge in competitive market where demands are increasingly getting higher. This can lead to more efficient and improved way of running a multinational company in an ever changing environment.

Whenever there is a need to implement anything there has to be certain mind-set with all the employees and owners in the company. In this process the quality manager is the key employee. Quality managers should have the full support and authority from the board of directors to ensure that all managers and employees develop and maintain their part of the quality system. The role of the quality manager is to support and lead the quality improvement initiative and ensure that quality is being delivered. Implementing a standard is quite impossible if staff does not welcome the changes it might bring and if board of directors do not support. So not only does it take time and effort to implement a standard but it will come for nothing if the people do not use it. Therefore the company really has to ask themselves tough questions if they want to incorporate ISO 21500:

➢ Why do we want to implement the standard?

- ➢ Are we willing to invest time and effort for a long term benefits?

- ➢ Is there someone who does not wish to partake in this? Then why?

- ➢ What quality do we want to share with our customers?

Quality is something that needs to be incorporated into every single person since it is not only the way of working but it is also an attitude or a way of thinking. You have to know why you do things in accordance to a standard to be able to work towards quality. According to Miles Shepherd the Chairman of project committee for ISO 21500 he stated that when he was a quality manager for a particular company his job was "… to improve the staffs attitude to quality. Because quality is more a matter of attitude than following bunch of rules in a book" He further stated that "the only thing you should do in any organization are things that will benefit the process that you are doing and if you find that you are doing something just for the sake of doing it, you need to stop doing it because you are wasting time and money." Having employees more aware of where the company is heading and what standards the company gives them out to be, helps employees to work together to achieve that quality.

This is the opportunity to grab since change is what everyone fears but holding onto something that is good for you now, may be the very reason why you do not have something better. That is why action is encouraged for the company to become even greater than it already is. In the future, it would be interesting to see the comparison between organization on what benefits ISO 21500 brings to them, when the ISO 21500 standard is better known and more widely used it. Furthermore, it would be interesting to see which processes get more emphasis than others and how they contribute to better quality and efficiency across different industries.

Bibliography

Albertsson, Óðinn (personal communication, November 4th 2013)

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *SAGE Publication*, *1*(3), 385–405.

Berniz, A. (2013, November 3). Difference Between ISO 21500 and PRINCE2®. *ProjectManagers.org - Trusted and Reputed Professionals*. Retrieved from http://projectmanagers.org/difference-between-iso-21500-and-prince2/

Boltanski, L., & Chiapello, E. (1999). *Le nouvel esprit du capitalisme*. Paris: Gallimard.

Bryman, A., & Bryman. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative Research*, *6*(1), 97–113. doi:10.1177/1468794106058877

Clark, K. B. (1989). Project Scope and Project Performance: The Effect of Parts Strategy and Supplier Involvement on Product Development. *Management Science*, *35*(10), 1247–1263. doi:10.1287/mnsc.35.10.1247

Denzin, N. K., & Lincoln, Y. S. (2005). *The SAGE Handbook of Qualitative Research*. SAGE.

Douglas, A., Kirk, D., Brennan, C., & Ingram, A. (1999). Maximizing the benefits of ISO 9000 implementation. *Total Quality Management*, *10*(4/5), S507.

Elizabeth Gasiorowski Denis. (2012, October 10). New ISO standard on project management. Retrieved March 23, 2014, from http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref1662

Garel, G. (2012). A history of project management models: From pre-models to the standard models. *International Journal of Project Management*. doi:10.1016/j.ijproman.2012.12.011

Gasik, S. (2012). Analysis of ISO 21500 and its compariosn with PMBoK® Guide. *History of ISO 21500*. Retrieved October 8, 2013, from http://sybena.pl/dokumenty/ISO-21500-and-PMBoK-Guide.pdf

Geothermal Energy. (n.d.). *Renevable Energy World.com*. Retrieved February 18, 2014, from

> http://www.renewableenergyworld.com/rea/tech/geothermal-energy

Hughes, T. P. (2011). *Rescuing Prometheus*. Vintage.

Iceland Geothermal Energy Market Report. (2010). Reykjavík. Retrieved from

> http://skjol.islandsbanki.is/servlet/file/store156/item61173/version3/2010%200419%2

> 0Iceland%20Geothermal%20Energy%20Market%20Report.pdf

International Standard. (2012). *ISO 21500 : Guidance on project management*. International

> Standard Organization.

International Standard Organization. (2008). ISO 9001 Introduction and Support Package:

> Guidance on the Conept and Use of the Process Approach for management systems.

> Retrieved from

> http://www.iso.org/iso/04_concept_and_use_of_the_process_approach_for_managem

> ent_systems.pdf

Ketilsson, J. (2009, November 26). 57 milljarðar spöruðust í fyrra. *Fréttablaðið*. Retrieved

> October 15, 2013, from http://www.visir.is/57-milljardar-sporudust-i-

> fyrra/article/2009810109637

Kolltveit, B. J., Karlsen, J. T., & Grønhaug, K. (2007). Perspectives on project management.

> *International Journal of Project Management*, *25*(1), 3–9.

> doi:10.1016/j.ijproman.2005.12.002

Labriet, T. (n.d.). *Comparing PMBOK Guide 4th Edition, PMBOK Guide 5th Edition, and ISO

> 21500*. Retrieved from https://docs.google.com/file/d/0B_0LY9oI6F-

> EWmo4bTRWMjNpN1U/edit?usp=drive_web&goback=.gde_2775_member_201652493

> #!

Latimer, J. (1997). *Friendship among equals*. Switzerland: ISO central secretariat. Retrieved from

> http://www.iso.org/iso/2012_friendship_among_equals.pdf

Lincoln, Y. S., & Guba, E. G. (1990). Judging the quality of case study reports. *International Journal of Qualitative Studies in Education*, *3*(1), 53–59. doi:10.1080/0951839900030105

Monkhause, P., & Kamel, M. (n.d.). *ISO 21500 Project management: the beginning of a journdy towards a new standard*. Retrieved from http://pmi.ca/ISO21500-Journey-Beginning.pdf

Morris, P., & Hough, G. H. (1988). *The Anatomy of Major Projects: A Study of the Reality of Project Management*. Wiley.

Morris, P. W. G. (2013). *Reconstructing Project Management*. John Wiley & Sons.

Newton, N. (2010). The use of semi-structured interviews in qualitative research: strengths and weaknesses. Retrieved November 20, 2013, from http://www.academia.edu/1561689/The_use_of_semi-structured_interviews_in_qualitative_research_strengths_and_weaknesses

Nuttall, P., Shankar, A., & Beverland, M. B. (2011). Mapping the Unarticulated Potential of Qualitative Research: Stepping out from the Shadow of Quantitative Studies. *Journal of Advertising Research*, *51*(1), 153. doi:10.2501/JAR-51-1-153-166

Packendorff, J. (1995). Inquiring into the temporary organization: New directions for project management research. *Scandinavian Journal of Management*, *11*(4), 319–333. doi:10.1016/0956-5221(95)00018-Q

PMI Standards Committee. (1987). *Project management body of knowledge (PMBOK)*. Project Management Institute.

Shepherd, Miles (personal communication, November 1st 2013)

Soderlund, J., & Lenfle, S. (2011). Special issue: Project history International journal of project management. *INTERNATIONAL JOURNAL OF PROJECT MANAGEMENT*, *29*(5). doi:10.1016/j.ijproman.2011.01.001

Standards Development. (n.d.). *How does ISO develop standards?* Retrieved October 14, 2013, from http://www.iso.org/iso/home/standards_development.htm

Stellingwerf, R., & Zandhuis, A. (2013). *ISO 21500 Guidance on project management: a pocket guide*. UK: Van Haren Publishing.

Structure and governance. (n.d.). *About us*. Retrieved October 14, 2013, from

http://www.iso.org/iso/home/about/about_governance.htm

Sumner, M. (1999). Critical Success Factors in Enterprise Wide Information Management Systems Projects. In *Proceedings of the 1999 ACM SIGCPR Conference on Computer Personnel Research* (pp. 297–303). New York, NY, USA: ACM.

doi:10.1145/299513.299722

Turner, D. W. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, *15*(3), 754.

V. Ryan. (2009). What is Geothermal Energy ? Retrieved February 18, 2014, from

http://www.technologystudent.com/energy1/geo1.htm

Vaskimo, Jouko (personal communication November 7th 2013)

10 Appendix 1 – Interview questions in Icelandic

Basic

Bakgrunnur starfsmanns

Hvað gerir þú innan fyrirtækisins?

Hvernig myndir þú lýsa vinnustaðnum?

Hverjar eru megin áheyrslurnar ykkar (hvað skiptir ykkur mest máli)?

Staðan í dag

Hvernig er verkskiptingin á vinnustaðnum?

Hvernig myndir þú lýsa verkferlunum í dag?

    Hvar er aðaláherslan?

    Er einhver veikur hlekkur?

    Hver stýrir verkefnunum?

    Er einhverstaðar sem má bæta?

Hvernig var að setja upp ISO 9001?

    Breytingar?

    Hvað tókst vel?

    Hvað var erfitt ?

    Kostir & gallar?

Hvernig eru samskipti á milli starfsfólks í verkefnum?

    Hvernig fara þau fram?

    Er notað eitthvað forrit?

    Má eitthvað bæta?

Hvernig myndir þú lýsa upplýsingaflæðinu á milli ykkar og viðskiptavina?

    Hvernig fer það fram?

Hvernig eru skjölum haldið saman? (hvernig er flokkunin)

Hvernig metið þið áhættu?

    Er eitthvað ferli?

    Hvernig er það skráð?

Eru þið með einhverja sem myndu falla undir „suppliers" eða birgjar?

    Hvernig er upplýsingaflæðið á milli ykkar?

Þegar þið farið í verkefni eru þið þá með „project team" eða vinnu teymi?

    Hvernig fer það fram?

    Hverju skila það sér?

    Kostir & gallar?

Þegar farið er í verkefni er gert scope? (lýsingu á hvað er gert og hvað er sleppt)

    Work breakdown structure?

Hvernig vinnið þið kostnaðaráætlun?

    Stenst hún alltaf?

    Ef ekki, hvað er það sem veldur því að hún standist ekki?

Haldið þið saman gögnum um „lessons learned"?

    Hvernig lærið þið af mistökum?

    Haldið þið að það væri eitthvað sem gæti nýst ykkur?

Hvernig áætlið þið tímanum sem það tekur að framkvæma verkefnið?

    Er einhver tímaáætlun?

    Stenst hún, ef ekki, af hverju ekki?

Hvernig er tekist á við breytingar?

    Er einhver ferill?

    Er eitthvað skráð?

Er eitthvað sem þú myndir vilja breyta á vinnustaðnum (varðandi verkferla)?

Hvað þýðir gæði í þínum huga?

    Hvernig myndir þú lýsa gæðunum sem þið skilið af ykkur?

    Er eitthvað sem þú myndir vilja sjá að mætti bæta?

ISO 21500

Hverjar eru þínar væntingar með þennan staðal?

    Af hverju þennan staðal?

    Hverju viltu að staðallinn breyti?

Er eitthvað sem gæti staðið í vegi fyrir því að þessi staðall væri tekinn upp?

Ef fyrirtækið væri fullkomið... hvernig myndir þú lýsa því?

Eitthvað fleira sem þér dettur í hug?